



Innovation Systems and the Periphery

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Byggðastofnun

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Prologue

This document is a project report for the contribution of the University of Akureyri Research Institute in Iceland to a trans-national Nordic project referred to as *Innovation systems and the periphery* (ISP). The project has been carried out as a joint initiative of a team of researchers from Denmark, Finland, Iceland, Norway and Sweden. The team included the following partners:

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The core funding of the project was provided by the Nordic Innovation Centre (formerly the Nordic Industry Fund). Additional funding for the Icelandic part of the project was received for the Institute for Regional Development in Iceland (Byggðastofnun).

The project idea was developed and operationalized as a cooperative effort of the members of the research team. The research team also worked with a reference group, consisting of policy actors and representatives of providers of support services from the participating countries. The reference group members participated in project meetings and provided the research team with valuable advice throughout the project period. It should, however, be noted that the project results are solely the responsibility of the research team. The reference group included the following members:

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<i>Erik Westholm, Ass. Professor Swedish Institute for Future Studies</i>	<i>Sweden</i>

The gathering of empirical data, as well as the writing of the following report, was carried out by Elín Aradóttir researcher at UARI. Elín was also the coordinating project leader for the project as a whole. The findings and conclusions from the other participating countries as well as the joint conclusions of the project as a whole, can be found in the project's final report, which is accessible on the World Wide Web at <http://vefir.unak.is/isp/> and <http://www.unak.is/rha>.

The ISP research team would like to thank those organizations that provided the project with the necessary funds, as well as the reference group members, for their contribution to the project. Sincere thanks also go to the project's key informants (interviewees) from the selected study areas and other parts of the Nordic countries. The contribution of these people was of great value to the project, and these people's assistance and hospitality were greatly appreciated.

On behalf of the ISP research team,
Elín Aradóttir, researcher, UARI.

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Summary in English

Background and focus of the project

The ‘Innovation Systems and the Periphery’ project (ISP) is a trans-Nordic research project which builds on the premise that there is a need for increasing our knowledge of innovation systems in the periphery and to pay an increased attention to the design and implementation of innovation policy and innovation facilitation practice in the rural context. The project focused on the role of innovation and the nature of innovation processes in selected industries in chosen peripheral areas/regions of the Nordic countries.

The project's goal was to explore how innovation capabilities of firms, in selected industries in periphery regions, can be enhanced through the means of innovation and regional policy, and the strengthening of innovation systems.

The meaning of the term *innovation* is of great importance for the ISP project. The ISP project approached the term from a fairly broad viewpoint, recognizing different types of knowledge and competences as the necessary building blocks for innovation and accepting a broad range of activities as part of innovation processes. The following definition reflects the understanding of the term, which the ISP project is built on:

Innovation means implementing/utilizing a novelty for the purpose of strengthening or improving the competitive status of the entity (firm) in question. Example of this is when a firm introduces a new or significantly improved product (good or service) to the market, or when a firm designs or utilizes a new or significantly improved process or method.

Innovation is based on the results of new technological development, new combinations of existing technology or knowledge, or utilization of other knowledge acquired by the firm.

Innovation is defined from the perspective of each firm, i.e. it has to include something new to the firm; but not necessarily to the market (locally, nationally or in an even wider context). It does, therefore, not matter whether the novelty was developed by the firm or by another entity.

The definition above can be applied to every industry sector, and to every size of firms in rural and urban locations.

The concept of innovation system has been developed to describe the systemic nature of innovations. It builds on the assumption that innovation is not only a result of, but also reliant on the interactions and knowledge transitions between different economic actors. The term innovation system has been defined as a “*set of institutional actors and interactions, having as their ultimate goal the generation and adoption of innovations at some level of aggregation*”¹ (country, region, industry sector, etc.). The set of players, who represent the different elements of the system are believed to include firms, large and small, as well as various organizations such as educational and research institutes, technology-transfer agencies, consultants and development agencies, public and private funding organizations and interest groups and membership organizations of various sorts. The interactions between these entities (elements) can take place in various ways. They can be described as flows of knowledge and information, flows of investment funding, flows of authority or leadership and even as more informal arrangements such as networks, associations, and partnerships.

The concept of innovation system was put at the center of the ISP project. Although the understanding of the concept, which is reflected in the paragraph above, generated the basis for ISP research approach, the role of the individual firm was emphasized. The exploration of

¹ Saviotti 1997. p. 180.

innovation processes within individual firms, therefore, formed the launching platform for the project's analysis.

Methodology

A case study approach was chosen as a research strategy for the ISP project. The four key research themes were: Innovation activity, knowledge and competence base, cooperation and networks, and innovation conditions. An emphasis was put on three industry sectors, i.e. tourism, agri-food production and manufacturing. The project partners also selected a study area within their home country, as well as a country-specific focus in regard to industry sector branches. The project included 14 cases. Each of the cases explored the contemporary phenomenon of innovation within a single industry sector in a single Nordic area. The Icelandic contribution to the project included one case on the agri-food sector, with an emphasis on milk production and the dairy industry, and one case on the tourism sector, with an emphasis on recreational services that focus on local culture or natural environment of the study area. The study area chosen for both cases was the Northwest region.

Various available information resources, e.g. policy documents, relevant research reports, and statistics, were reviewed for each of the cases explored. Empirical data gathering also took place through semi-structured interviews with key-informants. The interviews were based on a standard list of questions. Key-informants included representatives of firms, as well as representatives of regional and national support agents (representatives of development groups, industry associations, educational institutes, R&D organizations, etc.). The empirical data gathering associated with the Icelandic part of the project took place in the period of May to July, 2004.

The Icelandic research context

The Northwest region has a population of just over 9.000 and includes a mixture of sparsely populated communities and small urban centers. The two sectors, which the study focused on, were the tourism sector and the agrifood industry, with an emphasis on milk production and the dairy industry. The Northwest region is traditionally a food-production region, and hence is very much shaped by the traditional economic structure of rural Iceland. Currently there are about 90 farms producing milk in the study region² and two dairy plants are operated, producing a variety of products that are sold both regionally and nationally. The tourism industry in the region relies, to a greater extent than many other Icelandic regions, on organized activities and events as attractions for tourists. The region is renowned for activities as salmon and trout fishing, activities associated with the Icelandic horse, as well as several cultural activities focusing on different aspects and time periods of the region's rich history. The Icelandic Tourist Board Registry includes around 115 tourism firms located in the Northwest region.

Innovation activity

Many examples of innovative practices were found by the study. This applies to both sectors studied. Although many of the innovations found were small-scale and incremental in nature,

² The study area for the case on the milk production and the dairy industry in the Northwest region, only includes Skagafjörður district and East Húnavatnssýsla district (i.e. excluding the West Húnavatnssýsla district).

these examples demonstrate that innovation is possible and currently taking place in the study region. Innovation processes commonly seem to be considered necessary to stay in business. In that way innovation seems to be looked upon as a survival strategy. Although the discussion above describes a pretty picture, it should be stressed that for many of the firms found in the Northwest region, success has evidently not come easy. It can be argued that it is important that policy maker and rural development practitioners adopt and promote a certain attitude towards doing business and carrying out initiatives. These agents have a key role in creating an understanding that innovation is a cross-sectoral phenomenon, that it is possible, and indeed necessary for firms and organizations to maintain their edge. The existence of examples, as those found by the ISP project, should strengthen such efforts and encourage policy makers to take on a proactive approach aiming at facilitating innovation in rural regions.

Knowledge and competence base

Various forms of practical knowledge and gained experience, as well as personal traits such as entrepreneurial spirit, are the most evident building blocks for innovation in the firms studied. In addition, trade- and craftsmanship, and/or certain types of technical know-how are also important both in farming and food processing, while various occupational experiences and social skills seem to be important building blocks for innovation within the tourism sector. The knowledge and competence base, which innovations are drawn from, could, therefore, be regarded as informal and generated by experience, rather than building on knowledge generated by university education. The firms, furthermore, have limited contact or cooperation with educational institutes in general, as well as with research organizations. The primary common need for strengthening the knowledge and competence base (identified in both sectors), were needs for more extensive knowledge on markets, marketing and sales. Policy makers should aim at strengthening the role of educational institutes within the Northwest region, especially their input and involvement in various general capacity building efforts as well as their outreach to firms. A broad range of educational institutes should, have a role and unconventional institutes should be included in the discussion on further development of educational offerings, e.g. for the purpose of limiting a sector lock-in.

Cooperation and networks

‘Firm to firm’ relations seem to be an important part of cooperation associated with innovation processes. Clients, suppliers, personal contacts, and colleagues play a key role; in most cases a stronger role than various public support providers. The farming extension services seem to be the only agents that have a significant role in farmers’ innovation activities. The extension services also link farmers with institutes at the national level. The processing firms, however, had hardly any contact with local or regional support service providers, but rely almost solely on the above-mentioned horizontal relations, nationally and internationally. Generally the smaller and younger tourism firms rely to a greater extent on communication with support agents, while the more mature and larger firms are more independent and/or rely more on direct relations with clients, travel agencies and personal contacts. The younger and smaller firms also primarily network with local, regional and in some cases national agents, while the larger and more mature operations prefer to network with agents at either the national level or most preferably agents abroad. The majority of the tourism firm representatives had been in contact with several financial institutes in relation to

innovation projects. The representatives commonly expressed some frustration in regard to services of financial institutes and the overall access to funding. The sectors studied could evidently benefit from more cross-sectoral cooperation, e.g. in relation to branding of products, marketing, and alternative farming practices.

Policy situation and innovation conditions

Awareness and familiarity with different cross sectoral policy initiatives seems to be limited (including both the policy of the Science and Technology Policy Council and the rural development policy), especially among firm representatives, but also among representatives of different support organizations. Awareness and familiarity with industry specific policies, however, seem to be considerably better. We, therefore, argue that the visibility and coherence of the cross-sectoral policy environment should be improved with an emphasis on reaching the attention of the so-called end users and with an emphasis on a higher level of consciousness of the needs of specific industry sectors.

Specific planning for economic development for the study region does not exist and it seems quite evident that many aspects of the regional cooperation could do with some improvements for the purpose of maximizing the region's capacity and bargaining power and minimizing problems associated with the peripheral location. Many players evidently have a role in strengthening the regional cooperation, including municipal leaders, economic development practitioners, and leaders of industry associations. A broad range of support agents offer services to firms on the local, regional, and national level. The findings of the study, however, indicate that many of these agents play a fairly insignificant part in the context of innovation activities of firms in the region. This indicates that many of the support agents should strengthen their outreach to the business community for the purpose of improving their visibility and their level of effectiveness. Innovation in tourism is currently receiving considerable attention by support agents through the implementation of specific innovation-related project. The food industry could do with increased effort in this direction by public organizations.

Systemic aspect of innovation processes

Some differences were found in the systemic aspect of innovation processes between the two cases:

- *Agri-food*: The systemic aspect is purely sectoral. Firms rely on relations with other agents within the sector (firms and service providers). This is especially evident in the primary production phase (farming), where the local and regional environment is the most important platform of networking.
- *Tourism*: The systemic aspect has weak geographical underpinnings. The location of the firm is, therefore, not a crucial element. Firms seek for direct relations with partners at the national and/or international level.

Based on the above, we conclude that we should be cautious of using the term *regional innovation systems* to describe the systemic aspect of the innovations found in the Northwest region. These findings should encourage local and regional support agents to strengthen their role as intermediary agents between firms and national and international support agents and business networks.

Samantekt á íslensku

Bakgrunnur og afmörkun rannsóknarinnar

Nýsköpunarkerfi á landsbyggðarsvæðum er heiti þess samnorræna rannsóknarverkefnis sem fjallað er um í þessari skýrslu. Verkefni þetta byggir á því sjónarmiði að þörf sé á að auka þekkingu okkar á nýsköpunarkerfum á landsbyggðarsvæðum sem og að beina sjónum í auknu mæli að hönnun og framkvæmd nýsköpunarstefnu og þróunarstarfs sem ætlað er að efla nýsköpun á landsbyggðinni. Verkefnið beindi sjónum sérstaklega að hlutverki nýsköpunar og eðli nýsköpunarferla innan valdra atvinnugreina á völdum landsbyggðarsvæðum á Norðurlöndunum.

Markmið verkefnisins var að rannsaka hvernig bæta megi getu fyrirtækja á landsbyggðarsvæðum, innan valdra atvinnugreina, gegnum nýsköpunar- og svæðapróunarstefnu og eflingu nýsköpunarkerfa.

Notkun hugtaksins *nýsköpun* í rannsóknarverkefninu byggir á nokkuð víðri sýn á hugtakið. Litið er á ólíkar gerðir þekkingar og færni sem mögulega undirstöðu nýsköpunar. Einnig er litið svo á að nýsköpunin geti beinst að margskonar þáttum í starfsemi fyrirtækja. Eftirfarandi skilgreining gefur nánar til kynna þann skilning sem lagður var í hugtakið í verkefninu.

Nýsköpun er innleiðing nýjungar í þeim tilgangi að styrkja eða bæta samkeppnisstöðu viðkomandi fyrirtækis. Dæmi um þetta er þegar fyrirtæki setur nýja eða verulega endurbætta vöru/þjónustu á markað, eða þegar fyrirtæki hagnar eða notfærir sér ný eða verulega endurbætt ferli eða aðferðir.

Nýsköpun byggir á því að nýta niðurstöður nýrrar tækniþróunar, að tengja saman þekktu tækni á nýjan hátt eða á nýtingu annarrar þekkingar sem fyrirtækið hefur aflað sér.

Nýsköpun er metin út frá innra umhverfi hvers fyrirtækis, þ.e. út frá forsendum og sögu hvers og eins fyrirtækis. Þannig er nóg að um nýjung sé að ræða hjá viðkomandi fyrirtæki þó ekki sé nauðsynlega um að ræða nýjung á markaði (þ.e. á héraðs-, lands, eða heimsvísu). Það skiptir því ekki máli hvort viðkomandi nýjung er þróuð af fyrirtækinu sjálfu eða af öðrum aðilum.

Samkvæmt skilgreiningunni hér að ofan getur nýsköpun átt sér stað í hvaða atvinnugrein sem er. Hugtakið á því erindi við öll fyrirtæki, óháð starfssviði, stærð, eða staðsetningu.

Hugtakið ‘nýsköpunarkerfi’ hefur verið notað til að lýsa því sem kalla mátti hinn kerfisbundna samskiptaþátt nýsköpunarferlisins. Grundvöllur hugtaksins er sá skilningur að nýsköpun í atvinnulífi, hvort sem litið er til ákveðinna landssvæða eða landa, sé ekki aðeins byggð á frammistöðu fyrirtækja, stofnana eða annarra skipulagsheilda á viðkomandi svæði heldur einnig á því hvernig aðilar á viðkomandi svæði vinna saman og miðla þekkingu hver til annars. Hugtakið nýsköpunarkerfi hefur verið skilgreint sem “safn þeirra aðila og samskiptamynstra þeirra á milli sem hafa nýsköpun og innleiðingu nýjunga að meginmarkmiði innan ákveðinnar skilgreindrar einingar”³ (lands, landshluta, atvinnugreinar, o.s.frv.). Aðilar sem gjarna hafa meginhlutverki að gegna í slíkum nýsköpunarkerfum, auk fyrirtækjanna sjálfra, eru háskólar, rannsókn- og tækniyfifærslustofnanir, opinber og einkarekin ráðgjafafyrirtæki, fjármálastofnanir af ýmsu tagi, atvinnugreinasamtök og ýmis önnur félagasamtök og grasrótarhreyfingar. Samskipti milli aðila kerfisins geta birst á margskonar hátt. Þau geta birst sem flæði þekkingar eða upplýsinga, sem fjárfestingastraumar, sem yfirráð eða stjórnskipanir, eða sem óformleg tengsl af ýmsu tagi, svo sem samráð, samvinna, félagsskapur, o.s.frv.

