

Sustainable Innovation?

Addressing challenges and finding opportunities in a rural region of Norway.

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Supervisor

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Often within the texts and at times in the interviews there was expressed a sincere level of frustration and misery by the authors and informants regarding their struggles to have research they have done or simply themselves to be accepted by society. Within the frustration and misery however, there was seldom despair rather a reflection on the definition of patience:

“the bearing of provocation, annoyance, misfortune, or pain, without complaint, loss of temper, irritation, or the like.”

From knowing that all those others endured and were patient it provided hope that someday, somewhere, someone finds use of the following thesis and to is able endure, to continue the iteration.

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To Oslo International Hub for providing a much-needed space for outsiders in Norway to find pathways to come inside the society and add value to it.

Abstract

A key question for researchers is what blockages are on the pathway towards a sustainable transformation? This research is exploratory and advocacy based, taking place within a rural region in Norway. It involved two interconnected questions: **Q1.** What are the challenges to increasing environmentally sustainable performance in the region? **Q2.** What solutions could increase environmentally sustainable performance and the region's overall competitive advantage? The initial research focused on looking at the technical side of sociotechnical change. However, unexpected blockages on the socio side arise therefore, a second iteration of the research focused on the socio blockages. The research demonstrated there is a desire by environmental leaders to increase sustainability in the region, what lacks is the capability to integrate economic, societal and economic sustainability into policy and action. The challenges to change are reinforced by a strong resistance to letting outsiders play a leadership role. Regional level findings support prior research demonstrating Norway's oil industry crowding out innovation in other areas. The findings in the region may serve as antecedents as to blockages on a national level. The research discusses some possible ways of catalyzing a sustainable transformation without the pain generally needed to start one. Key findings are Norwegian net exports mostly being raw resources might be driven by policies that were founded long ago and may have caused a deeply embedded world-view of resource exploration rather than resource value add as the focus of the economy. The Norwegian innovation system is not particularly innovative when compared to its neighbors yet, the process of reshaping culture to be so are not being addressed as policy or results. Finally, some perspectives and world views that may help to facilitate a transformation spark are offered and suggestions for future research.

Keywords: sustainable transformation, advocacy research, wicked problems, regional development, socio-technical innovation, innovation pathway blockages, Norway, Hallingdal, inclusiveness, self-actualization, immigration and refugee studies.

Executive Summary

Globally, humanity is overshooting the carrying capacity of the Earth by 50 percent, a figure predicted to double by 2030. Many governments at the national level are working towards reducing their citizens impact on the Earth's carrying capacity via compliance with international environmental emissions agreements. Some sustainable transformations efforts in play are demonstrating the possibility of society to live within its environmental carrying capacity such as, Europe's first carbon net-zero neighborhood, *Västra hamnen* in Malmö Sweden or attempts at carbon net-zero such as Masdar City in the United Arab Emirates.

The impetus of sustainable transformations is often reactionary (i.e., due to increasing global competition and in turn the loss of traditional industry or adherence to agreed upon climate change legislation). The impetus provides enough pain for society to shift towards a longer-term perspective, outside the time frame of traditional political and business cycles. Whereas, such perspectives are needed as sustainable transformations require solving problems that are complex due to their difficulties to define, changing definitions, contradictory definitions, among other challenges. Such problems are known as wicked problems and are not easily solved by most innovation systems, (e.g., the triple helix or business incubator) and associated leadership world-views (i.e., tuned to succeed within typically short term political and economic cycles).

Rather than wait for the old order to fail or have change mandated from above, how can societies start sustainable transformations pro-actively? This thesis focuses on the problem of a rural district (region) in Norway that lacks a clear sustainable transformation strategy which is linked to competitive advantage via innovation. The district does face the challenge of its youth leaving to urban areas. However, there exists no crisis to compel the transformation. The problem is addressed by asking two interconnected questions: 1) What are the challenges for increasing environmentally sustainable performance in the Hallingdal region? 2) What solutions could increase environmentally sustainable performance and the region's overall competitive advantage? The questions are framed within a global and Norwegian narrative revolving around the same questions.

The questions are then addressed in the four following iterations using an advocacy research method inspired by action research, participatory research and participatory action research, where feedback from each iteration is analyzed for developing the following iteration. That is, each iteration is learned from in the hopes to removing blockages from the pathways towards answering the research questions via advocacy research. The research method was chosen due to it being exploratory research within the region to belay efforts to represent the regions voice academically and due to change in the region would require working with its inhabitants. Before explaining the iterations specifically, a general explanation of sustainable transformations and the initial application to the research is explained:

Sustainable transformation revolves around solving socio-technical challenges that are generally broader and more complex than a business case, policy, or technology alone can solve. Therefore, the initial interviews were structured under an assumption a version of some type of living lab methodology could be used to solve the problem. Where, a living lab is characterized as a partnership of government, industry, society, and the university coming together. Such partnerships have generally shown success at improving sustainable performance for a specific geographic area, usually a city or a neighborhood, albeit executed often under broader national, union, or global policy frameworks. The living lab methodology within this thesis focused on the technical side of the socio-technical challenge where, the initial assumption was: that by organizing institutions in new ways towards new goals would serve to answer the research questions in practice. The initial iteration recognized a desire to change however, also recognized that there was a compliance mentality thinking that prevented change that would integrate sustainable thinking into business and development models.

1. Desk research was used to develop an understanding of the district as a community (i.e., at a meso-level of analysis) and formulate a research approach for the micro-level, in turn used to facilitate answering the research questions. The initial research demonstrated little academic work whatsoever on

the region and none regarding the subject matter of the thesis. The desk research centered around publications by the region and its municipalities. The initial set of interviews consisted of environmental managers in the municipalities followed by interviews with actors recommended by the environmental managers for their respective organizations' environmental leadership.

2. Entrepreneurial and social entrepreneurial activities conducted under an action research framework. The action research attempted to overcome challenges to answering the research questions. The initial action research used a sustainable innovation incubator as the vehicle for action. After discovering deeper social blockages that limited the ability of the initial vehicle to answer the research question a second action vehicle, a social entrepreneurship project based on increasing the inclusiveness of outsiders to the region was established. This second vehicle was chosen due to it was better suited to answering the socio side of socio-technical challenges presented earlier in the research. The second iteration recognized resistance to change.

3. A secondary set of interviews for an attempt to validate the results from the action research. These interviews were with a diverse population within the region ranging from recently arriving refugees to long standing members of the community. The third iteration verified the results in the second iteration.

4. Synthesis of the results among national (macro level) frameworks. Norway has not integrated sustainability, innovation and industrial policy into a clear vision and subsequent executables, especially in answering the "after oil" question. In turn, Norway has yet to clearly define a post oil future and communicate that world view into action among the population. Therefore, the research attempts to associate local findings as potential antecedents causing blockages at the national level in Norway regarding the same research questions albeit focused on a national level.

The discussion questions the status quo by asking if the district and Norway are facing sustainable transformation problems due to a set of worldviews long ago embedded in the culture where, the oil wealth has been used to continue to protect the roots that limit rates of change in Norway. The thrust of the discussion revolves around the concession policies passed in the early part of the previous century as setting a worldview that has dominated Norway's relation to its natural resources. In turn, how such policies may cause Norway to continue to lean towards behaving as a colonial economy in terms of economic outputs. In turn, how the oil industry in Norway crowds out innovation, and the research within this thesis supports previous crowding out research. Following the challenges the discussion seeks to find solutions by examining Sweden, a world leader in sustainable transformations, and then offering one novel pathway for Norway that fits in with how the nation is perceived internally and externally.

The thesis concludes that blockages within the region may be based on world-views and a lack of institutional capacity capable of change at a rate which would place the region as a leader in sustainable transformations. Some of those blockages, due to their concentration, are easier to see in the region than at a national level, such blockages, may be antecedents that are, in part, hindering Norway overall. That is, to replace current compliance mentality with forward thinkers, such as Arne Næs Sr., that embolden the nation to write a new vision for the country. However, to get to such a point, de-constructing and untangling the concessions policies from nationalism and protectionism may have to take place first.

Nationally, there are emerging budgets to explore the crossroads of innovation and sustainability in Norway. However, there exist no national level policies integrating the crossroads with clear national goals in terms of replacing oil as the nation's primary revenue generator. Nor are these budgets clearly tied to general industrial goals. Rather, most of the sustainability initiatives rest under climate and environmental legislation. What could be useful to align industrial, innovation and sustainability into a system with clear goals could be in part to integrate the co-creative design methodology as a matter of function or yet to be set clear national policies calling for their integration.

Challenges to reaching such clear policy and associated systems to execute policy may exist, as they do in the district, with a desire to change but lack of capability to change. What could serve as a catalyst to change is educating via redefining and expanding the Norwegian relationship with nature as a novel approach. Where the foundation to a sustainable transformation is partly built on the concept of biomimicry, a proven method to find innovation inspired from nature as a process and a methodology, perhaps more so as a new narrative, perspective or world view to help facilitate the sustainable transformation spark. The catalyst could manifest itself as some sort of incubator thereby, being able to latch on to the popularity of innovation in. However, it remains to be seen if such a vision can be implemented with internal resources, and there is a resistance to outsiders playing a role in leading change, a chasm exists, compared the Silicon Valley attitude where those capable of change regardless of where they are from are recognized and assisted in self-actualizing.

Overall, the research is largely exploratory within the context of the district in question. The results of the research within the district uncovers challenges arising from culture that likely cause blockages to innovation and sustainable transformation. The thesis demonstrates the thinking of the anthropologist Marianne Gullestad, that anthropology can prove just as valuable being applied close to home as it can be to some far off distant tribe. The results in the districts when set before the backdrop of national and the global challenges faced hopefully can start asking more questions that can be answered later. Such as, what is the value of our traditions, values and norms when they no longer serve useful in solving either the needs of the planet or our own local needs? How can the desire to change become integrated into behavior and results without the typical pain required to cause a spark? What can be said with strong confidence is that industry in Hallingdal demonstrates the crowing out influence of the oil industry on a local level.

As the research moves further into the context of national challenges it is difficult to say with a strong confidence how much so the antecedents act as drivers in reinforcing the blockages to change. The use of the antecedents should be more about developing perspective. This perspective in the light of a rapidly changing world where innovation is often cross cutting rather than within the silos should be further explored in a Norwegian context. The topic of Norway supposedly avoiding the resource curse should be re-examined within the context of sustainable transformations for a post oil society, under this lens Norway seems to be experiencing a resource curse based on its net exports and its relative lack of innovation compared to its neighbors. Further research may prove useful in examining how Norwegian culture tends to trump business and innovation thereby, begging the question does the culture need to change? Key areas or blockages to change that would benefit on being examined in greater detail are what the business culture rewards, the inclusive society where outsiders play a leadership role, and how to redefine culture to better solve the challenges ahead of the county and the planet.

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Abbreviations

CSR	Corporate Social Responsibility
ECI	Economic Complexity Index
NOK	Norwegian Kroner
USD	United States Dollar
GHG	Green House Gas Emissions

1 Introduction

Today, the human species is overshooting the ecological carrying capacity of planet Earth by over 50 percent and it is predicted to double by 2030, see Figure 1. Transformation towards a full spectrum sustainable society is a plausible route for the preservation of Earth and its inhabitants. A broad definition of a full spectrum sustainable society is defined as: The combination of social, environmental, and economic sustainability. “Where sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (UN Document – Our Common Future).

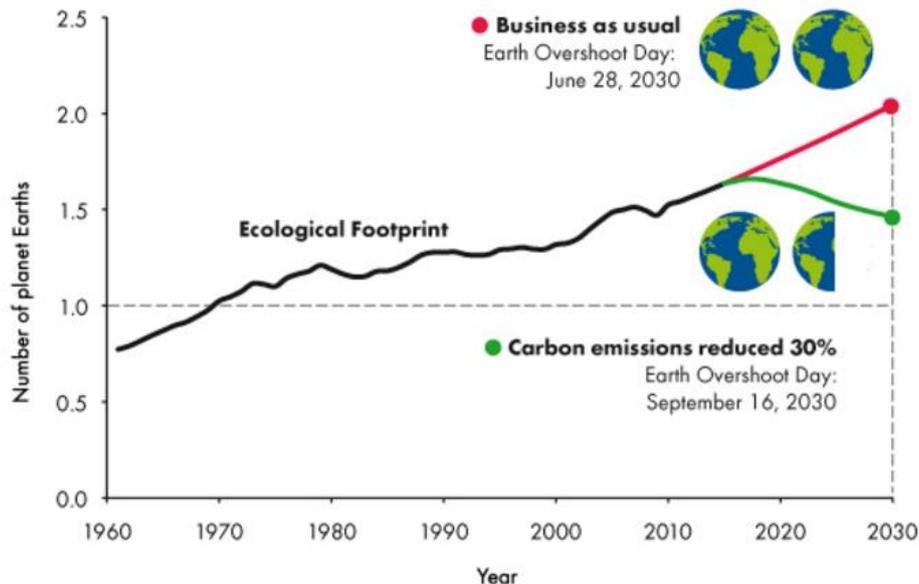


Figure 1. How many Earths does it take to support humanity?

Source: http://www.footprintnetwork.org/en/index.php/GFN/page/world_footprint

Currently, humanity as the hegemonic species are the only one capable of ensuring the transformation. Such a transformation is challenging as growth as a species and the ideology to justify growth has been with us behaviorally since at least the dawn of agriculture, through and beyond the advent of the nation building period and the widespread adoption of capitalism; which reinforces growth largely in disregard for the Earth's carrying capacity.

On the other-hand, capitalism's fundamental axiom of increasing productivity has hastened the rate of innovation. Innovation in both the narrow terms (i.e., technological innovation) and in broad terms (i.e., innovation in systems of governance, policy, and human behavior). With the caveat of economic sustainability typically leading the way often followed by reactionary policies that support environmental and societal sustainability (e.g., labor and women's rights movements).

Instead, what if systems of governance and associated partnerships between people, industry, and governments were proactive? Where governance facilitated innovation and innovation in turn supported transformation towards a full spectrum sustainable society. This thesis examines the challenges of attempting to shift from a relatively reactive model of governance and the associated society towards proactive thinking for sustainable transformations.

At this level of the research there is a well-defined geographical area, the region of Hallingdal located in south central Norway. The area is often popularized as having a unique culture and society unto its own within Norway. Initial research was used to develop a meso-level understanding of Hallingdal and formulate a research approach for the micro-level used to facilitate answering the research questions.

The approach was chosen due to research of unique cultures and societies at a micro and meso level may facilitate researchers to better understand increasingly larger and complex societies or problems. Specifically, sustainability and climate change challenges are often referred to as wicked problems.

Wicked problems are complex and often difficult to clearly define since there are different perspectives of what the problem is and what the appropriate responses should be. Wicked problems have many causes and dependent factors influencing each other. It's difficult to target the linkages of the causal factors and therefore can be hard to identify real problem and hence its solution. These problems exist in complex global systems that interact with each other and they're not fully predictable. Therefore, attempts to address them often result in unforeseen consequences. The complexity and size of the systems involved also means that our understanding of the problems is evolving constantly. It also means, there is no one clear solution to these problems. But rather, many different responses. We're still learning what works and what does not work and why this is the case. Because of this, wicked problems often involved in many policy failures and involve a long learning process to keep finding and testing successful responses. While technology is certainly part of the response, it is important to remember that wicked problems are socially complex, and involve changing behavior. They do not lie conveniently within the responsibility of any one organization, or area of study. These problems cross governance boundaries and disciplines. (McCormick, 2015).

By breaking down the analysis level the research attempts to better understand key drivers that cause resistance to sustainable transformation and offer recommendations to overcome the resistance.

1.1 Problem Definition

Today in Hallingdal there exists no unifying mechanisms to align key stakeholders of local government, industry, and society towards a transformation towards full spectrum sustainability. Likewise, there exists no strategy for the region to follow a critical path to elevate Hallingdal as a region to the national and international stage by increasing its competitive advantage via solving global challenges, or other wicked problems, albeit at a local level. Similarly, a scaled up version of the problem is Norway has not secured a post-oil future nor set clear policy (i.e., national level vision and goals) linking sustainability, development, innovation, industry in lock step and marching towards the vision.

1.2 Research Questions

Question 1. What are the challenges to increasing environmentally sustainable performance in the Hallingdal region?

Question 2. What solutions could increase environmentally sustainable performance and the region's overall competitive advantage?

1.3 Research Method

The research is nested within the larger research narrative of societal transformation towards a sustainable future. Such transformations often span several decades and are incremental in process. The research is exploratory (i.e., without a foundation of academic research of the region to build on pertinent to the subject matter), and initial research developed the following hypothesis. The hypothesis was thought of as a critical path to answering the research questions based on the ostensible pertinence to Norway for its future after oil and the topics of innovation and sustainability:

Initial desk research of documents published by municipalities within the region demonstrated a lack of integrated economic development, innovation and sustainability policies within the region. Integrating the two policies via an incubator focused on sustainable innovation could develop new business models that may help to diversify the region economically (a desire of local leadership) and increase environmental sustainability. Using the potential opportunities provided by innovation and sustainability as key drivers to answer Norway's after oil question of economic sustainability.

To accomplish realizing the statement a research method was chosen that may overcome challenges to the research, take advantage of the opportunities, and play on the strengths and bias of the researcher. The challenges are related to empowering marginalized ideas and people; the marginalized idea is sustainable thinking being overshadowed by an oil driven economy, and the lack of a voice on an academic level by people in Hallingdal. The bias of the researcher is based on being an outsider to the community which increased the desire and need to work with the community to answer the statement. The researcher placed as a campaigner (ENFP) on the Myers-Briggs Type Indicator and therefore, thought research that matched well with a desire to advocate ideas and change associated would complement the personality type.

Therefore, the research method falls under an advocacy or participatory worldview due to the research may better represent marginalized groups or individuals with the potential to empower the participants or ideas of the research via action and/or participation that may cause change (Creswell, 2014). Underneath the advocacy or participatory worldview, the research is inspired by action, participative and participatory action research. Table 1, Comparison of Action, Participative and Participatory Action Research, compares the three types of research, in bold are the tendencies of inspiration to this research method. Overall, the method should be grounded in the process spirit of participatory research which is centered on changing a community via synthesizing study of the society and educational work (Pain, Francis, 2003).

Table 1. Comparison of Action, Participative and Participatory Action Research.

Action	Participative	Participatory Action
Researcher achieves learning, and larger group may also learn.	Researcher and select participants learn about larger group.	Participants (and researchers) achieve learning within larger group.
The researcher facilitates the process, and collaborates with clients to create or actualize change. Researcher typically does not engage in change actions.	Participants make essential decisions in research project by which they are affected.	Action taken through process-action is incorporated into research itself.
Researcher collaborates with "clients"	Research works with "participants".	Research works with "participants".
Researcher and clients engage(s) in self-reflection	Researcher works with select participants / No Expert	Participant issues, actions and learning highlighted/No Expert
3rd party researcher engages in change as expert	Group works to change self with researcher not as expert.	3 rd party group works to change self and larger groups.

Emergent property: improved capacity and wisdom.	Emergent property: self knowledge.	Emergent property: creativity
--------------------------------------------------	------------------------------------	--------------------------------------

Source: Bell, J. Cheney, G. Hoots, C. Kohrman, J.S. Stidham, L. Traynor, S.

On the other hand, the method does attempt action research via creating two organizations focused on change within the society and would have continued with this method had the action made significant change. The method is concerned with the how and why questions rather than the what questions of what causes blockages to change and may incidentally be thought of as a case study due to those qualities (Yin, 1984). To reiterate and expound, under the overarching context of exploratory research the method set out with a goal of action research and after two action attempts the method was modified to fit under a broader advocacy method inspired by the three types of research in Table 1. As the initial intent of the paper was action research the thesis refers to it as such however, the broader terminology of advocacy research, participatory research, and participatory action research should be applied and drawn on to various degrees.

Dwelling on the details of the method would be more suitable for academic practitioners who make it their area of expertise. On the other hand, in the field in practice other considerations need to be made. For example, the strong organizations recommended to affiliate with when utilizing participatory research with (Pain, Francis, 2003) did not exist in the region. On the other hand, if a research method that did not engage the community was utilized it would have likely stopped at offering recommendations of suggesting the first action. In this context, the method could be thought of as a pre-study that failed inexpensively thereby, uncovering potential deeper level blockages to answer the research questions then would have been discovered otherwise. It also fits in with a new focus of Norwegian innovation, that of the entrepreneurial (i.e., small startup companies) being a new driver to answer the post oil question. The research method mirrors that small entrepreneurial type activity and may help to cast light on challenges for small organizations to be the agents of change in the district and potentially Norway.

The research began with action based research to bridge the gap between desires or wants of many of the informants and results or outcomes. Action research expands the role of the traditional researcher to that of a champion trying to solve the research questions. Action research is generally a type of action where the researcher assesses the environment in regards to the research questions. The assessment may be referred to as a snapshot or frozen state of the society. The researcher then acts to thaw the society and change it to better answer the research questions. Finally, the change or change attempt is reported on including the methods used to cause change. Within this thesis, the action takes place in four steps with two different types of action research vehicles used to try to answer the research questions.

The method used to make the attempt is in four steps:

1. Desk research and interviews. The desk research was used to develop an understanding of the district as a community, i.e., at a meso-level of analysis and formulate a research approach for the micro-level, in turn used to facilitate answering the research questions. The initial research demonstrated little academic work whatsoever on the region and none regarding the subject matter of the thesis. The desk research centred around publications by the municipalities within the region and regional publications themselves. The initial set of interviews consisted of environmental managers in the municipalities followed by interviews with actors recommended by the environmental managers for their organizations relative environmental leadership.

Sustainable transformation revolves around solving socio-technical challenges that are generally broader and more complex than a business case, policy, or technology alone can solve. Therefore, the initial interviews are structured under an assumption a version of some type of living lab methodology could be used to answer the research questions. Where the living lab is characterized as a partnership

of government, industry, society, and the university coming together. Such partnerships have generally shown success at improving sustainable performance for a specific geographic area, usually a city or a neighbourhood, albeit executed often under broader national, union, or global policy frameworks. The living lab methodology within this thesis focused on the technical side of the socio-technical challenge where, the initial assumption was through that by organizing institutions in new ways towards new goals would serve to answer the research questions in practice. The initial iteration recognized a desire to change however, also recognized that there was a compliance mentality thinking that prevented change that would integrate sustainable thinking into business and development models.

2. Entrepreneurial and social entrepreneurial activities conducted under an action research framework. Where the action research attempts to overcome challenges to answering the research questions. The initial action research used a sustainable innovation incubator as the vehicle for action. After discovering deeper social blockages that limited the ability of the initial vehicle to answer the research question a second action vehicle, a social entrepreneurship project based on increasing the inclusiveness of outsiders to the region was established. This second vehicle was chosen due to it was better suited to answering the socio side of socio-technical challenges presented earlier in the research. The second iteration recognized resistance to change.

3. A secondary set of interviews for an attempt to validate the results from the action research. These interviews were with a diverse population within the region ranging from recently arriving refugees to long standing members of the community. The third iteration verified the results in the second iteration.

4. Synthesis of the results among national (macro level) frameworks Norway has not set clear links and executables regarding integrating innovation and sustainability policy. In turn, Norway has yet to clearly define a post oil future and communicate that world view into action among the population. Therefore, the research attempts to associate local findings as potential antecedents causing blockages at the national level in Norway regarding the same research questions albeit focused on a national level.

Later in the research (i.e., during the second action), the method is inspired by Marianne Gullestad's book, "A Kitchen Table Society". Gullestad, a Norwegian anthropologist was novel in Norway by conducting ethnographies at home rather than abroad, and raising the voice of the minority in academia by giving the minority the leading role. The inspiration was useful in designing the second vehicle by giving a voice in academia to the refugees/immigrants in Hallingdal and Hallingar. Therefore, the method is a communicative action and providing a communicative space for voices that have not been heard by academia. Communicative action shares critical foundations such as emancipation with the other methods already explained (Creswell, 2014. Mackay, 2016).

The method within the context of full spectrum sustainability may allow for the latitude to discuss solutions for wicked problems. In this case, how mainstream issues of economic development can benefit from full spectrum sustainability thinking, such as inclusiveness of refugees and immigrants as leaders in the society and integrating environmental, industrial and innovation policy.

1.4 Audience

There are four audiences that may find an interest in the research.

- Policymakers and change artists in Hallingdal primarily due to there is a lack of academic research within the region. The research gives cause for more research in the region, and if the research recommendations were used it could be help to influence regional strategy.
- Policymakers and researchers interested in Norwegian districts or transformation of Norway to a post oil/post raw resource exporting nation, and innovation in Norway.

- Researchers interested in sustainable transformation and wicked problems.
- Researchers interested in an inclusive and innovative society via empowering foreigners and refugees to reach their full potential.

1.5 Ethical Considerations

The work is an independent work with no sponsorship or promise or offer of sponsorship from any source related with the research. No informants were paid or offered promises that would serve to benefit them. The informant's names have been excluded from the thesis, rather the name of the organization or their status is listed in Appendix A. The names of the informants have been shared with the research supervisor and any other professor associated at the IIIIEE needing to see the informant list. The confidentiality choice was made due to Hallingdal being a small community, where some of the informants are refugees with their cases still under review.

1.6 Disposition

Chapter one states the problems, the research question, how the research was conducted, audience, ethical considerations, and goes into detail to frame the research within the scope with an emphasis on limitations of the research itself.

Chapter two begins by placing the research within the context of global and Norwegian narratives. Then shifting to a matter of fact overview of the region, some challenges recognized by the political leadership, and its ostensible worldview and goals taken from public documents.

Chapter three presents a preliminary diagnosis of the region, the interview process, the action research process explained, the two action research efforts themselves, and finally a synthesis of the two separate action research efforts.

Chapter four discusses the research in the district and attempts to point to certain behaviours within the Norwegian narrative as potentially being antecedents of the tendencies being examined within the research of the district. The discussion moves on to look past the challenges for potential opportunities.

Chapter five provides the conclusion of the research and further potential research.

1.7 Scope and Limitations

The research is cross-disciplinary, just as the subject matter inherent to sustainable transformations is, ranging from subjects in business, economics, innovation, policy to psychology political science, and anthropology are needed to answer the research questions. The research questions themselves are at the center of wicked problem of sustainable transformations. There lacks a foundation of prior academic work within the region to build upon. The region lacks a university and the working relationships between academia and industry in Hallingdal is limited. Initial recommendations from the government environmental managers pointed mostly towards businesses and industry as a source of environmental leadership and this determined future informants and significantly shaped the research.

Norway as a democracy with an export economy dominated by oil and an innovation system delivering three-quarters of its funding to either resource extraction related technologies or maritime does not readily lend itself to comparison of neighboring national industrial innovation systems (i.e., Denmark, Finland and Sweden) regarding integration of sustainability, industrial and innovation policy. Neither is it suitable to compare Norway to other major oil exporters such as, Saudi Arabia, Russia, Iraq and the United Arab Emirates due to differences in culture and political structure. Norway overall lacks a foundation of research regarding living labs or co-creative spaces for sustainable transformations

especially regarding the integration of the three mentioned policies aimed at driving increased net exports of complex goods.

Therefore, the research sets a general context and foundation for future related research regarding the region and Norway. It does this by reducing the complexity to two research questions, albeit broad ones, and taking multiple approaches to answer them via desk research, interviews, and advocacy/action research.

The research binds itself together initially by narrow scope desk research to ascertain what ostensibly is occurring regarding the research questions. The desk research is tested against a formal and structured interview that identified gaps to be filled via advocacy research. The results of the thesis based on the structured interviews and their results are likely to have a strong confidence level of being accurate due to the number of interviews, the structure of the questions, and continuing the interview process until no novel or new pertinent information was being generated from additional interviews.

Initial iterations of the action research proved unsuccessful and the scope of the research was broadened to understand why it failed to cause change or innovation. The broadening of the scope caused additional complexity and uncertainty. Up to the action research process the research was driving down a proverbial road with a map, after the action research there was a road but no map. What is needed is ongoing iterations with data currently being collected in Oslo to better determine the validity of the antecedents posited in the research.

The research overall is exploratory as seen from combining the geographical region covered, the subject matter, and tools used to assess the research. Perhaps the highest and best use of the research is to continue to explore for further advocacy based research pathways that overcome the challenges found within.

The strength of the research rests in subject matter specifically related to Hallingdal. Further associations made between Hallingdal and Norway or to use Hallingdal as an example of tendencies or sentiment for other parts of Norway are anecdotal at worst and a guide at best. For Norway in general there may be some connection between the antecedents found in Hallingdal and the country overall but it is more a cause for further research than providing definitive conclusions. However, one issue that arose consistently during the research is the desire of stakeholders to have concrete solutions. Unfortunately, the expectation for concrete solutions is often they rest within a framework of worldviews that are likely drivers of the key challenges or blockages found within the research.

A portion of the research examines measuring the theme of carrying capacity for change. What remains unanswered in broad global strokes going down to the regional level of Hallingdal is an understanding of the carrying capacity for humans to change at this stage in human development. That theme has two thrusts, one being we live in a world of complexity which is not easily governed however, to maintain order governments work hard to ensure there exists the appearance of order. The apology letter to Queen Elizabeth II from the British Academy¹ regarding the financial crisis of the last decade exemplifies the governance issues however, no concrete changes have been made to change the system from such a crisis happening again (i.e., stuck in a worldview that requires us to move into another worldview using only concrete solutions from the new worldview that are not accepted as being concrete in the current worldview, a chicken or egg problem).

The second thrust is, the dominant economic systems that govern humans have made assumptions about human behavior which is not necessarily accurate (e.g., we make rational decision, we have all the information to decide, we are driven by self-interest). These assumptions were pointed out as not being wholly accurate at least far back as 1944 in Polyani's book, *The Great Transformation*. Yet, we are still

¹ https://www.euroresidentes.com/empresa_empresas/carta-reina.pdf

governed by notions of long dead economists which seem to be teaching us to become people who may be skewed from what is our natural equilibrium. In sum, if we may not be who we are and are governed by systems that cannot reign in chaos but are nearly incapable of change then it may be the system and ourselves which are causing problems to be wicked rather than just problems...which in and of itself could be a limitation of the research ².

² Some of this vein will be further mined in the conclusion chapter under the future research section.

2 Background

The background serves to give credibility as to why the research questions are worth answering. The narratives were chosen as they could provide momentum for two discussions taking place within the normative and cognitive boundaries of Norwegian public discourse.

