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ENERGY, ENVIRONMENT & SOCIETY

Master Thesis

Does the existing decision-making process in the housing co-operatives act as a barrier to climate actions?

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Abstract

The extreme storms, rise of sea level, melting glaciers and famine are a few examples of “silent” catastrophes. We don’t feel their effects immediately, so we do not act upon them as if these matters are urgent. But they are. Luckily though, there are those that do try and implement measures in order to mitigate the impact of these major forces. The expanding renewable energy market is one tool that can be used in the fight against climate change.

A qualitative research is conducted in where it is investigated whether traditional decision – making processes in the housing co-operatives might have a negative impact on decisions regarding climate measures.

The rational decision process represents the ideal decision-making model and is used as theoretical framework during the research. The “bounded rationality”-theory considers the fact that we are often not able to see the full picture and are not able to rank our own criteria and goals might also fluctuate. Unable to select a universal “best” option, we will have to select the one that will best satisfy the criteria we have come up with among the options we have managed to uncover.

This research revealed the following barriers as the most relevant and challenging within a decision-making process: Lack of knowledge among board members and residents concerning climate measures, difficult to get behind all the information and data regarding the different measures, low turn-up on general assemblies, lack of incentives – economical support mechanisms, lack of guidelines and supporting legislations.

The following factors on the other hand were seen as factors that would have been facilitators for climate measures: Increased knowledge regarding climate measures, more specific solutions for the individual housing co-operations, simplified procedures and standard options, more resources such as counseling and facilitation from local municipality, more incentives and economical support for climate measures, laws and statutes that would set guidelines.

The problem in housing co-operatives seems to be that decisions are often made only for meeting the needs and interests of the residents. This means that the climate concerns are never on top of the agenda. The residents’ willingness to innovate mainly depends on the

factor of cost/ benefit. Implementing climate measures is also not specified in law, there exists only a maintenance obligation which is embodied in the housing co-operative act §5-17.

The study also revealed that the average turn-up at the general assemblies is only 20%. This could be interpreted as a sign that not many residents in housing co-operatives have a desire to make an active choice regarding the distribution of the joint expenditures. In the concluding part this is used as an argument in favour of impersonalized default choice regarding environmental actions in the housing co-operatives.

Acknowledgement

Although this thesis marks the end of my master's degree in Energy, Environment and Society, it is at the same time the start of a new personal era. I feel the responsibility to bring forward this knowledge and to promote sustainable climate measures in the fight against climate change.

This journey has taught me to think differently. As said by Albert Einstein *“the value of an education is not the learning of many facts, but the training of the mind to think something that cannot be learned from textbooks”*. I would therefore express thanks to all my professors for sharing their knowledge with me.

A sincere big thank you to my supervisor, Karl Johan Engelhart Olsen for the constructive feedback and guidance. We made it despite a broken ankle and a forest fire.

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My personal Journey

This all started with the realization of finding oneself caught in a “gray zone” in a society where everything is supposed to fit within a framework. In theory housing co-operatives are defined as an organization and all housing co-operatives have an organization-code, meaning that they are defined as a business-entity. A business-entity with no employees and no possibility of making any profit (The Housing Cooperatives Act §2-4). Those who live in these housing co-operatives are regular people with widely different backgrounds, different age groups and with each their own interests. The major thing they hold in common is the fact that the members take care of their common matters in a spirit of sharing democracy, and thereby gaining a sense of shared responsibility.

When I first contacted Enova¹ my idea was that as a private household, I could receive some financial support, would I wish to install solar panels on the roof of my house and a charger for an electrical car in my garage. And the reply I got from Enova seemed positive, I just needed to apply for support through a link on their website and attach documentation verifying that I had paid for everything from my private account and that I had signed an agreement to become a plus-customer (Pluss Kunde – avtale²) with the electricity supplier. “This is great” was my first thought. I thereafter contacted Otovo (supplier and installer of solar panels) to request an offer. They were very forthcoming as I soon received an estimate price together with some fun facts regarding solar panels if I were to order 39 polycrystalline Silica-panels, each of them producing 275 watts. These were as follows:

- 9 panels would deliver enough power to make 34, 2 drives around the earth.
- Cook 38 casseroles of mutton in cabbage (fårikål) a week
- Do 62 hours of laundry at 40 degrees each week
- Fly the distance Oslo–Malaga 6,9 round trips each year
- The installation will deliver 219 000 kWh of energy during its lifetime!

After some further research though, I realized that it wasn’t as simple and straightforward as I thought initially. There were several obstacles to be overcome. The first of these was the fact

¹ Enova SF is a state enterprise, established in 2001 to contribute to the transformation of energy use and energy production and is owned by climate and the Environmental ministry.

<https://www.enova.no/om-enova/om-organisasjonen/>

² <https://www.lysenett.no/plusskunde/>

that if I wanted solar panels on my roof, it had to be issued as a case for the board of directors of the housing co-operatives. As this would be a change of façade, the matter could not be decided by the board, and would have to be passed on to the general assembly. The second obstacle would be that the roofs in the housing-community where I live are old and not facilitated for solar panels or solar catchers. The third one is the fact that the electrical installation does not have the capacity to handle the charging of electrical vehicles. In our carports we have a socket that has been secured with a 10A-fuse, meaning the circuit needs to be adapted to surge-protection.

As we can see, there are several factors here making it both costly and demotivating for me to get into green initiatives such as electricity-production or buying an electrical car. In the media, we all the time hear about the government's ambitious goals for us as a nation to become a low-emission society by reducing our carbon emissions with 80-95 % within 2050 both on a national and regional level³. We are all encouraged to take part in this paradigm-shift through different measures and incentives. Currently however, 605 602 individuals living in housing co-operatives are excluded from many of these measures and cannot make use of most of the incentives as they are reserved for residents of self-owned housing.

The support that Enova gives to households is rights-based (rettighets-basert). This means that as a private household one can make the adjustments first and thereafter apply so long as one can provide the necessary documentation. A housing co-operative cannot apply for economic support, neither for the facilitation for electricity production and EV-charging or for solar panels and chargers. Here, as shareholders we are dependent on 2/3 of the general assembly sharing our interest for the environment.

One of the aims with this research is to argue for a legislative amendment in the housing co-operative act which will impose co-operatives to facilitate for those individual residents who want to implement climate-friendly measures according to their own means or interests. This concerns in particular measures that receive no financial support from the local and state initiatives.

³ Retrieved, 11.05.2019: <https://www.regjeringen.no/no/aktuelt/ny-klimalov/id2547098/>

1 Presenting the theme

Retrieved from an early work; Fossil fuels are getting the blame for causing today's environmental problems, but it is the way we humans exploit the natural resources that are the root cause of the increased amount of CO₂ in the atmosphere, inducing global warming. The evidence is frightening and has already affected every part of the earth's biosphere" (McCormick, 2018).

The loss of habitats, loss of genetic diversity and species are all victims of "natural" disasters. The extreme storms, rise of sea level, melting glaciers and famine are a few examples of "silent" catastrophes. Sudden disasters are combated with immediate actions because they are tangible and visible to us. UNICEF⁴ states it well by saying that it is in human nature to react slowly to things that do not affect us directly.

While some disclaim responsibility, there are still many states, organizations and individuals who try to fight climate change through various means. Among these tools, the growing renewable energy market is one of the measures in the fight against the climate change.

Solar energy is an energy source that has had difficulty finding acceptance in the marketplace in Norway so far. Through the Master program "Energy, Environment and Society" it has become evident that in order to fight climate change, we have to facilitate for the implementation of renewable energy technologies. This again means that these new energy technologies must become socially accepted. In other words, we should mainstream the renewables (van Veen, 2018). Based on this idea, the theme of this project and the problem statement took shape.

The residents of Haugtussa Co-operative got involved early in the process through the pilot study because their perspectives and opinions have had a great deal of influence for the further approach. The data collected from the residents of Haugtussa have also been used as a support tool to formulate the interview questions. The key informants from the various fields who have an impact on decision – making processes when it comes implementation of climate friendly measures have been interviewed.

At the beginning of the research I was not completely sure from which angle the problem statement would be best illustrated. The outcome of the pilot study had an important role in

⁴ Received - 16.10.2018 - unicef.no

the choice of perspective. For example, if the organizational structure of the housing co-operative is the main factors that green initiatives have little entry, then it would be natural to seek and identify the missing aspects in the process to ensure success. I will further review how ownership and participation in the decision-making process can both lead to social acceptance of climate measures and at the same time be a time-consuming factor.

This research does not revolve around finding a definitive answer, but rather to gain an understanding of how the traditional decision – making processes in the housing co-operatives might have a negative impact on decisions regarding climate measures. The theories and models on decision making have the human -beings’ choices and interests in centrum. Decisions regarding climate measures should be higher on the housing co-operatives agenda in order to sideline the needs of the environment with those of the residents.

In order to propose any measures and hopefully an alternative decision model, it is therefore necessary to understand the structure of the housing co-operatives and the decision – making processes by analyzing what factors impact the board members decisions.

1.1 The motives behind the problem statement

The main goal of this research is to establish demands and regulations that encourage the housing co-operatives to have more focus on renewable energy technologies in order to take the necessary step towards a greener future. This might discover aspects within the technology where the knowledge and experience are not satisfactory. More specifically, the intention is to research how the housing co-operatives can contribute to a green change by investing in new renewable energy technologies.

1.2 Presenting the Problem Statement and the research questions

The problem statement and the research questions aim to explore a social phenomenon. To provide insight and understanding, an exploratory research design has been chosen. Blaikie (2010, p. 16) describes a problem statement as “an intellectual puzzle that the scientists want to solve. He also stresses that it is not always possible to formulate a complete problem statement at the very beginning of a research design. And the problem statement often needs to be reformulated several times before the final submission”.

According to Yin (2014), researchers may be tempted to try to understand everything, which is impossible. In order to define the main goal for this research and to keep the focus on what is interesting for this study several sub questions has been formulated. These questions have been used as a tool to refine and keep the attention throughout the research process.

Problem statement:

“Does the existing decision-making process in the housing co-operatives act as a barrier to climate actions?”

The research will address 4 questions all with a purpose to understand how to bring change in efforts to mainstream the renewables and to promote climate actions. Underneath each question sub questions are listed in order to show what the research is intended to achieve.

- 1- How does the decision- making process influence the “willingness to innovate” by the shareholders in a housing co-operative?”

Sub question: What are the main factors influencing the decisions of the residents when deciding in favor of the environment?

- 2- How can the chairman and board members promote climate measures? How do the laws and regulations influence their decisions, main concerns and priorities?

Sub question: Why is it important to have an understanding that upgrading projects must contain an upgrade to more environmentally friendly solutions?

As of now there is no requirement stating that maintenance work or upgrades need to prioritize climate measures. For instance, when changing the rooftops there are no regulations demanding that the upgraded roofs need to be prepared for the installation of solar panels.

- 3- What are the existing barriers and drivers for implementing environmental measures in the housing co-operatives?

Uncover and investigate the obvious challenges and possibilities for the implementation of new renewable energy sources.

Sub question: How do the public support systems promote the solar energy technologies? (Enova and the Municipality of Stavanger)

- 4- Should sustainable environmental initiatives be a subject of our rationality, or should the decision be made as a default choice among the housing co-operatives?

Sub question: Is our society ready and able to make rational decisions that comes the environment to the benefit, or are we hindered due to our bounded capacity?

1.3 The outline

Chapter two describes the methodology of this study exploring its research design. The techniques used for how the data is collected and data sources are shown, and the qualitative research methods; documents, interviews, observations conducted is identified and discussed. The trustworthiness of the research is also addressed to allow the readers to critically evaluate the validity and reliability of this study.

Chapter three presents the main concepts that have been used when exploring this field. This chapter elaborates the concept of housing co-operatives and how these are managed. Thereafter, sustainable development, the renewable energy with focus on solar energy. Finally, a brief presentation of the public support schemes.

Chapter four elaborates the theoretical framework of the study, focusing on decisions and the decision-making perspectives and theories. Following the policy – making process and the concept of decisions as a default choice.

Chapter five presents an overview of the data sources and elaborates the different barriers in the decision-making process in the housing co-operatives in Norway. The empirical findings are presented in a systematic way to guide the readers through the findings from the gathered primary data.

In **chapter six** the findings are brought together and discussed from different viewpoints presented in the theory chapter and from the gathered primary data. The four research questions are answered with the aim to gain an understanding of the challenge's individuals and the housing co-operatives as an organization face when trying to implement climate measures. Moreover, the discussion of whether an important subject such as climate change should be based on our “rational” decisions or should the decisions and alternatives to climate actions be set as a default choice.

Chapter seven presents a summarization of the findings from chapter five and six. Finally, a conclusion based on the findings and my understanding from this study and some further research recommendations.

1.4 A brief literature-review

Search on the internet indicates that housing co-operatives in Norway have not been considered when talking about implementation of solar power production technologies. However, in Stavanger, Solvang housing co-operative has recently installed a solar energy solution which was a part of a broader project funded by EU⁵. This is in line with Cuthill's (2002) findings that environmental engagement starts at the local level.

We often hear about incentives, and policies which aim to promote renewables within both private sectors and public buildings. The Housing co-operatives importance as an important player within the field of implementation of renewable energy is often overlooked. My research project aims to find the reason for this and hopefully fill the gaps. In addition, we also see that legislations⁶ regarding the housing co-operatives poses little value promoting renewables as a measure towards a greener change in the society.

Stoknes & Nilsen (2017) state that in order to get a society to invest in climate the choice has to be made simple – climate is set as a default. Further, the authors state that, as an individual, one realizes that so forth low carbon style of living, your individual contribution does not have any influence on preventing global warming. The message is that green private consumption is useful but primarily should be seen as a signal to the outside society which can influence new business-, regulation- and civil networks that contribute to the green change. Because of the non-linear complex way society transformations take place, it is difficult to assess how far these signals reach. According to Stoknes research these signals reach longer and become more “contagious”, if these radiate joy and enthusiasm, rather than giving a feeling of guilt and anger. In contrary to the positive approach by Stoknes & Nilsen, who focus on climate communication, while McCormick (2018) focuses on the damage created by human activity.

Arnekleiv & Larssæther (2004) explore the concept of green innovation. Further they explain how green innovation differs from other types of innovation. While explaining why a successful green innovation requires a widespread interaction with various stakeholders and the organization itself).

⁵ Received - 7.11.2018- nbbl.no

⁶ Received - 7.11.2018- lovdata.no

Furthermore, they indicate the various definitions and understandings of what green innovation really is. What is mutual however, is that they differ from "common" innovation in a significant way. The traditional innovation concept appears morally neutral, and it gives no guidelines as to which direction the changes should go and the consequences they will get. In contrast, green innovation involves an important value-based assumption that the environmental impact of one or more phases in a process or product life cycle is reduced.

Hauge et al. (2013) in their research has done an analysis on how the advantages gained by installing solar panels weigh up against the cost. They found that a private investment in solar cells with today's support scheme from Enova cannot be profitable. However, they do state that were the support scheme to be increased from its current level this could make this type of investment in Norway into a highly cost-efficient solution with a lot of benefits. It is also mentioned how forecasts for the future show how prices for electricity will go up while those for solar cell investments will go down which could make an investment feasible even without making any changes to the incentives. They conclude though that is still a somewhat insecure way of thinking, because you never know how correct or incorrect projections for the future will be.

The concept of rationality and how rational decisions are made when it comes to combat climate change. This topic has been discussed in depth by (Jacobsen & Thorsvik, 2002) and several models of decision- making are presented. Sunstein & Sjøbu (2017) argues that decisions of high importance should be set as default choice.

2 Methodology

A case study research method chosen as a methodology is best suited for this task, as research is not about finding a definitive answer (Creswell & Poth, 2018), but rather to find understanding of how the organizational structure, decision-making processes, social attitudes and regulations affect the implementation of environmental measures that focus on new renewable energy technologies.

Creswell and Poth (2018, p. 96) interprets a case study as “a type of design in qualitative research that may be an object of study as well as a product of inquiry” and defines it as a “qualitative approach in which the investigator explores a real- life, contemporary bounded system (a case) or multiple bounded systems (cases) over time, through detailed, in-depth data collection involving multiple sources of information”

To gather all the data needed it is almost impossible to just rely on a single data source. In order to develop an in-depth understanding multiple method to collect qualitative data like interviews, document analysis, reports, site inspection / visit (by attending general meetings) and audiovisual materials has been conducted.

2.1 Data Collection & Timing

A qualitative content analysis has been conducted where several different documents have been analyzed. Most of these have been written document supported by primary data collected through interviews on telephone/ skype meeting and by online chat and face to face interviews. An important part of the preparations for such an analysis is to choose which concepts to prioritize and which type of texts to consider as important to highlight the theme and answer the research questions (Grønmo, 2016). A qualitative study gave a deeper insight of the problem and also allows for observation through attending general meetings and visiting Solvang housing co-operative.

A combination of an abductive and inductive research strategy has been used in the research. This was decided and based on the formulation of the research questions as several of those concern what and how questions (Blaikie, 2010, p. 18)

Report provided by Sintef has been used as an example to gain in- depth information of what measures and strategies were most convincing when making decisions regarding sustainable renovations in housing co-operatives (Å. Hauge, Thomsen, & Löfström, 2013)

Five Chairmen and one board member from six different housing co-operatives in the Stavanger region have been interviewed to get an understanding into what measures and means are needed to implement climate measures and how the decision- making process impacts their priorities.

In order to answer the research questions, it is necessary to understand how the housing co-operatives in Norway are governed and how decisions are taken regarding climate measures. To gain an understanding and knowledge of what influences the decisions made by the boards a semi- structured interview guide was created and the interviews were performed according to the mentioned guide. Semi-structured interview is justified by the fact that information about the task and its purpose are pre-sent to the interviewees. To ensure the quality of the interviews an e-mail with information about the task and theme was distributed.

This way of interview gave the interview subjects room for personal emotions and experience and they also got the opportunity to talk about their own interests regarding the theme. A semi- structured interview was easy and flexible due to its structure, which again gave an advantage to change the questions during the interviews (Kvale, Brinkmann, Anderssen, & Rygge, 2015).

Observation was also used as a method for collecting data. By observation, a researcher can detect complex interaction in social settings that might otherwise go unseen (Blaikie, 2010). By being an observer, I could witness how decisions were made in the general meeting at Haugtussa housing co-operative. This gave me also the opportunity to see the body languages, shareholders and board members engagement and tone of voices which again added nuance to the words spoken. Notes were taken in order to recall the event.

Five chairmen and one board member were interviewed for this research. The selection of these subjects was since they represented a broad specter of housing co-operatives and that they all were situated in Stavanger. The reason for choosing chairmen and not board members or shareholders as interview subjects was mainly because the chairmen have a bigger authority, more responsibility and a greater overview of the challenges faced by the housing co-operatives. One board member representing Solvang housing co-operative was chosen

based on his experience by having a key role in the process of decision- making when the Invade⁷ project was first introduced by Smartly and Bate housing association to Solvang housing co-operative.

One of the main objectives of interviewing chairmen was also to see how the board members use their position to promote green technologies. Document analysis was parallel conducted to strengthen collected primary data. Enova, respondent from Bate housing association and representative from Smartly A/S were interviewed in order to collect primary data to support and strengthen the findings from the document analysis and own assumptions.

Interview time was set to 45-60 min as this is what is recommended in the literature (Yin, 2014). Here I naturally used discretion and ended the process when the desired answers were received before the allotted time.

All interviews were conducted in Norwegian, meaning all quotations from interviews are own translation.

The interview with Enova was conducted by telephone and their chat function and took approximately 15 minutes with each candidate. After presenting myself and the scope of my project I asked for permission to use the information collected for my research. They also provided me a copy of our chat on mail. In addition, I took notes during the telephone interview. In the end of our conversation I summarized the information to the informant in order to clarify any misunderstandings and also ensuring that the information was interpreted and understood correctly by me.

A meeting with the CEO and the Media responsible of the Bate Housing Association was held already in October 2018. The intention behind this meeting was to get a sense of where their interest on these issues lied.

Phone conversation with the informant from Otovo (supplier of solar power energy technologies) was conducted ahead of the design study. This was to get information about their previous projects and experience in general. We agreed that should there be any need for any information and documents prior the study, the representative of Otovo will provide it via mail.

⁷ Retrieved 11.05.2019: <https://www.smartly.no/invade>

Surveys was considered if the outcome of the pilot study would show that the residents were negative to the idea of solar technologies. Then it would be necessary to obtain data to map the cause of this negative attitude.