Hugtakið nýsköpunarkerfi var lagt til grundvallar því rannsóknarverkefni sem hér er til umfjöllunar. Þó að sá skilningur á hugtakinu, sem lýst var hér að ofan, leggi grunn að

³ Saviotti 1997. p. 180.

rannsóknarnálgun verkefnisins, er meginútgangspunkturinn þó fyrirtækin sjálf, nýsköpunarferli innan þeirra og helstu þættir sem áhrif hafa á slík ferli.

Aðferðir

Í rannsókninni fólst upplýsingaöflun og greining á nýsköpunarstarfi og nýsköpunarumhverfi ákveðinna atvinnugreina á völdum landsbyggðasvæðum á Norðurlöndunum. Sú aðferðafræði sem beitt var byggðist á svokölluðum greiningardæmum (case studies) þar sem sérstaklega var litið til fjögurra rannsóknarþema. Þemun fjögur voru: 1) einkenni nýsköpunarstarfs, 2) þekking og færni, 3) samvinna og tengslanet og 4) skilyrði til nýsköpunar. Sérstök áhersla var lögð á þrjár atvinnugreinar, þ.e. ferðaþjónustu, landbúnaðarvöruframleiðslu, og iðnað. Aðilar verkefnisins völdu einnig sérstök landssvæði innan hvers þáttökulands sem sérstaklega var beint sjónum að (study regions), sem og hver sína nálgun innan áðurnefndra atvinnugreina. Alls tók verkefnið til 14 greiningardæma. Í hverju þeirra var gerð úttekt á nýsköpunarstarfi og nýsköpunarumhverfi ákveðinnar atvinnugreinar innan ákveðins landsbyggðarsvæðis. Íslenski hluti verkefnisins fól í sér tvö greiningardæmi sem bæði afmörkuðust við Norðurland vestra. Í öðru fólst úttekt á nýsköpunarstarfi og nýsköpunarumhverfi mjólkur- og mjólkurvöruframleiðslu en í hinu úttekt á nýsköpunarstarfi og nýsköpunarumhverfi ferðaþjónustu með áherslu á afþreyingartengda ferðaþjónustu sem grundvallast á menningu og náttúru svæðisins.

Fjölbreytt gögn voru nýtt við vinnslu hvers greiningardæmis, s.s. ýmis opinber stefnumarkandi skjöl (lög, reglugerðir, þingsályktanir, o.s.frv.), rannsóknarskýrslur og ýmsar tölulegar upplýsingar. Frumgagna var aflað með viðtölum sem byggð voru á stöðluðum lista umræðuefna milli landa (viðtalsvísir). Meðal viðmælenda voru forsvarsmenn fyrirtækja í viðkomandi greinum, sem og fulltrúar ýmissa aðila í stoðkerfi greinanna sem starfa á landshluta- og landsvísu, s.s. fulltrúar atvinnuþróunarfélaga og ráðgjafarþjónustu, atvinnugreinafélaga, menntunar- og rannsóknastofnana, o.s.frv. Í tengslum við íslensku greiningardæmin voru alls tekin 32 viðtöl. Viðtölin fóru fram á tímabilinu maí til júlí 2004.

Um rannsóknarsvæðið

Á Norðurlandi vestra búa ríflega 9.000 manns. Samkvæmt skilgreiningu Hagstofu Íslands eru fimm þéttbýlisstaðir innan landshlutans, auk dreifbýlishéraða. Um tveir þriðju hlutar íbúanna búa í þéttbýli. Segja má að í sögulegu samhengi sé Norðurland vestra matvælaframleiðslusvæði sem markast mjög að hefðbundinni atvinnulífssuppbyggingu íslenskra landsbyggðarsvæða. Um 90 kúabú framleiða mjólk innan þess hluta Norðurlands vestra sem rannsóknin náði til⁴ og er heildarframleiðslumagn um 14.600.000 lítrar á ári (um 13.5% landsframleiðslu)⁵. Einnig eru tvö mjólkursamlög starfrækt innan landshlutans sem framleiða fjölbreyttar mjólkurvörur sem seldar eru bæði innan landshlutans og utan. Ferðaþjónusta er einnig mikilvæg atvinnugrein á Norðurlandi vestra. Segja má að ferðaþjónusta á svæðinu byggji í meira mæli á afþreyingartengdri þjónustu sem meginaðráttarafla fyrir ferðamenn, en ferðaþjónusta víðast hvar annars staðar á landsbyggðinni. Landshlutinn hefur ríkan orðstír sem lax- og silungsveiðisvæði og hestamennska og ýmis starfsemi sem tengist menningu og sögu svæðisins skipar stóran sess

⁴ Úttektin á nýsköpunarstarfi og nýsköpunarumhverfi mjólkur- og mjólkurvöruframleiðslu náði einungis til Skagafjarðar og Austur Húnavatnssýslu (Vestur Húnavatnssýsla var því undanskilin).

⁵ Byggt á gögnum fyrir árið 2003.

innan ferðaþjónustu á svæðinu. Samkvæmt þjónustuskra Ferðamálaráðs Íslands eru um 115 ferðaþjónustufyrirtæki starfandi á Norðurlandi vestra. Eins og víðast hvar á landsbyggðinni markast umsvif ferðaþjónustu á svæðinu mjög af árstíðarbundnum sveiflum.

Einkenni nýsköpunarstarfs

Rannsóknin leiddi í ljós að auðvelt er að finna dæmi um vel heppnað nýsköpunarstarf meðal fyrirtækja á Norðurlandi vestra sem starfa í þeim atvinnugreinum sem litið var til. Nýsköpunarverkefni á kúabúum snúast í flestum tilfellum um að auka skilvirkni á búunum í flestum tilfellum með innleiðingu nýrrar tækni. Vinnuhagræðing er einnig gjarnan markmið og afleiðing þessara verkefna auk þess sem mörg þeirra verkefna sem skoðuð voru fóru saman með stækkun viðkomandi rekstrareiningar. Nýsköpunarverkefni í afurðavinnslu tengjast fyrst og fremst vöruþróun sem í einhverjum tilfellum fer einnig saman með innleiðingu nýrra aðferða og/eða tækni. Einkenni nýsköpunarstarfs, meðal ferðaþjónustufyrirtækjanna sem skoðuð voru, voru nokkuð mismunandi. Þó má segja að í tilfelli yngri og smærri fyrirtækjanna virðist nýsköpunin fyrst og fremst snúast um þróun og markaðssetningu nýrra vara þar sem vöxtur (aukin velta) er meginmarkmiðið. Nýsköpunarstarf meðal stærri og lífsreyndari fyrirtækjanna snýst einnig gjarna um vöruþróun með það að markmiði að breikka framboð þjónustu og/eða að lengja háönn. Einnig voru dæmi um verkefni meðal eldri og lífsreyndari fyrirtækja sem snérust um innleiðingu nýjunga hvað varðar markaðssókn og samstarfsform við undirverktaka.

Þó að mörg þeirra dæma sem skoðuð voru væru fremur smá í sniðum og fælu fremur í sér stigvaxandi þróun en byltingarkennda, má segja að tilvist dæmanna sýni okkur að nýsköpun er möguleg og til staðar á svæðinu. Sú hugsun að nýsköpun sé nauðsynleg til að halda dampi virtist einkenna viðhorf þeirra sem að nýsköpunarverkefnunum stóðu. Því virtist sem litið sé á nýsköpun sem ákveðna leið fyrir fyrirtæki til að lifa af innan síns samkeppnisumhverfis. Það skal þó tekið fram að í mörgum þeim dæmum sem litið var til hafði nýsköpunarferlið oft á tíðum ekki gengið hnökralaust fyrir sig. Þetta átti sérstaklega við um dæmi innan ferðaþjónustunnar, þar sem forsvarsmenn fyrirtækja lýstu gjarnan erfiðu ferli þar sem hindranir á borð við takmarkaðan aðgang að fjármagni og ýmsa erfiðleika sem tengjast árstíðabundnum eftirspurnarsveiflum, höfðu sett strik í reikninginn.

Mikilvægt er að þeir aðilar sem að stefnumótun og stoðþjónustu standa tileinkir sér og stuðli að hvetjandi hugsunarhætti hvað varðar fyrirtækjarekstur og framkvæmd þróunarverkefna. Þessir aðilar hafa lykilhlutverki að gegna hvað varðar eflingu þeirra viðhorfa að nýsköpun sé möguleg, eigi erindi inn í allar atvinnugreinar og sé í raun nauðsynleg til að fyrirtæki nái að viðhalda samkeppnisstöðu sinni. Tilvist dæma á borð við þau sem skoðuð voru í rannsókninni, ætti að hvetja til frekari viðleitni til eflingar slíks hugsunarháttar, sem og að hvetja þá sem að stefnumótun standa til að stuðla með markvissum og kraftmiklum hætti að eflingu nýsköpunar í landsbyggðarsvæðum.

Þekking og færni

Ýmsar tegundir hagnýtrar þekkingar og reynslu, ásamt ákveðnum persónuleikaeinkennum sem einkenna frumkvöðla, virðast vera grundvöllur þeirra dæma um nýsköpunarstarf, sem skoðuð voru í rannsókninni. Að auki virðast ákveðnar gerðir iðn- og tækniþekkingar vera mikilvægar í þeim dæmum er lúta að landbúnaði og afurðavinnslu, en fjölbreytt starfsreynsla og ýmis félagsleg færni skipa veigamikinn sess í þeim dæmum sem snúa að ferðaþjónustunni.

Segja má að sá þekkingar- og færnigrunnur sem nýsköpunarverkefni byggja á, sé óformlegs eðlis og mótaður af reynslu, fremur en af langskólanámi. Einnig hafa þau fyrirtæki sem skoðuð voru afar takmörkuð tengsl við mennta- og rannsóknastofnanir. Aukin þekking á mörkuðum, markaðsetningu og sölumálum var sú þekking sem helst skorti að mati forsvarsmanna þeirra fyrirtækja sem skoðuð voru. Þetta kom fram bæði hjá forsvarsmönnum fyrirtækja í afurðavinnslu og ferðaþjónustu. Hvað nýsköpun á bújörðum varðar, var aukin tækni- og tölvuþekking gjarnan nefnd sem svið sem helst þyrfti að bæta.

Þeir sem að stefnumótun og þróunarmálum standa ættu að stuðla að sterkara hlutverki fjölbreyttra menntastofnana á Norðurlandi vestra, sérstaklega aðkomu þeirra að margvíslegum verkefnum sem ætlað er efla grundvallar þekkingar- og færnigrunn svæðisins. Einnig þyrfti að styrkja tengsl námsframboðs við þarfir fyrirtækja á svæðinu sem og aðgerðir til að koma námsframboði á framfæri við fyrirtæki. Margvíslegar mennta- og fræðslustofnanir hafa hlutverki að gegna í þessu samhengi og hvetja ætti fyrirtæki til að kynna sér námsframboð úr óhefðbundnum áttum. Þetta á sérstaklega við um kúabúin þar sem fræðsla virðist fyrst og fremst vera sótt til menntastofnana og ráðgjafajónustu innan greinarinnar.

Samvinna og tengslanet

Tengsl og samvinna fyrirtækja á milli virðast vera mikilvægur hluti þeirra tengslaneta og samvinnumynstra sem nýtt eru í nýsköpunarstarfi þeirra fyrirtækja sem rannsóknin tók til. Viðskiptavinir, birgjar, önnur fyrirtæki og/eða persónulegir tengiliðir innan sömu atvinnugreinar virðast í þessu samhengi hafa lykilhlutverki að gegna, í flestum tilvikum mikilvægara hlutverki en opinberir stoðþjónustuaðilar og ráðgjafar.

Ráðunautajónusturnar virðast vera nær eini aðilinn, innan stoðþjónustukerfisins, sem eitthvað koma að nýsköpunarverkefnum á kúabúum. Ráðunautajónusturnar hafa einnig það hlutverk með höndum að tengja bændur við ýmsar stofnanir landbúnaðarkerfisins sem starfa á landsvísu. Þau afurðavinnslufyrirtæki sem leitað var til virðast hins vegar hafa nær engin tengsl við stoðþjónustuaðila sem starfa á sveitarfélaga- eða landshlutavísu, en reiða sig nánast eingöngu á ýmskonar ‘lárétt’ atvinnugreinatengsl á borð við þau sem nefnd voru hér að ofan.

Svo virðist sem smærri og yngri ferðaþjónustufyrirtæki treysti í meira mæli á samskipti og stuðning ýmissa stoðþjónustuaðila, meðan stærri og lífsreyndari fyrirtæki eru mjög sjálfstæð og sækjast helst eftir beinum tengslum og/eða samvinnu við viðskiptavini, ferðaskrifstofur og ýmsa persónulega tengiliði innan atvinnugreinarinnar. Tengslanet og samvinnumynstur smærri og yngri fyrirtækjanna eru einnig í flestum tilfellum innan landshlutans meðan stærri og eldri fyrirtækin sækjast fremur eftir samvinnu við innlenda aðila sem starfa á landsvísu, eða við erlenda aðila. Meirihluti þeirra ferðaþjónustufyrirtækja sem leitað var til höfðu átt samskipti við ýmsar fjármálastofnanir í tengslum við nýsköpunarverkefni. Forsvarsmenn fyrirtækjanna gáfu almennt til kynna óánægju með þá fyrirgreiðslu sem í boði er til fjármögnunar nýrra verkefna.

Niðurstöður rannsóknarinnar gefa til kynna að þau fyrirtæki, sem beint var sjónum að, gætu haft hag af frekari tengslum og samvinnu við fyrirtæki og stoðþjónustuaðila innan annarra atvinnugreina (eða innan annarra geira sömu atvinnugreinar). Sem dæmi má nefna að matvælafyrirtæki, á ólíkum sviðum matvælaíðnaðar, gætu haft hag af samvinnu í þróunarmálum t.d. hvað varðar upprunamerkingar og/eða vörumerkjaþróun sem og hvað varðar dreifingu og flutninga. Einnig má sjá fyrir sér ávinning af frekari tengslum

ferðaþjónustufyrirtækja við matvælaframleiðendur innan svæðisins t.d. í tengslum við ferðaþjónustu á bújörðum.

Skilyrði til nýsköpunar

Vitund og vitneskja þeirra aðila sem rætt var við í tengslum við rannsóknina um mismunandi stefnumótunaraðgerðir var almennt frekar lítil. Þetta gildi bæði um Vísinda- og tæknistefnu Vísinda- og tækniráðs og um Byggðaáætlun 2002-2005. Sérstaklega virtust þeir forsvarsmenn fyrirtækja sem leitað var til hafa litla vitneskju um þessar aðgerðir, þó svo að það gildi reyndar einnig um mikinn meirihluta þeirra stoðþjónustuaðila sem rætt var við. Vitund og vitneskja um stefnumótun sem sérstaklega miðast við þær atvinnugreinar sem skoðaðar voru, var umtalsvert meiri. Niðurstöður rannsóknarinnar má túlka sem svo að bæta þurfi sýnileika almennrar stefnumótunar sem gengur þvert á atvinnugreinar. Sérstaka áherslu ætti að leggja á að gera stefnumótun sýnilegri fyrir fyrirtækjum og þeim stoðþjónustuaðilum sem starfa á héraðs- og/eða landshlutavísu. Einnig má velta fyrir sér hvort vísinda- og tæknistefna sem og byggðastefna þurfi að hafa sterkari skírskotun til viðfangsefna og þarfa einstakra atvinnugreina.