The need for industry to diversify is manifested by leadership at both the national and regional levels. Within the national consciousness, the question of “What is Norway future after oil?” is being asked with increasing frequency, yet it seems the question remains largely unanswered within the minds of many (Teknologirådet, Google Search, 2015).

There are emerging desires at a national level to integrate innovation and sustainable thinking into policy. Early stage efforts at a regional level (Hallingdal) to organize innovation sans sustainable thinking. With national sustainable innovation efforts having yet to manifest themselves into concrete plans, yet alone operationalize, the situation could provide motivation for a region to lead by example. (Research Council of Norway, 2015).

2.1 Global Narrative

Think global, act local. - perhaps sourced from Patrick Geddes, circa 1915

The Millennium Project since 1996 has canvassed over 4,000 experts from around the world to assess the key challenges impacting the prospects for humanity. Figure 2. shows an overview of the top 15 global challenges and is useful to demonstrate the challenges interconnectedness. These challenges may be thought of as wicked problems.

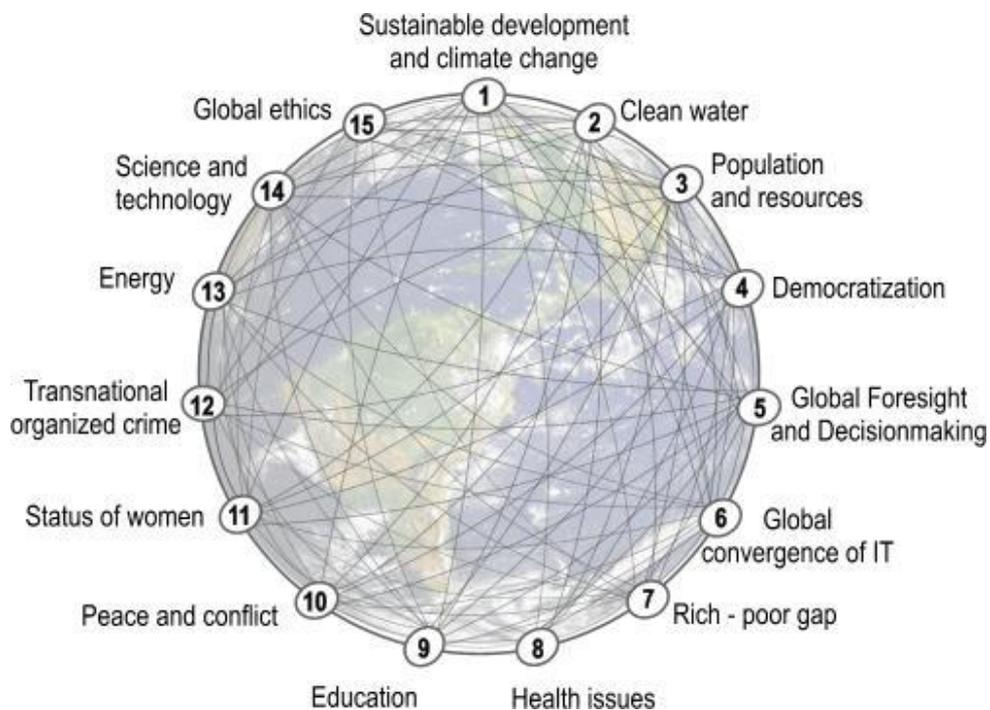


Figure 2. Global Challenges Facing Humanity

Source: <http://www.millennium-project.org/millennium/challenges.html>

There are no global governance mechanisms that exist which have implemented systems to solve the global challenges efficiently, be adaptable enough to solve new global challenges without setting back progress on other challenges, and filter down, across and up-from various geopolitical units. At best nations, have come to agree on the idea of state sovereignty (James & Soguk, 2014).

If globalization were to be looked at as an industry consisting of the challenges in Figure 2. then it may be characterized as an industry in its infancy. Examples, of beacons of competitive advantage shine when they are only able to meet a few of the challenges, e.g., Norway for lessons of peace (10), status of women (11) and democratization (4) carries considerable prestige for a political cleavage with 5 million people. Or Silicon Valley's 4 million inhabitants as a global leader in convergence of IT (6) and Science and Technology (14).

Within the context of meeting the sustainability challenges in practice, sustainable transformation vehicles known as co-creative university partnerships for urban transformations³ have demonstrated the ability to move society more effectively towards sustainable outcomes than the current hegemonic methods of technology transfer. Research to support the effectiveness of the transformation vehicles is supported by the analysis of seventy transformation projects globally. The genesis of the vehicles is found to be highly diverse ranging from the natural to the social sciences. For example, the Oberlin Project was started by a liberal arts department to increase competitiveness regarding environmental challenges in an economically depressed region, the rust belt in the USA. Conversely, the 2000-watt society project was started in a wealthy environment in Switzerland and was supported at the federal level technical research organizations and industry (Trencher, 2014).

The most attractive feature of the vehicles for this thesis is their portability across a wide swath of academia allowing for technology transfer and diffusion to be further democratized and increasingly inclusive compared to heavily natural science based research alone. Such a feature is also important due to blockages towards sustainable transformations are often deeper rooted in the socio side of socio-technical innovation (Trencher, 2014).

Philosophically, sustainable transformations vehicles may hold a similar magnitude of an emerging promise as additive manufacturing. Where additive manufacturing via such open source movements as RepRap are taking the mathematician's John von Neumann's idea of self-replicating machines (i.e., the means of production) and distributing it into the hands of the proletariat via the revolution of innovation and technology transfer rather than bloodshed, a process coined as Darwinian Marxism by a founder of the open source additive manufacturing RepRap movement. (Bowyer, 2011).

If a region or nation can develop competencies in solving global challenges locally and such solutions are scalable and transferable then a given region may increase its competitive advantage. Hallingdal currently has the competitive advantage of producing a great deal more renewable energy than it consumes, carbon sinks with capacities several times over current usage and significant timber resources. What Hallingdal lacks is innovation to make the best use of such resources over the long term via sustainable development. Due to Hallingdal also lacks a university environment the thesis is also an attempt to see just how portable sustainable transformations are, if they can live without the life support of an academic institution.

2.2 Norwegian Narrative

“If developing countries are defined as countries that export their raw resources and import finished goods then Norway is a developing country” (Informant 51, 2014).

³ Also known as living labs or urban living labs for sustainable transitions, or alternatively transformations is also used.

In a Nordic context,

...Sweden, Denmark and Finland are among the innovation leaders and Norway is more average, lagging behind. Now if I present data like this in Norway, Norwegian policy makers always say “this is very interesting, but this data has no relevance for Norway...because Norway is so special and so on”. Well, we can discuss it but I think (the data) is real (Fagerberg, video).

The narrative is framed in the context of thinking of traditional economic measurement and innovation as the end of a chapter for Norway based on concrete examples. A new chapter regarding sustainable thinking and innovation is emerging in Norway via The Research Council of Norway and Innovation Norway, a so called “dream duo” are planning on working closer together on sustainable innovation (Norwegian Research Council).

The success of Norway's development of aluminum, hydro power, and offshore oil industries is significantly rooted in the Norwegian state's desire to control its natural resources via concession laws being enacted as early as 1906. Natural resource protection in Norway is connected to natural resource exploitation's strong relation to Norway's industrialization. Overall, concessions policy set a worldview or narrative that transcended time and industry and set each industry up to become a significant exporter, albeit of mainly raw or minimally processed goods, particularly when belayed by innovation policy (Tønne, 1983; Fagerberg, Mowery, and Verspagen, 2009; Moen, 2007).

Norway is cited as having avoided the resource curse due to such factors as rule of law, strong institutions, (Mehlem, Moene, and Torvik, 2006) including the institutions associated with managing its petroleum wealth (Holden, 2014). Within these studies the justification for having avoided the resource curse is rooted in overall economic performance of the nation and its economic impact on Norway's inhabitants.

Attempts to explain Norwegian economic success vs. relatively low investments in research and development (R&D) compelled the OECD to present a case for “The Norwegian Paradox”. Investigation of the paradox is explained as either due to innovation adaptability, path-dependency, and policy (Fagerberg, Mowery, Verspagen, 2009) or sectoral characteristics where the energy sector, crowds out innovation in other sectors (Castellacci, 2008). Innovation support in Norway is divided only among a few sectors, with maritime, oil and gas, and other natural resources receive 76 percent of funding, yet only provide 13 percent of the jobs in the country (Fagerberg – 2). Both approaches lead to a similar conclusion that Norway needs to diversify its industries due to fossil fuels and Norway's oil fund does not guarantee Norway's current high standard of living to be sustainable indefinitely.

What was not defined in the research mentioned in the previous paragraph was the impact of the fossil fuel industry on crowding out other industries in concrete terms that are easily understood by a broad audience. A popular frame for crowding out uses the terminology of “sleeping pillow” (sovepute) and secondarily “straightjacket” (tvangstrøye). However, a desk search failed to find any economic, cognitive or normative explanations of what these terms means. Therefore, the following information is used to give concrete examples of the sleeping pillow or straightjacket effect.

1. In 2014, 87 percent of Norwegian net exports was raw or minimally processed goods (i.e., oil products or fish). Norwegian net exports compare similarly, with a plus or minus five percent variance, to other oil and gas export focused nations such as Russia, Iran, and Saudi Arabia (The Observatory of Economic Complexity). The only other industry with growth and size remotely capable of replacing oil is aquaculture however, that industry is 7 times smaller in terms of net exports than oil (For an overview of Norwegian exports over time please see, Appendix E. Selected Years of Norwegian Net Exports).

Norway scores relatively low on the economic complexity index due to two key reasons, a limited amount or diversity of kinds of products it produces and a relatively low complexity of those products.

The following definition from The Atlas of Economic Complexity defines Economic Complexity elaborates:

A measure of the knowledge in a society that gets translated into the products it makes. The most complex products are sophisticated chemicals and machinery, whereas the world's least complex products are raw materials or simple agricultural products. The economic complexity of a country is dependent on the complexity of the products it exports. A country is considered 'complex' if it exports not only highly complex products (determined by the PRODUCT COMPLEXITY INDEX), but also a large number of different products.

To calculate the economic complexity of a country, we measure the average ubiquity of the products it exports, then the average diversity of the countries that make those products and so forth⁴. (Atlas of Economic Complexity, 2016).

Figure 3, Nordic⁵ countries economic complexity ranking, 1995-2014 gives a comparative perspective. Sweden has continually been in the lead followed by Finland. Both Sweden and Finland export economies rely main on complex goods. Denmark places in third, perhaps due to a significant portion of their net exports being products of a low complexity such as, food or animal related products, possibly crowding out innovation in other areas. Norway ranks last with a much higher level of volatility then the other three Nordic nations.

The Norwegian government explains the Norwegian paradox or puzzle as follows:

1. Innovation activities in the Norwegian economy are not fully captured by common innovation indicators.
2. Norway's industrial structure is not favoured by innovation surveys
3. The impact of the Norwegian model on innovation is underestimated.
4. Innovation activities in the petroleum industry are underreported. (Norwegian Government).

What Figure 3 and Appendix E in aggregate hope to convey is: Norway is reliant on its primary export of oil, which happens to be a highly profitable one, hence, innovation and overall competitive advantage has suffered. To support, since oil became a significant part of the Norwegian economy (for this purpose 1978) Norway has had 1.7 trillion dollars in net exports of which oil has comprised 72 percent of those net exports. Over the same period, Norway had 873⁶ billion dollars in net imports which gave Norway a budget surplus of approximately 829 billion dollars between 1978 to 2014. Ceteris paribus, without oil Norway would have run a deficit of almost 400 billion dollars over the same period. The Norwegian puzzle is possibly solved by stating that applying moderate levels of research funding to oil extraction activities in the North Sea is highly lucrative especially when compared to other industries that export highly complex products such, as Sweden and Finland, which generally require higher levels in spending for research and development to achieve similar net export results.

⁴ P.24 of the atlas gives a deeper expiation of the economic complexity. [http://atlas.media.mit.edu/static/pdf/atlas/Atlas Of Economic Complexity_Part_I.pdf](http://atlas.media.mit.edu/static/pdf/atlas/Atlas%20Of%20Economic%20Complexity_Part_I.pdf)

⁵ Data for Iceland was not available

⁶ Calculated based on data from 1978 to 2014 from the Atlas of Economic Complexity.

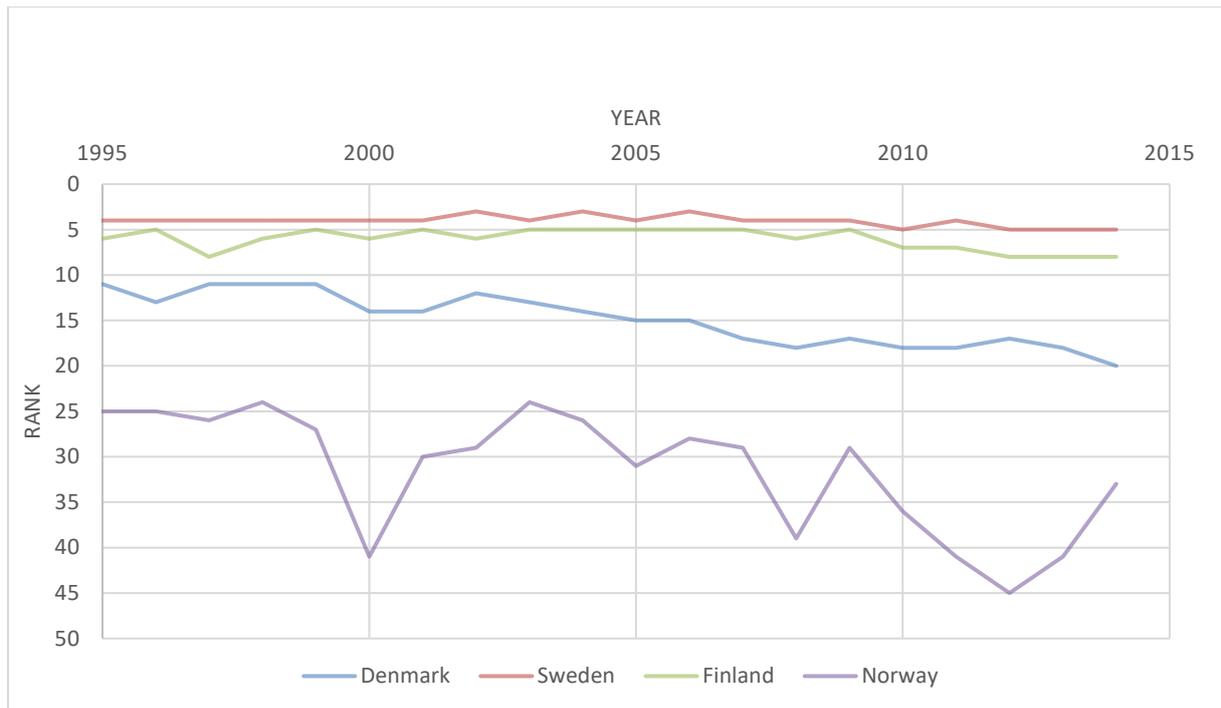


Figure 3. Nordic Countries Economic Complexity Ranking, 1995-2014.

Source: Aggregate data from The Atlas of Economic Complexity and The Observatory of Economic Complexity.

2. Between 1990 and 2011 manufacturing exports have declined by half, to 19 percent of overall GDP. Of the manufacturing base that is left, it has become increasingly dependent on the oil industry with growth in manufacturing serving other sub sectors remaining almost flat compared to 2005 levels (Cheptea, Mordonu and Kazuko, 2013).

3. Norwegian households have limited resilience if house price corrections or significant economic downturns were to occur: Households in Norway as compared to other OECD countries are the third most in debt, and rank second to last in financial assets (Cheptea, Mordonu and Kazuko, 2013).

4. What Norwegian business culture values expressed via what type of prizes the business community awards itself. In Norway, the Gazelle Prize (*Årets gasselbedrift*) is awarded to Norwegian companies that have met certain financial criteria including having doubled revenues in the last 4 years. The Norwegian business daily: *Dagens Næringsliv* and Dun & Bradstreet started the award in 2005 and it is awarded annually. Of the companies receiving the national award between 2005 and 2014, only three have significant export potential of their products or intellectual property. Two of those three companies were sold off to foreign competitors (Google Search -2, 2015).

5. Adoption of extended producer responsibility initiatives within the oil industry. Norwegian institutions involved in climate change politics, greenhouse gas emissions (GHG), do not count those GHG emissions on Norway's climate balance sheet. By being the first country to do so it could gain by redesigning the industrial use of fossil fuels in at least two areas:

- Norway and the Norwegian oil industry comparatively is an environment laggard compared to other industries, such as the automobile and electronic industry; that have accepted recovery rates as high as 90% through the auspices of extended producer responsibility (EPR).

- Opportunity cost of having not found more sustainable uses for its fossil fuels. Such as conversion into higher value added products as plastics that can be recycled rather than burned.

6. With a variance of a few years, its estimated the Norwegian Sovereign Wealth Fund, currently worth over 7 trillion NOK, will peak in value in 2030 at an estimated 265 percent of mainland GDP. While the elderly population is set to double by 2060 (Chepeta, Mordonu and Kazuko, 2013). Thereby, potentially requiring annual budgets that would likely have to be supported by increasing withdrawals from the oil fund over levels that interest alone might be able to support.

7. Norwegian national level innovation policy is not sending clear signals of what the future Norwegian economy will be nor has analyzed sufficiently how advanced manufacturing technologies could benefit the economy. Yet, the government stresses that many of the companies driving the economy in 20 years' time have not been founded yet. The report therefore appears somewhat ambivalent in terms of what industries Norway is to invest in to secure an economically sustainable future (Teknologirådet-2, P. 55-59).

8. The concessions policy rooted the idea that Norwegian natural resources should be used as a driver of the economy by and for the Norwegian people. However, as the global knowledge economy has grown and sustainability issues are becoming increasingly relevant the concessions policy may not foster Norwegian knowledge added to its resources for the purposes of creating advanced goods for export and produced under sustainable conditions. Norway is arguably stuck in a technology advancement regime that focuses on raw or simple goods resource extraction and export.

9. Norway is a country with a small population, high labor costs, long distances between cities over rough terrain, the smallest farms on average in Europe, and capable of producing nearly all its electricity needs with renewable hydro-power; albeit it exports a significant share of that energy. However, Norwegian agriculture (with aquaculture as a notable exception) has not focused on researching technology that could increase competitiveness and give birth to new industries such as vertical farming⁷ combined with automation. Or within an industrial perspective thinking of new ways to organize additive manufacturing in areas where logistic challenges arise (e.g., parts manufacturing). Rather, most agriculture policy has been protective or defensive and industrial policy having little impact regarding additive manufacturing.

Table 2 on the following page shows the main differences between weak and strong sustainability. Most of the above points (except 3 and 6 which are economic sustainability issues albeit, the outcome of the other points) could be placed under the framework of having a weak sustainability worldview. Possibly the worldview was reinforced by the concessions policies, which in turn may have promoted an export economy that is based on weak sustainability, what is not fully understood is the depth of influence, concession policies set in the early 20th century dominate economic behavior in the 21st century in Norway.

The theme of strong sustainability combined with an emerging narrative in Norway of increasing attention to the crossroads of innovation and sustainability could serve to replace concessions policy thinking with a new type of worldview more suitable for the challenges Norway and the world face. Shifting from instrumental rationality (aka substantive rationality) to policy where the framework for deliberation is based on procedural rationality. Procedural rationality may be more suitable for solving the global challenges humanity faces and freeing Norway from the possibly binding roots of the

⁷ Hydroelectricity producers interviewed voiced concerns that due to the accelerated growth of renewables and subsequent lowering energy prices that revenues have decreased. Using the energy for local food (i.e., greenhouse with artificial lighting) could help to offset such revenue loss.

concession politic worldview. Where, deliberately a new process for defining the future is made rather than reliant on rationality that seems to be increasingly trivial (e.g., the predominant economic systems which do not account for the externalities that are increasingly threats to humanity and The Earth such as climate change and overshoot). Specifically, such processes could be expressed in the last paragraph of section “2.1 Global Narrative”.

Therefore, tying competitive advantage to principles set within a transformation towards strong-sustainability as the primary thrust of national innovation policy could position Norway to take advantage of the increasingly valued, in an increasing number of markets, competitive advantage characteristics associated with sustainability and climate issues (e.g., the success of China and solar cells or Tesla). Lacking is the strong leadership and diverse perspective that can present a powerful enough case to align the forces of The Research Council of Norway, Innovation Norway, associated institutions and the greater society towards such a long-term mission and vision.

Table 2. Main Differences between weak and strong sustainability.

Main differences between weak and strong sustainability		
	Strong sustainability	Weak sustainability
Key idea	The substitutability of natural capital by other types of capital is severely limited	Natural capital and other types of capitals (manufactured etc.) are perfectly substitutable
Consequences	Certain human actions can entail irreversible consequences	Technological innovation and monetary compensation for environmental degradation
Sustainability issue	Conserving the irreplaceable « stocks » of critical natural capital for the sake of future generation	The total value of the aggregate stock of capital should be at least maintained or ideally increased for future generation
Key concept	Critical natural capital	Optimal allocation of scarce resources
Definition of thresholds and environmental norms	Scientific knowledge as input for public deliberation (procedural rationality)	Technic/scientific approach for determining thresholds and norms (instrumental rationality)

Source: Pelenc, J. Ballet, J. Dedeurwaerdere, T. (2015), Adapted from Mancebo, F. (2013).

In summary, the sleeping pillow effect is driven by the oil industry to increasingly draw more of the country’s industrial resources to it albeit, not under the current downturn. National level policy is indecisive regarding a clear vision and execution towards Norway's economic, environmental, and societal sustainability; reinforcing a lack of sustainable transformations integrating development, industrial and innovation policies. The sleeping pillow could be thought of as a disease which is only partially diagnosed and little is being done to treat the disease. The disease may continue to spread as the pain from the symptoms remains hidden due in part to state budgets being supported by oil fund profits, ranging from 170 to 220 billion kroner annually, representing roughly fifteen to twenty percent of the overall budget, over the last three national budgets. These profits go to support the general national budget as opposed to being invested in a national policy vision for the future which does not exist.

2.3 Regional Narrative

Hallingdal is a region located within Buskerud county, Norway. Hallingdal consist of 6 municipalities: Flå, Hol, Gol, Hemsedal, Nes, and Ål with a total population of 20,570 covering an area of 5940 square kilometers. Hallingdal is the intersection for key highways and a rail line between Oslo and Bergen. The terrain in Hallingdal is characterized by mountains and valleys, 70 percent of which is over 900 meters above sea level (RfH, p. 3).

2.3.1 Local Economy

The private sector economy of Hallingdal is primarily based on trade, construction, and tourism for the total number of jobs provided. The industrial sector is small however, there are a few local industries with significant exports such as Hallingplast (industrial pipes for water, waste, and gas), DEFA (Automotive and Marine products, primarily heaters) and Protan (Roofing and membranes).

19 percent and 2 percent of the land is used for forestry and agriculture, respectively. Agriculture and forestry account for 264 million NOK of Hallingdal's 4.6 billion NOK gross industrial product. The economy is 95.6% self-sufficient in terms of the net number of commuters, most who live in Hallingdal work in Hallingdal (Menon-1, RfH, p. 3-5).

As shown in Table 3, economic sectors by employment and turnover in Hallingdal, are rankings by aggregate employment, aggregate and per capita turnover within Hallingdal. Unemployment in Hallingdal rests at between 1 and 2 percent compared to a Norwegian average of 3% (RfH. p. 7). Income per household in Hallingdal has increased since the year 2000 relatively consistently. However, income in Hallingdal per household ranks below the national average by up to fifteen percent depending upon municipality (BF, 2013).

Table 3. Economic sectors by employment and turnover in Hallingdal.

Industry	Workers	Annual Turnover in Millions of NOK	Avg. turnover per worker in Thousands of NOK	Rank in turnover per Employee
1.Trade	1400	580	414	9
2.Construction	1400	900	642	4
3.Tourism	1300	580	446	8
4.Other business	950	500	526	7
5.Knowledge and Tech	400	225	562	6
6. Other industry	300	215	716	3
7. Healthcare	300	180	600	5
8. Energy	200	1000	5,000	1
9. Finance	175	225	1,285	2

Total	6,425	4,405	685	NA
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Source: Espelien, 2014.

Economic self-image of the society was often characterized as merchants and people who often should create their own work. Others commented of a push and pull between an independent mentality and the requirements of serving the greater society. Often people play many roles in the functioning of the society. It was mentioned by several informants, in support of the self-image of workers in Hallingdal, that there are more companies per capita in one municipality than anywhere else in the country (Informants 47, 44, 48 & 55). This same reference was also used on a few occasions to downplay economic differences between Hallingdal and the rest of Norway (Informants 52, 55, & 56).

The economic development vision varies for Hallingdal. An example of the range of such vision is compared by the following: The local politicians and stakeholders interested in developing a local business park are focusing on attracting industry from within the county or neighboring counties yet have few specific ideas or incentives to drive relocation (Informant 53). Hallingdal is rich in folklore, this wealth is undiscovered by the world, and attempts to commercialize this folklore are in motion via developing a theme park concept and animated film (Hallingdølen-4, Hallingdølen-5). Physical attractions and infrastructure are dependent upon outside forces, after several decades the Norwegian government has recently approved at least part of Hallingdal to be a key road between Oslo and Bergen. What Hallingdal lacks is the economically efficient cargo rail solutions for industry (Informant 39). Whether economically efficient cargo rail is possible is another question. A regional airport is also needed as without one this significantly impacts conference based tourism (Informant 50).

2.3.2 Public Health

People in Hallingdal live a year longer than in the rest of Norway on average. Expenditure in the cultural sector per person is slightly to significantly higher in 5 of the 6 municipalities of Hallingdal than the national average. Ål and Hol municipalities spend nearly two to three times the national average, respectively and Ål ranked as the second most cultural municipality nationwide recently. Safe access to nature and recreational activities was slightly to nearly double as high for residents in Hallingdal than the national average (BF, 2013).

Hallingdal youth when asked their opinion on three questions 1) their social environment, 2) job opportunities within their respective municipalities, 3) and the environment for raising a family; they were more likely to respond with good compared to youth in the other 4 regions within Buskerud, except for that last question which Hallingdal youth came in second. The dropout rate for youth within Hallingdal from upper secondary school was slightly to significantly lower than the national average depending upon municipality. The greatest fear amongst youth is that they will lose someone close to them. Youth overwhelmingly selected relations to other people or steps to realizing their full potential rather than material things when asked what was most important to them both now and in 10 years (BF, 2013).

Hallingdal are historically less likely to attend university than the national average. The national average is close to thirty percent of the population having a tertiary education, in Hallingdal it ranges from 16.9 percent to 25.4 percent depending upon municipality. However, the trend is for more people in Hallingdal to hold a tertiary degree, with the rate of Hallingdal holding a university degree as a percentage of Hallingdal's population doubling since 1990 (RfH 2012. BF, 2013).

Overall, when the latest public health report covering Hallingdal (BF, 2013) was analyzed by counting the performance of each municipality in Hallingdal. A positive was assigned to a specific health characteristic if 4 or more municipalities were performing better than the national average. An equal sign was assigned if 3 municipalities were performing better than the national average, and 3 were

performing under than the national average. A negative sign was assigned if 4 or more municipalities were performing under the national average. Of 27 public health characteristics analyzed 15 were positive, 6 equal, and 6 negative. Therefore, the conclusion in terms of public health for Hallingdal overall is: of the health characteristics measured there was a seventy-five percent likelihood of Hallingdal either being above or equal to the national average.

2.3.3 Demographic Challenges

Between 2003 and 2013 Hallingdal has increased in total population by two percent. In Buskerud, average increase in population size over the same period was ten percent, excluding Hallingdal. There are no colleges or universities situated within Hallingdal that offer a tertiary degree. Therefore, challenges arise such as, 1) Youth seeking university level education leave Hallingdal and many do not return. 2) Maintaining a population of employable age, particularly between the ages of 30 and 49. 3) Developing a more advanced economy particularly in the area of knowledge work. In comparison to other mountainous regions⁸ in Norway between 1987 and 2012. Hallingdal was the only mountainous region to grow in population (RfH, 2012).

The municipalities within Hallingdal are working together towards common development initiatives realized under the entity “Region Hallingdal” to meet the challenges.

The current primary objective comes from the Strategic Plan for Hallingdal for 2013-2016:

Hallingdal shall be a region with increasing value creation and growth in number of inhabitants and employment opportunities. The region should maintain a healthy balance in age and gender distribution. Hallingdal shall move forward to become increasingly innovative and creative as a whole both internally and externally (RfH, 2012).

There have been successful waves of initiatives aimed at attracting specialists, entrepreneurs, and other workers from places such as the Netherlands. Today, fifteen percent of inhabitants in Hallingdal are either foreigners or born to foreign parents. A portion of that fifteen percent are refugees who are given permanent residence permits (SSB-1).

One proposed regional strategy plan calls for having a comparative number of government employee hours per inhabitant in the relatively small municipalities in Hallingdal as compared to the larger municipalities. The larger municipalities use roughly four times the labor per inhabitant as the smaller municipalities and if work hours per inhabitant was equalized it would provide several jobs to the region (Hallingdølen). However, within Hallingdal there does not exist any industry or infrastructure which attracts in highly educated and experience knowledge workers, and in turn exports high value added knowledge in the form of products, services, or solutions on a scale large enough to exceed current dominant economic activities.

2.3.4 Environmental Sustainability

There are three main branches of environmental epistemology emanating from Hallingdal. The first branch is based on utilizing resources within a set of rules and worldview concerned with what is, how what is used, and by whom with a strong foundation in the pragmatic, this epistemological branch is labeled as compliance thinking. The second branch is the human relationship with the environment on a physical or aesthetic level, i.e., experiences with nature, transcended to and reflected on from a

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philosophical level. The third branch looks at nature from the viewpoints of both humans and the nature itself.

Development of hydroelectric power began in the early 20th century in Hallingdal. Initially, small local hydro-plants were developed. Oslo Lysverket (now known as E-CO) began development and acquiring land over the next several decades. The relationship building phase between Oslo Lysverket and Hallingdal prior to World War Two could be characterized as water usage rights being negotiated by pressure between forces of agriculture, society, and industry. Post-World War Two, there was increased levels of cooperation between local politicians and Oslo Lysverket as hydro-power construction brought a significant amount of employment to the region. (Solhjell, K. p. 183 -187, 223-242).