The candidate list of informants was made early in the project and 4-5 weeks was set aside for the data collection process. I used audio recording during the face to face interviews and did the transcription of the interviews on an ongoing basis to make the analysis work more transparent and tidier. For some of the transcription work, I got help from my daughter. A confidentiality agreement was signed in advance of the work. Before each interview I studied carefully documents and went through the organizations homepage to gain knowledge about the company and the field the interviewee represented. Estimated time of interview is recommended 60 Minutes (Yin, 2014), the interviews conducted did not exceed the allotted time. In addition, an interview guide was used to hold focusing on the questions and providing room for continuation questions. Changes in the interview guide is natural as there are several different subject areas more relevant for the different key actors/ informants. Interviews have been used as a supplement for document analysis and vice versa.

It is however very important to address some ethical issues along the process of data collection. By this I mean that all the participants were informed about the general purpose of the study and they were assured that their participation was voluntary and that they could withdraw from the study at any point. During the interviews it was also important that personal impressions were avoided by not asking any leading questions. Prior to the study, a notification to NSD⁸ was submitted and approved. This would build trust and convey the extent of anticipated disruption in gaining access to data. I also obtained permission for use of any material that may be considered proprietary by asking for permission to use figures and data from Enova's homepage and documents (Creswell & Poth, 2018).

2.2 The primary data sources - Presenting the interview subjects

Studies state that in a qualitative interview one should keep on interviewing until the respondents are aligned in their answers, meaning that no new information is revealed (Kvale et al., 2015). For this thesis six candidates from the board were selected. The original plan was to interview seven to eight board leaders, which proved to be more difficult than first

⁸ Retrieved 10.03.2019 - <https://dbh.nsd.uib.no/>

thought. Many of the local housing co-operatives do not have their own home page but instead refer to Bate Housing Association`s web page. When I contacted Bate to get hold of contact details of the board chairman, it was informed that these details could not be freely distributed. For this study 5 in -depth interviews with chairmen, one board member and 5 other participants from relevant sectors were chosen. Interview with Enova was done to gain facts about the existing and planned financial support for climate measures in the housing co-operatives.

After interviewing several chairmen, the replies became more or less the same and it became apparent that there was no need to interview several more as less and less new information was discovered. According to Kvale et al. (2015) one should interview between 5 and 25 interview subjects and they believe it is a misunderstood quantification to aim to interview as many people as possible.

Here follows a short introduction of the interview subjects and the numbers of years they have been on the board as chairman. Board member of Solvang and the CEO of Bate are presented with their names with their permission.

- 1 – Chairman at Haugtussa housing co-operative, board chairman for the last 3 years.
- 2 – Chairman at Tjensås III housing co-operative for the last 7 years.
- 3 – Chairman at Soltun housing co-operative, Chairman 14-15 years.
- 4 – Finn Tollefsen, Board member at Solvang housing co-operative, 4 years
- 5 – Chairman at Sundetunet housing co-operative, Chairman 2 years.
- 6 – Chairman of Tjensvold 6, has been chairman of the board for 11 years
- 7 – Project leader, Product and commercialization- Smartly AS
- 8 - Senior project leader and project leader for Pilot Project - Solvang co-operative from Bate Housing Association
- 9 – Paul Boxill, CEO of Bate Housing Association
- 10 - Enova – Telephone interview with Enova informant from the housing co-operative department.
- 11– Enova svarer, chat with Enova about general support for EL- Production & solar cells

2.3 Pilot study

Information meeting/pilot study with the board members and the residents of Haugtussa housing co-operative was scheduled for 21 of November 2018. The pilot study was conducted where the information about the topic was presented to the residents and board members of Haugtussa. The presentation took place as planned on 21.11.2018 at 19:00 at Haugtussa office (Øvre bomberom). My presentation was a part of the residential meeting. Expected turn-up was between 25—50 people, based on previous experience, but the actual turn-up was only 15 people.

This study gave the research an overview of the level of interest and knowledge on the subject among the residents. From the outcome of the meeting, I was able to draw a few conclusions which was of great help when choosing a perspective and approach for this task.

The following scenarios were assumed:

Outcome A – Positive attitude toward sustainable climate initiatives

If the residents and the board members show a positive attitude towards the project, the task will get a greater focus on the work of getting the green technology solutions to be implemented. Then, if desired, the General Assembly can decide to adopt the suggested Solar Energy solutions, and one can start and pursuit for finding supplier and apply for financial support mechanisms according to the routines of the housing co-operatives. The perspective of the task will then be to look at the financial framework and the different options for solutions that will be most appropriate for the housing co-operative. Selection of interview objects and survey questions will be colored by this outcome.

Outcome B – Negative Attitude

If the residents and the board members are negative or conservative towards solar technology the focus will then naturally be to study more in detail the following points to map the underlying causes of the negative attitude:

- Organizational structure and its importance to green innovation
- Decision-making process in the housing co-operatives
- The election process of board members
- Shareholders ' relationship to the project in terms of ownership and determination

- Is it the lack of knowledge or is it that there is scarcely information available about the solar technology?
- General resistance to change?
- What motivators are there? What are the needs, desires and dreams of the shareholders?
- How can the municipality's long-term strategies put climate action on the agenda for the co-operatives?
- Which legal tools can promote the renewable technology?
- Which financial support schemes exist?

The above-mentioned scenarios are polarized. Experience from resident meetings has previously shown that there are great disagreements and strong opinions that prevail in these types of meetings. Most often it is the combination of cost/ benefit and the level of knowledge related to different technologies and subjects that are the main reason for disagreement. Large projects that have an impact into people's private finances in the sense that rent is being increased is difficult to justify when using climate and sustainability as arguments. Here, I have benefited from earlier studies both international and national (Hauge et al. 2013), (Kadriu & Wendorf, 2011) on what factors lead to successful implementation of sustainable climate initiatives.

2.4 Case study

Here the intention was to look at a project where solar cells and battery bank are already implemented successfully, using Solvang housing co-operative as a case example. Data and information collected for this study helped me understand how decisions were made. Existing documents in addition to site inspection and interview with former board chairman are used as data source. The aim of the study was to determine which motivational factors were effective when decision was made for a comprehensive energy solution with solar power, battery packs and EV charging. In addition, the data from this case study will map the level of knowledge about the technology among the key actors.

These findings were also intended to be used in case of a feasibility study. This was however found not to be necessary as the early findings showed that it was not the willingness of the shareholders and the board members that challenged the implementation of renewables. It is

rather the level of cost and the decision process that are the main causes for hindering sustainable climate initiatives.

Expectations from the case study of Solvang housing co-operative was to gain insight into the following topics from the Board member and the project leader from Bate:

- Which factors were significant when deciding to implement solar technology?
- How does the city Council's plan and the regulations impact their decisions? EU-support?
- Are climate measures seen as a natural first choice when deciding for upgrade and renovation projects?
- Opportunities for resale of surplus energy, energy storage, electric car chargers and self-production records as positive side-effects?
- Do they experience general curiosity from the neighbors and other housing co-operatives?
- Would you consider or take the initiative without the EU-support through Bate housing association?
- How much information and knowledge did you possess prior to the project?
- How much did the preselected option containing Solar panels, battery bank and EV-charger had an impact on your final decision?

Site Inspection at Solvang was agreed with board member, Finn Tollefsen. Here I got to see the battery banks and charging stations that were located in the parking. Three battery banks were installed in the technical room. It was surprising to see how little space on the wall they took. A large screen was visibly placed on the building's main floor. It was confirmed that this was what many of the residents were paying attention to, especially on days where there was a lot of sunshine. This information screen was provided and controlled by Smartly that showed real-time data such as:

- Produced solar power - Real-Time information on how much solar energy is produced
- Power supply-power consumption or power produced and delivered to the local grid
- Electric car charging-shows power used for charging electric cars
- Battery charge or discharge of battery.
- Average W per month and Last 24 hours consumption and production

- Distribution last 12 months (power and Sun)-here showed real-time information about how much solar power was produced right now, and the power supply or electricity produced and delivered to the mains.

In addition to information on production, today's popular news appeared in text form on the screen as well. It was said that this visual representation aroused both interest and awareness of the technology. And that the vast majority of the residents in the co-operative were satisfied with the decision of implementing their own electricity production.

Online interview with Enova provided the information regarding existing financial support mechanisms and future planned means and measures for the housing co-operatives.

Interview with leader for product and commercializing at Smartly AS – Lyse was conducted by telephone. Here I got to know more about the existing infrastructure and possibilities for facilitating for production of solar power and other possible barriers and drivers for implantation of this technology at the housing co-operatives. How was the interdisciplinary planning and good information having an impact on the successful project at Solvang housing co-operative and how could this be helpful in creating good reference projects in the future?

Interview with senior project leader at Bate Housing Association was first appointed to be conducted by e-mail and therefore the questions were sent beforehand. The reason was because the project was completed nearly 2 years ago, and the project leader wanted to be prepared in the best possible way. The project involved several actors from Bate Housing Association and the project leader had to consult with them as well. Later it was decided to perform the interview face to face with great success.

For this study the secondary data was gathered from the University of Stavanger's Library and digital library Brage.bibsys.no. Search on the internet (Google Scholar was diligently used) for search of the key concepts and theories. In addition, the literature provided for the Master program - "Energy, Environment and Society" was proved useful. The Co-operatives Act and the Council's environmental action plans were valuable documents along with the primary data obtained from the interviews, site inspection and observations.

2.5 Data reduction and analysis

The data from the multiple sources provided the research an extensive amount of material. This could at times be a handful to manage. Creswell & Poth (2018) recommends in their book nine features when considering Data Analysis Software. A careful look at their suggestions was taken before choosing NVivo. NVivo is the latest version of software from QSR international. This software helped to manage and shape the collected qualitative data and when analyzing the collected data.

The collected data from the informants was categorized, coded and analyzed along the way in order to keep the process tidy and manageable. The data reduction was naturally limited by the outcome of the pilot study. The issue offered opportunities to look at green initiatives taken by the co-operatives from several different perspectives. The different data were categorized and linked to relevant research question and then analyzed using the applied theory.

2.6 The trustworthiness of this research

When it comes to generalizability of the research method the internal validity is present, whether this method can be used with same outcome is hard to justify as different organizations have different ways to deal with decisions, although the decision-making processes in the housing co-operatives are quite similar as they have to relate to the same laws and regulations. To ensure credibility, all the participants in the interview and their relevance to the research are carefully described in the paper. The interviews were continuously transcribed. Transcription can help strengthen the study's reliability and validity (Kvale et al., 2015). The interviews records were examined closely and the main theme, evident in the data, were listed. Each was also coded as suggested by Kvale et al. (2015). Dependability is about whether similar results could be obtained if the study was replicated with the same theme, methods and participants. In a qualitative research method dependability is hard to attain since the researcher's observations are connected to specific situation that cannot be repeated. In order to gain transferability, i hope that the readers have been provided with enough data and information about the context of the study so that they can decide if the results are valid to their own project (Blaikie, 2010; Shenton, 2004).

3 Presenting the main concepts

In this part of the paper, the underlying concepts that have been used when exploring this task will be explained. First, there is a need for elaborating the model of housing co-operatives and how these are managed. Secondly, sustainable development, the renewable energy with focus on solar energy. Finally, a brief presentation of the financial facilitators like Enova and the municipality of Stavanger.

3.1 The housing co-operatives - background & history

Immediately after the 2nd World War Norway had great challenges with providing housing for its people and rebuilding the country. A housing policy was implemented that divided the responsibility between the state, the municipalities and the private sector. The state provided affordable financing, the municipalities provided affordable property and infrastructure, and the private sector developed the houses. In 1946 the Co-operative Housing Federation of Norway (NBBL) was founded. The strategy was to enable all groups in society to own their own home by easy access to affordable financing and property. Co-operative housing associations and housing co-operatives are governed by Norwegian law. The Co-operative Housing Associations Act and the Housing Co-operatives Act from 1960 were revised in 2005 and separated into 2 new acts⁹.

The Co-operative housing in Norway is unique compared to other European countries with exception to Sweden. In both mentioned countries the co-operative sector accounts for 16%. The Co-operatives have been more of a team player in the national housing policy development compared to Sweden. Norway's vision was for everyone to be able to own their own home, as opposed to other Nordic countries and The Netherlands and England which built up a substantial public rental sector (Hansen, 2002).

⁹ Retrieved 15.04.2019: www.nbbl.no/Brosjyrer/2012

3.2 Co-operative Housing Associations – Boligbyggelag, BBL

As of 2017, 41 co-operative housing associations are registered in Norway. These co-operative associations have a total of 1.020.000 members altogether. The co-operatives can vary in size, counting anywhere from 50 individual members to 300.000¹⁰ and membership is open to anyone. Housing associations that are members of Norske Boligbyggelag Landsforbund (NBBL) have built more than 298 000 houses since 1946.

The housing associations run their operations in over 200 municipalities scattered throughout Norway. The board of the housing associations are elected in the annual general assembly by the members of the housing associations. The biggest representatives of these in Norway are OBOS and BATE.

The activities of the co-operatives are embodied within rules and regulations and are regulated by law regarding co-operative housing associations. The co-operative principles also include the members taking societal responsibilities (Hansen, 2002). The housing associations main purpose is building and managing homes for their members. In addition to this they also have the responsibility of managing the common costs, deal with loans and keep accounts. They also assist in the purchase and sale of resale homes and help the cooperators with technical and legal assistance (*Borettslagsboka*, 2012).

3.3 Housing co-operatives in Norway

The main characteristics of Norwegian housing co-operatives are that each property is owned by the co-operative, members buy shares, usually at full market rate, which give them the right to ownership of a specific home and the members contribute a proportionate share of operating expenses. A housing co-operative is owned by the residents. Buildings and common areas are joint ownership for shareholders and the number of shares is the same as the number of condos (Hansen, 2002). Each member has one vote, irrespective of the number or value of shares. The board of directors are responsible for the management, often assisted by a co-op housing association acting as a business manager. Local authorities have the legal right to buy 10% of the flats in housing co-operatives. Profits are used for the general good of the

¹⁰ Retrieved 15.04.2019: www.nbbl.no

membership. Membership is voluntary and members may retire if the organization ceases to meet their needs¹¹.

Hansen (2002, p. 58) presents some demographical facts about the housing co-operatives:

- Around 30 -31 % of the household are couples with children
- 7-9 % are single parents
- 26 % are below the age of 35
- 46 % are aged 55 or older

In the housing co-operatives several of the residents are elderly people. This applies primarily to medium -sized cities and towns. In larger cities residents above the age of 55 are less representative, but otherwise the age distribution is the same as in the medium cities and towns. In addition, the Statistics Norway (SSB) provides the status for the numbers of household types in Norway.

Table 1: Tenure status for household types in Norway (SSB, 2017)

Tenure status for household types in Norway	2017			Number of households
	Freeholder	Part/ shareholder	Tenant	
Households total	63	14	23	2 366 427
Living alone	44	19	37	902 664
Couple without resident children	75	12	13	566 172
Couple with children age 0-5 years	74	11	15	232 405
Couple with children age 6-17 years	85	7	7	256 630
Lone parent with small children (0-5 years)	37	12	51	27 574
Lone parent with older children (6-17 years)	58	16	25	84 485
One-family households with adult children (youngest child 18 years or over)	82	10	8	176 465
Two or more-family households with children	80	9	11	33 256
Two or more-family households without resident children 0-17 years	51	11	38	86 776

According to Statistics Norway 2017 (SSB) 605 602 people lived in housing co-operatives or put differently these made up 332 744 households. Meaning that 14.1 % of Norway's population lives in housing co-operatives (SSB, 2019).

¹¹ Retrieved 15.04.2019: housinginternational.coop

3.4 Board of housing co-operatives

The requirements for the number of board members is a minimum of three, but the statutes can decide at there can be more. The General Assembly elects the members to the board. Most co-operatives elect their board members among the shareholders, but according Act of 6 June 2003 No. 39 relating to housing cooperatives (the Housing Cooperatives Act) there is full access to select outside members. The board members are elected for a period of two years to ensure continuity. A housing co-operative must have a leader / chairman and the brl decides that this is decided by the General Assembly. It is therefore not possible for the board to choose its own leader (brl. § 8-2)

Examples of tasks for the board members are setting up budget, determining joint costs, reviewing accounting, managing the economy, hiring janitor, maintain the outdoor area and the building façade, conducting internal control, refinance and taking out loans, preparing long-term maintenance plans, to prepare the general assembly and go through applications for building extensions.

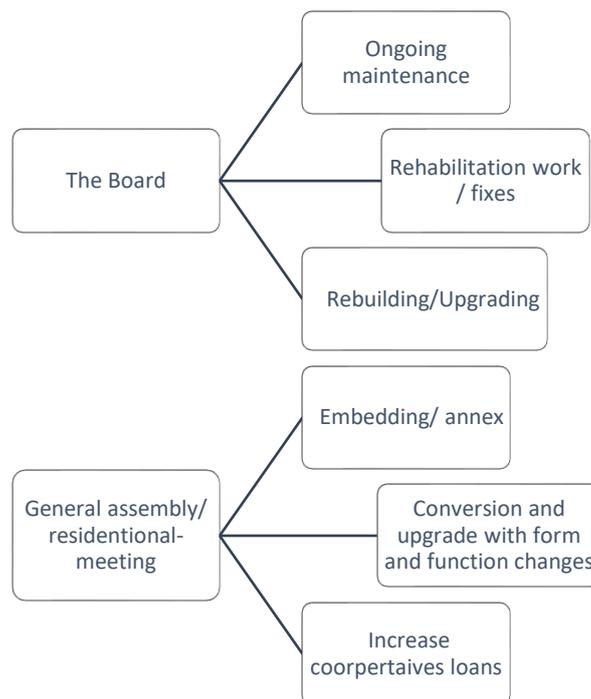


Figure 1: Division of decision authority in a housing co-operative (Sintef Byggforsk., 2010)

The board can make a decision if more than half of its members are present in a board meeting (brl. § 8-6 first paragraph). Decisions can be made with more than half of the votes

that have been submitted. If the votes are equal on both sides, the vote of the meeting's host will be decisive. Those who vote for a decision that results in a change in the current practice still must always constitute at least one third of all board members (brl. § 8-6 second paragraph).

The Chairman of the Board shall summon the board meeting and lead the meetings as well as lead any resident meetings and often the general meeting as well. However, each member of the board can always demand that a board meeting be held. The frequency of board meetings will vary on workload and depend on the size of the housing co-operatives.

By brl § 8-8, the board has wide powers. The board of directors have the daily management of business in the co-operative and the management shall take place in accordance with the law, statutes and decisions of the General Assembly (brl. §8-5). The Board of directors may make any decision that does not - by law or statutes - rest with general meeting, or where the general meeting has already struck a decision. The General meeting can also give the board instructions (brl. § 8-8).

3.5 The main tasks of the Board chairman

Since this thesis concerns decision processes it will also take a closer look at the tasks and responsibilities of the board chairman in the housing co-operatives. As mentioned previously the leader shall summon the board meetings and the annual general assembly. In addition, the leader should also:

- be well prepared for the board and general meetings
- create an agenda in advance for meetings
- distribute in corporation with the rest of the board tasks to be followed
- review all written inquiries and applications from shareholders as soon as they are received

The chairman's role can be both interesting and rewarding because it provides broad contact with many people. It is also natural that the leader is drawn into some troubled situations like complaints and disputes between the shareholders/ neighbors. The leader and the board members have a confidentiality obligation to the personal relationship they have been familiar with (brl. § 13-1).

3.6 The General Assembly

The General assembly is the supreme authority of the housing co-operatives and it is the General Assembly that chooses the board. According to the law, directors have a term of two years, unless the statute has determined otherwise. (brl. § 7-1). We distinguish between ordinary and extraordinary general meeting. The main difference between them is the rules of summoning and regarding which type of cases can be discussed.

The Annual general Meeting shall be held every year before the end of the month of June (brl. § 7-4 first paragraph). As the housing's supreme authority, the general meeting can deal with all matters. No matter is so insignificant that the General Assembly cannot process it.

Also, when a case can initially be decided by the Board, the general meeting will be able to process the case. The General meeting may be either make decisions, instruct the Board, or if the board has already struck the decision, redoing the board's decision.