Sameiginleg stefnumótun eða áætlanagerð að hálfu opinberra aðila á Norðurlandi vestra á sviði atvinnuþróunar eða nýsköpunar er ekki til staðar. Einnig virðist sem bæta mætti samvinnu um ýmis málefni innan landshlutans með það að markmiði að hámarka getu og samningsstyrk svæðisins, t.d. virðist sáralítill samvinna eða samskipti vera til staðar milli atvinnuþróunarfulltrúa og ráðunauta og einnig mætti auka samvinnu milli ferðaþjónustuaðila og matvælaframleiðenda á svæðinu. Margir aðilar hafa hlutverki að gegna þegar kemur að eflingu samvinnu innan landshlutans, meðal annarra forsvarsmenn sveitarfélaga, atvinnuþróunarfulltrúar og aðrir ráðgjafar og fulltrúar fyrirtækja og/eða atvinnugreina.

Niðurstöður rannsóknarinnar sýna að margir aðilar veita fyrirtækjum og einstaklingum þjónustu og ráðgjöf er varða fyrirtækjarekstur og þróun viðskiptahugmynda og tilheyra því hinu svokallaða stoðkerfi atvinnulífsins. Sumir þessara aðila starfa á héraðs- eða landshlutavísu, en aðrir á landsvísu. Niðurstöður rannsóknarinnar sýna hins vegar að margir þessara aðila virðast hafa veigalítlu hlutverki að gegna þegar skoðuð er aðkoma þeirra að nýsköpunarferlum innan þeirra fyrirtækja á Norðurlandi vestra sem litið var til í rannsókninni. Í mörgum tilfellum hafa fyrirtæki nýtt sér þjónustu fátta eða jafnvel engra ráðgjafa eða stofnana, utan fjármálastofnana. Þessar niðurstöður gefa tilefni til að velta upp þeirri spurningu hvort ekki þurfi að bæta sýnileika og ímynd þeirrar opinberu þjónustu sem í boði er á þessu sviði. Það skal þó tekið fram að svo virðist sem opinberir stoðþjónustuaðilar verji drjúgum tíma til eflingar baklands og grunngerðar ferðaþjónustunnar gegnum ýmis þróunarverkefni sem nýst geta í nýsköpunarstarfi fyrirtækja á viðkomandi svæði. Ekki virðist hins vegar um slíkt að ræða hvað varðar matvælaíðnað, en einungis sárafá sérstök þróunarverkefni virðast vera í gangi af hálfu opinberra aðila sem ætlað er að efla nýsköpun eða nýsköpunarumhverfi matvælaíðnaðar eða landbúnaðar.

Nýsköpunarkerfi

Fyrir í þessari samantekt var komið inn á hugtakið *nýsköpunarkerfi* sem notað hefur verið til að lýsa þeim samvinnu- og samskiptamynstrum sem í nýsköpunarferlum felast. Allnokkur munur virðist vera á því hvernig þessi mynstur birtast í þeim atvinnugreinum sem litið var til í rannsókninni.

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- *Mjólkur- og mjólkurvöruframleiðsla:* Svo virðist sem samskipta- og samvinnumynstur afmarkist nánast algjörlega við viðkomandi greinar. Fyrirtæki treysta á tengsl við aðra aðila innan greinarinnar, bæði við önnur fyrirtæki og/eða stoðþjónustuaðila. Þessi einkenni birtast hvað sterkast í nýsköpunarferlum hjá frumframleiðslufyrirtækjum, þ.e. meðal bænda, þar sem samskipti og/eða samvinna á sér einnig í flestum tilfellum stað innan héraðs eða landshlutans.
 - *Ferðaþjónusta:* Samskipta- og samvinnumynstur virðast aðeins að litlu leyti vera bundin við ákveðnar landfræðilegar afmarkanir, hvorki heimahérað, landshluta eða Ísland. Landfræðileg staðsetning fyrirtækja virðist því ekki endilega ráðandi þáttur hvað varðar val samskipta- eða samstarfsaðila. Í mörgum tilfellum virðist sem fyrirtæki telji bein tengsl og/eða samstarf við aðila sem starfa utan svæðis eða jafnvel erlendis vera ákjósanlegri en að nýta sér milliliði innan svæðis.

Út frá niðurstöðunum sem hér hefur verið lýst að ofan, má álykta að hæpið sé að tala um svæðisbundið nýsköpunarkerfi á Norðurlandi vestra (*regional innovation systems*) sem þjóni atvinnulífi almennt þvert á atvinnugreinar. Niðurstöður þessar benda til þess að þeir stoðþjónustuaðilar sem starfa innan landshlutans ættu að styrkja hlutverk sitt sem tengiliða milli fyrirtækja og ýmissa stoðþjónustuaðila er starfa á landsvísu eða jafnvel í víðara samhengi.

1.0 Introduction

It is now widely believed that economic performance of firms, organizations, industries, and economic regions is heavily based on the capacity to innovate⁶. It has furthermore been argued that there is a need to understand innovation in a broad sense. Firms progress by identifying or discovering new and better ways to compete in an industry and bringing them to market⁷. Innovation can, therefore, be triggered by the need for adapting to change or sustaining competitive advantage. Such a broad understanding of innovation includes not only R&D demanding and high-tech based processes, but also new ways of production, new ways in management and marketing and more effective networking relationships between firms and between the private and the public sector⁸. This broad understanding of the concept of innovation also calls for the recognition of different types of knowledge and competences as the necessary building blocks for innovation. These include not only the commonly emphasized laboratory and technology know-how (science-based knowledge) but also various forms of practical knowledge, which for example is a key underpinning for most traditional and mature industry sectors.

The contemporary discussion of innovation, in the context of regional economic development, commonly focuses on densely populated, so-called technology-advanced regions. In the Nordic context the capital regions and major university centers have often been in focus of research. Innovation policy is often seen as contributing to city growth, undermining population in rural areas. Less attention has been paid to the role of innovation in economic development of traditional and mature industries, in rural and/or peripheral regions, and to the integration of these industries in national systems of innovation. The ISP project builds on the premise that there is a need for increasing our knowledge of innovation systems in the periphery and to pay an increased attention to the design and implementation of innovation policy and innovation facilitation practice in the rural context.

1.1 Key concepts

The meaning of the term *innovation* is of great importance for the ISP project. The ISP project approached the term from a fairly broad viewpoint, recognizing different types of knowledge and competences as the necessary building blocks for innovation and accepting a broad range of activities as part of innovation processes. After exploring several concrete definitions of the concept of innovation, the ISP research team decided that the following definition would be used in the ISP project:

An innovation means implementing/utilizing a novelty for the purpose of strengthening or improving the competitive status of the entity (firm) in question. Example of this is when a firm introduces a new or significantly improved product (good or service) to the market, or when a firm designs or utilizes a new or significantly improved process or method.

Innovation is based on the results of new technological development, new combinations of existing technology or knowledge, or utilization of other knowledge acquired by the firm.

⁶ Edquist 1997; Lundvall 1992; Morgan 1997; Murdoch 2000.

⁷ Porter 1990.

⁸ Asheim and Cooke 1999; Murdoch 2000.

Innovation is defined from the perspective of each firm, i.e. it has to include something new to the firm; but not necessarily to the market (locally, nationally or in an even wider context). It does, therefore, not matter whether the novelty was developed by the firm or by another entity.

In the ISP research team's view, the definition above can be applied to every industry sector, and to every size of firms in rural and urban locations.

The concept of innovation system has been developed to describe the systemic nature of innovations. It builds on the assumption that innovation is not only a result of, but also reliant on the interactions and knowledge transitions between different economic actors. The term innovation system has been defined as a “*set of institutional actors and interactions, having as their ultimate goal the generation and adoption of innovations at some level of aggregation*”⁹ (country, region, industry sector, etc.). The set of players, who represent the different elements of the system are believed to include firms, large and small, as well as various organizations such as educational and research institutes, technology-transfer agencies, consultants and development agencies, public and private funding organizations and interest groups and membership organizations of various sorts. The interactions between these entities (elements) can take place in various ways. They can be described as flows of knowledge and information, flows of investment funding, flows of authority or leadership and even as more informal arrangements such as networks, associations, and partnerships.

The concept of innovation system was put at the center of the ISP project. Although the understanding of the concept, which is reflected in the paragraph above, generated the basis for ISP research approach, the role of the individual firm was emphasized. The exploration of innovation processes within individual firms, therefore, formed the launching platform for the project's analysis.

1.2 Focus of the project

The ISP project focused on the role of innovation and the nature of innovation processes in selected industries in chosen peripheral areas/regions of the Nordic countries. The project's goal was the following:

To explore how innovation capabilities of firms, in selected industries in periphery regions, can be enhanced through the means of innovation and regional policy, and the strengthening of innovation systems.

The project's main goal was addressed by examining a set of key variables. The gathering and analysis of empirical data was structured around four categories of variables, referred to as the project's four key research themes. These were: 1) innovation activity, 2) knowledge and competence base, 3) cooperation and networks, and 4) innovation conditions.

For the purpose of narrowing down the focus of the project, an emphasis was put on certain industry sectors. The importance of different industry sectors varies among the Nordic countries. Therefore, when selecting the sectors of emphasis, sectors that were regarded of importance to periphery areas of all participating countries were put at the center. The following industry sectors were selected: Tourism, agri-food production and manufacturing. The study included five cases on the tourism sector, five cases on the agri-food sector and four cases on the manufacturing sector. For each case, each of the research partners formed their country-specific focus, although common criteria were used as a basis. The Icelandic

⁹ Saviotti 1997. p. 180.

contribution to the project included one case on the agri-food sector, with an emphasis on milk production and the dairy industry, and one case on the tourism sector, with an emphasis on recreational services that focus on local culture or natural environment of the study area.

Each of the research partners also selected an area within their home country to use as a study area. The study areas were to be located in a considerable driving distance from major urban areas, correspond to national definitions for rural regions, and lack a major university/research center. Furthermore, the chosen industry sectors were to be of importance to the study areas economic structure. The study area chosen for the Icelandic part of the project was the Northwest region.

1.3 Methodology

A case study approach was chosen as a research strategy for the ISP project. Each of the cases explored the contemporary phenomenon of innovation within a single industry sector in a single Nordic area. The research approach, therefore, focused on understanding the dynamics present within a number of defined settings. It should be stressed that a case study is not a survey, where reliability relies on the characteristics of the data collection tools, the sampling techniques and the sample size. It should also be emphasized that when choosing the types of research tools for the project and when designing the actual tools and procedures, the intention was not to collect data for statistical inference. The case study approach, however, allows for systemic analysis of each case and the identification of common themes, patterns and trends, among the cases. The approach can, therefore, be used for producing analytical conclusions and interpretations.

A set of semi-structured interviews with key-informants was carried out for each of the cases. The interviews were based on a standard list of questions. Examples of key-informants included representatives of firms in the chosen sectors, as well as representatives of regional and national support agents (including representatives of development groups/corporations, industry associations, educational institutes, R&D organizations, etc.). The empirical data gathering for the Icelandic part of the project took place in the period of May to July 2004. During this time the researcher visited the chosen study area and the interviews took place in different communities within it.

2.0 The Icelandic research context

2.1 Rural Iceland

Iceland is Europe's most sparsely populated country¹⁰. Almost four-fifths of the country are uninhabited and mostly uninhabitable. The interior of the country mostly consists of barren highlands, lava fields, glaciers, mountains and volcanoes. The population is to a large extent concentrated in a narrow coastal belt and in valleys extending from the coast.¹¹

The population of Iceland is just over 290.000, of which over 62% lives in the capital city (Reykjavík) and seven surrounding municipalities, which are situated in the southwest part of the country (the capital region)¹². The remaining 38%, or 110.000 people, live in towns along the coast, other small urban centers, as well as in sparsely populated farming communities. Most areas of Iceland, apart from the capital region, have experienced considerable out-migration in the last few decades. The highest out-migration numbers are seen in Westfjords region (about 24% of the population in the period 1980-2002) and in the Northwest region and the East region (a decrease between 9% and 13%). Respectively the population of the capital region has grown considerably in the same period (about 50%).¹³

Statistics Iceland¹⁴ defines an *urban* community as a cluster of houses with at least 200 inhabitants and with a distance between houses generally not more than 200 meters. A *sparsely populated or a rural* community is by this definition an inhabited area, which is not urban. According to this definition, close to 21.300 Icelanders live in communities that are considered sparsely populated in 2002, which equals just over 7% of the Icelandic population¹⁵. However, if we look at the regional level, the picture is somewhat different. Based on OECD rural development programme's definition of rural regions and Statistics Iceland's division of Iceland into regions, six out of eight regions of Iceland can be categorized as significantly rural¹⁶. The other two regions would be categorized as predominantly urban. It should be noted that a common approach for geographical division of Iceland is to use a two- category-division, which is partly based on population density, i.e. 1) the capital region, and 2) the rest of the country; the latter usually referred to as *landsbyggðin* in Icelandic.

¹⁰ With only 2,8 persons per km² (Hagstofa Íslands. 2003b).

¹¹ Hagstofa Íslands. 2003b.

¹² Hagstofa Íslands. 2003a.

¹³ Hagstofa Íslands. 2003a. [AND] Hagstofa Íslands. 1997.

¹⁴ The Icelandic name for Statistics Iceland is 'Hagstofa Íslands'. The Icelandic version is repeatedly used in the list of references.

¹⁵ Hagstofa Íslands. 2003a.

¹⁶ OECD Rural Development Programme's definition of *rural* is based on a division between two levels of geography: 1) the local community and 2) the region (OECD, 1994). A community is defined as a small basic administrative or statistical area, which is either rural or urban, based on a similar definition as the one of Statistics Iceland referred to above. A region is defined as a larger administrative or functional area, providing "*the wider context in which rural development takes place*" (OECD, 1994, p. 20). Regions are categorized into three types, depending upon what proportion of the region's population lives in rural communities. These are 1) predominantly rural regions, with more than 50% living in rural areas, 2) significantly rural regions, with 15-50% living in rural areas, and 3) predominantly urban regions, with less than 15% living in rural areas.

Iceland has a strong economy, low unemployment, and low inflation, all which contribute to one of the highest standards of living in the world. The rich fishing banks around the island as well as the abundant hydro and geothermal power are Iceland's most valuable natural resources. The economy depends heavily on the fishing industry and marine products constituted 62,9% of Iceland's income from exporting of goods in the year 2002¹⁷. Another important industry is the aluminum industry, which accounted for close to 20% of the income from exporting of goods in the year 2000¹⁸. Tourism is also an important industry as a rapidly growing foreign currency contributor.

Employment by industry sectors in Iceland has changed in accordance with the development of other industrialized societies. Technological advancements have led to a decrease of employment in the more traditional sectors such as agriculture, fisheries and fish processing, while employment in various services, including tourism, has expanded. In 2002 over 70% of the Icelandic workforce were employed in various service industries, while agriculture, the fisheries and fish processing altogether only accounted for just over 10%¹⁹. It should be noted that in many communities and regions outside the capital area, employment in agriculture, fisheries, and fish processing is still fairly high, i.e. 36% in the Westfjord region and 25% in the Northwest region²⁰. These industries are, therefore, still important contributors of jobs in many of the rural regions.