Hydro-power and water rights were key drivers of compliance thinking within Hallingdal. Today, water systems management and compliance remain a priority within Hallingdal, regarding municipal cooperation. The history of hydro-power and compliance thinking in Hallingdal is rooted in the exchange that occurs between humans and nature and in turn the impacts of such interactions on other humans, e.g., new dams impacting farmland. (Informant 31, 2014).

The philosopher Arne Næss spent significant time in Hallingdal reflecting on nature and writing from his cabin known as Tvergastein located in Hallingskarvet national park. From the cabin, he developed the term deep ecology and Ecosophy T, T standing for Tvergastein. Ecosophy T primary premises are everyone should develop their own philosophies., experience self-realization; that humans are a part of nature however, not above or below it; and a variation of the precautionary principle or liberal do no harm principle (Wikipedia-2, 2014). Today, in Norway, Næss' philosophy (and cabin) are protected and somewhat revered intellectually via his role in establishing the Centre for Development and Environment and as reflected in the nascent academic journal Tvergastein. Within Hallingdal, there is a desire to commercialize Næss' work via protecting his cultural heritage, sharing his ideas, and promoting ecological tourism. However, there are not enough actors involved to carry the vision forward now (Hallingdølen-2, 2014).

The third branch rests in protecting nature via establishing national parks. The first establishment of a national park in Norway was not until the 1960's, 91 years, after the establishment of the world's first national park, Yellowstone, in The Unites States. The primary national park influencing tourism in Hallingdal is Hallingskarvet and was established in 2006.

The relationship with the natural parks and tourism is mutually dependent on one another and at times may be contradicting one another via encouraging more people to visit and increasing aggregate impact. Therefore, since the 1980's there have been efforts to protect nature and encourage environmental stewardship by some municipalities and tourist offices in Hallingdal. However, due to drivers of such efforts leaving or retiring the first mover advantage of placing Hallingdal at the front of environmental tourism certification or compliance in Norway was missed (Informant 31).

3 Action Research

Action research places the researcher in the role of acting as an agent of change via process. The process begins with an assessment of the environment in regards to the research questions. The assessment may be referred to as a snapshot of the frozen state of the society. The researcher then acts to thaw the society and change it to better answer the research questions. In the case of the thesis the researcher used vehicles thought suitable to answer the research questions. Finally, after the change attempt is made the society is refrozen and snapshot of the frozen state of the society is reported on including the methods used. Within this thesis, the action takes place in three steps with two different types of action research vehicles used to try to answer the research questions.

3.1 Preliminary Diagnosis

The initial review of Hallingdal was to gain a snapshot of Hallingdal's sustainability activities. The preliminary diagnosis of Hallingdal found there to be lacking clear sustainability policy tied to increasing the region's competitive advantage through industry or tourism. The diagnosis seemed counter-intuitive as the region could have a great deal to gain from setting such thinking high on the regions agenda.

Generally, sustainability and climate change issues are regarded as wicked problems where the current solutions, or lack thereof, may be counter-intuitive in and of themselves. For example, a population may see recognizing unaccounted for externalities they impose on the environment as a cost deferred to nature rather than an opportunity to solve. The diagnosis of Hallingdal demonstrated some initial aspects of wicked problems. However, it was not certain if a wicked problem existed at the time of the diagnosis. The decision to work from the wicked problem narrative was in the interests of being comprehensive. The following aspects of the diagnosis are each compared to the description of wicked problems as presented by Rittel and Webber in their work "Dilemmas in a General Theory of Planning" (1973).

- Regional development and environmental sustainability strategies were separate plans from one another. Wicked problem aspect: stakeholders may not agree, political and professional dimensions, requires complex judgment.
- Efforts at the regional level had devolved back to the municipalities, where each municipality had their own climate plan due to disagreements over funding (Informant 52). Wicked problem aspect: stakeholders cannot agree, there is no clear stopping rule "this is good enough" mentality may be present.
- The municipality of Hol stood out as integrating development strategy with sustainable thinking through their efforts in tourism. Wicked problem aspect: some alternatives have been discovered but pathway blockages in their diffusion.
- The regional government itself is a weak political institution, being supported from the bottom up rather than the top down, and therefore is dependent upon municipal actors with potentially differing agendas for resources. However, it is the regional government that is focused on bringing the municipalities together to be able to achieve larger goals. Wicked problem aspect: Strong political dimension.
- Hallindal's now devolved sustainability strategy is focused primarily on building infrastructure and cost savings. Within the regional plan and four of the six municipal plans there are references to conflicting goals. The conflicting goals are either about economic goals set forth by the municipalities, i.e., attract more economic development via trade and

tourism, or due to national highways between Norway's two largest cities running through municipalities, causing traffic and climate problems which are presented as not being solvable by the municipalities (HaVR, 2008). Several points in the plan have come to life such as a network of fast electric vehicle chargers throughout most of Hallingdal and replacing oil fired heating systems with systems with a lower environmental impact (Informant 48). Wicked problem aspects: Alternatives must be discovered, no right or wrong solutions, lock in (e.g., every trial counts).

- No continuous drivers of sustainability efforts, no evolution of the practice owned as knowledge passed down from one generation to the next in Hallingdal in terms of an overall strategy and vision for Hallingdal's future. Wicked problem aspects: No clear stopping rules, no right or wrong solution, alternatives must be discovered.

Wicked problems can also be considered as symptoms of another problem (Rittiel & Webber, 1973). Extending that idea to problems can also be looked at as opportunities for solutions providers under frameworks of leadership stemming from social and traditional entrepreneurship thinking also as influences to planning. Scanning for such outlooks in general and under the framework of strong sustainability did not produce any initial results.

3.2 Planning Interviews

Planning the interview portion of the research centered around two thrusts: tools for solving wicked problems that is, the co-creative space and understanding how the informants understand and define sustainable thinking within Hallingdal and their respective organizations. Combining the thrusts could flesh out challenges and opportunities in solving the wicked problems and provide communications tools. In combination, potentially offering a strategy or critical path that could fit in with the cognitive and normative narratives or worldviews held by the informants, in turn serving as effective solutions. The preliminary diagnosis inspired planning to fall under a worldview that could be useful for solving wicked problems as the research questions to be answered were pertaining to such problems.

This task is therefore to draw on all our intellectual resources, valuing the contributions of all the academic disciplines as well as other ways in which we construct our knowledge. And that brings the challenge of developing open trans-disciplinary modes of inquiry capable of meeting the needs of the individual the community, the specialist traditions, and influential organizations, and allows for a holistic leap of the imagination. (Brown, Deane, Harris, and Russel, 2010).

One approach to thinking this way is to use co-creative spaces, also known as living labs, designed to solve such wicked problems via mobilizing the previous quote into a functional organization by adding “and results” at the end of the quote.

Where co-creative spaces are defined as the role of the university:

collaborates with diverse social actors to create societal transformations in the goal of materialising sustainable development in a specific location, region or societal sub-sector.

Our use of the term ‘transformation’ as opposed to ‘transition’ (Geels, 2002) is to emphasize the physical and permanent socio-technical changes that co-creative partnerships can potentially manifest.” (Trencher, et. al, 2014).

Such co-creative spaces are emerging in what could be a fourth mission for universities. The first two missions being education and research. The third mission of entrepreneurship, technology transfer and economic development activities emerging in the late 1990's. However, research suggests a profitable third mission is limited to a handful of universities focusing on intensive natural science research and

that the third mission approach is incapable of solving the sustainability crisis alone. Rather, the emerging fourth mission is better suited to solve the root causes of sustainability issues and that more universities can take part in such solutions (Trencher, 2014).

The overarching challenge for Hallingdal is there are no research universities in existence therefore, a standard question in the interview was the relationships Hallingdal has with external research institutions in the hopes such relationships could be utilized as a foundation for potentially establishing fourth mission projects within Hallingdal.

The second thrust was to use a sustainability scale for the purposes of having informants rate their own organization, Hallingdal in general, name additional informants who were perceived as leaders in sustainability, and how far and how the informant thought they could change over the next four years. In sum, with the intent the informants would help establish what sustainable thinking is in Hallingdal and what the carrying capacity of that thinking in terms of what could be.

3.3 Data Gathering

The interviews are almost exclusively with leadership based in Hallingdal. The interviews are the core of the research due to the need to understand the research questions from the perspective of local leadership, and in turn use their interpretation of reality, to develop relevant paths for what may come after the research.

The initial five informants chosen are environmental professionals working at the municipal level. They were selected due to having a broad overview of Hallingdal's environmental activities. The initial interview informants were asked to identify organizations or individuals demonstrating environmental leadership in Hallingdal. In turn, those recommendations most other informants were chosen from except for key authors in the regional environmental and development strategies who were picked by the author.

Twenty-three first iteration interviews were conducted lasting between 30 and 115 minutes⁹. All interviews were in person, in Norwegian, recorded, transcribed, translated to English, and then reported. Eighteen of the interviews followed a standard format of twenty-one questions¹⁰ (see Appendix B, for a list of the structured interview questions). The remaining five interviews followed the standard format with additional questions to help fill in research gaps and to build on information from the previous interviews. All informants were asked questions pertaining to current and future environmental sustainable carrying capacity of Hallingdal and/or their organization as these questions are key supports to answering the primary research questions. Table 4, provides an overview of the informants' professional backgrounds.

Table 4. Information Background Overview.

Informant Background	Number of Informant
Environmental Managers/Administrators within government	5
CEO or Chairman of the Board for a company	7
Environmental Managers or eqv. for industry or energy sectors	3

⁹ Informants voices past the initial 23 interviews voices not recorded including returning interviews for follow up questions.

¹⁰ The question numbering (2.1, 2.2, etc.) refers to the questions order as they appear in Appendix B.

Business Development executive.	1
Regional Development Administrator	1
Media Executives	2
Consultants both with over 10 years environmental experience.	2
Tourism development executive.	1

Twenty-one of the twenty-three interviews were in Hallingdal. Sixteen of those interviewed are either from Hallingdal or have spent over twenty years there. Seven of those interviewed are pioneers in environmental development within Hallingdal either via Hallingdal Renovasjon, a waste to heat and waste management company, or the “Green Region” environmental plan between Hallingdal and the neighboring region Valdres.

Types of business interviewed were: Hydro-power, electricity networks, production and manufacturing industries, tourism, banking, construction, and waste management. Later interviews past the first initial interviews would address a broader representation of Hallingdal including students, immigrants and refugees.

3.3.1 Measuring sustainability leadership

The informants were shown a scale adapted from the “Geneva Association's framework for climate change actions of insurers-adjusted as a framework to measure CSR actions of organizations”, see Table 5. The modification substituted business for the term organization, and CSR with sustainability; where environmental sustainability was defined earlier in the interview as a vague concept from the Brundtland Report as sustainable development.

“Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.”

The vague nature of the definition was chosen due to the desire for a common definition being given to a diverse mix of informants that could be interpreted as an open-ended definition thereby, providing potentially addition information from informants.

Table 5. “Geneva Association's framework for climate change actions of insurers-adjusted as a framework to measure CSR actions of organizations”

Level	Criteria
- Uninformed	Understanding of environmental impact <u>on</u> the business is limited.
- Inactive	-Understanding of environmental impact <u>of</u> the organization is limited. -Efforts to address sustainability do not exist.
- Reactive	-Awareness of issues is driven by outside parties or uncoordinated interest groups. -Limited efforts are reactive, public relations-based and/or inconsistent with business goals.

- Proactive	-Understanding business impact and key issue areas relevant to business. -Progress is recorded via first sustainability reports.
- Developed	-Goals and relevant programs structure sustainability efforts. -Tracking and reporting capabilities are in place.
- Integrated	-Core business strategies address sustainability issues. -Sustainability efforts drive risk management, profitability and growth.

Source: Kaldal, 2014, adapted for integration of sustainability rather than CSR.

The informants were all asked four questions regarding Table 4.

- 2.1. Could you please rate your organization on the frameworks scale and explain your answer?
- 2.2. Where would you like your organization to place on the scale and why?
- 2.3. Could you please rate Hallingdal overall on the frameworks scale and explain your answer?
- 2.4. Could you name 3 organizations within Hallingdal that are at level 4, 5, or 6 on the scale. Which organizations are they and how would you rate each one of them and why?

Questions 2.1 to 2.3 Results.

The results were aggregated and divided among total respondents to give an overall average. The respondents were also divided amongst sectors: Environmental Manager at Municipality (EMM), Industry and Timber, Tourism, Energy, Construction, Media. The results are presented in Table 6, Question 1 to 3 Averages by Total and Select Organization Type.

Table 6. Question 1 to 3 Averages by Total and Select Organization Type

	Question 2.1	Question 2.2	Question 2.3
Overall Average	3.9	5.3	3.2
Total Respondents	20	21	17
Tourism	5	6	3
Industry/Timber Finance	4.4	5.8	3.3
Energy	4	5.2	3
Media	3	5	3
Construction	3.5	4	2
Env. Manager at a Municipality	3.6	5	3.4

The sentiment as demonstrated in Table 6 is most organizations believe they are reactive or proactive except for tourism which rates themselves as developed. Universally, all organization have a desire to improve with some having a concrete plan while most are at least open to the idea. The gap between self-assessment and regional assessment possibly is explained by the research method via asking the initial environmental manager informants working for examples of environmental leaders and then interviewing those leaders.

Twenty-one respondents offered thirty-seven responses. All responses were of organizations other than the one the informant was associated with. Overwhelmingly respondents identified private or state owned enterprises as being leaders in sustainability, only one public sector organization was mentioned by one respondent. The average ranking was 5.1 with no significant variances between various sectors.

The sentiment of the informants is private or state run enterprise are perceived as being leaders in environmentally sustainable development. All organizations believe they can improve their environmental performance. However, the informant's sentiment is overall Hallingdal is not being proactive in terms of dealing with environmental challenges.

3.3.2 Improving Sustainability Leadership

To better understand how the various organizations interviewed would increase their level on the Geneva table several questions were asked to triangulate towards finding a common answer.

Question 1.3. What would you prioritize as the 3 most important environmental sustainability challenges for your organization?

Table 7. Ranked sustainability challenges.

Theme / Sub Theme Number	Theme/Sub Theme and comments from informants.	Sub-Theme Total Response	Theme Total Response
1	Transport and Communication – Known as “Samferdsel” in Norwegian		28
1.1	Freight/Fleet Transport - “Customers are only interested in lowest economic price”, “ “We would pay 5 to 10 percent more for biofuel if available”. “How do we encourage customers to value env. considerations?”	6	
1.2	Commuting within Hallingdal “More collective transport”, “More env. Friendly transport”. “We used to have ride sharing programs but they have gone out of fashion” “Hallingdal is not a collective transport priority for county government”	4	
1.3	General access to and from Hallingdal “The selection of env. Friendly transport is not good”.	5	
1.4	Road access to and from Hallingdal “40 years ago there was less traffic, now its more traffic but the roads have not improved much”. “Tranport and tourism need to work together better”.	5	
1.5	Rail “We would need to ship 3 train cars to be econ. Viable which is not	4	

	possible”. “Freight trains are too expensive and not enough to Hallingdal”, “Trains don't deliver to our customer, we have to use trucks”. “Its not a capacity issues its a systems issue, Hallingdal is not designed any longer for shipping freight via rail”.		
1.6	Conflicting goals - Similar to conflict theme as found in the municipal and regional climate plans. “We can't do anything about the traffic”, “We are reliant on traffic for our economy”.	4	
2	Meeting regulatory requirements for the water directive.		4
3	Reducing the impact of current processes/products within operations or in existence.	10	
3.1	Replacing oil heating with more sustainable alternatives “We have worked on water heating systems fueled by wood pellets with some successes and some failures”, “wood pellets is a logical political alternative for a timber region”, “electricity from hydro power in Norway, combined with heat pumps, used to generate heat via radiant floors with a heat sink is highly environmentally and cost competitive”.		4
3.2	Sustainable transformer oil “our energy challenges are global energy challenges, biodegradable transformer oil in cold climates is a challenge”		1
3.3	Reduce energy use overall		1
3.4	Incentive to finance energy efficiency measures in older homes.		1
3.5	Reduce use of creosote soaked timber in power poles “the problem is solving itself with more cables being buried”.		1
3.6	Reducing Nitrogen Oxide (NOx) emissions “this is in relation to our core operations which is waste to heat production”		1
4	Business case challenges for Hallingdal “What to do with so much inexpensive renewable energy in light of so much inexpensive renewable energy coming online within the markets we serve?”	1	
5	Knowledge, leadership, and management infrastructure	3	
5.1	Need for continuous process improvement in environmental thinking within government.		1
5.2	Better organization and communication regarding environmental challenges.		1
5.3	Setting the environment and climate rather than nature on the political agenda.		1
Total		48	

Of the 69 possible responses (23 interviewees multiplied by 3 choices) 48 responses were given. Each individual response was compared with one another and a set of themes and sub themes were constructed based on the comparisons. An overview of the themes, sub-themes, and responses is given in Table 7, ranked sustainability challenges.

Question 1.4. Can you tell me how your organization is meeting those 3 challenges? Table 8 below demonstrates the largest division of answers occurred between public sector vs private and state run enterprises.

Table 8. How are the challenges being met?

	Public Sector Responses	Private Sector/State Enterprise Responses
Transport	<p>Regulations are there to use collective transport under certain conditions.</p> <p>Through traffic, we cannot do much about it.</p>	<p>We are not doing anything about this (1 similar response)</p> <p>We only utilize 3rd party transport and award contracts based on price and quality of service.</p>
Construction	<p>Construction ends up being a political decision and the land owners and tourism groups are very strong.</p> <p>The Environment will lose a bit to the politicians, tourism, and land owners. (3 similar responses)</p>	<p>The municipalities do not see us as being environmentally certified as a positive in their bidding process.</p> <p>Most municipalities take pictures awarding environmental certification but do nothing substantive by recognizing construction companies that have the award in terms of contracts. I wish they would do what they say and say what they do.</p>
Forestry	<p>Forestry is relatively well managed with regulations. For a forestry manager the way they do business is structured within that regulation.</p>	<p>We believe current regulations are enough and that further proposals for a new standard by environmental groups would cause us to be uncompetitive in the markets we serve.</p>
Certification	<p>We recognize environmental certification as being valuable.</p> <p>We are one of the highest certified municipalities per capita to business. Its part of our tourism strategy.</p>	<p>Over 75 percent of organizations interviewed held some sort of environmental certification with the trend being larger organizations or export focused organizations holding ISO 14001 and small organizations having a nationally recognized certification. The larger export oriented organizations cited customer compliance as the main drivers for adopting ISO 14001.</p>
Biodiversity	<p>We have mapped many biologically diverse areas and work with a large share of the farmers whom use</p>	<p>No information given.</p>

	<p>related grants. Such grants and similar ones are very useful. For example, to form a greater understanding of how to protect the wild reindeer. We have north Europe's only wild reindeer strain. Norway has an international responsibility to take care of this, and much of the winter grazing is in the municipalities of Ål and Hol.</p>	
Agriculture	<p>Agriculture organizations have taken many steps to work together on environmental challenges. Its grass roots organizations that can tap into national organizations to get information when needed.</p>	No information given.
Water	<p>Water quality is very high here, we work hard to constantly monitor and improve it.</p>	No information given.
Energy	<p>We reassess the environmental impact of hydro-power every so often.</p>	No information given.
Resources	<p>There is not enough money to meet all regulatory requirements such as phasing out oil.</p>	No information given.
Outlook	<p>We need more knowledge that can be more effectively distributed to the politicians. Why its important to have large nature reserves...what functions these nature reserves serve (biodiversity, watershed, flora and fauna, etc).</p> <p>Economic arguments are the primary drivers of decisions with discretionary spending.</p>	No information given.
Consumption	<p>A few years ago we had study circles. Lately we have not so much here.</p>	No information given.
Sewage	<p>We process a portion of the sewage waste into compost. In Hallingdal there is an agreed ruling that the sludge is delivered to Rotneim for processing into</p>	No information given.

	compost. The compost is used for road, land fill, or fertilizer.	
Water Directive	<p>A fair amount of resources go to working with the water directive</p> <p>Being at the low end of the valley we take in more pollution relatively but its not at a high level enough where its a real challenge.</p> <p>Our systems have to be flexible. We swing from a few thousand inhabitants to 50,000 during holidays.</p>	No information given.
Process/Operations	No information given.	<p>“Increasing our sales during summer months could balance and smooth out our operations.” “Shifting away from oil heating is a major undertaking for us.” “Influences on how things are done come from external forces such as EU directives, customer requirements, or industry lead initiatives such as no conflict minerals (combination of 4 respondents)”</p>
Strategy	No information given.	<p>“We have not marketed Hallingdal as a green region although many companies are working on env. Certification.”</p> <p>“Bringing archived or internal knowledge to the public in a way that it can be leveraged into wisdom by the greater society for mutual gain, including better environmental performance.”</p> <p>“Changing our business model to integrate environmental performance as a driver to increased profits.”</p>

Questions 1.5 and 3.2 are related to one another and were grouped together based on the limited responses.

1.5 Are you working with any third-party actors such as industry or educational institutions to help solve your organizations sustainability challenges? If so who? And how? What are the results so far?

3.2 What support has your organization received from the international, national, country or regional

level in improving environmental performance or reducing greenhouse gas emissions?

Answers for question 1.5 provided 27 responses. Only 2 responses were focused on working with universities in a research capacity that could lead to a commercially innovative idea. The rest of the responses were primarily regarding working with external organizations to meet compliance challenges or gain specific knowledge to make a better decision regarding existing processes or operations. In contrast, the only large company based outside of Hallingdal interviewed was working with many universities in several capacities. Earlier in the interviews the same company mentioned how they have a great deal of knowledge but no efficient ways to share it with all their stakeholders (Informant 49). Such a statement is reflective of the knowledge gap and barriers to diffusion of innovation that exist in Hallingdal.

3.2 responses supported 1.5 answers and further explained the role between county and municipal administrations, that of oversight and an information resource. Only in two cases was support noted to be coming from innovation sourced money either through Innovation Norway or the Norwegian Research Council.

1.6 If budget was not an issue what are the three sustainability issues you would prioritize for your organization and how would you work to solve them?

31 responses were given. 14 responses were regarding transport and commuting with increased bicycle paths receiving 5 responses. 2 of the 14 responses called for better electric car charging infrastructure, which has occurred since the interviews have taken place, today 5 of the 6 municipalities have fast charging infrastructure.

There were a few responses that offered a promise of looking closer under the sustainable innovation lens, such as a need given for ways to stimulate sustainable and organic agriculture in the region, less resources intensive snow production, reduced GHG emission transport, and more economical and lower climate impact heating.

1.7 What are the strengths of your organization in regards to environmental issues?

Within the public sector the strengths considered are the competency of the employees, although half of the municipalities responded that politicians often are under political pressure and make decisions against our recommendations however, there is hope with politicians beginning to see the value in environmental certification. Extending that theme two respondents in the public sector noted how environmental education is important for the youth as both acknowledged it was a challenge trying to teach older generations.

The private or state owned enterprise answers fell into 4 main categories certification, systems, business model and competency. None listed innovation or sustainable innovation as their strength. Although, two companies noted that sustainability was integrated into their business model.

1.8 Would you take part in a 3-hour workshop designed to express initial thesis findings and then help to further develop solutions to solve the research question?

All respondents agreed to take part in a 3-hour workshop designed to explain the results and then develop solutions based on the consensus demonstrating if nothing else there is a desire to gain knowledge and to put it to use. There was a linkage with concrete results desired from the research process by 6 interviewees when asked what they thought of the interview. Perhaps, one informant representing the 6 with a sentiment there are too many reports and not enough action.

The workshop was initially used to test interest or commitment to further sustainable endeavors in Hallingdal. However, the idea was canceled as a workshop does not measure how pro-activeness of the informants, rather just participation levels.

3.3 Are you aware of any project in Hallingdal focused on sustainable agriculture, forestry, ecological agriculture, transport, industry, construction, tourism, trade or energy? Do you know of anyone who is interested in starting such projects?

The primary use of the responses to question 3.3 were to find the organizations who are leaders in sustainable development within Hallingdal. Purposely, companies with an export potential, capable of developing sustainable innovation, and not traditionally the largest sectoral employers in the region were chosen (i.e., not construction or tourism). The last criterion is based on a self-admitted need by some Hallingdal leadership to diversify the economy of the region and increase the productivity of workers (Informants 41 and 51, 2015, Espelien-2, 2015). Therefore, interviews were not focused on traditional industries such as tourism, construction, organic and sustainable agriculture, and food services for the most part. On the other hand, the traditional industry of hydro-power and energy was focused on as this renewable resource could serve as a sustainable foundation for industries capable of producing complex products for export.

3.6 (3.4a in the later interviews) In the strategic plan for Hallingdal 2013 to 2016 there is no mention of environmental sustainability as part of the overall strategy. Do you know why this is so?

3.7 (3.5a in the later interviews) It seems that municipalities within Hallingdal have focused on handling the environment and climate change themselves rather than working together through regional initiatives? Is this accurate and if so why?

3.8 (3.5a in the later interviews) What are the municipalities in Hallingdal best at working together at in general, and in terms of environmental sustainability initiatives in specific?

Questions 3.6 to 3.8 were used to better understand the status of Hallingdal overall, and its respective municipalities environmental and climate change strategies. The answers provided explained that there were financing issues and related disputes over the regional plan therefore, climate change and environmental strategies had devolved to the municipalities. Despite the devolution several targets set in the regional plan were being met.

3.4 Analysis – Feedback of results

A desire to increasingly bring sustainable development closer to the core of the mission.

The interviews demonstrate that the leadership interviewed in Hallingdal looks towards private or state run enterprises to be at the forefront of sustainable and environmental thinking in practice. When state run enterprise or private industry were asked their desire to improve, the results were to increase to a developed or integrated level on the Geneva Association scale, except the construction industry which chose proactive as where they would like to place on the scale¹¹.

The environmental managers in municipalities also believe they can improve from a current range in between reactive and proactive towards a developed level on the Geneva scale. Although the environmental managers in the municipalities largely see themselves in a supporting role with outliers offering responses ranging from “sustainable improvements will not occur without regulation”

¹¹ The sample size of the construction industry was small and therefore not necessarily reflective of the construction industry overall within Hallingdal.

(Informant 42) to “we already accept social responsibility problems, why not environmental and sustainable challenges at a level of 6, and then what is beyond 6 on the scale?” (Informant 40). The support question, 1.8, reinforced unanimously that informants had an interest in seeing the results of the research and moving forward to find solutions that would move them further on the Geneva Scale.

Desire to change does not equate to the capability to change.

Questions 1.3 and 1.4 combined ask “what and how are you solving your organizations most important sustainability challenges?”. 79 percent of responses rank on the lower half of the Geneva scale falling under the categories of transport and compliance.

- The second most frequent answer was meeting compliance challenges or indirectly meeting compliance challenges e.g., reducing energy use reduces GHG emissions, which received 10 responses. The 10 responses fall under the Geneva Scale as being reactive, i.e., complying with requirements.
- The most frequent sustainability challenge cited by informants were transport related issues (28 of 48 responses). Most municipal organizations and Hallingdal as a political region regard transport related issues, particularly through traffic's climate change implications, as a conflicting goal to their development plans. Therefore, on the Geneva scale they are reacting to through transport by offering a solution of being inactive to it “We can't do anything about it”, or similar remarks (Informants 31,40,42 2014 (2014) & Gol (2013), Hemsedal (2012), Hol (2014), Flå. (2011). The private sector as the expected leader in environmental change by most informants for generally not developing their business models to a developed or integrated model on the Geneva scale.
- The remaining 21 percent, ten challenge responses and several solutions represent higher levels on the Geneva Scale.
- Challenges in regards to lack of knowledge, organizational structures, and communication resources all represent infrastructure needed to climb the scale.
- Forestry as a traditional industry has come under global competitive pressures. The solution for Forestry in Hallingdal is to innovate by developing bio friendly products. On the other hand, the Forestry industry faces challenges from environmentalists to increase standards which the forestry industry feels will make them uncompetitive. What could be examined is the offset that Forestry in making via the relatively renewable and bio-friendlier products it is producing compared to traditional products, i.e., avgas from trees instead of fossil fuels and wood fiber replacing fossil fuels in materials such as asphalt or piping. The portion of the forestry business model that is driven by sustainable thinking in terms of reaching profitability and growth should be rated as a 6 on the scale. A rating of 6 combined with forestry being an export industry, and that the company interviewed is owned by mostly 10,000 forest owners in southern Norway, i.e., local ownership ranks the industry high on the scales of social, economic, and environmental sustainability (Full Spectrum Sustainability). Therefore, forestry should be thought of a key industry to apply sustainable innovation to.
- Other industry. There are few examples in Hallingdal of companies meeting the higher levels of sustainability in regards to the modified Geneva Association scale. However, of those that exist there are opportunities for synergy with one another and provide the opportunity for spin off companies in the areas of wood composite products as an example.

- A small, and increasing segment, of tourism in Hallingdal is a driver for answering difficult sustainability challenges such as biodiversity issues, environmental certification, increasing collective transport, etc.
- Local state owned enterprises, waste to heat and a wood pellet manufacturers, have built business models that are integrated (level 6) on the Geneva Scale. A combination of their inability to scale, develop complex high value add intellectual property, and their export potential limit their impact. Although, they could be utilized in a similar way that hydro-power can, i.e., a base of renewable energy to build sustainable industry from.

Construction is the second largest industry in Hallingdal in terms of total employees and gross revenue (Espelien p. 23 and 26). Environmental managers for most municipalities conceded in response to question 1.4 that construction is often a political decision and therefore their full advice is often overlooked by politicians, and the environment will lose a little to those politicians, tourism, and land owners (Informants 31, 33, 36, 40).

On the other hand, vendors wishing to serve large organizations and procurement networks in Norway will often need to go through a certification process. The certification process in the case of the construction industry is a broad certification aiming to impact the procurement process via reduction of procurement time, cost, CO2 emissions, and risk; while increasing oversight of the supply chain, value and access to new vendors via trusted systems. Under such certifications systems environmental certifications are also required. The primary reason for certification by the company interviewed was the ability to serve larger clients (Informant 37, 2014).

The municipalities in Hallingdal have not adopted green procurement in regards to construction (Informant 37, 2014) however, larger municipalities in Norway have implemented green procurement policies, e.g., Bergen Municipality and explained the implementation process as relatively simple, i.e., validating the vendor has some type of environmental certification. (Miljøledelse, 2014). Municipalities within Hallingdal do participate in larger procurement systems and do agree to a standard in their IT solutions (Informant 52, 2014). Hallingdal certainly has the resources to require environmental certification in their construction contracts and may have resources to incorporate a larger procurement system region wide. Construction companies that were viewed as being environmental leaders by informants held some sort of environmental certification. The response by one certificate holder was they were more aware of their environmental impact and how reducing their impact could help them to save economic costs in some cases (Informant 37, 2014).

