NILF-REPORT 2011–2

# Comparative Perspectives on Rural Development and Policy Challenges in Sogn og Fjordane

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ICRPS International Comparative Rural Policies Studies

NILF Norwegian Agricultural Economics Research Institute

Norwegian University of Life Sciences

Sogn og Fjordane Fylkeskommune

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# About NILF

- Research and analyses on agricultural policy, food industry, commodity trade, economics, farm management and rural development.

- Documentation of economic results in the agricultural sector at national and farm level. This includes serving as secretariat for the Budget Committee for Agriculture and preparing the annual statistics for Account Results in Agriculture and Forestry.

- Develops tools for farm management and accountancy.

- Funded by the Ministry of Agriculture and Food, the Research Council of Norway and through projects for public and private institutions.

- Main office in Oslo; regional offices in Bergen, Trondheim and Bodø.

# About the ICRPS Consortium

The ICRPS Consortium includes the following Universities and Research Institutes.

University of Missouri-Columbia, USA, Pennsylvania State University, USA; Oregon State University, USA; Brandon University, Canada; University of Guelph, Canada; Université du Québec à Rimouski, Canada; Universidad Autònoma de Barcelona, Spain; Wageningen University, the Netherlands; Bologna University, Italy; Norwegian Agricultural Economics Research Institute, Norway (NILF); University of Life Sciences, Norway (UMB), University of Highlands and Islands, UK.

For more information see: http://www.icrps.org/

# Foreword

This report is the result of a project undertaken for Sogn og Fjordane County in Norway during the Summer Institute of the International Comparative Rural Policy Program. It has been written by students and faculty attending the Institute.

The summer institute was jointly organized by UMB and NILF, who are members of the ICRPS consortium.

The editors would like to thank NILF and UMB for providing basic funding, administrative and organisational support without which the Summer Institute would not be possible, and Sogn og Fjordane County for funding the project. We hope that all will find it useful in reflecting on some of the contemporary and future challenges facing the County and regions like it.

The report would not have been written without the hard work of the students and faculty, who brought with them comparative content. The editors were part of the organizing team, but two of that team were also very much involved in the organization of the Institute and the field trips, but not able to take part in editing the report of the project. They are Helene Lie, now working in Tanzania, and Arezoo Soltani, currently in Iran doing PhD fieldwork. We would particularly like to thank two students who came to be with us from their regular jobs in Sogn og Fjordane County, and who hopefully ensured that we did not spin off into orbit, or climb into our Ivory Towers! They are Rosa Marie Skovli Øyrehagen and Elisabeth Veivåg Helseth.

We would also like to thank all those from Sogn og Fjordane County who received us during the field visits, gave presentations to us, or participated in the final seminar where the draft report was presented and discussed.

Both Raffaele Trapasso and Betty Ann Bryce from the Directorate for Public Governance and Territorial Development in the OECD provided valuable inputs on renewable energy, rural services and other issues during the summer Institute, and we would like to thank them for taking the time to be with us.

Finally, Berit-Helen Grimsrud and Siri Fauske at NILF handled the layout of the report, dealing with all of those tricky issues such as tables and figures from different sources, photographs, and formatting. Without Siri, *sine qua non*!

The Editors

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# 1 Introduction and Overview

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Photo by Kristin Kovar

This report is the joint effort of the participating students and faculty from the 2011 ICRPS Summer Institute – held in Norway between June 26th and July 11th 2011. A total of 33 students and 25 faculty from 17 countries participated during the two week the summer institute, and they have all contributed in some way to one or more of the following chapters.

During the Summer Institute we spent one week at the University of Life Sciences in Ås which is situated close to Oslo, and one week in Sogndal, Sogn og Fjordane. The Sogn og Fjordane County was an important partner for the second week and the project, suggesting relevant themes and also funding this report. The seven key themes which were agreed with the County following meetings in March 2011 were linked with local discussions around the County Plan document, as well as with the content of the ICRPS program and Summer Institute. They were:

I. **Social structure and change.** In particular, the key challenges around changing internal settlement patterns related to internal and external migration patterns and changes, county labour market patterns and changes, and social preferences as to residence and access to a range of material and non-material quality of life elements, including livelihood possibilities, access to nature and recreation including extreme sports, housing availability and cost, access to cultural activities, and education, health and other services. Although there are no large towns in the county, there are a range of settlements of varying size. Some show growing population, while in others it is declining. In such a sparsely populated and mountainous geography cut by Fjords and Glaciers, even small declines in population can threaten the survival of small communities, while further growth in larger communities presents land use conflicts, given the scarcity of flat land. In general there is the triple challenge of youth out-migration (especially educated young women), immigration from third countries, and an ageing population. However, there is also some internal in-migration, including 'footloose entrepreneurs' settling in the County, driven by quality of life considerations. Questions raised by the County and Plan relating to social structure and change related questions include: Are specific policies needed? What good practices from other countries. What drives inward and outward migration (quality of life issues)? What is the role of extreme sports in attracting new young in-migrants? How important is access to broadband telecommunications? There is also a more general question about whether it is more 'sustainable' for people to move to/ live in cities? How does the answer to this question link with the discussion of decentralised renewable energy?

II. **Government and governance.** Local choices are increasingly constrained by national directives and policies. For example, an "Expectations letter" is sent to both local municipalities and county, narrowing local room for manoeuver and taking up the time of local staff. There are questions related to "Rettighetsstat" versus Local Governance, Democracy versus Technocracy and the professionalisation of decision making (the closure of maternity wards in small local hospitals is a common case in point). New Public Management is also relevant here. Norway is remarkable for its relatively strong local government system, its fiscal equalisation scheme, and its relatively high local autonomy. However, there are clearly processes at work (some 'universal') which are increasingly constraining local autonomy. What are the conflicts between National and County level, and between Counties and Municipalities? How are such conflicts dealt with and resolved? What are the local consequences of 'rule-based' governance? How can and should adverse conse-

quences by avoided or circumvented? What is the experience of other OECD countries? Can we identify principles and practices which are useful?

III. **Tourism (based on nature and culture)**, adds to a set of planning issues and conflicts, nonetheless partly also related to 1. Due to the popularity of the County as a tourist destination, including cruise ships, foreign visitors, domestic visitors, vulnerable small communities can be overwhelmed by tourists in summer, and find difficulty adjusting. The UNESCO-site at Urnes with stave church (in Lusterfjorden) is a good case. UNESCO is only a status, but local government decisions put restrictions on use etc. This is a challenge for the locals. More tourism or restrictions on landscape creates problems as to maintenance, and leads to concentration of pressure on some vulnerable points. Locals have been under pressure here, but have changed from being hostile to now seeing tourism as something positive. Here the questions are related to how to take care of the local cultural and natural identity at the same time as these particularities can be utilized for local economic development. But there are also questions about how to get more local economic benefit from tourism.. What can be bought – how can locals gain money from a nice view? There is too little for tourists to spend money on that leaves local value-added, or too little that Tourists are willing to spend money on.

IV. **Renewable energy and local development.** Several issues carise concerning the link between the drive for renewable energy and the benefits (and costs) to local people. Renewable energy policy is driven by the need to reduce climate gas emissions, energy policy, and a range of other environmental considerations. Despite the fact that most of the very considerable new investment taking place in renewables takes place in rural regions, there is too often little employment or other material benefit to these regions. The challenge for rural policy makers is how to change this situation and increase benefits to the regions which at the same time suffer from negative externalities often associated with renewable energy production. Some of the local issues are as follows:

a. Small scale hydropower plants

b. Large scale windfarm projects which sometimes bring little if any benefits to local communities while having negative externalities which can harm tourism, for example

V. **Mitigation of climate emissions, and new policy initatives.** We need new ways of analysing problems which connect the different facets of for example climate-related issues, and cut across sectors, if policy mistakes are to be prevented.

a. The extent to which planting of new forest really does lead to increased carbon fixation has been raised. One project for replanting coastal forest is thought to have lead to a wrong strategy. The question is really related to how a lot of topics are being used in the name of addressing climate change, but not delivering.

b. What are the impacts of living close to waterfalls. The local politicians are arguing about this – some think it will benefit the local owners and locals. The farmers are able to build new farm buildings with the income from these hydropower plants. On the other hand, the landscape may suffer as waterfalls disappear. The outlets from small hydropower plants are often moved to artificial outlets, to avoid disturbance of the salmon in the fjord etc.

c. The county: is exporting renewable energy and power and at the same time closing down industries (aluminium smelting, e.g.) in order to reduce CO2 emissions. However, the processing is merely moving elsewhere, where emissions may be higher. The responsibility for emission should be at the level of the

consumer. We need broader analysis and thinking. Is there international policy or guidance on this? How can the situation be changed?

VI. **New directions for farming and food in a challenging environment.** The general question is how small scale, usually pluriactive, agriculture can survive in a challenging environment in the context of the potentially increasing WTO pressures, budgetary constraints, general economic and governance reforms and climate change. Relevant themes to explore can be farm level innovation, cooperation among farmers (for example in production or marketing/sales), product diversification, income diversification, use of new technology etc. New concerns raise new opportunities, e.g. in fruit and vegetable production, "value added" food (local food, organic food etc), as well as multifunctional activities related to public goods and pluriactivity of farms. How can the policy framework be developed to meet new farming practices and challenges such as extreme topography, long distances (both to markets, the processing industry and to other farmers), climate change and generation change/handing over of farms to the next generation?

VII. **Can information and communications technologies be used to reduce or remove the disadvantages of remoteness and small settlement sizes?** The County has made, and is making, considerable use of new information and communications technologies to meet its own communication problems between distant offices and clients etc., and in this respect is way ahead of many of its urban counterparts, centralised agencies, universities and research institutes. There has been much discussion over the past 20-30 years on whether or not such technologies offer new opportunities to rural regions to defeat some of the barriers and constraints of distance from centres and markets, as well as offering new economic possibilities to footloose entrepreneurs and businesses not bound to be close to main markets, and rural service delivery, including distance health and education and e-governance. We should focus on ICT as a topic "How can we use the new information and communications technologies to overcome the obstacles of remote location, distances between institutions and people, political voice, service delivery". Can we make more and better use of this technology in future? What local policies and activities might help this process?

Each theme was researched by a small group of faculty and students, each with at least one Norwegian speaker in it to facilitate access to documentation, statistics etc as needed.

## 1.1 The ICRPS Consortium and the Summer Institute

The International Comparative Rural Policy Studies (ICRPS) is an international program which brings together a multi-disciplinary group of faculty, students and professionals, in order to study the many facets of rural policy, from formulation to impacts. This advanced program has been developed by a Consortium comprising faculty from 16 universities in North America and Europe. The main aim of the program is to enable students to examine and compare the nature, role and impacts of rural policy in different cultural, political and administrative contexts. It also provides the opportunity to study the nature and implications of new forms of governance in rural contexts, and to consider global issues in a range of local contexts. The key features of program are: the annual two-week summer institute, comparative rural policy research, and online distance learning courses.

The partnership arose from initial collaboration between the Universities of Missouri (United States), the University of Guelph (Canada), the University of Aberdeen (Scotland), and the Economics and Business Studies Program of Budapest (Hungary). In 2002, representatives of these Universities met in Columbia, Missouri to discuss the need for post-graduate education in comparative rural policy. The meeting, hosted by the Rural Policy Research Institute, led to creation of the consortium, and plans for the ICRPS project. The University of Aberdeen and the University of Guelph, as partners in the ICRPS collaboration, successfully applied to the EU-Canada Program for Collaboration between Institutions of Higher Education and Training in 2003 adding partners in Europe (Universitat Autònoma de Barcelona and University of Leuven) and Canada (Université du Québec à Rimouski and Brandon University) as well as an unfunded partner in the US (the University of Missouri-Columbia). The University of Highlands and Islands, Corvinus University and Oregon State University subsequently joined the ICRPS Consortium bringing the total to 10 partners. In the last few years NILF and UMB (working in partnership), Penn State University and the University of Bologna joined the Consortium as well. The rich multi-cultural learning experience of over 180 graduate students, the engagement of faculty members and the involvement of the OECD Directorate of Public Governance and Territorial Development as well as over 40 governmental and non-governmental agencies testifies to the success of this much needed education and research program.

The ICRPS core faculty members are leaders in their fields and their academic diversity and practical policy making experience in a range of fields provides an exciting learning experience. They are mainly social scientists (economists, sociologists, political scientists, anthropologists, human geographers) with a strong commitment to the study of rural policies and the territorial approach to rural development.

Each year, the Consortium organizes an ICRPS Summer Institute, which rotates around the consortium members, oscillating between North America and Europe. For students who wish to attend two consecutive institutes (one in North America and one in Europe), the program includes advanced topics and an opportunity to share research results with faculty and other students. Students work in groups to make presentations, analyze documents, prepare policy briefs, meet policy professionals and take part in field trips. Each intensive summer institute connects faculty and international students in a dedicated learning environment. In addition, each summer institute session is a combination of new and returning students, which enhances the mutual learning experience of both years.

## 1.2 Sogn og Fjordane County

Sogn og Fjordane is a particularly interesting county to visit when studying rural policy. The county has a population of 108 000 inhabitants, spread over 26 municipalities. Unlike most Norwegian counties, it has no dominant large town or city, but rather several small towns. The dramatic natural landscape with high mountains, glaciers, and long fjords create special challenges but also many opportunities in a rural development context. The county has the longest fjord in Norway, Sognefjorden, which measures 204 kilometers. Sogndal is situated along this fjord. The County administration lies in both Førde and Leikanger, while several large

governmental agencies are located throughout the county, such as the national Agency for Public Management and e-Government (DIFI), The Norwegian Gaming and Foundation Authority (Lotteri- og stiftelsestilsynet) as well as several regional offices. The county is a net exporter of hydropower and lies in the most important hydro power production region in the country. It has still a large potential for further increase. Sogn og Fjordane College University is also situated in Sogndal, and plays a role as an important resource in developing competence on relevant issues for the future of the county.

## 1.3 The Field Trips

Field trips were arranged both in the Ås area, and in Sogn og Fjordane County. The groups who worked on the project themes presented in the following report, have used these fieldtrips as important inputs for their chapters. The methodology of each group will be explained in the individual chapters, but the following field trips were arranged as a basis for all participants:

The first field trip destination was the Morsa lake in Østfold, where a program to improve water quality has been carried out successfully over the last 1.5 decades. Focus on reduced run-off from agriculture and improved sewage treatment in rural areas are among the main measures taken.

Next stop was the town Drøbak and municipality of Frogn – a small community on the brink of the Oslo fjord. An introduction to the municipality and to local democracy in Norway was held by director of planning and administration and the municipality Mayor. This was followed by a guided trip of the historical parts of Drøbak. The participants also visited Oslo, where they had presentations and discussion with the ministry of Local government and Regional Development, the ministry of Agriculture and Food, and the Agricultural department of the Oslo and Akershus county governor´s office.

On the way to Sogndal, a stop was made at Bakeriet i Lom. This bakery was funded by a well known chef from Oslo who decided he wanted to move away from the big city, and make his own business in a smaller community. The bakery, it´s history and background was presented by one of the bakers who currently works there. The students also had a few hours to get to know the village of Lom.

While in Sogndal, the fieldtrips included a visit to a fish farming and research center, called Fjord Forsk AS. In the municipality of Luster, the Sørsida - south side project of recruiting new families to move to the small local community of Urnes along the idyllic fjord was presented. While in Urnes the students could then choose to visit one of two local entrepreneurs. One group visited the Ornes boat builder and saw how this business was not dependent on being localized in a urban area. The other group met with a local farmer specializing in organic raspberry farming, and learned about the joys, problems and challenges involved in running the Vetle-kroken organic raspberry farm.

The final destination for the field trips was Jostedalen, and the visit to a farmer owned micro hydro power plant. The two farms involved told the groups about how the micro hydro power plant was established, and what it involved in terms of economic investments and planning, as well as what it means for the livelihood of the farmers today. The project leader of “Project small scale hydro power plant” at

the Norwegian Farmers Union introduced the farmers and the project to the participants.

At all field trips destination the participants could ask questions, mainly to shed light on the research question of the group projects.

# 2 Social Structure and Change in Sogn og Fjordane: Exploring the Potential for increasing Population

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Photo by Sinisa Berjan

## 2.1 Introduction[1]

The county of Sogn og Fjordane is facing change associated with their population and social structure. We offer the following figures and statistics from Statistics Norway (2011) to present an accurate contextualization of the county. First, compared to other counties, Sogn og Fjordane has the second smallest population in Norway. Figure 2.1 illustrates the population of Norway by county across the years 2000, 2005, and 2011. Across these three years, the population of Sogn og Fjordane changed very little. In 2011, there were 107,742 people in the county, and the years 2000 through 2010 saw population decline in the county (Kristoffersen 2011).

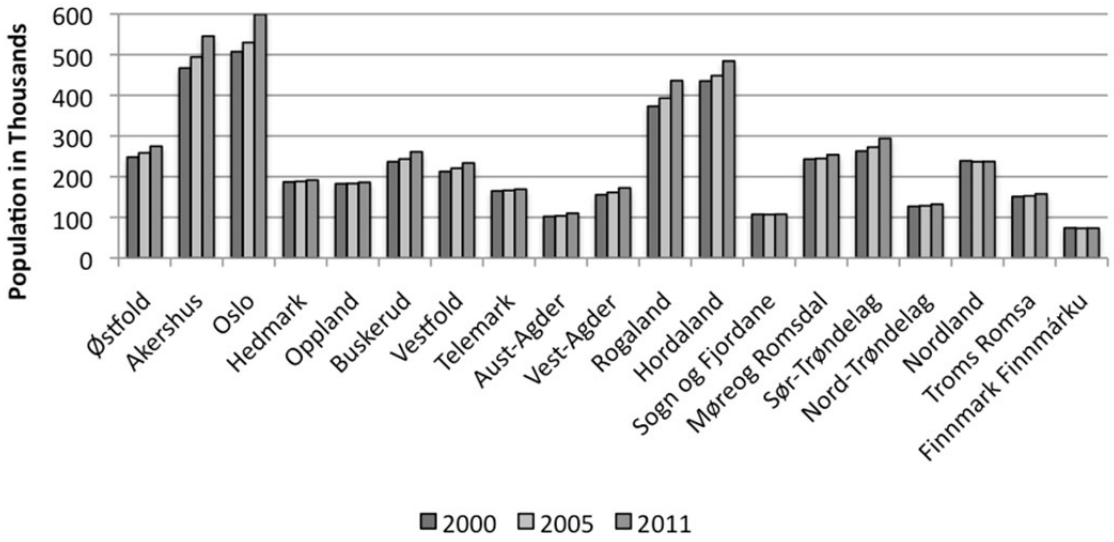


*Figure 2.1 Norway population by county and year*

The structure of the population in Sogn og Fjordane is also worth examining. Figure 2.2 displays the percentage of the population by age. In this county, there is a higher number of people in older age groups compared to the national population. This indicates that older generations out number younger generations – a common feature of rural areas generally.

[1] The source of the data for all graphs and tables in this chapter is Statistics Norway (2011).

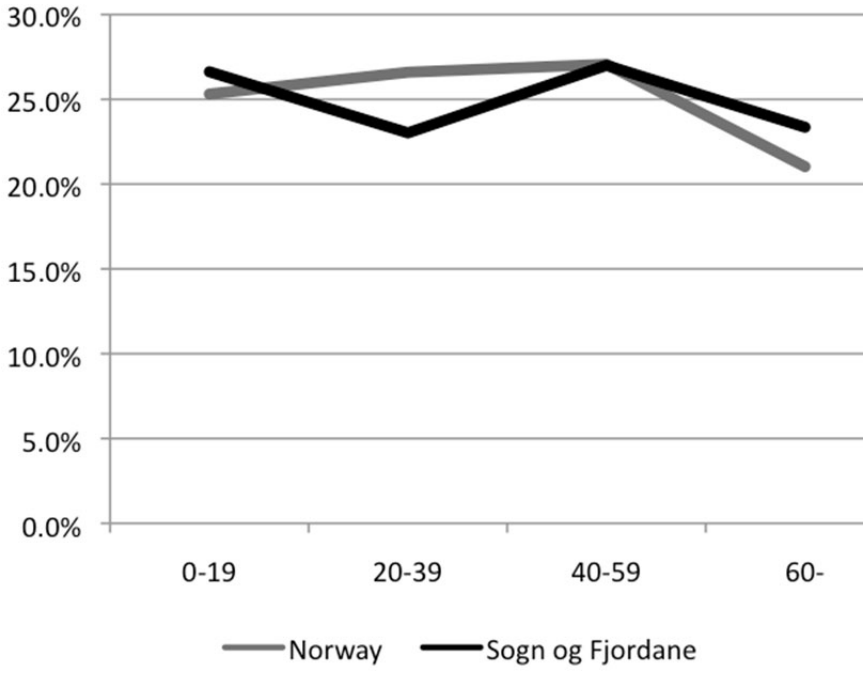


*Figure 2.2 Percent of population by age, Norway 2011*

As we explore the gender distribution in Sogn og Fjordane, we discover there is a difference in the number of unmarried men and women. Figure 2.3 shows there are more unmarried men than women at nearly every age except very old generations. This illustrates a gender gap, with a larger number of single men in the area. This gap has been targeted as an important focus of attention by county officials.

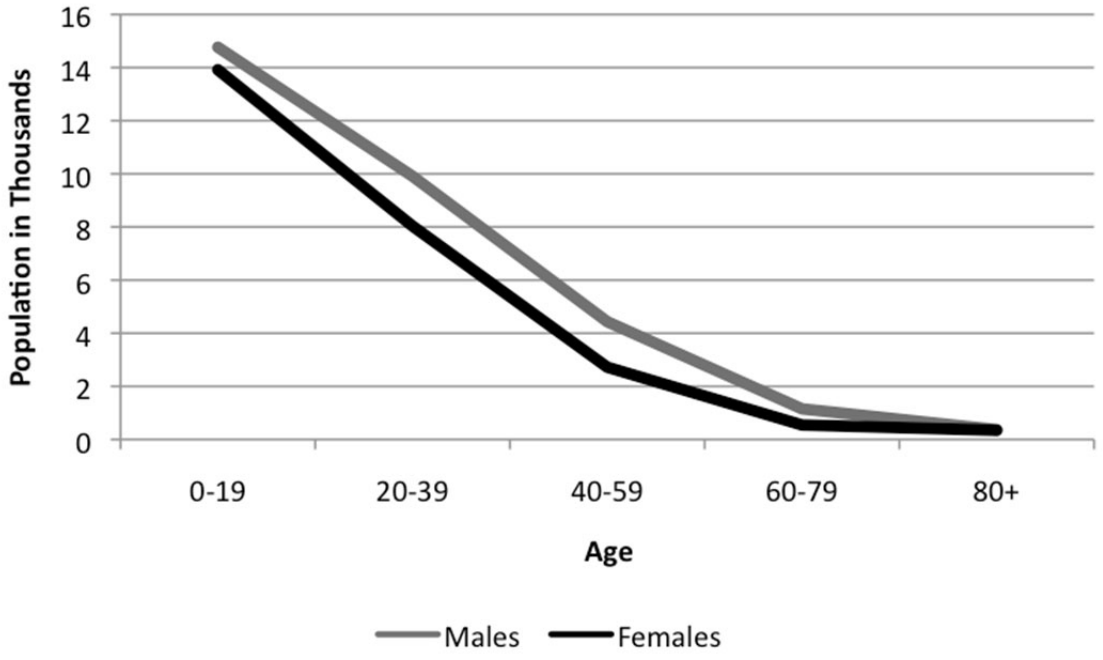


*Figure 2.3 Unmarried population by age, Sogn og Fjordane 2011*

While it is important to understand the population residing in Sogn og Fjordane, we also are interested in who is moving into the county. With immigration on the rise across Norway (Kristoffersen 2011), we explored the origins of those immigrants. Figure 2.4 is an examination of immigrants to Sogn og Fjordane in 2010 with respect to their country of origin. This graph shows the percent of the population of nationally aggregated groups in the county compared to Norway as a whole. The largest group, 89 immigrants, came from Africa, Asia, Turkey and South and Central America, which is much higher than the country proportion. On the other hand, there are fewer immigrants from Eastern Europe and other Scandinavian countries than national trends.