2.2 Profile of the Northwest region

The Northwest region extends from Hrótafjörður fjord and Hrótafjörður river in the west to Hvannadalsbjarg cliff between the fjords of Héðinsfjörður and Ólafsfjörður in the east. Its south border lies through Hofsjökull glacier, Kjölur highland and Arnavatnsheiði highland. The total area of the region is around 12.000 square kilometers²¹. There are two main districts in Northwest Iceland: 1) East and West Húnavatnssýsla district, which is located further to the west and 2) Skagafjörður district, which constitutes the east part of the region. Highway one passes through the Northwest region, the distance from the west boarder of the region to the east boarder along the highway is 181 km. The driving distance from Iceland's capital city Reykjavík to the west boarder of the region is 159 km. Figure 1 shows the geographical position of the North West region of Iceland.

¹⁷ Hagstofa Íslands. 2003a.

¹⁸ Hagstofa Íslands. 2003a.

¹⁹ Hagstofa Íslands. 2003a.

²⁰ Hagstofa Íslands. 2003a.

²¹ Ólafur Arnalds et.al. 1997.

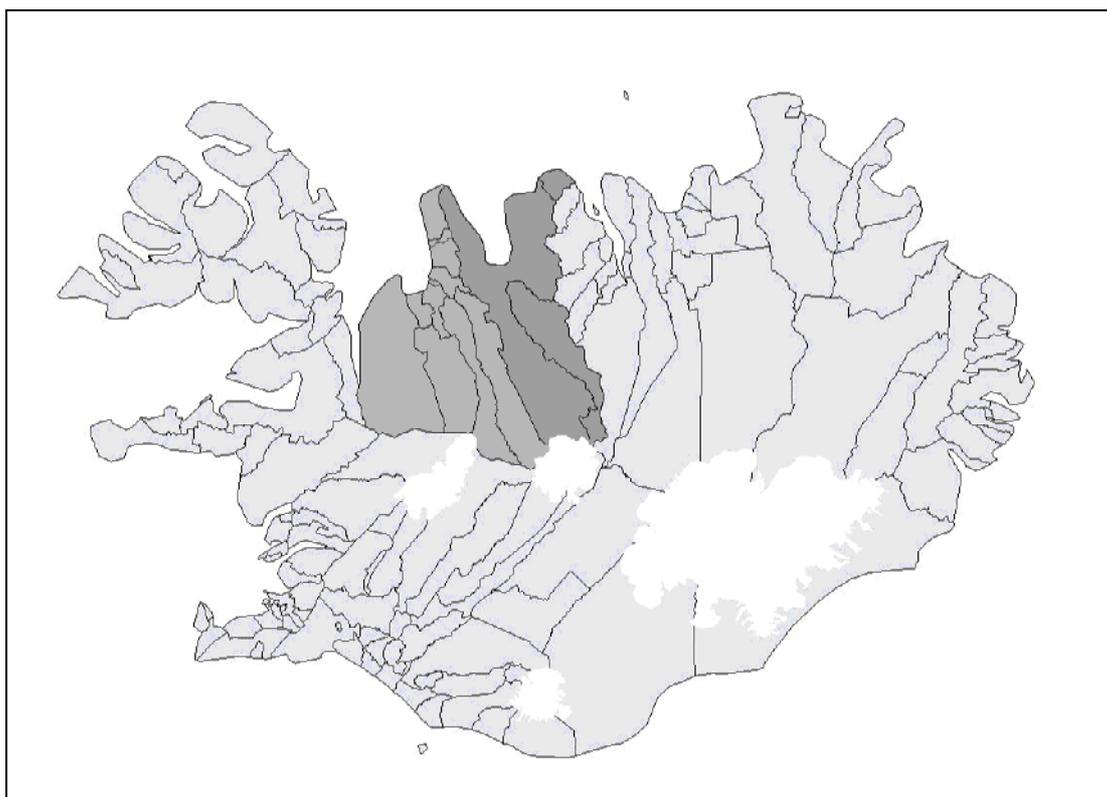


Figure 1: Location of the North West Region of Iceland (dark area)

The population of the Northwest region was 9.151 in December 2003. The region includes five communities that are classified as urban. These five urban communities account for approximately 6.100 people or roughly 67% of the population of the region. The rest of the population, or roughly 33%, lives in either small centers (of 80 to 190 people) or in sparsely populated areas (these two habitat forms are, as mentioned earlier, are classified as rural).²² In fact the Northwest region is the region in Iceland that has the highest proportion of the population living in rural settings. The rural areas and the urban center are interlinked in many ways through the interchange of goods, services, and people. Agricultural products (raw materials) are transported from the rural areas for processing in the urban centers. Rural residents also utilize various services in the centers and in some cases commute to the nearest center for employment. The course of development of the rural and urban communities is therefore strongly connected.

The population of the Northwest region has been slowly declining in the last couple of decades. In 1980 the population of the region was 10.631 but in 2003 it had gone down to 9.151 (close to 14% decrease). The communities that have experienced the most decrease in recent years (1997-2002) are Siglufjörður (2,3% decrease), Blönduós (2,1% decrease) and Húnaþing vestra (1,7% decrease).

The region is divided into 12 municipalities some of which include a town (an urban center) and a sparsely populated area. Table 1 lists the municipalities of the North West region of Iceland and their population number.

²² Hagstofa Íslands. 2004.

Municipalities		Population number
Siglufjörður	Urban	1438
Sveitarfélagið Skagafjörður (including the town of Sauðárkrókur)	Urban/rural	4178
Akrahreppur	Rural	229
Húnaþing vestra (including the town of Hvammstangi)	Urban/rural	1175
Áshreppur	Rural	75
Sveinsstaðahreppur	Rural	91
Torfalækjarhreppur	Rural	93
Blönduóssbær (including the town of Blönduós)	Urban/rural	958
Svínavatnshreppur	Rural	119
Bólstaðarhlíðahreppur	Rural	113
Höfðahreppur (generally referred to as Skagaströnd)	Urban	585
Skagabyggð	Rural	97
	<i>Total</i>	9151

Table 1: Municipalities within the Northwest region and their population number. Source: Hagstofa Íslands, 2004a.

The first three municipalities that are listed in the table above belong to the Skagafjörður district and the rest to the East and West Húnavatnssýsla district.

The five largest centers are Sauðárkrókur, Siglufjörður, Skagaströnd, Blönduós and Hvammstangi. Figure 2 shows the geographical structure of the region as well as the location of the major centers. The town of Sauðárkrókur in Skagafjörður district is the largest town of the region, with a population of roughly 2.600. The town is a center of public administration, commerce, services and education in Skagafjörður district and to some extent also the Northwest region. A few state-run service organizations are also located in Sauðárkrókur, e.g. the Institute for regional development, the Horse center of Iceland and a branch of the Housing financing fund.

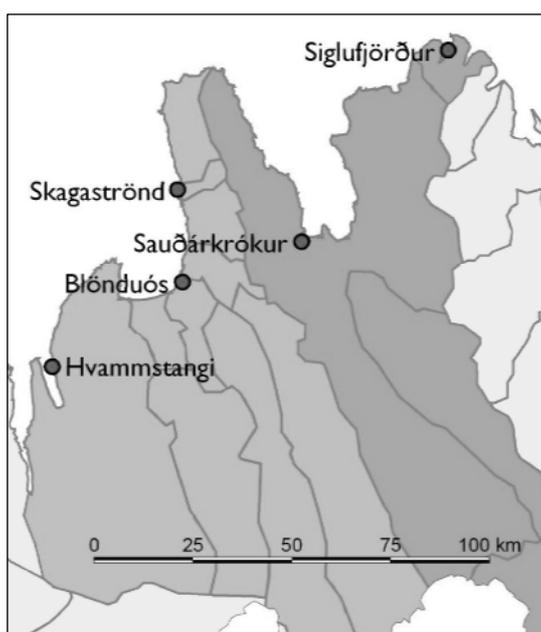


Figure 2: Geographical structure of the study region and the location of major centers.

Food processing is also an important industry in the town of Sauðárkrókur, both in the field of marine products and agri-food products. A strong cooperative (Kaupfélag Skagafirðinga: KS) is run in the Skagafjörður district. KS is the key player in food processing in the district with its main operations in Sauðárkrókur. The cooperative runs a slaughterhouse, a meat processing branch, and a dairy. It is also involved in processing of various marine products. Siglufjörður is another urban center, located at the east border of the Northwest region. It has a population of 1.430. One of Iceland's best harbors is in Siglufjörður and the fisheries are the back bone of the local economy. Three other small centers are located in the Skagafjörður district. These are Varmahlíð, Hofsós and Hólar. Hólar College is a research, development

and educational institution run by the Ministry of agriculture. Its primary fields are aquaculture, rural tourism and horse breeding and training. Hólar College is the only educational institute in the region, which offers university programs.

East and West Húnavatnssýsla district includes three communities that are can be considered urban. The largest one is Blönduós with a population close to 900. Blönduós is a service center for the surrounding area but is also a food processing center. A dairy, a slaughterhouse, a shrimp processing plant and other small food processing firms operate in the town. Hvammstangi, a community of approximately 580 people is the urban center located furthest to the west within the region. Similar to Blönduós it is a service center for the neighbouring farming communities. Shrimp fishing and shrimp processing is of prime economic importance for the community, along with fisheries that are based on small vessels. A slaughterhouse and knitting- and sewing factory are also important employers in the community. The third urban community in district is Skagaströnd. Skagaströnd has a population of approximately 580 and is heavily depended on the fisheries.

As seen from above, the Northwest region is in a traditional sense a food production region. The area is well suited for agriculture and also has strong tradition in the fisheries. Currently around 25% of the employed persons in the region work in agriculture, the fisheries or fish processing. This is a considerably higher proportion than the national average. As in other regions of Iceland, various services nevertheless account for the largest proportion of the labour force. Tourism is becoming an increasingly important industry in the region, especially various action-based and recreational services. Table 2 shows the division of employed persons in the region by industry sectors.

Economic activities (industry sectors)	Employment by economic activity (% of employed persons)	
	Iceland	Northwest region
Agriculture	3%	11%
Fishing	4%	5%
Fish processing	4%	8%
Manufacturing except fish processing	11%	10%
Electricity & water supply	1%	1%
Construction	7%	7%
Wholesale, retail trade, repairs	14%	10%
Hotel, restaurants	4%	2%
Transport, communication	7%	4%
Financial intermediation	4%	3%
Real estate & business services	8%	3%
Public administration	7%	11%
Education	7%	6%
Health services, social work	15%	12%
Other services and not specified	7%	5%

Table 2: Employment by economic activity (% of employed persons) in the Northwest region and in Iceland as a whole. Source: Hagstofa Íslands, 2004b.

2.3 Few facts on the agrifood industry in Iceland

Although agriculture is not today one of Iceland largest sectors in regard to proportional contribution to the country's GDP²³, the country is self-sufficient in the production of meat, dairy products, eggs and to a large extent also in the production of certain vegetables. Although currently only about 4% of the Icelandic workforce is employed in agriculture²⁴, some agriculture activities are found in all lowland areas around the island, and the industry is still the backbone of local economies in most of the sparsely populated areas of the country. Many people are also involved in farming although receiving their main income from other sources.

Currently there are about 3.300 farms in Iceland (including all types of farms, cattle farms, sheep farms, etc.)²⁵. The number has somewhat decreased in recent years, with a trend towards fewer and larger operating units. Icelandic farms are, nevertheless, still small on an international scale, and most units are run as family-farms. Icelandic farms are usually highly mechanized. The income of farmers is rather low compared to other occupational groups²⁶.

Traditionally, as well as presently, agriculture in Iceland is based largely on livestock farming. Cattle farming (milk and beef production) is by far the biggest branch within Icelandic agriculture, with aggregate turnover of 8,7 billion ISK²⁷ in 2002 or 47% of the total turnover of Icelandic agriculture²⁸. Sheep farming is next in line with a turnover of almost 4,1 billion ISK and a 22,1% share²⁹. The most common form of farming in Iceland is the so-called mixed animal husbandry, which usually consists of a mixture of cattle and sheep farming. Specialization has, however, increased significantly in recent years. A considerable number of farmers now raise pigs, poultry or horses, or produce eggs or vegetables exclusively. In the most sparsely populated areas, such as the Westfjords and some parts of East Iceland, agriculture is mostly limited to sheep farming.

Since the interior of Iceland mostly consists of barren highlands, glaciers, and lava fields, only around 15.500 km², or 15,5% of the total land area of Iceland, is arable. Of this area only around 1.500 km² have been cultivated (1,5% of the total land area)³⁰. Apart from growing of potatoes and a limited range of vegetables, farmers in Iceland mostly concentrate on the cultivation of perennial grasses for hay and silage for feeding of livestock. Conditions for grain growing are difficult due to the short summers and cool climate, although barley is cultivated for animal feeding in some parts of the country.

Changes in the legal and quasi-legal environment concerning agriculture in the last decade or so have generally focused on increasing efficiency of production, the relaxation of production and price control, as well as on liberalizing import control in connection with Iceland's EEA-membership and the WTO-agreement³¹. Also some policy efforts have been targeted towards diversification of the industry. Official grants are now available for a broader range of

²³ According to Hagstofa Íslands (2003a), agriculture accounted for 1,5% of Iceland's GDP in the year 2002.

²⁴ Bændasamtök Íslands. 2004b.

²⁵ Bændasamtök Íslands. 2004b.

²⁶ Bændasamtök Íslands. 2003c.

²⁷ Exchange rate: ISK / 87 = Euros.

²⁸ Bændasamtök Íslands. 2004b.

²⁹ Bændasamtök Íslands. 2004b.

³⁰ Bændasamtök Íslands. 2004b.

³¹ Bændasamtök Íslands. 2004a.

production and agricultural activities. Development efforts have also aimed at encouraging utilization of resources such as fishing in lakes and rivers, collecting eider down, drift wood, etc. Fish farming and tourism are also industries that farmers have increasingly got involved in for the purpose of supplementing their income³².

Milk production

Milk is produced in some extent in most regions of Iceland. However, in some regions the production is more concentrated than in others, with the South region and certain parts of the Northwest and Northeast regions leading the way in terms of number of farms and production quantities. Milk production in Iceland is solely based on the use of a specific Icelandic breed of cattle. It is a hardy and fertile type of cattle, which is slightly smaller than cattle in neighboring countries. Cows are kept in barns for eight months of the year and are mostly fed on dry hay and silage. The most productive milk cows also receive feed concentrates. Cows are put out to pasture in the summer³³.

At the end of the year 2003 there were 893 farms producing milk in Iceland, with a total production quantity of 108.384.000 liters. The average production quantity per farm was 121.371 liters and the average number of cows per farm was 24,8. The total production has gone slightly up in the last few years and at the same time the number of farms has gone steadily down. In 1991 there were 1.509 farms producing milk and in 1998 the farms were 1.185. This translates into over 40% decrease in the number of farms in the period from 1991-2003. As seen from these figures the average production of farms has grown considerably or from 69.920 liters in 1991 to 121.371 liters in 2003 (an increase of 74%).³⁴

A state law on the production, pricing and sales of agricultural products (No. 99/1993) indicates that the Minister of Agriculture, on behalf of the Government of Iceland, and the Farmers Association of Iceland, shall make an agreement on the operating environment for milk production. In this agreement the parties negotiate the government's support for milk production, customs protections and the main rules of the industry game.³⁵ The current agreement is valid until the first of September 2005. Under the current agreement milk production in Iceland is controlled through an official quota system. According to the agreement, farmers receive a so-called base price for their production (per liter)³⁶. This price is built up from two sources: 1) the state treasury pays the farmers 47,1% of the base price (subsidies), usually referred to as direct payments, and 2) the processing firm, i.e. the dairy plant, pays 52,9%. In order to receive the direct payments, each registered farm has to hold production rights. The production rights are generally referred to as a support target or a quota. The target specifies the quantity of milk, measured in liters, that entitles the holder to a direct payment from the State Treasury. Milk that is produced beyond the support target of each farm does not, in a nutshell, receive any subsidies from the state.³⁷

³² Sigurgeir Thorgrímsson, the director of Bændasamtök Íslands. [year missing].