The Co-operative act defines the following cases that must be dealt with by the general assembly:

- Changes of statutes (brl. § 7-11)
- Distribution of means to the shareholders (§ 3-2)
- Financial statements and annual reports (§ 7-4)
- Investigation (§ 7-14)
- Selection of board (§ 8-2)
- Board allowance (§ 8-4)
- Auditor election (§ 9-2)
- Merger - fission (§§ 10-2 & 10-7)
- Disintegration (§ 11-1)

The general assembly is being held annually, and here the shareholders go through accounting and budget. In addition, shareholders discuss and decide on issues that have been submitted by shareholders to the board of directors in advance of the meeting. After an issue has been discussed for some time, a motion (suggestion for action) is voted upon. This can for instance be about whether to facilitate for the charging of electrical vehicles. If the vote goes in favor of the motion, the board then must carry it out in practice. At the annual general meeting,

hereby referred to as AGM, members also elect directors to the board and approve the financial statements (*Borettslagsboka*, 2012)

3.7 Legal Framework

The Housing Co-operative Laws is a joint name for the Co-operative Housing Association Act and the Housing Co-operatives Act, which received major legislative revisions. The renewed acts came into force in 2005. The Co-operative Housing Associations Act sets the co-operative housing associations' organisational rules including their business activities framework. It also regulates their business conduct such as member's rights concerning participation in the general assembly and board of directors.

The Housing Cooperatives Act is a law that sets co-operatives organizational rules regarding their business conduct such as:

- one-member one-vote system,
- participation in the general assembly,
- maintenance
- (first) refusal
- and non-payment of monthly fees.

The law also contains requirements regulating the shareholder's responsibilities as a member of the housing co-operative (*Borettslagsboka*, 2012).

The Co-operatives Act contains several requirements on how to run the co-operative and the rights of the shareholders. The statutes can be characterized as the internal laws of the co-operatives. If the housing co-operative is to determine any new statutes, this has to be processed within the general assembly. It will not be sufficient for a statute to be decided upon by the majority of the votes, as at least two thirds have to be in favor of decision (*Borettslagsboka*, 2012).

According to brl § 8-9, a board of directors cannot make a decision without a two-third majority vote from the general assembly in the following cases:

1. Reconstruction, extension or other modifications of buildings that go beyond regular maintenance.
2. Increasing the number of shares or converting rental housing into shareholder residence.
3. The sale of or the acquisition of property
4. Measures that go beyond common stewardship, when the measure brings financial responsibility or outlay for the team at more than five per cent of the annual joint costs.

3.8 Sustainable development

The concept of “Sustainable development” became widely known after the Brundtland commissions report in 1987 defined the term as: “development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (McCormick, 2018, p. 13)

This report made it very clear to us that there are limits as to how much nature can handle and that this is something that we must consider when making choices that have impact on the environment. McCormick states that:

the underlying argument of sustainable development is that the uncontrolled free market does not work, that resources are not unlimited, and that while they can be used and exploited, this should be done only in such a way as to ensure indefinite supply (2018, p. 13).

For the sake of the environment we must go down a different path which does not involve exploiting fossil fuels. Transitions are continuing processes of radical change at the level of societal systems such as sector, city or region. A sustainability transition is defined as a “radical transformation towards a sustainable society, as a response to a number of persistent problems confronting and challenging modern societies” (Grin, Schot, Rotmans, Geels, & Loorbach, 2010).

Despite the variances in definitions, a main theme that appears is that “sustainability is a concept that needs to be incorporated in many if not all of the activities that people undertake” (Rosen, 2009, p. 1).

Sustainable development is a broad field and it will be too extensive to address all issues connected to this topic. How sustainable development is defined and what is set high on the

political agenda has implications on both prioritization of environmental initiatives and what is seen as good solutions. For this task, the concept of sustainable development is limited to environmental measures with focus on “energy captured from the sun – Solar power” (McCormick, 2018, p. 276).

3.9 Renewable Energy - Solar Energy (Photovoltaic Energy)

Renewable energy is defined as “energy from sources whose supply is not finite and cannot be exhausted under any plausible future scenarios” Cleveland & Morris (2013, p. 249) further states that “renewable applies to any energy source considered environmentally desirable relative to the non-renewable fossil fuels that compose the lion’s share of modern energy use”.

According to Papadopoulou, a solar power system is one of renewable energy system which uses PV modules to convert sunlight into electricity. The generated electricity can be used either directly or stored in battery packs, fed back into the grid line, or combined with one or more other electricity generators or more renewable energy sources. Solar PV system is highly reliable and a clean source of electricity that have a wide range of applications (Papadopoulou, 2012).

3.10 The public support schemes

The Norwegian government has facilitated several support schemes in order to help both individuals and organizations to implement environmentally friendly measures. EU funds are also possible to apply through EEA cooperation, but these funds are difficult to get as these are more geared towards new buildings (Å. Hauge, Mellegård, & Amundsen, 2011).

Enova

Enova SF was established in 2001 and is owned by the Ministry of Climate and Environment and funded by the governments Energy Fund¹². Enova works for Norway's transition to the

¹² Retrieved 17.04.2019: snl.no

low emission society. Their mission is to contribute to reduced greenhouse gas emissions and enhanced energy supply security, as well as the development of new energy and climate technology. Enova has instruments that can be used by the housing co-operatives and the shareholders. In addition to support environmental measures Enova also supports concept assessment for innovative energy and climate solutions for the housing co-operatives. This support has the aim to prepare a good decision- making basis when choosing innovative energy and climate solutions. The concept to be deployed must be planned for use on/in a concrete physical building/area and the projects must have a high degree of innovation and have a proliferation impact, some examples of the different categories with special interest for this study are:

- Local energy production
- Façade-integrated solar cells

According to Enova, all categories are eligible, but in the case of priority, the following categories will take precedence in 2019:

- Holistic area solutions focusing on energy, power, and transportation
- Simple Technologies in power and storage¹³.

Enova support a household with up to 28.750 NOK when one starts producing own electricity. El production means that you cover some of your own need for power with renewable energy sources such as sun or wind. The Power which is not used may be sold to the local power network company when the production plant is connected through a plus customer agreement. El-production with solar cells is suitable for people who:

- wants to produce their own electricity
- have a plus customer agreement
- are interested in using new green technology¹⁴

¹³ Retrieved 17.04.2019: enova.no

¹⁴ Retrieved 17.04.2019: [Enova - el production](#)

The Norwegian State Housing Bank

The Norwegian State Housing Bank offers both loans and support for making improvements in housing co-operatives. The basic loan scheme's main aim is to promote universal design and environmentally sustainable solutions in new and existing housing.

The criteria for basic loans are that these loans are supposed to be for rental apartments encumbered by the local municipality, for student housing and for pilot- and model projects. In relation to this assignment, only the last criteria will be applicable. The basic loan is very often given to professional actors in the home construction industry, but individual households building their own home may also apply for the basic loan. The lending frame for 2019 is 16 billion NOK. Housing Bank Loans are supposed to be a supplement to the private credit market and not compete with it¹⁵.

The role of the municipalities

According to the Planning and Building Act the municipality has the authority to process applications for facade changes related to installation of solar collectors and solar panels. As solar cell panels have decreased significantly in price during the recent years it has become a much more viable alternative source of renewable energy production in Norway. Several municipalities have also created their own financial support schemes for varied power production to actively promote the renewables. The municipality is in many cases the owner of Energy Company¹⁶.

Stavanger Municipality and the city antiquary in Stavanger have the responsibility for façade changes, which in general are all subject to application. It is of special importance to note that some areas of the wooden house city are regulated as a special area for preservation, where there are clear requirements for layout and the reversal of building features to its original state, and also restrictions on demolition and annex.¹⁷

¹⁵ Retrieved 17.04.2019: [Housing bank - basic loan](#)

¹⁶ Retrieved 17.04.2019: [miljokommune.no](#)

¹⁷ Retrieved 17.04.2019: [stavanger.kommune.no/bolig-og-bygg/byantikvaren/](#)

4 Theoretical frameworks

In searching for a better understanding of how decisions regarding environment are being made, implemented and influenced upon in housing co-operatives, the framework of decision-making will be used as a guideline in order to highlight how the existing decision - making processes in the housing co-operatives act as a barrier against taking environmental measures. Two different models used in the decision- -making processes will also be presented in this chapter, the “administrative man “model and the “economic man” model to see the reality from different viewpoints.

To understand the bigger picture, it is important to understand the main difference between policy-making and decision-making and whether they are two sides of the same coin when it comes to how decisions are made in a housing co-operative.

Choice is a key word when it comes to decision-making processes and the concept will be elaborated in order to show how having many choices can influence the decisions when introducing environmental initiatives in the housing-co-operatives. This chapter will firstly elaborate the main concepts within decision-making and thereafter present the theoretical perspectives.

4.1 Decisions and how to make good ones

Randers (2012) presents what he himself calls some educated guesses as to how the future will look like in 40 years. He and his contributors have predicted some future scenarios, but the truth as Randers states is that no one knows what the future will look like in 2052 as we are missing the full picture.

When we are unable to see the full picture, it is all the more difficult to make good environmental decisions. Literature presents us with an array of criteria that must be in place in order to make good decisions. Studies show that good decisions require opportunities for both factual and value learning while other scholars suggest that science is powerful and is due respect because it is based on an “evolutionary epistemology” (Dietz, 2003)

According to Jacobsen and Thorsvik (2002), decisions revolve around systematizing, analyzing and interpreting information that has been gathered. Often, we also wish to share this information with others, before selecting options. We also must not forget that very often

the intention behind a decision is to influence behavior. The expectation is for the decision to be put into practice so that it will have the desired effect.

Dietz (2003, p. 36) refers to Radnitzky and Bartley (1987) that “science is a process that is structured so that we can learn from our mistakes”. Dietz (2003, p. 36) further explains that “A good decision is one that is scientific in the sense that it allows learning from error. Environmental decisions usually involve a great deal of uncertainty about facts”.

With regards to the scope of this assignment, the focus here will be on decisions in favor of the environment. This does not necessarily mean that one has to choose between the well-being of humans or to the best for nature, although we have certain perspectives that value one above the other. One example of such is “the utilitarian’s and anthropocentrists favor those outcomes that provide greatest satisfaction to the greatest number of people” (Dietz, 2003, p. 33)

The challenge about making good decisions is that they are often made in groups. This is especially true of political decision-making and also fits particularly well to decision-making in housing co-operatives. At the same time, it is claimed that all decisions are individual decisions, since the individual has taken a position within the process of group decision-making and its outcomes. (Stern et al. 1999 in Dietz 2003).

When it comes to environmental decisions, it is generally argued that the individuals/groups are tasked with making decisions about topics which they do not have sufficient information about (Dietz, 2003).

One of the criteria of making a good decision -whether individually or group-based -is that we base our decisions on reliable data. When Randers (2012) states that we miss the full picture, what he really meant is that we do not have all the facts at hand, but we still have to make important decisions regarding the future. In many cases we are asked to choose between our instant well-being and future goals that will benefit the biophysical environment. A big challenge here is that people are mostly biased towards the “present-self” and that the future seems more distant and does not concern us immediately. However, in case of environmental decisions the decisions that favor the wellbeing of humans must sometimes be disregarded in absence of certainty. Baron (2008, pp. 471, 472) also claims that we can think of decisions about the future as plans or policies. Where “a plan is a decision to do something in the future time, while a policy is a plan that binds us to perform a certain action regularly or under certain conditions”

According to Jacobsen & Thorsvik (2002), we have to first understand the process of decision-making before we can understand why decisions are made. This means understanding the whole process including the gathering and processing of information and the selection of the alternatives. Finally, the implementation of decisions.

The next chapter will elaborate the decision-making processes to gain understanding in how decisions are made in the housing – co-operatives.

4.2 Decision-making process

The following section is about the decision-making processes and some relevant models will be presented in order to show what factors influence the decision -making processes when it comes to taking climate measures in the housing co-operatives. The aim is to show through the theoretical models how the existing praxis of decision -making process itself can become an obstacle when attempting to conduct sustainable climate actions in the housing co-operatives.

Jacobsen & Thorsvik (2002, p. 292) defines decision-making process as “a process or sequence of activities involving stages of problem recognition, search for information, definition of alternatives and the selection of an actor of one from two or more alternatives consistent with the ranked preferences”. Additionally they describe the decision- making process in three steps:

- The first step consists of gathering information and data. This phase is called the initiative phase.
- Second step – Decision and adoption phase - Choose the best among the alternatives
- Third and final step – Implementation

A decision is most often defined as a choice between different options. Decisions are also considered as the outcome of a decision-making process, that is, the entire series of actions or assessments leading up to a decision.

Decision making is the process of making choices by identifying a decision, gathering information and assessing alternative resolutions. Hauge et al. (2011) have issued a report that highlights this process, and that shows the timeline of decision-making process in a housing co-operative. They list 27 steps that are partitioned into three main phases:

1. Preparation and complicity
2. Decision-making
3. Start of construction / implementation

Guidelines for boards in housing co-operatives developed by SINTEF (NBBL/2015) indicates that the decision-making process in a housing co-operative from conceiving an idea to implementation takes 2-4 years.

Table 2 illustrates the recommended order to follow when going through the implementation of upgrade- and maintenance measures in a housing co-operative. Based on Sintef's existing procedure of decision -making process in a housing co-operative the overview is made to show the complexity of existing practice. The steps within the decision-making process however will not be elaborated in detail although the different types of barriers occurring in the process will be discussed in chapter six.

Hauge et al. (2012) mention some pitfalls in their study which basically concludes that if one does not follow this procedure during the decision- making process the chances of failing are more likely. Their recommendations are based on their research which pinpoints different factors that either work as barriers or facilitators. These are differentiated between individual level, organizational level and societal level.

Table 2: The decision- making process from start to implementation 2-4 years (NBBL / Sintef Byggeforsk., 2015)

Timeline (months)	involved actors	Preperation and complicity	Why?	
Estimated time used in this part depends on the project size (9-12 months)	The board	1- board meeting	Specify needs, search possibilities for finanacial support and seek for information, contact experts on the field	
	Shareholders	2- information meeting	presenting the need	
		3 - investigate the residents needs	find out the interests and thoughts about the idea	
		4- written information, create a survey		
	General assembly	5- general meeting	decisions on further investigation	
	2	The board	6- meeting with advisors and experts	gain knowledge
		Municipality/ state	7- application	assess needs (husbaken, ENOVA)
		Experts/BBL advisors	8- initial condition assessment	step 1 - assessment of the conditions
	3-6	The board	9- board meeting	evaluation of findings, evaluate the alternatives
		Experts/BBL advisors	10- specific condition assessments	step 2 - assessment of alternative solutions
		Shareholders	11- written information	inform the residents
		The board	12- board meeting	agreement on the decision
		Shareholders	13- resident meeting	information sharing
		Municipality/ state	14- clarification - municipal requirements	clarification
Decision				
3	Experts/ BBL advisors	15- pre-project start with experts	experts prepare proposal	
	Shareholders	16-written information to the residents	clarify the residents needs and apply for financial (Enova)	
1-3	Experts/ BBL advisors/board	17- board meeting	planning resident meeting,processing inputs from residents	
	Experts/ BBL advisors	18- (2-3)information meeting with the residents	consider inputs from residents, make sure everyone have understood the scope, discuss the proposals and the costs related to the project.	
3-6	Shareholders	19- Notice	final voting for the proposal	
Implementation				
2 weeks	General assembly	20- general assembly meeting	decision - making	
	The board	21- board meeting	create building committee	
2-4	Municipality/ state	22- application	building permit (municipality) - financial support (ENOVA)	
	Experts/ BBL advisors	23- design details with architects and consultants	prepares details and offer calculated costs	
	Experts/ BBL advisors	24- send the tender to contractors		
	The board	25- board meeting - taking the final decision	advisors / board - assessing the offer- signing the final contract	
	Municipality/ state	26 - application	commissioning permit (municipality) - basic loan (the housing bank)	
	Experts/ BBL advisors/board	27- information meeting with the shareholders	share information about the building process and plans. How this will impact individual shareholders	
	Total time estimated : from preparartion to implementation- aproximatly 3 years			

The report prepared by SINTEF for NBBL (2015) and the study by Hauge et al. (2013) “How to get residents/owners in housing co-operatives to agree on sustainable renovation” provide ten criteria for a successful decision making process:

1. Be open about the plans. Go out early with information on necessary renovation and prepare for a good dialogue with the owners and residents.
2. Invest plenty of time. Let the project and decisions mature.
3. Seek advice. Involve the co-operative housing associations or equivalent advisors early in the process.
4. Agree within the board on a joint proposal for renovation.
5. Involve people who create enthusiasm once the project shall be marketed to the owners and residents.
6. Let the owners/residents take the floor. Remember that the need for information among owners and residents is great. They must be able to ask questions, have objections, and introduce new ideas.
7. Provide information in small portions, both orally and written. Use examples, pictures and a simple language.
8. The trust factor when providing the information to residents is crucial. It is beneficial if the information is given by fellow residents.
9. Set up the calculations showing the financial consequences for the individual owner. Show how the costs and energy savings affect monthly costs over time.
10. Do not vote on the renovation until you are sure that shareholders are adequately informed. Then you will be more likely to gain support for the project (NBBL/SINTEF, 2015, p. 3).

These criteria are based on experiences from earlier projects that have been proven to increase the likeliness for the residents to vote for sustainable renovation. Following are some of the most relevant principles when it comes to facilitate for “willingness to innovate” presented jointly with the findings achieved from interviews for this research.

Hauge et al. (2012, p. 317) in their research refer to Steg and Vlek (2009) who summon factors that influence our environment-related behavior into five main groups: (a) weighing costs and benefits, (b) moral and normative concerns, (c) affect, (d) habits, and (e) contextual factors

Hauge et al. (2014) also state that decision-making process moves in circles. Their case study research found that it takes time to get support for a sustainable renovation and that the decision processes often takes 4-5 years or even more, depending on how the starting point of a project is defined. The aim of their study was to find out what factors increase the chance that the residents/ owners agree on a sustainable energy efficient renovation. They conclude that “the barriers and the success factors are often two sides of the same coin. The barriers may be connected to structures in society, or the organization of the housing co-operative, or the board/chairman’s abilities to make good decisions” (2013, p. 316).

In this assignment the focus will be on the barriers existing at individual, organizational and societal levels when it comes to implementing sustainable upgrades in housing co-operations. This is especially a concern considering that environmental measures are not grounded within the law of co-operatives and within the statutes of the housing co-operatives. With so many actors involved and so many interests to consider it can be difficult to make a rational decision that benefits the environment and the long-term paybacks for the shareholders in a housing co-operative.

In order to understand what’s behind a decision and what will decide the outcome we will look at some of the decision-making perspectives in the next chapter.

4.3 Decision-making perspectives

One of the most famous theories about bias in decision making is the prospect theory by Tversky and Kahneman (Leonard C. MacLean & Ziemba., 2013). This theory revolves about people and how they view potential of loss and gains and that the decision maker may be more worried about the consequences rather than the benefits. Prospect theory also proposes that decision makers are concerned with how their decisions might have an impact on other people (Wu, Zhang and Gonzales in Koehler & Harvey, 2004). This goes against the economic man model, which claims that people make choices that make the most of benefits and minimize any costs only to their own gain (Kørnø & Thissen, 2000). However, this prospect theory will not further be elaborated in this task. This model would have been more interesting if the shareholders and the board members would have a negative attitude to climate measures.

The figure below shows the idealized model compared to the realistic model which explains the human behavior when it comes to taking decisions.

Table 3: Characterisation of "the rational - economic model" and "administrative model" (Kørnø & Thissen, 2000)

Aspect	Rational -economic model	Administrative model
<ul style="list-style-type: none"> • Rationality of decision-maker • Available information • Selection of alternatives 	<ul style="list-style-type: none"> • Perfect • Complete and complete access • Optimal and rational choice 	<ul style="list-style-type: none"> • Bounded • Limited • Satisficing choice

4.4 The Rational "Economic man" perspective

This theory assumes that human beings are sensible and therefore will always make reasonable choices which consists of the following:

1. the actor is faced with a problem to be solved
2. the mapping of different alternative solutions
3. the consequences of the different options are assessed
4. the different alternatives with their consequences are compared
5. the alternative with the *best* outcomes for the decision-maker is selected

The "economical man" is assumed to be fully rational, meaning one has a clear target and has full insight into the different options and consequences of these. The decision maker can then rank the different options from the most desired to the least attractive one, and that the decision-maker will choose the alternative best suited to reach the target (Jacobsen & Thorsvik, 2002).