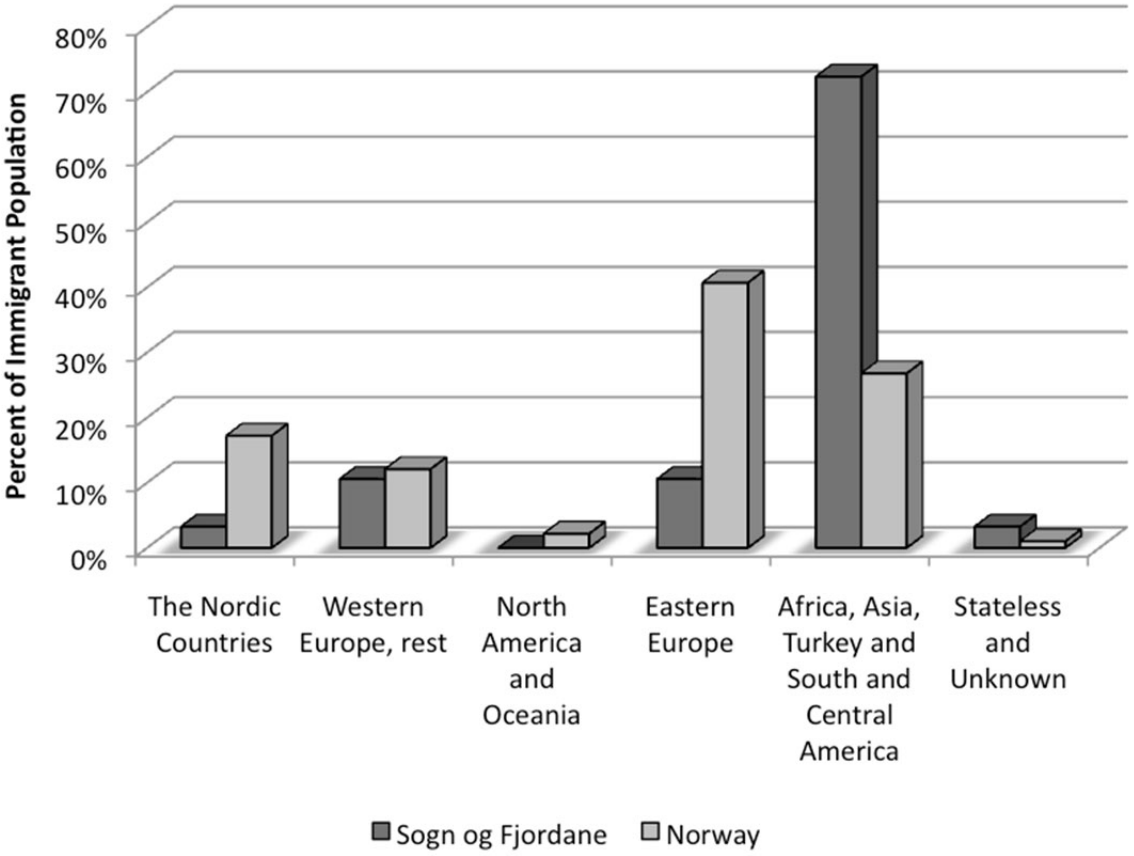


*Figure 2.4 Immigrants by region of origin, 2010*

These features reflect important aspects of the social structure in Sogn og Fjordane. The county identified these areas, declining population, a lack of younger individuals, a disproportionate amount of men compared to women, and migration/immigration, as potential areas of concern. Therefore, our research focused on examining these issues here in Sogn og Fjordane in a comparative context in order to gain insight into how other communities handle similar problems. This paper highlights this research. We first begin by briefly explaining our methodology. We then examine how Sogn og Fjordane might attract more youth, with case studies from Japan, Canada, and The United States. Next, we explore migration and immigration issues, providing a different case study from a Canadian community. We finish with a look into how to potentially attract more women to the county, and give an Australian example of a program there with similar aims. Each section includes

considerations from the various cases, which are summarized in the conclusions section.

## 2.2 Methodology

Our research focused on three questions. First, how might Sogn og Fjordane attract more youth? Second, what would decrease out-migration and increase in-migration to the county? Finally, how can the county attract more women? To answer these questions, we participated in numerous seminars and presentations, speaking with local individuals regarding these issues. We also examined data collected by the county and Statistics Norway to gain a greater insight into the current context of the county. Finally, we utilized a comparative case study approach to gain insights from other communities in order to inform considerations the county may want to explore to assist with these challenges.

## 2.3 Youth Recruitment

This section specifically aims to answer the question how might Sogn og Fjordane attract more youth? It first outlines the goals and strategies of the county, moving into current trends. It presents three communities, each from Japan, Canada, and The United States, that aim to attract youth through innovative approaches. The section concludes with considerations for the county based on this information.

### Goals and strategies of Sogn og Fjordane

Within the Sogn og Fjordane County there has been a goal to attract youth to stay in the county. This includes programs to promote their return after living elsewhere for education purposes or other experiences. They also encourage their youth to become educated in sectors where there is a need for more knowledge and workers within the county, or to establish their own business.

In the next few years the County has stated they will focus on increasing the in-migration of youth. To do this the County developed a plan (2005–2008) solely focused on youth, a continuation of previous youth strategies. The main components of the plan include the development of the youth county council, cultural activities and entrepreneurship for youth, working for a safe and good public transportation system for youth, continuing work with "Ungdommens kulturmønstring", advertising exciting nature experiences, and actively marketing the county keeping in mind in-migration (Sogn og Fjordane County, 2010).

### Trends in Sogn og Fjordane county

In both 2005 and 2010 the number of youth migrating out of Sogn og Fjordane County has exceeded the in-migration of youth. This is depicted in tTable 2.1. This includes both the age groups of 16–19 and 20–29, although the latter has a higher out-migration. In 2010, 1,761 youth migrated into Sogn og Fjordane County. The largest group was between 20 and 29 of age. This is the lowest number of all the counties in Norway.

At the same time 2,522 youth migrated out of the county. In the age group 16–19 only 180 people moved out, which is the smallest number of all counties together

with Finnmark County. In the age group 20–29 there are three counties that has a smaller number than Sogn og Fjordane county (Aust-Agder, Nord-Trøndelag, Finnmark) suggesting that there is not a large amount of out-migration from Sogn og Fjordane compared to other Counties in Norway. On the other hand there are not a large number of youth moving into the county(SSB 2010). According to these numbers, the goal of keeping youth and attracting youth to the county has not been successful despite the different programs and strategies implemented by the County in the past 20 years. It may be that comparative analysis of other regions in the world will be of value under these circumstances.

Table 2.1 Sogn og Fjordane youth migration patterns

| Youth in-migration | 2005 | 2010 |
|---|---|---|
| 16-19 | 62 | 93 |
| 20-29 | 545 | 671 |
| **Total** | **607** | **764** |
| **Youth out-migration** | **2005** | **2010** |
| 16-19 | 148 | 180 |
| 20-29 | 1181 | 1179 |
| **Total** | **1329** | **1359** |
| **Net-migration** | **2005** | **2010** |
| 16-19 | -86 | -87 |
| 20-29 | -636 | -508 |

## 2.3.1 Case Studies

### Case study 1: Taking the long term view to youth retention in Japan

In the face of considerable outmigration of their youth, the Japanese community of Awano adopted an unusual but farsighted strategy. Instead of trying to hold their youth, they concentrated their efforts on keeping in touch with them wherever they go. They send regular newsletters and e-mails about the events taking place in Awano, organize reunions, support their youth to return for these events, and invite them to community meetings to show photos and tell stories about their adventures.

They anticipate that once their youth start having families and consider places to settle, some of them will think of Awano since they will still be familiar with the local conditions, people, and changes. This strategy has two added advantages. First, the local entrepreneurs make use of the departed youth as a source of intelligence when searching for markets to sell local products; and second, if the youth do come back, they bring with them insights and information they have learned while away.

### Case study 2: Redefining local assets to foster youth retention in Canada

The small town of Warner, Alberta (Canada) was faced with the burden of maintaining its hockey arena even though the outmigration of youth significantly diminished its use. They sought out a well-known hockey coach and convinced him to establish a hockey school for girls at the arena. Using an internet-based campaign, they were able to attract about 70 students per season from all over North America. The demand has been so high that they went on to renovate idle facilities in their

town to turn the seasonal school into a full-year residential one. This strategy means that the facilities have remained used, their maintenance costs are paid, derelict facilities have been reactivated, and family life in the community has been rejuvenated.

## Case study 3: AmeriCorps for work experience in rural areas of the USA

AmeriCorps fund local and national organizations and agencies to address community needs in education, public safety, health and environment. Being an AmeriCorps member is a full-time, team-based residential program for men and women age 18–24. The mission is to strengthen communities and develop leaders by working in teams and directly with the community in partnership with local municipalities, non-profit organizations, national parks, and state or federal governments. The members receive support to cover living expenses, student loan forbearance, health coverage, and child care if necessary. In addition, the member receives an education award of up to $5.350 that can be used for paying down student loans or financing continued schooling or training (AmeriCorps 2011).

## What can Sogn og Fjordane county learn from these case studies?

No information from the County suggests that they keep in touch with the youth when they move out from the county except for the "County for the future" webpage[2] focusing on linking up workers with employers and vice versa. This program started out as a private initiative and is not integrated into the County's job recruitment webpage targeted to attract youth. Using information community technologies to stay in touch and use the youth as resources, like the case in Japan can be a good idea for SFJ. This will both update youth on what is going on in the county and their options when moving back. In addition the youth that decide to not move back can be used as resources in a way that they can market the county or specific businesses or enterprises or provide valuable knowledge about markets and opportunities elsewhere.

The second case study focusing on sports as a means to attract youth can be integrated into the Sogndal football stadium and used to emphasize how important it is to have activities and facilities to undertake such activities in the County. Since the Sogndal football team is in the elite series in Norway and the inhabitants are proud of their team, it seems like the County already makes good use of this but could possibly use it more actively to attract youth to the County, especially to Sogndal since it is the team's home town. Using the team players to mentor youth from the region, supporting extra events for the team members to meet with youth in their regular travels, and using internet-based media to provide visibility to the players and community (e.g. marketing posts, videos, blogs, chats, social networking) are some of the initiatives that might be considered.

The third case study illustrates how Sogn og Fjordane can attract more youth to test out work in the area as well as using well-educated youth to solve community challenges. The County could apply for support from the ministries to start up a paid summer internship program, where the County subsidizes the salary, finds hosts, and supervises the interns. A good strategy would be to discuss such a proposal with the college in order to see whether course credit might be included for the intern, a strategy that might reduce the financial costs of the program.

[2] http://framtidsfylket.no/om-framtidsfylket/om-framtidsfylket-as/

Such a program would contribute to community development, but most importantly, it would show youth living in the area and from outside the possibilities for exciting work in the area. The existing trainee program does this for educated young men and women, and this program would do the same for youth that have not yet started their education or are currently working on their education. A summer internship would be a good addition to the trainee program. They could be placed at an organic farm, for example, or with a newly started business, thereby providing the interns with skills and the host with additional help. Placing them with newly started businesses can even be another way of attracting young entrepreneurs to the County.

### Considerations

Based upon this information, we offer the following three considerations for the county. First, develop a strategy on how to keep better in touch with youth that move out of the County to keep them updated on what is going on in the County, attract them to move back, or utilize them as resources. Second, look into how important the Sogndal football team and stadium are and possibly utilize this strength better when marketing the County to attract youth. Finally, start up a summer internship to give youth skills and knowledge on work options in the County.

## 2.4 Migration Issues in Sogn og Fjordane

When exploring opportunities for attracting individuals to Sogn og Fjordane, an understanding of migration will help to inform policy decisions. To make accurate recommendations, this section will make a delineation of two types of migrants: those migrating from outside of Norway (immigrants) and those moving within Norway (in-migrants). These two types usually differ in their preferences. Depending on the nature of local objectives (population growth, maintenance, or redistribution) the implications of these differences will vary. Once an exploration of the characteristics and patterns of these categories are examined, policy recommenddations and considerations are listed.

### In-migrants

As illustrated in Figure 2.5  Population pyramid for Sogn og Fjordane, 2011. Figure 2.5 we see a considerable decrease of individuals in the 24–39 age range in both men and women in the county. While this follows the trends on a national level, it is a much larger gap than national trends. We also see a larger proportion of people in the older age groups in Sogn og Fjordane than at national level, indicating a trend towards older individuals residing in the county. Indeed, the county is currently aiming to attract individuals from this age range through a number of initiatives, as noted previously. The 24–39 age range represents younger individuals looking to begin their career. While smaller places may be seen as viable to begin a career in their respective fields, upward mobility and advancement in job placement is easier in urban centers, driving a need for relocation to fulfill this as a personal goal (Fielding 1995).

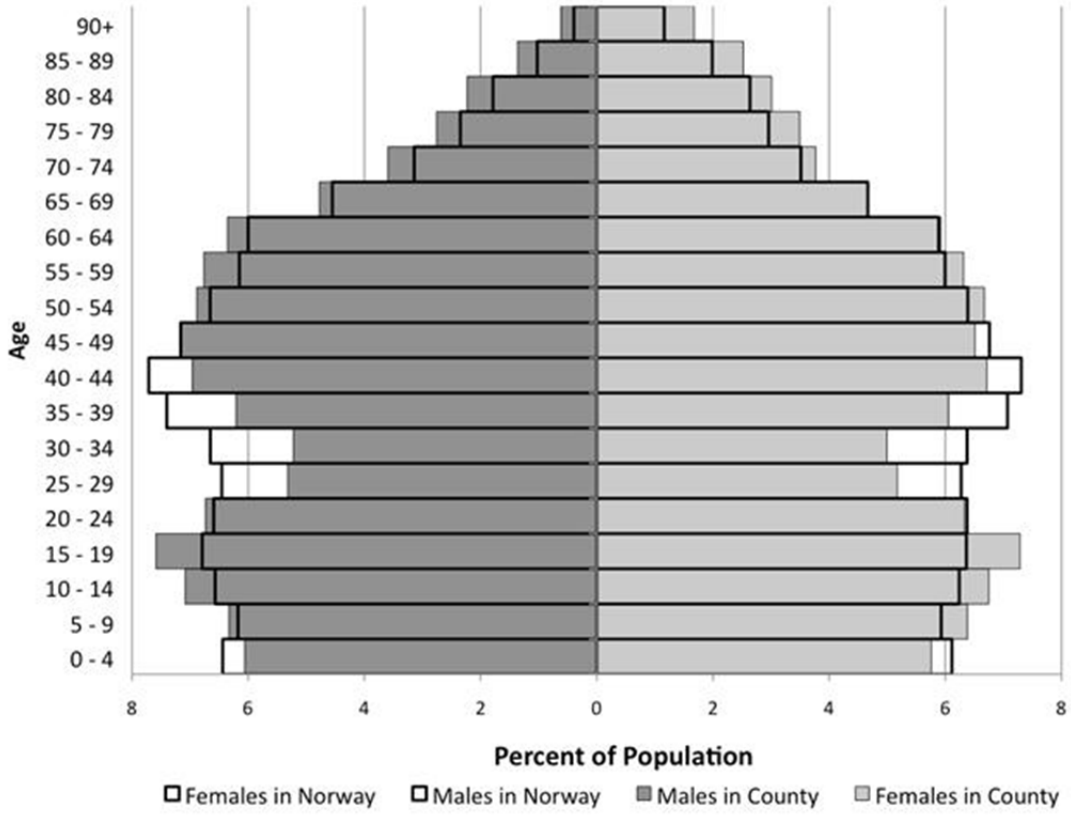


*Figure 2.5 Population pyramid for Sogn og Fjordane, 2011*

However, in-migrants are not solely motivated by economic reasons. Communities that encourage diversity and inclusion along with economic development see higher rates of migration, especially those that lower barriers for entry into their area (Florida 2002). When considering the diversity of a community, ethnic groups' patterns for migration provides insight for policy considerations. A case in the United Kingdom found "Higher migration is to be expected for all ethnic groups among those aged 20–29, those in rented accommodation, those with higher qualifications, those without a limiting long-term illness, students, the unemployed and those with more professional occupations" (Finney & Simpson, 2008, p. 80).

While the focus of late is on encouraging youth migration, diversity also includes variety in age ranges. Individuals that are more advanced in their careers, nearing the end of it, or retired, leave densely populated areas for more peripheral regions due to the low cost of living and the ability to utilize the capital gained from their lifetime of work more efficiently (Fielding 1995).

Although the choice to locate to a place may be influenced by environmental (i.e. seasonality, natural resource amenities, etc.) or family considerations (Heikkila and Korhonen 1995), the primary driver, especially those earlier in their career, is for economic reasons (Montgomery 2005). This poses a great challenge for rural areas in Norway, and especially SFJ due to its remote villages secluded by geographical features such as mountains, fjords, rivers, and climate.

## Immigrants

There is an increase of immigrants to Norway as a whole, and specifically an increase in rural, outer lying areas (Kristoffersen 2011). Indeed, SFJ has experienced an increasing immigrant population, with the highest number coming from the category of Africa, Asia, Turkey and South and Central America (see figure 2.4). Immigrants are attracted to areas where there is easy navigation of immigration laws, economic opportunity, and community inclusiveness (Carter, Morrish et al. 2008). Specifically, immigrants are attracted to areas where they are able to fill a gap in the employment sector (Hooghe, Trappers et al. 2008).

It is not only important to attract immigrants, but their retention is key for population stabilization and to establish social networks for continued recruitment. "Retention of immigrants depends on many factors: employment opportunities; family and community ties; affordable and available housing; settlement and integration support; timely, accessible and appropriate language training; access to health education and social programs; cultural and recreational opportunities; and social support" (Carter, Morrish et al. 2008, p. 174).

## Case study of Manitoba, Canada

A case study of communities in rural southern Manitoba (Canada) provides insight into the retention of immigrants. This area has created conditions that give them a level of immigration that rivals that of the country's major metropolitan centers. In response to a labor shortage (particularly for a huge meat packing plant that moved into the region), they targeted specific national and ethnic groups in the Americas and Europe. They chose groups that had similar cultural and religious backgrounds to the current residents in the region.

They negotiated with the provincial and federal governments to adapt immigration programs to their special needs, and they organized different volunteer groups to assist the settlement and integration of the new individuals and families. Using these groups, they provided language training, medical assistance, information regarding local services, job training, and community celebrations. The retention rate remains high and the stimulation of new enterprises has served to maintain the extraordinarily high level of growth.

## Considerations for increasing migration

Based upon the previous studies and information on the county and Norway, we propose the following considerations for the county.

## Relaxing of land policies

Relaxing land policies creates an opportunity to mitigate out-migration and increase in-migration to SFJ. By decreasing barriers for individuals to purchase land, immigrants (Carter, Morrish et al. 2008) and ethnic minorities (Finney and Simpson 2008) are more likely to stay. This will also provide greater opportunity for younger in-migrants to establish residency and increase opportunity to use the land for more diverse ideas. While land policies are not made at the regional level, it may require SFJ to work with other counties with a heavy rural component to develop a greater sense need for this change at the national level.

### Increase recruitment to individuals later in their career

While there is a clear deficit of individuals in the 24–39 age range and there are a number of initiatives aiming to attract them to SFJ, there could be a greater focus on those individuals more mature in their career. These individuals, as previously noted, are looking to move to peripheral places. They need not be elderly, just more mature in their career. They bring capital to the region, both economic and human. There is an opportunity to have them mentor of younger professionals. Their experience may assist community leadership, while potentially utilizing their social networks to attract business to the region.

### Expand job attraction

While entry level jobs and new businesses pose a good option for rural areas due to their relatively low beginning salaries, these types of jobs do not retain younger generations. There needs to be a greater focus on jobs and firms that hold the potential to provide younger generations to advance their career while providing them the natural resource amenities they are seeking.

### Increase recruitment of immigrants

There is a finite number of native Norwegians to attract. Under these conditions, when one municipality attracts individuals from another, it creates deficits in other areas. Hopefully these will come from more densely populated areas, but this is not always the case in rural areas. By increasing the recruitment of immigrants, the county will gain individuals from other areas of the world, thereby increasing the diversity of perspectives and skills. However, this needs to be coupled with immigrant retention programs, in order to assist them in their transition to the county to encourage their retention.

## 2.5 Attracting Women to Sogn og Fjordane

The county of Sogn og Fjordane has identified attracting and retaining more highly educated women as a major concern to be addressed. This section provides a background and demographic data. It then outlines a case study from an Australian community, and finishes with considerations for the county.

### Background and demographics

By examining the demographics of the county, we find the gap between men and women in the county is relatively small and generally follows a consistent pattern across age groups. In figure 2.6, we display the male to female ratio across age groups in Sogn og Fjordane. We see that while men do out number women for all ages except until beyond 70 (where the ratio is above 1), the ratio is not very large. This indicates there might not be as large of a gender gap as perceived. This population trend also follows the larger national demographics, where men outnumber women for the first time since figures on sex were collected for the 1769 census (Statistics Norway 2011).

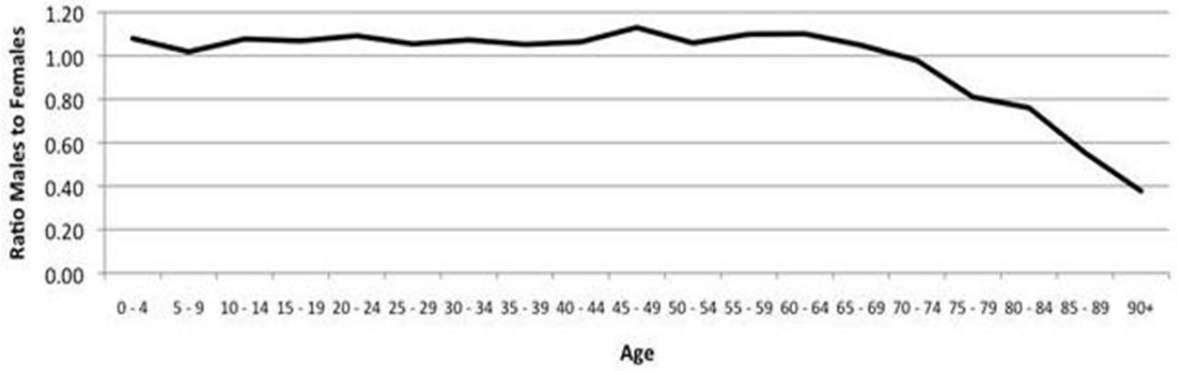


*Figure 2.6 Male to female sex ratio by age*

More men with Master's level education reside in Sogn og Fjordane county; the overall levels are very low, and significantly more women in this county hold a bachelor's degree. Given this particular national trend, it will be more important than ever for Sogn og Fjordane county to employ very targeted marketing strategies to encourage educated women to move to this county over another. The county's current focus on entrepreneurship as a development tool appears to be targeted specifically towards young men, with an emphasis on independence and extreme sports as evidenced by the presentations given by Heather Broomfield at Innovation Norway and Wilhelm Tangerud at Sogn Naering As.

## Case study

Research conducted in Australia, however, found that nurses who chose to work in rural or remote places had specific characteristics when considering job placement. Among these were: previous exposure to rural life, social ties and networks, and professional consideration such as ease of placement and diversity of work-place challenges (Hegney, McCarthy et al. 2002). This research is applicable to the Sogn og Fjordane context in several ways. While the research focuses on nurses, not women, the majority, nearly 90-percent, of the respondents were women. Similarly, employment choices for many Norwegian women are centered on public/social services and education, the medical field being but one example (Statistics Norway, 2011). Finally, both Norwegian and Australian "rural and remote" areas have similar characteristics, namely small populations far removed from fairly centralized urban centers. This research suggests that while the current practice of monthly meetings and occasional classes may be beneficial for male entrepreneurs, a different tactic may be necessary to gain and retain female entrepreneurs. Additionally, pointed marketing strategies that highlight not only the value of natural resources and sports in the area, but also the entrepreneurial possibilities for social services in Sogn og Fjordane may be more attractive to women entrepreneurs.

The Australian study also investigated the reasons nurses leave rural and remote areas: lack of job prospects for partner, lack of childcare, and inability to move up in career (Hegney, McCarthy et al. 2002). While the childcare aspect might not be particular relevant to this situation, given Norway's level of social services in rural and remote areas, the other two issues provide some useful information when considering retention. Family is clearly a strong consideration for women when making employment decisions. This element must be incorporated into either marketing or

retention strategies for women. Finally, as the perceived inability to move up in their chosen career was both a significant source of frustration and a prominent factor in the decision to leave rural or remote area, care should be taken to ensure advancement potential exists for women who move to rural areas and work in public service.