Tourism. The next level may be the teaching the philosophies of Arne Næs and educating tourists, an important cleavage of which is conference tourists. Where retreats help business leaders think of a world where all life on earth is equal and that the goal for business is to develop business models that work towards such goals. The steps for tourists to reach Hallingdal in an environmentally friendly way as possible are being led by the Forestry industry in their attempt at developing bio av-gas¹². This type of tourism could help to bring back more business conferences that have migrated to the larger cities due to airport access especially by marketing the idea that there are ways of learning sustainable transformation out in the nature that cannot be so easily taught in the city (Informants 45 & 50, 2014).

Hallingdal faces the challenge of an oversupply of renewable energy which can directly impact some of the municipalities budgets due to their ownership stake in some of the producers. Energy intensive industries that can produce high value added products and/or products that can be sold at a premium due to those products low environmental impact could benefit by either expanding in or re-locating to

¹² The industrial activities of avgas are taking place in Follum outside Hallingdal but within the same country (Buskerud). Some timber from Hallingdal may supply Follum's projects.

Hallingdal. Such a scenario may give industry and hydro-power a political wedge to drive in between politicians and consumers, the latter of which receive price subsidies for electricity. In turn, increased revenues by the municipalities could be redistributed to offer incentives for the insulation of existing homes, which per some of those interviewed is needed with the aging stock of homes found in Hallingdal (Informants 37, 43, and 48, 2014). In turn, the hydro power companies would have increased capacity from the energy savings due to insulation which could be used to power higher value added activities. There must be a balance between inviting heavy industry in diminishing the attractiveness of the region for and tourism however, several industrial parks already exist in the region and have capacity for growth.

The larger hydro-power company headquartered in Oslo offered a long list of universities it worked with on several issues. This was in marked contrast to all but a few of the organizations interviewed in Hallingdal regarding their collaborations with research institutions. Of those three organizations, the tendency was to work with only one or two research organizations at a time and generally only sporadically. A key challenge for the large hydro-power company was finding the resources for diffusion of practical knowledge to its stakeholders, many of whom are in Hallingdal.

An observation made during the interviews and background research regarding hydro-power and energy network companies is the largest seem to be a state or municipally owned enterprises, with a few cases of small privately owned hydro-power plants. A second observation is there are few Norwegian companies offering hydro-power equipment especially for export. To expound, Norwegian hydro-power has not seemed to be able to make the jump from serving the domestic market to competing in international markets with a wide range of offerings as has the Norwegian oil and gas industry. How the two observations are related is not fully understood and further research is needed to understand the relationship of those observations and how it could be possible restructure the Norwegian hydro power milieu for a more optimal export, spinoff, and innovation focused mission. One industry expert attributes Norway to not being a leading exporter of hydroelectric equipment is primarily due to the business culture not prioritizing it rather than a case of state run enterprises having an impact either way regarding hydroelectric equipment exports (Brekke, 2015).

Industry within Hallingdal

Locally owned, export oriented, value added via innovation and manufacturing, environmentally sustainable oriented companies within Hallingdal with sales over 100 million NOK is unique within Hallingdal. Removing the locally owned criterion increases the number of companies to three.

There is lack of infrastructure for these companies to support their innovation and development within Hallingdal, e.g., no innovation cluster and the local business network groups cater more so to the larger traditional sectors within Hallingdal (Informant 51 & 53, 2014).

The genesis of sustainable thinking in industry here in Hallingdal started with larger customer requirements for meeting certain standards such as ISO 14001. However, from the interviews with two of the companies sustainable thinking focused on a level of beyond compliance in so far as increasing the companies competitive advantage in incorporated into areas of efficiency, product development, marketing and CSR reporting (Informants 39 & 51, 2014). However, their core products were not designed from the ground up with sustainability being inherent to the product or business models competitive advantage.

3.4.1 Analysis Conclusion

The analysis is written within the boundaries of the regulatory, cognitive and normative norms expressed in the interviews, where the outliers often prove the rule rather than an exception to it, as evidenced by an overall lack of enterprises that were formed and driven by sustainable thinking from the start that also export complex goods.

The overarching challenge within Hallingdal is being locked into a compliance worldview in terms of sustainable thinking. At the government level this means meeting requirements set and administered by higher levels of government, often with few resources left over to dedicate efforts to finding the best practices worldwide and seeing if such ideas could fit into local government sustainability strategy. Within the industrial front the few export companies that exist have their sustainable thinking mostly driven by their customer's expectations.

The compliance worldview serves as a foundation to look at challenges as someone else's problem rather than an opportunity to be taken advantage, such as five out of seven of the regional or municipal governments manifesting environmental challenges as conflicting with their economic development strategies.

This compliance lock in is reinforced by several factors:

The expectation that private enterprise or state owned enterprise will lead the way in sustainable thinking however, their sustainability focus is largely decided by a market pull rather than a technology or business model push, the latter of which would be sales as a service rather than a product.

Lack of infrastructure for the diffusion of sustainable innovation subject matter and lack of knowledge workers with the resources to make use of such diffusion of innovation. Some examples are no mechanism to educate construction companies and politicians of advantages for moving beyond compliance. Nor institutional infrastructure for environmental managers within the municipality to use to be more influential with political decision makers. Or, frameworks for fact driven political policy rather than decisions being made by the influence of interest groups¹³.

The most telling sign of all the compliance lock in is going back and re-reading the quote by Brown, et., al. in the second paragraph of 3.2 and then applying that quote to question 1.6 "If budget was not an issue what are the three sustainability issues you would prioritize for your organization and how would you work to solve them?".

This task is therefore to draw on all our intellectual resources, valuing the contributions of all the academic disciplines as well as other ways in which we construct our knowledge. And that brings the challenge of developing open trans-disciplinary modes of inquiry capable of meeting the needs of the individual the community, the specialist traditions, and influential organizations, and allows for a holistic leap of the imagination. (Brown, Deane, Harris and Russel).

This question was designed to see if there existed visionaries who through their creativity and imagination saw a different future for Hallingdal via sustainable thinking. Ostensibly, based on the answers given for question 1.6 compliance lock-in and its enabling factors has suppressed that "holistic leap of the imagination" in every case but two in the interviews.

The proceeding two paragraphs are presented in efforts to portray those interviewed in Hallingdal as accurately as possible and to attempt to protect their confidence in the research. As it is common for outside experts to portray Hallingdal in ways which Hallingdal often construe as inaccurate, or experts

¹³ Informant 47, a venerable elder of the community, commented at length in regards to one of the more important political questions impacting Hallingdal, that of, municipal amalgamation (*kommunsammenslåing*). The politicians brought the questions directly to the public, which the informant was critical of and posed the question as to why experts from local regional studies universities, or other experts, could not have been brought in to conduct an analysis of the benefits and disadvantages of municipal aggregation to better inform the society before posing such a question. The dialogue ended with the informant this was all too typical of political behavior in Hallingdal.

bring general knowledge and apply in an out of context manner or inaccurately in regards to Hallingdal¹⁴ (Vanhull 2014 & 2015, Informants 41,52, & 55, Hallingdølen-3). A key reason misunderstanding between Hallingdal and the outside world likely exist is there are few institutions within Hallingdal capable of aggregating and diffusing knowledge of Hallingdal to those outside Hallingdal at an academic level¹⁵; with little academic voice, it is understandable Hallingdal is often misunderstood by the outside world.

Overall the following observations should be taken to foster questions for further dialogue not as accusations. The responses from all the interviews did not provide any inconsistencies that would indicate dishonest answers. Therefore, there is a confidence 1.6 was answered truthfully.

The observation may be reinforced that people in Hallingdal find it challenging to share their ideas or vision. Nascent attempts at converting the local business network into thinking about innovation heavily reinforced through several guest speakers that there is the need to share ideas and support one another is in the development phase. This sort of collaboration and sharing of potentially innovative ideas is new for the region as there has been a tendency to hold ideas close to the vest rather than work together (Vanhull, 2015).

3.5 Action Planning

The analysis provided feedback that explained some behaviors that were the cause of the findings in the preliminary diagnosis and opened potential pathways for actions that could help to solve the research questions.

The key solution aims at re-orienting the perception of challenges from being problems to being opportunities by enough leadership in Hallingdal to: unfreeze current perceptions and then refreeze the new opportunity focused perception as the new reality; to transform from research question one as a researcher, towards question two as a champion of the solutions.

The vehicle to do so was designed to support Hallingdal's strengths and take account of its weaknesses, in some cases where the strengths would help Hallingdal overcome its weaknesses. Table 9 shows the strengths and weaknesses that influenced vehicle design.

Table 9. Strengths and Weaknesses of Hallingdal Influencing Vehicle Design.

Strengths	Weaknesses
-A tradition of entrepreneurship, trade, and associated characteristics such as being strong negotiators, promoters, and good salespeople. (Informants 47, 44, 48 & 55).	-Strong tendency to be locked in to compliance thinking regarding sustainability. Challenges are mostly seen as costs or problems rather than opportunities. (From previous points made in Section 3). -Lack of knowledge workers to add value to the raw resources or processes in existence within Hallingdal seen as an opportunity to apply sustainable business models to.

14 The conflicting goals mentioned in strategic plans could be looked at as a breakdown in communication and cooperation between National policy makers, county level policy enforcers, and municipal implementers. As the conflicting goals statements are another way of the municipalities saying to higher levels of government, your worldview is contrary to our priorities as a society.

15 A desk search resulted in 14 peer reviewed articles in the last 15 years regarding Hallingdal. Half of these were closely associated to acute hospitalization, with most of the rest regarding various health topics. This early discovery proved challenging to the research overall as there existed no academic anchors with a regional focus to build upon.

<p>-Rich in renewable energy, timber, and waste heat.</p> <p>-Rugged and aesthetically pleasing terrain often characterized as mystical¹⁶.</p>	<p>-Lack of university in the area and limited connections to research institutions for the purposes of innovation. Challenging to establish a living lab or co-creative space without such infrastructure close at hand.</p> <p>-Lock in to tradition and culture that inhibits imagination (Informant 39).</p> <p>-Ostensibly, the regions political leaders want population growth as reflected in the strategic plan. However, if foreign population were removed from Hallingdal, then population levels would be pre-1980 levels (Espelien-2, 2015, Solhjell,2014). Often in the interviews informants commented on youth leaving due to lack of jobs but few commented further on why is there a lack of jobs and more importantly why hasn't something been done about it that has been effective at attracting knowledge workers within various industries.</p>
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The dynamics at play that make Hallingdal incapable of growth when only dependent upon the domestic Norwegian population are not well understood due to a lack of academic studies focused on the region exist. Rather, the statements should be thought of as a fog hanging over the research action.

The vehicle was contained within normative frames deemed acceptable to the society. That of a business start-up focused on launching other business start-ups known as:

A proactive business incubator focused on wrapping environmental, social, and economically viable business models around locally found sustainability challenges, with a focus on solutions for those challenges that could scale and be exported elsewhere.

The vehicle's overarching mission is to focus on launching business models at level 6 of the Geneva Associations Framework, modified for sustainability:

<p>6 - Integrated</p>	<p>-Core business strategies address sustainability issues.</p> <p>-Sustainability efforts drive risk management, profitability and growth.</p>
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The language used to convey the vehicle was set in the framework to include societal sustainability via local ownership and economic sustainability, aspects which also seemed valuable for Hallingdal.

Examples of projects to start with on a feasibility study level were proposed in the incubator's pitch deck based on observations during the research where at least partial capacities for such business models existed in Hallingdal.

1. Biofuels for logistic firms and fleets in Hallingdal in partnership with fuel warming system manufacturers.
2. Biologically degradable transformer isolation oil and / or redesign of existing transformers.

¹⁶ In Hardanger & Odda Norway, due to the challenging roads and harsh weather conditions, National Geographic based a series there called "Ice Road Rescue". <http://natgeotv.com/uk/ice-road-rescue/about> . Arguably, roads are similarly challenging in Hallingdal. Why a Tesla or Google does not have an automated test center here is one of those open ended questions I would frequently ask with little answer. It is likely if self-driving cars could do so here it could handle most any road.

3. Increased automation of alpine agriculture, food production, and tourism with several sub ideas.
4. 3d printing and fabrication lab activities for youth.
5. Hydrogen production combined with bioculture and aquaculture.
6. Null net energy / passive house refurbishment example.

Missing pieces of the business models would be fulfilled via business oriented innovation, e.g., partnership or licensing agreements with world class leaders in those missing pieces. The incubator would play the role of stitching all the pieces together and resourcing talent to execute a given business model effectively.

Key operational principals used as selling points of how the incubator would function were:

1. Fail quickly and cheaply. Innovation fails more than succeeds, solid cut off point management is vital.
2. Continual process improvement. If sustainable thinking from a business perspective is an ongoing part of the culture here it will catch on.
3. Innovation via partnerships. Bring the best of the world to the Hallingdal showcase.
4. Project management thinking.
5. Organizing, orienting, and pushing and pulling organizations in Hallingdal towards sustainable transformations by showing examples of what can be done by doing them.
6. Local ownership is a priority, acting as lead investors.
7. Startups to use English as the corporate language to make it easier to take advantage of international opportunities.
8. Refining regional sustainability strategy in practice by focusing on sustainability as a profit center not a cost.
9. How to make money? Each deal is the formation of separate parts. The revenue is realized from putting the parts together. We bring in outside grants and other support from day 1 of a business idea.

These ideas were incorporated into a pitch deck that started by explaining global challenges as wicked problems and that leaders can solve those wicked problems via a living lab process or methodology, whether called that or something else. The downside of not having a university explained that a living lab would be difficult to establish within Hallingdal and that perhaps a better critical path for Hallingdal to make a sustainable transformation would be through business as the driver, albeit a new way of thinking about business for Hallingdal (Appendix D. Pitch Deck Contains a more an overview of the presentation used in promoting the incubator.).

Research regarding proactive sustainable incubators was limited however, literature exists on proactive business incubators and sustainable incubators, separately. Proactive incubators were focused on people, relationships and processes rather than technology, structure and systems, specifically defined the focus as “incubation as co-creation”. Key findings were, the development and ongoing nurturing of all actors involved in each incubation project was crucial for value co-creation only achievable via an incubation manager able to play a strong role as a catalyst (Eriksson, Vilhunen, Voutilainen, 2014).

Strategic sustainable development when integrated into a business incubator was shown to increase awareness among incubator staff and entrepreneurs of sustainability and its relation to opportunities and threats. The incubator studied was able to incorporate sustainable thinking as part of their vision where “Businesses exist to meet the needs of human society, without undermining the natural regeneration of life sustaining natural systems. (Blankenship, Kulhavý, Lagneryd, 2007).

Based on the desk review there seemed to be commonalities between co-creative spaces coming from university spaces and co-creative spaces with an entrepreneurial focus, i.e., strong leadership as a catalyst between actors. The role as a catalyst was conceived as a challenge due to the innovation mode of companies in Hallingdal are primarily doing, using, interacting (DUI) with their customers rather than involved in the typically more complex arena of the Science, Technology, and Innovation (STI) mode of innovation; think of STI companies as larger ones often involved in a triple helix where, DUI companies are solving process challenges in the STI companies. On the other-hand, having recognized the challenges and having an open dialogue with actors involved would help to mitigate collaboration. Additionally, being able to downplay common political objections of “has this been done before” with concrete examples was hoped to quash potential laggard’s objections.

3.6 Action

Attempts were made to pitch to a local idea person in the region connected to a local industrial park. Meetings were arranged and canceled and re-arranged, it was obvious after a few interactions that there was no point in trying to meet with him. On the other hand, a local business incubator was initially supportive stating “no politician could say no to such an idea”. We both agreed the idea needed some actual traction, at least the beginning of a formation of a partnership or two aimed at tackling one of the business models in the pitch deck, and that we would see what I could accomplish in a month, and go from that point with the intent to be introduced to stakeholders in the incubator to pitch further.

Decided to consecutively push forth on three business models to see if any could generate interest. This gave me three separate groups of actors to try and bring together to at least discuss the plausibility of moving further. Overall, 15 separate actors were contacted via telephone, email, face to face, and after several attempts at arranging meetings only 4 organizations out of the 15 agreed to meet. Of the 11 that were unresponsive to meetings they ranged from local schools, to small business, and private run enterprise. Comparatively, wearing the hat of a researcher made it easier to book a meeting with organizations than a person with a business idea in Hallingdal.

Of the four meetings with four separate organizations only one gave a clear signal to move forward. During each meeting, it was made clear that the project would be a collaboration requiring a broad set of actors being brought to the table, that initially there was no cost risk to anyone other than their time, and it was my responsibility to bring all the actors together, and that how the actual shape of the business model being proposed could occur in several forms that would depend on what stakeholders agreed to during subsequent meetings. The commitment expected was to bring actors together to the table and see what would transpire.

The respondent giving a clear signal to move forward, as a several decades old mid-sized company came back with a long list of requirements they would need a just launched startup company to fulfill to work together. This was not unexpected, its generally normal in start-up culture for new and small companies to work with companies a few years old rather than several decades, as there are gaps in the boarding process in establishing a working relationship¹⁷. Therefore, as a driver of the incubator project I had to decline moving further due to it would be unrealistic for a start-up to be able to invest so much effort into meeting such requirements.

¹⁷ This was typical thinking I was exposed to during my time working around the incubators at MINC and Ideon in Skåne, Sweden.

The three respondents who decided not to move forward were asked after the fact as to why. 2 responded and their answers were surprisingly similar: There was no clear service or product that was being offered. The results were surprising regarding one response as it came from a talented thought leader in the region who seemed to have the capacity to see value in the collaborative processes. The results were the attempt to create a collaborative co-creative space for sustainability via innovation and business as an entrepreneurial activity were not successful. The largest attribution as to why being there was no conceptualization by actors of the value of a co-creative space as product or service, the second attribution being a bureaucratic boarding process to work together.

3.7 Learning Processes / Action Analysis

The actions were summarized and explained individually to 5 informants, over the period of a few months, these informants had ongoing contacts with the business community in Hallingdal. The informants were then asked for feedback in the form of an open-ended question “Why were the results so?”. Any result with only 1 response was discarded.

The responses that were then categorized by the number of times a response was made by several informants (39, 41, 53, 58, 67).

1. Came from the outside “a don't come here and tell us what to do mentality” or resistance to change in general. (4 responses).
2. The society requires long term establishment of an organization to trust it “is this just a bluff?”. Or a new idea needs to come from a respected institution (4 responses).
3. They did not know what to think, there is no conceptualization of how to interact with it. Or people are not educated on sustainability issues, particularly the opportunities that surround them, there is no basis for people to share the same vision. (3 responses).
4. Business ideas are too complex or too big for companies here to work with. (3 responses).
5. People are not motivated to become involved. (2 responses).

Source: (Informants 39, 41, 53, 58, 67).

The initial analysis from the learning process was, before a co-creative space can exist in this instance it needs to be able to educate the community on what it is and develop enough infrastructure to make the boarding process clear and simple. However, before that can occur what may be needed is explaining why such an institution needs to exist and it being accepted as an institution to make headway in leading change. However, such activities seemed challenging for an outsider, and there was no experience or educational base for insiders to move forward with such an initiative, the change action was stuck.

Reflecting on the preliminary diagnosis did not show any clear signs of outsiders running into issues of acceptance in general. Some examples:

- The strategies for development here showed growth as a desire.
- This growth in the region has been largely dependent on foreigners moving in.
- In Hallingdal there are more immigrants per capita than the national average.
- Most municipalities in Hallingdal have or do accept refugees either temporarily or as permanent residents.
- A new arrival to Hallingdal found the local schools their children attended to be diverse and there to be few problems with diversity related issues (Informant 53).

The action was wrapped up by attempting to find context to the first action via attending an entrepreneurs course hosted by a business incubator within Hallingdal. The start-ups at the course were a mix of actors ranging that fit a pattern of past local start-up successes, i.e., small businesses. None of which have taken sustainability, local resources, and sophisticated knowledge and applied it to create a scalable business model.

Within Hallingdal¹⁸ there exists a fund with over 1 billion kroner earmarked for investing in start-ups. However, only a few percent of these funds are used. Purposely the author commented to a few leaders of the event “the inefficient utilization of investment fund money may mean there are not enough good ideas in Hallingdal and that the fund should search for outside ideas and people to invest in”. The response from leaders of the meeting was not open to entertaining the idea and rather a more defensive response that at least such a fund exists here, where in other places there is no such investment vehicle. This reaction also fits into other informants stating the importance of local ownership of new start-ups within Hallingdal (Informants 47,48).

During some of the courses breaks informal conversations with participants and an explanation of investment requirements from various funds summed up Norway as tending to, as explained to me by one of the participants, “give a person one shot, whereas in America failure is an accepted part of becoming a success”¹⁹.

The results of the action were enough to decide that the typically positive aspects associated with innovation and economic, societal, and environmental sustainability were not compelling enough to overcome resistance to change by an outsider from Hallingdal²⁰. However, the results were not enough to find solutions to overcome these issues layered beneath the original analysis conclusion.

In an epiphany, during a conversation with one of the informants there was reflection of their first association with Hallingdal in the late 1990's during a wedding. The wedding was between a Halling and a Bergenser. At the dinner an aunt of the Hallingar spoke for no less than 30 minutes, where much of the speech was regarding if it was possible for a Hallingar and a Bergenser, two people from such different cultures could ever find lasting love as how could there be common ground (Informant 53). The story seemed to sum up the challenges of locals and outsiders working together even if as an anecdote.

3.8 Planning

The second action was designed to understand the challenges faced by a different cohort in Hallingdal. This cohort was the potential outsider in Hallingdal with three sub-cohorts, the immigrant, the refugee, and the non-ethnic Norwegian. Some of these sub-cohorts are interchangeable with one another. For example, a refugee may later be accepted as a permanent resident and then become an immigrant. Or,

18 The fund is also used for start-ups in the neighboring valley.

19 Attribution to unknown participant in the course, which was perhaps the 3rd of 4th time I had heard such comments during my 18th month stay in Hallingdal.

20 The author's experience regarding innovation did not prepare him for the results, that is: being exposed to incubators in Sweden, launching successful entrepreneurial ideas in Florida, and sitting on the board of Expat in Denmark - an association geared towards making foreign knowledge workers being welcomed in their new home. In such situations, there was typically always a warm welcome to outsiders who brought ideas that could make a positive impact. There was often attempts at poaching of such talent by other countries or cities occurring at events such as video game developer conferences associated with the incubators thereby, showing many societies competing over people with good ideas, ideas which were still often in the early stage of development (e.g., a poacher from the Netherlands at a game developer conference in Malmoe, Sweden).

a refugee moving here at a very young age can adopt the primary identify of being Norwegian (Informant 59).

The researcher formed an organization and registered it with the Norwegian organization registry and named Hallingdal International Club (organization number 916 101 821). The first step was locating other leaders in the region who may be interested in the subject matter. Within a few weeks several members of the cohort were identified who stated there were various challenges faced by outsiders within Hallingdal (Informants 53,59,71,72,73). A diverse and strong set of leaders would be needed to cause change as the previous iteration alone did not have any impact. Therefore, the initial board was comprised of professionals including a medical doctor, dentist, teacher, industrial manager, entrepreneur and the author as the chair of the board.

The mission and vision of the organization were designed to give complimentary results to developing club members' full potential and in turn those members contributing more to society by being able to self-actualize. The self-actualization need was expressed via Maslow's Hierarchy of Needs and the ability to reach self-actualization was explained under the framework of inclusiveness literature developed by the University of Kansas, Work Group for Community Health and Development (2015). The methodology was chosen as Maslow's Hierarchy is a well diffused social construct and the work at the University of Kansas is publicly available.

Hallingdal International Club's Mission and Vision:

Mission Statement

Hallingdal International Club's (HIC) mission is to help immigrants, asylum seekers and Norwegians with non-ethnic Norwegian backgrounds to reach their full potential. HIC achieves its mission by working closely with the greater society. HIC should help to promote Hallingdal as an attractive place for foreign knowledge workers to live by demonstrating there is the infrastructure available for them to quickly develop a network and become part of the society.

Vision

Hallingdal shall be a leading example of successful inclusiveness results. Where success is defined as many as possible of our members reaching their full potential and in turn adding additional value to society due to becoming the best version of themselves.

With the diverse board, there was a clear vehicle to build rapport with the cohorts served by the mission statement and vision. (See Appendix G²¹ for the approval of the vision and mission for the club)

3.9 Second Action

The second action consisted of a series of board meetings, events such as group dinners, transport of refugees, and marketing and promotion of the organizations with the primary goal of generating exposure within the community to see if there was some sort of unfreezing of the society which could occur. The second goal was to use the club as a vehicle to better understand the cohort.

The first sub-cohort interviewed were refugees who were waiting for their case to be decided by the Norwegian Directorate of Immigration. Of those informants, they had lived in Norway from six months to four years. None of the informants had contact with Norwegians outside of the institutions that served their needs (Informants 65,66,67,68). They live in a refugee center that is several kilometers from the nearest town and referred to their living conditions as meeting the basic needs however, they referred

²¹ The organization used Norwegian as its working language therefore, the document is only available in Norwegian.

to their residence as “the prison”, further questions as to why expressed feelings of living in limbo (Informants 65, 68, & 69), in lonely isolation (66), or something other than life (67). Continued interaction with one of the members of the cohorts, a software developer, served the organization as a translator in various roles, including the delivery of motivational speeches to newly arrived refugees provided feedback: “I am feeling hope again that there is something after tomorrow, the potential of a future”, when asked why, he responded with “I feel a part of something, a part of the society again” (Informant 69). The informants were all asked if they felt institutionalized or if they were being punished for something they did not do, all gave sentiments supporting one or both of those statements.

The second cohort are a group of former refugees who are now immigrants permanently living in Hallingdal. They experienced isolation by the society as did the refugees (Informants 61,62,63). One informant at a meeting with several others from the cohort group stated “In my culture if you live with us for 40 days you are a member of the tribe, it is not so here, I don't know how long I have to live here to be accepted but it is much longer”, he has lived in Norway for 4 years (Informant 63).

When the board members were presented this information 2 of the board members recognized how different it is for refugees in Norway now compared to their experiences 3 or 4 decades ago. In the past, each case there was a Norwegian family assigned to each of the refugee families and their childhood experiences were rooted within the Norwegian culture. There was agreement they were shown empathy and inclusion by the Norwegian society, something which the institutions today largely miss. In the board member's cases, when they were growing up in Norway there were one of a handful of refugee families in the society, where today there are often many hundreds, yet not enough infrastructure to still provide that empathy and inclusion (Informants 59 & 71). Further interaction with the society found active and retired Hallingdal leadership to recognize that immigrant and refugee isolation is common, that not enough resources are dedicated to the inclusion process but there needs to be, and that isolation of refugees and immigrants often turns into a health issue (Informants 60,64,70).

An example for contextualizing the challenges of outsiders acting as leaders and change makers in Hallingdal was the statements of a professional working in Hallingdal for over two decades challenged the possibility of change in Hallingdal, the following is paraphrased, “Hallingdal is the last remnants of a Viking clan culture, you cannot underestimate the importance of families here. I feel like an outsider in my own country, I have not made a difference what makes you think you will?” Further comments went on to state that immigrant should not expect to make a difference or change in society and accept their place (Informant 57).

During this action portion of the research, while driving activities for the international club, there was pressure and formal sanctions from one local government agency to not further develop the organization. Roughly 3 months later that government agency changed their opinion and offered a change in opinion, that of the realization that the efforts of immigrants and refugees here of using the normal methods of finding an income by going around and asking for one does not work, that often they are not offered work because of their skin color or last name. Adding, that alternative methods such as networking activities may be a good way of helping them find employment” (Informant 77).

The end of the second action was observing and participating in a public meeting regarding integration and inclusion within Gol. At the meeting, there were roughly 100 participants including most of the elected municipal council members. The meeting was divided into an information session where several support agencies, such as the red cross, government, and management from privately owned refugee centers gave an overview of their services and situation. The second part of the meeting was a workshop designed to bring small groups of 2 to 4 people together to discuss when they have met people from other cultures and what was the result of such meetings. The feedback was to be analyzed by the local government to determine what type of use can be made from it. The third part of the meeting was a wrap up and inspirational speech given by the mayor.

The format of the meeting had immigrants and refugees playing the role of audience members, entertainers, and providers of food. Within the meeting there were no immigrants or refugees that acted in a leadership or decision making role. Refugees and immigrants were spoken about, third party stories were told of them from the third parties point of view, but nowhere in the meeting did the refugees or immigrants have their own voice or offer their own perspective to the entire audience. One speech was given by the manager of a refugee center regarding how good the refugees have it there overall and telling the story of a refugee that was so glad to be in Norway. The challenge here is there is a contrast in what leadership is saying compared to what the refugees are saying in terms of the refugee's quality of life and ability to self-actualize.

The worldview of the meeting was held under the premise via being vocalized by leadership during a speech that it is the natural state of the human being to be with people who are like ourselves. It is unknown whether the leader giving the speech was framing the speech to identify with an audience who genuinely behave that way or if that was the leader's true belief. The next step in the speech was to give reasons to step outside of that worldview no matter how far from being normal it is, due to Hallingdal is changing. The audience attending the speech was divided into small groups of 3 to 6 people. The groups when forming tended to stay homogenous rather than integrated or inclusive.

3.10 Further Analysis

It was identified that outsiders being included within Hallingdal is a challenge by all members of the society interviewed. The definition of an outsider often applies to Norwegians from other parts of the country, immigrants, refugees, or non-ethnic Norwegians. In one case, over two decades of attempts at change by a professional in the society, whom is Norwegian, have met with little results (Informant 57).

Within the framework of Maslow's hierarchy of needs there seems to be a behavior pattern within Hallingdal society that by refugees having the basic levels of the hierarchy met, i.e., food, water, living space that the refugees' life is better than whatever war-zone or situation the refugee or immigrant left from, which could very well be accurate. However, the society has few mechanisms which reinforce the idea that if outsiders can self-actualize they may contribute more to the society; exemplified by the integration and inclusiveness meeting where no refugees or immigrants played a leadership role in the meeting.