This model also puts the following demands on the decision-making process. These are:

- All facts and options are given.
- All the consequences of all options are well known.
- the decision-makers have clear preferences for all possible outcome

This model however, is not meant to be a description of reality but rather an ideal of how individuals should make decisions (Jacobsen & Thorsvik, 2002, pp. 294,295).

Herbert Simon (Peters, 2015) disputes the concept of total rationality in administrative behavior. He observes that human behavior is neither totally rational nor totally non rational and further states that decision makers do not have the ability and knowledge to always find the perfect solutions and that they will often end up looking for a solution that is satisfactory rather than the optimum one. It involves, what he calls bounded rationality. The rational model has been criticized for simplifying the reality and narrowing the possible choices and predictions. Psychologist Gigerenzer (2011) argues that decisions based on experience can often have a better outcome than decisions made through thorough theoretical processes. He also criticizes the rational model for not taking into account the role of emotion by emphasizing the varying tolerance of risk between the decision makers.

Studies done by Thunholm (2004) presents the following key features of a rational decision maker:

- A rational decision maker is detail oriented
- The decision maker searches actively and consciously search for information in order to generate several solutions to the problem.
- She or he will then assess the alternatives logically
- The rational decision maker takes personal responsibility and control when faced by challenges and doing so with a sense of confidence
- A rational decision maker does not avoid a problem, but faces it
- The decision maker will use well known methods that are proved successful when gathering and analyzing their data

Further Thunholm (2004) goes on to say that this systematic approach does not foster innovative behavior. Rationality has also proved to act as a barrier when attempting to generate alternative solutions of problem solving.

4.5 Bounded rationality

The term “bounded” is referred to as boundaries in the environment, such as information, costs and to constraints in the mind, such as limited memory (Koehler & Harvey, 2004). Their studies show that human being’s ability to be fully rational is impossible. They go on to state that “models of bounded rationality puts us back into our human skin and try to answer the question how do humans who have little time and knowledge behave?” (Koehler & Harvey,

2004, p. 65). The bounded rationality model – also called “administrative man”- in contrast to the rational ideal-model considers that human beings are not fully rational and have limited cognitive capabilities. Therefore, one will have unclear and unstable goals, have insufficient knowledge and will often find a satisfactory solution instead of optimizing the solutions. However, this model does not claim that humans are irrational. In contrast to the economic man-model, the administrative man model is conscious about the fact that humans are bounded rational. This involves the following:

- goals are present, but they are often unclear and changing
- one considers some possible alternatives and some consequences of these
- the different options are considered sequentially along the way as they turn up
- one chooses the first alternative that proves satisfactory according to the set goals

While “economic” man model assumes that we know all options and that we always have clear criteria, “administrative man” takes into account the fact that often we are not able to see the full picture and also are not able to rank our own criteria. Goals might also fluctuate. We therefore are not always able to select what might be seen as a universal “best” option, but rather the one that will best satisfy the criteria we have come up with among the options we have managed to uncover.

Peters (2015) proposes an alternative and more holistic way of understanding decision making, where a decision maker wants to act rationally but also understands fully that he is constrained by the information available and the analysis he can make. A better way would be to make several smaller decisions rather than try to rationalize from a simplification of a large amount of data. Peter states that these decisions should be “good enough for the time being – they “satisfice” rather than maximize”. This means that the problem may not be solved but with some luck it may be enriched (Peters, 2015, p. 44).

The bounded rationality perspective presents a simplified process compared to the “Perfect Rational”-model and which will also be quicker, needs less input and can be applied to a broader range of situations.

There are also many cases of situations where rationality can only be used partially, for instance when one ends up with several options that are equally satisfactory to the criteria. There will then be no logical approach to follow when trying to select one for

implementation. One would in these cases often end up having to select one option randomly or having a popular vote where an option will be chosen simply because it was selected by the majority (Jacobsen & Thorsvik, 2002).

4.6 Politics and policies: What are the differences

Before going in depth about the policy making process and starting to compare the process of decision making and the process of policy making it is needed to make clear what exactly is meant with policies and policy makers. In the British Dictionary policy is defined as “a plan of action adopted or pursued by an individual, government, party, business, etc.” while a Policymaker is defined as “a person responsible for making policy, especially in government”. For this task a policy maker is defined not only as a government representative but also the shareholders and the board members in the housing co-operatives.

It is sometimes hard to differentiate between politics and policy. According to McCormick (2018), one is a process of decision-making, and the other is a course of action or inaction.

However, the type of politics that are interesting with regards to this task are the broader communal ones, involving those in positions of power and authority. Power can be defined as “the capacity to control in the sense of being able to bring about change or to resist pressure to change”. If we see power as the capacity to act, then authority is the acknowledged right to act (McCormick, 2018, p. 7). The terms of power and authority will not be investigated any further but had to be briefly explained to be able to explain what weight that lies behind decisions in housing co-operatives.

A policy is a general plan for action to address some specific type of issues. Policies may involve countless decisions in order to be- or not to be successfully implemented. A decision is a choice between two options open to the decision maker at any time (Cairney & Weible, 2017). No matter what the policy is though, its implementation will have a different effect depending on which political level we are studying. McCormick (2018) refers to four different political levels: Local, national, international and global. Below will follow a brief description of each of these:

- Local level: How a political decision affects local communities, for instance in the towns or specific regions of a country. For example, waste-management and infrastructure.
- National level: Shows how this decision will affect the nation as a whole, and the everyday life of its citizens. For example, Germany`s Energiewende.
- International level: Describes how the decision will affect the relationship between the mentioned nation and one or more other countries. An example here is how EU member countries have committed themselves to binding national targets for increasing the share of renewables in their energy consumption by 2020, under the Renewable Energy Directive.
- Global level: Often describes agreements made in cooperation between a big percentage of the world`s states. (Paris agreement, Kyoto Protocol). Not all policy implementations will affect the whole world off course, so this level may not apply to every study (McCormick, 2018)

4.7 Policy – making process

The policy cycle aims to make sense of the otherwise disorderly and process of policy making. McCormick (2018) illustrates what he argues to be a complex process into six steps.

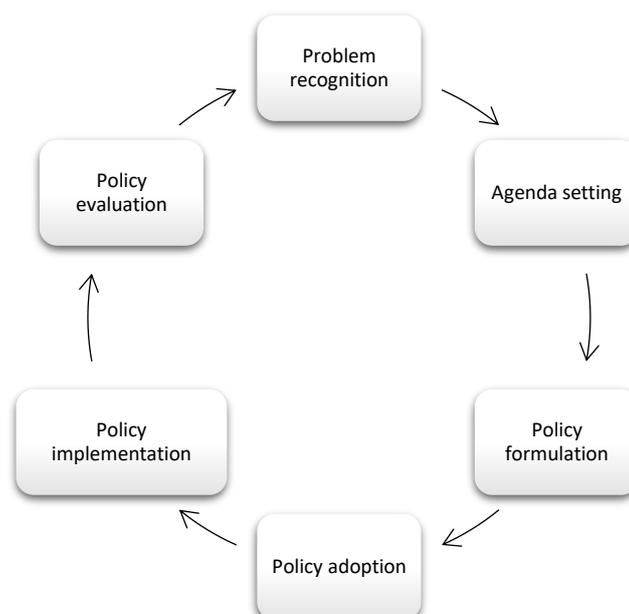


Figure 2: The policy cycle (McCormick 2018)

However, many scholars reject the policy cycle because they find it too simplified to explain the complex policy making system (Cairney & Weible, 2017). Following is a brief explanation for each step:

1. Problem recognition: the first step is to agree and recognize that a problem or a need exists.
2. Agenda setting: Placing the problem on the public agenda. McCormick states that recognizing that a need exists does not mean that it necessarily gets the public and political attention.
3. Policy formulation: Policy makers in the government and organizations take up the issue and create legislative and regulatory plans to address the problem. This step involves data gathering, investigation and discussions with experts to create a strategy program, identifying the costs and estimating the effect of alternative solutions.
4. Policy adoption: Policy makers formally adopts a policy solution in form of rules and legislations
5. Policy implementation: Governmental agencies establishes procedures and issues grants-in- aids to other government departments.
6. Policy evaluation: Assessing the degree of success or failure of the policy. The policy analysts in this step determines whether the policy implementation is working well.

As a continuous improvement the government should strive for revision of the policy implementation consecutively. Considering if the policy should be continued, modified or discontinued. (McCormick, 2018).

Cairney (2017) presents several factors which make up policy environments:

1. Actors which can make up or influence policy at many levels
2. The rules followed by the actors, also called institutions. These can be both formal and informal
3. Networks, which describes the relationship between the policymakers and influencers
4. The beliefs shared by actors which can either limit or facilitate the development of a new policy ideas.
5. Context are the conditions in which policies are made. This can include economic, social, demographic and technological factors. These are often outside of the policy-makers control.

6. Events can be either routine or unpredictable which demands immediate attention from the policy makers.

As stated by Peters (2015) when discussing policy making and policy design, we are in the end talking about decision making. The rational model is therefore also used to describe policy making.

The Rational policy model is defined by McCormick (2018, p. 46) as “One in which problem or a need is identified, alternative approaches studied and weighed, goals and schedules agreed, preferred approaches implemented, and the problem is solved, or the need is met”.

But the rational policy model is heavily simplified and does not reflect reality. The different aspects of a problem are rarely seen through the lens of objectivity, and what is the dimension of a problem or the optimum solution and what the different policies give us in terms of costs and benefits are often not clear to see, and more often problems are mitigated instead of solved. Governments are under pressure from all sides, having to consider the interests of multiple groups, challenged by political differences and cases that are fluctuating on the political agenda, often determined by the amount of attention they receive, the amount of funding and how urgent they are (McCormick, 2018)

To better reflect the reality of policy, two alternative policy models have been proposed.

In the incremental policy-model, the focus is on reaching consensus between different stakeholders on how to proceed once a problem has been identified. This often means making changes by making incremental adjustments to existing structures and solutions with several minor adjustments instead of a “grand plan”. Lindblom (1979) describes this as “the science of muddling through”.

The garbage-can model describes the decision-making process as an organized anarchy. Problems, needs and solutions are all thrown into a figurative “garbage can”. These are all generated separate from each other and are not the result of some clear policy goal. Instead, solutions are often the result of meeting a need at present. This model has been described by Cohen et al. (1972) as “a collection of choices looking for problems, issues and feelings looking for decision situations in which they might be aired, solutions looking for issues to which they might be the answer, and decision makers looking for work” (McCormick, 2018, p. 46). This can be said to underscore the anarchic nature of this model.

4.8 Decision as a default choice

The mantra of rational choice is that in order for us to make good decisions and choose the best alternative, we need to possess sufficient knowledge about the different options available. As Hauge et al. state most people have positive attitude towards climate actions, but this does not mean that people will always act according to their own beliefs. Their research shows that housing co-operatives should not only motivate the residents to make climate friendly measures with financial benefits as they have identified several different rationalities like economy, comfort, sustainability, technology and aesthetical aspects (Å. Hauge et al., 2013).

Chaharbaghi (2008) states that the nature of rationality is about making choices in a world that is uncertain. He further elaborates that human survival is dependent on us being able to make our own decisions and have faith in our choices. One can therefore say that rationality is a mean of survival of the human mind.

he goes on to say that by providing individuals with a specific rational choice, risk will be replaced certainty, and with certainty comes stability.

Baron (2008) in his study points out that human beings tend to be more vary of potential loss, then they are open to the potential gains. One example he exposes is that people are mostly biased towards the status quo, which means that they prefer things as they are. The fear of the new and loss aversion are the main factors. This amplifies scholars that believe that we are biased towards our present self. Our existing way of life which leads to a large amount of emissions of greenhouse gasses hurts people who do not yet exist. Therefore, Berdinesen (2015) suggests that we must develop both political and financial strategies that are sustainable

Professor Cass R. Sunstein (2014) recommends that the government should stimulate citizens to make better choices. In his book “Choosing Not to Choose” he presents arguments for when and how we should let people choose not to choose. Sunstein demonstrate that sensible default choice makes people’s lives both better and freer. He also explores when default choices matter and when they do not.

His theory is that choice is an exceptional benefit, but this benefit can also be a burden. He grounds this by saying that time and attention of humans are limited. Gathering enough information and data in order to make good decisions can come at a great cost, and this is why we cannot focus on everything, not even when our beliefs and our interests are at risk and

danger. He goes on to say that in particular situations, it may be more useful for us to choose not to choose. However, he argues that if people make active choices regarding for example reducing pollution, they are likely to be committed to them and that the commitment might have desirable spillover effects by encouraging other such decisions. Sunstein presents three different options of choices:

- Impersonal default Rules: when community planners and electoral architects develop precise standard rules for the individual in the corresponding population.
- Active choice: when people choose based on their own preferences, partly because they trust themselves more than they trust others and partly because they want to use their autonomy.
- Personalized default Rules: when community planners and electoral architects develop precise personalized rules with respect to the individual's preferences.

A potential downside to defaults would be that people's own preferences would not be registered nor affected (Cass Robert Sunstein, 2014).

Weber (2015, p. 569) asks, "What Happens When We Change the Status Quo"? And presents two contemporary examples of policies that were enforced as changes in status quo. The first one was the Smoke Free Air Act proposed by New York city Mayor M. Bloomberg in 2012 and the second example of a bold change in status quo happened in 2007, when the Canadian province of British Columbia (BC) disclosed carbon tax on all fossil fuels consumption and purchase.

Weber presents the multiple ways in which human beings make decisions:

- sometimes with our heads (weighing costs and benefits)
- sometimes with our hearts (following our feelings), and
- sometimes by the book (following rules of conduct).
- We also delegate decisions, going to a doctor to get a medical diagnosis or to a lawyer with our legal issues (2015, pp. 570-571)

As a concluding remark Weber (2015, p. 577) states that "behaviour change can be facilitated by innovative no-choice defaults, changes in the status quo, or the rephrasing and reframing of choice option labels". He further suggests that in addition to providing access to a broader range of choice processes than rational discussions one need to focus on the positive consequences of change.

5 Empirical findings

This chapter covers findings from responses from the interviews conducted from selected actors. The purpose of the data collection was to map the level of interest and willingness to invest in climate measures among the board chairmen in the housing co-operatives. Finally, it was the desire to see how the decision-making process in relation to climate challenges are taken by the board in the housing co-operatives and the placement of different decisions in decision-making authority and hierarchy.

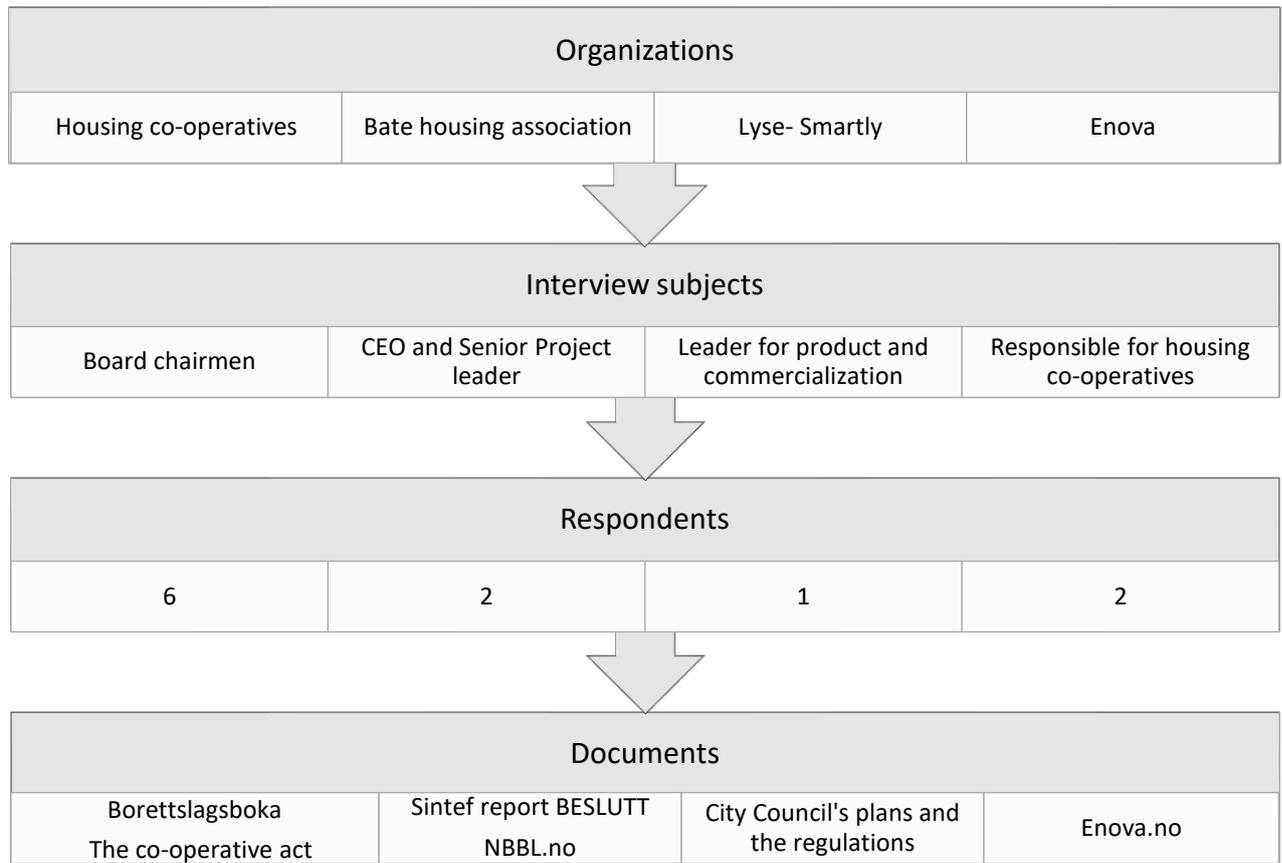
The interview guide for chairmen was divided into 10 categories. These consisted of the following:

- 1- A general presentation of the board and the housing co-operative.
- 2- The strategies and goals of the housing co-operative concerning climate and the environment
- 3- The decision-making process within the housing co-operative
- 4- The board's view on- and interest for the environment
- 5- Environmental measures conducted
- 6- Impressions of the residents – environmental consciousness
- 7- The importance of economy
- 8- Knowledge base and information regarding climate and the environment
- 9- Which factors hinders and what promotes climate measures in their housing co-operatives.
- 10- Impact of role-model projects

The interview guide for the project leaders contained some of the same elements as those for the chairmen, but here questions regarding the project leader's experience with housing co-operatives were emphasized. Further, the findings will be presented according to the 9 topics and the project leaders' experiences will be highlighted where seems natural.

5.1 An overview of the primary data sources

Table 4: overview of the primary data sources



Chairmen from the following housing co-operatives are the main respondents:

1. Haugtussa Housing Co-operative (1971)
2. Soltun Housing Co-operative (1978)
3. Sundetunet Housing Co-operative (2007)
4. Tjensås 3 Housing Co-operative (1978)
5. Tjensvold 6 Housing Co-operative (1952)
6. Solvang Housing Co-operative (1986)

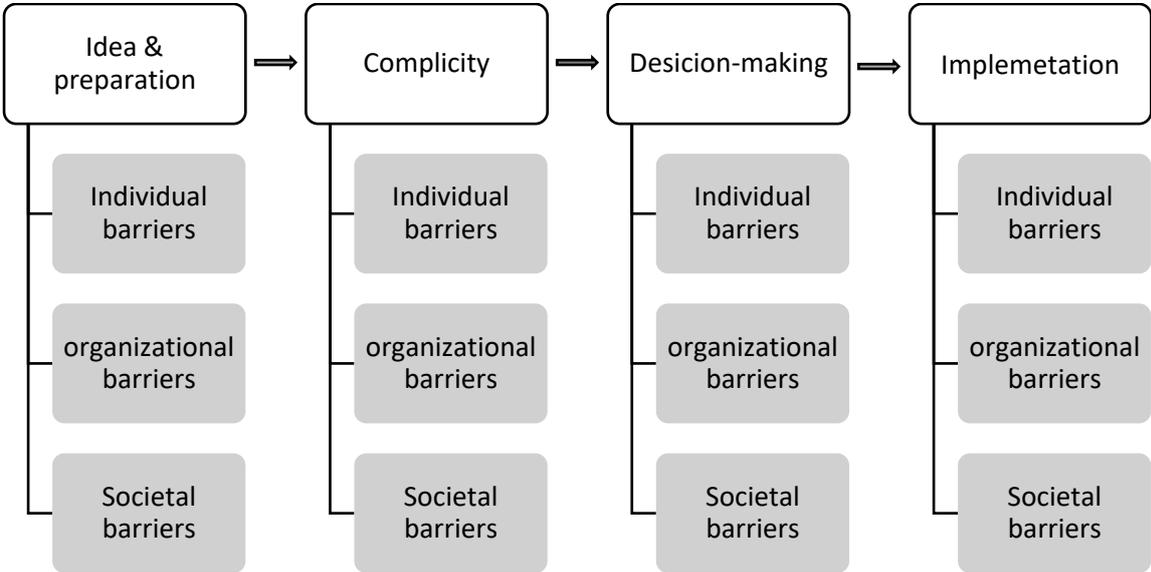
5.2 Decision – making process in a housing co-operative

As mentioned in the theory chapter, the decision-making process in the housing co-operatives is by Hauge et al (2014) divided into 27 steps which again are separated into 3 main phases where preparation and complicity have been combined into to one. For the purpose of this

research it was considered more appropriate to split the first phase into two as this will bring forward the different level of barriers more clearly. Another reason for doing this is that the preparation phase mostly concerns the board members and external consultants. The complicity phase however involves many more individuals/ shareholders. Further on the most relevant findings from the interviews will be presented.