### Considerations

Based on the preceding analysis and case studies, some suggestions have been developed for the county to consider when addressing how to attract highly educated women to Sogn og Fjordane. First, the importance of social networks must be recognized. The county may want to consider working closely with existing business development and support organizations such as Sogn Naering to create a professional and social network of female entrepreneurs in the county. Additionally, although rural and remote areas provide easy entry to jobs, a major driver for women leaving these areas is the inability to move up in their chosen career. It is important to find avenues for women to develop their careers beyond the entry-level positions. Similarly, the difficulty for partners to find work is also a consideration when women decide to leave. As such, the emphasis cannot solely be on attracting women, but also on general job creation. Finally, as previous exposure to rural areas increases the likelihood of choosing to move to rural and remote areas, the county may want to consider how to increase this exposure to young educated women through scholarship or internship programs.

## 2.6 Conclusion

This chapter has focused on the changing demographics and culture of Sogn og Fjordane. We specifically focused on attracting youth, decreasing out-migration and increasing in-migration, and increasing women in the county. Based upon our research we developed a number of considerations for the county. To attract and retain youth, we recommend the county consider: developing a strategy on how to keep better in touch with youth that move out of the County; utilize the Sogndal football team when marketing the county; and start up a summer internship program in the County. To assist in the attraction and retention of in-migrants and immigrants, we think the county should consider: relaxing land policies; increase recruitment to individuals later in their career; expand job attraction; and increase recruitment of immigrants. In considering how to attract and retain more women, the county might consider: develop a strong social network for women in businesses and among women entrepreneurs; expand jobs for women beyond entry-level positions; and utilizing scholarship and internship programs in rural areas specifically targeted at women. We hope these considerations will be of use to the county to assist as they find ways to solve their declining population.

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# 3 Government and Governance

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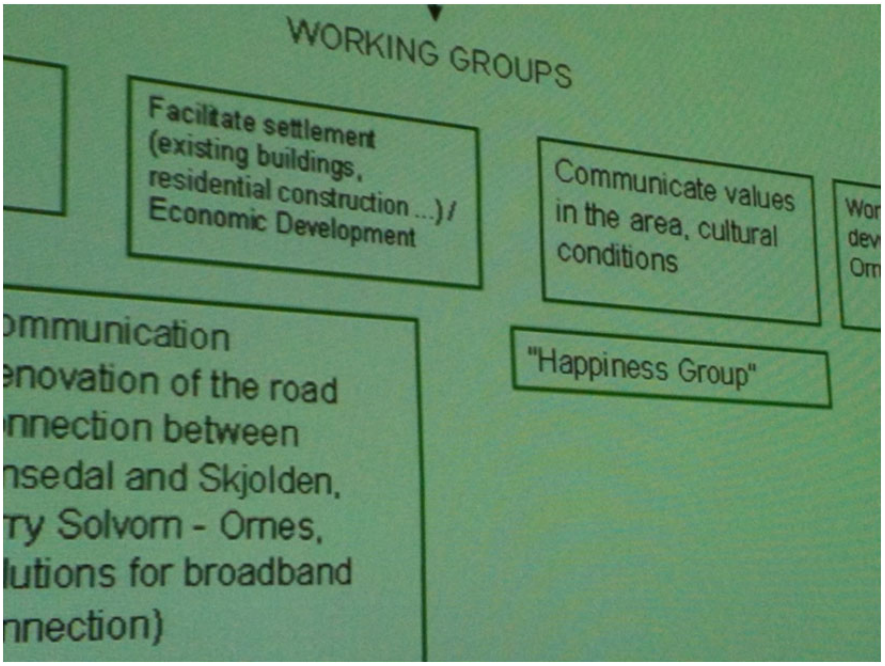


Photo by Shana Hirsch

# 3.1 Introduction

Society is changing—people are becoming more aware and more involved and increasingly recognizing shortcomings in top-down policy approaches. These shortcomings manifest themselves in various ways (e.g. the high cost of reaching agreements). Policy-makers must respond to these changes and in order to do so a new type of policy is needed—place-based policies, policies which enable and empower residents and governments at the local level to improve cooperation and give input to officials at the national level (OECD, 2011).

The purpose of this paper is to compare governance structures from several nations so that policy-makers within Sogn og Fjordane can draw from experiences abroad to improve the delivery of services to their constituents. This paper examines two local governance issues: 1) autonomy 2) cooperation. Autonomy focuses on the decision-making capacities of local governance in relation to vertical pressures from higher levels of government. Cooperation, on the other hand, reflects the co-ordination of multiple local governments on a horizontal level.

The group preparing this chapter consisted of five student members and two faculty members from different countries: Spain, Republic of Srpska (Bosnia), Scotland, the United States, Canada and Norway. Drawing from both secondary data sources and the relevant literature, the group hopes to provide a basic framework which can be utilized by Sogn og Fjordane's policy-makers in their future decision-making capacities.

## Local governance

The scale of local governance varies significantly across the six sample countries and sub-regions and some indicators are provided in table 3.1. The state of Missouri in the United States has the largest number of county units with 115 while the Republic of Srpska at the other extreme has none. Among the countries with county level governments Norway has the fewest with 19.

Missouri has the largest number of municipalities with 1,264 while Scotland has none. These extremes already provide an indicator of the variations in the structures of local governance. Most, but not all, countries have both county and municipal levels of government. Hence the distribution of functions across levels of government must inevitably vary. In addition the intensity of representation can be quite diverse. Norway and Ontario, Canada, have the largest average populations per county at over 250,000 persons while Missouri has the smallest at roughly 52,000. Ontario has the largest population per municipality at almost 30,000 while Missouri has the smallest at just below 5,000. Norway's sits in the lower middle position with just over 11,000 persons per municipality.

Table 3.1 Comparative local governance structure and population (2010)

| Indicators / Country /Region | No. of counties | No. of municipalities | Total population | Average population per county | Average population per municipality |
|---|---|---|---|---|---|
| Norway | 19 | 430 | 4 900 000 | 257 895 | 11 395 |
| Scotland | 32 | 0 | 5 200 000 | 160 000 | 0 |
| Missouri (USA) | 115 | 1 264 | 5 988 927 | 52 078 | 4 738 |
| Catalonia (Spain) | 41 | 947 | 7 535 251 | 183 786 | 7 957 |
| Republic of Srpska (Bosnia) | 0 | 63 | 1 433 038 | 0 | 23 113 |
| Ontario (Canada) | 48 | 444 | 13 200 000 | 275 000 | 29 730 |

Source: Author's elaboration

The number and size of local government units also influences the intensity of representation. Table 3.2 compares available data on the number of elected representatives. Norway has by far the most intense level of representation with almost 11,000 elected municipal representatives and only 448 persons per elected representative. Catalonia, Spain is a close second with over 9,000 elected municipal representatives but the number of persons per elected representative is almost double at 825. In all countries the percentage of women elected is much lower than men with Norway have the highest percentage of women elected and the Republic of Srpska the lowest.

Table 3.2 Comparison of municipal elected representatives (2010)

| Indicators / Country/ Region | Total No. of municipalities/ lowest level | Total No. of elected represen-tatives | Average population/ elected representative | Gender of elected representative | |
|---|---|---|---|---|---|
| | | | | Male (%) | Female (%) |
| Norway | 430 | 10 946 | 448 | 62.6% | 37.4% |
| Scotland | 32 | 1 222 | 4 255 | 78.4% | 21.6% |
| Missouri (USA) | 1264 | NA[3] | NA | NA | NA |
| Catalonia (Spain) | 947 | 9 137 | 825 | 69% | 31% |
| Republic of Srpska (Bosnia) | 63 | 1 408 | 1 018 | 84% | 16% |
| Ontario (Canada) | 444 | NA | NA | NA | NA |

Source: Author's elaboration

A third item of importance to local authorities is fiscal capacity. The provision of the services required by their residents necessitates that local governments have

[3] NA denotes such data are not available due to a lack of central reporting of such statistics.

resources. The simplest measuring rod of the amount of services provided by the local governments to their populace is the amount of expenditures, both in total terms, average terms, and per capita terms, where per capita is defined as per resident or per head. Because the countries vary in currencies, each region was expressed in a common denomination, the Euro. These expenditures are detailed in table 3.3 below.

The greatest total expenditures at the municipal level amongst the study region were in Ontario, Canada with municipal level governments spending 39.2 billion Euros. Norway was a close second with it's municipalities spending 37.9 billion Euros. Catalonia had the lowest reported expenditures with its municipalities only spending 9.8 billion Euros. Because there are differences in the number of municipalities within each country or region, these expenditures were averaged out over all municipalities. Ontario's average municipal expenditures were slightly greater than Norways (88.3 million Euros and 88.2 million Euros, respectively). Owing to peculiarities with statistics for the U.S., all county and local government expenditures are reported jointly and as such, no direct inferences can be drawn. Catalonia again had the lowest municipal spending with the average municipality spending 10.43 million Euros. When these expenditures are examined in per capita terms, Norway's municipal governments clearly have the highest expenditures, 7,740 Euros, while Catalonia is again the lowest with per capita expenditures of 1,311 Euros. It should be cautioned that such numbers only tell a portion of the story as there exists clear differences in what level of government is responsible for the provision of different services in each nation or region.

Table 3.3 Municipal expenditures

| Indicators<br>Country/ Region | Total expenditures at the municipal level (€) | Average expenditures per municipality (€) | Average municipal expenditures per capita (€) |
|---|---|---|---|
| Norway | 37.9 billion[4] | 88.2 million | 7 740 |
| Scotland | 21.5 billion | 67.1 million | 4 264 |
| Missouri (USA) | 24 billion[5] | - | 3 037 |
| Catalonia (Spain) | 9.8 billion | 10.43 million | 1 311 |
| Republic of Srpska (Bosnia) | NA | NA | NA |
| Ontario (Canada) | 39.2 billion | 88.3 million | 2 991 |

Source: Author's elaboration

Our comparison of governance issues will focus on two general issues that arise in many local governance contexts. The first is the issue of local autonomy in relation

[4]Statistical data refer to municipalities in Norway. Comparison with Scotland and Missouri requires addition of county spending in Norway, which gives a total of 357.2 billion NOK (44.62 billion Euros) or 9107 Euros per capita.

[5] Statistical records do not distinguish between county and municipal expenditures.

to higher order government authorities and the second is cooperation between local government units and in partnership with private and civil society organizations.

## 3.2 Autonomy

Autonomy can be explained as "the right and capacity to make choices". Many communities seek the right to make policy that is to some degree independent of national authorities. In addition to increasing pressure on national budgets there has been a tendency to download responsibilities to lower levels of government. These combined processes have led to rising friction between levels of government and to a growing debate over public sector reform (Pekkarinen et al. 2011).

In the debate over the allocation of responsibilities and rights between levels of government the OECD offers a useful model of five dominant gaps that challenge multi-level governance relationships. These are set out in table 3.4 below.

Table 3.4 Gaps that challenge multi-level governance relationships

| | |
|---|---|
| Information gap | Asymmetries between levels of information at different levels of the administration |
| Capacity gap | Lack of human, knowledge or infrastructure resources to carry out tasks |
| Fiscal gap | Difference between sub-national revenues and required expenditure |
| Administrative gap | Administrative borders do not correspond to functional economic areas at sub-national level |
| Policy gap | Central government take a vertical approach to cross-sectoral policy |

Source: OECD, 2011

These gaps represent weaknesses that higher tier governments often ascribe to lower tier governments with the suggestion that these weaknesses render it inappropriate for greater autonomy to be allocated to lower tier decision making. A the same time lower tier decision makers suggest that these gaps work in both directions and sometimes make it more appropriate to distribute responsibilities and resources downward. Further, it should be noted that these gaps do not constitute mutually-exclusive categories. Often the gaps will overlap and several will be present in the implementation of a specific policy or program.

### Information gap

The information gap refers to asymmetries between levels of information at different levels of administration. Viewed from below local residents have high levels of information about local conditions and the potential local impacts of policies which higher levels of government may lack or ignore. Viewed from above national or regional level authorities have information about larger scale impacts and wider agreements and obligations that limit the range of variation that may be acceptable at the local level. As a result different levels of government feel justified in pressuring

for greater decision making responsibilities. The resolution of these conflicting perceptions requires openness to greater dialogue between levels. Such dialogue makes greater demands on time and can slow down decision making but can result in more informed decisions and a higher level of lower tier support for implementation of decisions.

Gormley and Balla (2004) provide a U.S. based example of an information gap in environmental policy. The U.S. federal government sets environmental guidelines on emissions, effluents, and standards through its regulatory agency, the Environmental Protection Agency (EPA). The guidelines set by the EPA must be enforced by the states. The states argued that allowing them more flexibility would lead to more successful fulfillment of policy goals owing to the states' superior knowledge of local conditions such as economic, geographic, and topological circumstances and constraints.

The devolution of authority to the states began in the 1980s under the Reagan administration. Critical minimum environmental standards must still be met irrespective of local conditions whereas the states were granted more flexibility and discretion in the enforcement of other environmental policy goals. States are still required to report relevant statistics and evidence of compliance with standards to the EPA. The EPA continued its reform in the 1990s during the Clinton administration. Performance Partnership Agreements (PPAs) granted the states the ability to negotiate directly with the EPA. The outcomes of these negotiations grant the states relaxed reporting requirements in exchange for promises to improve performance and proof of such progress (Gormley and Balla, 2004).

The potential insight to be gained by Norway's county governments is the value of PPAs. It should be noted that there are fundamental differences in governance structures between the U.S. and Norway. Owing to the United States' federalist system, the states retain more independence from the central government and therefore, can put demands on the central government that Norway's counties cannot. However, such partnership programs between central and county governments can enable county governments to exploit their local knowledge advantages to achieve policy goals.

## Capacity gap

The capacity gap refers to differences between the non-financial resources needed to carry out a given policy and the resources actually available to the level of government that is to complete the task. These resources are often of the human, knowledge or infrastructure variety. A shortfall of needed roadways or trained professionals are ready examples of this gap. Higher level government officials often view such deficiencies as a justification for why such a task should be carried by the central government. Conversely, local officials often view such problems as either too great of demands from the higher-levels of government or as a justification for greater resource allocation to the locale. The resolution to such problems require communication of the capacities of the various levels of government and a mutual understanding of what problems are likely to arise in the implementation of a given program.

A common problem in many municipalities in Sogn og Fjordane – as in much of rural Norway – is shortage of doctors to meet the demand for their services. Five out of nine doctors are only temporarily employed. Moreover, the doctors who are temporarily employed at the health centres in Sogn og Fjordane are very often

relatively young residents, often from Denmark and Sweden. This can present language difficulties for some residents, especially the elderly. Equally problematic is that many of these doctors leave Sogn og Fjordane after only a few months, creating an issue of continuity of doctors (Sogn Avis, 2011).

There is no complete solution to this issue at present. Currently, national authorities and the county governors are working with the municipalities to reform health care services to address this issue. A solution being currently employed in the U.S. is the creation of regional medical campuses. Regional medical campuses allow medical schools to increase class sizes while training doctors in locations away from where the actual medical school is located. The typical sequence is for the doctor to spend their first two years at the main campus and their third and forth year at the clinical campus. This allows the core training to be completed at the main facility while expanding the patient base of the program (Mallon *et al*., 2006).

## Fiscal gap

The fiscal gap arises from a difference between local government receipts and the actual expenditures needed to provide required services. The receipts, or revenues, can be those collected from local residents (e.g. a property tax or local income tax) or intergovernmental transfers. The view from the higher levels of government is such problems arise from the inefficiencies of local governments and thus, such service provision should be centralized to capture economies of scale. Local officials, however, will contend that they are not inefficient, but the allocations of money is simply not sufficient to meet the amounts needed to carry out required programs. The solution to such problems are typically complex and not straightforward. It could be that the higher levels of government are not providing adequate funding to support their programs or it could be that the tasks are too expensive when carried out locally. Only a careful assessment of the actual problem can fully redress such issues. Higher-level officials must be aware that the cost of providing a given service can vary greatly from location to location (and such costs are likely to be higher in more remote, sparsely populated regions), while local-level officials must be aware when some programs are too costly to simply go it alone. In some instances, centralization may make more economic sense, whereas in other situations, cooperation (discussed later in this paper) may help economize on costs.

The entity government of the Republic of Srpska is currently facing a fiscal gap. The Republic of Srpska determines the revenue allocation to the municipalities and decides how funds are allocated across all levels of government by formula. The current formula apportions 75 percent based on the population of the municipality or city, 15 percent based on surface area, and 10 percent based on the number of students enrolled in secondary-level schools. But this allocation scheme puts smaller, poorer, and more sparsely populated regions at a disadvantage and leads to unequal service delivery (MALG-RS, 2010).

The Republic of Srpska needs a revision of their formulae to ensure a more equitable allocation of funds so that minimum levels of service provision can be guaranteed. One source the policy-makers of the Republic of Srpska could consider would be the fiscal equalisation scheme used in Norway.

## Administrative gap

The administrative gap arises when geographic delimitations and boundaries do not correspond with the actual economic boundaries. A common example of this is

programs aimed at fostering economic development in a given city while ignoring the surrounding towns and region. Desmet and Fafchamps (2005, p 263) cautioned against programs and analyses at purely the city-level, arguing they treat cities as "islands, where the hinterland does not matter." Officials in higher-levels of government are often not aware of these typically unclear boundaries. Policy-makers at the local level often recognize this problem as a result of their greater knowledge of local conditions. The solution to such issues is both a deeper understanding of the complexities of multi-regional economies and aiming programs, such as economic development initiatives, at broader regions.

*The case of Catalonia in Spain*

In Spain, there is a problem of guaranteeing the quality of primary education in small municipalities due to constraints of small scale. Each autonomous region has total competence in educational matters, which means that they can adapt the National Educational Laws (LODE, LOGSE, LOPEGCE and LOCE) to the social, cultural, historic, economic and politic reality of the Community.

The unitary rural school is that school of a single classroom where boys and girls of different ages and educative levels receive teaching together.

Rural schools can come together in 'groupings'. These groups of multi-grade schools are created with the purpose of:

- Ending the professional isolation of the rural teacher.
- Opening cultural horizons to rural boys and girls.
- Strengthening collaborative and team work.
- Sharing human, structural, administrative and managing, material and economic resources to be used by all the schools of the group.
- Developing a model of participation of the educational community in the daily tasks of the rural school.
- Collaborating in territorial balance and dignifying the rural population.

In the year 1988 the Decree of Scholastic Zones in Catalonia appeared; a ZER is a group of rural schools (unitary and/or cyclical) which due to teachers' pedagogical affinity and certain geographic proximity are structured as a scholastic centre. They share an educational and curricular project (with travelling specialist teachers in physical education, musical education, special education, foreign languages - English or French - and the optional subject of catholic religion), without losing the school's own uniqueness. At the present time, there are some 103 ZER, spread over all the rural Catalonian territory, recognized by the Education Department. The group of schools which is taking part in the NEMED network, "ZER El Cep de Sis", is a consolidated ZER composed of 4 schools, located in different municipalities and with different degrees of capacity.

## Policy gap

Policy gaps arise when central governments delegate all the authority and decision-making capacities of a particular program to a single branch or agency. Such gaps are problematic as they often lead to that body making decisions based solely on their own expertise while ignoring the input of related agencies. An example of this type of gap could be stringent environmental policies that ignore economic or

cultural ramifications, or *vice versa*. Such problems require coordination across agencies and levels of government to ensure that all facets and outcomes of a particular policy are considered prior to its enactment.

*The case of Scotland*

Scotland presents an example of a policy gap and a method to overcome such gaps. Scotland is characterized by many sectoral national government agencies and many issue-based third sector organizations. The competing interests of these groups causes coordination problems at the local level. Community Planning is a process which helps public agencies to work together with the community to plan and deliver better services which make a real difference to people's lives. Community Planning in Scotland aims to: ensure people and communities are genuinely engaged in the decisions made on public services which affect them; and to ally the organizations to seek commitments from organizations to work together, not apart, in providing better public services. Moreover, two further key principles in addition to the main aims are: 1) using Community Planning as the key over-arching partnership framework helping to coordinate other initiatives and partnerships and where necessary acting to rationalise and simplify a cluttered landscape; and 2) enhancing the ability of Community Planning to improve the connection between national priorities and those at regional, local and neighbourhood levels.

An example of an application of Community Planning are Single Outcome Agreements. Single Outcome Agreements are agreements between the Scottish Government and the Community Planning Partnerships (CPPs), which set out how each will work towards improving outcomes for the local people in a way that reflects local circumstances and priorities, within the context of the Government's National Outcomes and Purpose. Each of the outcome agreements are uniquely shaped to reflect the needs and circumstances of the areas they cover and designed to ensure local people know exactly what their CPP is committed to provide on their behalf, with all levels of government working together to deliver better services across the whole of the country.

What the above examples demonstrate are both the common problem of autonomy and the distribution of responsibilities among levels of government and the potential for solutions using the OECD's "gap" framework. Officials at all levels of government need to work together in order to bridge these gaps to best ensure the needs of their constituents are met (OECD, 2009).

## 3.3 Cooperative Service Delivery

Issues of autonomy address the vertical relationships that arise between various levels of government; conversely, cooperative service delivery issues address the horizontal relationships between governments (and third sector groups) at the same level of government. Cooperative service delivery issues can be broken into three primary categories: 1) cooperation, 2) amalgamation, and 3) public-private partnerships (each detailed below). What sets such issues apart from autonomy issues is the absence of hegemonic or authoritative control in reaching agreements owing to the equal-footing of the actors involved. County or municipal authorities typically will not have the authority to decree what action, if any, should be taken by their fellow

county or municipal authorities. Owing to this, compromises must be reached that protect the interests of all stakeholders and their constituents.

### Cooperation

Municipal cooperation is the mutual venture towards the advancement of a shared goal between two or more government units on a horizontal level. Lombard and Morris (2010) present an example of communities working together across state lines to achieve the goal of economic development. The primary cities were Hartford, Connecticut and Springfield, Massachusetts. Economic development programs in the U.S. seldom transgress state boundaries owing to both statutory law differences and which state receives taxes collected from the firm. The cities aimed to develop and market the Interstate Highway 91 corridor (commonly known as New England's "Knowledge Corridor"). Instead of competing amongst each other, as is common in the U.S., the cities and the surrounding six counties worked together to pool resources so that a wider range of industries could be attracted.

### Amalgamation

Amalgamation is the horizontal merger of two or more government units into one unified unit. Athens and Clarke Counties (Georgia) merged with each other in 1991. Selden and Campbell (2000) evaluated the fiscal ramifications of this amalgamation using eight years of data and compared Athens-Clarke County with three other counties in Georgia. The authors found that real and per capita income steadily increased over the review period. Additionally, while there were cost savings in some government departments, such savings were not ubiquitous across all departments. Some functions, such as police expenditures increased initially in the first year, but decreased over the remaining years. Operating expenditures decreased over the study period, on the whole. Selden and Campbell caution that the potential economies of scale from amalgamation are ultimately dependent on the policies chosen by the elected officials as well as by settlement patterns.

### Public-private partnerships

Public-private partnerships are the allocation of service delivery responsibilities to the either the private or the third sector. Public-private partnerships (PPPs) can be employed by government bodies to help improve service delivery in rural areas. One such arrangement is the ConnectKentucky PPP. Kentucky is a largely rural state and as previously mentioned, is amongst the poorest states in the United States. ConnectKentucky laid broadband lines which have allowed for 98 percent broadband access in rural Kentucky. Rural residents are using these broadband connections to order needed farm equipment, gather information on breeding stock, and finding higher prices for farm outputs. The success of this program has led to efforts to expand this program to rural West Virginia and Tennessee (The Economist, 1997).

## 3.4 Concluding Remarks

This report provides brief examples of the myriad of complexities that arise in multi-level governance and provides examples of how local governments abroad have approached and addressed some of these issues. It should be noted that the examples

presented in this report do not represent an exhaustive and complete survey of these problems, but rather provide a framework from which challenges can be addressed. Moreover, each problem faced by policy-makers is likely to be unique and a product of the circumstances surrounding the problem. When dealing with issues of either jurisdictional authority or service delivery, it is important to understand the peculiarities of space and time and to exploit natural advantages such as local knowledge. Using this local knowledge in tandem with comparative analysis will allow Sogn og Fjordane to best provide for the needs of its constituency.

Multi-level governance is a complex issue rife with problematic gaps. Local officials and central government officials must work together by sharing knowledge at both the vertical- and horizontal-level to gain a deeper mutual understanding of their own limitation. Further, as cautioned by the OECD (2009, p 2) officials at different levels of government must recognize their "mutual dependence, since it is impossible to have a complete separation of policy responsibilities and outcomes among levels of government." A more thorough examination of what deficiencies are likely to arise when implementing programs coupled with improved communication and cooperation can help address these issues and will allow for greater success when implementing policies.