How immigrants as an isolated cohort can reach their full potential was not examined in depth. Research associated with inclusiveness state the importance of giving the immigrant or refugee a voice in civil society (University of Kansas, 2015). However, within the society there is a telling lack of immigrants playing leadership roles, as mentioned in the limitations section, within the institutions of Hallingdal or positions where the immigrant or ethnic minority is offered a voice directly to such institutions for example, no office for diversity or inclusiveness exists with the minority playing the leadership role.

There exists no formal justifiable explanation why Hallingdal society functions as it does. There is only a small mark drawn on the start of a map that possibly could give some ideas of where to start research as to the why:

Professor Frank Aarebrot at the Department of Comparative Politics at the University of Bergen was lecturing 20 years ago, to a class I was a part of. He was commenting on the international communities' view on Norway's whaling: the international community seems to frown on Caucasians holding onto their indigenous values. Such may be the case of Hallingdal, a society holding on to the ownership of its indigenous values and that anything new to the society must fit into that worldview (Aarebrot, 1995).

Such an explanation may clarify change challenges in Hallingdal. Without any researchers to codify the local culture and reflect against other cultures the level of cultural awareness in terms of norms and expectations is somewhat of a mystery to outsiders and potentially Hallingar alike.

3.11 Final synthesis

The findings or analysis from the first set of informants found a compliance worldview to likely be the cause of a lack of proactive behavior regarding sustainable thinking regarding most of the leadership within Hallingdal. The results of the first action showed a lack of conceptualization of the value that a co-creative space could offer. The first action also discovered the emergence of resistance to outsiders being accepted, and requiring outsiders to have significant support from an institution or other power source to play a leadership role; which further heightened the barriers for an outsider bringing forth new ideas and attempting to operationalize those ideas. The second action pivoted towards further examining challenges experienced by outsiders that demonstrated barriers to inclusiveness and in turn hindering outsiders from reaching their full potential in Hallingdal.

Some of the barriers exist in regulatory norms via how the state sets the stage for municipal and refugee relations. For example, establishment of refugee centers takes place in discussions between property owners and The Norwegian Directorate of Immigration. Local municipalities in Hallingdal have been left out of those discussions including the direct neighbors to such intended refugee centers. The refugee center establishment process does not provide institutions needed to ensure a smooth boarding process and acceptance of the refugees; the state decides and the refugee and the municipalities are left with sorting the details out.

Another regulatory barrier is a lack of inclusiveness policies and infrastructure within the local government. As seen in each municipality having a person responsible for the environment does not mean the society will change rather, the society will tend to comply and when it cannot comply it may blame higher levels of government for conflicting with regional and municipal plans, as demonstrated in most of the climate plans in Hallingdal. Regulatory norms may need to change however; regulatory norm change alone is no guarantee normative and cognitive norms will change.

Due to the barriers that exist for outsiders to change the society, a method of changing the society from within was scanned for that could help local leadership raise their self-awareness regarding challenges for outsiders and perhaps decide to take imitative and begin a change process. The method selected contained motivation aspects that hooked into real world challenges Norway and Hallingdal are facing and played on values Norwegians typically hold important such as fairness, soft power, and democracy.

The motivation aspects are:

- Norway's desire to shift from an oil economy to some other type of economy yet is challenged to do so.
- Hallingdal's desire to increase tourism and further develop the culture.
- The inclusion process as a path to self-actualization which in turns benefits the whole society.
- Promotion of inclusiveness as protecting Norwegian society via creating more people who can add a Norwegian identity as opposed to integration which tends to further multiculturalism.

The motivational aspects were then loaded into the vehicle of worldview:

The most important factor driving many people's attitudes is not evidence or data but their worldviews'; that is their basic beliefs about how the world should be organized. If scientific facts challenge those worldviews, then this may set in motion an effort to deny those inconvenient facts. (Lewandowsky, 2015)

The above quote is further reinforced that there is a tendency to further resist changing their beliefs the more facts to the contrary are given to them as a defense mechanism to cognitive dissonance (Lewandowsky, Ecker, Siefert, Schwarz, and Cook. 2012).

Therefore, what was reinforced was not a clash of worldviews, rather complimenting each other's worldviews via mutually shared goals listed under the motivations above. Such a worldview of worldviews was something which some refugees from Syria, a relatively secularized society for the Middle East, was a common type of short hand that helped society to function smoothly (Informants 65 & 66). The concept of multiple world views co-existing was presented as the multiverse concept for social sciences to determine if it could be a catalyst for increasing inclusiveness (See Appendix D, for the presentation).

The multiverse presentation was presented to about 25 Rotarians in Hallingdal. After the presentation, there was interest from several participants at the meeting shown by the numerous questions and feedback. There was some discussion about the need for a refugee consultant within the municipality. However, such a position is contained within the regulatory and compliance mindset of the institutions that surround it. A mindset which does not change the normative or cognitive outlooks of the society. At the beginning and end of the presentation and throughout the following Q and A session there were offers made by the researcher to help facilitate inclusiveness in a role as founder of the second action vehicle (Hallingdal International Club) or in any other capacity. There was no further pro-active contact from the audience besides follow-up questions as to try and ascertain the identified need and desire to change as demonstrated in the behavior of the questions and comments after the presentation and manifesting the desire into action.

4 Discussion

The discussion attempts to take the research overall and find opportunities to construct a new narrative as a possible starting point for potential future research and sustainable transformation activities. The challenges and opportunities in the discussion reflect a lack of previous research regarding Hallingdal to build on hence, being an exploratory paper, the results of the action research, and the multidisciplinary approach required to attempt to answer the research questions. The discussion was structured to give a broad overview with open ended possibilities as there is no clear impetus for a sustainable transformation to occur; a proverbial high scale map with a few blow ups of the more interesting terrain. Aimed at being a guide to future researchers as a starting point. As action based research the tone of the discussion is focused on barriers to change and opportunities to change.

4.1 Challenges and Obstacles

The following section discusses challenges followed by their summary. From there opportunities or solutions are looked at in terms of solving the challenges. There is a desire in Hallingdal by the initial set of informants to further integrate sustainability into their organizations. However, resting between a desire to improve sustainability there are key challenges and obstacles.

The impact of compliance mentality and its symptom of reinforcing current concessions policy worldviews, in turn, limiting the ability to imagine a vision for a full spectrum sustainable future are likely the key challenges and obstacles to answering the research questions. Associated with the key obstacles are norms of not accepting outsiders to play leadership roles in the society or placing self-actualization in second place to reinforcing the status quo. Possibly, the incentive systems to change society seems to be outweighed by the incentives which reinforce lock-in or keep the society frozen. This frozen state linked to compliance mentality is likely to be an influence on deferring responsibility for challenges to other hierarchical levels (i.e., through traffic as a national problem) rather than looking at a challenge as an opportunity.

4.1.1 Hallingdal as a slow thaw society to change.

There could there be a link made that tendencies for Norwegian businesses to collaborate less with foreign firms serve as a frame for debate on increasing inclusiveness and innovation in societal sustainability via helping refugees to self-actualize. The establishment of a vision for a framework and a path that leads to the outcomes of increasing the potential of a sustainable transformation; as it was noted in the research that in regards to environmentally sustainable transformation leadership had a difficult time imagining a vision of the future or how to reach the vision that did not exist.

For example, it may be useful to determine if there are relationships between innovation and inclusiveness for the purposes to help catalyze the ingredients for change. Norwegian firms tend be less inclined to work with companies outside of Norway, in comparison with other Scandinavian countries. Norway also produces significantly less triadic patents per million inhabitants than Denmark or Sweden, 24.06, 54.74, 94.07, respectively (OECD, 2015). Triadic patents were chosen due to their potential to better explain the quality of the patents per the OECD definition:

The concept of triadic patent families has been developed in order to improve the international comparability and quality of patent-based indicators. Indeed, only patents registered in the same set of countries are included in the family: home advantage and influence of geographical location are therefore eliminated. Furthermore, patents included in the triadic family are typically of higher economic value: patentees only take on the additional costs and delays of extending the protection of their invention to other countries if they deem it worthwhile. (OECD, 2011).

Such national level challenges are caused in part by the aggregate actions, or inaction, at lower levels of the society. The example of stating a potential connection between hard innovation outcomes of patents and refugee policy is difficult to make however, it should not be as if there were clear national goals for a sustainable transformation and policy were connected towards reaching those goals such relations would likely have been mapped out. Such a gap of association of knowledge represents the sort of systemic blockages that exist.

The combined action research demonstrates with a strong confidence that Hallingdal overall as a society is stuck in a compliance mindset regarding integrating sustainability into the society as a driver for competitive advantage. The caveat to this is attempts have been made in the past to develop environmental quality standards and environmental plans based primarily on energy efficiency (i.e., the “Green Region” plan in collaboration with the neighboring region Valdres). The plan has moved forward on several of the points however, success in consuming energy efficiency products and thinking is not a primary driver of economic growth compared to industries focused on integrating sustainability into the business model potentially could be.

The first action and following interviews demonstrate it does not appear that leadership in Hallingdal can thaw the society and Hallingdal in reluctant or incapable of allowing small actors, outsiders or the classic entrepreneur, to lead change that can scale and diversify industry in the society. The only likely options for Hallingdal were if a large institution came with the right combination of economic and political power needed to act as a change maker.

Due to Hallingdal likely being frozen or very slowly thawing within the progression of environmental and societal sustainability the region lends opportunities to further study the root causes for normative and cognitive blockages at an individual level. In turn those blockages seem to have either manifested themselves or spawned from the society that in turn lead to societal and institutional blockages regarding societal and environmental transformation. That is, examining Hallingdal society further may allow researchers to better explain behavior at lower, equal or higher organizational levels and the interplay between those hierarchies.

Within Hallingdal, there were a few cases of well-educated refugees who ostensibly had the potential to contribute to the society in the capacity as a startup driver or knowledge worker. These refugees, like others, are essentially warehoused for processing into cultural integration programs that take several years to complete and may do more to reinforce feelings of being institutionalized than feelings of being included or integrated per the interviews.

Norway is beginning to recognize challenges to integration or inclusion as an issue and some pilot programs are under development to fast track refugees with potential to becoming contributors to the society via assessing skills and desires of the immigrant and finding pathways to find win/win outcomes. One program under development grounds justification or validity to decision makers by being sold as lost annual labor to the society. Recognizing this pragmatic sales approach is important in a socialist democracy fueled by high taxes and requiring low unemployment to function efficiently. The approach to selling the project could have taken a primary thrust of equity or equality issues however, by being rooted in economic principles the architects have given what the audience may interpret as a concrete solution rather than being abstract or philosophically based. Noting the approach is doubly interesting as the pilot program itself does give self-actualization and empowerment opportunities to the refugee via considering their desires, see Appendix H: Draft of settlement project via refugee temporary housing centers for details²².

²² The document is only available in Norwegian.

Therefore, approaches of empowering refugees and immigrants is an important consideration. Perhaps, trying to move forward ideas based on equity and equality as was Hallingdal International Club are not appealing as it could invade the comfort zone of established power and institutions. Akin to how much of the Norwegian environmental movement may have a voice but it is not enabling of the change it seeks because the body politic is resistant to the frames the message is delivered within. Perhaps other ways of selling the empowerment of refugees may be more effective via linking them to innovation. For example, due to the unfortunate growing displaced purposes challenges new opportunities arise to serve those markets with new services and products (Robinson, 2016).

There do exist frameworks within the UNHCR to draw upon for the systemization of refugees to become a part of the innovation process. Thereby, allowing for co-creative design to serve broader principles of progressive change such as self-actualization. Figure 4, UNHCR and Innovation, shows an overview of programs offered by the UNHCR which pairs well with the democratizing and inclusive aspects of co-creative design vehicles to sustainable transformations. It is within such programs there may be the potential to build a foundation on the three pillars of full spectrum sustainability: economic, environmental and societal.



Figure 4. UNHCR and Innovation.

Source: <http://innovation.unhcr.org/>

Figure 4's aesthetic represents an ideal to possibly inspire. However, at present are no national goals or vision that reinforce Norway's desire to be a humanitarian superpower, nor mesh with other visions and goals, that percolate down to a balanced scorecard thinking of processes and outcomes for refugees and society. On the other hand, recent legislation calls for refugees to remain in the area they are placed for longer periods of time with little in the way of being offered incentives for seeing to it the refugee self-actualized in the community in which the refugee is placed. There is a lack of mechanisms that cause municipalities to promote to either the greater society or the refugee: these are the basket of goods and services we can offer you and we believe compared to other offerings this type of refugee has the highest chance to self-actualize. Rather, the refugee is treated more so as a revenue generator for service providers as opposed to being a resource.

The desire for Norway to continue to support rural districts may inhibit refugees and outsiders in those regions who are placed there from reaching their full potential. One intent of placing refugee throughout the country is explained as to prevent the formation of ghettos. However, considering the invisible wall that exists in Hallingdal it would seem in terms of inclusion and the inability of refugees to self-actualize there are ghettos occupying an intellectual space if not a physical one in Hallingdal. Without refugees having a voice or power to change their situation the question of exploitation of refugees for the purposes of maintaining the districts while suppressing the ability of the refugee to self-actualize should come under question on not only morale grounds but economic ones as well. The action research demonstrates its vital for outsiders without any conflict of interest (e.g., operating a refugee center) enable the refugees and immigrants to speak for themselves without fear of repercussion from the society. On the other hand, most immigrants who become acculturated to Hallingdal are likely to have to conform and will no longer be able to act as agents of change

4.1.2 The impact of being a colony for several hundred years

Historically it is a misnomer to designate Norway as a colony in political terms. However, if Norway is defined by what it exports historically, save a spike in industrial exports during part of the latter half of the last century, then it would not be incorrect to call Norway a colonial economy or developing economy by economic definitions. That is, an economy which primarily exports raw or minimally processed goods and imports finished goods.

What framework can be used to explain why Norway is so heavily reliant on exporting its natural resources rather than adding value to those resources? The scale of the paper does not allow the full breadth of this question to be properly addressed. For example, what impact do the great powers and Norway's trading partners have on Norway's industrial and energy policies remains an unknown.

On the other hand, utilizing intuitive observations to help foster strategic thinking, (i.e., "Intuition is useful in the sense that we speak in a strategy of a future which is not properly defined". Where the utility could be to develop foresight and new ideas that in turn may help to establish a new set of values (Henden, 2004). Those values could then be adopted within society to help to overcome the blockages, preventing a sustainable transformation. This intuition is expressed in the form of the following ideal outcome from a sustainable transformation and countered with concrete and highly embedded policy that has caused Norway to develop an entrenched resource exploitation world view which, today serves as a blockage towards full spectrum sustainable transformation.

The ideal is based in extrapolating The Brundtland report's definition of sustainability for the purposes of competitive advantage of a nation via innovation follows as a goal or reference to measure Norway or any other society against and will be referred to again at the end of the discussion. A theoretical definition of an advanced society that is post full spectrum sustainable transformation could be "a society in which other nations desire the intellectual output of that society in the form of ideas, products, services, solutions and worldviews at a rate which is higher than that society demands in kind from other such societies, where all the societies are able to produce those outputs under a full spectrum societal framework".

The concrete blockages may be rooted in The Concessions Acts of 1906 and 1917, which focused on Norway determining the future of its natural resources for the greater good of the new nation. The first act is sometimes referred to as the panic act due to Norway's independence in 1905 versus foreign investors desires to purchase waterfall rights where, reaction via the first acts submitted to parliament only took a matter of days. (Tønne, p. 725).

Arguably, the concessions acts have dominated Norwegian industrial and resource management policy for over 100 years. A policy that ensures Norway will control the natural resources for the greater good of the nation however, the policy does not address value being added to the natural resources. Rather,

Norway's more successful industries are related to increasing the capability and efficiency of resource extraction such as the sub-sea or maritime industries.

When combining the concession act with the Norwegian labor movement and nation building processes there is a continuity for Norway to surpass most other resource exporting nations in terms of placement on the GINI index or as having avoided the resource curse. Today, Norway is a wealthy, developed or advanced nation, often leading the charts, when measured by mainstream economic devices such as GDP per capita or the human development index.

4.1.3 The Norwegian economy

Three perspectives are given one of looking at a colonial economy and the other by looking at a countries ecological footprint and natural resource rate of spending.

If current production levels of 2 million barrels per day of oil, natural gas and condensate are maintained then Norwegian proven oil and natural gas reserves will be depleted in roughly 30 years. The 30-year window could stretch further by a few decades given new discoveries thereby, giving Norway perhaps a century long history of economically viable oil extraction. On the other-hand, most Norwegian reserves are extracted from the Neogene period or further back in time²³, or at least 2.5 million years ago, (most oil is likely much older). In perspective, Norway is spending a savings accumulated over 2.5 million years in 100 years. If it is assumed the average salary earner could save all their wages earned over a 40 career and that savings equaled Norway's oil savings rate, then a similar spend rate would have that savings depleted in less than 90 minutes.

The methodology used to measure an ecological footprint is complex and could be misleading without some clarification. For example, a country that increases highly mechanized crop production and decreases its forests may receive a better ecological footprint index then a society that protects the diverse ecological services provided by forests. (Loh, Green, Ricketts, Lamoreux, et al, 2005).

The presented numbers are used as a part of a narrative being painted in large strokes rather than an analysis of methodology. The ecological footprint methodology itself could be thought of as an emerging and transformative accounting system for the planet in reaction to several centuries of industrial and exploitative mankind. Keeping the weaknesses of ecological footprint in mind what can be said is the trend is for humanities ecological footprint to increase.

Norway's ecological footprint would require an additional 1.7 Earths if everyone on the planet consumed as Norwegians do. This consumption is slightly higher than Denmark and significantly lower than Sweden. where those countries would require an additional 1.4 and 2.6 Earth's respectively²⁴.

What is a colonial economy? The following characteristics of a colonial economy are presented.

-A colonial economy is defined by at least three characteristics:

1. Colonial economies export natural resources, and then import more expensive produced goods.

Norway's net exports are 80 percent raw or minimally processed goods and imports are 70 to 80 percent medium to highly complex goods (Organization of Economic Complexity, 2014).

²³ A rough estimation based off of Norwegian Petroleum Directorate Lithostratigraphic charts available at <http://www.npd.no/en/Topics/Geology/Lithostratigraphy/>

²⁴ Sources <http://www.globalis.no/>

2. What is produced and who benefits from the production?

The concessions policy intended for Norway to benefit from its natural resources. However, this policy was based on largely renewable resources such as timber and hydroelectric power. The concessions policy is an ill fit for ensuring the prosperity of future generations of Norwegians when its logic is applied to non-renewable resources.

3. What forces control or indirectly controls the Norwegian economy either via hard or soft power?

What current influence foreign powers have over Norwegian energy and industrial policy are out of the scope of this paper. However, going back to the genesis of the concessions policies, a period of Norway developing a national identity after several hundred years of unions, it may be useful to frame the concessions policy as a reflexive action to colonial rule rather than then as a response to the long-term needs of a new nation. Within reflex or reaction thinking there may be a tendency to embed the reaction into the emotional side of culture, into the fabric of the norms and values. Thereby, causing high levels of resistance to change because rational thought cannot easily remove the blockages the reaction has caused. In this case, the concessions policy arguably has created a resource exploitation mindset within the society where, the compliance thinking towards the environment within Hallingdal could be just an extension of said deeply embedded resource exploitation mindset.

Hallingdal may serve a valuable purpose of identifying antecedents that still influence behavior at a national level to varying degrees. This is due to within Hallingdal the antecedents are amplified and thereby, easier to observe. Such clarity may provide perspective and sourcing national behavior at the root and then rationally discussing if this behavior is useful or detrimental for the challenges ahead namely, sustainable transformations.

Framing the narrative that the Hallingdal identity formation is grounded in resource exploitation, including human resource exploitation, facilitates explaining why there is such strong resistance to outsiders playing the roles of change makers in Hallingdal society. To expound and review, interviews after the first action regarding the challenges faced by the first vehicle are from a small sample size however, the responses are cross checked with a separate cohort of refugees and immigrants and confirmed. For the purposes of triangulation, the initial informant's backgrounds support the responses from the informants after the first action, and the refugees/immigrant informants via demonstrating an underrepresentation of immigrants represented in those leadership roles compared to the percentage of the general population of immigrants within Hallingdal. That is, fifteen percent of the general population are immigrants from other countries (SSB-1) versus 23 of the 23 initial informants interviewed are ethnically Norwegian, keeping in mind that 18 of those interviews were suggested by the first 5 informants not the researcher. This data is further verified by an overview of elected politicians within the region and its respective municipalities, where it is estimated only two of the 108 elected municipal board member and mayors have a non-Norwegian immigrant background. The caveat being the elected official count could have a handful of errors due to Danes being elected or name changes (See Appendix F, Hallingdal Elected Officials for details). The limitation here is a time series that could analyze the matriculation rate of immigrants in leadership positions in lower levels of management and compare that to other areas of Norway and other nations and specific ethnographies that tell the stories of potential immigrant leaders regarding the challenges they face in being included commensurate with their ability. Having that top, side, and bottom overview may help to better understand the challenge with inclusivity in Hallingdal and beyond.

The concessions policy of the society can see the natural resources, yet it cannot see the climate or the environment because it was created at time when those epistemologies had yet to exist. Similarly, the outsider when seen as a resource to exploit is by default not given equitable treatment by the society, (e.g., the opportunity to self-actualize and be included in the society as institutionalized functions of the society). To expound, the outsider does not seem to be given the concession that they too have human agency yet, are often not afforded an opportunity to act on it, especially in the case of refugees.

1. Rooted tendencies in Hallingdal may be a source of linkages to several of the challenges presented within the thesis such as:
2. Norwegian companies are less likely to partner with foreign companies.
3. A compliance rather than opportunity mentality regarding climate, sustainability and the environment.
4. The business culture valuing, as shown via what it awards, measures that are rooted in the resource exploitation worldview rather than fostering competition within new industry capable of exporting high add value things produced under a sustainable framework.

Increased levels of inclusiveness thinking and behavior within Norwegian society and circles of power may help to being the process of solving the above changes by providing a space for dialogue that today does not appear to exist. Therefore, inclusiveness thinking could be a key lever to dislodge societal normative blockages, and in turn institutional blockages, via dialogue regarding offering new perspectives and new actors afforded opportunities to drive new (to Norway) and challenging perspectives.

To expound, the idea that Hallingdal provides a source of antecedents causing blockages to a sustainable transformation is a hypothesis. The hypothesis may be useful to be discussed within the Norwegian public conscience to stimulate new dialogues and offer new perspectives that could be helpful to unlock the blockages for sustainable societal transformation.

Particularly, if these dialogues could be conducted under a co-creative design methodology or process designed for sustainable transformation across the society. Ideally, such work would loosen the blockages and increase the rate of collaboration among the many constellations needed to work together. For example, hastening the rate of work between funding institutions such as Innovation Norway and the Norwegian Research Council and distribution to a center or space at the crossroads of full spectrum sustainability and innovation which has yet to exist. Such a center could help to solve the Norway after oil question and integrate other agendas such as Norway's desire to be a humanitarian superpower into an action vehicle for holistic policies.

4.1.4 Crowding out innovation

What may complement Fagerberg's and Castellacci's papers are framing the discussion within the dichotomy of two distinct innovation strategies, that of Science, Technology, and Innovation (STI – mode) and Doing, Using, and Interacting (DUI – mode) to assist in further research that seeks to better understand how to utilize the two modes in understanding their relationship in Norwegian innovation and how to transition towards sustainable innovation.

Research based in Spain suggests that a combination of STI-DUI research is likely to be the most effective approach when measuring innovation output in terms of economic performance however, more research is needed to fully explain the combination. (Gonzalen-Peria, Parrilli, Pena-Legazakue p. 489-491).

The small and medium sized companies in Hallingdal that export are primarily engaged in DUI mode research via serving the needs of their customers. Their customers are often large industrial or supply companies whose innovation models have greater access and focus on STI innovation funding. It's accurate to say that the small companies in Hallingdal are providing products that solve process innovation challenges in larger companies. These DUI companies are often better suited to solve the larger companies' problems which fall outside their core competencies and ability to rapidly solve such process challenges.

The relationship between large STI-mode industry and small DUI-mode innovators in Hallingdal could support the following: without large scale STI focused industry driving a sustainable transformation it's difficult to expect the smaller DUI focused firms whose innovation stems from their clients to drive innovation. Such an observation would only be based on anecdotal examples if it could not be compared with Norwegian net exports. As mentioned in the background section, over 87 percent of Norwegian net exports are raw or minimally processed goods. Sustainable transformation efforts within industry are further hampered due to industry being cut in half nation as a contributor to gross domestic product and increasingly what industry is left serves the oil industry.

4.1.5 The innovative and entrepreneurial state.

Historically, the Norwegian state has guided and supported certain industries. The post-World War II period saw Norway modeling its defense industry off the successes found in the UK and US defense industries. In turn, related spinoffs in areas such as ICT (Information, Communication, and Technology) provided numerous technological achievements for Norway through the 1980's. Due to deregulation efforts in Norway and increasing competition there are no longer any mass market ICT manufacturers in Norway today (Fagerberg-1, p.14). Today, which industries receive support via innovation funding is mostly divided among just three sectors. With maritime, oil/gas energy, and other natural resources receive 76 percent of funding, yet only provide 13 percent of the jobs in the country (Fagerberg – 2).

There are arguments to support the value of the innovative and entrepreneurial state playing a crucial role in creating markets due to taking risk where the private sector does not often dare. Where the public-sector activities can open the doors for entire new ecosystems and technologies to be launched. For example, government research of GPS, LCD screens, and internet technologies allowing for iPhone type ecosystems to be developed within the private sector (Mazzucatto, 2011, 2015).

There are several opportunities for Norway to apply this thinking to sustainable transformations by setting clear national goals and then supporting industry with the needs to achieve those goals in such areas as sustainable shipping, biodegradable transformer oil with cold weather tolerance, distributed additive manufacturing, and increases in automation for aquaculture, agriculture and logistics. The most disruptive innovation of all would be processing its oil for products that can be recycled. Additionally, nonproductive oil fields could be used to for carbon capture and storage or sequestration systems²⁵. However, most of these transformative actions are out of the scale of the small entrepreneurial activities Norway is fostering as seen by results so far.

4.2 Opportunities and Solutions

The discussion points to probable tendencies to exclude the outsider within leadership or change making roles within Hallingdal. Such tendencies probably should be portrayed as the primary blockages towards sustainable innovation thinking within Hallingdal. Tendencies in Hallingdal may be antecedents to cultural behaviors causing part of the blockages for Norway to unlock and drive new pathways leading

²⁵ The Errata contains an update. This footnote will be removed in the final version.

to sustainable innovation. In turn, Norwegian STI industries appear to be feeding back to DUI companies based in Hallingdal and by extension elsewhere and reinforcing current path dependencies.

Wrapping the preceding paragraph within an environmental compliance mentality framework where, at the frames foundation in concessions policy thinking may further entrench actors within long established path dependencies. These path dependencies are primarily adding knowledge value to industries who at their core are resource extraction based rather than adding value to the resources themselves in a sustainable manner.

Norway, still seems focused on a narrow band of industries within STI related thinking for innovation and therefore, it's questionable what results emerging work from cooperation between The Norwegian Research Council and Innovation Norway will produce. As what is lacking is the infrastructure in terms of both co-creative design for sustainable transformation and organizations such as incubators that focus on the crossroads of sustainability and innovation with the results being things Norway can export. That is, co-creation for sustainable transformations being embraced as the process or methodology of what it is and the recognition that to begin such transformations pathway blockages should be addressed and then actively work towards being removed.

4.2.1 Learning from Sweden.

Norway compared to Sweden as a nation has yet to begin a sustainable transformation as a policy that reflects the aspects of full spectrum sustainability. What Sweden did a few decades ago in planting the seeds in its youth to value the environment seems to have shifted the worldview of the country to value the environment in general. Examples such as the following give a general perspective of what Norway is lacking: 1) a people who do not advertise yet commonly place a sticker on their door of their pride in using a renewable energy provider. 2) In Sweden in a business culture stories regarding environmental performance are important to be accepted by the culture.

Sweden as one of the highest industrialized and finished goods exporting countries per capita has taken a global lead in many areas of progressive environmental industrial and societal policies. From a global point of view Sweden could be thought of as one of the leading research laboratories for transformations towards a sustainable society. Sweden has ranked at the top of the Responsible Competitiveness Index and Swedish publicly traded companies that focus on environmental and social performance often create more shareholder value than those that do not. Comparatively, US and UK studies were inconclusive regarding linkages between financial and social performance. (Semenova, Hassel, Nilsson. 2010).

The paradox though is with increased environmental performance, particularly energy efficiency, comes increased production due to the rebound effect, i.e., less gains than expected from increasingly effective resource utilization technology due to increased use of the resource either from an increased competitive advantage and/or decreased costs per unit. In Sweden, the rebound effect from a five per cent increase in energy efficiency ranges from 40 to 70 percent across the entire economy. There is significant policy debate on how to devise policy to minimize the rebound effect generally centered around whether to tax carbon emissions or not (Broberg, Berg, Samakovlis. 2015).

A third point about Sweden that is important to mention is the concept of extended producer responsibility (EPR) that Sweden pioneered. Where, industry and government work together to ideally find an equilibrium between environmental and economic performance. With EPR there is the potential for industry in a given country is able to realize the benefits of EPR due to reduced resource costs and more efficient product and packaging design. Such benefits may cause a competitive advantage for the industry and often industry seeks to protect its competitive advantages. In turn, industry further may align itself with government to lobby for legislation in other jurisdictions for higher environmental standards.

What may be more effective at aligning societal interests to solve the wicked problems is packaging the above points into the multi-generational societal transformation towards environmental sustainability process, and to portray Sweden at some stage in the transformation process further ahead than most other societies. Perhaps at an integrated or developed level as a nation in reference to Table 6.

Within such a context Sweden has managed to align at least environmental and economic interests in a way which is influencing change within long established and entrenched economic orders, via at least adding complimentary goals to the system and perhaps emerging to change the mindset out of which the system arises. Such interventions within the system represent second and third place, only outranked by the power to transcend paradigms, on the hierarchy of effectiveness in Table 10, Places to Intervene in a System.

Table 10. Places to Intervene in a System.

No.	Places to Intervene in a System
12	Constants, parameters, numbers (such as subsidies, taxes, standards).
11	The sizes of buffers and other stabilizing stocks, relative to their flows.
10	The structure of material stocks and flows (such as transport networks, population age structures).
9	The lengths of delays, relative to the rate of system change.
8	The strength of negative feedback loops, relative to the impacts they are trying to correct against.
7	The gain around driving positive feedback loops.
6	The structure of information flows (who does and does not have access to information).
5	The rules of the system (such as incentives, punishments, constraints).
4	The power to add, change, evolve, or self-organize system structure.
3	The goals of the system.
2	The mindset or paradigm out of which the system — its goals, structure, rules, delays parameters — arises.
1	The power to transcend paradigms.