³³ Bændasamtök Íslands. 2004a.

³⁴ Nefnd um stefnumótun í mjólkurframleiðslu. 2004.

³⁵ Lög um framleiðslu, verðlagningu og sölu á búvörum. No. 99/1993.

³⁶ Currently ISK 80,74 per liter.

³⁷ Agreement on the Operating Environment for Dairy Production. 1997.

The total support target of milk is determined on an annual basis by the Minister of agriculture. The decision is based on the consumption of domestic dairy products processed through dairy plants in the last twelve months and the estimated dairy consumption for the coming year made by the Farmers Association of Iceland, with regard to supplies. This total support target is then divided between milk producing farms in the country, based on their proportional share of the total support target last year.³⁸

Quotas are freely tradeable between operators of registered farms, regardless of farm location (i.e. regardless of borders of operational areas of dairy plants or geographical regions). In September 2004, the market prize for quota allowing for production of one liter of milk per year was approximately ISK 250³⁹. For an average sized farm (producing 121.371 liters) the market value of the corresponding production rights is therefore around ISK 30 millions. Based on the September market values, this amount is about the same as the value of farm sufficiently big for an average production (including land, buildings, livestock and machinery).

Milk is the only agricultural product in Iceland that official price administration applies to. The minimum price for milk is decided in a pricing base that is formulated by a state-appointed committee, i.e. the Pricing Committee of Agricultural Products. The committee also decides upon the wholesale price of milk and basic products.

The dairy industry

At the end of the year 2003 there were nine dairy plants operated in Iceland. In the last decade or so the number has gone considerably down due to reorganization processes within the industry for the purpose of reducing costs and facilitating more efficient use of production capacity. The dairies are located in different regions of the country. As the general rule, each dairy plant processes milk that is produced in the plant's neighboring area. Figure 3 shows the location of the different plants.

A vast majority of firms in the dairy industry are run in the form of cooperatives, which are owned by farmers. The dairy plants are very different in size in regard to quantities processed. The largest one, Mjólkurbú Flóamanna in Selfoss in the South region, receives 38% of the milk produced in the country, while the smallest one, Mjólkursamlag Vopnfirðinga in the East region, processes 0,7% of the total production.



Figure 3: Dairy plants in Iceland. Source: Samtök afurðastöðva í mjólkuriðnaði 2004.

The firms also have extensive cooperation among each other. They are all members in a specific industry association called the association of dairy plants (SAF)⁴⁰. They also jointly

³⁸ Agreement on the Operating Environment for Dairy Production. 1997.

³⁹ The quota price is constantly rising.

⁴⁰ Samtök afurðastöðva í Mjólkuriðnaði (SAF), in Icelandic.

run a sale and marketing firm, the Icelandic Dairy Produce Marketing Association⁴¹, which is responsible for sales and distribution of spreads, cheese and milk powder. The Dairy Laboratory of Iceland is also run as a joint initiative of all the firms in the industry. It handles all kinds of testing, chemical analysis, and research on dairy samples and various quality management related task.⁴² Finally the different firms in the dairy industry have come to terms with as specific division of tasks, where each of the plants specializes in the production of specific dairy products. In a nutshell the firms that are located furthest from the capital region have put a strong emphasis on products that have less volume (e.g. cheese, butter, and milk powder) while the firms that are located in or closer to the capital region have focused on various fresh products such as fresh milk and skimmed milk.⁴³

Icelandic milk and dairy products are almost solely consumed domestically. Export of dairy products has been very limited after export compensations were abolished in 1992. Import has on the other hand been increasing in the last few years, although it is still not very much overall and mainly restricted to cheese and yogurt.⁴⁴

2.4 Few facts on milk production and the dairy industry in the Northwest region

One part of the criteria for the selection of focus for the aspects of this research project (cases), which deal with agri-food production, was that at least two links of the value chain (production and processing) had to be located within the chosen study region. In the case of the Northwest region, milk that is produced on farms in the most western part of the region (West Húnavatnssýsla) is processed in Búðardalur, which is located in the neighboring region, i.e. the West region. The following discussion of the dairy industry in the Northwest region will, therefore, only refer to the Skagafjörður district and the Eastern part of Húnavatnssýsla district.

In June 2004 there were a total of 94 dairy farms in the study region with a total of 2.703 dairy cows (average number throughout the previous year). The production is more condense in the east part of the study area (Skagafjörður district) both in regard to number of farms and the average size of farms. In June 2004 there were 35 farms with 22,5 dairy cows on average in the East Húnavatnssýsla district, while there were 59 farms in Skagafjörður with a 32,5 dairy cows on average. At the same time the average size of a dairy farm in Iceland was 27,9 cows per farm. In fact only one other district in Iceland (Eyjafjörður district) has larger average size of dairy farms than Skagafjörður district.⁴⁵ The total production of milk in the study area in the year 2003 was 14.597.212 liters of milk, of which 10.502.060 liters, or 72%, were produced in Skagafjörður district. As seen in Table 3, milk production in the study region has increased considerably in the last decade. The increase has been proportionally larger than the increase in the national production. However, as also can be seen in Table 3, the industry has been expanding to a much greater extent in Skagafjörður District than in the Western part of the region.

	Production	Production	Change
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⁴¹ Osta og smjörjalan sf. in Icelandic.

⁴² Samtök afurðastöðva í mjólkuriðnaði 2004.

⁴³ Nefnd um stefnumótun í mjólkurframleiðslu. 2004.

⁴⁴ Nefnd um stefnumótun í mjólkurframleiðslu. 2004.

⁴⁵ Bændasamtök Íslands. 2004c.

	1993 (liters)	2003 (liters)	
Iceland as a whole	99.915.000	108.384.000	8,5%
The study area	11.535.000	14.597.000	26,5%
Skagafjörður district	7.834.000	10.502.000	34,0%
East Húnavatnssýsla district	3.701.000	4.095.000	10,6%

Table 3: Development of milk production quantities in the study area in the period 1993-2003 in comparison to the development of the national production. Source: *Samtök afurðastöðva í mjólkuriðnaði 2004*.

As seen on Figure 3, page 22, two dairy plants are located in the Northwest region, one in Sauðárkrókur and one in Blönduós. These are Mjólkursamlag Kaupfélags Skagfirðinga, hereafter referred to as MKS, and Mjólkursamlag Húnvetninga, hereafter referred to as MH. The total annual turnover of the two dairy plants is close to 1.200 millions ISK⁴⁶.

MKS is run by a local cooperative (Kaupfélag Skagfirðinga, KS). It was established in the year 1935 and processes all milk produced in the Skagafjörður district. MKS's primary focus is on several types of cheese. It also has a well-established product line of flavored sour milk. The cheese and the sour milk products are distributed nationally. MKS also produces fresh milk and cream for the local market. Currently the employment created by MKS is around ten man-years.

MH is run by Mjólkursamsalan, which is a large dairy operation, which runs plants in several locations in the country (head quarters in Reykjavík). Mjólkursamsalan was initially founded as a cooperative of farmers in the Southwest part of Iceland and MH was established in 1947 as a local cooperative, owner by farmers in East Húnavatnssýsla district. Mjólkursamsalan and MH merged in 1999 and MH is currently run as separate division of the company⁴⁷. MH has from its beginning put the strongest emphasis on the production of milk powder which is used both for human and animal consumption and distributed nationally. Butter of various sorts is also an important product for MH and the plant is the only producer of flavored butter in Iceland. Finally MH produces skyr (a special Icelandic yogurt-like product) for national distribution. Currently the employment created by MH is around nine man-years.

2.5 Few facts on rural tourism in Iceland

The Icelandic Tourist Board defines tourism as an economic sector that includes all firms and individuals that operate in or are associated with traveling. This broad definition includes a wide range of firms, including travel sales corporations (whole sale and retail), travel organizers, transportation companies, accommodation establishments, travel guides, etc.⁴⁸ In this project, however, the focus will be on operations that are in the business of offering recreational services to tourists. In that way, operations that utilize special aspects of the study areas' culture and natural environment would be put at the center.

⁴⁶ Exchange rate: ISK / 87 = Euros.

⁴⁷ A representative of the head quarters of Mjólkursamsalan was interviewed in relation to the primary data gathering of the ISP project. When asked about Mjólkursamsalan's future plans for the MH operation, he responded that, in his view, the future of MH's operation, from a long term perspective, was uncertain.

⁴⁸ Ferðamálaráð Íslands. 2004a

Tourism is currently the second largest foreign currency earner within the Icelandic economy after the fisheries (13% of the country's export income in 2002)⁴⁹. It is estimated that tourism provided around 5.400 jobs in Iceland in the year 2002.⁵⁰ In the year 1999, 3,9% of the Icelandic labour force were employed in the tourism sector and at the same time it was estimated that the industry contributed around 4,4% of the gross domestic production. The number of jobs in the industry has increased by 2,3% per year on average since 1973. It should, however, be noted that the contribution of tourism in regard to total employment in the country has only grown by 0,03% per year, on average in the same period. The growth of tourism is, therefore, about equal as the growth of employment in the country as whole.

The number of tourists that visit the country from abroad has grown by 6% on average per year since 1960. This equals that the number has doubled every 12 years.⁵¹ In the year 2003, 320.000 tourists visited Iceland from abroad, which is the highest number of visitors recorded for a single year.⁵² The largest groups of visitors come from the Nordic countries, USA, Canada, UK and Germany.⁵³

Attractions, seasonality, and geographical distribution of the industry

Tourism is a part of the economic structure of all regions in Iceland. Traditionally the main tourist attractions have been the remarkable landscape of the country and the vast selection of natural phenomena, such as waterfalls, lakes, lava, rock formations, etc. Those regions that are rich in this regard, therefore, traditionally have been the most popular among tourists. Foreign visitors have also become increasingly more interested in various recreational activities connected with nature and culture and there has been a dramatic increase in the activities offered in this regard. The results of a survey of the Icelandic Tourist Board, for the year 2002, show that around 76% of tourists that visit the country in the summer, name interest in Icelandic nature as an influential factor for their decision on traveling to Iceland. An interest in the country's culture and history is the second most commonly mentioned motivating factor by summer visitors.⁵⁴

Tourism in Iceland is very much a seasonal phenomenon, with the high season extending over the period from middle of June to the end of August. The number of overnights stays, which are bought from Icelandic accommodation service providers, in the high season periods is around five times higher than the corresponding number for the low season period. The seasonality within the industry is, however, even greater in regions outside the capital region. This stems primarily from the facts that only a small proportion of tourists from abroad, who visit Iceland over the low season period, visit areas outside the Capital region.⁵⁵

Due to a lack of official data it is hard to estimate the number of firms within the tourism industry in Iceland. This is partly because of the fact that the classification of economic

⁴⁹ Ferðamálaráð Íslands. 2003.

⁵⁰ Ferðamálaráð Íslands 2003.

⁵¹ Hagfræðistofnun. 2004a.

⁵² Ferðamálaráð Íslands. 2004b.

⁵³ Ferðamálaráð Íslands 2003.

⁵⁴ Ferðamálaráð Íslands 2003.

⁵⁵ Hagfræðistofnun. 2004a.

activities⁵⁶ that is used by Statistics Iceland, which is the official agency responsible for official business registration, does not include tourism as a special category. Also only a proportion of Icelandic tourism operators hold membership in the Icelandic Travel Industry Association (SAF). The member register of SAF, therefore, does not give an accurate picture of the number of firms in the industry. What probably comes closest to a realistic number is the Icelandic Tourist Board's registry⁵⁷. However, since registering with the Tourist Board is not mandatory, the Board's register is not fully exhaustive. The registry currently includes close to 900 tourism operators nation wide⁵⁸.

One way to look at the geographical intensity within the industry is to look at statistics on overnight stays sold by registered accommodation sellers in different regions of the country. Statistics Iceland collects such data on an annual and monthly basis. According to this data, the total number of overnight stays in 2003 was 1.984.448. This was a 6,7% increase from the year 2002. Majority of overnight stays, or 61,2%, occurred in areas outside the capital region. However, if we look only at overnight stays by Icelanders, 88,4% of stays occurred in areas outside the Capital region while just around half (49,2%) of foreign visitors overnight stays took place in the areas outside the capital region. As seen by these figures tourist visits in Iceland do not spread evenly through out the country. The overnight stays in areas outside the capital region are also not evenly distributed between the different areas. The most overnight stays, in rural Iceland in 2003, were in South Iceland (383.517, or around 19% of all overnight stays in the country), Northeast Iceland (312.329, or 16% of all overnight stays in the country) and East Iceland (197.659, or 10% of all overnight stays in the country).⁵⁹

There is ample supply of accommodation of various sorts in Iceland. This also applies to areas outside the Capital. The occupancy rate for hotels and guesthouses in the Capital region has been high during high season (June, July, and August), or up to over 80% in August 2003, and has also gone significantly up during low season. At the same time the occupancy rate during high season has been around 60% or less in areas outside the Capital region.⁶⁰

As noted earlier, employment in the more traditional industry sectors such as agriculture, fisheries and fish processing, in Iceland, has been decreasing in the last decades. The general discussion of rural economic development has highlighted the role of tourism development as a mean towards diversification of rural economies. Studies have shown, however, that tourism development in the rural areas commonly faces serious challenges. In some remote areas of Iceland tourism has very much been on the agenda, but attracting tourist has turned out be far more complicated than expected.⁶¹ Tourism enterprises, even in areas that have experienced a steady increase in the flow of tourists, also are faced with severe challenges. To name some examples, low turnover, which at the best allows for minimum wages and zero return on investments seem to be quite common among the smaller enterprises. The seasonality within

⁵⁶ Statistics Iceland uses an Icelandic version of NACE rev.1.

⁵⁷ Ferðamálaráð Íslands. 2004c.

⁵⁸ In addition to accommodation and recreation service firms, the register includes various other operations, such as swimming pools, museums, car rentals, transportation firms, travel agencies, etc. (Note the register does not includes restaurants).

⁵⁹ Hagstofa Íslands. 2004c.

⁶⁰ Hagstofa Íslands. 2004c.

⁶¹ Gunnarsdóttir. 2003.

the industry also poses some challenge for the management of human resources and the stability of cash flows. Finally, access to development grants and business loans with acceptable interest rates, especially for firms that solely focus on providing recreational services, seem to be quite poor.⁶²

Tourism promotion and marketing

The Icelandic Tourist Board (ITB) is the governmental institute officially in charge of tourism development in Iceland. The Board adheres under the Ministry of Communications. The two most evident players in promotion of tourism internationally, for the last two decades, have been the Tourist Board and Icelandair (a private airline company). The Board has mostly concentrated on the basic promotion of Iceland as a tourist destination. Private operators and local and regional interest groups, associations and authorities have therefore, mostly carried out product development and promotion targeting different regions of the country.⁶³

2.6 Few facts on tourism in the Northwest region

Tourism is becoming an increasingly important industry in the Northwest region, especially various action-based, culture-based and other recreational services. The tourism industry in the region relies on organized activities and events as an attraction for tourists to a greater extent than many other regions of the country, although the region's nature and landscape also is a resource in this regard⁶⁴. The Western part of the region (East and West Húnavatnssýsla district) is renowned for salmon and trout fishing. The region as a whole, especially the Eastern part (Skagafjörður district) has strong tradition for tourism activities associated with horseback riding and the Icelandic horse. Cultural tourism is also an important part of the tourism landscape of the Northwest region. The area has rich history, which has contributed to the development of various development projects through out the region. Several museums and cultural centers operate in the region focusing on different aspects and time periods of the region's history and traditions.