The table below shows the different phases in a decision-making process and the possible barriers at the different levels.

Table 5: Phases in decision-making and the possible barriers



The barriers discussed in this paper are presented on three levels: on individual level, organizational level and societal level. Further on, it will be investigated how these barriers are connected. On an individual level, these barriers concern the resident’s attitudes and economy, while on a societal- and organizational level, the organizational structure and the boards capacity for making good decisions might have an obstructive effect on the decision-making process.

5.3 Barriers at individual level



preparation

- insufficient knowledge
- insufficient information
- too much data
- time consuming
- personal interests
- lack of ownership
- Personal economy
- Cost/ benefit
- affect and habits
- behaviour
- fear of the new
- life situation
- planned length of residence



Complicity

- insufficient knowledge
- insufficient information
- personal interests
- lack of ownership
- personal economy
- lack of ownership
- time consuming
- cost/benefit
- affect and habits
- behavior
- fear of the new
- planned length of residence



Decision-making

- insufficient knowledge
- cost/benefit
- personal interests
- personal economy
- lack of ownership
- time consuming
- affect and habits
- behavior
- planned length of residence



Implementation

- availability
- lack of knowlegde
- lack of communication
- overreaching budget
- Timeframe of the process

5.4 Barriers at organizational level



preparation

- lack of knowledge
- the board does not consult experts
- low turnout on general assemblies
- cost/ benefit
- insufficient knowlegde
- time consuming
- too much data to handle
- too many opinions to respect
- lack of supportive regulations and incentives
- non environmental goals
- lack of environmental plans
- short-term plans



Complicity

- insufficient information shaing
- insufficient knowledge
- rushing the process
- people feel excluded and
- lack of supportive regulations and incentives
- bad communication
- many interests to concern about
- low turnout on general assemblies
- tight timeframe of the process



Decision- making

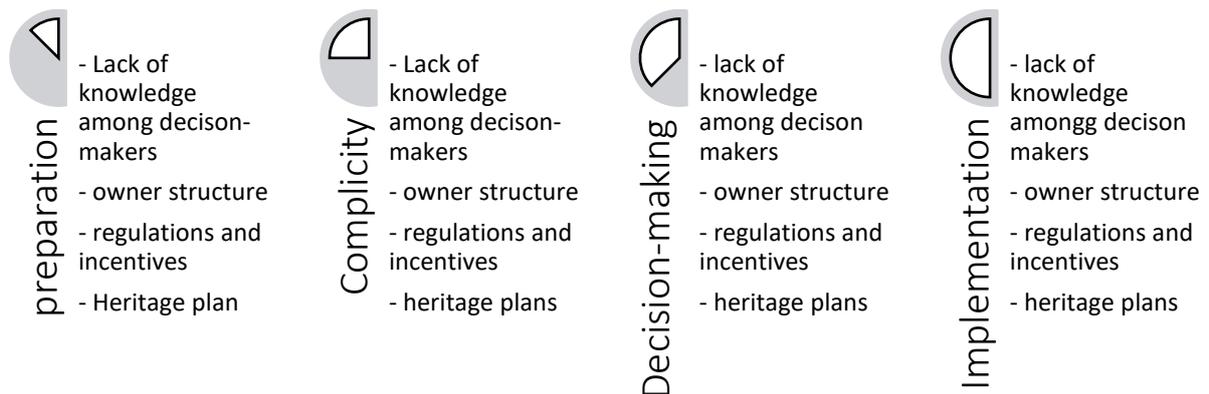
- low turnout on general assemblies
- lack of understanding the importance of the issue
- difficulties in choosing the best alternative
- disagreement between shareholders and board members
- lack of supportive regulations and incentives



Implementation

- timeframe of the process
- overreaching budet
- bad communication
- time consuming

5.5 Barriers at societal level



The barriers at the different levels often repeat themselves and stay mostly the same within the different levels of a decision-making process in a housing co-operative. Many of them overlap and possibly even reinforce each other. Most chairmen promote the following barriers as the most relevant and challenging within a decision-making process:

- Lack of knowledge among board members and residents concerning climate measures
- Difficult to get behind all the information and data regarding the different measures
- Lack of incentives – economical support mechanisms
- Lack of guidelines and supporting legislations
- low turn-up on general assemblies

While the factors that promote climate measures where, according to the chairmen:

- the boards own interest, engagement and knowledge about climate and the environment
- Stability within the board
- Support for facilitation from the local municipality
- Increased knowledge about the different technologies and the existing possibilities
- Professional guidance and economical support from municipality and state
- Supporting legislation and regulations
- Role model projects

5.6 General information and findings about the selected housing co-operatives

One of the first finding of note is that these respondents have been residents in their respective housing co-operatives in average of 14 years. Where the one that has lived in the co-operative for around 28 years and the one that has been living the shortest period has lived there for almost 5 years. These housing co-operatives were built between 1950 and 2007. The different housing co-operatives consists of both houses and apartments. This is an important differentiation as the studies show that residents living in apartments more often have a short-term perspective on how long they are planning to live there and therefore will more likely be skeptical to climate measures that lead to a higher monthly fee. The housing co-operatives that have been studied vary greatly in size, where the smallest consists of only 9 housing units whereas the largest consists of 532 units. The findings also show that the size of the housing co-operatives has a significant influence on the decision -making process. Another area where the size of the co-operative can have an influence is in how the chairmen are elected. In the smallest housing co-operative, the chairman said that since they only consisted of 9 units, he felt that it was now “his turn” to take on this obligation. In bigger co-operatives however, it is often seen that the same individual holds this position for years at a time. It came forward that it is generally challenging to get people to run for the position of board chairman, but otherwise for the rest of the board when selecting potential members, the aim is to have a diverse selection concerning background and interests.

When asked about what the motivation was behind running for this position, the following answers were given:

- A smart way to get to know the neighbors
- The increase of well-being for the residents
- Being able to influence the decisions
- Getting things done
- Have plans of staying for long-term basis and thereby important to be engaged

One other interesting finding was that out of 6 chairmen, only one was a woman. Despite this the replies from the mentioned chairman did not differ significantly from her male counterparts. It is however worth noting that the boards otherwise had an even distribution of gender, age and other demographical factors.

Findings from interviews with other respondents such as project leaders from Bate and Smartly have a general value and will be presented in the end of this chapter.

5.7 The housing co-operatives climate strategies and objectives

When asked about the housing co-operatives strategies and goals regarding climate and the environment, all chairmen said that these do not exist for their housing co-operations. Several also mentioned that there were discussions around ideas such as solar panels and EV-charging, but because of the cost that comes with these measures the board mostly prioritizes maintenance issues. Still, it was stated by several that when time comes to replace the roofs on detached houses and terraced houses, solar panels and roof-panels with integrated solar panels will naturally be considered. Measures like for instance voluntary work, nice looking outdoor/playing areas, common events like the lighting of the Christmas tree and the celebration of 17th of May were mentioned, in other words measures which increased the wellbeing for both adults and children had a higher priority than measures concerning climate and environment. The board chairman from Haugtussa in that regard mentioned that the goal is to create an attractive housing co-operative to live in where one wishes *“that people will live here for a long time, that one sees the children who live here grow up, that one see them from they are lying in the stroller until they graduate from high school with their diplomas in hand”*. While the board chairman in Tjensås 3 replied that the financing is the main hindrance: *“... until now we have renovated what has been necessary. The money is where it’s at, one must make payments on the existing loan before one can start on new projects”*.

On the question regarding whether it would have been an idea to create their own goals and strategies concerning climate, the board chairman of Soltun housing co-operation explained:

We could have said that we are innovative and have visions, but that would have been more on paper and not as much in actions. We wish to be able to write that we are innovative because we....and not just brag about ourselves but have something to show for it.

The importance of action is brought forward, and it is stressed that climate goals and visions have to be more than just good intentions.

The board chairman of Soltun housing co-operative could tell that they discuss climate- and environmental issues all the time. However, everything comes at a cost and so far, it has been more important for the board to maintain and take care of what they already have in the best

possible way. When they did a thorough renovation on the flats, measures like solar panels were not prioritized. The board does have a plan though that when the detached houses and terraced houses are to have their roofs replaced - something which is due soon – it would be natural to consider solar panels.

5.8 Decision-making process in the housing co-operatives

This part concerns the decision-making processes within the housing co-operatives. The general assembly represents the highest authority of the housing co-operatives ((brl. § 7-1). The ordinary general assembly is held once a year and this has to happen before the end of the month of June brl. § 7-4 first section). All the chairmen interviewed for this study could tell that there is generally a low turnout on general assemblies. Findings from the interviews show that there is on average 20 % of the residents in a housing co-operative that show up. In Borettslagsboka (The housing co-operative book) it says that all shareholders have the right to meet in the general assembly, but there is no meeting-obligation. Those that do have an obligation to meet up, is the board chairman and the business operator (2012). Several of the respondents replied that when there were important cases there were also more attendees for resident meetings and general assemblies. There was no assuredness regarding the numbers, so these were not specified.

All chairmen reported the frequency of board meetings to be about 6-10 times a year or according to need, while during larger renovation projects the meetings could be more frequent. Cases are reviewed on a running basis as they come in and it is the guidelines that decide whether a case has to be reviewed in a general assembly or can be decided upon by the board alone. Board members mostly agree, simultaneously several respondents pointed out that some discussion within the group is healthy.

It is the board of the housing co-operative that summons the general assembly. The notice must be sent with an alert of at least eight days and at most 20 days (brl. § 7-6) (Borettslagsboka, 2012). The findings show several instances where the board on their own had the authority to make a decision, but which they still decided to bring up as motion to be voted upon in the general assembly. The board chairman of Solvang housing co-operative for instance, chose to involve the shareowners when Bate and Smartly were presenting the Invade-project. When asked why the board did not make this decision on their own, the then

board-member stated that it was important for the board that the shareowners were part of this decision so that all involved parties had the same responsibility and ownership towards the project. The board of Haugtussa housing co-operative on the other hand, chose to decide for the facilitation for EV-charging outside of the general assembly. This was reasoned by the fact that this had been requested by so many of the residents, in addition to a discussion that had taken place in the board about a possible change in law and the fact that the facilitation received support from the Stavanger municipality.

The chairmen express that the time it takes from the start of an idea to implementation is often dependent of the project's size and complexity. The chairmen from smaller housing co-operatives thought that the decision-making processes were not very demanding as smaller housing co-operatives often have a more communal mindset. All the chairmen pointed out the importance of being well-prepared and presenting an idea in a proper way. The board's engagement and knowledge about the projects were seen as important properties. When asked whether it is challenging to gain impact on ideas the board chairman from Tjensvold 6 said that it's

Not very demanding to gain impact since it is such a small housing co-operative. It is important to be tactic when presenting a motion. Often people are more cautious when voting against something then when voting in favor of a motion.

The chairman in Tjensås 3 reported that the board itself has taken the responsibility for project implementation instead of hiring external project leaders. When asked whether one believed that the projects would have been done quicker if expertise had been hired, the board chairman replied that it would have been implemented *“much faster, and would have eased the communication with the company that does the labor”*.

It becomes quite clear that the practice differs between different housing co-operatives when it comes to which cases are decided upon in a general assembly. As a rule, it is when costs exceed a certain amount that the board decides to involve the residents. In Borettslagsboken (2012) it is specified that when a measure brings costs for the residents that exceeds 5% of the annual joint costs, this is to be addressed in the general assembly. This does not concern maintenance projects that represent the regular management of a housing co-operative (2012). The board chairman of Haugtussa housing co-operative came with the example of when the board decided to replace all windows and doors in all housing units. Even though this would be costly it was completely necessary and came in under the board's duty of maintenance.

The respondents from Bate and Smartly could confirm that it was generally difficult to gain impact on climate measures in housing co-operatives. The reasons for this were as following:

- Low level of knowledge about the different technologies among board members and residents.
- A lot of data to deal with
- Costly
- Difficult to gain impact in a general assembly
- Little understanding of the importance of climate measures
- Lack of supporting legislations and decisions
- Lack of good enough incentives

They did however promote the following factors which have influenced the decision-making process in a positive way in earlier projects:

- Low costs when incentives and financial support is in place
- The climate measures are presented as a package-solution
- That the chairmen were engaged in the debate about climate and the environment
- That there was an understanding of the importance of climate measures
- Stability within the board, good communication- and conveying-skills and trust

Senior project leader from Bate housing association could confirm that there were no laws, guidelines or regulations they could lean on in order to get solar panel energy-production implemented. He thought it important for the municipality to get on board and impose this. He went on to say:

One of the reasons that the project with Solvang housing co-operation became such a success is because it was presented as a ready-made package solution to the board and residents. If they would have had to make a choice and get into the different technologies, it would probably have taken much more time and wouldn't necessarily have been implemented.

Regarding how the decision-making process has been in previous projects, the board chairman from Tjensås 3 reported that *“this has gone very smoothly. We have taken it step by step. We have made down payments on some of the loan and waited with the next project to keep ourselves at the same level”*.

5.9 The Boards interests on climate and environmental issues

Senior Project leader from Bate Housing Association admitted that the decision-making process concerning climate and the environment is most often dependent on the board being very “green” and showing a particular interest in technology and the environment. He went on to say that it is not easy to convince people and that most are more concerned with the cost/benefit-factor.

Several board members interpreted the question about the environment more as a question concerning the living environment and pointed to several examples of measures that had been done to increase the well-being and to improve the living environment for the residents in the housing co-operative. Most of them however, stated that even though they had a personal interest in the environmental challenges this was not an issue that was prioritized on the board. The following explanations were given:

- It costs too much (cost/benefit value)
- Lack of incentives
- That the board did not have enough knowledge about the different technologies
- Time consuming
- It is difficult to gain impact in the general assembly
- That it was not imposed
- That this was not among the tasks of the board
- The interests and needs of the residents and general maintenance were prioritized

The respondent from Solvang housing co-operative and project-leader at Bate housing association explained that the main motivation behind the wish to conduct their pilot-project was “*learning about new technologies and to show that we have a forward-looking vision*”.

Different factors can determine the interest and enthusiasm around environmental- and climate-measures. According to the board chairman for Soltun housing co-operative, the board has a unique opportunity to steer the housing co-operative in such a direction as they wish. By gathering good information and good arguments. He stated that “*The resident could say no but if this goes very much against the ideas of the board, they can choose a new board*”.

In the housing co-operative Tjensvold 6 they have slightly different issues. Here there is nothing lacking in enthusiasm or the interests of the board, but rather there is the fact that the housing co-operative is listed as protected under the cultural heritage act. There are therefore several restrictions as to which measures can be performed. The board has been working for a long time to get EV-charging for its residents, but since the housing co-operative does not have its own parking spaces and the residents park their cars on municipal ground, they cannot install their own dedicated chargers. The local municipality has stated that the housing co-operative may well put up their own charging posts, but with the ground belonging to the municipality non-residents will also be able to occupy the spaces even though they would not be able to use the chargers as they are coded. Another barrier was the power input, which was from 1954. Further it was said that if the parking area was to be reregulated to belong to the housing co-operative, it would be interesting to invest in EV-chargers. The fact that the parking space is communal also means that neither the housing co-operative nor the individual residents can apply for any economical support from either the state or the local municipality.

On the question on whether laws and guidelines from the local municipality and the state would have contributed to more engagement and more environmental measures, the reply from the chairman of Soltun housing co-operative responded that *“...until now there has just been a demand to maintain the housing according to its value. But demands for environment and climate measures are up to the individual board”*.

Regarding whether the boards interests for the environment can influence the focus and engagement around the environment and climate measures, the board chairman for Haugtussa housing co-operative said that *“...it is important that a board is in favor of environmental measures, because if they are against it nothing will be possible to get done as quite a few things can be stopped by a board”*.

5.10 Motivation for conducted environmental initiatives

The majority of findings from the interviews indicate that the main motivation for conducting environmental initiatives is often not the environmental concerns, but rather meeting the needs and interests of the residents. Often, a renovation has led to the implementation of environmental measures even though this was not the main intent with the renovation itself.

For instance, the board chairman from Haugtussa could confirm that the replacement of traditional waste containers with joint containers situated below ground level was done as a safety measure, in order to lessen the heavy traffic through the residential areas. The original motivation here was increased safety for the children living in Haugtussa. However, it may also have led to less traffic pollution.

The respondent from Solvang housing co-operation had the following to say regarding the motivation behind conducting environmental measures: *“One main motivation was to learn about new technologies and showing that we have a futuristic vision”*.

In addition to this personal motivation, the other factors which were significant when deciding to implement solar technology were according to the respondent from Solvang Housing co-operative the following:

- It came at almost no cost.
- the solution was tailormade
- was presented as a package solution
- the solution was presented by trustworthy actors
- and the possibility of withdrawing without any further consequences

Two of the housing co-operatives used in this study already had the possibility for EV-charging, while Solvang produce their own electricity where they stored the surplus energy in battery banks and used this to power the common areas and for EV-charging.

An interesting measure that was done at Soltun housing co-operative was the location of the parking for residents. Here, the co-operative had consciously placed the parking spaces for residents below the flats located at the outer edges of the co-operative. The intention behind this was that it should be of equal distance to walk to the bus-stop as to walk towards your car. They have also established a car sharing offer for the residents, which allows shareholders to buy-in and use a car on demand. Tjensås 3 on the other hand have installed a light- and movement-sensor in the garage that saves quite some electricity-usage and expenses for the housing co-operative.

Lastly, all the respondents said that they would have considered solar panels on the roof if there would have been sufficient financial support for it and if there were clear guidelines for it in the law.

5.11 Impressions of the residents – environmental consciousness

Most residents in a housing co-operative are environmentally conscious to a certain degree. This was a common statement between most of the chairmen. Measures such as waste sorting, preventing littering by keeping the common areas clean and neat, taking care of green areas and striving for mostly car-free streets were mentioned. The attitudes towards the implementation of measures was independent of demographical conditions, but income however was a decisive factor when it came to measures that lead to higher monthly costs for the individual resident.

There were also some differing impressions of the interest in climate and the environment among the residents. The board chairman of Tjensås 3 had a *“good impression, not everybody gets into it in-depth. We have many different age-groups, the younger ones are often a bit worse than the older ones (at getting into it)”*. The board chairman of Soltun housing co-operative found that there is a *“growing interest, because the demographics are well distributed from those that are newlyweds to the elderly, there is a wide spectrum and the interest follows accordingly. The more that younger people come in the more the interest in climate”*.

What also stood out, is that those who had or wished to have an electrical car were more positive towards package-solutions such as solar panels combined with battery banks and an EV-charging station.

The chairmen could confirm that in general very few suggestions for climate measures came from the shareholders, but on the other hand there was also very little resistance when the board presented for climate proposals.

The Chairman of Tjensås 3 said, among other things that, *“what is most interesting for the residents is that the rent does not increase”*.

5.12 The importance of economy

It is quite clear from these studies that the economy seems to be one of the more important issues for shareholders in a housing co-operative when it comes to the implementation of measures or major upgrades. On the question regarding how big an increase in joint expenditures would be acceptable for the implementation of climate measures like solar

panels, most chairmen said that this would not be much. Findings show that most housing co-operatives are hesitant to adapt new technologies, especially if they do not receive any financial support for it. Other reasons for postponing the installation of solar panels is because of a general impression that the technology is not completely mature yet, and that prices will continue to drop. Talking about whether there was any fear connected with being an early adopter of new technology, the board chairman of Soltun said *“not necessarily because of price, but rather that the quality will get better”*.