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# 4 New Directions for Farming and Food in a Challenging Environment

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Photo by Pamela Kelrick

## 4.1 Introduction

There are many challenges for the future of agriculture in Sogn og Fjordane, but also many opportunities. Challenges include: an ageing population, declining farm income, and a lack of new farmers. Other rural areas in North America and Europe face similar challenges; programs that are considered successful in meeting these challenges in these areas are used to support our analysis. We propose that the County of Sogn og Fjordane undertake specific programs to maintain its agriculture base. First, develop regional branding to tie agricultural products to the natural beauty of the region. Second, promote new markets through organic farming, agroforestry, and aquaculture. Third, encourage the next generation of farmers by creating a database of available farmland and by bringing youth to the county to work on farms. It is crucial that the County coordinate these programs so that agriculture can be developed alongside other sectors in Sogn og Fjordane.

### Background

A few statistics about the nature of farming in Sogn og Fjordane will help us to situate and describe the county's unique agricultural conditions. The county of Sogn og Fjordane contains approximately 45 000 hectares (2. 4 %) of agricultural land. Of the agricultural land available, 62% of it is cultivated[6]. Productive agricultural land is decreasing every year, with roughly 6% of agricultural land being taken out of production over the past 10 years. Despite the decrease in total productive farmland, the average size of agricultural land per holding has increased by 45.6%. In 2010, Sogn og Fjordane had about 3 000 registered holders of agricultural land[7], and the average farm size was 14 hectares (in 2010), considerably smaller than other regions of Norway, which average 21 hectares (Statistics Norway 2011). Approximately 25% of the population lives on agricultural and/or forest property (Statistics Norway 2011). Production is dominated by animal husbandry and production of fruits and berries. About 87% of the holders engage in animal husbandry, especially winter fed sheep, goats, cattle and dairy cows. According to the Agricultural Census 2010, 9% of farmers produced fruit, and 6% produced berries (Statistics Norway 2011). Despite the limited number of producers, the production of fruits and berries in Sogn og Fjordane accounted for approximately 85% of the raspberries produced in Norway (Sognfruktre.no 2011). The number of animals per holder has increased substantially over the last 10 years; however, the figure remains below the national average. The average number of dairy cows per holder in Sogn og Fjorande is 15, while the national average is 21 cows. Likewise, the average number of winter fed sheep is 48, while the national average is 60. Dairy goats on the other hand are more abundant in Sogn og Fjordane (97 per holder) than at the national level (91 per holder).

Agriculture in Norway is predominantly carried out by older men. According to Statistics Norway (2011), the average farmer is a 52-year-old male. Furthermore, only 15% of holders are women and 15% of holders were found to be younger than 39 years old. Only 12% of the holders make the majority of their income (90% or

[6] Agricultural area that has been ploughed and can still be ploughed further. The area can be used for cultivating field crops or meadow and pasture renewed by ploughing.

[7] To be registered as a holder in Statistics Norway, one has to fulfill certain conditions, e.g. being registered as at the National Business Registry, be an active farmer, gross income above 20 000 NOK within the last 12 months.

more) from agriculture. The trend in Sogn og Fjordane shows a shift from revenues from agriculture towards wages and salaries. On average, wages and salaries are the main source of income; almost 50% of average gross income in 2009 (Statistics Norway 2011). Diversification is an accepted part of the livelihood of farmers in the county, and 53% of the holders had a supplementary industry consisting of non-agricultural activities in 2010 (Statistics Norway, 2011). Types of supplementary industry are contracting work with farm machinery (18%), processing timber for sale (12%), selling hunting or fishing rights (21%), camping site, cabin renting, and farm tourism (8%) and renting out farmhouse or farm buildings (9%).

## 4.2 Research Question/Problem

The county of Sogn og Fjordane faces challenges in the future with regards to agriculture. These include product diversification, increasing production of crops in response to population increases, an aging farming population, high entry barriers to young farmers, concerns over preservation of traditional farming methods, and keeping small scale farmers competitive in an increasingly globalized market. At the local level, tourism does not work *with* agriculture but rather the two sectors operate in parallel with each other. Because of these challenges, the central question that will be addressed in this paper is: *How can Sogn og Fjordane preserve its rural identity and maintain agricultural production that is competitive and self sustaining*?

To answer this question, case studies from other countries with similar challenges have been used as a basis for comparative analysis and inspiration. To accomplish this, we are working from the viewpoint that economic development should come through innovation and collaboration of different players in the community (Corridor 2020, 2011). The case studies address the challenge of marketing and branding, linking farmers and market together to shorten the value chain, organic farming, income/crop diversification and the establishment of young farmers and farm employment.

## 4.3 Possible Strategies

### Regional branding: Sogn og Fjordane as an international recognized region of high quality food, tradition, history and nature

Regional branding presents an opportunity for Sogn og Fjordane to market its products and itself to Norway and the rest of the world. Branding is possible because of the ability to differentiate the region from other areas of the country. Its forest, agricultural, and water resources contribute to the region's landscapes. Through branding, agriculture can remain competitive, traditional, and multi-functional, which are important issues addressed by farmers, the Ministry of Agriculture, and the Agricultural Director at the County Governor Sogn og Fjordane. Regional branding for Sogn og Fjordane can learn from the example of Tuscany, Italy. The name of Tuscany invokes imagery of the landscapes, wine, cheese, and olive oil that are synonymous with the region. Branding began with wine but the agricultural sector now thrives with brand recognition through its wines, cheeses, and olive oil.

Furthermore, brand recognition has lead to positive spillovers into other sectors, particularly in the tourism sector.

According to Ministry of Agriculture, Norwegian agricultural policy has several objectives: (i) food security – production with high quality (ii) Conservation and protection of cultivated land, and (iii) animal welfare and high standard of plant health, (iv) reduction of negative climate effects, and (v) preservation of cultural landscape and history (Agricultural Director at the County Governor Sogn og Fjordane; Ministry of Agriculture). Regional branding is a means to target all of the issues raised above. By creating interdependencies between sectors (public, agri-cultural, tourism, education) sustainable growth will be achieved. When formulating a regional branding policy, three points must be considered:

(i) Traditional farming is part of the landscape along with the fjords, and forests.
(ii) Despite the preservation of the agricultural landscape, farmers struggle with production.
(iii) Even with subsidies, farmer's struggle to earn sufficient income solely on agricultural production.

Sogn og Fjordane possesses the necessary characteristics to emulate the Tuscany regional branding model. Regional branding, particularly following the Tuscany experience, would benefit the county. Like Sogn og Fjordane, Tuscany was a rural area traditionally dependent on agriculture. However, through regional branding, Tuscany has transformed its agriculture and tourism sector (Pasquinelli 2009). Farmers practice multifunctionality as they produce traditional crops, sell added value goods, and participate in the tourism sector as well (Pasquinelli 2009; Bindi 2008). According to Bindi, in Tuscany, regional branding increased regional GDP of the agricultural sector by 1.7 %, and the agrofood and agro-tourism sectors by 4.8% and 2.7% respectively. Additionally, exports of the agricultural sector rose by 7.3%, while the overall contribution from the agro-food industry rose by 11.8% (Bindi 2008).

Based on preliminary study of the region, we recommend that a product representative of the region be chosen to signify the denomination of origin of the region. We believe that a potent symbol for this regional branding could be sheep. Reasons for this include:

- 36 % of farmers raise winter fed sheep (Statistics Norway 2011).
- Sheep are central for the cultural landscape.
- Sheep meat and wool have the potential for differentiation and are added value goods.
- Sheep in the county are grass-fed and free-range, leading to a highly desirable, natural and sustainable quality meat.
- During summer, sheep graze in the bush/mountains before being slaughtered in the fall.
- Sheep do not require feed imports, whereas pigs and cows do.
- There are no major predators of sheep in this area (wolves, foxes).

An important and necessary step in the creation of a regional branding policy is the creation of a branding committee to consist of members of the community, including farmers, entrepreneurs, tourism experts, government officials, environmentalists,

youth, and other members of the community. Together, the community can jointly determine the marketing campaigns on which to promote sheep.

Regional branding will allow small scale agriculture to become the identity of the region. Branding has the potential to safeguard cultural heritage and traditional farming practices as well as to increase farmer income through increased production, exports, and tourism (Messely et al. 2010; Calvo-Iglesias et al. 2006). In conclusion, government support for the creation of a regional brand can be a suitable approach for sustainable growth of the region, survival of agriculture, and the creation of inter-dependencies amongst sectors to help ease the dependency on agricultural subsidies in Sogn og Fjordane (Donkers et al. 2006).

## Diversification of farm incomes – create a market for new niche products

Lack of a stable farm income leaves farmers more vulnerable to market and climatic fluctuations. Low farm income demotivates farmers to produce more and forces them to pursue complementary source of income in other sectors. Diversification of production and farm income could provide an incentive for farmers to continue farming. Most arable land in Sogn og Fjordane is already in production with traditional crops and livestock. This means that new crops could be explored as a means to their incomes. The physical and geographical characteristics of the region favor agroforestry and aquaculture as well as organic farming in Sogn og Fjordane. As a complement to branding Sogn og Fjordane with sheep, the possibility of free range and grass fed organic sheep could link different farming enterprises.

## Organic farming

In accordance with the Økoløft project, Sogn og Fjordane established a partnership with Hordaland that seeks to achieve 15% production and consumption of organic food by 2020 (County office 2011), with bulk of adoption and implementation of the program planned between 2010 and 2013. According to Debio Statistics (2010), 187 certified organic farms existed as of 2010 covering roughly 4.1% of the overall certified organic farming area in Norway. In addition, Sogn og Fjordane had 24 businesses involved with packaging and marketing of certified organic products in 2011 (Debio Statistics 2010). Organic production is a niche market with great potential.

## Mushrooms and seaweed

Agroforestry includes a diverse selection of crops that can be grown in forested regions, including wild nuts, medicinal herbs, and certain fruits. These high-end specialty products may be an effective way to diversify farmers' incomes with limited arable land. One product that may be profitable for farmers in this region is specialty mushrooms. Medical research has revealed the health benefits of some species and as consumers increasingly have a global palette, specialty mushrooms (such as shiitake and oyster) are experiencing an increase in demand that current supplies have not matched. In 2010 alone, the value of specialty mushrooms increased by 15%, and additionally, Norway is one of the top importers of mush-rooms (Roach 2011).

Regions similar to Sogn og Fjordane have had success with growing mushrooms as a niche product because of the climate conditions of the area, and farmers in the region may be able to increase their income while providing a high-end product to residents of the surrounding area as well as Oslo and Bergen. In 1990 in the Ozark

Mountains of Missouri, the Ozark Forest Mushroom Company began producing Shiitake mushrooms. The owners of the company had approximately 1000 hectares of forested land, and devoted 2 of them to mushroom production (Bruhn & Hall 2008). While they started with only 100 logs producing mushrooms, as of 2008 they had 16000 logs producing fresh mushrooms for sale in specialty grocery stores and high-end restaurants.

Aquaculture is already an important element of Norwegian food production, but thus far it has been mostly limited to fish and shellfish farming. Another way to diversify the incomes of farmers and aquaculturists could be to introduce the cultivation of seaweed and sea vegetables for human consumption. While most seaweed is still harvested from the wild, the growing concern of depleting sources is creating a demand for cultivated seaweed, and companies like Portland, Maine's Ocean Approved company is being awarded grants not only from the United States Department of Agriculture but also the National Oceanic and Atmospheric Association (Hendrix 2010) in order to meet this demand. Other countries, such as Ireland, are researching this topic heavily and investing in companies that are willing to investigate the viability of commercial production (Irish Seaweed Research Group 2011).

Although seaweed is not a traditional food item in Norway, the market is increasing and it could be developed and promoted. For instance, seaweed is a necessary ingredient for sushi, one of the fastest-growing food trends in Norway and the rest of Europe. According to Nortrade, the number of sushi restaurants in Norway doubled between 2005 and 2010, with total sales in 2008 coming to 520 million NOK (Sorensen 2010). Additionally, the health benefits of seaweed, particularly in kelp, are receiving more attention. With an infrastructure already in place for aquaculture firms, incorporating seaweed into the food production of the region would require little in regards to development.

Potential barriers to niche products could be lack of experience and knowledge, natural conditions and microclimate, diseases, international competition, and labor shortages in the harvesting season. Market access and poor linkages between producers, processors, retailers, and consumers is also a major bottleneck. Financial assistance is needed for the initial setup; however, equally important is the need to connect farmers directly to consumers and retailers. There is little evidence of programs meant to connect farmers with buyers of their products. When dealing with specialty products such as mushrooms and seaweed, such programs are necessary.

A possible solution to Sogn og Fjordane's struggle to improve linkages between producers and consumers can be found in the Almenland region in Styria Austria[1]. Like Sogn og Fjordane, Styria's remote alpine territory has small farm holdings of roughly 10 hectares. The region has struggled with similar challenges such as limited labor force, limited tourism and remote geographical location. In an attempt to link producers with consumers, projects were set up to promote farm gate sale of crops as well as on farm processing of crops into other added value goods. The LEADER (Liaison Entre Actions pour le Developpement de L'Economie Rurale) Program fostered these partnerships by providing the Local Action Groups (LAG) with funding necessary to launch their initiatives (Karner et al. 2010). Furthermore, business owners from different sectors and farmer's organizations took part in the planning process (LINC 2009). As a result of this dialogue, two main initiatives benefited from the funding of the LEADER program:

(i) Almo: A cooperative of farmers who produce high quality beef from alpine oxen: The initiative has grown over 20 years to include 550 farmers, two butchers and one processor.
(ii) Almenland Bauernspezialitäten: A cooperative of 40 direct selling farms in Almeland, that provided support for small farmers through joint advertisement and branding strategies as well as the through the creation of a cooperative relationships between farmers, local restaurants, and tourism enterprises (Cipra 2006).

Creating linkages between different stakeholder groups allowed farmers' products to reach for a wider group of consumers, and likewise, benefited participating businesses (Karner et al. 2010). Success came not only through LEADER funding, but also from the interaction and engagement of local actors in the creation of a regional identity (Kneißl and Wild 2010). A similar model can be applied in Sogn og Fjordane involving the production and consumption of new food products. In addition to the above suggestions, we encourage the county to consider complementary actions, such as creating a market for consumers, both retailers and individuals, to buy local foods from producers.

## Creating opportunities for new farmers

Demographic change is one of the major barriers to the future of agricultural production in Norway and Sogn og Fjordane. There is a demand for farms among youth. According to a national survey by Synovate in 2009, about 8% answered that they were very or quite interested in buying a small farm (Flemsæter et al. 2011). Approximately 24% of farm properties with dwelling houses are not inhabited in Sogn og Fjordane (Statistics Norway 2011). The phenomenon of surplus demand is common to rural areas in many countries, and some innovative solutions have been tried with great success. One such program is the Farmlink program in the United States and Canada. Farmlink facilitates the connection between new farmers and retiring farmers and assists in all aspects of transference of land. This helps to ensure that agricultural land remains in agricultural production. Farmlink improve the relationship between young people and retiring farmers.

Farmlink is a program that has been implemented in many regions of the United States and Canada, including Ontario, Washington, California and Maine. The program was started because of the need for facilitation and linking of retiring farmers and landowners and potential farmers. Farmlink also provides financial and property advice, and consultations and workshops on farming business and life skills. The Farmlink program in Washington State has since its inception in 2002, it has assisted over 800 individuals, provided 30 educational workshops, helped keep over 300 acres in agricultural production (Cascade Harvest Coalition 2011).

The Norwegian Smallholders and Farmers Union, in conjunction with Nature and Youth and Norwegian Rural Youth have created a website which connects new farmers with farmers that would like to pass on their land (Gardsbruk 2011), and they work to create more access to resources that new farmers may need. Unfortunately, there are few farms that are listed for Sogn og Fjordane, and people looking for farming opportunities have a difficult time locating farmland within the county. Because of this barrier to farming, the Sogn og Fjordane County Council could take steps to help locate farmland that is not in production, and create a forum based on the Farmlink model which focuses more specifically on the local county.

## Exchange program for youth in agriculture

To address the problem of shortage of affordable farm labor, there is potential to take advantage of the beautiful and natural scenery of Sogn og Fjordane to attract youth from Norway and elsewhere. In many parts of the world, farms make up for this shortage by utilizing help from young people that are willing to work on farms in exchange for some accommodation and the experience of working on a farm. The county might wish to consider facilitating a program for youth from both Norway and abroad that would like stay on farms in Sogn og Fjordane in exchange for some basic farm training and possibilities for tourism or extreme sport adventures in the weekends. The County of Sogn og Fjordane could promote youth involvement in agriculture by inviting youth to work on farms in the area. In programs of this type, youth apply to be placed on a farm. They usually stay for a minimum of one week and provide labor on the farm for around 20 hours per week. Of course, the program would only be operational in the summer during the farming season. Farms would provide training in agriculture and lodging in exchange for the work. Additionally, the program could potentially organize classes and activities about traditional farming, the fjord, and Norway. The farmers benefit because they have a source for basic labor, which reduces what is usually their main expenditure and the youth benefit by learning about farming and having an opportunity to stay in beautiful Sogn og Fjordane. Additionally, the county could benefit by an increase in tourists, and helping the local farmers.

There are existing programs at the county-level and national-level that could enhance the program. The Sogn Agriculture and Horticulture School in Kurland could serve as a base for the program and incoming youths would receive basic orientation there and take agricultural classes. There is also a national program called Atlantis Utveksling (Atlantis Exchange), which brings people to Norway to live with host families and they have a small program for agriculture work. It is possible that the county could make more use this program instead of developing their own, or they could develop a similar program, which is more directly focused on Sogn og Fjordane.

Some potential problems include transportation to and within Sogn og Fjordane and farmer privacy. Transportation to the farms would also have to be arranged. Some farmers may have issues with inviting youth workers to their farm because of the infringement on family privacy. One potential solution to this would be providing alternative accommodation. The Folk High School in Sogndal would be a good place to house students.

One example of a similar program is the Rogue Farm Corps in Oregon, USA. Participants to this program are placed on a farm usually with another person for company. They work on the farms and they also have one educational day during the week where they all gather together and receive training on an agriculture topic. At the end of the program participants receive a certificate. The Rouge Farm Corps gives people interested in farming an opportunity to develop agricultural skills and learn about some of the issues with owning their own farm. A program in Sogn og Fjordane would provide similar benefits of increasing youth interest in farming and allow them to learn practical skills while also providing labor for small farms in the area.

## 4.4 Conclusion

From the cases studies, one can see that there are several success stories for inspiration to promote the food and farming in Sogn og Fjordane. Although a variety of programs and policies to help the agricultural sector already exist, and they address the issues of income diversification, branding, labor shortages, added value and aging, there is a potential for the County to engage more, and inspiration for these programs can be found in the efforts of agricultural communities in other parts of the world. Our policy recommendation is to brand the County as a special region with a strong production basis of traditional food. Addtionally, it is crucial that the County coordinate these programs so that agriculture can be developed alongside other sectors in Sogn og Fjordane. This could include the initiatives from the case studies. We believe that if the county were pursue these ideas, they can insure the future of farming, and thus the future of the area's rich cultural landscape, for many years to come.

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# 5 Mitigation of Climate Emissions and New Policy Initiatives

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Photo by Katja Cappelen

## 5.1 Introduction

This section will focus on the mitigation of greenhouse gas emissions from the County of Sogn og Fjordane. The overall emissions from the County in 2006 were approximately 1.6 million tons of $CO_2$- equivalents (County Governor, 2011). The section explores emissions from both consumption and production within the County. At the end of the section options are presented for how the County may reduce its emissions within some specific sectors.

Concerns over greenhouse gas (GHG) emissions and their connection with climate change are growing across the globe. In keeping, local governments are becoming increasingly aware that action must be taken at the local and regional level, and that it cannot be left solely up to the state to address this issue. The County of Sogn og Fjordane has demonstrated this mindset through their County Climate plan adopted in 2009 (SFJ, 2009). Overall, Sogn og Fjordane County is not a major emitter at the global scale; there are, however, actions that should be considered to reduce emissions in the County wherever possible. The County Climate plan outlines an overarching goal that the County be climate neutral by 2030, consistent with the national goal of emissions reduction in Norway (SFJ, 2009).

The Sogn og Fjordane County Council recognizes in the Climate Plan that there is an opportunity to reduce emissions released outside the County due to consumption of imported products. Countries today are evaluated on their emissions reductions based on the standards of international agreements like the Kyoto Protocol. This international agreement solely focuses on emissions from production within a country's border. Therefore, emissions from consumer products imported to Norway are attributed to the country that produces the product. Indeed, emissions from the production of imported goods consumed in Norway are not incorporated in the cost of the product that the end-user buys. While the County has no control over the production of products in faraway lands, it can potentially have an impact on the products that are consumed by its residents. A shift in international politics that recognizes the responsibility of the consumer (wherever they may be relative to the producer) as the responsible greenhouse gas emitter might have important implycations for rural areas like Sogn og Fjordane.

As mentioned, there is an increasing awareness worldwide that anthropogenic greenhouse gas emissions are contributing to climate change. Within several states, local governments are beginning to take action to address their emissions through a variety of means. This includes a variety of methods, such as the Aspen, Colorado *Climate Action Plan* which includes such actions as: research and education; energy efficiency in households; expand transit and reduce car use; promoting local food consumption; among others directly related to reductions in greenhouse gas reductions (City of Aspen, 2007). The Climate plan of Sogn og Fjordane focuses on the emissions from the sectors of industry, agriculture, transport, public sector in general, and the County Council in particular.

Three main greenhouse gas emitters in Sogn og Fjordane are explored in this report: *transportation, agriculture and household consumption.* That said, this report will not address emissions by the industry sector. Industry (in particular the aluminum industry) is responsible for the largest portion of the emissions in the County, close to 60 per cent. The industry, however, is seen as a national climate responsibility, whereas and therefore the County Council has limited control to implement change. The aluminum industry in Sogn og Fjordane has already made significant emission cuts, and the facilities are mainly operated using (SFJ, 2009).

For the purposes of this report, we recognize that relocation of the aluminum industry may result in operations powered by less sustainable energy than local hydropower.

According to the County Climate plan the transport sector contributes 12 per cent of the County's greenhouse gas (GHG) emissions. In addition to the significant emissions contribution, transportation was chosen due to the emissions associated with the supply chain transportation of imports from distant countries. The County Council has strong influence on the local transport sector, most of the County roads, as well as the public transport. According to the County Climate plan, agriculture also contributes with 12 per cent of the emissions, and it was therefore selected as an area of evaluation. The County Council has few direct tools when it comes to influencing agriculture, but it works closely with the County Governor to improve local agricultural practices. Finally, we will evaluate household emissions due to personal transportation, household heating and common consumption.

The report has been written with the intent of providing a comparative perspective of emissions issues in Sogn og Fjordane relative to case study examples from other countries. The hope is that these examples may provide the County Council with options to consider for ways to decrease GHG emissions.

## 5.2 Transportation

*Public transport*

Public transportation can be seen as both a means to mitigate greenhouse gas emissions as well as a contributor. Indeed, the same service can reduce the emissions from passenger cars by minimizing personal vehicle use, but still contributes emissions. Increasing tourism in the area will also cause further transportation emissions if careful planning and forethought are not employed.

Also important to note is that the design of Sogn og Fjordane County's public transportation system is unusual for rural areas internationally as it is a fixed-route system with large urban-style buses. Therefore, in some cases urban examples may actually prove more relevant for the County than would rural examples from other countries. This situation will be reflected in the selected case studies.

In Sogn og Fjordane we do know that buses are diesel powered and therefore will contribute greenhouse gas emissions. Indeed, Table 5.1 demonstrates that while public buses are one of the most efficient forms of mass transport, the emission contribution is significant.

Table 5.1 $CO_2$ emissions per passenger km

| Method | g $CO_2$/pkm |
|---|---|
| Train | 8 |
| Moped | 59 |
| MC | 63 |
| Bus | 78 |
| Car | 100 |
| Taxi | 172 |
| Air | 191 |
| Hurtigruta | 367 |
| Ferry | 621 |

Source: Thune-Larsen, H., R. Hagman, et al. (2009)

According to Statistics Norway the county buses have a capacity of 38 seats, however only 26 per cent of the service's capacity is being utilized (SSB, 2010). This means that public transportation in the County could gain from efficiency improvements since there is significant inefficiency. While theoretically, public transportation in the County could be optimized by scaling down to smaller buses, or reducing routes or frequency, the preferable option would surely be methods to increase use. Such methods might include a marketing campaign; fare reduction; or driving deterrent such as a road toll. One example is Whidbey Island, Washington, USA where it was decided that transit would be free rather than include the added costs and burden of collection. Another local example is Portland, Oregon, USA where rail transport in the City centre is free (TriMet, 2011, Island Transit, 2011).