As with the situation at the national level, the lack of statistics makes it hard to estimate the exact number of operators within the tourism industry in the region. The Icelandic Tourist Board registry⁶⁵, however, included around 115 tourism firms that are located in the Northwest region⁶⁶. Most of these firms are very small and many only operate during the summer months. It seem reasonable to say that the region possesses a fairly large group of firms offering unusually broad range of recreational services, in comparison to other areas outside the capital region. These include for instance firms offering various forms of salmon and trout fishing, guided walking tours, river rafting, jeep tours, boat tours, riding tours, etc.

In 2003 the total overnight stays sold by accommodation establishments in the Northwest region were 69.053, which is 3,5% of the total number of overnight stays sold in Iceland that

⁶² Samgönguráðuneytið. 2003.

⁶³ Gunnarsdóttir. 2003.

⁶⁴ Ferðamálaráð Íslands. 2002.

⁶⁵ Ferðamálaráð Íslands. 2004c.

⁶⁶ Since registering with the Tourist Board is not mandatory, the Board's register is not fully exhaustive. In addition to accommodation and recreational service firms the register includes swimming pools, various museums and highland cabins.

year. This equals 5,1% increase from the previous year. Around half of the overnight stays was bought by Icelanders (34.717, or 50,3%), but the other half was bought by foreign visitors (34.336, or 49,7%).⁶⁷ According to a recent study the seasonal difference within the annual tourist flow is more drastic in the Northwest region than in any other region of the country.⁶⁸ The number of overnights stays, which were sold by accommodation establishments in the region, in the high season period, is around 34 times higher than the corresponding number for the low season period. Considering these figures it is not surprising that the average annual occupancy rate for the year 2003 was only 28% in the Northwest region, reaching the lowest in January (5%) and the highest in July (62%). As also seen by these figures there seem to be sufficient, if not excess supply of accommodation services in the region.

3.0 Selected issues in policy and institutional initiatives

A single direct governmental policy framework, including every aspect of the broad spectrum of innovation, does not exist in Iceland. However, the topic is touched on in several legal and quasi-legal documents. Below is an overview of the policy environment in Iceland in this regards, as well as a short discussion on those implementation bodies that are of the most relevance for innovation facilitation in rural areas of the country and the Northwest region.

3.1 Innovation policy

For simplification we can say that the concept of innovation is touched on in at least three different governmental contexts:

- 1) The policy statement of the current state government⁶⁹ from 2003.
- 2) The legislation on the organization of science and technology policy and the funding of research and technological development, accompanied by a resolution of the science and technology policy council.
- 3) Parliamentary resolution on a strategic regional development policy and plan for the period 2002-2005.

For the implementation of these different policy contexts, there are furthermore several governmental organizations and institutes that run various innovation-related projects and offer a broad range of programs, services and information to public agents, private firms, and individuals. Some of these initiatives are closely connected to the policy environment, but some are more loosely connected.

In addition to the three cross-sectoral contexts listed above, various industry specific policies exist, which are administered by different ministries. In 1996, the Ministry of Transportation, which is the ministry officially in charge of tourism affairs in Iceland, initiated a policy⁷⁰ that describes the state government's vision for the development of the tourism industry until the year 2005. Various working plans have since then followed, targeting different aspects of the

⁶⁷ Hagstofa Íslands. 2004c.

⁶⁸ Hagfræðistofnun. 2004a.

⁶⁹ The Coalition Government of the Independence Party and Progressive Party.

⁷⁰ Samgönguráðuneytið. 1996.

industry, including efforts to strengthen recreational types of tourism, e.g. culture-based activities, health-related activities, etc. This emphasis on recreational issues could be regarded as an indication of innovation-oriented strategy. However, the term innovation is not necessarily used in this context.

The Ministry of Agriculture does not currently have in place an overall policy framework for agrifood production. However, the state's emphasis for the development direction of specific branches of the industry is reflected in the state's agreements with farmers within the different branches. An example of such is the Agreement on the operating environment for milk production (see section 2.3 for further discussion on the current agreement). The current agreement is valid until the first of September 2005⁷¹. A successive agreement has already been approved for the period of 2005-2012. The topic of innovation does not receive specific attention in neither the current nor the new agreement.

Finally it should be noted that the private sector also has a role in the context of the innovation policy environment. Several industry associations have included the concept of innovation in policy initiatives that are meant to lead the way of the industry into the future. A good example of this is the official strategy of the Icelandic Travel Industry Association (SAF)⁷² for 2004-2012, where innovation receives considerable attention⁷³. Also in the official policy of the Icelandic Dairy and Beef Farmers Association (LK)⁷⁴, considerable attention is paid to product development and objectives aiming at utilizing milk in innovative ways in the food industry⁷⁵. Although LK's policy reflects a certain indication towards innovation-oriented strategy, the term 'innovation' is not used in this context.

The general policy statement of the current state government (national level)

The policy statement of the state government has a broad mandate, touching on pretty much every sphere of Icelandic society.⁷⁶ The statement lists the main emphases of the government in different fields, including the mandate for the key industry sectors of the country. One of the main objectives listed in the policy statement is the following:

"Boosting research and development work, among other things to facilitate contributions by businesses for this purpose and thereby stimulate entrepreneurship. In accordance with new legislation on the Science and Technology Council, research activities and innovation will be systematically built up in as many fields as possible."

The commentary above is the one most directly linked to the general discussion of the concept of innovation within the policy statement. The term 'innovation' only appears in one of the other objectives of the statement. Below is the objective on future emphasis within agriculture:

"Creating an operating environment in which Icelandic agriculture can provide consumers with healthy and safe products at favourable prices. Conditions will be established for the sector to exploit its strengths in order to tackle growing competition, among other things in light of the pending WTO agreement. This will be done, for example, by reducing levies on agricultural production, boosting agricultural educational and research establishments and supporting innovation and recruitment in rural areas. These measures will aim to unleash the full potential of the agricultural sector for further growth. Farmers' pension rights and entitlement to sickness benefit also need to be improved."

⁷¹ Agreement on the Operating Environment for Dairy Production. 1997.

⁷² SAF: Samtök ferðapjónustunnar.

⁷³ Samtök ferðapjónustunnar. 2003.

⁷⁴ LK: Landsamband kúabænda.

⁷⁵ Landsamband Kúabænda. 2003.

⁷⁶ Forsætisráðuneytið. 2003a.

As seen from the above, officially the government emphasizes a holistic approach to the facilitation of innovation in a broad range of economic sectors. However, in the actual policy text, the concept is only directly linked to one specific economic sector, i.e. agriculture, through the objective listed above. It should, however, be highlighted that in this particular objective the concept of innovation refers not only to agriculture as a particular economic sector, but also to the wider context of rural economic development.

Policy governance structures in the field of science and technology policy (national level)

Finnbjörnsson (2003) provides an excellent overview of the current Icelandic policy governance structures in the field of science and technology policy. The following text is borrowed from Finnbjörnsson with his permission.

“A new legislation on the organization of science and technology policy and the funding of research and technological development in Iceland was enacted by Parliament (Althing) at the end of January, 2003. The new law took effect immediately.

The legislation is composed of three separate laws:

- 1) **Law on the Science and Technology Policy Council (nr. 23/2003)** under the Office of the Prime Minister.
- 2) **Law on Public Support to Scientific Research (nr. 33/2003)** under the Ministry of Education, Science and Culture.
- 3) **Law on Public Support to Technology Development and Innovation in the Economy (nr. 43/2003)** under the Ministry of Industry and Commerce

The new legislation replaces the earlier law on the Icelandic Research Council from 1994 which is abolished. The main features of the new laws are as follows.

A new Science and Technology Policy Council (SPTC) is established headed by the Prime Minister of Iceland. The Council provides for the permanent seat of three other ministers, the Minister of Education and Science, the Minister of Industry and Commerce and the Minister of Finance. Two other ministers with research in their portfolio can be added to the council at the discretion of the Prime Minister. Fourteen other members are appointed to the Council through nominations as follows:

- a) Four nominated by the coordinating committee of higher education institutions (representing 8 higher education establishments)
 - b) Two nominated by the Icelandic Association of Labour.
 - c) Two nominated by the Association of Icelandic Industries (Employers).
 - d) One nominated by the Minister of Education and Science.
 - e) One nominated by the Minister of Industry.
 - f) One nominated by the Minister of Fisheries.
 - g) One nominated by the Minister of Agriculture.
 - h) One nominated by the Minister of Health and Social Security Affairs.
 - i) One nominated by the Minister for the Environment.
-

While not stipulated in the law it is the declared intention that the nominees to the Science and Technology Policy Council shall have scientific, technical and other relevant qualifications and connections to secure the effective implementation of the Councils mission.

Out of the non-ministerial members of the STPC the Minister of Education and Science appoints an unspecified number (probably 9) to the **Science Board** and the minister of Industry appoints an unspecified number (probably an equal number) to the **Technology Board**. It is intended that the membership on the two committees may be mutually overlapping (by two) to secure coordination and continuity between science, technology and innovation in the policy making process.

The mission of the STPC is to strengthen scientific research, scientific training and technology development in the country in support of Icelandic cultural development and increased economic competitiveness. The SPTC shall issue tri-annual guidelines (declarations) for public policies on science and technology. The policy declarations shall be prepared by the Science Board and the Technology Board respectively.

The Law on Support to Scientific Research establishes the **Research Fund** through fusion of the previous Science Fund and the Technology fund of the Icelandic Research Council. The Research Fund is governed by a board, whose chairman is also the chairman of the Science Board. Linked to the same board is also the **Instrument Fund** financed by 20% annual levies on the University Lottery net income. Similarly the Law on the Support to Technology Development and Innovation establishes a new **Technology Development Fund** which is governed by a board chaired by the Chairman of the Technology Board. So far there is no decision on the size of this new fund. Thus the link between policy and implementation through funding is achieved. This law also provides for the establishment of an **Innovation Center**, which is to be linked to **IceTech** (Technological Institute of Iceland).

The chief responsibility for assistance in preparing policy oriented papers is to be provided by the **Ministry of Education, Science and Culture** and the **Ministry of Industry and Commerce** for the two respective boards. Overall co-ordination is provided by a secretary to the Science and Technology Policy Council to be placed within the Ministry of Education and Science. The administrative services to the operational level of the whole structure are provided by the **Icelandic Center for Research – RANNÍS** which is the secretariat of the previous Icelandic Research Council. Its mission is to give administrative and operational support to the boards and funding bodies, to manage the international connections, monitor the effects and impacts of policies and to provide intelligence and informed advice to the STPC and its boards and sub-committees. Thus RANNÍS will administer all the funding bodies set up by the new legislation including the Research Fund, the Technology Development Fund, the Instrument Fund, the **Graduate Training Fund** and other funding bodies for science that the government may want to assign to it. It will maintain the National Contact Point Coordination and support network to the EU Framework program, the Nordic NOS - organizations and other international bodies in science and technology. Thus RANNÍS will function as the operational arm of the new council structure.

The new Icelandic innovation policy governance structures are shown in Figure 4 below:

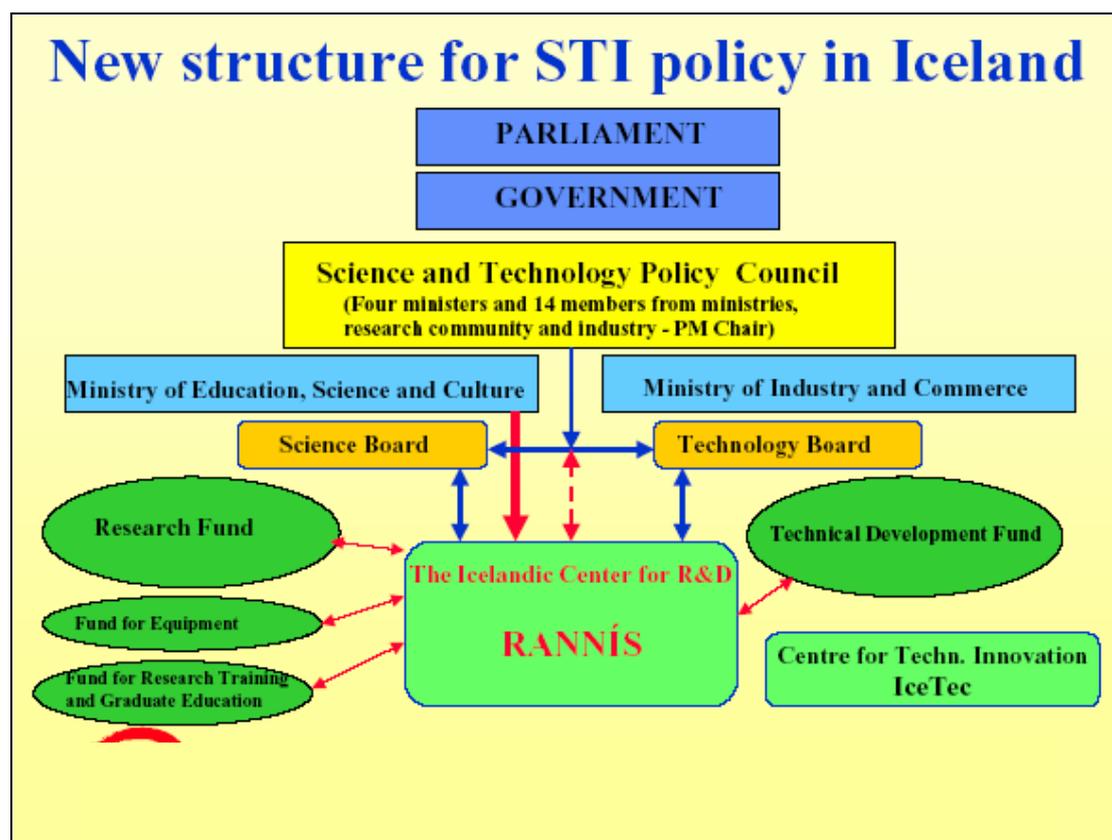


Figure 4: The new Icelandic innovation policy governance structure.

[The quote to Finnbjörnsson's text ends].

One of the first tasks of the new Science and Technology Policy Council has been to put forward a policy resolution. This took place through a two-step process, firstly the release of a Science and Technology Policy in December 2003⁷⁷, and then the passing of a resolution of the Council in the summer 2004⁷⁸. In a nutshell both documents are similar in content. The resolution is divided into four chapters, which together identify eight priorities. These are:

- 1) Strengthening Competitive Funds
- 2) Strengthening University Research
- 3) Redefinition of the Structure and Procedures of Public Research Institutions
- 4) Other Policy Items
 - a. International Cooperation
 - b. Continuity of Funding for Research and Innovation
 - c. Support Network for Innovation
 - d. Equality Issues
 - e. Increasing the Number of Students in Science and Technology Subjects

The content of each priority issue will not be discussed thoroughly in this report. However, as seen from the list above, the resolution is fairly concentrated on research at an advanced level in association with the future development of public research institutes and universities. It is

⁷⁷ Forsætisráðuneytið. 2003b.