Source: Meadows, Donella. *Leverage Points: Places to Intervene in a System.*

Norway and Hallingdal, could also learn from Sweden when examining Sweden's goals of waste management. Which from the outset did not seem to be based on being export focused based upon challenges faced by Swedish waste management experts in exporting their expertise. Rather, Sweden focused on being a world leader in waste management however, the process of getting there within the domestic marketplace was primarily consultative based. Whereas, potential foreign customers are primarily look for product centric solutions. Therefore, innovation and sustainability when adapted to developing new opportunities should incorporate export potential as a high priority especially due to the need to make up for oil export revenues over the coming decades.

What Norway could benefit from is thinking about sustainable transformation in the context of places to intervene in a system. Current projects to reduce or eliminate private automobile transport in Oslo or increased incentives for electric vehicle adoption do little to solve economic sustainability questions posed under the prime economic sustainability question for Norway, i.e., what do to after oil.

Therefore, Norway may benefit by looking at the interrelation of economic, societal, and environmental sustainability as a system within itself and design solutions which solve that and related wicked problems via cross disciplinary and systems wide thinking solutions. Norway can learn from Sweden in specific examples such as waste management, which is a paradox for Sweden. Sweden is a world leader in waste management (i.e., recycling) but has had challenges converting that leadership into tangible exports. Such a result is counter for a nation who is typically able to industrialize industries most other nations cannot (e.g., construction and then export that industry). It may have to do with the Swedish waste industry not being designed as a system to solve both domestic and export goals from the outset.

Sweden as an export focused nation of generally advanced industrial goods probably had a strong foundation to rest its foray into sustainable transformations on, as increases in efficiency quickly translate into gains in specific sectors and for various actors as mentioned previously. However, due to Norway's primary industries focused on non-renewable resource extraction or on industries that are resistant to implementing sustainable measures in, e.g., maritime there is no clear economic drivers historically. However, with downturns in the oil industry resulting in an increased number of technical competencies becoming available paired with renewable energy prices falling leaving hydroelectric in Norway caught short there are pains to be solved. An additional problem to solving those pains is not about adding new processes to existing systems but rather creating new organizational structures and associated processes. That is, going back and looking at the global challenges and finding a context to support integrated policy, sustainability, and business cases.

4.2.2 Learning from Nature.

Perhaps both external and internal perceptions of Norway would quickly associate the country with Nature. There is a special relationship in Norway between nature and its people where there is even a word for being out in the nature, “the free air life” or friluftsliv. The experience of being in the nature itself is often thought to have a positive impact on a person's health and wellbeing. Strong financial support for culture associated with nature in Norwegian society exists ranging from sport, to folk history, to simply finding a reason to get out in the nature. Cabin culture in Norway is perhaps the predominant form of leisure time spent away from home with, some reports claiming half of the Norwegian population owns a cabin ²⁶.

However, due to worldviews being perhaps centered within a compliance mentality there could be some truth to a cartoon published a few years ago, stating in Norwegian, and this is paraphrased, “from the views of our cabins we can see the nature but not the climate or the environment” (Source unknown). The challenge is being able to align climate, the environment, and solutions for Norway after oil with the deeply embedded feelings Norwegians have with nature. Perhaps, nature could serve as a spark for Norway to start a sustainable transformation. The challenge is to get people to use the non-use value of nature via being inspired to innovate in new ways from it.

Within the context of sustainable transformations every nation or even region has their own style for example, South Korea and developed Asia in general are biased towards technological innovation rather than social innovation. However, such technical approached alone generally do not spark scalable social transformations. Rather a combination of social and technical innovation perhaps fostered by

26 <https://scandinavian.washington.edu/events/2014-05-27/excess-and-asceticism-norwegian-cabin-culture>

collaborative planning and governance may provide greater impact for sustainable transformations (Trencher, 2014).

Therefore, Nature as the style or flavor of sustainable transformation in Norway could serve as a catalyst to drive sustainable transformations. Specifically, an approach to nature where the nature is not only seen but it is valued especially in terms of the climate, the environment, and Norway after oil. Perhaps, that worldview transformation from seeing the nature to valuing the nature could be leveraged through the methodology known as biomimicry, with Velcro being the best known example of a product inspired from nature.

Biomimicry education within the context of sustainable transformations in Norway could be thought of as a process and way of looking at solving problems by being inspired by nature. Where, if it could gain popularity, it could be used as a shorthand used to facilitate proactive sustainable thinking in models, processes, products, solutions and services. Due to biomimicry's process or consultative orientation there may be opportunities to pair it with co-creative design for sustainable transformations. The debate could begin as to what level of education biomimicry is suited for. Taking cues from Sweden would place this education at early age groups as older students could find biomimicry concepts clashing with their worldviews.

Working with biomimicry as a business developer for a three-month period in the Oslo area allowed for some observations to be made regarding the perceived value of biomimicry in Norway in contrast to other areas of the world. Biomimicry has been used design products the world-over, reducing drag in water and air, and changing business models (e.g., Interface Carpets). The biomimicry movement has gained enough traction in countries such as The Netherlands, France, and The USA to succeed as a business model serving industry. On the other hand, the perceived value of biomimicry in Norway based on willingness to pay for services needed to be economically sustainable does not currently exist. On the other hand, the capabilities and potential of the organizations efforts in Norway was viewed as being disruptive innovation by a professor specializing in innovation working at a local university. In general, the most success the organization had was with academia either via designing exhibits for a museum or offering courses. Contextually some other countries could be said to be further along adopting biomimicry as innovation within the business community (i.e., confirmation) whereas, in Norway biomimicry would be in a less developed stage in the innovation process (i.e., knowledge). Norway still needs to be persuaded, decide, and implement biomimicry as an accepted business norm. Although anecdotal, this case presents that Norway is diffusing innovation at a slower rate than other countries regarding a type of innovation that ostensibly is well suited for Norway as demonstrated by Norway's relationship on one hand. However, perhaps the concessions policy and how it operationalizes Norwegian's relationship with nature functionally does not make it a good match, at least so far.

5 Conclusion

“If you want to build a flotilla of ships, you don’t sit around and talk about carpentry. No, you need to set people’s souls ablaze with visions, exploring, and distant shores.”

– Antoine de Saint-Exupery

A key series of questions to answer is where can action be taken in the society to align forces towards a sustainable transformation. How can a sustainable transformation be utilized to solve Norway’s primary unresolved question “What do we do after oil”? What is the most powerful and compelling force that can be harnessed and used to help facilitate the shifting of world views required to go through such a transformation? These questions need to be asked and addressed, dialogue started with new perspectives, agreement made, goals set and then all the forces needed to achieve those goals properly aligned to execute them. However, the key challenges to changing is the compliance mentality or worldview and how it limits seeing and making a new vision for a full spectrum sustainable future. There exists an inability within the district and perhaps the nation of being able to integrate outside thinking and leadership at a level high enough to cause a tipping point towards a sustainable transformation towards full spectrum sustainability.

We live in a time of great change, today Space X has set as a mission colonize Mars and has found a business model to finance the mission step by step. Two possible areas for Norway to examine are: how its resource extraction technologies for subsea could translate to being used in space resource extraction. Another related area is based on Norwegian and external perception of what Norwegian’s are: adventurers, explorers and captains of the sea. Those perceptions and competencies could be used as themes to help spark a sustainable transformation and aligned with other frames such as Norwegian desires to be a humanitarian superpower.

For example, if Norway started examining space as an opportunity then perhaps how the oil fund could be harnessed may help to align Norway’s other desires and a sustainable transformation. To expound, increasingly current economic regimes the planet functions under are being challenged on the basis they do no account for the externalities the systems cause. One wonder of space is its very large compared to The Earth, and within such a framework the dominant economic and ideological policies of the day can exist for quite some time before the externalities of those policies cause become a relevant issue (space debris aside). Norway could continue with its progressive policies by establishing a research institute or think tank focused on “off world economics” which could help to facilitate why “on world economics” and its associated ideology need to better match the environment and economic systems it operates within. Such an organization could be a policy arm for the industrial development of a Norwegian space industry focusing on resource extraction technologies as it is close to Norway’s current innovation competencies in subsea. This may be an untenable example however, Norway due to its professed desire for a post oil society should find such a challenge of relative scale. The oil adventure was framed in the thinking big mentality and was a great success. A key challenge is when oil was discovered the reward from extracting it was a known whereas, Norway’s future is likely based on taking more risk and venturing into lesser understood and cross cutting innovation drives (i.e., the low hanging fruit has been picked, oil). To replace the oil economy perhaps ideas larger and more compelling must be brought into play. To do so, will require more imagination and risk taking than the society is used to acting on, as the oil industry and the value of oil was better understood when Norway started building its oil industry, compared to sustainable transformations today.

5.1.1 Key Conclusions

Answering the research questions directly, there needs to be an effective process that allows for the adding of knowledge to the natural resources available in Hallingdal that in turn would produce things

that have export potential. However, the population of Hallingdal currently does not have a worldview or institutional capacity capable of answering the questions, both in terms of accepting outsiders with the knowledge needed or the social-technical capacity internally required to do so themselves. The informants noted that they look to state or privately run enterprise to demonstrate environmental leadership however, since most of the local DUI companies serve STI companies located outside of Hallingdal, the local companies would be dependent upon STI focused companies to be the driver of sustainable initiatives. Therefore, there is no clear mechanism for removing blockages on the pathway to sustainable transformation in Hallingdal. Within Hallingdal the norms lack incentives and politics often trumps professional opinion to offer compelling reasons to move past a compliance mentality.

Rather, what value Hallingdal provides is potentially a magnified and concentrated overview of possible antecedents that are hindering Norway overall from answering the research questions. Therefore, Hallingdal provides a valuable starting point for reflection and perspective, as at one end of the spectrum there is the radical and unique thinking of Arne Næs. His thinking is overshadowed by mostly compliance mentality thinking perhaps rooted in concessions policy legislation. The concessions policy itself may be rooted in a reactionary form of Nationalism and protectionism on one hand while limiting the potential for value added thinking to the natural resources themselves.

Hallingdal and its municipal governments could overcome the blockages by developing an integrated sustainability and development policy that is written on a timeline which allows Hallingdal to solve local full spectrum sustainability challenges. Government could help lead the way in procurement areas where local companies may have a competitive advantage or be more proactive in engaging research institutions to utilize Hallingdal as a living lab or co-creative space. However, the research notes that even environmental leaders in Hallingdal generally lack a combination of the vision, ambition, and imagination and drive to realize such a future on their own at present. The caveat being, sustainable tourism and some organic agriculture however, this does not serve to diversify the economy as Hallingdal leadership desires.

At the national level, there exists the emergence of creating budgets for the crossroads of innovation and sustainability but no organization that has a mandate to drive it fast and scalable as their primary mission. Mazzucato's "Entrepreneurial State" thinking could help to influence the shaping of policies tied to clear executables. At the same time, Norway is searching for how to replace oil as its main net export however, such solutions appear difficult due to the business culture, crowding out of other industries by oil, and perhaps some of the antecedents noted in Hallingdal such as, a lesser likelihood to work with foreign partners as compared to Sweden or Denmark. Therefore, Norway may share similar world views and institutional capacity that exist in Hallingdal.

What could be useful are new forms of organizations capable of solving Norwegian challenges and in turn eventually challenges in Hallingdal. The research notes that co-creative design for sustainable transformation does have the capability to produce socio-technical innovation outcomes however, when attempts at establishment of one in this district a university or college of some sort may be needed, as the infrastructure that exists currently does not provide the space for such efforts to blossom.

Operationalizing the conclusions into a further evolved action vehicle (i.e., the next iteration) aimed at answering the research questions on a broader scope (i.e., within Oslo innovation culture) is a cut off point for the research in terms of results. However, within the context of the conclusion serves as showing what was learned from the research for functional purposes. The vehicle could solve the challenges and taking advantage of the opportunities presented in the discussion. While there has been some success with the following conclusion it's important to emphasize the Norwegian private market is probably not well developed enough and instead the organization should exist within an earlier phase of diffusion such as knowledge and persuasion (i.e., as part of educational infrastructure).

A difficult challenge is packaging a model that is appealing enough to overcome the potential antecedents. An idea and structure beneath it would likely need to be institutionally strong enough to overcome deeply rooted normative and institutional blockages strongly interwoven with concepts of nationalism and the associated identity that may provide Norway's current association with nature. One potential idea that could be strong enough is the concept of biomimicry which could latch on to the key roots which embed themselves into Norwegian identity and perhaps cause those roots to blossom in terms of utilizing nature to hasten the travel along the path towards a Norway after oil and a sustainably transformed Norway. Other approaches that may show success are framing the changes proposed in accepted so called concrete norms of social-democracy such as belying full employment.

The vehicle aimed at doing so was in the concept stage and presented to constellations involved with innovation within the greater Oslo region for the purposes of potential collaboration. The vehicle was defined as an incubator that would be a leader at the crossroads of sustainability and innovation for the purposes of Norway's sustainable transformation and post oil future. Where the incubator overall is focused on co-creative design and biomimicry as primarily a process which requires people, government, academia, and private enterprise to work together on primarily social-technical innovation in close concert with policy makers. To move across and organize various constellations in Norway for to better solve cross cutting or wicked problems. When potential solutions would be found, they may require competencies out of the incubators capacity then those solutions can be distributed within the Norwegian innovation network, potentially providing for further scalable technology or social centric innovation. Features of the package would be utilizing more foreign talent and learning from the Germans, Japanese and other export focused countries that often to compete globally the corporate language needs to be English. Initial and inconclusive testing has shown the vehicle does have much traction within the Oslo innovation culture. Considering Norway lacks co-creative spaces for sustainable transformations within its academic community it is likely to be a leap to try to progress the society at a rate faster than it has the carrying capacity can adapt to. Further iterations could modify the package based on the operational opportunities that arise. Please refer to Appendix I, BiomimicryNorway's Vision, as a summary of the third vehicles intentions.

Building from previous work by one biomimicry focused organization in Norway, where they have connected several constellations in industry, academia, and various government organizations. As well as, starting the worldview shift process by bringing biomimicry exhibits in public spaces such as museums has provided some traction to exhibit interest from decision makers at other public spaces. Biomimicry could be a disruptive innovator for worldviews in Norway however, it is still in the early stages of diffusion (i.e., primarily as an academic idea).

The background used to build the incubator iteration, within the context of this research, provides the opportunity to inject new perspectives that bely new post-oil visions and explain to stakeholders why such transformations may be difficult within a Norwegian context. Therefore, the actual vehicle itself may not be realized rather, akin to the other vehicles it may prove useful for identifying additional blockages and opportunities. The incubator vehicle could also be modified to test the reception to refugees and immigrants being the drivers of such vehicles to better understand inclusiveness and equity issues.

In conclusion, the research went through several actions and subsequent iterations morphing to better solve the research questions with answers that at least could provide some useful answers in practice. Hallingdal served as a valuable narrative to show Norway's past and possibly current worldviews, the background gave an overview of the current situation in Norway and attempted to find associations between a relative past, present, and emerging plans. The addition of bringing in contemporary thinking from outside Norway and assembling that in a manner to solve Norway's future challenges proved to offer what could be practical solutions for a sustainable transformation and what Norway may do after oil.

5.2 Future Research

Observations that were made over the last 3 months within Oslo corporate, startup, and social entrepreneur culture were made in relation to the research, especially regarding compliance mentality and the associated inability to change (even though a desire too) including the lack of imagination to see and then carry out the desire. The future research is based on several months of observations and should be thought as researcher notes of possibilities or ideas to be reflected on and followed up, only then being scrutinized under the rigorous lens of academic standards.

There are a few recurring related themes that should be further investigated:

The first theme is a culture resistant to change, trying new things or being proactive.

During a presentation at the Norwegian Innovation Forum by a senior executive leading innovation at Telenor he stated “I wanted to try something new at Telenor. It met with a lot of resistance as we don’t do new, we just look at what our competition is doing, copy it and apply best practices” (paraphrase).

During a presentation at a social entrepreneurship incubator regarding social impact bonds many public-sector employees were highly critical of the concept. The criticism was over one goal of a social impact bond: to shift a societal issue from being an ongoing issue to being a resolved one. The criticisms centered around problems would always be ongoing and that business should not profit from other people’s misery. Overall an unwillingness to try to things and be resistant to change seemed to be the tone of the criticisms.

From acting as a business developer at Biomimicry Norway for three months an overall sense of malaise within key public sector institutions responsible for innovation reflected in a lack of the incentives to produce results however, a great deal of activity in the form of events and public relations was taking place. One professor knowledgeable of the Stanford startup innovation culture noted, a problem with Norway is its hard finding the people yet alone organizing them for results. At Stanford, there are offices you simply go to for everything that is needed to launch and the people and processes there are highly focused. One comparison was observed during Oslo Innovation Week from the country of Estonia, which has set itself as a country to be a driver of competitive advantage realizing they must be attractive as a nation to capture the best talent and companies in a world of options. Estonia has managed to turn government into a potential profit center for the country and measures results by using a balanced scorecard type system. On one hand, Norway seems at an earlier stage of innovation infrastructure and culture development then say a Stanford on the other hand, Norway is not taking the aggressive steps that some countries are to get ahead of the competitive advantage curve.

Research on how to be an effective change leader as an outsider (i.e., encouraging risk, accepting of new ideas, being empowered by offering incentives for others to act). The extension of this research should also find ways to translate equality (something Norwegians are good at) to equity and inclusiveness especially within leadership roles in society. There are organizations in Oslo such as Oslo International Hub that were started specifically due to challenges foreign knowledge workers face regarding finding a career in Norway and those challenges are recognized by at least the city of Oslo, as they are supporting a certain amount of the hubs budget. The hub could be a starting point for further research in leadership as it assembles not only expats but several consultants experienced with innovation, change and bridge building between outsiders and Norwegians. At the hub research by Dr. Robert Kegan²⁷ was presented regarding orders of the mind and the type of leadership needed to solve

²⁷ A brief introduction to Kegan’s thinking, noting the 4th and 5th order of the mind is probably the suitable level of development to solve wicked problems. Had this research been discovered earlier in the process it would have been incorporated into the initial round of interviews. http://www.shiftingthinking.org/?page_id=449

today's challenges. While not framed in the context of wicked problems the research could prove useful in developing and organizing teams to better solve such problems.

A discussion came up late in the research with a strategic consultancy based in Oslo²⁸, they were trying to answer the question as to why Norway has such high levels of sick leave. The strategist said that conservatives may say its due to the system is too lenient and allows abuse however, his observations were that too many people do not find meaning in the work they do in Norway. In the media, there are ongoing debates sometimes framed as “master’s sickness” where the story is framed there are too many highly-educated people in Norway for the work that needs to be done other times, the stories are framed the society is not advanced enough to take advantage of people’s full capacity, or that people have the wrong types of education. How this topic fits into sustainable transformation can be framed into the Solo Hypothesis, Solo being an orange flavored Norwegian carbonated beverage. The hypothesis is Norway is run and owned mostly by people in their 50’s and 60’s, that cleavage of people tends to be resistant to risk and change, and represents the top of the soda bottle. Most of the rest of the country is used to risk and change however, it is blocked by the soda top. Eventually, pressure will build up and the contents will be released. However, the main question is where will the momentum and the contents be directed if there is not a vision for Norway’s future, without any focus Norway will continue to be what the strategist and I summed up as a motor yacht going at full speed in circles. Research on how to give the next generation of leadership a space to efficiently use their momentum and capabilities to change Norway, to make it a post oil society could be important, as it’s could be too late for the current workforce in power to change. To expound, Sweden had to indoctrinate its youth on the value of nature decades ago before the society valued it in their decision-making processes within institutions or economically.

The second theme is defending the culture exemplified by one meeting:

Culture is the number one killer of strategy and we can’t do that much about it was a quote from a senior IT specialist working in the public sector. The culture seems to be the protector of worldviews that defend decisions and excuse them based on logical fallacies such as “Norway will have a secure future, because of...usually either a reference to the oil fund or because we did well with oil so we will do well with what is next”. How to cultivate ways to change worldviews for new visions to solve new challenges is a key area of research that may benefit from revisiting Arne Næs’ thinking on recommendations for debate²⁹ updated with Cook and Lewandowsky’s “The Debunking Handbook”³⁰. This vein of research could start by understanding where the public consciousness worldview equilibrium rests and then using the tools in the handbook to better understand how to skew the equilibrium towards a sustainable transformation.

The third theme is a lack of finding a replacement for oil by revisiting the research results, providing perspective, and thinking of research from a brainstorming point of view over a long timeline.

During a business summit one of the founder’s from Kolonial, a Norwegian online food delivery service, noted the reason why their business model was chosen was due to the size of the domestic food market as compared to other potential international markets. The founder, probably one of Norway’s more talented founders in recent memory, decided to stay within the domestic market rather than tackle a global problem. Overall, the startup culture is not fostering many export focused companies except in a few niches. It may help to have a better understanding of what challenges and opportunities for export there are in Norway and how to better take advantage of them.

²⁸ This is the point where the limitation discussion picks back up for the rest of the paragraph.

²⁹ Halfway down page “Recommendations for public debate”. https://en.wikipedia.org/wiki/Arne_N%C3%A6ss

³⁰ http://www.skepticalscience.com/docs/Debunking_Handbook.pdf

There is a satirist who presented Norway's cabin culture, a cherished and deeply rooted culture in many Norwegian's identity as, "from the cabin we can see the nature but not the environment or the climate". Similarly, much of the work done by Norway's leading environmental thinkers and organizations such as Arne Næs, the founding principles of Bellona³¹, Norway's Green Party (Miljøpartiet De Grønne) are in reaction to policies that were formulated long before climate change or resource scarcity were on the agenda, policies which neither can see the environment or climate either. Research into seeing the climate and environment has been mentioned but it's the context of how it is shown seems equally as important as for some time Norway, as reflected by its net exports, has been blind and deaf to its antagonists. Understanding where and how to target policy intervention needs to take place, as mentioned earlier perhaps only future generations who are educated to value the environment in ways which facilitate full spectrum sustainability thinking may be possible of sparking the transformation. That is, due to a lack of clear vision today regarding restructuring the behavior of the society for a full spectrum sustainable transformation perhaps the best today's society can do is to educate the future generations to adopt a new vision from a young age.

This research lacks a comparative study of other similar regions in terms of how they are answering the research questions however, a limited scan did not show any similar regions integrating development and sustainability policy into a comprehensive worldview and then working to reach said worldview via co-creative design methods.

One emerging discovered possible tendency is for outsiders to bring good ideas or competencies to the table and either share the ideas or begin to work with organizations on a temporary contract basis. Once Norwegians decide they have the competencies to move further with the idea on their own they may cut the outsider off or take the idea and try to run with it themselves. One way for outsiders to influence change would be for outside perspectives, new and novel ideas, be efficiently diffused in Norway except under more equitable and inclusive mechanisms than exist today perhaps, supported by programs who can promote the cost of isolation and lack of inclusiveness in decision making.

The following areas of potential research fall under a category of related, some distantly so, questions that came up during the research to try and better ground the work. If these areas could be better understood and then the right audiences informed it could help to unblock cultural pathways and increase the carrying capacity of Norwegian society to transform towards a sustainable future. The questions if answered may help Norwegians to be more self-reflective of who they are and how they came to be and what shaped their national identities and what relevance those national identities have in terms of the future. For a nation wishing to be a humanitarian superpower the society should strive to make the collective conscious self-aware and able to rapidly adjust to the new challenges the world presents.

Potential areas of the resource curse that could benefit from research is understanding where nationalism fits into the hierarchy of controlling a nation's destiny. The relationships between national identity formation, sustainable transformation, and foreign influence that shapes domestic policy. In regards to national identity and sustainable transformation, Sweden took measures decades ago to create a new form of national identity that put care of the environment at the center of the national consciousness.

Today, within many areas of Swedish society such as, business sustainability is often the agenda and rarely off the agenda entirely. Arguably, Norway could have benefited by taking a similar stance long ago and supported the now failed, Th!nk electric car, and tuned its oil industry to focus on making products which can be recycled rather than burnt. A better understanding of why such policies were not

31 Norwegian environmental NGO.

implemented and how to start implementing them now could prove valuable for sustainable transformation efforts in Norway.

Arguably, if Saudi Arabia has advanced in many ways since the advent of oil it could be said Saudi Arabia has frozen the development of its religion and is stuck in a kingdom mentality. Similarly, it could be said that Norway has frozen its culture. As an anecdote to perhaps build off in the future, Saudi Arabia realized it did not have the human capital to utilize its financial capital efficiently and therefore, has bought in top talent the global human resources market offer. As a contrast, Norway has generally favored hiring domestic talent and lost out on occasion for example, Norway buys a fair share of its plastics from Saudi owned or controlled firms, some of which used to be owned by Norwegian companies. Therefore, questions could be asked as to when does promoting national unity and domestic harmony get in the way of increasing a nation's competitive advantage and transformation to a sustainable society? Subsets of these questions are asking what type of labor pool does Norway have and how is it matched to challenges of diminished revenue from oil income? How does Norway compare in terms of efficient delivery of services by actors in the public sector? Starting to look deeper into these areas on how Norway can transform to behave like an Estonia before Norway faces the pressures Estonia did is the type of proactive research that could prove useful.

Larger question should be addressed as to what influence foreign powers have had over Norway's energy/industrial policy and formation of Norwegian identity. Arguably, what Naomi Klein speaks of in her book the shock doctrine, where countries not willing to go along with neoliberal thinking often have their governments overthrown and economic reforms implemented under dictatorships installed by proxy. Instead, Norway ostensibly and arguably went willingly along with such thinking and may have allowed its natural resources to be exploited and world views to be shaped by outside forces.

Norwegian domestic and foreign policy could be mixed up in terms of what benefits Norway in the long term. Arguably, Norwegian culture reinforces the exploitation of Norway by outside forces by not including effective means of resistance to those forces internally, e.g., welcoming and bringing in new ideas and outsiders to help shape Norway's future (e.g, the Silicon Valley mentality). Such thinking leads to other questions such as when and how is protecting one's own culture harmful to the future of a society? Has the noble lie for domestic harmony purposes been replaced with an ignoble lie serving outside interests? Do current definitions of the resource curse accurately define it considering challenges both Norway and the planet face?

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Appendix A. List of Informants by Organization.

Informant Number	Organization
31	Hol municipality
32	Hallingdal Renovasjon
33	Ål municipality
34	Halling Expo
35	Hallingdal Trepellet
36	Flå Municipality
37	Mestbygg
38	Hallingdølen
39	DEFA
40	Gol and Hemsedal municipality
41	Sparebank 1 Hallingdal Valdres
43	Ål kratverk
44	Kvalitet & Sikkerhet Rådgivning AS
45	Vikensskog
46	Regionrådet Hallingdal
47	Hallingdølen
48	Hallingdal Kraftnett
49	E-CO Energy
50	Visit Geilo
42	Nes Municipality
51	Hallingplast AS
52	Engineering Firm
53	Hallingplast AS
55	Hallingdal Etablering Senter
56	Halling Expo / Nice View Studios
57	Doctor in private practice.
58	Sparebank 1 Hallingdal Valdres
59	Board Member Hallingdal International Club
60	Culture and Leisure department for Gol Kommune
61	Former refugee now immigrant.
62	Former refugee now immigrant.
63	Former refugee now immigrant
64	Former mayor in Hallingdal.
65	Refugee
66	Refugee
67	Refugee
68	Refugee
69	Refugee / Project Manager / Software Developer
70	Operations Officer local volunteer center.
71	Non-ethnic Norwegian. Small business owner.
72	Board member Hallingdal International Club
73	Board member Hallingdal International Club
74	VGS Student
75	VGS Student
76	VGS Student
77	NAV

Appendix B. Structured Interview Questions

The Structured Interview is divided into 3 parts.

1. Part one of a draft narrative building section the purpose of which is to help portray Hallingdal accurately within the thesis and assess qualatative information.
2. A structured section which is desinged to measure on a scale where Hallingdal is now and the potential of where Hallingdal wants to be in terms of transforming to an environmentally sustainable society.
3. Part two of a narrative building section is scanning the environment for challenges that may slow down sustainable transformaiton for Hallingdal.

Narrative Focused Questions. Part 1.

- 1.1 How long have you been in your current role? What experience and education do you have with environmental sustainability issues?
- 1.2 Would you tell me about your organizations environmental sustainability or climate change challenges?
- 1.3 What would you prioritize as the 3 most important environmental sustainability challenges for your organization?
- 1.4 Can you tell me how your organization is meeting those 3 challenges?
- 1.5 Are you working with any third party actors such as industry or educational institutions to help solve your organizations sustainability challenges?

If so who?

And how?

What are the results so far?
- 1.6 If budget was not an issue what are the three sustainability issues you would prioritize for your organization and how would you work to solve them?
- 1.7 What are the strengths of your organization in regards to enviromental issues?

Part 2. Framework related questions.

The following interview questions are primarily based on the «Geneva Association’s framework for climate change actions of insurers-adjusted as a framework to measure CSR actions of organisations».

Here is a copy of the «Geneva Association’s framework». Please take a few minutes to familiarize yourself with it as the research questions will be based on the framework.

2.1 Could you please rate your organization on the frameworks scale and explain your answer?

2.2 Could you please rate hallingdal overall on the frameworks scale and explain your answer?

2.3 Could you name 3 organizations within Hallingdal that are at level 4, 5, or 6 on the scale. Which organizations are they and how would you rate each one of them and why?

2.4 Where would you like your organization to place on the scale and why?

2.5 What improvement on the scale do you think your organization is capable of achieving in the next 4 years?

How would you accomplish that improvement?

2.6 How could the level of improvement be increased for your organization in terms of resources required? In other words what are the key challenges your organization faces in terms of becoming a developed or integrated leader?

Narrative Focused Questions Part 2.

3.1 Once all the interviews are completed and analyzed an invitation will be sent to invite all those interviewed to participate in a 3 hour workshop...the workshop will have 2 goals:

1. Demonstrate the initial research results.
2. The participants will be asked to work together in a co-creative workshop in order to attempt to find common solutions. This process is also called the living lab process and has been effective in the past at solving challenging environmental sustainability solutions.

The workshop will be held in early December. Would you be willing to participate in it?