An additional option is that the fuel source for buses could be switched from diesel to an alternative source. For instance, hydrogen fuel cell technology, which has no greenhouse gas emissions, has been tested in various cities such as Whistler and Victoria in British Columbia, Canada (BC Transit, 2006). Another no-emission fuel is electric power, an example of which is Écolobus operated in Quebec City, Quebec (RTC Quebec, 2011). The use of electric vehicles would be particularly beneficial for reducing emissions in Norway due to the high proportion of hydro electricity and significant potential for expansion.

*Goods Transport*

In 2009, heavy duty vehicles contributed 75.9 thousand tonnes of carbon dioxide within Sogn og Fjordane County (SSB, 2011). This accounts for approximately 7 per cent of the $CO_2$ emissions within the County. As can be seen in table 5.2, train and ship transport produce the least $CO_2$ emissions, however these are not well suited for intra-county transport in Sogn og Fjordane. As a result, trucks are the best method for the transport of goods within the County. An option for mitigating the emissions from this sector could include a requirement/incentive to shift to more fuel efficient vehicles in the transport sector, or a restriction on emissions such as exists in London, United Kingdom within the Low Emission Zone (TFL, nd).

Table 5.2 $CO_2$ emissions per tonne km

| Method | g $CO_2$/tkm |
|---|---|
| Lorry/Truck | 135 |
| Ship | 57 |
| Air | 2210 |
| Train | 12 |
| Ferry | 621 |
| Hurtigruta | 367 |

Source: Thune-Larsen, H., R. Hagman, et al. (2009)

It is important to note that the emissions from the international transportation of goods are not accounted for by these numbers. While ships are efficient compared with other methods, they travel long distances to bring imports to Norway which are not included in emission calculations. Indeed, studies have found that these emissions are significant but are not generally accounted for due to their presence in international waters (Reinvang and Peters, 2008, Heitmann and Khalilian, 2010, CICERO, 2009, Peters, 2005). Some options for reducing emissions from international transportation include encouraging more efficient designs for hulls and propellers; shift to larger ships; and shift to alternative power sources such as liquefied natural gas, wind power, biofuels and solar energy (CCC, nd).

Unfortunately, as an international issue this would be difficult for Sogn og Fjordane County to address. Options at this level might include an information campaign to remind consumers of the high emissions from international transport along with the benefits of consuming locally produced products.

## 5.3 Households

*Problem statement*

The population density of Sogn og Fjordane County is relatively small with only 42,867 households (Thune-Larsen et al., 2009). People in these households, however, can still make choices which will reduce their overall greenhouse gas emission output, sometimes referred to as a 'carbon footprint'. Individual residents may feel that their contribution to total emissions is too small to be relevant. However, collective choices by households can reduce the emissions for the entire county. Local governments represent the best chance at organized leadership for promoting public policies and education for citizens to reduce greenhouse gas emissions. That said, there are advantages and disadvantages to all changes because emission reduction will always require a behavioural or technological change, and sometimes both.

The wide diversity of consumption behavior makes it impossible to fully cover in this report. Instead, this section will focus the discussion on three of the most significant ways residents can reduce their emissions: personal vehicle use, home heating, and common purchasing. Personal vehicle use represents the most significant emission contribution by most households. Home heating sources, particularly in Norway, are another significant contributor. Finally, purchasing patterns in terms of basic food and household items represent a very significant contribution to emissions, both in Norway and along the supply chain worldwide.

## Household emissions

*Personal vehicles*

Personal vehicle use is a necessity in rural counties such as Sogn og Fjordane to purchase goods and take advantage of services. Personal vehicle emissions for the county total 130.8 (1000 tonnes $CO_2$ equivalent) (SSB, 2009a). Some consumers may buy vehicles that emit lowers emissions; yet there isn't a clear role for the county to play in vehicle purchasing habits. There are some cases to consider, however, that illustrate ways Sogn og Fjordane County may reduce emissions presently and into the future.

## Vehicle idling

The State of Connecticut Department of Energy and Environmental Protection in the United States campaigns against vehicle idling because doing so emits 20 times more emissions than traveling at 30 mph for the same period of time. Further, 10 seconds of idling in a vehicle uses more fuel than restarting the vehicle (2011a). A 2007 survey of 1300 U.S. drivers concluded that idling accounts for over 93 MMt of $CO_2$ and 40.1 billion liters of gasoline a year, 1.6% of all US emissions. This large emissions release also directly translates into wasted fuel and money (Carrico et al., 2009). Anecdotally, we observe that places with extreme temperature seasons seem to lead to even more personal vehicle idling because people want to run the heating or air conditioning for quick store stops, or chatting on the phone. Winter in Sogn og Fjordane is much longer and colder than the State of Connecticut. While no data is available on the extent of idling in the county, it is difficult to imagine that the vehicle use would be substantially different than the case study.

## Commuting patterns

The State of Virginia has two fast growing counties, Loudoun and Fairfax, and the result is a large number of public sector employees. These counties strive to attract the best qualified candidates, reduce emissions production, and retain employees. Enabling some employees to telecommute for work satisfies all of these objectives, and more. Fairfax County has nearly the same number of public employees as Sogn og Fjordane County, 11,900 and 11,174 workers respectively (SSB, 2009b, SSB, 2006). The topography in Sogn og Fjordane, however, makes commuting even longer. Fairfax County, Virginia has developed a flexible plan for managers to allow workers to try telecommuting for their work as little as 1 day per month. Some departments have found the telecommuting options essential for hiring the most qualified workers, as they work from as far away as the State of Pennsylvania. As their workforce has grown, allowing workers to telecommute has significantly reduced the need for additional office space. The quantity of emissions saved, therefore, is the total of fuel not used in vehicles, energy not used in large publicly-owned buildings, and additional consumption for things like buying lunch. This strategy has become especially important as workers choose to live outside of the city center to pursue housing or other amenities.

## Home heating

Home heating in the United States accounts for approximately 17 per cent of total greenhouse gas emissions per year. U.S. homes, however, primarily use oil or natural gas for home heating (EPA, 2011). Homes in Sogn og Fjordane County are typically heated using electricity and wood stoves. Together, these total, on average,

about 50 per cent of a household's energy consumption in Norway. Although electric heat systems are often thought of as being low emission because of the significant hydropower resources, electric heat systems have a higher carbon footprint than some may believe because they are powered from a mix of energy sources, some of which include fossil fuels. More recently, people have begun to upgrade their heat pump systems to reduced energy costs (Markusson et al., 2009). In fact, 18.5 per cent of Norwegian households have installed heat pump systems. While the number of houses with electric heat and woodstoves in Sogn og Fjordane is not known, it stands to reason that most households in the county still have inefficient systems in place.

Comparative data is not readily available for heat pumps, therefore this report will focus on woodstoves. Across Norway woodstove use accounts for about 155 $CO_2$ equivalent (in 1000 tonnes) (SSB, 2009a). For Sogn og Fjordane County, the total is approximately 3 $CO_2$ equivalent (in 1000 tonnes) (SSB, 2009a, SSB, 2009c). Wood stoves are typically filled with locally harvested wood, and so the source of energy is clear. While emissions are the main focus of this report, there is another important consideration regarding use of woodstoves. Particulate emissions for Norway average about 30,000 grams of all measured particulates (e.g. dioxin) (SSB, 2009a). These emissions are harmful for health, and especially difficult for people with asthma or other breathing problems to tolerate.

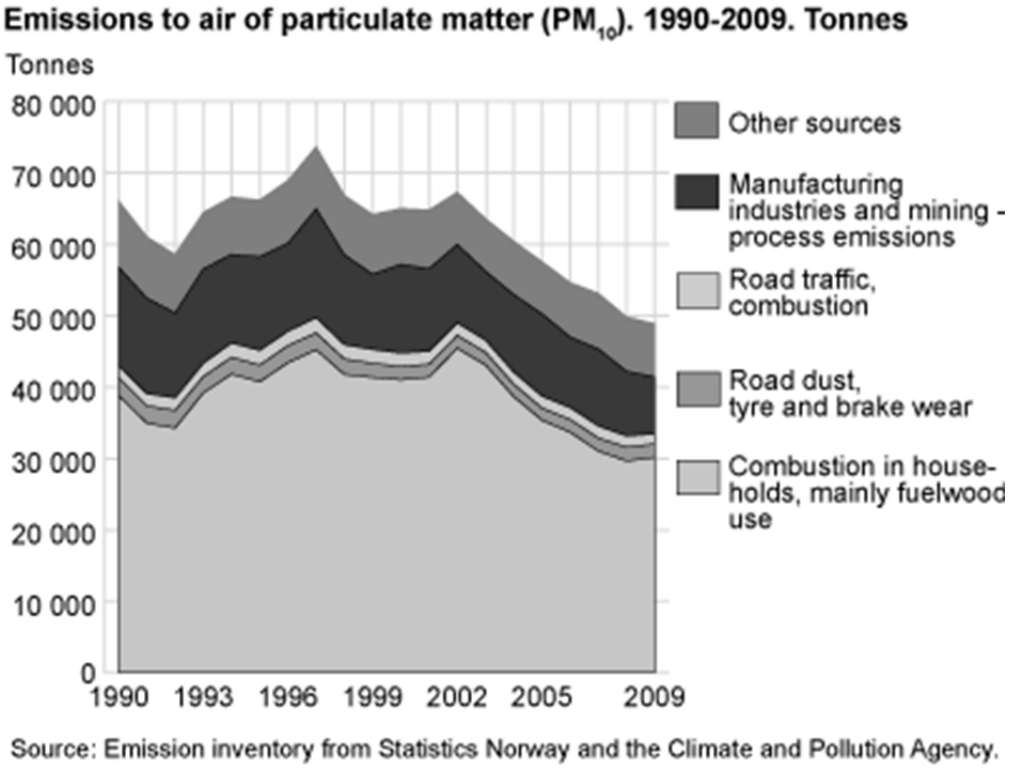


*Figure 5.1 Emissions to air of particulate matter*

In British Columbia, Canada a 2006 study found that wood heating is responsible for virtually all particulate release from household heating. This same study cites that 58% of total provincial emissions from all residential woodstove use (including fireplaces) warrants a proactive replace plan aimed at reducing greenhouse gas and particulate emissions (Xue and Wakelin, 2006). In response, British Columbia has a woodstove rebate and exchange program with a goal of replacing 50,000 wood-

stoves. As of March 2009 the program has exchanged nearly 400 woodstoves, reducing particulate emissions by over 37 tonnes per year. This program has wide public support and community outreach programs improved the overall success (2011b).

## Common consumption

Common consumption is often bypassed as an insignificant contributor to greenhouse gas production, or dismissed as too complicated to quantify. The notion of daily decisions leading to extremely problematic and long term consequences is difficult (at best) to convey to the public when the problem is hardly quantifiable. Changing consumer behavior is even more difficult. Finally, the global economy has led to significant mixing of energy types producing products and consumers in a different market buying and using these products. Therefore, many factors must be considered when trying to understand the emission 'footprint' of consumption. Among these considerations, two key factors will be considered, supply chain emissions from imported products and emissions from food waste.

A study in 2008 specifically explores the contribution of greenhouse gas emissions due to consumption of imported products in Norway. Researchers note that past studies have wrongly assumed that imports are produced using domestic production technology. This study accounts for diverging technology and mixed energy sources, with significantly different results. Although the scale of the study was for Norway as a whole, the conclusion was that Norwegian consumption represents a significant amount of emission pollution. Those sectors responsible for the most significant contributions to emissions include: food, business services, clothing, chemicals, furniture, cars, agriculture, textiles, and manufactured products (Peters and Hertwich, 2006). The details of this study would be useful as a way to guide public education and procurement practices. The implications for Sogn og Fjordane are similar to those for all of Norway. Be mindful of what you are buying, and try not to waste what you purchase.

Similarly, food waste produces both significant emissions as well as high disposal costs for the food sector. In the UK estimates range from 20–30 per cent annual waste of whole food production, translating into 9–13.5 million Euros worth of waste. Even worse, the cost of disposal for this waste is estimated to be approximately 195 million Euros (Vittuari, 2011). In Norway, the level of waste is not much different. The total estimated waste for milk, bread, meat and potatoes in Sogn og Fjordane County is nearly 60,000 tonnes per year. Developing countries have substantially lower food waste rates. If these lower waste rates were adopted by Sogn og Fjordane the emissions from waste disposal would reduce emissions by 55 per cent (see table 5.3).

Table 5.3 Climate effects of reducing Norwegian consumer food waste

| | House-hold waste % in sub-Saha-ran Africa[b] | House-hold waste % in Europe[b] | Tons consumed in Norway | House-hold waste estimate in Norway (tons)[c] | Tons con-sumed in Sogn og Fjordane | House-hold waste estimate in Sogn og Fjordane | $CO_2$-eq % reduc-tion (Sogn og Fjor-dane) if food |
|---|---|---|---|---|---|---|---|
| Milk | 0,1 | 0,07 | 1 500 000 | 105 000 | 34 518 | 2 416 | 7 |
| Beef | 2 | 0,11 | 75 000 | 8 250 | 1 725 | 190 | 9 |
| Bread | 1 | 0,25 | 605 000 | 151 250 | 13 922 | 3 481 | 24 |
| Potatoes | 2 | 0,17 | 400 000 | 68 000 | 9 204 | 1 565 | 15 |

Source: Refsgaard, K., H. Bergsdal og V. Kvakkestad

## 5.4 Agriculture

*Contribution of agriculture in green houses gases*

Data from Eurostat (2010) show that the relative importance of agriculture in terms of its contribution to the overall level of greenhouse gas emissions in the EU-27 was 9–10 % in 2007. According to Bye *et al.* (2010) Norway had a total emission of 50.8 mill tons $CO_2$-eq in 2009 of which 4.8 mill tons (9%) came from the agricultural sector (48% $CH_4$, 41% $N_2O$ and 10% $CO_2$). However including the emissions arising indirectly from manufacturing of mineral fertilizer, and carbon-losses from arable land management and tillage of moor, the total emission from agriculture rises by some 62% to around 7.8 mill tons $CO_2$-equivalents (Trømborg et al. 2008). Methane ($CH_4$) and nitrous oxide ($N_2O$) in addition to $CO_2$ are agriculture contributions to green house emissions. $CH_4$ and $N_2O$ emissions have a much more significant impact on the climate comparing to other GHG's (Wightman). In this part we are going to study briefly the contribution of the agriculture sector in Sogn og Fjordane in its contribution to GHG emissions. Our goal is to identify opportunities to reduce the emissions from agriculture within the County.

Table 5.4 Emissions to air (1000 tons $CO_2$ equivalents)

| | Norway | Agriculture in Norway | County Sogn og Fjordane | Agriculture in Sogn og Fjordane |
|---|---|---|---|---|
| CO2 | 42842,7 | 0 | 1076,2 | 0 |
| CH4 | 4259,6 | 2210,5 | 159,7 | 130,7 |
| N2O | 3038,9 | 1987,4 | 95,1 | 81,3 |
| Fluorinated gases | 1151,3 | 0 | 253,7 | 0 |
| Total | 51292,4 | 4197,9 | 1584,7 | 212 |

Source: SSB, 2009a

Agriculture contributes 13.4 per cent of the total GHG emissions of the County and presents 5.05 per cent of contributions in the entire agricultural sector. The question

may be raised as to why agriculture in the County contributes such a small proportion of emissions when compared to other Counties. First, the County has several obstacles to agriculture. Topography, soil quality and climate is diverse and in some areas not so friendly to agriculture. Only 2.7 per cent of land in Sogn og Fjordane is suitable for agriculture (Statistics Norway).

The second obstacle is related to the types of agriculture which are exercised in the County. Almost 75 per cent of raspberry production in Norway is from this County. Since the temperatures are rather low in the county, farmers use fewer pesticides for fruit production when compared to the other parts of Europe according to an interview with the director of agriculture at the county governor. Based on the information from the Ministry of Agriculture and Agri-Food Canada (2011) agriculture in Canada has 10 per cent of Canada's total greenhouse gas emissions contribution. Livestock and manure account for 58 per cent of these gases; crops for 37 per cent. We found that cultivation of winter cover crops (e.g. alfalfa have been mentioned as a strategy to reduce emissions by the Ministry of Agriculture and Agri-Food in Canada (2011) which might be an interesting point to work on in Sogn og Fjordane. Paustian et al. (2000) suggested that using perennial crops (e.g. fruit trees) can increase carbon sequestering in the soil.

Calculating emissions of greenhouse gases from agriculture is however a challenging task as there are large variations for several reasons which are discussed in Refsgaard et al. (2011). First of all the system boundaries for what to include in agricultural production has significant importance, e.g. whether to include the manufacturing of mineral fertilizer or not – very often the numbers for $CO_2$-emissions only include the agricultural sector. Secondly there is large variation differ according to the feeding practices of the animals, e.g. the amount of grass compared to protein for ruminants and the balance between vegetable versus animal feedstuffs for salmon. Further the use of mineral fertilizer for plant production and the handling of manure have significant impact on the size of the climate gas emission

## Methodology

In order to study how we can reduce the emission from agriculture in the county, we focused on protein production parts. We simulated a few scenarios to show the effect of producing different source of protein on GHG's emission. Since the data specific for the county are not available, we tried different data sources. We looked at it from a consumption point of view. Table 5.5 shows per capita consumption of protein in Norway. We used this table as basic information for our estimation and calculation.

Table 5.5 Per capita consumption of protein and $CO_2$ equivalent mission of producing one unit of each protein source

| | Dairy cow meat | Beef cow meat | Salmon | Sheep |
|---|---|---|---|---|
| Annual per capita consumption (kg) | 17,6 | 2,4 | 4 | 6 |
| $CO_2$ equivalent emission for one unit production (kg) | 15 | 32 | 2,4 | 14,6 |
| Source | Nguyn et al (2010) | Nguyn et al (2010) | Marine Harvest (2011) | Spedding (2009) |

## Results

**Current situation:** table 5.6 shows the current amount of consumption of each protein source in the county.

Table 5.6 $CO_2$ emissions in current situation

| Scenario | Population | Consumption | Total emission |
|---|---|---|---|
| Salmon | 107742 | 4 | 1034323 |
| Lamb | 107742 | 6 | 9438199 |
| Beef cow | 107742 | 2,4 | 8274586 |
| Dairy cow | 107742 | 17,6 | 28443888 |
| Total | | | 47190996 |

**Change consumption from beef cow meat to salmon:** In this scenario, we assumed that the consumption of beef cow meet is substituted by salmon (4+2.4). Table 5.7 shows the $CO_2$ emission of consumption of each protein source based on the salmon scenario (2).

Table 5.7 $CO_2$ emissions in salmon scenario

| Scenario | Population in Sogn og Fjordane | Consumption per capita per year | Total emission |
|---|---|---|---|
| Salmon | 107742 | 6,4 | 1654917 |
| Lamb | 107742 | 6 | 9438199 |
| Dairy cow | 107742 | 17,6 | 28443888 |
| Total | – | – | 39537004 |

**Change consumption from beef cow meat to lamb:** In this scenario, we assumed that the consumption of beef cow meat is substituted by lamb (6+2.4).

Table 5.8 $CO_2$ emissions in lamb scenario

| Scenario | Population in Sogn og Fjordane | Consumption per capita per year | Total emission |
|---|---|---|---|
| Salmon | 107742 | 4 | 1034323 |
| Lamb | 107742 | 8,4 | 13213479 |
| Dairy cow | 107742 | 17,6 | 28443888 |
| Total | – | – | 42691690 |

**Change beef meet consumption source from beef cows to dairy cows:** in this scenario, we assumed that the consumption of beef cow meat is substituted by dairy cow meat.

Table 5.9 $CO_2$ emissions dairy cows scenario

| Scenario 2 | Population in Sogn og Fjordane | Consumption per capita per year | Total emission |
|---|---|---|---|
| Salmon | 107742 | 6,4 | 1034323 |
| Lamb | 107742 | 6 | 9438199 |
| Dairy cow | 107742 | 20 | 32322600 |
| Total | – | – | 42795122 |

Based on or findings, the three different scenarios are contributing in decreasing $CO_2$ emission. The first scenario with increasing salmon consumption has has the largest potential contribution in decreasing $CO_2$ emissions. The lamb consumption scenario identified a reduction of 9.5 per cent and beef consumption of 9.3 per cent. The difference between the second and third scenarios is small. The priority in Norway is to produce more meat than milk and dairy cow production system requires full time farmers. Therefore the lamb consumption scenario seems to be better than the dairy cow consumption scenarios (table 5.10).

Table 5.10 The effects of different scenarios on decreasing CO2 equivalent emission based on consumption protein in Sogn og Fjordane (our finding)

| | $CO_2$ equivalent emission (1000 kg) | Decrease in $CO_2$ equivalent emission |
|---|---|---|
| Salmon | 47 191 | 0 |
| Lamb | 39 537 | 16,2 |
| Dairy cow | 42 692 | 9,5 |
| Total | 42 795 | 9,3 |

## 5.5 Opportunities to decrease GHG Emissions in Sogn og Fjordane

Table 5.11 suggests the opportunities which might be effective to decrease the amount of $CO_2$ emission from agriculture and household consumption of the agriculture sector. First we suggest increasing the production of lamb meat in the county. Lamb production has fewer emissions when compared to beef production. The point remaining is how sheep are fed. (In the county some grass lands are fertilized, if some variety of alfalfa which is suitable to the climate and soil quality is cultivated, it can help in fixing nitrogen and reduce the emissions of GHG's.) Branding local products from the county will presumably increase the price of the product and provide economic incentives for producers. A further option may include increasing the production and consumption of fish in the County of Sogn og Fjordane.

Table 5.11 Strategies and policy means to reduce GHGs emission within agriculture in Sogn og Fjordane

| Strategy | Objectives | Policy means | |
|---|---|---|---|
| | | Production parts | Consumption parts |
| Substitute consumption of beef cow meat by salmon | | Increase the price of salmon by branding salmon produced in the county | Educate kids in school about the advantage of eating fish for health and environment |
| | Increase production of salmon in fish farms | Subsidizing fish farm which feed fish with vegetables | |
| Substitute consumption of beef cow meat by lamb meat | Increase production of lamb meat | Increase the price of lamb produced in natural way (grazed in mountain) by branding | - |
| | | Cultivation variety of alfalfa as input for sheep farms | |

Table 5.12 Summary of policy options

| Policy options | |
|---|---|
| **Issues** | **Options** |
| Diesel bus emissions | Shift to low/no emission vehicles |
| Low usage of bus capacity | Reduce bus size; Attract riders (i.e. fareless buses) |
| Emissions from goods transport within the County | Restrict emissions from heavy duty vehicles |
| Emissions from international shipping of goods consumed within the County | Public education/buy local campaign |
| Personal Vehicle use | "In town" ordinance against idling, signage. Promote working from home |
| Home heating | Provide financial incentives, replacement program |
| Common consumption | Public awareness |
| Emissions from meat production | Public awareness directed at changing eating habits towards consumption of local lamb meat, increase production. Branding high quality "Fjord- meat" |
| Carbon intensive eating habits | Increase production and consumption of fish and other sea products |

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# 6 Renewable Energy and Local Development

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Photos by Bill Reimer

## 6.1 Summary

The aim of this Chapter is to analyse the benefits and identify potential risks in regard to actual as well as future use of different sources of renewable energy in Sogn og Fjordane County.

The recommendations given in regards to renewable energy for this specific area are formulated based on a comparative case study of renewable energy production looking at best practice from three different countries. Analysis of these cases and additional statistical data on Sogn og Fjordane County has led to recommendations on how to expand renewable energy production in the area by utilizing the counties potential in forest biomass, waste and wind power.

Benefits from renewable energy production on a social, economic and environmental level are discussed in the chapter. Furthermore it is described how benefits can be obtained through clearing forest, diversification of sources of renewable energy and taking advantage of available natural resources in the county. Reducing negative impact on landscape associated with installation of infrastructure for energy production is suggested to be mitigated through architectural solutions for integration of windmills and wind generators in the area. Last, but not least this chapter emphasises the importance of encouraging formation of farmer associations and connecting different stakeholders from rural areas to establish community based production of alternative energy and use of forest biomass residues.

## 6.2 Introduction

The issue of renewable energy production is a major force in the world, given the need to reduce emissions of greenhouse gases that cause climate change. The production and consumption of alternative energy to oil and coal are intended not only to reduce environmental pollution but also reduce dependence on energy sources such as oil where prices are both highly controlled and unstable over time.