⁷⁸ Vísinda og tækniráð. 2004.

reasonable to argue that the most relevant aspect of the resolution, from the perspective of every day activities of firms in traditional or mature sectors, are sections 4b) and 4c). In these sections the role of various governmental organizations and funding agencies, which provide services to businesses, is discussed. These organizations have a role in supporting innovation activities of firms and should form a bridge between firms and the other agents of the national innovation system that are discussed in the resolution. It should be noted that among those organizations, which are listed in sections 4b and 4c, are various organizations that specifically aim to serve rural areas and the economic sectors most evident in the economic landscape of rural regions (e.g. the Regional Development Agency, the Agricultural Productivity Fund, and the Agricultural Loan Fund). These organizations are, therefore, seen as part of the support network for innovation.

It is also relevant to note that the resolution states that Impra Innovation Centre (a branch of Technological Institute of Iceland) is to be assigned the task of establishing formal cooperation between organizations that provide support for economic development in Iceland, and for linking them to the public support system for scientific research, technological development and innovation. This also applies to the before-mentioned support organizations that have a specific rural focus. Impra Innovation Centre, therefore, has an important role as an intermediary agent within the Icelandic national innovation system. Included in this role is the strengthening and coordination of innovation facilitation in rural regions of Iceland.

3.2 Rural development policy (national level)

The Parliament of Iceland has approved a parliamentary resolution on a regional development policy and plan for the period 2002-2005. The parliamentary resolution is based on article no. seven in the Act on the Institute of Regional Development (no. 106/1999), which states that the Minister of Industry and commerce shall submit to the Parliament a proposal for a parliamentary resolution regarding a strategic regional development plan for a period of four years. The Institute of Regional Development in Iceland shall supervise and monitor the implementation of the plan.

The current plan has five overarching goals. These goals are fairly broad and touch on various aspects of rural development. The goals, however, lead into six strategic objectives, which are the following:

- 1) Growing and diversifying businesses
- 2) Strengthening communities
- 3) Enhanced knowledge base
- 4) Improved transportation
- 5) Emphasis on sustainable development

These five objectives are then further elaborated on by identifying twelve main so-called strategic themes, which are then finally are developed into 21 specific action proposal/projects.

The term ‘innovation’ appears in several contexts in the regional development policy and the accompanying action proposals. The most evident examples of this are listed below:

- 1) The first one of the strategic objectives, which is listed in the policy (growing and diversifying businesses) is accompanied by the following text:

“... A support needs to be given to diversify the business sector by enhancing knowledge and encouraging innovation in traditional and new sectors and hence increase the number of specialised jobs ...”

Here the importance of innovation is stressed, as well as the need for applying the concept in a broad context and to old and new economic sectors.

- 2) The second of the main strategic themes highlights the importance of competent local development work in all regions. This theme is accompanied by the following text.

“Government support programmes for enterprises, based on both regional and economic strategies, are multifaceted and strongly tied to different sectors, i.e. agriculture, fisheries, manufacturing and tourism, and long-established contentious division of roles between ministries has impeded government endeavours to support new business initiatives and ventures. ... It is essential to restructure local economic development assistance and advisory services in the peripheral regions, with the objective of making it more fruitful, i.e. to increase value for money and create more new businesses.”

Here the need for coordination of activities that are meant to facilitate innovation is stressed.

- 3) In association with strategic theme number eight, which stresses the important role of culture, the following statement is put forward:

“...It is also crucial that culturally based tourism will be considered as an important sector when it comes to government support for innovation and economic development.”

Here culturally based tourism is identified as a specific economic activity that holds innovation potential.

- 4) Finally three of the 21 action proposals (no. one, two, and fourteen) are specifically relevant in the context of innovation and innovation facilitation. Proposal no. one suggests that a specific innovation center shall be established in the town of Akureyri in North Iceland with the assigned task to coordinate public support for innovation activities in rural regions of the country.⁷⁹ Proposal no. two discusses the need to better coordinate the work of the different public funding agencies, which allocate funds to different innovation-related projects. Finally proposal no. fourteen suggests a specific development programme for selected municipalities where, amongst other things, the aim is to strengthen innovation and the economic wellbeing of the residents of those municipalities through the establishment of various new ICT-related projects.

As seen by the list above, innovation receives considerable attention in the regional development policy of the Icelandic state government, both in the context of overarching goals and strategic themes as well as in direct action proposals.

As stated earlier, the governmental organization in charge of the rural policy process is the Institute of Regional Development. The institute, in partnership with various other agents, is also the main implementation body for the associated plan and action proposals. The Institute of Regional Development, therefore, is assigned an official role as an innovation facilitator in the rural regions of the country. Various other organizations also have an important role as innovation facilitators in rural Iceland, although they are in most cases only indirectly linked to

⁷⁹ It should be noted that this center has already been established (Impra innovation centre). The results of the center's coordination efforts, however, remain to be evaluated.

the implementation of the rural development policy. Organizations that have a key role in this context will be listed in section 3.5 of this report.

3.3 Linkages between innovation policy and development policy

Since there is not a single direct governmental policy framework targeting innovation in Iceland, the linkages between innovation policy and development policy in Iceland are not clear-cut. However, as noted in the previous section, the term ‘innovation’ appears in several aspects of the regional (rural) development policy and the accompanying action proposals. There are no direct linkages between the before-mentioned policy governance structures for science and technology and the regional (rural) development policy. However, it seems reasonable to argue that the most relevant aspect of the science and technology policy framework, for innovation facilitation in rural areas, are the sections on the role of various governmental organizations and funding agencies, which provide services to businesses. Among those organizations, mentioned, as agents that have a role in the overall official support network for innovation, is the Regional Development Agency. Since the Regional Development Agency is also the key implementation body for the rural development policy the agency could be regarded as an unofficial linkage point between the two policy frameworks.

3.4 Policies at the regional and local level

Currently there is no mandatory legal requirement for municipalities or regions of Iceland to form a specific policy or a plan for economic and/or social development. It should be noted that the Icelandic governmental structure has only two official levels, the state level and the municipal level. The term ‘region’ in Iceland, therefore, does not represent an official governmental level, with associated governmental structures, income and expenditure basis, or responsibilities. In spite of that, the country is commonly divided into regions, representing different geographical areas. Statistics Iceland for instance uses a division that initially was similar to the geographical division for the constituencies, used for deciding the composition of the state parliament’s member group. The structure of the constituencies has now been redefined, but the old constituency structure still forms the basis for a regional division used for a number of different purposes, e.g. the operational areas of regional offices of governmental institutes. Also regional associations of municipalities commonly are built on the old constituency structure. The definition of the Northwest region of Iceland, which has been chosen as a study area for the ISP study, is an example of a definition, which is built on the above premises, i.e. the old constituency structure.

Partly due to the circumstances described above, planning for economic and social issues currently barely exists at a regional level in Iceland and these affairs also appear to be on a very underdeveloped stage at the local/municipal level, at least in the rural regions of Iceland. It is also important to note that the municipal structure in many of Iceland’s rural regions is characterized by extremely small municipalities, in regard to population numbers⁸⁰ and hence also in regard to the scope and scale of economic activities. Due to this situation, many of the smaller municipalities do not realistically possess the preconditions or the capacity for sophisticated strategic economic planning.

⁸⁰ In some cases the population number is less than 250.

The Northwest region possesses five municipalities with a population number exceeding 500. Of these, two have a currently valid formal policy, or a strategic vision, for economic development in place. These are Blönduósbær municipality and Húnaþing vestra municipality. Both these municipalities are located in East and West Húnavatnsýsla district.

Blönduósbær's policy on economic development⁸¹ was passed in 2003, and spans the period 2003- 2013. In this policy a three-fold vision is put forward, which should lead development initiatives in the given period:

- 1) Blönduósbær shall become known as a leading “food production town”, in regard to entrepreneurship and research within the food production sector in Iceland.
- 2) Blönduósbær shall become a renowned tourism destination, regarded as a fun place to visit for families and other tourists.
- 3) Blönduósbær municipality will create a facilitating and supporting environment for food production firms.

Blönduósbær's policy vision is fairly clear-cut, with an obvious emphasis on two industry sectors, i.e. food production and tourism. Based on the three-fold vision, 10 key-goals are identified, accompanied by measurable indicators, and implementation strategies. The policy quite clearly focuses on facilitating entrepreneurship, innovation and growth within the two sectors. This is especially evident in relation to goals and strategies targeting the food production industry.

The current policy of Húnaþing vestra municipality⁸² is quite different from the one of Blönduósbær municipality. The policy is built on a holistic approach where economic development is seen in as closely connected to the overall development of the community. The policy defines 18 topics that need to be addressed (policy targets). Some are directly economic development related but others are focusing on community development issues in general. Examples of such topics are infrastructure related matters, such as the development of transportation networks and telecommunication systems, as well as discussion on the development of education systems within the municipality and development of a land use plan. The policy does not clearly identify specific industry sectors that should be focused on, although tourism development and marketing of the area evidently receive considerable attention. The policy itself does not identify specific development strategies or implementation projects. However, following the policy process the municipal government put forward an implementation plan. This plan lists how each topic should be addressed, and who should be involved in the implementation. The plan, however, does not identify a specific time frame or indicators of success. The policy and associated implementation plan, focuses on various aspects of the community that need to be developed, some of the projects proposed include implementation of novelties and establishment of new initiatives and/or organizations. The policy, therefore, has some orientation towards innovation, although this orientation is not very clear-cut and the specific term ‘innovation’ is not commonly used in the actual policy documents.

⁸¹ Blönduósbær. 2003.

⁸² Hagfræðistofnun. 2004b.

In addition to the policy efforts of the two municipalities discussed above, Skagafjörður municipality is presently initiating a policy process for economic development, which is to be completed before the first of December 2005. Skagafjörður municipality is also initiating a specific policy processes targeting tourism development within the municipality. This is also to be completed in the year 2005.

It should be noted that in the year 2001, the Association of municipalities in the Northwest region⁸³ put together a joint vision for future economic development of the region. This initiative was carried out for the purpose of being a joint input of the municipalities of the region to the state's rural policy process (see section 3.2 on the current national rural policy). This joint vision has, however, not been actively implemented by the association nor its member municipalities.

3.5 The official framework for innovation facilitation in rural Iceland

Measures for innovation facilitation at the regional and local level in rural Iceland, given the specific industry focus of the ISP project, can be described from a three-fold perspective:

1. **Regional economic development corporations⁸⁴:** Eight official economic development corporations are operated in the regions, outside the capital region, of Iceland. These corporations service firms, organizations and individuals in different geographical areas. They are usually run as a joint initiative of the state and the municipalities within each area. However, business associations, trade unions, and other regional organizations, in some instances also take part in running the corporations. The state provides a proportion of their operational funding, which is channelled through the Development Department of the Institute of Regional Development, which also has an advisory and a monitoring role for the corporations. In some instances the corporations are directly linked to formal associations of municipalities and act as their offices as well. The corporations' role varies a bit between different corporations, but most have a primary focus on facilitating economic development and innovation through specific projects or services to firms, entrepreneurs, organizations and community groups. Usually the corporations have a wide cross-sectoral focus. In some instances the corporations employ or host a specific staff person focusing on tourism development, commonly referred to as a 'tourism development officer'⁸⁵. These officers are however, in some instances associated with other organizations (see next paragraph). One of the eight economic development corporations, in rural Iceland, is the Economic development corporation of the Northwest Region, which, as indicated by its name, services the geographical area that was chosen as a study region for the ISP project.
2. **Local economic and/or tourism development officers⁸⁶:** Some municipalities in rural Iceland have a specific staff person focusing on economic development and/or tourism development. These staff persons also commonly have a role in promotion and public relation activities of the municipal office in question. Most commonly the local officers

⁸³ In Icelandic: Samtök sveitarfélaga á Norðurlandi vestra.

⁸⁴ In Icelandic: Atvinnuþróunarfélög.

⁸⁵ In Icelandic: Ferðamálafulltrúi.

⁸⁶ In Icelandic: Atvinnu- og ferðamálafulltrúar.

are hosted at the municipal office or at a local tourist information center. These officers, in most cases, are responsible for facilitating economic and/or tourism development within the municipality as well as for providing assistance to firms, community groups and individual in the field of economic and/or tourism development. In many cases the local officers work closely with the regional economic development corporation in the surrounding region. Skagafjörður municipality is the only municipality within the Northwest region that has a specific position for a economic development officer. This position also includes the responsibility for tourism development in addition to various other activities.

3. **Regional agricultural extension services⁸⁷**: Specific agricultural extension services are operated in all rural areas of Iceland. These build on a long-standing tradition. The services are in most instances run by the regional farmers associations. The majority of the operational funding of the services is provided by the state, partly through specific taxation on farmers. The funding is channelled through the regional farming associations. The extension services staff provide professional consultation to farmers, on pretty much every aspect of farming; from advice on animal feeding to managerial and accounting guidance. Two agricultural extension services are operated in the Northwest region. One services the East and West Húnavatnssýsla district⁸⁸, and the other services Skagafjörður district.

In addition to the above, various organizations, associations, and institutes offer innovation-related services on a cross-sectoral basis. Many of these operate on a national level and commonly do not run regional branches or offices. Examples of these are the Technological Institute of Iceland (IceTec) and Impra innovation center (a specific branch of IceTec), the Institute of Regional Development, various public and private financial institutes, etc. It should be noted that the Institute of Regional Development is located in the town of Sauðárkrókur (Skagafjörður municipality) in the Northwest region.

Specific support structure and services for agrifood production

Historically Icelandic agrifood production has a strong status in Icelandic society. Traditionally the industry enjoys extensive goodwill within the governmental system in regard to resources allocated to the industry. This applies to different aspects of the industry, reaching from the direct support payments to farmers (subsidies), education and research related to the industry as well as to different support services and consultation mechanisms available to the industry⁸⁹. The overall industry system, including education, research, funding agencies, industry associations and support services has developed quite independently from other spheres of Icelandic economic life. The industry, therefore, has access to industry specific institutes relating to pretty much every aspect of its existence.

⁸⁷ In Icelandic: Ráðunautabjónustur.

⁸⁸ This agricultural extension service also services a part of a neighbouring region, i.e. Strandasýsla County.

⁸⁹ Note: The different support services and consultation mechanisms are partly funded with special taxation on farmers.

The table below lists various players that have a role in the industry system of Icelandic agrifood production, with an emphasis on those directly linked to dairy production⁹⁰. Many of these operate at a national level, while others have a regional/local focus. However, firms and individuals involved in milk production and the dairy industry in the Northwest region have access to all of those listed below, in one way or another.

Organization/Institute/Board/Association	Contact information
The Ministry of Agriculture (Landbúnaðarráðuneytið)	http://www.landbunadarraduneyti.is/
The Farmers Association of Iceland (Bændasamtök Íslands)	http://www.bondi.is
The Industry Board for Cattle Farming (Fagráð í nautgripærækt)	http://www.bondi.is/landbunadur/wgbi.nsf/key2/hbsr53jk9a.html
Regional Farmers Associations (Búnaðarsambönd)	http://www.bondi.is/landbunadur/wgbi.nsf/key2/bunadarsambond
Regional Farming Extension Services (ráðanautapjónustur)	http://www.bondi.is/landbunadur/wgbi.nsf/key2/bunadarsambond
The Icelandic Association of Cattle Farmers (Landssamband kúabænda)	http://www.naut.is
Regional Cattle Farming Associations (Nautgripæræktarfélag)	http://www.naut.is/default.asp?sid_id=119&tre_rod=002 003 &tld=1
The Agricultural College Hvanneyri (Landbúnaðarháskólinn á Hvanneyri) *	http://www.hvanneyri.is/
The Icelandic Agricultural Research Institute (Rannsóknastofnun landbúnaðarins) *	http://www.rala.is/
The Institute for Experimental Pathology of the University of Iceland (Tilraunastöð Háskóla Íslands í meinafræði að Keldum)	http://www.keldur.hi.is/
The Agency for Agricultural Statistics (Hagbjónusta landbúnaðarins)	http://www.hag.is/
The Agricultural Loan Fund (Lánasjóður landbúnaðarins)	http://www.llb.is
The Agricultural Productivity Fund (Framleiðnisjóður landbúnaðarins)	http://www.fl.is
The Association of Dairy Plants (Samtök afurðastöðva í mjólkuriðnaði: SAF)	http://www.saf.is
The Icelandic Dairy Produce Marketing Association (Osta og smjörsalan)	http://www.ostur.is/enska/index.htm
The Dairy Laboratory of Iceland (Rannsóknastofa mjólkuriðnaðarins)	http://www.sam.is/frodleikur/rannsokn_mjolkur.htm
* As of January 01 2005, the Agricultural College at Hvanneyri and the Icelandic Agricultural Research Institute, as well as the Icelandic Horticultural College, will be merged in one institute.	