The board chairman of Sundetunet housing co-operative also said that it is not always the economy that proves to be the main barrier for the implementation of climate measures as they had no financial concerns in the housing co-operative on a general basis, neither any in particular connected to climate measures by stating *“It is not necessarily the economy that hinders measures, but rather civic facilitation”*.

On the other hand, the board chairman of Tjensvold 6 told that the housing co-operative in the period between 2012 and 2017 have had large renovation projects which have led to the joint debt having increased from almost zero to more than half a million Norwegian krona (NOK) per housing unit. He went on to say that this will limit which climate and environmental measures can be implemented in the near future.

The Tjensås 3 housing co-operative were among the first to receive support from Lyse for EV-charging. In this case, Lyse A/S themselves requested the participation in the pilot-project for 2015. The board chairman claimed this saved the housing co-operative 150 000 NOK in cost. When asked whether they were afraid of being too early with this solution, the board chairman admitted that there was some skepticism to begin with but went on to say that *“we got it so cheap that if it didn't work out we wouldn't have lost so much”*. When it came to costs for the individual resident, the chairman explained that the individual residents themselves had to buy the charging box which cost between 15 000 to 18 000 NOK. The chargers could be brought along when moving or used as a sales argument when selling the house.

When asked whether the housing co-operatives can contribute to a more sustainable development, the board chairman for Tjensås 3 replied that *“they can contribute a lot if the means were there”*. This was an attitude shared by all chairmen when it came to how the housing co-operatives could contribute to the climate struggle and for a sustainable development.

When it came to solar panels, the down payment time was often used as a counter argument. However, the board chairman for Soltun housing co-operative said that *“The down payment time means little to me as the debt belongs to the housing co-operative and does not follow me”*.

Board member from Solvang housing co-operative could confirm that in the aftermath he has been contacted by several housing co-operatives that want him to come over and lecture for them about their experiences with the new technology. He went on to say that he has rejected several of them as he thinks he cannot answer the technical questions and has rather referred to Bate and Smartly.

The respondent found it hard to tell whether solar energy-production and EV-charging have had any positive effects regarding the value of the housing units in the co-operative as in general, very few apartments have been for sale. He referred to one apartment that was for sale, but he could not spot that solar energy-production was used as a promotional argument.

5.13 Knowledge base and information regarding climate and the environment

Findings show us that there is in general very little knowledge regarding the technology within solar panels and solar energy production. One of the main reasons is not just a low level of interest, but also because several think that technology is changing so fast that they will not be able to follow the trends.

The project leaders from Bate housing association and Smartly could confirm that the level of knowledge about solar panels and the technology around this among the general population is generally very low.

A German study on how housing co-operatives can contribute to reducing climate change, they list the following ways in which housing co-operatives can access information, news and updates: (Kadriu & Wendorf, 2011, p. 12)

- Website, advertisement, word of mouth
- Panels, workshops, exchange of experience
- Through community members and housing federations.

Speaking of where the chairmen obtain information and data about climate and environmental measures, the board chairman of Tjensvold 6 said that they had large renovation projects in

2012 and one in 2017. The decisions were then made according to a maintenance plan they had received from Bate.

When asked whether it would have been desirable to receive more information and more training, and to learn about which incentives are possible to receive for a housing co-operation the board chairman from Soltun housing co-operation said that this would have indeed been helpful. *As he explained: “because much of what we come up with are things we just pick up, nothing systematic”.* He went on to say that it is *“nice to have something to choose from, some alternatives that are presented to the housing co-operative”.*

The board chairman of Haugtussa housing co-operative said that there was a wish for more consciousness regarding the topic of environment and climate. A suggestion came up, implying that to raise awareness on environmental measures one should create a group which might consist of a couple of board members and residents that both had the time and knowledge and special interest concerning the topic.

The chairmen had slightly different practices when it came to where they obtained data and information on climate and the environment. The following replies were given:

- Own interests, family & friends
- From the group within the board
- Bate Housing Association homepages
- Media

5.14 What hinders and what promotes climate measures in their housing co-operatives.

The question of what hinders and what will promote climate measures in housing co-operatives more or less summarizes the findings from previous questions.

From research it shows that the same factors repeat themselves when it comes to the question on barriers and facilitators for climate measures. The most central barriers that always show are as following:

- Little knowledge and consciousness around climate measures
- Lack of legislation and guidelines
- Lack of incentives and funds

- Lack of facilitation from the local municipality
- Time consuming
- Hard to gain support in the general assembly on cases leading to increased joint expenses

The respondent from Solvang housing co-operation explained that one of the reasons that it took such a short time to gain support for the solar energy-production was that the plan was conveyed through credible organs and that it was presented as a complete package solution.

The project leaders from Smartly and Bate both singled out the low price on electricity in our region is a possible barrier keeping people from investing in new renewables such as solar energy.

When asked which factors would have been facilitators for climate measures, the respondents replied the following:

- Increased knowledge regarding climate measures
- More specific solutions for the individual housing co-operations
- Simplified procedures and standard options
- More resources such as counseling and facilitation from local municipality
- More incentives and economical support for climate measures
- Laws and statutes that would set guidelines

All chairmen and project leaders replied yes on the question on whether supporting laws and regulations would have increased acceptance for and production of solar power.

The board leader of Tjensvold 6 also stated that solar energy could be an alternative for upcoming renovations, given that there will not be too many barriers for this:

When the roof has completed its lifecycle, it would absolutely be an alternative to replace it with solar panels. And then hope for the local municipality not to hinder this by arguing that the houses are listed under the protection act. If we had to reinstate the original roofs, these were eternit plates, something which would be out of the question anyways.

The board chairman from Tjensås 3 confirmed that if solar panels and sun-catchers had been subsidized or there had been more incentives this could have been an alternative for electricity-production in the housing cooperation.

5.15 Impact of role-model projects

Most chairmen held the opinion that role model-projects could create a great curiosity and have a contagious effect when it came to efforts invested in climate and environmental measures.

The board chairman of Haugtussa brought forward the example of heat pumps, the implementation of which spread fast following the installation of the first ones. It was also pointed out that houses in the co-operative had very cold floor since they were built on pillars and not a foundation.

The chairmen had the following to say regarding the effects of role model-projects:

- Role model-projects are visible, one sees them
- They create curiosity
- It is easier to pose questions regarding the technology in a reference-project
- It would make it easier to “sell” the technologies to shareholders

When asked whether it could have been an idea to mount solar panels on just a few houses in some housing co-operatives to generate more attention around solar panels and observed whether it created a contagious effect, senior project leader from Smartly said *“Sure, this will have a domino-effect. We already see this in neighborhoods where solar panels have been mounted, that there is a bigger chance that the neighbor will also get it”*. He also confirmed that they have a goal of reaching 100 facilities during the course of 2019, but there are not many housing co-operatives. There also does not exist any overview showing whether it is a self-owned house or a housing unit in a housing cooperation that has had previous installations.

5.16 Findings from the case study of Solvang housing co-operative

The meeting with the CEO and the Media responsible of the Bate Housing Association was held in October 2018. The intention behind this meeting was to get a sense of where their interest on green technology lied. Paul Boxill CEO of Bate, confirms that they wish to stand out as a future-oriented organization with green and environmentally friendly visions and plans. The company wants to be a role model for the housing co-operatives but have no authority to implement environmental measures in existing co-operatives as they are builders

and facilitators for the public areas. NRK (Høyland, 2018) could the 20th September confirm in their news story that with the new technology, residents of Solvang housing co-operative are among pioneers in Northern Europe to produce their own electricity using solar panels and battery banks for storage of surplus power. Here is an example where Bate has already made its mark in Stavanger with exemplary projects like Solvang housing co-operative. The pilot project is a part of a major research project called Invade. The project has been awarded 125 million NOK from the EU.

One of the main reasons that Bate wanted to be a part of this project was out of curiosity and having a wish to extend their knowledge in order to be able to provide and implement similar solutions on larger scale in future projects.

The project of Solvang was a collaborative project between Bate housing association and Smartly A/S, where Smartly was responsible for the technological development, while Bate played the role of consultant and contact point towards the housing co-operative.

Senior Project leader of Bate housing association, responding to the question regarding how they would like to shorten the decision-making process in future projects with the housing co-operatives explained, that their latest projects have included solar panels as standard material. It was also confirmed that the cooperation with Smartly and Solvang went very well. *“There will always be some kind of issues”* he said, but nothing major that had great influence on the progression of the project. The whole process took about eight months, where around two months passed where Solvang housing co-operative had to wait for the pending answer on their application to Enova. In the end, their application was refused, and they also did not receive any financial support from the municipality of Stavanger.

Nevertheless, respondent from Smartly singled out the repayment period as a possible barrier. As he explained that *“if I am installing solar panels on my detached house, then I can gladly accept there being a 15 years repayment period”* [...] *in an apartment complex people usually have shorter living plans within horizons of 3-5 years”*.

This means that the economic incentives will not be as strong in favor of the decision. He also mentioned Germany`s measure for promoting solar production by saying that it would be interesting to see the effect if we were to say that installed solar panels on houses would automatically increase the value by 4%. What he most often finds is that people are asking *“What`s in it for me?”* their main concern being what economic returns they will get out of it. And as he continues, if you are then told that you will get 4% more for your house because

you have installed solar panels this will of course make it more interesting for the client as well.

Regarding what the housing co-operatives have to consider in order to shorten the implementation process when thinking of producing their own solar energy he mentioned these steps:

- it is an advantage that the roofs are new to avoid having to remove the panels in short time
- that a decision has been taken in general assembly
- that there is an approval from the local municipality for façade change

He goes on saying that he has not heard of instances where the local municipality has turned down an application for the installation of solar panels.

Obvious benefits for Solvang by producing their own electricity and the package solution as presented by project leader were:

- the residents get more control over their energy consumption
- the battery bank allows the residents to use self-produced electricity during the expensive rush hours
- the energy can be used to charge vehicles

He also mentioned future scenarios when the battery capacity can be used two way so that the stored energy also can be used in their homes or for instance sold to neighbors

The project leader from Smartly said that it is generally very challenging for the housing co-operatives to invest in projects of this scale as this means increased joint depth and this makes it complicated to get a motion like this adopted. An interesting move on behalf of Solvang was that in order to ease the decision- making process, Lyse and Smartly made the investment in the installation and the infrastructure surrounding it while Solvang housing co-operative was offered a repayment deal of 15 years duration where they rent the infrastructure. He also specified that although this project was sponsored with funds from EU and that these present a clear advantage, it will only be a question of time before it will become beneficial even without those funds.

The opportunities for solar energy production concerning terraced houses and detached houses connected to housing co-operatives the respondent from Smartly replied that in order to make this possible one would have to:

- each shareholder would have to contact Smartly individually
- each shareholder must bear the costs themselves, which in turn means that the individual shareholder also gets the benefits associated with the production

The project leader of Bate could confirm that the process would be rather unproblematic, as this has no implications for other residents as on terraced houses and detached houses the roofs are separate. One only needs an exemption from the board.

Lastly the project leader from Smartly gave some other reasons for low interest in solar production among the residents in the housing co-operatives that were often connected to the following factors:

1. insufficient knowledge of the technology,
2. too much information to handle
3. not everyone has their own garage
4. costs associated with these measures

5.17 Findings from Interview with Enova

Interview with Enova was conducted to gain more insight into the criteria when applying for support at Enova, especially for the housing co-operatives.

As a shareholder, one can apply for financial support for solar production and electric vehicle charging if:

- the cost is billed to a private account
- a plus-customer agreement with the energy supplier is in place
- the application is not through the housing co-operation as there is no financial support for these organizations for energy production and EV-charging

The respondent from Enova confirmed that the support arrangements for individuals came in place in 2015. He went on to say that one can receive support for up to 35 % of a documented total cost (incl. VAT), and up to:

- 10 000 kroner for a solar production facility

- 1 250 kroner extra per kW installed power, up to 15 kW. This means, if you install 15 kW power, you can get up to 28 750 kroner subsidized in total
- There exists no separate support scheme for battery bank and solar collector, but the expenses of these measures can be included in the application for solar power production.

For more information on the criteria and link to application the respondent referred to their website, Enova.no.

When asked whether there are many co-operatives and shareholders from co-operatives who make use of these support arrangements, the response was that there was neither an overview of applications nor grants as these are categorized and filed under private households.

Although Enova has recently begun to keep track of the number of shareholders who have applied for support as a private household, the data amount is currently too small to draw any conclusions.

The informant from Enova could affirm that a larger number of individuals did make contact when solar panels and solar power production had been given attention to in the media.

When asked why there was no support schemes for EI-Production for housing co-operatives, Enova responded that housing co-operatives fall under the definition of enterprise, as it is an organization with an organization number. However, as an individual shareholder one can apply and receive support from Enova for solar energy production and for EV-charging possibilities. But implementation will be dependent on the statutes of the housing co-operatives, he also pointed out other factors of importance ahead of application:

- the infrastructure needs to be facilitated for these measures
- the grid must be able to handle the extra load
- there are no exiting support measures from Enova for facilitation / preparation work neither when it comes to the roofs or the power grid

It is pointed out that some municipalities have their own support arrangements for facilitation. An interesting observation from Enova in this regard is that despite Oslo as a municipality and region having their own support scheme for solar production until recently, Rogaland has a higher number of individuals applying for support at Enova.

The respondent from Enova points out that it is the government and the politicians that through laws and regulations can decide when the housing co-operatives will have the same

opportunities as private households for support through Enova. “Coming to decisions takes time”, but it is only a question of time before the housing co-operatives will have the same privileges as they receive inquiries on a daily basis on this issue.

Enova support for private individuals and private buildings are rights-based, meaning that private individuals can apply for support in the aftermath of the completed actions. The Enova grant will either be given immediately, or the person concerned may apply for tax deductions the following year.

6 Discussion - reality check

In this section the problem statement **“Does the existing decision-making process in the housing co-operatives act as a barrier to climate actions?”** will be discussed from different viewpoints presented in the theory chapter and the gathered data.

In order to elaborate on the problem-statement the following four research questions will provide the base for discussing and analyzing the findings:

- 1- How does the decision-making process influence the “willingness to innovate” by the shareholders in a housing co-operative?
- 2- How can the chairman and the board members promote climate measures?
How do the laws and regulations influence their decisions, main concerns and priorities?
- 3- What are the existing barriers and drivers for implementing environmental measures in the housing co-operatives?
- 4- Should sustainable environmental initiatives be a subject of our rationality, or should the decisions be made as a default choice among the housing co-operatives?

By systematically answering the research questions it is desired to guide the readers through the findings and simultaneously stay focused on what is relevant to the task. In this way it is hoped to gain an understanding of what are the key factors that are needed to address the challenge posed by the problem statement.

Several decision models have been used to highlight the different aspects on how decisions are made in the housing co-operatives. The decision models will further provide insight into how the board members experience having to make decisions related to climate measures and which barriers and facilitators impacts the decision-making processes. If only the rational model was used, the outcome would have been optimum decisions to the advantage of the environment. But considering the knowledge about human mind’s limited capacity to have full overview of all options and their consequences as presented in Herbert Simons (Peters, 2015) bounded rationality model, a fully rationally made decision is not possible.

As a counterweight the incremental models, the so-called “muddling through” and “garbage can” models have also been used as tools to provide an understanding of complex decision - making processes. In the case of decision-making in the housing co-operatives, studies by Hauge et al. (2013) show that they are often characterized by incremental behavior since the

decisions in housing co-operatives involves many shareholders with different views on how to distribute resources leading to the fact that this particular group very often adapts goals to the means available instead of adapting the funds to the goals.

The following section will discuss the findings by answering the research questions one by one.

6.1 How does the decision- making process influence the “willingness to innovate” by the shareholders in a housing co-operative?”

Willingness to innovate in this sense means that the shareholders have the possibility to choose and invest in good environmental decisions based on their understanding of the need to invest in climate measures.

The organizational structure in the housing co-operatives is supposed to be organic and non-linear (democratic), but at the same time the Housing Co-operative Act, studies and the statutes show that the residents must go through a rigid bureaucratic process to receive approval for environmental measures concerning the façade change. For instance, the main rule for solar panels on roof tops in Norway is that they are not under the application of construction Regulations § 4-1.4. D, if they are mounted on an existing building. Solar panels on protected buildings and new buildings though, are to be applied for and reported to the local authorities.

Being transparent about plans and providing necessary information early on about a project could imply that the board members have a complete overview of possible alternatives and this could give the impression that the board has done a thorough research and possesses all necessary information. This would be the case in a rational decision model, but as we understand this is hard to achieve in decision making processes which involve several actors with differing means and values. The term *early* has not been clearly defined and is up to individual interpretation. In the cases examined in Hauge et al. (2011) the successful projects took six years from first resident meeting to implementation of measures. A third project ended unsuccessfully with the explanation that the voting by shareholders was done at a too early, premature stage.

Ruud, Wold, & Aas, (2016) in their study “Increased community acceptance for renewable energy. How to reduce conflicts during planning, development and operation?” reminds us of

the citizens' right to information, transparency and the possibility of co-determination and how they are central principles of our society. These are also embodied in international conventions and national legislation. Further they go on to refer to the new Plan and Building Law (PBL) which came into effect on 1st July 2009 which states that state authorities and agencies have the right to object to applications that have been presented, while private individuals and organizations do not have a corresponding right of objection but are to be included in traditional hearings and could claim compensation.

When it comes to informing the residents in housing co-operatives about planned upgrades, this is often done in resident-meetings and at general assemblies. But as was reported by the chairmen during interviews, the average turn-up at such meetings has shown to be generally low.

Studies show that our willingness to innovate mainly depends on the factor of cost/ benefit, as presented by Steg and Vlek (2009). This fact is supported by the research done by Ruud et al. (2016) which shows that in order to mobilize engagement around a proposed energy project, it is important to pinpoint that the project is useful and that there is an understanding of the need among the shareholders. Findings from interviews of chairmen and observations made on residential meetings confirm these theories. All informants replied to questions regarding environmental measures and their impressions about residents' attitudes to climate measures showed that there was an increasing interest in climate challenges and that the residents are in general conscious about the environment and have an environmentally friendly attitude. Despite this however, the cost/benefit-aspect plays a big part when deciding in favor of the environment when cases regarding upgrades and renovation are presented or considered in general assemblies and board meetings. This again underscores the study done by Hauge et al. (2013) which states that even though the authorities' information campaigns might increase the awareness of the shareholders towards a more positive environmental attitude, this does not necessarily translate into action.

It is also important to bring forward the fact that a good decision-making process is recognized by the right to information. Ruud et al. (2016) refers to Rowe and Frewer (2005) who classify information sharing by distinguishing between communication, consultation and participation. This in practice means that when the authorities make decisions resulting in policies, it will for private citizens mean a one-way communication as only state agents have the right to object to proposals that have been presented. This stands in contrast to how the process is presented in recommendations of Hauge et al (2011) for the housing co-operatives,

where the residents are entitled to be involved early in the process and have the possibility to exchange information in order to participate actively which will according to the research increase the feeling of ownership to the project. This is highlighted as one of the main criteria to a successful decision-making process.

The point of discussion here is to reveal the unnecessarily lengthy procedure early on during the decision-making process. Findings show that most barriers are to be found during the preparation and complicity phases. Here it is difficult to differentiate between barriers at the individual and the organizational level as in the housing co-operatives there is no clear separation between the two. Table 2 presented in chapter 4.2 shows all the phases and the timeline of a decision-making process from start to implementation. Here we see that the stage of preparation and complicity takes up a considerable amount of time. Simultaneously findings show that factors like lack of information, insufficient knowledge and too much data to understand are presented as major barriers during these steps. Despite the resources used the residents still complain about not receiving enough information and lacking the feel of involvement. As the administrative model describes when people lack full overview, they will try to make a satisficing decision based on the knowledge they possess, while the rational decision model requires that the decision makers are aware of all alternatives and possibilities and will therefore make an optimum decision by choosing the first best solution based on the information at hand.