Norway is a leader in the production of hydropower, a renewable energy source, taking advantage of the abundance of water resources within its territory. Additionally the country aims to diversify production and energy consumption as wood alternatives energy, wind energy and energy waste. Renewable energy provides a variety of benefits to the community but also has costs. We began exploring this research question: how to balance benefits and negative externalities associated with renewable energy development in the area. In our initial assessment we looked at the potential renewable energy options for Norway as well as for Sogn og Fjordane.

The first part of the analysis focuses on the current status of renewable energy production. The analysis highlights the benefits and risks of the current model, through a range of statistics for production, consumption and prices of different renewable energy sources in Sogn og Fjordane County.

The second part of this chapter on renewable energy is a brief comparative study showcasing three examples of renewable energy production and its impacts on rural communities. The case studies are from Catalonia, Austria and Oregon, US.

Finally some recommendations are formulated as a starting point for further development of renewable energy in Sogn og Fjordane County.

## 6.3 Background

Currently there are different options for renewable energy production including: bioenergy, geothermal, hydro, solar, tidal energy, wave energy and wind energy. Bioenergy is produced from different types of organic materials, among which are: wood biomass, some types of municipal solid waste, alcohol fuels, agricultural crops and agricultural waste, among others. Given the limitations of this report and the characteristics of the area of interest, we are only analysing the trade-off from production and use of renewables such as wind energy, wood, small hydro and fish and animal fat for biodiesel production.

Sogn og Fjordane County is characterized by high mountains, small towns, territorial fragmentation, the presence of abundant water (fjords and waterfalls). These features are part of the determinants of the different activities performed by the inhabitants of this region and the possibilities of the County. Given the abundance of water resources, more energy is produced than consumed in this County, and it is hydropower. However, the plan for Climate and Environment (2008) promotes the increased use of bioenergy, using both forest biomass as waste from commerce and households.

### Energy Trends in Sogn og Fjordane

Electricity production represents one of the main economic sectors in Sogn og Fjordane, due to the abundant water resources. Indeed, the county, as part of the Western Norway region, is a major exporter of electric power, mainly to and through Oslo region and South Norway (NORDPOOL).

Recent figures shows that between the years 2007–2009 electricity production in the county has been decreasing by 8%, with a parallel decline in the consumption by over 5% in 2009 (Stat. Norway)

These trends could be partially explained by the increase in the average cost of power production in Norway, which rose from 9.6 NOK/kWh in 2000 to a maximum of 32.9 NOK/kWh in 2010, partly due to the change in oil prices (Statistics Norway).

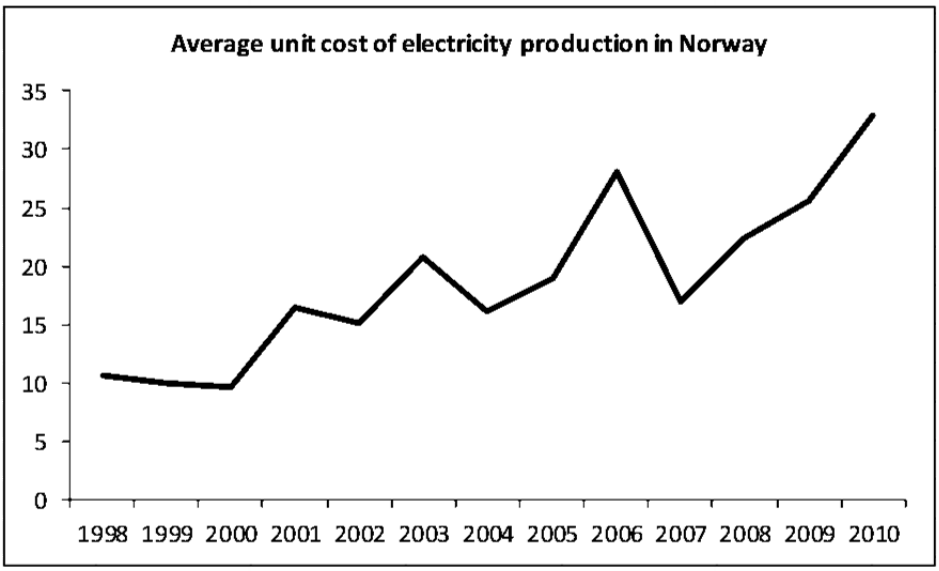


*Figure 6.1 Average unit cost of electricity production in Norway*

Likewise, energy prices in Norway showed a sustained and significant upward trend, with peaks in late 2003 and 2006 (Statistics Norway).

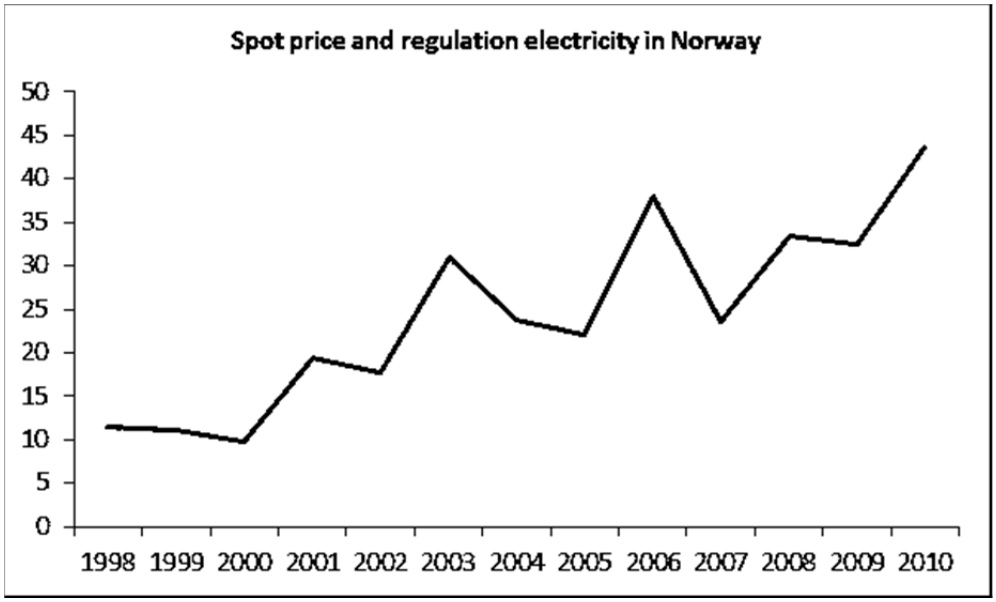


*Figure 6.2 Spot price and regulation in Norway*

As far as consumption is regarded, the most intensive energy use in the county are the manufacturing and mining sectors, followed by households and services. The primary sector accounts for only 1% of energy use (Statistics Norway).

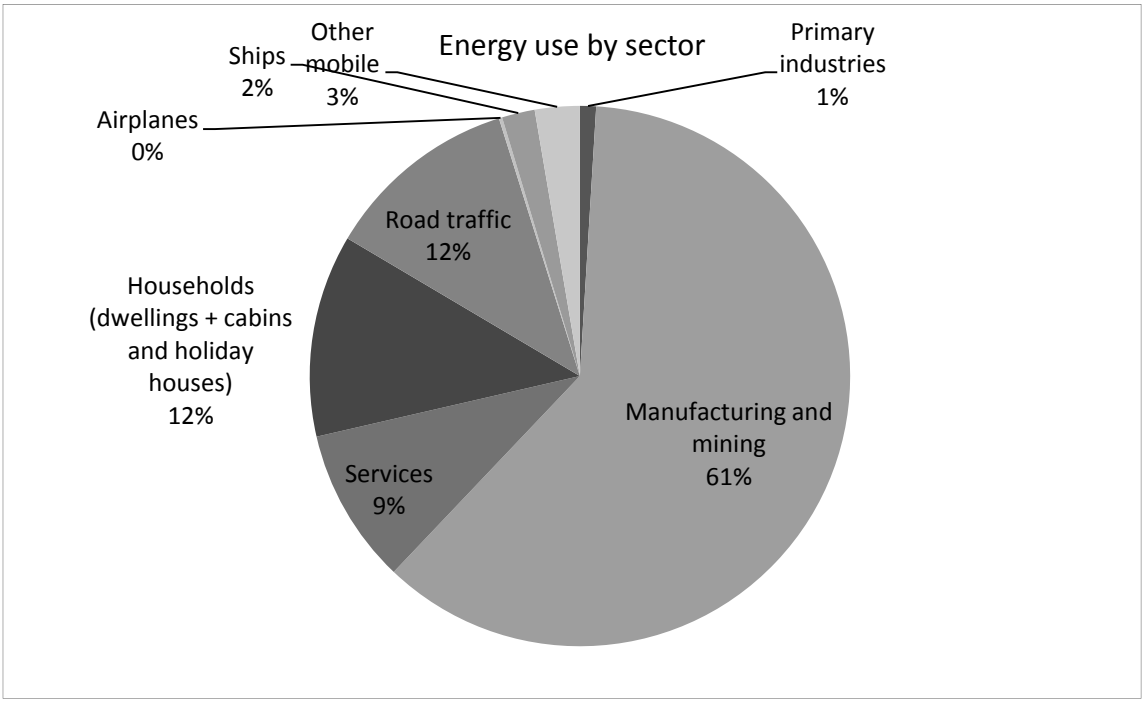


*Figure 6.3 Energy use by sector in Sogn og Fjordane*

The main source of energy in Sogn og Fjordane remains electricity (73%), while fossil fuels (coal, gas, transport fuel) account for 22%. Wood-based energy represents 3% of consumption by source. (Statistics Norway).

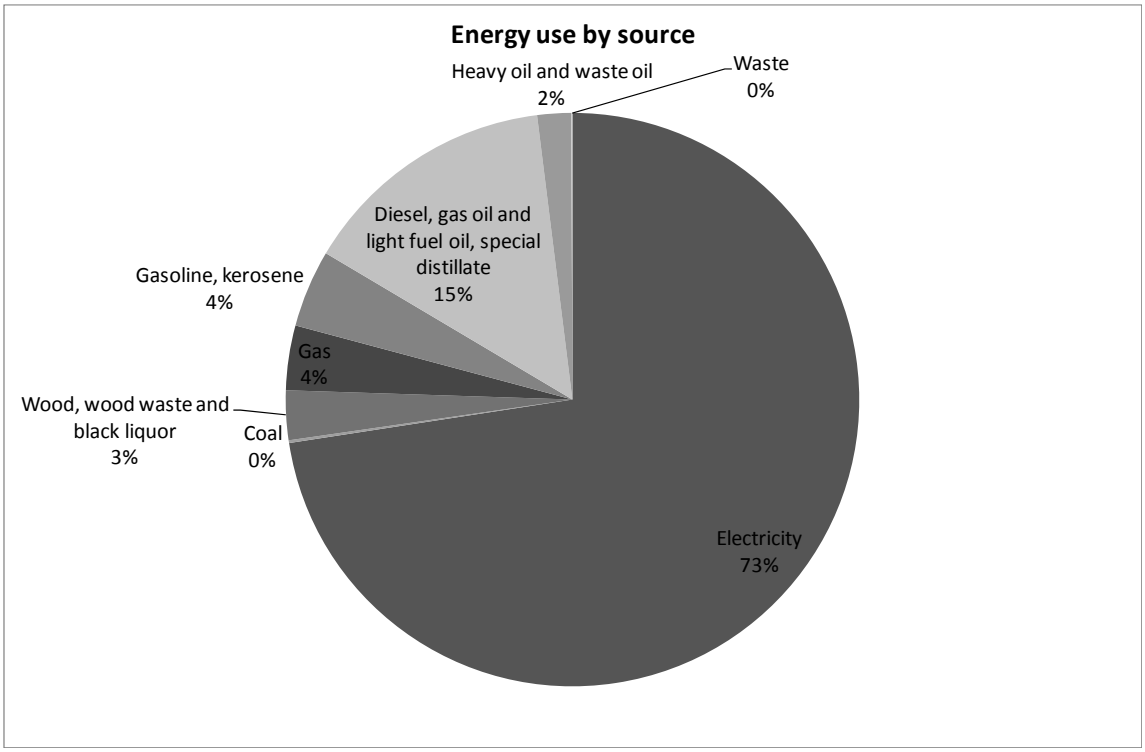


*Figure 6.4 Energy use by source in Sogn og Fjordane*

Nevertheless, at the household level the figure is quite different, because, although the main energy source for households is electricity, wood plays a crucial role in the satsfaction of energy needs. (Statistics Norway).

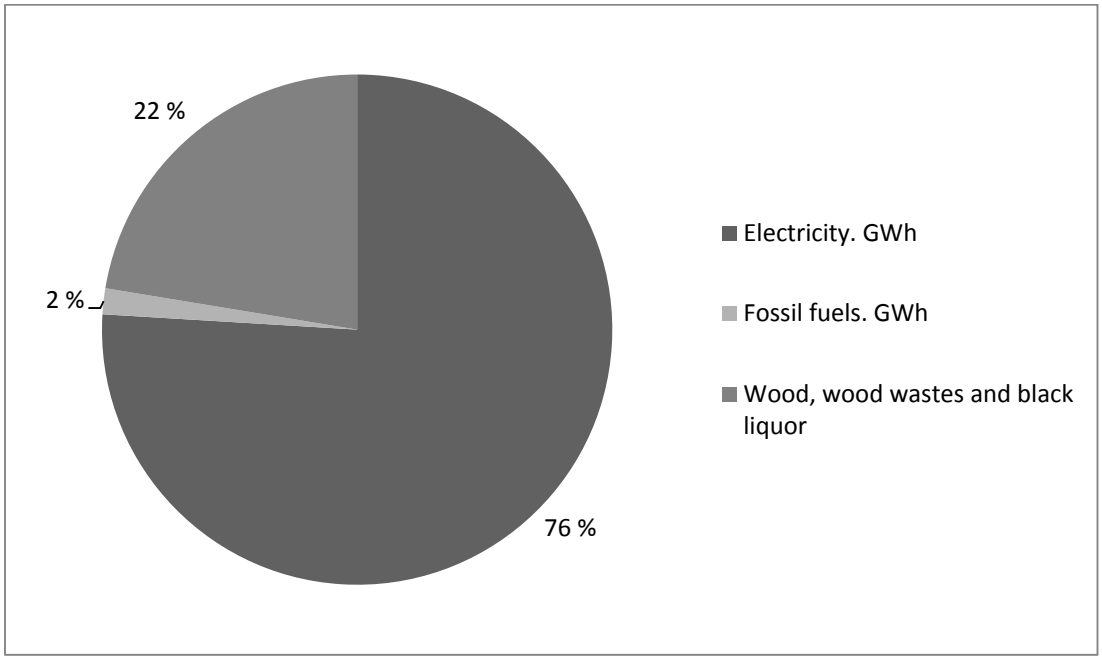


*Figure 6.5 Stationary energy use in households in Sogn og Fjordane*

Waste plays only a residual role, despite the increase in the proportion of household waste recovered for energy production (Statistics Norway).

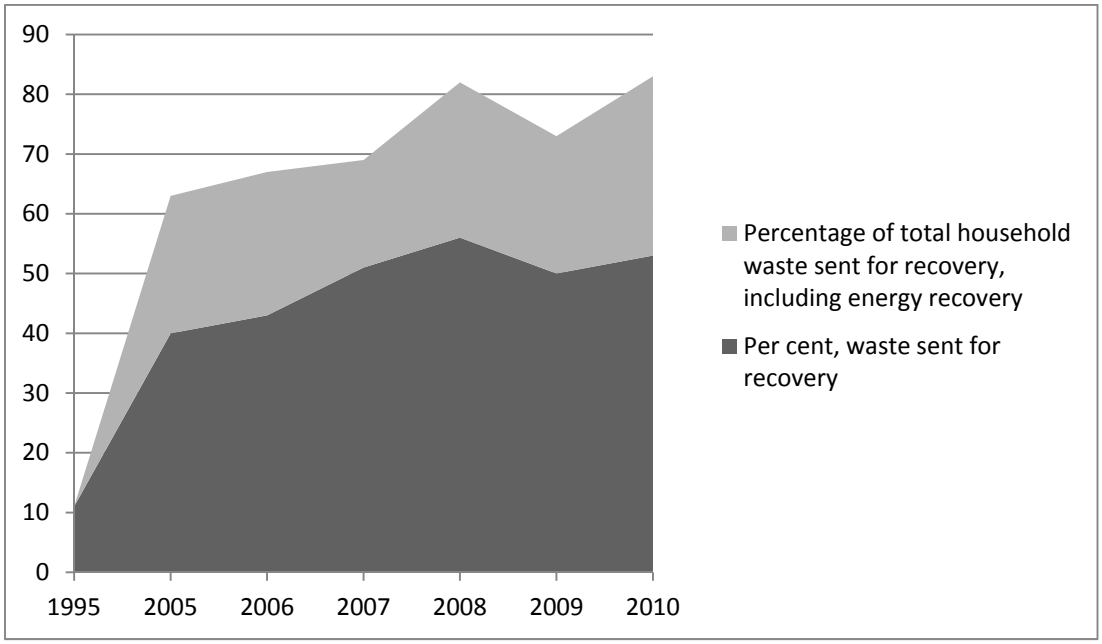


*Figure 6.6 Household waste recovery 1995–2010*

## 6.4 Renewable Energy in Sogn og Fjordane: Possibilities and Constraints[8]

Renewable energy development in the county of Sogn og Fjordane relies on the particular morphology of the territory. While it always guaranteed a major potential for hydropower, it also poses constraints to the development of other renewable energy strategies. Therefore it is crucial to assess the availability of different feedstock's and technology options.

At the county level, bioenergy could represent a significant resource. The last climate & energy plan (2009) stresses the potential for its use in stationary applications and efficient heating. Wood is the most available feedstock, with an economically feasible harvesting area of 1811 $km^2$ and it is already used in conventional stoves with low energy efficiency. If fully exploited, it could satisfy the county demand for heating.

Biogas and landfill gas from municipal solid waste (MSW) present limited potential for development. On one hand, biogas production could face a scarce availability of feedstock, due to problems of collection of agricultural residues and manure. On the other hand, MSW is already collected for recycling and energy generation, and gas generation could represent an option for existing waste management centres. Nevertheless the low density of population makes it difficult to centralize the collection in order to reach the due economy of scale in the production of landfill gas.

Regarding biofuels, the share of agricultural land in the county (2,5%) constitutes a major limitation. Both the cultivation of energy crops and the use of food crops as biofuels feedstock could give rise to land use conflict, especially in the case of large scale and centralized production. Nevertheless, the use of residuals from fishery, animal and fruit industries could represent an interesting option for the county, if an appropriate assessment of collection yield factor is taken.[9]

Wind energy is the sector with the fastest growth. In the shoreline areas and offshore, Vestavindkraft is the main local actor, with 11 projects and a total capacity installed of 1505 MW with a yearly production of 8 TWh. The potential for inland wind energy needs to be balanced with its impacts on natural and cultural landscape. To a certain extent, these trade-offs could be mitigated, in order to increase benefits for the society. Possible solutions include the deployment of wind farm near existing hydropower facilities and incentives for small-scale integration of wind in existing buildings

Water is the most abundant natural resource in the county. Hydropower has always played a crucial role from the point of view of both energy supply and regional economic development. In future, a further increase in the capacity installed could enhance these benefits. Specifically, according to NVE figures Sogn og Fjordane represents the county with the largest micro-hydro power potential (Figure/s). Nevertheless, the full development of this potential presents trade-offs in terms of landscape impact and meets constraints in terms of grid connection.

[8] Holden *et al.*, 2009. Fornybar energi i Sogn og Fjordane, Vestlandsforsking-rapport nr. 3/2009

[9] Andersen & Weinbach, 2010. Residual animal fat and fish for biodiesel production. Potentials in Norway. Biomass and Bioenergy. Volume 34, Issue 8, August 2010, Pages 1183-1188.

A residual role could be played by thermal and PV solar, especially in buildings. More promising, the county could benefit from the extraction and production of components (silicon).

Finally, it is important to strengthen the role and linkages with the education sector. The Sogn og Fjordane University College and the Vestlandsforsking should be considered as the critical asset in terms of human capital for the development of renewable energy in the county.

## 6.5 Three Comparative Case Studies

*a) Wood energy in Catalonia*

Spain is a country with high dependence on imported fossil fuels and emits a lot of greenhouse gases. Therefore, following the recommendations of the Kyoto Protocol, has directed its efforts to reduce emissions of greenhouse gases from different options. The incentives for renewable energy production are one of the methods promoted by the Spanish in the Development Plan for Renewable Energy (2005-2010). One of the Autonomous Communities with the greatest potential to produce wood-based energy is Catalonia, given the density of forest located in its territory and the amount of industrial wood waste.

In 2010 Catalonia was operating 15 facilities producing energy from forest biomass. The subsidy mechanism used to promote investment in this kind of renewable energy is a fee higher than the average market price of electricity. The potential benefits associated with wood energy are: Construction of heating systems for homes and livestock on farms, allowing farmers not only to diversify energy sources and the activity of the farm. The creation of a local association of forest owners to coordinate the management of wood products, strengthening community work and coordination of local projects. Additionally, it has been able to start clearing forests that contain large amounts of surplus biomass product of processes of collapse of trees by storms or by degradation of ancient trees. Cleaning reduces the risk of forest fires and facilitates mobility within forests, and therefore possible recreational use.

Among the various problems encountered so far in the process of energy production of forest biomass is the lack of internalization of the different areas of local government use of wood energy. Processes are also hindered by lack of long-term planning, defining a policy of quality wood exploitation, utilization of raw materials for renewable energy production and the extent and management of conservation forests. The small size of most plant in Catalonia does not generate many additional jobs. Finally, another negative externality associated with wood energy production is the management of waste combustion and ash, which is sometimes pelletized.

Table 6.1 Impacts on rural communities from using more wood based energy

| Benefits | Trade-offs |
|---|---|
| • Community management of forests by landowners.<br>• Fire prevention<br>• Infrastructure for recreational activities<br>• Diversification of farmers income<br>• Decreased fossil fuel consumption | • Possible over exploitation of forest (need for long term sustainable management)<br>• The small size of most plant in Catalonia does not generate many additional jobs<br>• Management of combustion residuals (particle matter and ash) |

*b) Best practice in government on Oregon*

Best practices suggest a collaborative governance approach may be the most effective and beneficial for communities dealing with natural resource issues. Collective collaboration is most effective in communities with strong social capital, homogeneous cultures and beliefs, as well as, communities with high policy homogeneity. The framework also proves beneficial for rural communities with local economies dominated by extractive industries that lack a full scientific understanding of the issues facing the community. The framework consists of a shared vision, willingness to negotiate, role of local elites and key stakeholders and breaking down barriers of distrust.

The idea of a shared vision can come from the interdependence of the community and while there may not be a strong incentive for change, the community capacity makes a shared vision a possibility. Regular meetings with community members and other stakeholders provide the avenue for exploring how to define the shared vision. Local extension workers have been used in a training capacity to help develop the necessary skills needed for a cooperative approach, as well as effective facilitation of meetings. Throughout the process of defining the shared vision an agreement in the spirit of negotiation will be achieved. Generating new ideas will establish the informal rules that will govern the group. Shared norms and understandings of how to approach the issue will emerge. The community itself will help to define the groups shared values out of an understanding of place and what is acceptable and what is not. Well-chosen leadership is vital in the process. Ensuring that all stakeholders are represented in a way that informal, as well as, formal access to the

leaders is essential in developing trusting relationships (Weber 2009 & Oregon Sea Grant, O. S. 2008).

An example of collaborative governance in action can be seen in the wave energy development off the coast of Oregon (ODFW 2009). In the initial phases the state issued protected marine areas to be formed (Office of the Governor of the State of Oregon 2008). Community stakeholders mapped important coastal areas in a collective forum that allowed lucrative fishing grounds, community dependent fishery areas, as well as, bio-diverse areas to be protected (Sea Grant Extension 2008). Only after this collective community effort has been completed and Oregon's Territorial Sea Plan amended will wave energy implementation begin (Department of Land and Development 2008).

As part of the preparation for wave energy implementation, a berth site was developed that allows wave energy developers to test their device in order to receive further funding and prove effectiveness in real ocean conditions (Department of Land and Development 2008). Minimal ocean area is needed for the site and the berth allows local users the opportunity to experience what a device will look like and how it will operate off our coast.

Table 6.2 Impacts on rural communities – by improved government practice

| | Benefits | Trade-offs |
|---|---|---|
| **Social/ Institutional** | • Ability to couple with existing large scale off-shore wind<br>• Potential job creation (devices)<br>• Shared vision of place<br>• Equity based, holistic mission<br>• Preservation of rural, working, natural | • Transaction costs (time, trainings, effort, opportunity cost…) |
| **Economical** | • Income and power generation | • Initial investment expense |
| **Environmental** | • Protection of landscape | • Large scale operation |

*c) Best practice: Bioenergie Mureck, integrated bioenergy system*

Mureck is a municipality located in Styria, a southern region of Austria, at the border with Slovenia. This community of 1700 inhabitants hosts one of the first self-sufficient integrated biomass systems in Europe, called Bioenergie Mureck.