3.2 What support has your organization received from the international, national, country or regional level in improving environmental performance or reducing green house gas emissions?

3.2A (Alternative question to top down organizations...what support do you offer municipalities and regions to improve their environmental performance or reduce their green house gas emissions?)

3.3 Are you aware of any project in Hallingdal focused on sustainable agriculture or organic agriculture?

Why do you think no such programs exist?

Do you know anyone who is interested in starting such projects?

3.4 A few years ago Hallingdal and Valdres teamed up to become «The Green Region» Den grønne regionen. It seems the program is inactive, is that accurate?

3.5 Do you know why it is inactive?

3.6 In the strategic plan for Hallingdal 2013 to 2016 there is no mention of environmental sustainability as part of the overall strategy. Do you know why this is so?

3.7 It seems that municipalities within Hallingdal have focused on handling the environment and climate change themselves rather than working together through regional initiatives? Is this accurate and if so why?

3.8 What are the municipalities in Hallingdal best at working together at in general, and in terms of environmental sustainability initiatives in specific?

3.8 In your opinion who are the key actors that are driving environmental sustainability initiatives in Hallingdal?

3.9 How would you describe the interview overall?

3.10 Do you have any questions?

Appendix C. Worldview Presentaiton

The presentation was made in Norwegian (Bokmål) to the Nesbyen Rotary Club on

Slide 1.

Thank you Nesbyen Rotary for inviting me to speak tonight. Tonight's presentation is about how to look at the refugee challenge as an opportunity in general.

Introduksjon

Taler: Shane Murray,
Styreleder, Hallingdal International Club

Født, Seattle, USA.	1972
Bergen	1996-1999
Aurskog-Høland	1999-2001
Melbourne, Florida	2001-2007
Malmö/Lund	2007-2014
Gol	2014 -

Utdanning: Bachelor, Business Administration.
Fortsetter med, Master's Miljø politikk og ledelse (Lund Universitet)

Arbeidserfaring : IT løsning for forsikring, eiendom investering og eier et eiendomsmegler firma, IT sosial media løsning twitter/facebook, Saxo Bank (selger), styremedlem "Expat i Danmark".

Slide 2

Hallingdal International Club was started in September and we engage immigrants, refugees and Norwegians in activities together and try to function as a bridge building organization with a mission to help members to self actualize. If you have any questions about the club please call me.



Slide 3.

To fulfill the mission I asked what is Norway's greatest challenge. Well, roughly 80 some odd percent of Norway's net export are raw or minimally processed goods.

Norges største utfordring

88 prosent av Norge's netto eksport er råvarer.

Kilde: The Observatory of Economic Complexity.
<http://atlas.media.mit.edu/en/profile/country/nor/>

Slide 4.

Muligheter for Norge og flyktninger

Norge + flyktninger =

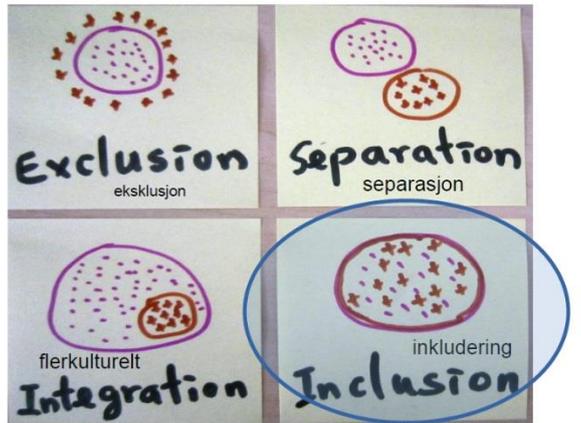
økt handels muligheter

Ikke minst!! Økt muligheter til fortelle verden hvor bra vi har det i Norge.

In solving such a challenge refugees could play a key role in developing trade networks to markets with half a billion potential customers. For example, I reflect on my days at Saxo Bank in Copenhagen, working with employees from over 20 countries, where the Israeli sales team sat right across from the Egyptian sales team...and think, why not companies serving the global marketplace from Hallingdal? Maybe not tomorrow, but in 5 years or so could it be possible? So, then I think, what are the steps to getting there, tonight is about the first steps, and those steps must be first taken by leadership in Hallingdal to light the path.

Slide 5.

Inkludering. "Alle skal være med".



The first steps are about inclusiveness methods, which is mainly about Norwegian civil society taking action by making refugees feel welcome to Norway, and by us being good hosts and teaching refugees how to become engaged with the society and also act independently within it.

What are effective strategies for leaders to adopt and teach to accomplish inclusiveness?

My answer revolves around "worldview" management and leadership and is based off of the work done by cognitive scientist Professor Stephan Lewandowsky combined with some thinking from Maslows, his behovspryamide.

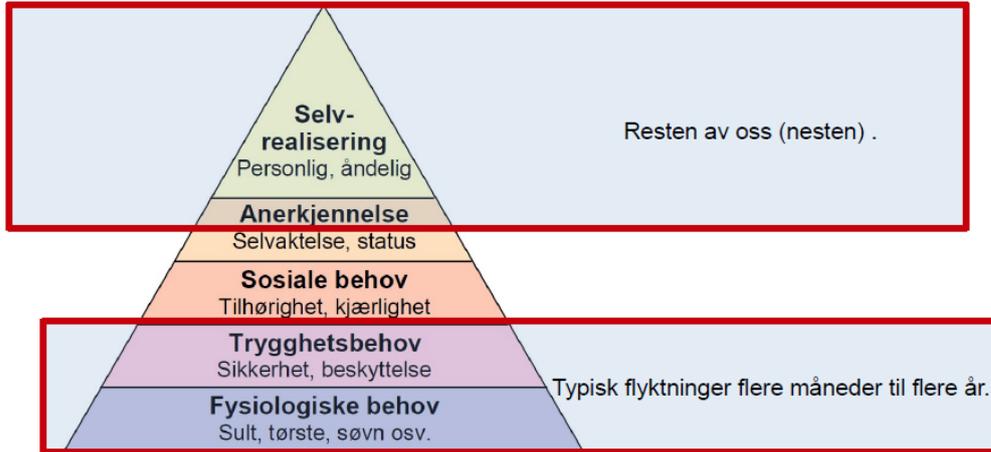
Slide 6 (Slide shows quote).

Here is the first concept.

"The most important factor driving many people's attitudes is not evidence or data but their 'worldviews'; that is their basic beliefs about how the world should be organized. If scientific facts challenge those worldviews, then this may set in motion an effort to deny those inconvenient facts. Professor Stephan Lewandowsky

Slide 7

Maslow's Behovspyramide



Here is the second concept.

We who are not refugees in Norway, a country full of opportunities, should place at or near the top of Maslows behovspyramide in terms of being able to be the best version of ourselves. On the other-hand, refugees start very low on the scale and the time it takes to rise on the scale are opportunities lost for both Norway and the refugee.

Slide 8

Verdenssyn + Maslow's Behovspyramide



Now, lets combine the two concepts of worldviews and relative levels of self actualization. If we, the non-refugee, who are in a superior position on Maslow's Hierarchy of Needs hold that our worldviews must be accepted by the refugee, then how do we expect refugees who have been institutionalized in Norway for many months to many years to be able to give up on their

worldview's, often the only part of their “selv realiserende selv” they have left? I think, to avoid conflict and facilitate the inclusiveness process a different strategy needs to be taken by leadership.

Slide 9

Parallele Universet

som en samfunnsvitenskapelig begrep



Verdenssyn MED verdenssyn MED verdenssyn, OSV., OSV.....

If we apply the parallel universe concept to worldviews its easier to think of these worldviews co-existing rather than conflicting. By adopting this parallel universe concept we who are in a superior position can quickly replace our tendency to judge from our own worldview with tolerance and acceptance.

Slide 10

Multivers Perspektiv



Mer:

Utfordringer
Løsninger
Muligheter
Mangfold
Inkludering

Resultat:

En bedre forståelse av globale utfordringer og hvordan du kan løse dem lokalt..

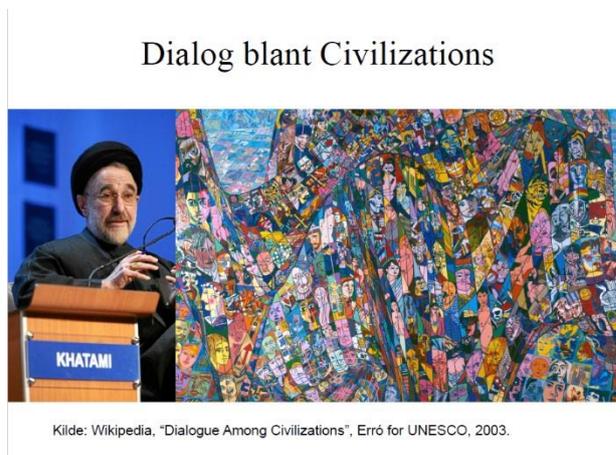
If we take the concept a step further and think, when we have people from many different cultures together here in Hallingdal, then what we have is a multiverse. And instead of conflict we can think of sharing ideas and finding new opportunities with one another.

Slide 11



From a global perspective, here is an example of worldviews as a conflict and worldviews as an opportunity. In 1996 Samuel Huntington published “The Clash of Civilizations?”. This work presented worldviews as grounds for conflict, and was used as an ideological support tool for my birth country and its allies to justify many wars.

Slide 12



On the other hand, Austrian philosopher Hans Köchler has adopted in a sense the multiverse point of view in his theory “Dialogue Among Civilizations”, his work was implemented by former Iranian president Mohammed Khatami and was the basis for the FN resolution to name 2001 as the “Year of Dialogue Among Civilizations”. Who would have thought, I as an American would be sharing with Norwegians great examples of leadership in Iran? Adopting the multiverse perspective has helped me to do such things, and also opens new windows of opportunity on an individual level.

Slide 13

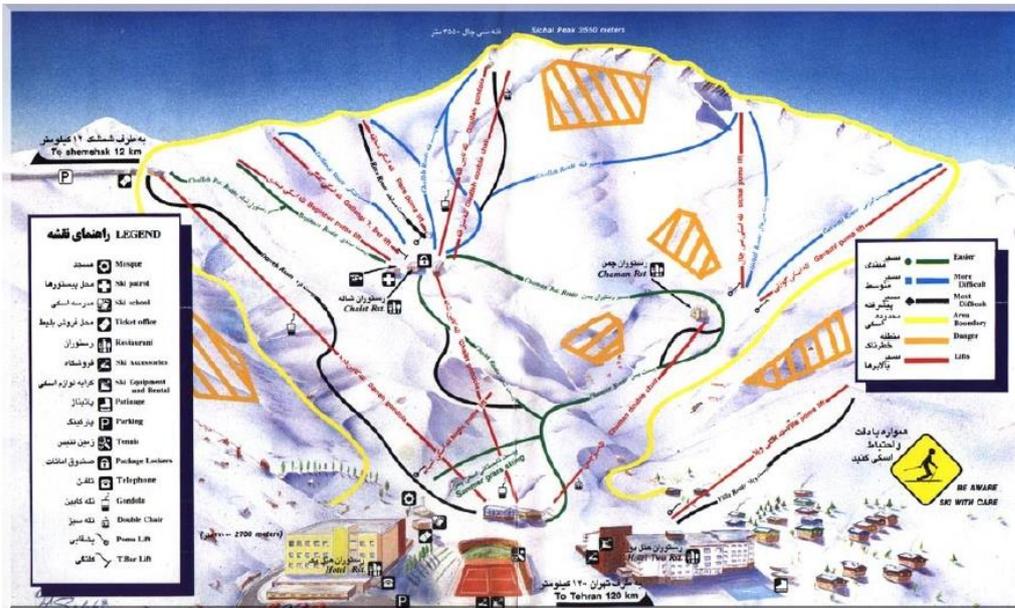
Mehdi Jamali,
Iranske, flyktning, vellykket



For example, a close friend of mine in Tehran tells me, Americans and Iranians are a lot alike, our governments tells us what we can't do and we do it anyway, and Iranians love motorcycles but the big ones are illegal in most cases, but even so a Harley Davidson dealership would do very well there.

Slide 14

Muligheter mellom Hallingdal og Iran? *Hva!?*



What about opportunities for Hallingdal? Iran has a rich skiing culture, there are opportunities for cross cultural sporting events and for Iranians to vacation here. Those possibilities exist because I befriended an Iranian refugee 15 years ago, Mehdi Jamali.

Slide 15 Global Challenges Image same as figure 2.

Today, I think its even more important for each one of us to develop an international network due to the challenges the planet is facing require global solutions, and such challenges will only increase.

So, what I am asking of you today is to consider adopting and teaching the multiverse strategy as a world view management tool for the early steps on the path towards inclusiveness. With the very first step recognizing that in our positions we have power over the refugees, and we must work to share that power to empower the refugees, and that by doing so such investments will pay off for everyone. Thank you for listening.

Slide 16 – Same as text below.

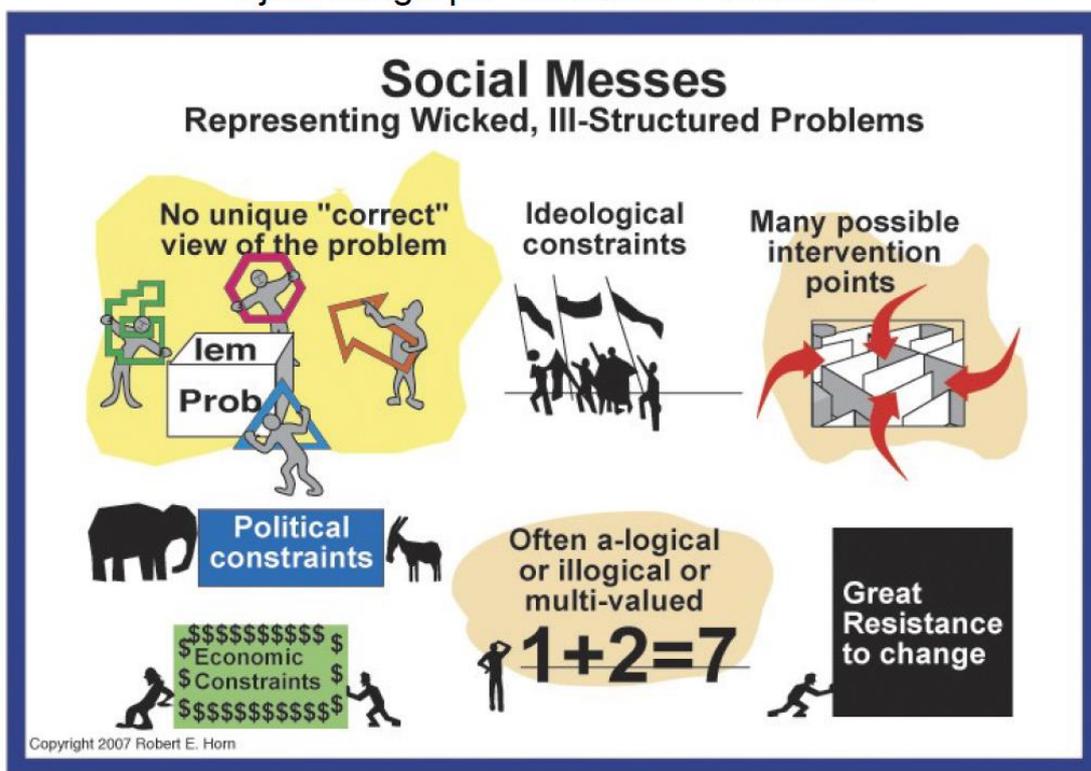
Any questions or comments?

Appendix D. Incubator Pitch Deck

Slide One Global Challenges. See Figure 2 for details.

Slide 2. Wicked Challenges Overview

Globale Utfordringer er ofte: «Wicked» eller onde Problemer
Kjennetegn på «Wicked» Problemer



Kilde: Horn og Weber. «New Tools for Resolving Wicked Problems»

Slide 3. World Bank.

Mor til alle onde problem for menneskeheten er klimaendringer og ressursknapphet.

Mennesker bruker jordens ressurser med en hastighet femti prosent mer enn jorden kan tåle.



We are bankrupting the «World Bank». Men,....

Slide 4. Solutions

Det finnes løsninger

En av de beste løsninger for bærekraftig transformasjon er den «levende lab» konsept. Det er over 400 «Living Lab» eksempler i verden.



«Living Labs» er partnerskap mellom universiteter, samfunnet, privat og offentlig sektor. Hvert trinn av forskningen er matet inn i neste utviklingstrinn. Forskningen utføres ved bruk av samfunnet som laboratoriet.

Bilde: Västra hamnen, Malmö. Første karbon netto null-området i Europa ble utviklet ved hjelp av den levende lab metoden. Men,

Slide 5. Challenges for Hallingdal.

....Hallingdal har ikke et forskningsuniversitet.

...Og jeg er en mann med begrensede ressurser, men...

Jeg har et sterkt ønske om å gjøre en positiv innvirkning.

Så, dette er hva jeg kom opp med. Hvis det gjøres riktig kan vi gjøre Hallingdal leder i bærekraftig tenkning i Norge og fortelle denne historien til verden.
«Hallingdal as a sustainable showcase to the world»



Jeg har en stor visjon for en bærekraftig fremtid i Hallingdal. Hvor folk fra hele verden reiser til Hallingdal på fly som bruker fornybare drivstoff laget i Norge. Der ledere og fremtidige ledere fra hele verden kommer for å lære om bærekraftig industri, reiseliv og samfunnet. Denne visjonen krever at vi tar små steg omgangen.

Slide 6. Elevator Pitch

Idé i heisen

- Proaktiv inkubator konseptuell «elevator pitch»:
 - Å integrere miljø, sosial og økonomisk tanker inn i forretningsmodeller kan bidrar til å løse «wicked» problemer. Løse globale utfordringer kan starte ved samtaler i det globale offentlige. F.Eks,
 - Vestas (Alternative energi)
 - Tesla (el biler)
 - Fair Phone (konfliktminerale)
 - Hallingplast, Protan. (produserer med istedenfor brenne fossilt brensel)
- Eksport Fokus.

Slide 7. Why Hallingdal?

Hvorfor Hallingdal?

Ved å tilby et fundament av bærekraftig energi, miljøvennlig turisme, natur og friluftsliv, og «hjemmet» til tankelederen som Arne Næs har et sterkt konkurranse fortrinn til å utviklet et suksess rikt utstillingsvindu til Norge og verden.

Det som trengs i Hallingdal er proaktiv næringsutvikling som ser på globale muligheter og trender og pakker løsninger sammen til nye startups. Det bør være fokus på inkubator.

Slide 8. Examples of potential development projects.

Eksempel innledende forretningsprosjekter.

- Biodrivstoff til logistikk firma i Hallingdal sammen med drivstoff oppvarmings utstyr.
- Biologisk nedbrytbart transformator isolasjon olje og / eller redesign av eksisterende transformatorer.
- Økende automatisering av alpin landbruk, matproduksjon, reiseliv.
- 3D skiving, fabrikasjon lab, programmerings aktiviteter for barn og ungdom.
- Hydrogen drivstoff produksjon, bioculture, akvakultur.
- Kompositt fiber industri.
- Null nett hus / passiv hus projekt.
- Og flere...

Slide 9. Key Points.

Nøkkelegenskaper

- Mislykk raskt og billig. This is innovation and innovation fails more than succeeds, so set forth several projects at a time and then focus on the projects that find traction.
- Kontinuerlig prosessforbedring. If sustainable thinking from a business perspective is an ongoing part of the culture here it will catch on.
- Innovasjon gjennom partnerskap. Bring the best of the world to the Hallingdal showcase.
- Prosjekt ledelse tenkning.
- Organizing, orienting, and pushing and pulling organizations in Hallingdal towards sustainable transformations by showing examples of what can be done by doing them.
- Lokalt eierskap er prioritet.
- Startups to use English as the corporate language to make it easier to take advantage of international opportunities.
- Omdefinerer «Den grønne regionen» i praksis...Den opprinnelige planen var et kostnadssted, må det neste plan å være et grunnlag for et profit center.
- How to make money? Each deal is the formation of separate parts. The revenue is realized from putting the parts together.
- Just taking this approach is innovative. Day 1, Hallingdal is already ahead of the rest of the districts in Norway.

Slide 10. Geneva Association's framework for climate change actions of insurers-adjusted as a framework to measure CSR actions of organizations.

Nivå	Kriterier
1. Ikke informert	Forståelsen av miljømessige eller sosiale innvirkninger på organisasjonen er begrenset.
2. Ikke aktiv	- Forståelsen av sosiale og miljømessige konsekvenser fra organisasjonen er begrenset. - Satsingen mot CSR* ikke eksisterende. *Corporate Social Responsibility (CSR) – på norsk «bedriftenes samfunnsansvar».
3. Reaktiv	- Bevissthet om problemene er drevet av utenforstående eller ukoordinerte interessegrupper. - Begrenset innsats er reaktive, PR-baserte og / eller inkonsistente med forretningsmessige mål.
4. Proaktiv	- Forstår virksomheten innflytelse og viktige saksområder som er relevante for organisasjonen. - Fremgang er rapportert i den første CSR rapporten/gjennomgangen.
5. Utviklet	-Mål og relevante programmer strukturerer innsatsen innen CSR. -Sporings og rapporterings evnen er på plass.
6. Integrert	-Kjerneforretningsstrategien tar tak i CSR problemer. -CSR drive risikostyring, lønnsomhet og vekst.

Geneva Association's framework for climate change actions of insurers-adjusted as a framework to measure CSR actions of organisations.

Slide 11. Linked competitive advantage, changes for disruptive innovation and CSR to sustainable business models.

Nivå	Konkurransetrinn (for miljø bevisst markeder)	Sjansen for «disruptive innovation» (for en miljømessig bærekraftig verden)	oppfattet som: Doing the right thing by stakeholders.
1. Ikke informert	ingen	Nesten ikke mulig	nei
2. Ikke aktiv	veldig lav	Nesten ikke mulig	nei
3. Reaktiv	lav	kanskje mulig (blind flaks)	kanskje
4. Proaktiv -	middels	mulig	ja
5. Utviklet	høy	Mulig eller veldig mulig dersom organisasjonen er utformet til å tenke som en «disruptive innovator».	-dyktige folk ønsker å jobbe for organisasjonen -høy CSR ROI
6. Integrert.	svært høy	Samme som over	-meget dyktige folk ønsker å jobbe for organisasjonen -svært høy CSR ROI

Slide 12. Plan

Plan.

- Ett års pilotprosjekt. Håper det går videre....
- Shane Murray er ansvarlig til å drive projekter. Operational responsibilities were briefly explained in the executive summary sent on Monday. The key is to be an entrepreneur for entrepreneurs and in some cases be the entrepreneur when there is a gap.
- Shane Murray's øvrige 50 prosent av arbeidet vil gå mot støtte Hallingdals langsiktige behov: Jobbe mot å utvikle bærekraftig kompetanse senter i Hallingdal.
- Finansiering:
 - Konsulent «selge og drive konsept» til noen offentlig / privat sektor i Hallingdal.
 - Innovasjon Norge.
 - Investorer.
 - ???

Appendix E. Selected Years of Norwegian Exports.

The following figures show overall exports from Norway except, figures 9 through 12 show net exports, overall the selected years demonstrate how the oil industry has increasingly crowded out the growth of exports from other industries. The source of images slides 1-8 are from The Observatory of Economic Complexity³², slides 9 to 12 the data is from the Atlas of Economic Complexity³³. The data shown is either classified under the Standard international trade classification revision (SITC) 4³⁴ or 2. Where for the appendix SITC 2 shows a less detailed data set then SITC 4.

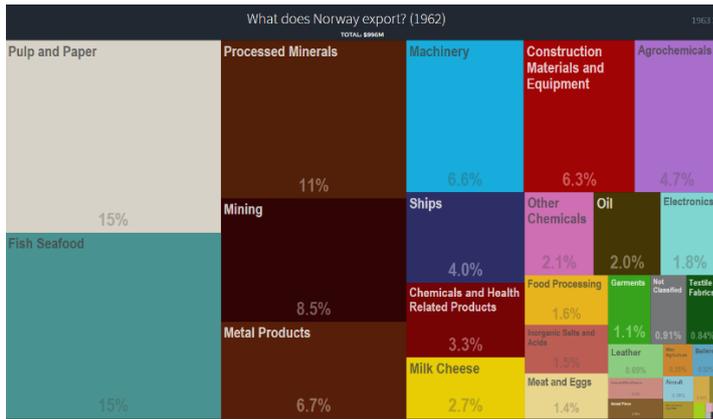


Figure 1. 1962 Norwegian Exports (SITC 2).

The beginning of the data shows Norway exporting almost 1 billion dollars in aggregate with pulp and paper as the leading export in 1962, see Figure 1 for details. Figure 2 shows fish taking the lead in exports and exports overall totaling slightly over 1.6 billion dollars.

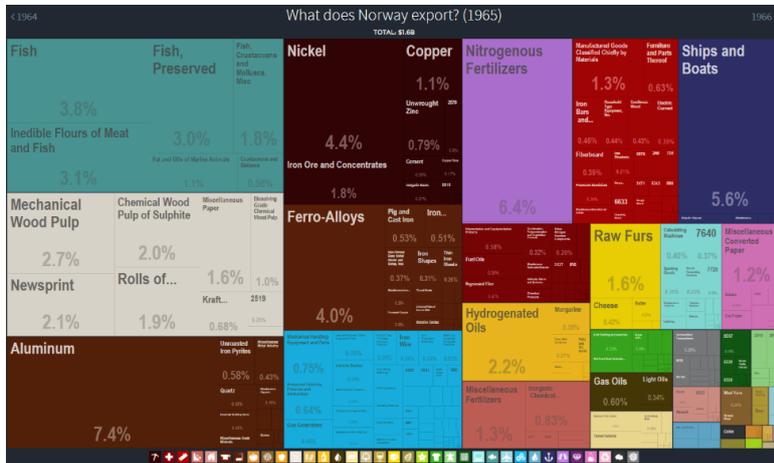


Figure 2. 1965 Norwegian Exports (SITC 4).

1968 shows aluminum dominating the 2-billion-dollar total export market, see Figure 3 for details. Between 1969 and 1974 there were several industries trading for the top of the export chart such as

³² http://atlas.media.mit.edu/en/visualize/tree_map/sitc/export/nor/all/show/1984/

³³ http://atlas.cid.harvard.edu/explore/tree_map/export/hnd/all/show/2014/

³⁴ <http://unstats.un.org/unsd/cr/registry/regcst.asp?Cl=28>

Nickel and Ships during certain years. While it had taken Norway 6 years to double its exports between 1962 and 1975, export growth was occurring more rapidly between 1968 and 1975, a 7-year period exports nearly quadrupled. 1975 marks the first year that Oil was the leading export as shown in figure 4.

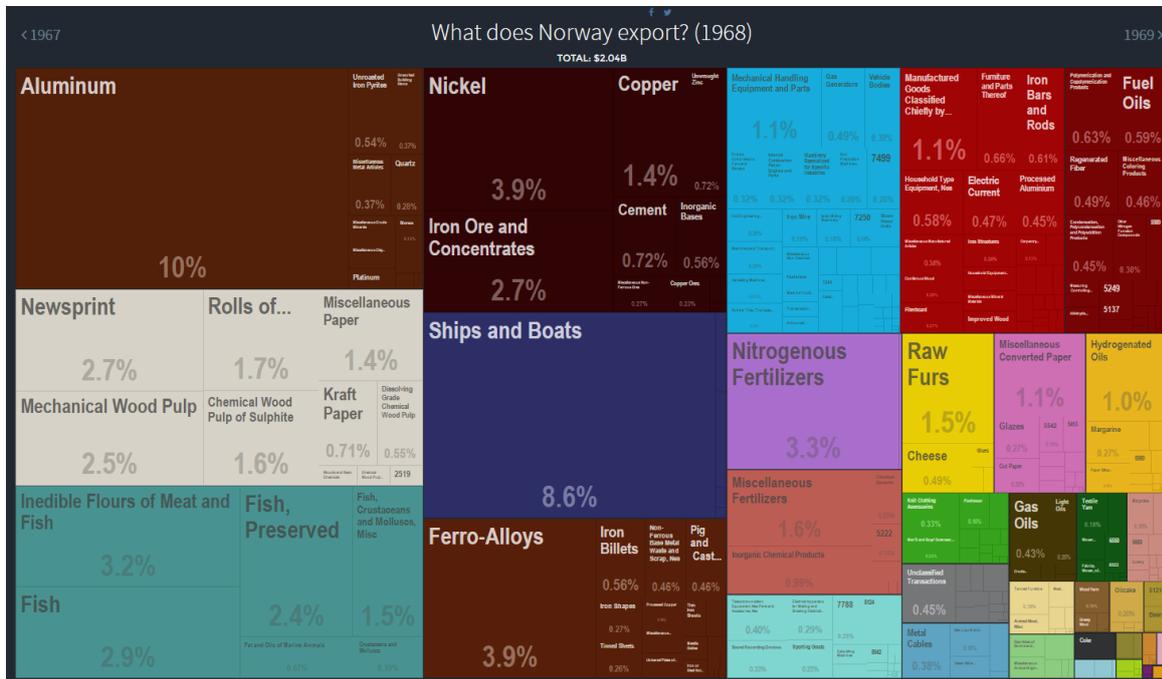


Figure 3. 1968 Norwegian Exports (SITC 4).