From the interviews and observations, it has been observed that the attendance on the general meeting and the resident meeting usually consist of roughly the same group of individuals. The fact that these individuals have a long experience attending general assemblies, and observations have shown that this group have familiarized themselves with the content which also gives them the confidence to speak up regarding their interests during these meetings. This group will therefore often have a great deal of influence on the decisions being made. Conversations with residents and own experiences attending general meetings revealed that in contrast to those that who have read and understood the agenda, those who are not familiarized with the agenda but still attend the general meetings often tend to vote down the suggestions to ensure that they do not vote in favor of a decision they do not know the consequences of. This is also supported by the findings of Hauge et al.(2011, p. 34) where they say that “residents often vote in favor of what seems to be a safe choice when the residents do not understand the importance and urgency of the upgrade” .

On a final note based on findings and the theory the “willingness to innovate” is sometimes as Weber (2015) points out comes from the head when we measure the costs and benefits and sometimes following our feelings. The low turn-up at general assemblies could explain the lack of information and knowledge as expressed by both theory and findings. This factor might reveal why the phase of complicity and preparation is so time consuming. According to the theory early involvement of the shareholders and getting their support when attempting to implement climate measures is the key to a successful decision -making process. At the same time one can question the effectiveness and usefulness of such democratic process in regard to what is best for the environment. In order to make a rational decision one needs to have an understanding and substantial amount of knowledge about the topic and as the findings reveal this is not the case among the shareholders.

It can also be said that even though the agenda has been distributed through e-mail and mail it does not guarantee that the residents have familiarized themselves with the content. Neither can the board make sure that the content information is understood. At the same time the interviews with the chairmen revealed that those who don't show up usually also do not complain about decisions that have been made in their absence, despite that decisions may have a direct financial impact on their personal economy.

Recommendations based on findings in order to increase the willingness to innovate by investing in climate measures would be:

- a ready-made package solution presented with clear benefits which does not demand a deep level of knowledge to understand the need.
- the information is conveyed by actors with good knowledge and which are trusted among the shareholders.
- proper incentives and financial support which eliminates the cost/ benefit factor as a decisive argument for voting against climate measures.

By following the above mention steps, one could possibly avoid the decision making process taking the shape of the garbage can model where decisions are made almost at random.

The next question is directed towards the board members and the chairman to gain knowledge about how their interests influence the decisions in favor to sustainability.

6.2 How can the chairman and board members promote climate measures? How do the laws and regulations influence their decisions, main concerns and priorities?

The main tasks of the Chairman and the board has earlier been described in chapter 3.5. In this section the responsibilities of the board, especially which of the chairman will be discussed. The chairman's tasks consist of summoning the board meetings and the annual general assembly. As well as this he or she also has to prepare and set the agenda for meetings, distribute tasks within board members and to review all written inquiries and applications from shareholders on an ongoing basis. The Co-operative Housing Association of Norway- NBBL point out that one of the main tasks of the board is to assure that the residents' common interests are maintained. It is therefore the task of the board to implement what has been decided at the general meetings. Beside these the tasks that is of main importance to this case is the boards responsibility to manage the building stock and property values to the benefit of the shareholders with an overall goal of creating a good living environment for the residents.

One of the questions asked to the chairmen was why they wished to be board chairman. The chairman of Haugtussa said the following: *"we burn for people to thrive, as if people thrive there is a bigger possibility to get things done that the residents appreciate"*. As we can see from the findings, the main reasons for someone to take on the responsibility of becoming a board chairman in a housing co-operative is the wish to work for the common good of the residents. This can be interpreted as working for the benefits of the human beings and the concern of the natural environment seems to be secondary. From the interviews it was confirmed that it can prove a great challenge to satisfy the needs of all residents as there will always be numerous of opinions on how these interests are best served. This was reasoned with the fact that these differences are mostly caused by the fact that the residents are in different stages in life and therefore have different needs and economy. One such example is when asked if the residents show much interest to environmental measures in the general assembly meetings, the chairman of Soltun said: *"No, not when it comes to bigger climate issues. People are mostly concerned with their own housing and the prizes on electricity etc."*

When asked what environmental strategies and future goals the housing co-operatives had, the answers that were received were disappointing, but not very surprising. The reason they did not surprise is because the main task of the board as described by NBBL in Borettslagsboka (2012) is to work for the benefit of the shareholders. This means accordingly that the

environmental concerns are not set high on the agenda. This supports the perspective of the anthropocentrists defined by Dietz (2005) as the outcomes that will provide the greatest satisfaction to the greatest number of people.

What Baron (2008) points out is that when we are asked to choose between our instant well-being and future goals that will benefit the biophysical environment we often tend to be biased towards the “present self” and think that the future is something distant that does not concern us at the moment. Baron (2008) goes on to say that plans are really decisions about doing something in the future. The findings are supported by Barons (2008) theory about how we choose when having to make a decision. All the respondents from the housing co-operatives said that they did not have any specific or written environmental strategies and plans, however they have plans for maintenance as this is an important part of their responsibility as board members. Chairman of Haugtussa mentioned that the board would go on to set up environmental plans and visions in the aftermath of the interview. This reply shows itself to correspond to the theory of the rational policy model which says that a problem or a need must be identified before goals and schedules can be set up (McCormick, 2018). Although this would not automatically mean that this issue is placed high on the agenda. If an identified issue does not disturb or hurt the residents it would most likely not be prioritized by the board. When it comes to the question of how the board members interests affect the focus and engagement around environmental issues board leader of Haugtussa said “*I think that it is important that the board is positive to environmental initiatives, because if they are against it, there is a possibility that nothing will be done as there much that can be stopped by the board*”. Most of the board leader pointed to the fact that as of today the requirement is to maintain the housing so that it keeps its value, while environmental- and climate-measures are up to the individual board to decide. The board chairman of Soltun housing co-operative said that:

The board has a unique opportunity to manage the co-operative in the direction they want. By gathering good information and solid arguments to why one should do exactly what the board has decided. The residents can say no, but if it contradicts against the board's ideas, they can choose a new board.

This means that if the board should decide to conduct environmental measures, the residents will have the opportunity to reject the motion. If the interests of the residents’ conflict with those of the board, the residents then have the possibility to choose a new board. In order to dismiss a board member, it is enough with a majority vote in the general assembly. Beyond

this, no reasoning is needed behind the sacking of the board member. The majority vote is enough (Borettslagsboka, 2012). This makes sense considering the work tasks described in the responsibilities of the Board. The board are there foremost to promote the interests and well-being of the shareholders.

The further question will be how laws and regulations can aid and support the board's interests for the environment. It is easier to convince a smaller group of board members about the importance of implementing environmental measures than to communicate the same amount of knowledge and data to all the 605 000 individuals who live in housing co-operatives. This puts the spotlight on the importance of laws and policies as tools for promoting environmental measures and moving them up the agenda. The studies of Hauge et al. (2013) confirm that the decision-making processes in housing co-operatives take a long time from an idea is supported until it is implemented, usually around 4-5 years. The ideal rational model tells us that after detecting a problem, one starts to look for different alternative solutions. The board's first and perhaps biggest opportunity at selecting the best solution will be limited by the consideration one has to take into account of the residents' differing economies, needs and interests. By this, they are forced to choose the option that is the most satisfying to the people, at the cost of the environment. When asked how the board of directors think that laws and policies would influence their case, there was a consensus among the respondents that laws and regulations would have been helpful and would have shortened the decision-making process significantly. Specific comments included the following:

- Less time on discussions and persuasion
- There will be more time for planning
- More time to seek advice and consider alternatives
- More time and energy to do something more constructive
- And overall more power and support to take decisions regarding environmental measures

As has been mentioned earlier, McCormick (2018) argues that politics is often about promoting one's own interests and not necessarily about making decisions for the common good. Further on, he also emphasizes the relationship between power and authority which can influence our rationality and make our planning and decision-making processes very complex. As the studies have shown, the chairmen have a great deal of power to steer the housing co-

operative in the direction they prefer, but if the residents do not agree their ideas can be rejected. This shows us that a lack of authority can have a big influence on their interests and prioritizations. Clear and firm environmental requirements in law and regulations would legitimize the board's choice of environmental measures and kept environmental considerations from becoming second choice no matter the occasion.

Another factor which influences the interests of the board is whether a case is occupying many people. If there are many inquiries regarding a case, it will rapidly move upwards on the agenda. One example of such a case was the possibility to charge EV-vehicles. There has been a great demand for this and in most of the housing co-operatives represented in this paper this was already in place or there was an ongoing process to get this implemented. The chairman from Haugtussa replied, «*We will facilitate for the charging of electrical vehicles which has been heavily requested even though the politicians cannot agree on how the housing co-operative act is to be shaped*». Here we see an example of how policies on a national level can influence the political decisions on a local level and affect the local communities.

In conversation with Enova with responsibility for housing co-operatives it was confirmed that during those periods that solar panels and solar energy was often mentioned in the media and received a lot of publicity, they (Enova) experienced a lot of interest and requests. The role of the media and the politicians should not be underestimated in such instances, and neither how us humans are being influenced by role-models and exemplary projects. Hauge et al. (2011) argue that the power of examples is strong, and good role models therefore seem to be more effective than other means like information campaigns.

Studies show that not all residents wish to be a part of the board in the housing co-operatives. In fact, it has become a growing problem that the housing co-operatives struggle to find competent people willing to take on the responsibility. Soon these roles might be outsourced leading to a board of professionals (Hauge et al., 2011). This could have positive effects as these professional board members have no self interest in the agenda and they will not base their decisions on barriers on an individual level. From own observation and interview findings this indeed appears to be a reality. There are usually only one or two candidates contesting given position in the board. Paul Boxill, the CEO of Bate Housing Association said in a conversation regarding board members that these often are picked randomly without any background check to ensure level of competence. He further stated that he was not surprised

given the amount of the responsibility they are given compared to the economical compensation they get in return.

The findings support the theory that in order to make good environmental decisions in housing co-operatives, the board must possess knowledge about climate change and understand the importance and the need of sustainable climate measures. It could therefore be preferable to set certain requirements for competence when selecting board members, and perhaps in particular when electing to the position of board chairman. Insufficient knowledge among the decision - makers was mentioned as one of the main reasons for lengthy decision – making processes by both project leaders and board chairman. At the same time findings show that the reason of climate measures successfully being implemented in for instance Solvang housing co-operatives was that the project was promoted by actors seen as trustworthy by the shareholders.

A brief conclusion based on the empirical findings and applied theory would be that the transition requires a strategic and long-term engagement where the development of competence within the board and prioritizations are about having the courage to go in the lead and create an arena for the new and good ideas and solutions for housing co-operatives. For society to emphasis sustainable growth the housing co-operatives have to be clear in their visions, goals and strategies about the fact that growth should not only mean economic growth.

The maintenance obligation is embodied in the housing co-operative act §5-17. A possible recommendation could be to mandate by law that when doing maintenance projects, environmental measures need to be a priority when looking at alternative solutions.

The next question concerns more with the existing barriers and facilitators on different levels and how these affect the decisions in favor of the environment through the process of decision making.

6.3 What are the existing barriers and drivers for implementing environmental measures in the housing co-operatives?

This question intends to uncover and investigate the obvious challenges and possibilities for the implementation of new renewable energy sources in the housing co-operatives. How do these barriers and drivers influence the decision-making processes?

Drivers / Facilitators are “factors which helps bring forward or stimulates a certain behavior”. A facilitator can be the opposite of a barrier, meaning that as we reduce the impact of a barrier it changes into being a facilitator (Enova 2012, p. 24). For instance, by reducing bureaucracy one could make it easier for residents in a housing co-operative to implement climate measures. A barrier does not give much meaning by itself but must be seen in connection with some type of behaviour or some type of action, such as making a decision. One also must define who is to take this decision or who has to change behaviour.

Enova (2012) classifies the barriers as divided between individual barriers and structural barriers. The individual barriers consist of attitudes, social norms and the ability to execute, while the structural barriers consist of knowledge, demographical-, physical-, regulatory-, market-, cultural- and political barriers. For the purpose of discussion, the barriers described by Hauge et al. (2013) will be used as these are more detailed.

Hauge et al. (2013) present an array of barriers on individual and organizational level. Although in a housing co-operative there is no clear boundary between these two as a housing co-operative is seen as an organization consisting of individual shareholders with equal rights to influence the decision- making processes and the final decisions.

Based on the research of Hauge et al. (2012, p. 327), a guide for board members in housing co-operatives has been created which contains certain advises as a practical procedure to follow in order to gain support when making decisions in favour of the environment. These advises might be good, but are they efficient? In a decision-making process, it is the phases of preparation and complicity that take most of the time. A revised version of the existing decision-making process shown in chapter 4.2 is presented in table 6. Further on the different barriers that come along with the recommendation to include the residents in the decision-making process will be discussed.

Table 6: Revised and proposed decision-making process

Timeline (months)	involved actors	Preperation and complicity	Why?
Estimated time used depends on the project size (6-12 months) 9 months	The board	1- board meeting	Specify needs, search possibilities for finanacial support and seek for information, contact experts on the field
	Shareholders	2- information meeting	presenting the need
		3- investigate the residents needs	find out the interests and thoughts about the idea
		4- written information, create a survey	
	General assembly	5- general meeting	Decisions on further investigation
2	The board	6- meeting with advisors and experts	gain knowledge about the alternatives
	Municipality/ state	7- application	assess needs (husbaken, ENOVA)
	Experts/BBL advisors	8- initial condition assessment	step 1 - assessment of the conditions
3-6	The board	9- board meeting	evaluation of findings, evaluate the alternatives
	Experts/BBL advisors	10- specific condition assessment	step 2 - assessment of alternative solutions
	Shareholders	11- written information	inform the residents
	The board	12- board meeting	agreement on preliminary project
	Shareholders	13- resident meeting	information sharing
Municipality/ state	14- clarification - municipal requirements	clarification	
Decision			
3 1-3 3-6	Experts/ BBL advisors	15- pre-project start with experts	experts prepare the proposal
	Shareholders	16- written information to the residents	clarify the residents needs and apply for financial (Enova)
	Experts/ BBL advisors/ board	17- board meeting	planning resident meeting, processing inputs from residents
	Experts/ BBL advisors	18- (2-3) information meeting with the residents	consider inputs from residents, make sure everyone have understood the scope, discuss the proposals and the costs related to the project.
	Shareholders	19- notice	final voting for the proposal
Implementation			
2 weeks	General assembly	20- general assembly meeting	decision-making (present the final decision)
	The board	21- board meeting	create building committee
2-4	Municipality/ state	22- application	building permit (municipality) - financial support (ENOVA)
	Experts/ BBL advisors	23- design details with architects and consultants	prepares details and offer calculated costs
	Experts/ BBL advisors	24- send the tender to contractors	
	The board	25- board meeting	advisors / board - assessing the offer- signing the final contract
	Municipality/ state	26 - application	commissioning permit (municipality) loan (the housing bank)
	Experts/ BBL advisors/ board	27- information meeting with shareholders	share information about the building process and plans. How this will impact individual shareholders
Total time estimated : 36 months = 3 years			
Revised decision-making process in best case shorten the time by 20 months from start to implementation			

The board members have the possibility to create an arena for cooperation with the residents. However, this requires a certain continuity within the board (*Borettslagsboka*, 2012). In this study, the stability of the board has not been an issue since all board chairmen have been on the board for a longer period of time. What can present a barrier is the level of knowledge regarding the technology and the alternatives existing on the market. Making the best choice demands that one has sufficient time to get to know the different options. It is not just the different technological alternatives on the market that can prove challenging, but also the requirement that the board examines the needs of the different residents. According to findings, the needs of the different residents are often limited and connected to cost/ advantage, private economy and interest. The board chairmen can do a good job here by distributing lots of information and do thorough research, but in the end it all comes down to the fact that the individual barriers are often so complex that the board is simply unable to select the best option. The considerations of the economy and needs of every single resident might put a stop to the whole project.

Hauge et al. (2013) give advice on how to create trust among residents by recommending the board to use facilitators and advisors with competence. NBBL give certain recommendations that tell how board chairmen and board members are to acquire new knowledge or to gather existing knowledge, but this is not a requirement.

As seen from the findings, the practice of how and where the chairmen get their information from varies greatly. Also, none of the housing co-operatives had any climate strategies or targets of their own. This means that when upgrade- or maintenance work is to be implemented, climate measures will be chosen more by coincidence if at all. For an easy illustration of this, one can take the case of EV-charging: Several housing co-operatives implemented this because there appeared to be a need for this, and it was specifically requested by the residents. The need to use incremental policy-models such as “garbage can” and “muddling through” is in reality behind many of the decisions made in housing-co-operatives.

Another barrier in the existing decision-making process is the requirement that all residents should feel included and informed to feel a sense of ownership to the project. This could imply that one expects all involved parties to have the same interests and see the need for implementation of climate measures. That the board must consider the different inputs to be able to make a final choice can remind of the garbage can model. In such a situation, several motions can be put forward and which one is selected will be dependent on whether the

residents have understood the need, and their feelings towards the proposed measures. If then 2/3 of the met residents have not understood the need, one can risk that the vote goes in disfavour of climate measures.

The study by Hauge et al. (2012) suggests not to hold the popular vote before the importance and the need of the project are clearly understood by all residents. This recommendation is important in order to successfully execute a project, but at the same time it is shown that this stage also creates a barrier for implementing new ideas. It can be said that even though the need is understood by the residents, the decision can still be affected in a negative direction by several factors such as personal economy, the residents plans of how long one intends to stay in the housing co-operative and cost benefit value.

As a facilitator it is recommended that one uses a simple language and point to role-model projects. Findings reveal that role model projects create curiosity and increase the understanding of the technology. There are not so many visible role-model projects in our region, especially not in housing co-operatives with terraced houses and in particular where solar energy has been implemented. This might be one of the reasons why the board have difficulties to convince the shareholders in investing in such technology.

Some residents vote no in sympathy with the financially weaker neighbors. Sources in research of Hauge et al. (2012) discuss whether it is a human right to live in the same apartment for the rest of your life. Their philosophy is that if you cannot afford something you have to let it go. Forcing the housing co-operatives to adapt their choices of decisions by considering the private economy of each and every resident at the expense of the quality of the building stock is simply not in line with sustainable development requirements. From a rational perspective though it can seem a very harsh decision to prioritize climate measures before letting the residents keep their homes they are attached to.

By outsourcing the tasks of the board to professional actors this dilemma would be lessened as the professionals will not have the same relation to the residents and thereby be able to make more rational choices in the sense that they will seek to do the best for all and not take individual situations too much into account. Hauge et al. (2011) presents continuity in the board as a success factor effecting the decision -making processes. A board that is exchanged often does not have sufficient time to create trust and a sense of safety among the residents. If a previous board has made plans and the next one abandons all of these, we are once again at ground zero. Once again, the importance of both continuity and the interests of the board

becomes the decisive factors in decision-making processes. One of the questions to the board leaders dealt with how long they had been part of the board and whether there is a continuity within the board. Here, the findings from all the involved housing co-operatives show the following:

- An even and fine composition of gender and ages, something which enables the interests of all residents to be taken into account. For instance, if the board consisted of only older people without small children, the groups which has small children would be affected.
- On the question of continuity, the answer from all respondents is yes. The one that had been on the board for the longest had been a board member for 18 years and been the board chairman for 5 of these. Most housing co-operatives have five board-members plus two vice-members.
- The chairmen confirm that the board meets regularly, mostly between 12 to 14 times a year and/ or as needed and that cases are being processed and considered continuously.

The outsourcing of the board's chores might bring advantages in a decision-making process, but at the same time it is important to point out that it is *not* the "big" decisions that usually dominate in a housing co-operative. It is the everyday- and lesser matters that make up the bulk of the cases, and on those occasions, it is important to have a board that knows the residents and have a personal relationship with their neighbors and can take individual needs into account. A point of discussion could be that a professional team could be engaged only for larger projects. Then the discussion will be based more on "rational" choices and not be characterized by a long persuasion process. This would lead to less pressure and save a lot of work for the board, and it would also give the board more room to focus on their main tasks. Climate and environmental problems could then be processed at a higher and more neutral level by actors with the right background and knowledge.

As mentioned previously, the board does have the mandate to decide on many cases that have economic consequences for the residents, but these will have to come under the duty of maintenance. For instance, in the Solvang housing-complex, the monthly rent increased by only 200 NOK. This was one of the decisive factors during the decision-making process when implementing the solar energy production system. From the case study of Solvang and during the interview with the project leader from Smartly it was asked whether something which

requires such a large investment was difficult to get acceptance for the project leader replied as following:

Yes, because it means that the housing co-operatives need to take up loans and this applies to everyone [...] to facilitate the decision making process Lyse will make the investment where we invest in solar panels, batteries and the type of infrastructure that we rent out and have a for example 15 years repayment agreement with the housing company where they are renting the infrastructure.