It is composed of three interrelated companies, SEEG Mureck, Nahwärme Mureck and Ökostrom Mureck, that constitute the "Mureck Energy Cycle" and supply the entire region with electricity, heat and fuel. SEEG Mureck, a cooperative founded in 1989 and predominantly owned by local farmers, produces biodiesel from rapeseed (10%) cultivated in the area and waste vegetable oil (90%) deriving

from the near city of Graz. The biodiesel produced is then returned to farmers (together with rapeseed cake as fertilizer), public transport companies, and petrol stations.

Nahwärme Mureck, owned by SEEG and 2 farmers, operates a 7,5 MW CHP plant that provides heat to the local district heating system for a total of 250 households (90 EUR/kWh), burning wood chips obtained from farmers and sawmills.

The third company of the district, Ökostrom Mureck, owned by Nahwärme with 7 farmers, produce 1MW per year of power with a biogas plant, fed with local feedstock such as manure, plant materials, maize, silage and the glycerine from the biodiesel production. The plant use the surplus heat from the local DH system, while the electricity is fed into the grid and the substrate is returned to the field in a 500 ha area.

The project started in 1987 thanks to the individual motivation of the founders, the energetic self-sufficiency of farmers and the reduction of their dependency from fossil fuel.

Another strong belief of the founders was the need for a strong relation with their community. Since its foundation, the main cooperative incorporated 570 members guaranteeing both a large participation in the ownership and a transparency in the decision-making process. Authorities and residents has been directly involved in the planning of Nahwärme Mureck and in the site decision of biogas plant, from the beginning. Most of the employees have been selected on a regional basis, as well as the maintenance contract.

The peculiar ownership structure of Bioenergy Mureck constituted indeed a major factor in the degree of benefits kept in the region. According to owners' estimates, the main objective of the partnership, energy self-sufficiency, has been probably already reached in 2010.

The reduction of fossil fuel dependency had a direct economic impact on the inhabitant's purchasing power, generating savings for 1.325 EUR per person.

The job creation amounts to 50 jobs, within the company and along the supply chain.

As far as local authorities are concerned, those who decided to buy biodiesel for transport, benefited from its low price, while the savings of costs related to the disposal of used cooking oil amounted in some cases to 9000 EUR per year.

Bioenergy Mureck has resulted also in major multiple environmental benefits:

- Reduction of pollution and GHG emissions (compared to domestic fires and fossil diesel).
- Utilisation of residues (waste wood from the sawmills and used cooking oil).
- Production of crop friendly fertilizer and improved crop rotation (rapeseed).

A special attention has been dedicated to possible problems of social acceptance, such as the odour impact from biogas plant (installation of a dust filter and a biofilter).

Finally, the company is truly committed to the attraction of tourists into the region and it pushed for the inclusion of Mureck in the energy sites list of the eastern Styria's Energy Display Road. Around 6,000 people per year visit the region and Bioenergy Mureck provides advertisement for local restaurants.

Notwithstanding the relevance of the project, the deployment of an integrated bioenergy system based on a waste product such as used cooking oil, presents some

constraints in terms of feasibility, replication, and up-scaling. Main problems could be associated with feedstock availability and collection yields. (SEEG, n.d.)[10]

Table 6.3 Impacts on rural communities – by establishing an integrated bioenergy system

| | Benefits | Trade-offs |
|---|---|---|
| **Social / Institutional** | • Job creation<br>• Community acceptance<br>• Tourism promotion | • Collection |
| **Economical** | • Direct impact on purchasing power<br>• Energy self sufficiency in 2010 | • Yields<br>• Feedstock availability |
| **Environmental** | • CO2 reduction<br>• Waste disposal<br>• Fertilizer | |

## 6.6 Policy Recommendations

Our recommendations are based on the best practices described in the previous sections. In particular, the comparative case study analysis led to a set of possible strategies, which can be implemented to deal with different renewable energy sources and the balance between their benefits and trade-offs.

The county renewable energy and rural development strategies should focus on the promotion of feasible and innovative solutions, based on the careful assessment of the availability of needed resources. From this point of view, small-scale hydro-power and wood-to-energy chain seem to represent the most promising options, in order to guarantee more benefits to the county, especially farmers, forests and rivers owners. Another technically feasible option could be wind energy, especially off-shore. Finally, residuals and bi-products from specific food industries (fish, animal, fruit) could be successfully exploited with the integration of decentralised systems.

Analysis of best practices showed the crucial role of particular strategies of governance in the renewable energy sector. In the specific, participatory planning and management of renewable energy resources by the community can help to generate additional income for the local area and to diversify the productive activity of the county.

The social acceptability and awareness about renewable energy benefits can also be enhanced by involving citizens in decision making about sites, technologies, and in the impact assessment. In this sense, two policies, such as collaborative governance and community ownership, could be seen as possible strategies for the mitigation of negative externalities.

Nevertheless, these strategies may also imply the increase of some costs, mainly in the initial stage of planning. These costs are mainly related to the increased length and inclusiveness of decision-making process, as well as the eventual need for training.

[10] SEEG, n.d. Bionergy Cycle Mureck Brochure. Bioenergie Mureck website: http://www.seeg.at/

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# 7 Local Tourism Development

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Photo by Katja Cappelen

## 7.1 Introduction

The tourism industry is an important income opportunity for many local communities and towns in Sogn og Fjordane. There is however a fine line between preserving the interest of all stakeholders while at the same time increasing the tourist industry in such a vulnerable environment. Tourists require services such as accommodation and food which can provide economic incentives to attract larger numbers, which can also put pressure on the natural resources and private owned land.

We assume that increased access to services and activities increases the spending and thereby increase the economic benefits. In this chapter we will look at both the perspective of the tourists and the community, and pose the following questions:

1. How can tourism projects be better received in the community through more widespread and inclusive participation in the planning and implementation process?
2. How can Sogn og Fjordane encourage spending by tourists through increased destination access to cultural and natural resources?

## 7.2 Background

Sogn og Fjordane is a popular destination for tourists. Every year 1.18 million visitors have overnight stays in the county, which is 4.7% of the total of 28.5 million overnight stays in the whole country. The largest attractions are the three UNESCO sites. Urnes Stave Church was included on the World Heritage List in 1979, while the two fjords, Geirangerfjorden and Nærøyfjorden, were included in 2005. Cruise ship travel is a popular way of visiting the fiords, and 17% of all ships coming to Norway stop in Geiranger and Nærøyfjorden (Cruise Norge 2011).

The scenery with high mountains, glaciers and fjords makes Sogn og Fjordane an attractive destination for tourists seeking nature and outdoor activities. The cultural aspect is also important for many visitors. Farm tourism and local foods are becoming more common as diversification strategies on small farms, and this is also an important part of the experience of visiting the county.

Sogn og Fjordane attracts a larger proportion of its tourists from abroad rather than within the country, with a proportion of 44 % from abroad compared to 28 % from within Norway (Statistics Norway 2011). Some of the challenges and barriers to increased expenditure among nature seeking tourists coming to Norway are lack of knowledge about the country and what to expect concerning activities and places to visit. Tourists are also unfamiliar with dining and accommodation practices and unsure how long to stay (Synovate 2009).

## 7.3 Methods

Several methods of obtaining information were used in this project. Participant observation was the most useful in determining the tourist perspective of the tourism industry. Interviews were also a crucial method in the research of tourism development. Tourist destination site visits such as Urnes Stave Church, a small organic raspberry farm, and a tourist information site in Luster Municipality were valuable in obtaining a sense of what attracts tourists to the county. We also spoke with

representatives of local projects on the municipality level, working on tourism-related issues to determine the significant needs of the county.

## 7.4 Results

In this chapter we will address the community and the tourist perspective of the tourism industry. To highlight the comparative aspect of our work, we have chosen to present some relevant comparative cases which could be relevant to Sogn og Fjordane. At the community level we present a case on a Canadian community involvement process, while at the tourism level we present three case studies on increased accessibility for tourist with the same goal of increased spending.

### 7.4.1 Community Level

**Assumption:** Tourism projects are better received by the community the more widespread and inclusive the participation is in the planning and implementation process.

**Problem:** Drawbacks and benefits of a local tourism project are often allocated to different stakeholders, creating winners and losers, and thus often also local conflicts. The list of examples is manifold.

The resulting change in income distribution is a main reason for conflicts. Different stakeholder interest is another, often connected to property rights and traditional uses and other habits. Personal relationships, local culture and local government politics may also play important roles, as may the characteristics of the projects themselves (visibility/aesthetics, cultural challenges, etc.). Locals commonly find it hard to imagine the pros and cons of a planned project, and thus some of the effects will necessarily come as a surprise once the project has been implemented. Other sources of tension may be that only the elite participate in the planning and implementation processes, there may be frustration over tourism impacts (parking, litter, noise, crowding), or a frustrating feeling of not being heard when being negatively affected, or just general skepticism towards change and decisions made by others.

It may also be noted that the risk of land use conflicts increases with the shortage of land, and thus often also over time in more densely populated areas. Sogn og Fjordane is not a densely populated county, but habitable land is scarce in many local places, causing conflicts to arise.

Conflicts seldom solve themselves; they typically increase over time. It is therefore important to have a mechanism that aims at solving or reducing conflicts as soon as they arise, or even better: to make sure that they never occur. One key point then, as we see it, is to produce and distribute information to those that may be affected by a potential project as early as possible, and to maintain a dialogue. In general it will not suffice to assume that the stakeholders are well informed. We therefore suggest that an impact assessment analysis should be required for any new project of significant size. The idea is first to present a well-balanced document of pros and cons to a wide audience of stakeholders. This is in order to ensure a fairly well distributed common knowledge of the project in question. The stakeholders should be invited to express their opinions about the pros and cons through active participation. In this way there will be fewer surprises after the project has been realized, stakeholders will more likely feel that they are a part of the process (instead

of having to watch a "black box"), and those who want to may be kept updated on new developments.

Setting up a community-based conflict resolution body may also be a good idea. Members should be locals who, due to their integrity, have a high standing locally. They should have broad networks, good communication skills, and preferably some experience in solving conflicts.

## CASE 1: Community-based rural tourism development - Canada

While community participation in tourism planning is considered an ingredient for sustainable development, few tools for meaningful and broad community-involvement have been assessed. As part of a community-centered tourism process undertaken in several Canadian locations from 1999 to 2002, Reid et al. (2004) developed a self-assessment instrument to fill this gap. The instrument has been used to focus discussion on the issues facing communities concerning tourism development.

Most tourism development often lacks the initiation of community-wide discussion. Without negative impacts having been actually experienced, it is difficult for citizens to anticipate problems or how tourism might affect their lives (Reid et al. 2000). Tourism development is often adapted from business models, with the focus on product formation and issues of supply and demand; recent research argues for approaches to tourism, particularly in rural areas, that must emphasize meaningful participation and community development (Reid et al. 2004).

Reid et al. (1993) had earlier developed a Community Tourism Development Planning Model (CTDPM). The model's third step concentrates on raising awareness about tourism issues and organizational responses. However, the model did not outline practical strategies for implementing this third step - a step that is often overlooked by entrepreneurs who are eager to get to the stage of launching their businesses. If the awareness-raising step is not dealt with fully, there is often a build-up of tension as tourism begins to dominate a community (Reid et al. 2000). In order to operationalize step three of the model, Reid et al. (2004) developed the Community Tourism Self-Assessment Instrument (CTAI) - a tool designed to measure residents' feelings about and readiness for tourism, as well as to generate dialogue, build community involvement, and assesses readiness.

The CTAI study took place in three southern Ontario communities (populations 9881, 5391 and 6763); a Northern Ontario community (population 4135); a British Columbia municipality (population 4020); and Lunenberg, a Nova Scotia village (population 2568) which has a UNESCO World Heritage site as the best surviving example of a planned British colonial settlement in North America.

In the first phase of the research, the impacts of tourism growth were identified and assessed through participant observation and qualitative interviews (Reid et al. 2000). Tension due to tourism activities was indeed present within all four communities, as well as due to the process of and access to the decision-making that led to these activities.

In the second phase of the research project, a strategy to alleviate or circumvent the development of these critical issues was created. A manual, entitled ''Visiting Your Future: A Community Guide to Tourism Planning'' (Reid et al. 2001), was developed and, using a two-day workshop format, the research team implemented and tested the activities and strategies outlined in the manual.

Finally, the CTAI - a questionnaire with quantifiable results - was implemented. The CTAI uses a 5-point linear scale to provide a mechanism for displaying similarities

and differences among the participants in each category. Individuals were interested in discussing why members of their group scored particular categories differently than they did, leading to discussions about the positive and negative impacts of tourism for their community. The scoring of the questionnaire also assisted the planners in guiding the communities through a number of strategic decision-making activities – important, as planners often risk initiating a process without testing the readiness level for such activities.

Each community was led through workshops over two evenings, resulting in a community-based vision for tourism as well as plans to hold future community-wide meetings on the implications of tourism planning and development. The initial intent of the CTAI was not to just produce a self-assessment instrument with quantifiable results but rather to create a tool that could be used to initiate participant discussion; it became an effective way to launch the workshop sessions. The act of scoring each question individually and then discussing the results in a group setting prompted further discussion about the community and the potential impact of tourism. Participants included teachers, artists, local politicians, festival planners, business owners, retired residents, youth, and new residents.

All communities acknowledged the importance of involvement in decision-making and product promotion if the tensions and other negative impacts of tourism development were to be avoided. The process of implementing the questionnaire allowed for reflection on what preconditions need to be in place for long-term success. Each community believed that identifiable leadership was crucial and warranted its own analysis project. There was also a recognition that a decision-making process and organization should be in place if tourism is to succeed over the long-term. There is evident tolerance for continued change but there is also concern that not everyone is willing to be involved in providing direction for change. It was clear that time and effort is needed in communicating the importance of participation so that satisfaction with tourism development remains high.

Reid et al. (2004) have shown that the CTSAI has use as a quantitative tool for assessing a community's ability to initiate a tourism plan and handle subsequent growth. They have also demonstrated its utility as a mechanism for establishing dialogue on the issues that affect communities and individuals in tourism destinations. The results suggest that communities need to spend considerable effort organizing for initial participation activities and to handle ongoing issues as they arise through transparent mechanisms.

## 7.4.2 Tourist Perspective

***"A tourist's experience in Ornes, Luster***

*This week I went to Ornes with a group of students to hear about some of the businesses on the south side of Luster. We had the opportunity to take the ferry across the fjord, eat our sack lunches on picnic tables just down the way from Urnes stave church, and get to know some of the local business people.*

*The highlight of the trip was a visit to an organic raspberry farm about 10 minutes by coach from the ferry dock. The farm sat on a hill overlooking the Sognefjord, and the farmer served us water with frozen raspberries which we sipped while she told us the story of her farm and about the way the community works with each other to make the area a great place to live and own a business.*

*The key difference between my experience in Ornes and my first night in Sogndal is that my group was shown around the area by local residents. I had no trouble knowing which direction to walk or what there was for me to do and see because my Norwegian friends had already made contact with the business owners and had arranged for them to introduce us to the area. The experience felt much more authentic than more touristy activities, since we got to find out what everyday life is like for people there. I would imagine, however, that if I had come to Sogn og Fjordane on my own, I would not have known how to make such an adventure happen."*

***"A tourist's experience in Sogndal***

*I arrived in Sogndal, Sogn og Fjordane with a group of students. After checking in at the Sogndal Folkhøgskule, a number of us were hungry and wanted to relax a bit, maybe pick up some groceries, before bed. I had a lot of kroner in my pocket, because I had the idea that maybe I could find some souvenirs to buy for my family, or I might want to buy a café latte if I came to a coffee shop. A few of us took a walk into town from Sogndal Folkehøgskole to see what might be open. One of the first things that we noticed (after ooh-ing and ahh-ing over the fjord and the mountains, of course) was that we were not sure where to walk. It was hard to tell which direction would take us to local businesses or recreational areas, and which way would lead to us walking through someone's backyard. Eventually we wandered towards the dock, where we sat for a bit and watched a boat come in for the night. Then we decided to find a place to take refreshment and relax together. The problem was, the only place we found open was a bar.*

*The next day was Sunday, and everything seems to close down on that day. By Monday, things were up and running again, and our group was able to visit the shopping center, where we got groceries, and we were able to get a cafe latte at the coffee shop in the park. It was good that we were able to stay longer than the weekend so that we could enjoy Sogndal. I can only imagine that if I were taking a private holiday, and had no plans for activities in the area, I would likely have moved on to the next town quickly, because of what I perceived as inaccessibility, and that would have been a shame."*

**Question:** can Sogn og Fjordane encourage spending by tourists through increased destination access to cultural and natural resources?

**Problem:** Coming to Sogn og Fjordane as a tourist can both be a great, yet challenging, experience. Lack of signage and confusion concerning where to go and what to do is apparent. Other aspects such as limited opening hours affect the experience of a tourist visiting the county. The nature- and culture-based tourism can inspire people to get out of the more populated areas and visit less central places. However, these places are often characterized as having less opportunity to spend money, which is considered a problem in Sogn og Fjordane. The county has many motor tourists, who are also seeking natural and cultural experiences. These tourists will travel on the roads along the fjords, stopping on the way for food and possibly also accommodation. There is an under-utilized potential for increased spending in these areas.

To highlight some examples of increased spending in areas outside the main tourist destination, three relevant examples were selected. From the USA, one example describing use of signage and appropriate opening hours as a means of increasing accessibility is the Kenai Fjord National Park in Alaska/USA. Another example is the innovative use of technology through a Smartphone App for tourists in Newport/Oregon/USA, as well as an example of extended use of joined up experiences within agriculture, cultural landscape and local nature in Ontario/Canada.

## CASE 2: Kenai Fjord National Park, Seward, Alaska

A relevant example of a tourist area similar to Sogn og Fjordane is the Kenai Fjords National Park in Alaska. The main attraction in this area is the Exit Glacier which draws just over 40,000 visitors in a typical peak month of July (Sanford 2010). The accessibility of the Kenai Fjords National Park, with nearly 670,000 acres, is mainly possible because of the efficiency and effectiveness of the park's Visitor Center.

The availability of the visitor center is crucial to directing and assisting the tourists visiting this park. The visitor center in Seward offers exhibits, slide programs, maps, publications and information. It is open year round, with extended hours in the summer. There is a ranger station at Exit Glacier which offers exhibits and information about the glacier and the Harding Icefield, interpretive programs and talks. Rangers provide information daily during the summer months (National Park Service 2011). It is imperative to offer access to information in order for the tourists to navigate the area as well as be informed of possible opportunities available to them. Access to the visitor's center is also crucial to local businesses. The businesses advertised through the visitors' center receive increased traffic because of recommendations from visitor center staff. Promotion of local businesses increases revenue for the entire county.

Another necessary aspect of tourist accessibility to Sogn og Fjordane is adequate signage. In the Kenai Fjord National Park, signage is the primary means for tourists to navigate the 4,600 square kilometers of park land. According to the National Park Service, the Kenai National Park has several signs available for tourists to find their way. Park signs fall into three categories: directional, interpretive, and regulatory. Directional signs simply lead the tourists to where they want to go or inform the tourists of where they are. Interpretive signs give meaning of the experience to the visitor. They also communicate specific messages that may be educational. Regulatory signs indicate to the visitor what they can and cannot do, depending on the circumstances, as mandated by park rangers and state law. A new series of trail-

side orientation and informational waysides with associated way-finding signs is nearly complete. The first signs were placed in the summer of 2008 as temporary units of evaluation. The evaluation has been completed and new way-finding signs have been installed. Tourist access to appropriate signage is crucial in directing tourists to varied locations throughout the county. A signage plan can be implemented in order to lead tourists through populated areas where they might visit local businesses, investing directly into the county.

## CASE 3: Oregon Coast Working Waterfronts project, USA

From the perspective of a tourist, information about what to do and where to go is a vital part of enjoying a new place. Some tourists complete research before the trip, while others arrive ready to explore. Oregon State University Extension Service, in connection with Oregon Sea Grant, is in the process of developing an innovative way to give tourists the resources they need to make the most of their visit to the Oregon coast.

The Working Waterfronts is an example of a project that is designed to guide tourists through the beautiful communities along the Oregon coast using strategically placed signage and a smartphone application that tourists can download for free. Sea Grant staff undertook a process of evaluating in three stages to help develop effective signage placement in communities along the coast. Beginning with the natural places tourists go, such as the Historic Bayfront of Newport, staff observed the demographics and behavior of visitors to determine who was attending and to gauge how people interacted with signs along the way. They looked to see how long tourists stopped at the signs already in place, whether children interacted with the sign, and whether families talked to each other about what they were reading. This pre-evaluation process allowed Sea Grant to develop goals around what changes they hoped to affect through the introduction of new signage. Among those goals was to increase time spent at each sign, to encourage families to read aloud to one another, and to inspire interaction where people talk to one another about what they learned and the application into their own lives.

Next, Sea Grant developed informational signs that would give tourists more details about the history and stories of the places around them, and established signs intermittently. After the signs were installed, staff undertook further observation to uncover what adjustments to the plan were necessary, for example, increasing the distance between signs to fix a bottleneck problem that was observed. Adding more signs to give additional people a chance to read was another adjustment that came out of this stage.

Finally, an evaluation was conducted in which Sea Grant staff compared observed behavior after implementation to the goals they had set in the beginning. This process was important in constructing the sign portion of the project because the results were clear and convincing, and created a good method for demonstrating to the agency that funded the project that Sea Grant had used the money in a worthwhile manner.

The smartphone application portion of the Working Waterfronts project is a success story. Sea Grant is tapping into new technologies, the use of which is on the rise across the globe, to promote communities along the entire coast of Oregon. The app is designed to provide tourists with information about what they are seeing and what else they should see in the area. Tourists can browse for products they need like gear for fishing or boating, and find out dining opportunities. The app is flexible,

providing the option to choose between winter or summer activities and seasonal hours of operation for local businesses. The information is not sponsored by businesses, and Sea Grant does not want the app to seem to be a way of selling products. However, the app links up to the websites of local businesses and recreation companies for additional information, such as restaurant menus, prices for renting gear, or capability for reserving a hotel room.

An important benefit that the smartphone app offers to business owners, aside from informing tourists of location, products, and hours of operation, is that the use of the app can be tracked. This indicates business owners can receive feedback regarding the day and time tourists look for information about their business. The logical extension is that if, for example, tourists are regularly using the app seeking a coffee shop on Saturday evening between 6:00 and 8:00 pm, then a coffee shop owner may want to accommodate tourists by being open at that time, and advertise that on the app.

The Working Waterfronts project is a case study that is helpful on two main fronts. First, the evaluation process used by Sea Grant staff to determine the best way to place signs to guide tourists is a tool that could be adapted to the development and achievement of any goal for the area. And by extension, is an example of best practice with regards to developing tourism from the bottom up. Second, the development of a smartphone application to provide tourists with the information they need to get the most out of their visit is an innovative idea that is relatively non-labor intensive. Each of the coastal communities would not have the number of attractions or the resources to make it worthwhile to develop such an app; however, Sea Grant, working with communities from Astoria in the north to Brookings in the south, is assembling information that ties the locations together while giving a comprehensive picture to the area's visitors.

## CASE 4: Taste the County™ - Prince Edward County, Ontario, Canada

The Taste the County™ project offers Sogn og Fjordane a model for joined-up tourism activities linked to agriculture, cultural landscape and local nature. In Sogn og Fjordane this can be considered an extended version of the existing Norwegian organization Hanen, that promotes farm tourism an local foods.

Prince Edward County is a rural municipality with an island-setting that features farm-fresh products, cultural heritage, artistic talent and culture, and nature-based recreational activities. Taste the County™ is an incorporated not-for-profit destination marketing and quality enhancement organization for Prince Edward County, established in 1999. It links together all the "tastes" of the County, offered as both a lure to visitors and a reason to stay. The tastes of Prince Edward County include the history, the natural beauty, the recreational activity, the culture, the artistic talent and so on.

As an incorporated not-for-profit organization, Taste the County™ is able to apply for funding in order to fulfill its mandate to stimulate agricultural and tourism economic growth through sustainable event marketing and project management in the County.