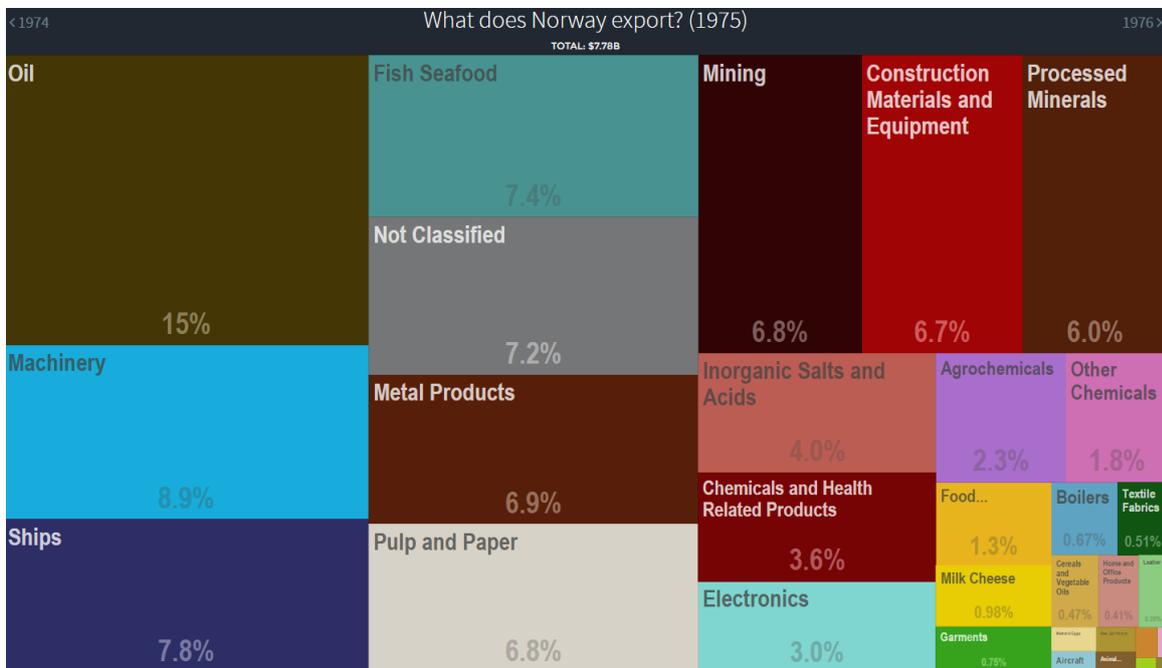


Figure 4. 1975 Norwegian Exports (SITC 2).

The 5-year period of 1976 to 1980 shows significant growth in exports, over doubling, with oil taking over as the primary export at a percentage level not shown by any other industry previously, see Figure 5. Figure 6 shows oil becoming the majority export for the first time. Exports in aggregate were relatively flat over the period from 1980 to 1984.

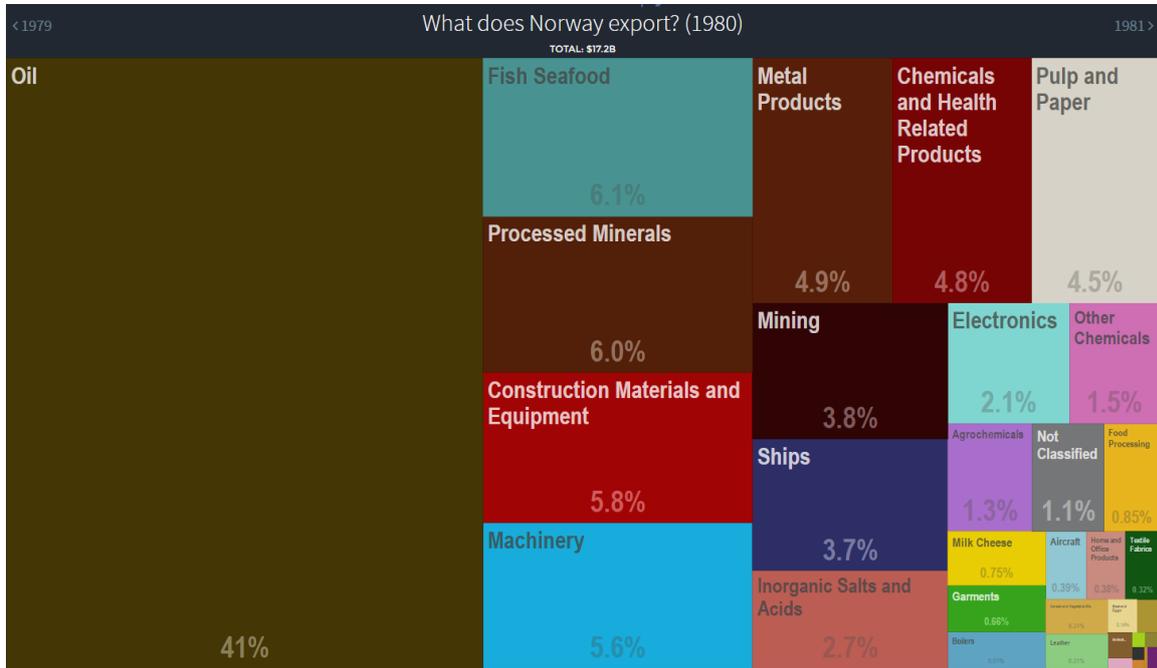


Figure 5. 1980 Norwegian Exports (SITC 2).

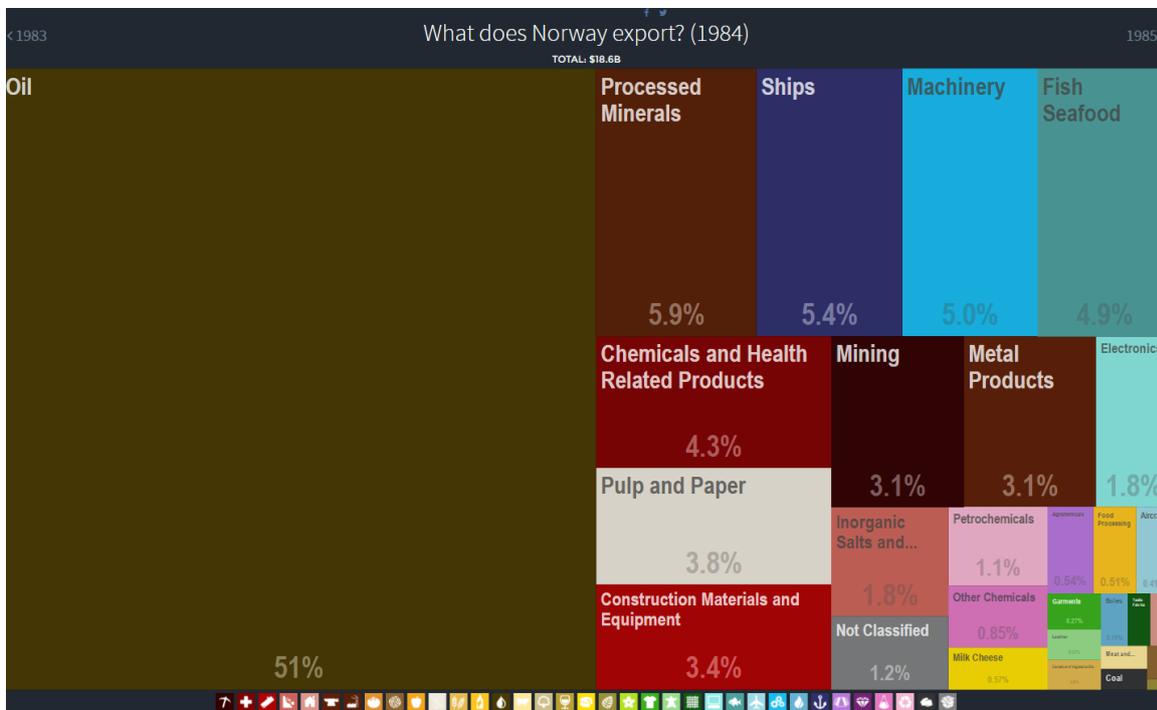


Figure 6. 1984 Norwegian Exports (SITC 2).

1988 represents a low mark for oil exports in the post oil growth period for Norway due to low oil prices³⁵, see Figure 7 for details. It would not be until the year 2000 when Oil when become the majority export for Norway again, see figure 8. Oil exports for Norway in the total amount exported would peak during roughly a decade period between the late 1990's and early 2000's³⁶.

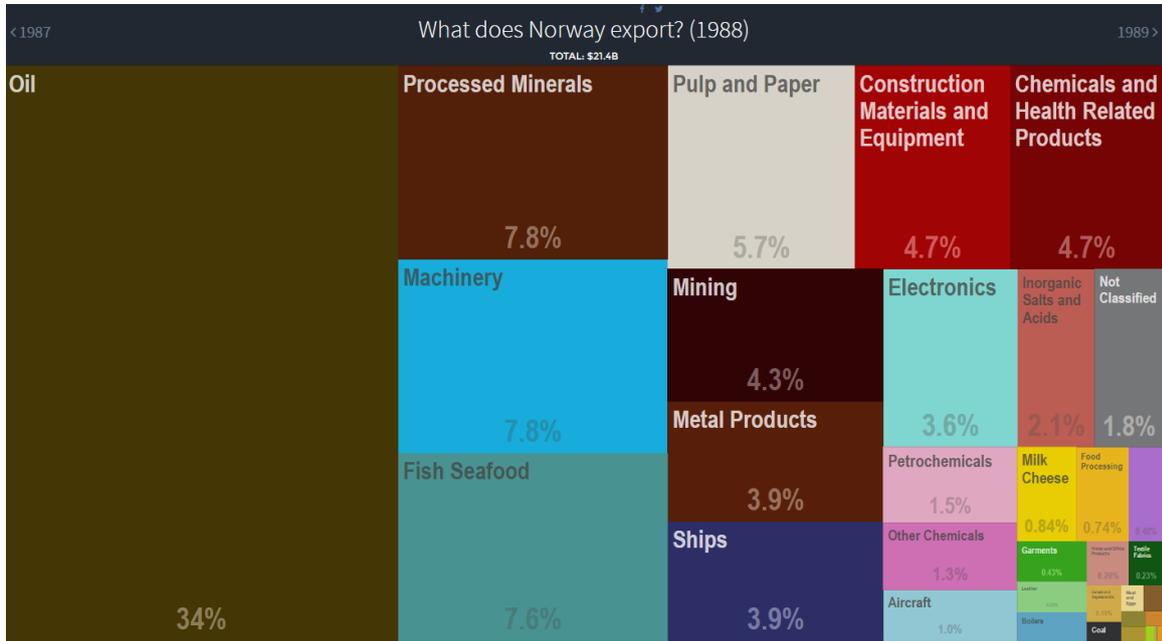


Figure 7. 1988 Norwegian Exports (SITC 2).

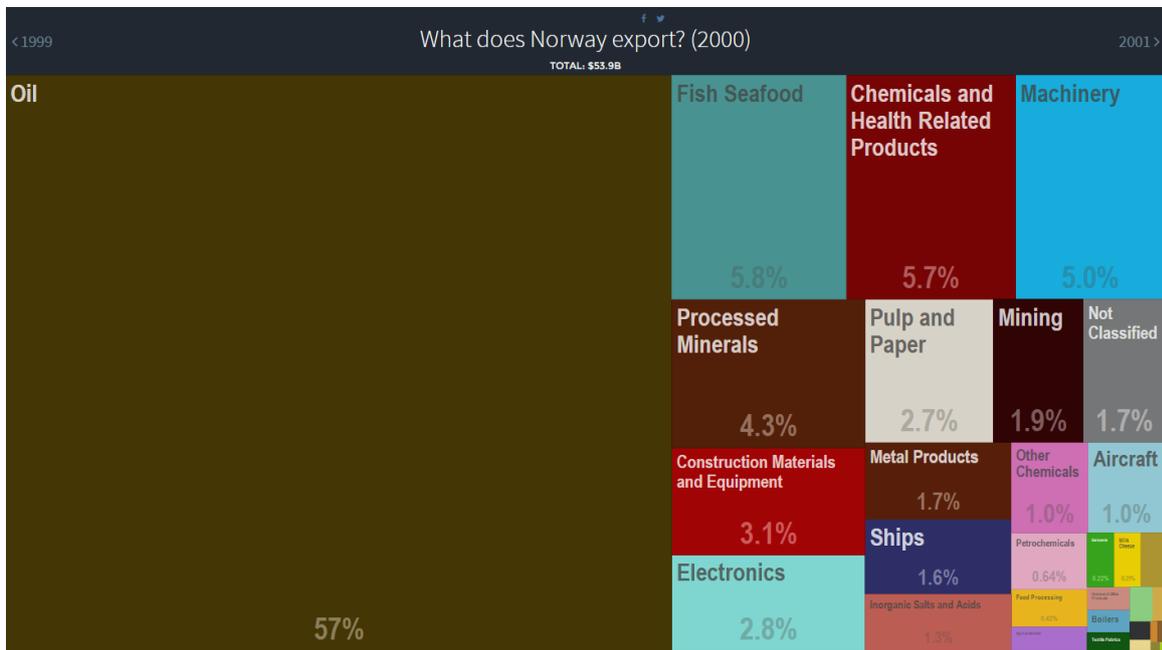


Figure 8. 2000 Norwegian Exports (SITC 2).

³⁵ <http://www.macrotrends.net/1369/crude-oil-price-history-chart>

³⁶ <http://www.norskpetroleum.no/en/production-and-exports/exports-of-oil-and-gas/>

(Third Chart: Historical and expected production in Norway, 1970-2020).

When measuring by net exports a slightly different story is told. Where net exports demonstrate, oil plays a much larger role in supporting the surplus of trade than if exports overall are looked at alone. Figures 8 and 10, show the increasingly important role oil plays in net exports and the beginning of the decline of complex goods as net exports.

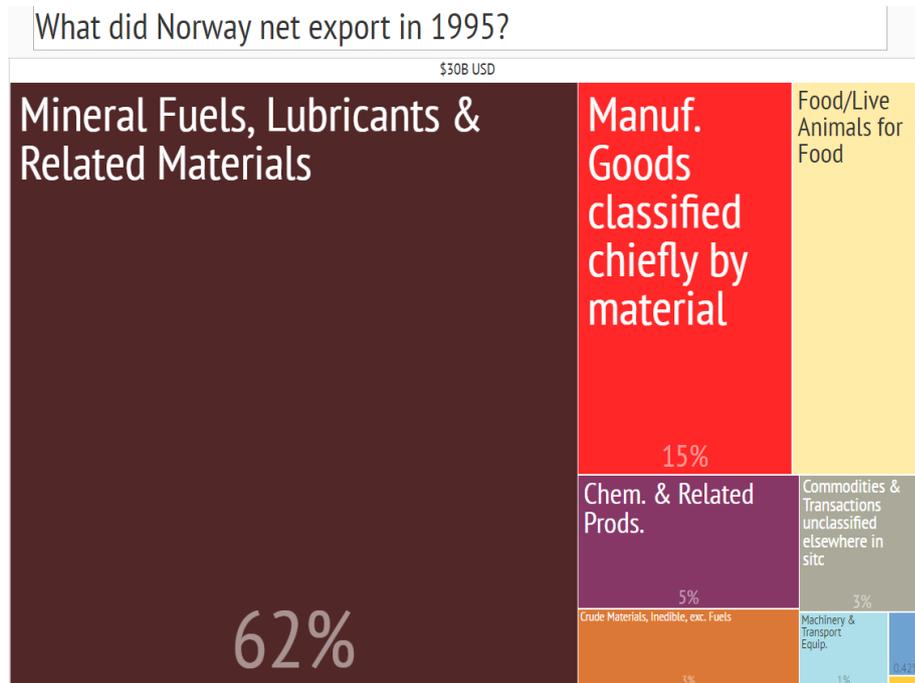


Figure 9. 1995 Net Norwegian Exports (SITC 2).

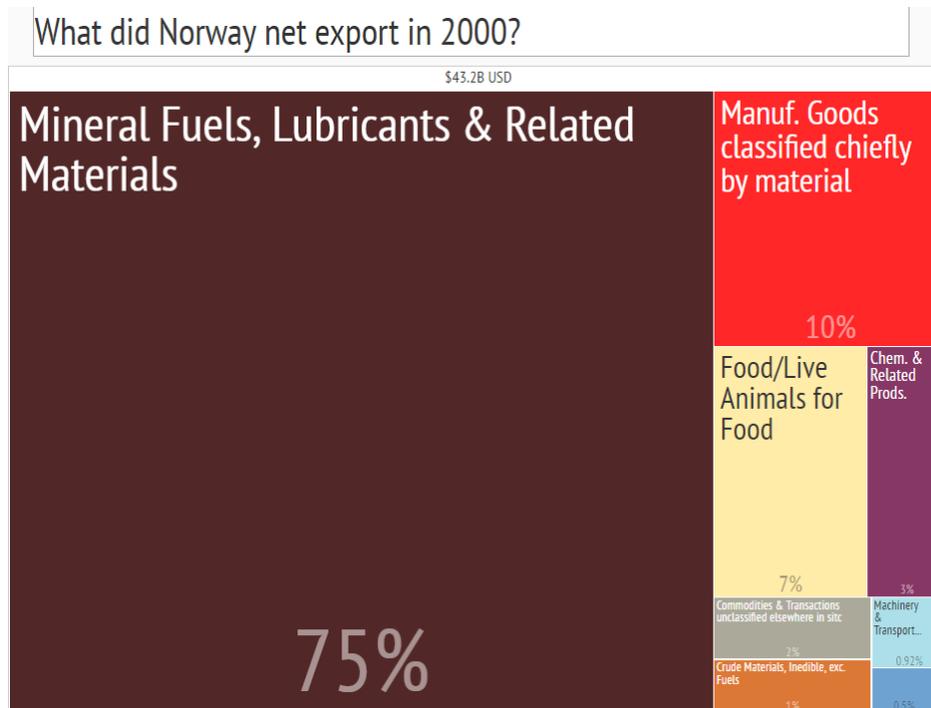


Figure 10. 2000 Net Norwegian Exports (SITC 2).

In 2006 oil exports peaked as a percentage of net exports, see figure 11. In 2014, the simple and commodity type export products of oil and mainly fish represented 87 percent of net exports, see figure 12. Figures 9 through 12 show a diminishing role advanced or complex products play in Norway’s net export economy. For example, Manufactured goods have a net export value 3 billion in 1993, 3.84 billion in 2001, peaked in aggregate net dollar value in 2007 at 10.4 billion USD, and have fallen to 7 billion in 2014.



Figure 11. 2006 Net Norwegian Exports (SITC 2).



Figure 12. 2014 Net Norwegian Exports (SITC 2).

Appendix F. Hallingdal Elected Officials.

Municipality or Region	Elected Members Sources.	Ethnic Norwegians by Name.	Non-Ethnic
Gol	http://www.gol.kommune.no/politikk-og-innsyn/lokaldemokrati/kommunestyret/	21	2
Hallingdal	http://www.regionraadet.no/regionradet/om-regionradet/	6	0
Hemsedal	http://hallingdolen.no/article/20150915/ARTIKKLER/150919863/1015/1001	16	0
Hol	http://www.hol.kommune.no/siteassets/hol/dokumenter/politikk-og-innsyn/politikere/representanter-2015_2019.pdf	22	0
Flå	http://hallingdolen.no/article/20150915/ARTIKKLER/150919867/1001	13	0
Ål	http://hallingdolen.no/article/20150915/ARTIKKLER/150919865/1001	25	0
Nes	http://www.nes-bu.kommune.no/siteassets/nes/politikk-og-innsyn/nemnder-styrer-og-rad-2015---2019/nemnderstyrer-og-rad-2015-2019---revidert-14.11.16.pdf	<u>5</u>	<u>0</u>
	Sum	<u>108</u>	<u>2</u>

Appendix G. Board meeting minutes from Hallingdal International Club noting activities and approving the vision and mission (In Norwegian).

Referat fra styremøte 11. november 2015

Deltagere: Kajan Kanasamy, Jagannivasan Thurainayagam, Wunalem Kassahun, Shane Murray og Randi Tofting

1. Gjennomgang av ulike aktiviteter som HIC har gjennomført siden forrige styremøtet.

- Internasjonal middag på Bombay Tandoori
- Kjørte 150 +/- flyktninger over 3 dager rundt i Hemsedal
- Motiverende tale til flyktninger på Fossheim hotell.
- Middag hjemme med flyktninger og nordmenn.
- Hovedtaler og presenterte HIC for Nesbyen Rotary.
- Presentasjon til potensielle medlemmer

2. Søknad om støtte

Shane ønsker å søke om støtter for ulike aktiviteter som blant annet:

- Transport Tilskudd
- Cafe /Aktivitetscenter tilskudd
- Aktivitets tilskudd

Styret har gitt Shane fullmakt til å søke om støtte i tillegg til å sette opp et budsjett som sendes med søknadene.

3. Vedtektene til HIC

Randi gikk igjennom vedtektene som ble godkjent av styret.

4. Visjonen til HIC

Visjon og misjon ble gjennomgått og godkjent av styret.

5. Neste klubbkveld

Styret ønsker å arrangere en julefest med norsk julemat. Forslag fra styret er at vi serverer julegrøt med mandel.

Kajan sjekker om det er mulig å leie Rotheim. Vi kommer til å ta en liten inngangspris for å dekke leiekostnadene.

Styret undersøker om det er flere som ønsker å være med i arrangement komiteen.

6. Eventuelt

Ingen eventuelle saker.

Appendix H. Draft of settlement project via refugee temporary housing centers for details

The following gives excerpts from the draft provide an overview of the concrete or pragmatic approach to selling the idea (page 1), the acknowledgement by a traditionally conservative organization, the Norwegian Trade Association (page 2), and the incorporation of the wishes or desires of the refugee into a program which aims to provide the equity mechanisms needs to become independent in society (page 3).



Til: BLD
Fra: Nettverket for Asylmottak i NHO Service
Kopi:
Dato: 28.08.15
Sak: Utkast til **bosettingsprosjekt ved asylmottak**

Oppsummering Prosjekt «Rett inn»

Det er en stor menneskelig og samfunnsøkonomisk utfordring at så mange bosettingsklare mennesker sitter så lenge i asylmottak. Dagens modell for bosetting bør endres for å unngå unødig og skadelig passivering av mennesker som er motiverte for å skape seg en ny og selvhjulpent tilværelse i Norge.

Det er en samfunnsøkonomisk utfordring fordi mer enn 3.400 årsverk går tapt. Den lange ventetiden i asylmottak og "klientifiseringen" i en sårbar periode er passiverende for dem det gjelder, og representerer en regelrett sløsing med menneskelige ressurser.

Med dagens modell starter fokuset på å finne egnet arbeid først etter over åtte måneders passiv venting i mottak, og etter et år med norskopplæring som ledd i introduksjonsprogrammet. Nær to år er fryktelig lang tid å vente for et voksent menneske, som på vedtakstidspunktet er motivert for å starte et nytt liv i et nytt land for seg selv og sine nærmeste.

Prosjektet som vi i det følgende vil beskrive, er et konkret forsøk på å forbedre dagens modell for bosetting basert på våre medlemsbedrifters mangeårige erfaring med drift av asylmottak.

	2014	2012
Antall bosettingsklare:	4.939	3.829 personer
Snitt tid fra vedtak til bosetting- enslige voksne:	11	7,7 mnd
Snitt tid fra vedtak til bosetting- total:	8,3	6,1 mnd
"Tapte potensielle årsverk i perioden":	3.416	1.946 årsverk

Kilde: IMDI: Årsrapport for bosetting 2014

Dette prosjektet baserer seg på allerede utviklede og testede metoder, og søker å utnytte aktivt den motivasjon vi av erfaring vet at våre beboere har til selv å finne egen bolig og sikre rask inntreden i jobb.

De aller fleste flyktninger er ressurssterke mennesker og kan selv aktivt bidra til å finne sin bolig. Dette er vårt utgangspunkt.

Det er etter vår mening helt unødvendig at flyktninger skal konkurrere med rusmisbrukere, eldre og syke om kommunale boliger. Dette er sløsing med ressurser hos den som er mest motivert for bosetting, nemlig flyktningen selv.

Vi mener at det er et sunt prinsipp at en som selv klarer å skaffe seg en bolig, kan forkorte ventetiden på egen bosetting. Samtidig er det viktig å kvalitetssikre bosettingen, slik at ikke boforholdet tar slutt og den nybosatte må henvende seg til kommunene allikevel. Kommunen er derfor en nødvendig og sentral samarbeidspartner i metodikken bak dette prosjektet.

Prosjektet skal gi erfaringer som kan legge grunnlag for videre utvikling av programmer for bosetting i Norge. Vi vil sikre dette gjennom en bred erfaringsflate med fem delprosjekter i forskjellige regioner, i bynære og mer rurale kommuner med varierende grad av boligmangel.

I fem delprosjekter vil vi teste ut hvordan boligsøk kan kombineres med jobbsøk uten store tilleggsressurser. I ett av delprosjektene vil vi rette oss utelukkende mot den gruppen som har lengst gjennomsnittlig bosettingstid, nemlig enslige voksne. På denne måten vil prosjektet gi erfaringer og resultater som en nøytral evalueringspartner kan sammenligne på tvers av regioner, boligmarkeder og målgrupper, og på den måten presentere funn som er mulige å benytte som grunnlag for å utforme mer generelle programmer.

Prosjektet er utformet på et initiativ fra nettverket for asylmottak i NHO Service og vil gjennomføres som et samarbeid mellom medlemsbedriftene i dette nettverket.

Erfaringene og metodeutviklingen som dette prosjektet bygger på er gjort av forskjellige medlemsbedrifter, slik dette er presentert i punkt 3 under. Vi vil samarbeide tett slik at det for prosjektets del ikke har betydning hvilken aktør som er kilden til kompetanse og metoder.

Prosjektbeskrivelse

1. Målsetninger

Prosjektets overordnede målsetning er å vise at man ved aktivt å utnytte flyktnings egen kapasitet på en faglig velbegrunnet måte, kan korte ned tiden det tar å finne bolig og jobb. Funn skal dokumenteres på en måte som gjør at metodene kan ligge til grunn for videreutvikling av politikk og praksis på området.

Ved å benytte kjente metoder, og sterkt understreke flyktningsenes eget aktive ansvar for egen fremtid på et tidligere tidspunkt, vil vi sette som mål at de bosettingsklare deltakerne i prosjektet har:

- En stabil bosituasjon etter bosetting;
- En klar plan for hvilken sektor de ønsker arbeid innen, og er i arbeidspraksis på bosettingstidspunktet;
- Funnet ordinært arbeid senest 12 uker etter bosettingstidspunktet;

Individuell veiledning:

- Veiledning og oppfølging i anskaffelsesperioden.
- Ved behov, konkret støtte til boligsøk.

3.3 Arbeidslivskunnskap

- Kartlegging: kompetanse, språk, arbeidserfaring, ønsker;
- Norske koder: 7 kjerneemner som til sammen gir deltakeren et godt bilde av muligheter og krav i norsk arbeidsliv; ledelse i norske bedrifter, spilleregler og selvbylde, nettverk, service, HMS, helse, barn/skole/fritid.
- Forberedelse til arbeidspraksis: Yrkesorientering, individuelle forutsetninger for å utøve yrket; sikre at deltakeren har realistisk bilde av krav i arbeidslivet/ sektoren når valg gjøres
- Jobbsøk: utarbeidelse av CV og trening på intervjusituasjonen. Individuell støtte til søk på utlyste stillinger, samt bruk av nettverk (med vekt på nettverk opprettet gjennom praksis).

3.4 Arbeidspraksis

Utplassering i bedrift og utførelse av arbeid innen aktuell sektor. Hver praksisvirksomhet vil stille en kontaktperson for deltaker, og forplikter seg til å gjennomføre nødvendig opplæring. Prosjektets ansatte vil følge tett opp, for å sikre god opplæring og kommunikasjon. Mot midten av perioden vil det legges vekt på at deltakeren utfører et fullverdig arbeid, slik at deltaker er en aktuell kandidat for ordinært arbeid før praksisperiodens slutt. Arbeidsgiver vil bli fulgt tett opp med spørsmål om muligheter for overgang til ordinært arbeid før og under arbeidspraksisperioden.

4 Organisering

Prosjektet skal gi erfaringer som kan legge grunnlag for videre utvikling av programmer for bosetting i Norge. Vi vil sikre dette gjennom en bred erfaringsflate med fem delprosjekter i forskjellige regioner, i bynære og mer rurale kommuner, og med varierende grad av boligmangel.

I ett delprosjekt vil vi rette oss utelukkende mot den gruppen som har lengst gjennomsnittlig bosetningstid, nemlig enslige voksne. På denne måten vil prosjektet produsere erfaringer og resultater som en nøytral evalueringspartner kan sammenligne på tvers av regioner, boligmarkeder og målgrupper, og på den måten presentere funn som er mulige å benytte som grunnlag for å utforme mer generelle programmer.

Vi vil gjennomføre aktivitetene beskrevet over ved totalt 5 delprosjekter, for å sikre et bredt erfaringsgrunnlag. På denne måten vil evalueringspartner HiOA kunne sammenligne funn fra:

- forskjellige regioner i landet;
- bynære så vel som rurale kontekster;
- kommuner med få tilgjengelig boliger og med mindre press på boligmarkedet;
- åpen målgruppe med funn fra målgruppe enslige voksne spesielt;

Appendix I. BiomimicryNorway's Vision

Source: <http://www.biomimicrynorway.com/vision/> . The vision was developed in collaboration between the author and BiomimicryNorway's founder Michel Wolfstirn.



Vision

BiomimicryNorway's primary vision is to help Norway answer the "after oil" question in a manner that lives up to the Brundtland report's definition of sustainability:

"Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs." -Our Common Future aka The Brundtland Report, 1987.

To reach the vision many constellations will need to work together to solve the primary wicked problems the vision identifies. Organizing and maximizing the potential of cross-disciplinary work among the silos should require new types of organizations suited to reach the vision. Executing the vision is based on working with several partners to establish an incubator in Norway.

The incubator should focus on leading at the intersection of sustainability and innovation via co-creative socio-technical based sustainable transformations. These transformations should be designed to offer the potential of exporting solutions they develop, that is, cross disciplinary work used to solve systemic issues may give rise to new spin offs in niche technical areas, social innovation and more likely a combination of both.

To reach the vision we BiomimicryNorway have engaged in **smaller activities** that would be part on an incubator. On one hand, we are working to educate Norwegian society on the value of Biomimicry and Circular Economy Thinking via exhibitions, public workshops and keynote speeches. On the other hand, we are helping businesses with consulting services in the idea generation, feasibility and product development phases.

Why Norway?

Nations that decide to begin an overt and focused sustainable transformation all do so with their own particular style. For example, South Korea is heavily technology focused. Norway's great outdoors and the cultural anchors of *"friluftsliv"* (the outdoors life) makes biomimicry a relevant style for Norway's sustainable transformation.

Where does our inspiration come from?

Sustainable transformations among some academic circles are emerging as the **fourth mission of the university**. There are many examples of socio-technical sustainable transformations as a **proven way of achieving increasing levels of environmental sustainability**. Such an organization by design is able to move across the constellations and silos and thereby potentially find new inspiration from the cross pollination of ideas.

Why is there a need for this vision in Norway?

- Fossil fuels take millions of years for the earth to save, Norway is spending that savings in about 100 years.
- Today, roughly 80 percent of Norwegian net exports are raw or minimally processed goods. We want to elevate Norway's love affair with nature by adding value to it.
- Norway with hydro-power as a foundation is in a rare position to lead the world in sustainable transformations.