And when asked if the solution had worked out as planned, the informant from Smartly said it has been working well so far because the major investment costs of the measures are reduced while the deal has been prolonged. It also came to light during the interview that the decision was made through a collective vote in the general assembly. Although the board could probably just have adopted it outside the general meeting.

Further on it was also said by Project leader from Smartly that the challenges are often connected to the down payment time and that people living in apartments do not have long-term living plans and usually they have a horizon of 3-5 years, which again leads to the fact that these residents would not have the same economic incentives. It was also said that: *"I am very happy about the green intentions, but we often see that in the end, the customer asks, "What is in it for me?" and "Where is the money?"*

Board chairman of Soltun do support the abovementioned statement:

I'm not worried about the economy, [...] the repayment time has little meaning to me as the debt belongs to the housing co-operative and does not follow me. Yes, you might pay a bit more per month in joint debt, but again a bit less for electricity.

Hauge et al. (2013) indicate that it isn't the economy, but rather the lack of information and understanding of the project that are regarded as a greater hindrance to sustainable renovation. This is a good example of how the existence of several barriers can reinforce each other to create an even bigger hindrance. The lack of information can make the residents insecure and feel like they do not know enough about the case to make an opinion about it. This again will affect their attitude and engagement towards environmental decisions. Findings from the interviews show that several of the chairmen have a low level of knowledge about national- and regional environmental plans. The knowledge level is often based on their own interests and gathered from different sources such as Bate, political debates and the media.

This goes on to show that it is often by pure chance that one obtains information on sustainable development goals and climate measures. Whether a shareholder or board member

chooses to get deeper insight into this topic is basically dependent on personal interests. The theory of muddling through applies well also in this situation. The barriers here have been created by how environmental issues are framed.

Concluding this chapter one can say that studies of Hauge et al. (2013) and findings show that the demographical facts mean very little when it comes to decisions regarding environmental measures. But what is common among those that are negative to upgrades is that they are people with lower income, and because of this they are afraid of increased monthly rent impacting their private economy (2011). Time and understanding are seen as a huge barrier, as understanding the importance of a problem and seeing the needs are a decisive factor in the studies of Hauge et al. (2013) and are supported by the findings. Often the residents do not understand what they are voting for because of insufficient information provided by the board. They go on to state that the residents find it provoking if they do not understand what to vote for and have not been involved or consulted. It will always be the visual and practical changes that have the biggest impact on the shareholders. Most residents do not have enough technical or economical competence to understand the complex information regarding project accounts. In addition to time and knowledge, factors such as the individual economy sets the agenda for the priorities. Hauge et al. (2012) have found that people are often afraid that if the joint dept is increased this can have a consequence for the value of their homes. This regards especially to those residents who plan to move in the near future. The barriers are considerable when it comes to convince the residents about the need for a change in face of the environmental challenges. It is not mainly the attitude towards the environmental concerns, but rather the individual and organizational prioritization and interest on the topic. In this regard it would be more efficient for the state and the municipalities to approach the housing associations as a whole rather than trying to convince individual residents.

Findings show that the following factors act as drivers for implementation of climate measures:

- the boards own interest and knowledge about climate and the environment
- governmental regulations regarding climate measures giving the board an increased authority to make decisions
- Support for facilitation from the local municipality
- Increased knowledge about the different technologies and the existing possibilities
- Professional guidance and economical support from municipality and state
- Supporting legislation and regulations

- Role model projects

On a final note one can see that the cause of the barriers at individual and organizational level are possibly the lack of drivers/ facilitators at societal level. It could be expected that at societal level the level of knowledge and means is higher, giving the decision-makers a greater possibility to take a rational decision on behalf of the environment and the citizens.

The next research question discusses the subject of whether our society can make rational decisions that are beneficial towards the environment, or whether we are hindered due to our bounded capacity?

6.4 Should sustainable environmental initiatives be a subject of our rationality, or should the decisions be made as a default choice among the housing co-operatives?

McCormick (2018) argues that politics is often about promoting own interests, and that it is not always about making and implementing decisions for the common good. He goes on to say that any relationship between two or more individuals can be considered political, because it involves shared decision-making, even if it is just one person dictating terms to the others.

The problem in housing co-operatives is not always that decisions are not made for the common good, but rather that it is only made for meeting the needs and interests of the residents. Does this mean that the climate concerns are never on top of the agenda? Findings from the interviews with the chairmen show that none of the housing co-operatives have any strategies and goals regarding climate and the environment. This can be explained by the fact that the boards in housing co-operatives are not obliged to develop such a plan by the Housing Co-operative Act. They do however have a duty of maintenance as their main task.

The decision -making processes in the housing co-operatives are good illustration of McCormick's (2018) argument about promoting one's own interest. The process of decision -making in the co-operatives can be compared to politics that is the process where one collectively decides how resources are spent and distributed in a society. For instance, how decisions are made in general assemblies. One example from own observation is when the shareholders had to decide the supplier of internet services for Haugtussa housing co-operative. The choice was informed by the matter of cost and personal emotions. This does not make for a rational decision process. Another example is when the board decided to facilitate for EV-charging based on the fact that governmental regulations are expected to

change in the near future and the fact that the facilitation was desired by several requests from the shareholders. In this case the board chose to make the decision without consulting the general assembly. The board of Haugtussa decided on behalf of the residents not just to avoid the motion being voted down, but also to save the time it takes when involving and engaging all the residents in the decision -making process.

As the findings of this research have shown, the average turn-up at the general assemblies are only 20%, this means that 80% of the residents can be assumed to have no objections to decisions made by others. This could imply that the majority of the residents would have accepted a policy that was prepared by the government, as they according to the findings do not seem to have any interest in the outcomes of the decisions made by the board and the general assembly. This poses the following question to us: Should we keep these rigid bureaucratic processes for a small group that join the general assemblies or maybe it would make more sense to just skip the whole process and let more of the decisions rest with government policies, as 80 % seem to be perfectly fine with whatever is decided. On the other hand, we could also be concluding that it is not the fault of the 20 % that the majority do not care sufficiently to partake in the decision- making organs of the housing co-operatives, and that this should not make us deny them their democratic rights which they wish to exercise.

As Sunstein (2014) asks when should governments set such defaults? Based on the findings from this research it would make sense to argue that when it comes to environmental actions the decision should be set as a default choice. Climate change and environmental actions have a such an importance and the impact of not taking action based on rational decisions can have unknown consequences for future generations. The issue of climate change is too complicated and should be the responsibility of experts that have sufficient knowledge to make informed decisions. Sunstein & Sjøbu (2017) argue that decisions of high importance should be set as default choice. Letting the government and experts make these decisions for us regarding climate actions would reduce the chance of decisions being taken based on emotions, cost/benefit and our limited cognitive capacity.

Psychologist, Gigerenzer (2011) argues that the rational decision-making model simplifies reality and limits the possible choices and predictions. He finds that decisions based on experience can often have a better outcome than decisions made through thorough theoretical processes. He also criticizes the rational model for not taking into account the role of emotion by emphasizing the differing tolerance of risk among the decision-makers.

Stoknes & Nilsen (2017) state that in order to get a society to invest in climate the choice has to be made simple – climate actions are set as a default. Regarding having alternative solutions to combat climate change the chairman of Soltun Housing co-operative said, it would be *“nice to have something to choose from, some alternatives that are presented to the housing co-operative”*.

Among the factors that would have made them consider solar panels on their roof all respondents mentioned financial support and supportive clear guidelines and simplified procedures and standard options. This supports the theory of Sunstein (2014) that choice can often be seen as a burden when it concerns a topic about which one does not have time to investigate the best alternative and gain sufficient knowledge in order to make a good decision. He goes on to say that many people do not prefer to make choices about their health and therefore delegate those choices to experts they trust.

Based on the findings from this research one can presume that in order to engage the housing co-operatives to contribute to climate measures, the suggestions should come from a top-down approach. As Sunstein (2014) proposes default choices do not take away people's freedom of choice, but meets their desire not having to choose.

7 Concluding remarks

The aim of this study has been to reach a conclusion which can go some way in answering the problem statement “Does the existing decision-making process in the housing co-operatives act as a barrier to climate actions?”.

There are several positive aspects about the existing decision-making process in housing co-operatives. It is no doubt democratic, as all residents can have a say regarding the different measures that are at any given time considered for implementation in the near or not-to-distant future. All measures not filing under maintenance are usually put forward as motions during the general assembly, where they need to receive a 2/3 majority vote in order to be adopted. This means that any project or investment has its foundation in the will of the residents. The board members are usually elected among the shareholders, meaning that they are “one with the people” so to say. At the same time, the board will always have to answer to the general assembly, which is the highest authority. This in a way resembles a lot the way a government in a democratic country always must answer to the parliament.

Throughout the research however, several factors were also uncovered indicating that the current decision-making process in housing co-operatives may act as a barrier against the implementation of climate measures.

First, there is often a lack of knowledge among the decision-makers, including both board members and residents. This can lead to decisions made on a weak basis, and residents voting down motions simply because they do not understand what they involve. Second, the decision-process is lengthy and needs to go through several phases before the start of actual implementation. This is because of the requirement that the residents need to be thoroughly informed and involved in the process. Third, most decisions are made in the general assembly, where popular vote decides the outcome of the process. Residents will most likely vote out of their own self-interest, where cost/ benefit has been shown to be one of the decisive factors. Research showed that environmental concerns were not a top priority when voting. Further, if an individual resident wants to implement climate measures such as solar panels on their own initiative, they are actively hindered in doing so, as this is considered a facade-change. Also, so far Enova does not have any support schemes for housing co-operatives regarding solar energy production. However, as an individual shareholder one can apply and receive support from Enova for solar energy production and for EV-charging possibilities. But

implementation will be dependent on the statutes and decisions made by the housing co-operatives. In other words, there is a barrier at an organizational level hindering the individual to make climate-friendly decisions. The housing co-operative act does not currently give any guidelines or place any demands regarding climate measures, it only mentions the duty of maintenance. There is also a general requirement that the board works for the well-being of the residents. There are however no demands regarding background, competence or diversity when board members are selected.

What this research also revealed was that in average only 20 % of the residents in a housing co-operative show up at general assemblies. This can imply that possibly 80 % of the residents are okay with decisions being made for them without their direct involvement. At the same time, scholars argue that climate is such an important matter that we should not let people without sufficient knowledge make decisions about it. This could be presented as an argument in favor of letting the position of board chairman being taken over by a professional or making climate measures a default choice when undertaking renovation projects.

Alternatively, the chairmen could receive mandatory training in subjects such as environmental measures.

The interests of the individual shareholders have possibly been taken too much into account in previous instances. Based on the findings and theory it can also be assessed that to fight climate change, we also need to consider what's best for those that do not have a voice of their own, such as nature and creatures other than humans. Possibly, the co-operative act should be amended to require for a board to work for the wellbeing of both residents *and* the environment. The duty of maintenance could also be extended to include a duty to implement climate measures when performing maintenance or renovation projects. The chairmen have a great deal of power to steer the housing co-operative in the direction they prefer, but if the residents do not agree their ideas can be rejected. This shows us that a lack of authority can have a big influence on their interests and prioritizations. Clear and firm environmental requirements in law and regulations would legitimize the boards choice of environmental measures and kept environmental considerations from becoming second choice no matter the occasion.

The local municipality should also get on-board by way of facilitation and incentives. Some of the hassles of bureaucracy could also be removed, as these can discourage many residents of housing co-operatives from even considering measures such as installing solar panels.

A good example of how decisions at societal level can act as a driving force is how the housing co-operative act is due to be amended to include a requirement for housing-co-operatives to provide the possibility for EV-charging for their residents. The findings showed that several housing co-operatives have already provided this for their shareholders and that most chairmen are positive towards climate measures, it is more a matter of cost, time, knowledge and facilitation.

It must be said however that there are also pitfalls. Even if one should make environmental measures a default choice by law, it is still important that the shareholders do not feel bypassed in the process in order to create a sense of ownership. Otherwise one could create an ambience of hostility among residents. And though professionalizing the board might lead to a more rational decision-making process in some cases, it can also make the board seem several steps removed from the residents, instead of being representatives of them.

Even though this paper has aimed to uncover the barriers and possible drivers that the current decision-making process inhibits when it comes to implementing climate measures, there are still several key aspects that can be explored more in-depth.

Recommended areas for further research are:

1. Investigate the opinions on climate measures as default choice among residents, and whether they are willing to accept a higher monthly payment in order to realize these measures.
2. What would happen if professionals/ experts were recruited as chairmen?
3. What do the barriers at societal / municipal level mean for housing co-operatives in the long run?
4. How much benefit would we have if more housing co-operatives were to produce their own solar power?

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Attachments

1 - Consent form for research participation

Study Title: Master in Energy, Environment & Society

I, Leila Raza van Veen am a student at the University of Stavanger, in the faculty of Social Sciences. I am planning to conduct a research study, which I invite you to take part in. This form has important information about the reason for doing this study, what I will ask you to do if you decide to be in this study, and the way I would like to use information about you if you choose to be in the study.

You are being asked to participate in a research study about the decision-making processes in the housing cooperatives. The focus of the conversation is to obtain expertise insights that you possess. The purpose of the study is to find out whether the decision-making process in the housing co-operatives may act as a barrier when implementing climate actions. I want to research how the housing co-operatives can contribute to a green change, and how the residents within a housing cooperative could contribute to a shift by investing in solar energy production.

You will be asked to provide me with data based on your experience. Study participation will take approximately 60 minutes and we can agree on time and location for the interview.

The project will end in June/July 2019 and all the audio material will be deleted when the censorship of the thesis is given.

I would like to audio-record this interview to make sure that I remember accurately all the information you provide. I will keep these tapes in my personal computer, and they will only be used by me and the transcriber. If you prefer not to be audio-recorded, I will take notes instead.

I may quote your remarks in my thesis resulting from this work. A pseudonym will be used to protect your identity, unless you give explicit permission to use your true name or your job title.

Participation in this study is voluntary. You do not have to answer any question you do not want to answer. If at any time and for any reason, you would prefer not to participate in this study, please feel free not to. If at any time you would like to stop participating, please tell me. You may withdraw from this study at any time, and you will not be penalized in any way for deciding to stop participation.

On behalf of the University of Stavanger, NSD - The Norwegian Centre for Research Data AS has assessed the processing of personal data in this project in accordance with the privacy rules. If you have questions, you are free to ask them now. If you have questions later, you may contact me at: lr.vanveen@stud.uis.no or call me on my cell phone: 98296718.

Consent

I have read this form and the research study has been explained to me. I have been given the opportunity to ask questions and my questions have been answered. If I have additional questions, I have been told whom to contact. I agree to participate in the research study described above.

Informants signature

Date

2 - Confidentiality Agreement for Transcriptionists

Confidentiality Agreement for use with Transcription Services

1. I, _____, agree to maintain full confidentiality of all research data received from Leila Raza van Veen related to this research study.
2. I will hold in strictest confidence the identity of any individual that may be revealed during the transcription of interviews or in any associated documents.
3. I will not make copies of any audio-recordings, video-recordings, or other research data, unless specifically requested to do so by the researcher.
4. I will not provide the research data to any third parties without the client's consent.
5. I will store all study-related data in a safe, secure location as long as they are in my possession. All audio recordings will be stored in an encrypted format.
6. All data provided or created for purposes of this agreement, including any back-up records, will be returned to the researcher or permanently deleted. When I have received confirmation that the transcription work, I performed has been satisfactorily completed, any of the research data that remains with me will be returned to Leila van Veen or destroyed.
7. I understand that University of Stavanger has the right to take legal action against any breach of confidentiality that occurs in my handling of the research data.

Transcriber's name (printed):

Transcriber's signature:

Date: 01.03.2019

3 - Interview guide, Chairmen

Part 1

General information

Name, age, profession, interests

For how long have you been living here?

Do you see it as realistic that you will stay here all your life?

How long have you been on the board? Tasks?

Why on the board?

Description of the housing cooperative?

Who lives here?

How's the living environment?

How many board members do you have?

Composition of the board? Gender, background, age, interests, education

Continuity within the board/a lot of replacements?

Good communication on the board? Among the board members?

The chairman a "prime mover"?

Part 2a

The strategies and goals of the housing co-operative

Goals and visions for the future?

Does the housing cooperative have their own environmental plans and strategies? (Why not?) Have there been suggestions or ideas from the board or the residents on environmental initiatives?

How are these met by the residents or the board?

Have you thought of initiating environmental initiatives? How do you mean the housing cooperatives can contribute to a more sustainable development?

Where did you get the information? Used advisors? The House Bank? Enova?

Part 2b

Decision-making processes in the housing cooperative

The attendance at the general meetings?

Number of board meetings per year?

Agree or often disagree on issues?

How do you prioritize the incoming cases?

What type of cases can be decided by the board outside the general meetings?

Part 3

Environmental measures

What instruments do you think are effective for implementation of environmental measures?

Is it done any kind of surveying of the social attitude of residents when it comes to climate action or upgrade?

To what extent do you think that the board's interest in environmental issues influences the residents?

Do you think you can contribute to more focus and engagement around environment and climate action?

Would increase knowledge and more awareness on the topic contribute to more focus on environmental initiatives? (The board and residents)

Do you think that laws and regulations would contribute to more commitment and more action?

Part 4

Environmental measures that the cooperative has already carried out

Waste management practice?

Charging stations for electric- cars, would you have assembled these if it was not a requirement and supported by the municipality?

Enova do not support charging of el-cars, what do you think of that?

Would you install solar cells and solar collector if this was subsidized from the state/county?

Part 5

Impressions of residents

The impression of residents ' attitudes towards climate problems and environmental initiatives?

Environmental awareness?

Different attitudes? Which/ why?

Competing needs? (Other priorities other than environmental measures?)

Part 6

Economy:

Concerns? Why?

How much increase in joint costs would you and the residents accept to carry out climate measures?

Are you afraid to be "early on" with new technical solutions?

Are you engaged in environmental protection/energy efficiency; how does it affect your attitudes to Environmental challenges?

Are you worried about the financial consequences? Why, why not? Possibly: What would comfort you? Enova/House Bank support, resident support – How important are incentives?

Part 7

Base of knowledge

What do you know about the climate and environmental plans of the municipality? Or Norway's climate targets for reducing greenhouse gases?

About the climate and environmental Initiatives – who has knowledge/experience in the housing cooperative?

Where would you seek for more knowledge and information?

What do you know about solar cells and solar collectors?

Part 8

What hinders/what promotes climate action in your community?

Factors that has made it difficult to have high ambitions regarding climate action.

What kind of obstacles do you see as the most central? (Individual level, organizational level, societal level?)

How can the board inspire and motivate the residents to green measures?

Facilitators?

The role of media?

Part 9

Role Model projects

Do you know of any other cooperatives who has carried out climate actions?

How does that affect you? Curiosity? Inspiration?

Do you think that environmental measures can increase the value of the houses?

4 - Interview guide, Project leaders

1. Describe your role in the project of Solvang housing co-operative?
2. Can you give a brief description of the project?
3. Can you describe the decision-making process (from idea start to implementation) How long did the whole process take?
4. What attitudes did you experience that the board and residents had towards the project/idea? And what was the reason as such for their positive/negative attitude towards the project?
5. Did you experience any concrete barriers in the process? (Obstacles on the individual, organization and community level?)
6. Knowledge level about the production of electricity, battery bank? How was the information passed on to the residents and the board?
7. How did you inform the Board about the project?
8. What and who were the drivers behind the project?
9. How did you experience the cooperation with the other actors? (Lyse/Smartly, Solvang Housing Co-operative, municipality)
10. Was the "package" solution pre-selected and presented to the residents or was this solution a collaboration with Solvang housing co-operative?
11. Has this pilot project a "contagious" effect on other housing co-operatives/co-ownerships?

5 - Interview guide, Enova

1. Is there a high demand from the housing co-operatives in regard to support for el- production?
2. Do you have an overview of how many housing co-operatives have applied for financial support regarding el-production?
3. Why is there no financial support for el-production for the housing co-operatives?
4. Who decides if the housing co-operatives gets financial support to the existing climate measures?
5. What is meant by "right-based" support?
6. What other barriers are there for the housing co-operatives regarding el-production?