The goal is to sustain long-term marketing and quality enhancement initiatives that will ensure the continuation of Taste the County™ services and to encourage ongoing growth in the local agricultural and tourism market, which are linked. Taste the County™ has aligned its strategy with that of the County of Prince Edward through the Economic Development Office. In addition to marketing existing busi-

nesses, events and attractions, Taste the County™ fosters innovation and creativity by providing a structure where new ideas are nurtured, developed and translated into reality to benefit growth and prosperity in Prince Edward County. There is a Board of Directors made up of a cross-section of community members, and a staff of an executive director, a partnership and sales director, and a bookkeeper.

The mission of Taste the County™ is to successfully promote Prince Edward County as a unique destination in order to stimulate growth. The objectives of Taste the County™ are:

- To market the products and services of Prince Edward County, both inside the County and to a targeted and diverse external market.
- To provide educational and support services to the Partners of Taste the County™.
- To generate revenue through event management and consultation services that are relevant to their mandate and expertise.

Taste the County™ offers the following services:

- Marketing of partner products and services, using targeted media to attract a targeted audience.
- Management and marketing for events held within the County.
- Project management of approved projects which further the mandate of Taste the County™.
- Regional advocacy for initiatives and products which will benefit the County as part of a broader region.
- Consulting services related to event and project management, fundraising and marketing on a community or regional basis.

Taste the County™ develops and oversees events such as self-guided tours (Taste Trail, Arts Trail, Maple in the County); a celebration of fine dining based on local products (county.licious); an annual celebration of regional cuisine (TASTE!); a magazine publication and podcasts (horntripmagazine.com); and maintains a maintains a blog ('Experience the County'). The Taste the County™ website is linked to the County's tourism website (http://prince-edward-county.com).

In 1999, Taste the County™ was recognized with the Ontario CDC Economic Development Award. In 2003, Taste the County™ received the Outstanding Partnership with Business 2003 from the Foundation for Rural Living.

## 7.5 Conclusions

The following are considerations offered with the hope of stimulating ideas for further work in Sogn og Fjordane.

1. It would be beneficial for all the stakeholders if an impact assessment analysis is considered for any new project of significant size.
2. The investment of time and resources may be made in initial community-participation for tourism development and to manage ongoing issues as they arise through transparent mechanisms.

3. Tourists should be able to easily access information and services. The Kenai case study demonstrates that signage and appropriate hours of operation are effective ways to assist visitors enjoy the vast remote landscape.
4. An efficient way of increasing accessibility can be to install a Smartphone App for the towns in Sogn of Fjordane. It can also be used for businesses to track tourist needs. A relevant case is the Newport Waterfront Project in Oregon/USA.
5. Taste the County™ could be used as a relevant comparative case for Sogn og Fjordane for increasing joined-up tourism activities linked to agriculture, cultural landscape and local nature. This can be linked to the existing organization Hanen.

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# 8 Can Information and Communications Technologies be used to reduce or remove the disadvantages of Remoteness and Small Settlement Sizes?

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Photo by Bill Reimer

# 8.1 Introduction and Background

## Topography and geography

The County of Sogn og Fjordane is dominated by high mountains, deep fjords, and scattered population settlements. These naturally existing circumstances present opportunities as well as challenges for inhabitants when it comes to infrastructure, communications and cooperation between villages across the 26 municipalities. As the County consists largely of smaller settlements (with an average population size of 4,134), (Statistics Norway 2010) the ability to easily communicate, share information and cooperate effectively is of crucial importance.

## The current status of Information Communications Technologies (ICT) access and usage in Sogn og Fjordane

As the cost of developing ICT infrastructure and broadband has already been absorbed at a national level, with a reported 98.9 per cent of the population having the ability to access internet[11] in 2009 (Norwegian Government 2009a), Sogn og Fjordane County has the opportunity focus on investing in accessibility and expanded utilization. In general, accessing a computer is relatively easy in Norway and according to Statistics Norway data for 2011, 82 per cent of households use the internet every day (Statistics Norway 2011). There is a rather slight income effect observed with ICT access, as all households with incomes above NOK 600 000 have internet at home and the corresponding figure for those earning less than NOK 200 000 stands at 80 per cent (Statistics Norway 2011). In response, the national Broadband 2.0 Project is working to increase access and bandwidth for the majority of households by 2015 (Norwegian Government 2009b).

## ICT for rural areas

"Broadband information and communication technology has the potential to reduce the disadvantage of distance that rural and remote communities experience" (Ramirez 2007). In the following sections, the means by which this disadvantage may be reduced through e-commerce and e-governance will be explored. These are important and innovative models for economic development and service delivery in rural and remote areas (Skogseid *et al.* 2005). Given the topography and geography of Sogn og Fjordane County, the desire to expand ICT in these fields has obvious applications. With the infrastructural advantage the County possesses with regards to broadband, there are opportunities for further exploitation of the aforementioned technologies.

## The research question

The overarching question that will be analyzed is: What are the strengths, weaknesses, opportunities and threats observed in the use of ICT for commerce and governance in the rural municipalities of Sogn og Fjordane County? Within the identified sub-categories the research question is further broken down into:

1. E-commerce: How have e-business and e-commerce contributed to the diversification and expansion of economic activities in the rural areas of Sogn og Fjordane?

[11] Note: Ability to access the internet should not be construed as currently accessing.

2. E-governance: How effective are the current e-government websites among municipalities with regards to the three performance indicators of information dissemination, e-services and e-democracy—and what were the original drivers for their development?

## 8.2 Methodology

The main methodology used for examining the current ICT situation is a Strengths, Weakness, Opportunities, and Threats (SWOT) approach. Strengths and weaknesses are assessed from a present standpoint, analyzing how the system currently works. As noted in *Nordic ICT Foresight: Futures of the ICT environment and applications on the Nordic level*, strengths refer to resources or capacities that effectively achieve specific goals or objectives (Ahlqvist *et al.* 2007). A weakness, on the other hand, is defined as a fault, limitation, or defect that acts as a barrier to achieving specific goals or objectives. In contrast to the current conditional analysis of strengths and weaknesses, opportunities and threats refer to future or potential scenarios. The authors define an opportunity as a favorable situation that may be utilized to produce positive results while a threat is an unfavorable situation that may be potentially destructive to the current situation. Opportunities may be a trend or change while threats might be a barrier or constraint.

## 8.3 E-business and E-commerce in the Rural Municipalities of Sogn og Fjordane County

The prevailing assumption concerning the driver of economic activity in rural areas is rooted in land-based activities—namely agricultural and livestock production, plant nurseries, forestries, and so forth. However, globalization has increasingly put rural communities at risk, threatening their traditional economic viability. Conversely, it has also presented new opportunities for commerce through ICT that are free from attachment or bias to place. The challenge, then, is to promote the *diversification* of rural economies, which consequently creates new revenue streams and sources of employment while protecting cultural landscapes and lessening population outmigration to urban centers.

According to the OECD (2006), ICT plays a key role in economic diversification through electronic business (e-business) and electronic commerce (e-commerce). This is particularly true in rural areas (Colom 2004) where ICT enables rural entrepreneurs to tap into new markets regardless of their location. E-business is defined as the application of ICT in support of all business endeavors. This is similar to e-commerce, which is the exchange of products and services between businesses, groups and individuals (Beynon-Davies 2004).

E-business has been on the rise across Norway, with 40 percent of purchases transacted electronically in 2008 (Statistics Norway 2009). More recently, the total share of the population that utilized e-commerce during the last 12 months increased to 73 percent (Statistics Norway 2011—Household use).

Current research identifies a number of cases where investment in ICT has created employment opportunities in rural areas (Bryden and Bollman 2000). Emphasis is

placed upon *opportunities* rather than simply job creation, due to the ability of ICT to allow rural enterprises to compete on a higher level (Bryden & Bollman 2000).

While ICT is advantageous to rural areas, there are also several weaknesses to overcome with respect to the implementation of e-business and e-commerce. According to some scholars, principal weaknesses are related to the lack of broadband infrastructure and support in addition to the lack of ICT skill training available to rural populations (Galloway and Mochrie 2005).

Through field research and unstructured interviews conducted with two business owners in Luster Kommune, we ascertained the varying levels of IT expertise and how e-commerce was being used to access external markets from the rural town of Ornes. Given the age differential, the results regarding the implementation of an ICT marketing strategy was consistent with national trends—the older interviewee finding it more difficult to navigate these new technologies (Stats Norway 2011-Household Use). Our first conversation with the owner of Velte Kroken Farm revealed that the internet has been a crucial resource for the sale of value-added goods, access to agritourism markets and general promotional purposes. The second, a boatbuilder, claimed that although a website exists for his business, it is rarely used and was developed by a local IT assistant. This latter case highlights the need for increased/expanded ICT training and technical assistance from groups/organizations similar to Sogn Næring, based in Sogndal.

In the specific case of ICT as a principal tool to achieve economic diversification—and thus, sustainability—in Sogn og Fjordane, we do not find the same structural deficiencies as with the aforementioned rural areas. Since over 98 percent of Norway has broadband access and ICT skill training is available, the main question of interest is: How have e-business and e-commerce contributed to the economic diversification and expansion in the rural municipalities of Sogn og Fjordane County?

## SWOT-analysis (e-Commerce)

The following SWOT analysis is formulated on the basis of unstructured interviews and presentations held by 6 entrepreneurs and business owners, working within the hi-tech industry, agricultural and rural tourism, local business development and social capital development organizations.

Table 8.1 SWOT-analysis based on a group of entrepreneurs and and businessowners in Sogn og Fjordane

| Strengths | Weaknesses |
|---|---|
| ▪ Extensive broad brand connection (approx 99 % of all households*)<br>▪ High level of ICT-skills in the population<br>▪ Large investments in ICT infrastructure and equipment<br>▪ Good physical infrastructure already in place<br>▪ ICT awareness among the entrepreneurs<br>▪ Good local examples of e-commerce<br>▪ Local support and strategy (e.g. Innovation Norway) for ICT use, transversal priority in all economic sectors | ▪ Constrained broadband capacity<br>▪ Start up cost for new business |
| **O**pportunities | **T**hreats |
| ▪ Disadvantage of distance reduced<br>▪ Willingness and capability to use the ICT technology<br>▪ Technological hub/cluster: networking, lower transaction costs and economy of scale<br>▪ Young populations interested in ICT<br>▪ Willingness to pay for value-added products<br>▪ There are public and private risk capital sources<br>▪ Further expansion of Fosshaugane Campus (business incubators) | ▪ Lack of future investments in upgrading the technological infrastructure<br>▪ External/global competition<br>▪ Technological breakdown<br>▪ Information security |

## Best practices (e-Commerce)

As a first case study for successful business development through ICT, we present CASIMIR Technology Centre in Auvergne, France. This technology center offers information and advice to rural businesses, and facilitates the provision of services, as well as laboratories and other technical support for specific projects. The strength of CASIMIR is said to be its technological development consultants (OECD 2010).

As a second sample, we look to the region of Extremadura, Spain where there is a business incubator for IT-firms called Vivernet. The main goal of the organization is to develop new enterprises in the technology sector and help entrepreneurs in the scarcely populated Extremadura region enter the global e-market and commercialize

diverse products in the internet. Vivernet also emphasizes developing safe and secure online systems, and overcoming physical boundaries by use of ICT. (eEurope y Extremadura 2001).

Thirdly, in Sogndal, a business development firm, Sogn Næring, is already located at the Fosshaugane Campus. The company is owned by several other local businesses and offers help, advice and support for businesses wanting to start up in the Sogndal area. They are collocated, and cooperate with the "Knowledge park Sogn og Fjordane" (Kunnskapsparken Sogn og Fjordane), and they hope to extract synergy effects from the collocation at Fosshaugane Campus (Sogn Næring 2011).

### Considerations (e-Commerce)

Sogn og Fjordane should continue to invest in physical and technological infrastructure to develop and meet the future needs of e-commerce. Priority should continue to be placed on technological skill building among rural populations. Additionally, national and municipal incentives could be given to create new opportunities for the emerging generation of e-entrepreneurs. There is also an opportunity to invest in the development of a technological cluster on Fosshaugane Campus. Lastly, in order to attract entrepreneurs to Sogn og Fjordane, the County is encouraged to continue marketing itself as a place with high quality of life, access to nature, and a superior environment for hi-tech business development.

## 8.4 An Analysis with Recommendations for E-governance in Sogn og Fjordane Municipalities

Among the primary questions posed in undertaking this analysis was: What has been the driving force behind the development of e-governance in Sogn og Fjordane? Seeking evidence to offer a response allows us to determine whether the original impetus was to maximize cost-effective service delivery; improve access to accurate information and transparent, responsive institutions; or transform the public sector so that it can function as truly citizen-centric (Flak *et al.* 2005). In theory, e-governance addresses all three aspects. In reality, municipalities, as the primary localized service providers, have constructed their websites upon the principles of internal efficiency and cost reduction rather than allowing for a generative, citizen-as-stakeholder process to guide the development of their web presence. The authors of the 2005 report "Local E-government in Norway: Current Status and Emerging Issues," cite this lack of e-democracy as one of the prevailing limitations among municipal websites (Flak *et al.* 2005). And despite the release of the eCitizen 2.0 report in 2008, the modus operandi of e-governance sites remain largely one-way—providing information and services without fostering an open forum for citizen engagement and dialogue. Before delving into this issue, we will highlight the strengths of the current system and ultimately reflect on opportunities for expansion by presenting comparative case studies and evaluative indicators for the progress of e-governance in Sogn og Fjordane County.

Compiling data from Statistics Norway, we find that 2010 was a year of positive growth for the use of e-governance at the national scale:

- 94 percent of county municipalities are using electronic case handling;

- 74 percent of people contacted public authorities via e-government sites, reflecting an increase of 3 percent;
- Over half of internet users downloaded official forms and/or sent completed forms to public authorities; and
- Two in 5 have sent tax declarations via the web (Statistics Norway 2011).

In surveying government-to-business (G2B) and government-to-citizen (as consumer) (G2C) interfacing, the AltInn and MinSide websites spearheaded by the Norwegian government provide excellent examples of co-located e-services and information (MinSide). Several Sogn og Fjordane municipalities have made reasonable strides towards this level of user-friendliness—especially since the 2005 Norge.no survey of e-government sites, where the 26 municipalities performed the least well in this category—earning an average of 53.8 percent, or three of six stars for user-friendliness (Appendix). By far, the greatest strength of municipal sites is in their transparency and their *output*-based functions of information dissemination and e-service delivery. In order to cultivate greater *input*, we must turn to the opportunities for the expansion of e-democracy in Sogn og Fjordane.

### SWOT-analysis (e-Governance)

The following SWOT analysis is based on a review of the current municipality websites within Sogn og Fjordane.

Table 8.2 SWOT-analysis for a municipality website in Sogn og Fjordane

| **S**trengths | **W**eaknesses |
|---|---|
| ▪ Information dissemination<br>▪ E-service delivery<br>▪ Transparency<br>▪ Access and availability | ▪ Lack of citizen-centric e-governance<br>▪ Insufficient interactive forums<br>▪ No user evaluation mechanisms in place |
| **O**pportunities | **T**hreats |
| ▪ Expansion of e-citizenry through e-chat, online discussion forums, user surveys, social media networks<br>▪ Continued expansion of co-located e-services | ▪ Technological breakdown<br>▪ Information security<br>▪ Insufficient knowledge of ICT among potential user populations |

## 8.4.1 Best Practices (e-Governance)

Norway's official ICT policy promotes e-governance within the state, specifically targeting effective public self-service solutions and efficient public administration as a main priority area (Ministry of Government Administration, Reform and Church Affairs Website). To improve citizen participation, e-governance solutions should focus on enhancing bilateral dialogue between citizen stakeholders and the government. This interaction can further be encouraged through e-democracy, responseveness and the use of social networking sites.

In the release of the 2008 report eCitizen 2.0, the Ministry of Government Administration, Reform and Church Affairs stressed the importance of using a "culture of sharing on the internet" as web users today expect public information to be freely accessible (Brandtzæg *et al.* 2008). At the forefront of citizen-centric e-governance is Denmark's MindLab, an interactive website which focuses on developing "the public sector within" by involving "individuals and businesses [to create] better public solutions" (MindLab). Created in 2002 for the Ministry of Economic and Business Affairs, MindLab serves as an innovative tool, helping the Ministry's key decision-makers and employees "view their efforts from the outside-in, to see them from a citizen's perspective" (MindLab). The organizational mission is achieved through five strategic objectives: innovation, efficiency, culture, knowledge, and visibility (MindLab).

A concrete (and more visual) example of an effective e-governance operation is the website for the city of Portland, Oregon (USA). In 2009, Portland's site was ranked as one of the top two municipal e-governance websites in the nation (Portland Municipal Website). This distinction was based on content, usability, service, privacy and citizen participation ratings. Features of the City's website include a complex online GIS system, visual access to neighborhoods and bike routes, and a polling capability to "facilitate 24/7 interaction with the public" (Portland Municipal Website).

The key attribute of Portland's site is that it simplifies citizen access to government through a "Social Media Link Directory" for every department and program operated through the City (see Figure 1). Options range from reading the Mayor's blog to following the police department on Twitter. Considering the Mayor has over 36,000 followers on Twitter, the high level of public participation and success of e-citizenship in Portland's e-governance system is readily evident.

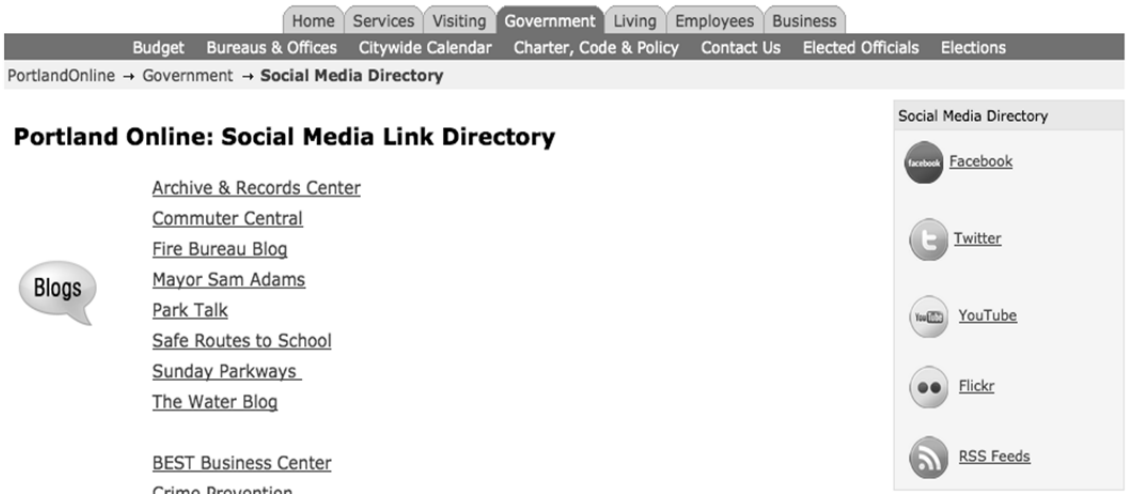


*Figure 8.1 An example from a Portland municipality website – simplifying citizens access to government*

## Considerations (e-Governance)

Continued evaluation of e-governance and e-democracy strategies is imperative to ensure Sogn og Fjordane is effectively developing e-citizenship within the county. Recommended methods include the expansion of strategic planning to engage citizen stakeholders, establishing a system of benchmarking, and providing internal and external evaluation mechanisms. External evaluation tools that may be employed

range from immediate user ratings on each webpage to brief surveys by which citizens may email feedback anonymously. Another means to gauge progress in outreach and citizen engagement is to track website visits, posts, number of followers on social media sites, and so forth.

## 8.5 Conclusions

> *"Although the development of the 'information society' does not represent a new era, ICT affects the content and form of goods and services at an increasingly higher pace. In addition, ICT affects the organization of business and industry as well as communication and social contact between people. ICT has a social, political and cultural effect on our everyday lives." (Statistics Norway 2008).*

The high internet connectivity and broadband access within Sogn og Fjordane presents a significant opportunity to utilize ICT as a means for economic growth and governmental communication. The existing infrastructure—both physical and virtual—also permits continued development of e-commerce and e-governance. The use of these communication technologies is especially important for bridging any gap that rural areas might experience due to remoteness. It is also important to note that the most remote areas may be the least well connected, which presents an opportunity for Sogn og Fjordane to assist the smaller municipalities within the County as it relates to ICT skill building and broadband accessibility. The use of older technologies, e.g. telephone communication, may be helpful with new skill building. An example would be ensuring online businesses and municipality websites maintain a contact phone number which is readily accessible to users. Overall, our analysis has demonstrated that Sogn og Fjordane County has the necessary capacity to strengthen and grow the sectors of e-commerce and e-governance.

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# Appendix

Norge.no Survey of Municipality E-Government Sites in Sogn og Fjordane County, 2005

| Etatsnaven / Municipality | Tilgj. / Avail. | Bruker-tilpasn. / User friendliness | Nyttig innhold / Content Information | Gj.-snitt / Average | Antall stjerner / Total stars |
|---|---|---|---|---|---|
| Årdal | 29% | 66% | 75% | 60% | **** |
| Askvoll | 43% | 47% | 29% | 40% | ** |
| Aurland | 48% | 58% | 79% | 62% | **** |
| Balestrand | 76% | 50% | 54% | 60% | **** |
| Bremanger | 67% | 55% | 46% | 55% | *** |
| Eid | 57% | 50% | 75% | 60% | **** |
| Fjaler | 52% | 39% | 36% | 41% | ** |
| Flora | 48% | 61% | 68% | 60% | **** |
| Førde | 62% | 50% | 71% | 60% | **** |
| Gaular | 71% | 45% | 39% | 49% | *** |
| Gloppen | 76% | 61% | 57% | 63% | **** |
| Gulen | 43% | 39% | 32% | 38% | ** |
| Hornindal | 67% | 63% | 71% | 67% | **** |
| Høyanger | 62% | 76% | 82% | 75% | ***** |
| Hyllestad | 43% | 39% | 32% | 38% | ** |
| Jølster | 76% | 55% | 57% | 61% | **** |
| Lærdal | 67% | 45% | 39% | 48% | *** |
| Leikanger | 76% | 24% | 18% | 34% | ** |
| Luster | 62% | 71% | 82% | 72% | **** |
| Naustdal | 67% | 45% | 43% | 49% | *** |
| Selje | 67% | 55% | 64% | 61% | **** |
| Sogndal | 81% | 74% | 71% | 75% | ***** |
| Solund | 67% | 50% | 68% | 60% | **** |
| Stryn | 76% | 68% | 68% | 71% | **** |
| Vågsøy | 67% | 58% | 50% | 57% | *** |
| Vik | 52% | 61% | 64% | 60% | **** |

# 9 Conclusions and Summary

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Photo by Willi Meyers

The brief for the ICRPS summer institute project was agreed between faculty and Sogn og Fjordane County, and circulated before the summer institute to both faculty and students. The students and faculty were allocated to groups to deal with the themes identified in the brief. The allocation process sought as far as possible to ensure a balance between the topics, presence of a Norwegian speaker in each group, gender, and faculty-student balance. Each group worked on one of the themes, and reported to a final conference held at the Folk High School in Sogndal on the penultimate day of the summer institute. Local officials and politicians were invited to this seminar, and despite the holiday season, some came and offered constructive feedback. The final chapters, each of which deals with one of the themes, also reflect this feedback.

An important aspect of each Chapter is that students and faculty drew on their knowledge of other countries to provide case studies against which the situation and policies in Sogn og Fjordane could be assessed. It is for the readers to assess the extent to which this has provided useful insights and suggestions, but we as the local faculty in Norway consider that it does so, and this was actually achieved by enthusiastic students and faculty who worked tirelessly during the two week period only part of which was available for the project itself.

Some of the key points to note are

(1) That most of the countries referred to in the report face a set of similar economic, social and environmental challenges as well as opportunities in their rural regions, but

(2) that there are very different ways in which national and local policies address these issues in different contexts, reflecting differences in political values, political systems, and resource availabilities, among other things.

(3) While Norway is notable for some very strong underlying policy instruments that help to keep 'living rural regions' – especially strong and decentralized democratic local government, fiscal equalization scheme, equality of education provision and access to that, agricultural and districts policy, land access rights to all, and relative equality of property ownership – the cases show that other countries have developed stronger policies in some other fields which are also local priorities in Norway – for example, for the attraction and retention of immigrants, and the welcoming of, and services to, tourists. There is therefore considerable scope for mutual learning.

This project was the first commissioned project undertaken during the summer institute, and those of us involved in it believe that it represents a useful addition to the learning experience, as well as providing comparative insights on relevant policy issues to the authorities involved. Such insights are often very costly to identify and codify in ways which relate to local conditions, and the Summer Institute project provides a cost effective means of obtaining them.

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