Table 4: Various players that have a role in the industry system of Icelandic agrifood production, with an emphasis on those directly linked to dairy and beef production. (Note: Not an exhaustive list).

Specific support structures and services for tourism

The organizational landscape of the tourism industry in Iceland, in regard to research, education, and consultation services, is quite complex, with a mixture of players operating at the local, regional and national level. Below is a list of the most important players that have a role in developing the industry, with an emphasis on those linked to tourism development in the rural areas of the country⁹¹. Firms and individuals involved in the tourism industry in the Northwest region have access to all of those listed below, in one way or another.

Organization/Institute/Board/Association	Contact information
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⁹⁰ Icelandic names of organizations/associations/institutes in parentheses.

⁹¹ Icelandic names of organizations/associations/institutes in parentheses.

Icelandic Ministry of Communications (Samgönguráðuneytið)	http://www.samgonguraduneyti.is/
The Iceland Tourist Board (Ferðamálaráð Íslands)	http://www.ferdamalarad.is http://www.icelandtouristboard.com/
Icelandic Travel Industry Association (Samtök ferðaþjónustunnar: SAF)	http://www.saf.is
The Icelandic Tourism Association (Ferðamálasamtök Íslands)	petur@icetourist.is
Regional Tourism Associations (Ferðamálasamtök landshlutanna)	---
Local Tourism Associations (Ferðamálafélög á afmörkuðum svæðum eða sveitarfélögum)	---
Municipalities (Sveitarfélög)	http://www.samband.is/template1.asp?id=364
The Association of Tourism Officers (Félag ferðamálafulltrúa)	http://www.tourofficers.is/
Economic development corporations (Atvinnuþróunarfélög)	http://www.byggdastofnun.is/Samstarfsadilar/Atvinnuthrounarfelog/
Tourist information centers (Upplýsingamiðstöðvar)	http://um.margmidlun.is/um/ferdamalarad/vefsidur.nsf/index/23
Association of farm tourism operators (Samtök ferðaþjónustubænda)	http://www.farmholidays.is/
The Institute for Regional Development (Byggðastofnun)	http://www.byggdastofnun.is
The Agricultural Productivity fund (Framleiðnisjóður landbúnaðarins)	http://www.fl.is
The Marketing bureau of North Iceland (MBNI) (Markaðsskrifstofa Ferðamála á Norðurlandi)	http://www.northiceland.is
The Iceland Tourism Research Centre (Ferðamálaásetur Íslands)	http://www.fmsi.is
Hólar University College, Rural Tourism Department (Háskólinn á Hólum, Ferðamálaásetur)	http://www.holar.is/english/tour.htm
University of Akureyri, Faculty of Management, Department of Tourism (Háskólinn á Akureyri, Viðskiptadeild, Ferðaþjónustubraut)	http://www.unak.is/template1.asp?PageID=1086
University of Iceland, Faculty of Science, Department of Geosciences, Tourism Studies (Háskóli Íslands, Raunvísindadeild, Jarð- og landfræðiskor, Ferðamálafræði)	http://www.hi.is/nam/jardland/indexE.htm
Tourism studies at Menntaskólinn í Kópavogi	http://www.mk.is

Table 5: Various players that have a role in the industry system of Icelandic tourism, with an emphasis on those having a role in the rural context. (Note: Not an exhaustive list).

3.6 The official framework for innovation facilitation in the Northwest region

The official framework for business services and innovation facilitation in the Northwest region is structured in a similar way as has been described as the general norm for rural regions of Iceland in a previous section of the report (see section 3.5). The table below lists some public organizations that can be regarded as key players in this context within the Northwest region⁹².

Support service providers	
<i>Organization</i>	<i>Contact information</i>
The Association of Municipalities in the Northwest region and the Economic	http://www.ssnv.is

⁹² Icelandic names of organizations in parentheses.

<p>Development Corporation of the Northwest Region (Samtök sveitarfélaga á Norðurland vestra (SSNV) and Atvinnuþróunarfélag Norðurlands vestra (ANVEST)):</p> <p>The association runs the regional economic development corporation. In Dec. 2004, the corporation employed three development officers. One is located in Húnaþing vestra municipality, one in Blönduósbær municipality, and one in Skagafjörður municipality. The officers are involved in various tasks that have to do with economic development (including tourism development) and provide advice to firms, community groups and individuals.</p>	<p>http://www.anv.is</p>
<p>Center for young entrepreneurs in Húnaþing vestra municipality (Frumkvöðlasetur ungs fólks í Húnaþingi vestra):</p> <p><i>The center is actually in the form of a support programme for young entrepreneurs. The programme is hosted by a local development association (Hagfélagið) but supported by the municipality, the local bank, ANVEST and others. The programme provides a small grant to young entrepreneurs that wish to develop new projects within the municipality. The programme also provides an access to a professional consultant (the local economic development officer) and some educational courses.</i></p>	<p>http://www.anv.is gudrun@anv.is</p>
<p>Skagafjörður municipality/economic development officer (Sveitarfélagið Skagafjörður, deildarstjóri markaðs- og þróunarsviðs):</p> <p>Skagafjörður municipal office includes a position for a local economic development officer. This staff person is also in charge of promotional and PR related efforts and various other tasks.</p>	<p>http://www.skagafjordur.is/displayer.asp?cat_id=58</p>
<p>The Regional Farmers Association of Skagafjörður District and the Agricultural Extension Service for Skagafjörður district (Búnaðarsamband Skagfirðinga and Leiðbeiningaþjónustan ehf.):</p> <p>The extension service is run as an independent organization, with the key partners being the Regional Association of Farmers and the local cooperative (KS). The extension service's staff provide professional consultation to farmers on pretty much every aspect of farming; from advice on animal feeding to managerial and accounting guidance. The extension service occasionally organizes educational seminars for farmers as well as acts as a linkage point between farmers in Skagafjörður district and various national agricultural institutes and organizations.</p>	<p>http://www.bondi.is/landbunadur/wgbi.nsf/key2/bunskagfirdinga</p>
<p>The Regional Association of Farmers in East Húnavatnssýsla and the Agricultural Extension Service for Húnavatnssýslur and Strandir district (Búnaðarsamband Austur Húnavatnssýslu and Ráðunautaþjónusta Húnaþings og Stranda)</p> <p>The extension service is run by the Regional Association of Farmers in East Húnavatnssýsla as well as two other regional farmers associations. The extension service's staff provide professional consultation to farmers on pretty much every aspect of farming; from advice on animal feeding to managerial and accounting guidance. The extension service occasionally organizes educational seminars for farmers as well as acts as a linkage point between farmers in Skagafjörður district and various national agricultural institutes and organizations.</p>	<p>http://www.bondi.is/landbunadur/wgbi.nsf/key2/radunautathjonusta_hunathingso_gstranda</p>
<p>The Tourism Association of the Northwest region, plus a number of differently active local associations (Ferðamálasamtök Norðurlands and Ferðamálafélög á Norðurlandi vestra).</p> <p>The Tourism association is a grass-root organization of firms, municipalities and individuals that are involved or interested in tourism within the Northwest region. The Association and its local groups take part in running tourist information centers throughout the region. It is also a member in a national umbrella organization (the Icelandic Tourism Association).</p>	<p>johannaogalli@mmedia.is</p>
Tourism marketing organizations	
<i>Organization</i>	<i>Contact information</i>
<p>The Marketing Bureau of North Iceland (MBNI) (Markaðsskrifstofa Ferðamála á Norðurlandi).</p> <p>The Bureau is a recently established organization owned by the Tourism Association of the Northwest region (see above) and the Tourism Association of the Northeast region. It is funded by municipalities in North Iceland* as well as individual tourist firms through a membership fee, and through development grants provided by the state (or its institutes). The mandate of the Bureau is to facilitate increased cooperation between tourism firms in the area, as well as facilitating</p>	<p>http://www.northiceland.is</p>

cooperation between different municipalities in the field of tourism development, especially in regard to marketing and promotion of the area. <i>* Note: Not all municipalities in the area have chosen to support the Bureau.</i>	
The Tourist Information Center in Varmahlíð (Upplýsingamiðstöðin Varmahlíð) The Tourist Information Center is open year around and is funded by the Iceland Tourist Board, The Tourism Association of Northwest Iceland, Skagafjörður Municipality and others. The Center has an official role as a service center for the Northwest region as a whole, but in addition several other tourist information centers are run throughout the region.	http://www.northwest.is
Other	
<i>Organization</i>	<i>Contact information</i>
Some educational institutes have an indirect role in innovation facilitation in the region. The following two are examples of such institutes. <ul style="list-style-type: none"> ➤ Hólar University College (Hólaskóli) ➤ Center for continuing education of the Northwest region (Farskóli Norðurlands vestra) 	http://www.holar.is http://www.fsnv.is

Table 6: Local and regional public organization and associations that have a role in business services and innovation facilitation in the Northwest region.

In addition to local and regional public organizations and associations, firms, community groups and individuals in the Northwest region have access to the services of the various organizations, institutes and association that have been listed in Table and Table .

Examples of recent and ongoing development initiatives in the Northwest region

Table lists examples of specific development initiatives and projects that are currently ongoing or have recently taken place in the Northwest region. The table lists projects that are lead by public development groups, support agents, or carried out as joint initiatives of the public and private sector. The emphasis is, furthermore, on initiatives/projects that have to do with the two industry sectors that were focused on in the ISP project. The focus is, therefore, on projects/initiatives that are meant to strengthen the regional infrastructure or the conditions for further growth within the two industry sectors, rather than on various projects, which are being carried out by private firms or individuals.

Name of project/initiative	Agent responsible	Short description
TOURISM		
Grettistak	Initiated as a cooperative effort of Húnaþing vestra municipality, a local tourism association and a local folk museum.	Grettistak is an organization, established in 2002 in Húnaþing vestra municipality in West Húnavatnssýsla district. The mandate is to facilitate cultural and economic growth in Húnaþing municipality by utilizing cultural heritage and history of the area, especially the Icelandic sagas. The supporting objectives are to make Húnaþing vestra more visible as a tourism destination, as well as building a joint platform, which private firms and individuals in the area can utilize in their development efforts. For further information see www.grettistak.is , and http://www.northernperiphery.net/main-projects.asp?intent=details&theid=44
The Seal Center in Hvammstangi	The Economic Development Corporation of the Northwest region, in association with	This project has recently been launched. The goal is to establish a center where exhibits will be held focusing on the natural seal habitat in the surrounded area. The

	various other agents, e.g. the Húnaþing vestra municipality, the Icelandic Institute of Natural History, etc.	center will also have the role of general tourist information office. For further information see http://www.anv.is and http://www.northwest.is .
Northern Coastal Experience (NORCE)	This is a transnational project with 15 participants from seven countries. The project is lead by the Economic Development Corporation of the Northwest region.	The project focuses on heritage-based tourism. It can be regarded as an initiative aiming at improving the conditions for innovation, through the exchange of experiences and ideas between the project partners and the facilitation of local networks, and the development of new products and marketing strategies at the local level. The project receives its core funding from the Northern Periphery Programme (NPP). http://www.northernperiphery.net/main-projects.asp?intent=details&theid=66
The Triangle Hiking Trails	The Economic Development Corporation of the Northwest region, in association with the local tourism associations and the municipalities in the targeted area.	This project focuses on establishing marked hiking trails on Skagi and the neighbouring areas, and by doing so creating a net of trails between the urban centers Blönduós, Skagaströnd, and Sauðárkrúkur in the Northwest region. Contact information: http://www.anv.is
Project on Vatnsdæla Saga	The Economic Development Corporation of the Northwest region, in association with various interest groups, organizations and stakeholders in the targeted area as well as a number of organizations outside the region.	This is a project that is still early in its development process. The project targets Vatnsdalur and the neighbouring area in the East Húnavatnssýsla District in the Northwest region. The mandate is to enhance utilization of the cultural background and the Sagas of the area for the development of tourism products. Contact information: http://www.anv.is
Service Center in Blönduós	Blönduósbær municipality in cooperation with a private firm operating a camping and a cabin site.	This project is still in the planning process. The project includes building a new service center for tourists in Blönduós. The center will be a service center for a camping and a cabin site, information center and meeting facility.
The Food Chest Skagafjörður	Hólar University College Rural Tourism Department, in association with food producers, food processors, and restaurant owners, the municipality of Skagafjörður and others.	This project focuses on culinary tourism. The project is seen as a multi-year endeavour with the principal objective of developing culinary tourism in rural areas in Iceland. In the first project phase, an emphasis is put on Skagafjörður District. The project will aim at identifying what role food plays in the tourism industry and explore ways to increase the economic impact of local foods to both domestic and international tourists. Further information: http://www.holar.is/matur/ensk.htm
Research on Skagafjörður as a Tourist Destination	Hólar University College Rural Tourism Department.	This is an on-going applied research project, which aims at analyzing the status of Skagafjörður district as a tourist destination as well as identifying the key components of the area's attraction for tourists. The competitiveness of Skagafjörður district as a destination will also be evaluated. Information is gathered among tourists as well as among tourism experts within and outside the area. The project results will be utilized in further development of the tourism industry within the targeted area. Further information: http://www.holar.is/english/
Sturlungaslóð (Historical sites of Sturlunga Saga)	The Folk Museum of Skagafjörður (Skagafjörður municipality), and others.	This is a project still early in its development process. The project targets historic sites in Skagafjörður district, which are associated with the Sturlunga Saga. The mandate is to develop and publish brochures and maps for the purpose of promoting the sites to tourists. Contact information: http://www.skagafjordur.is
Hólar archeological research project	The National Museum of Iceland, the Folk Museum of Skagafjörður (Skagafjörður municipality), Hólar University College, and others	In relation to a large scale archeological project in Hólar Skagafjörður District, specific tours as well as other activities that have to do with distributing information on the history of Hólar have been organized. These activities have especially been targeting tourists where the mandate is to utilize the historical and cultural background of the area for tourism development. Further information: http://holar.is/%7Eformleifar/
MILK PRODUCTION AND THE DAIRY INDUSTRY		
Matgæði	Blönduósbær municipality in association with two food	Following Blönduósbær municipality's economic development policy process in 2003, the municipality in

	research firms in Reykjavík and food processing firms in Blönduósbær municipality	cooperation with two food research firms in Reykjavík and food processing firms in Blönduósbær municipality, have established an organization, specializing in consultation on food research, product development and quality management in food production. The organization also has the mandate to seek for new partners and marketing opportunities in Iceland and abroad for food products produced by firms within the municipality. This organization is meant to strengthen the role of Blönduósbær municipality as a food production town.
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Table 7: Examples of recent and ongoing development initiatives in the Northwest region, within the two chosen industry sectors. (Note: Not an exhaustive list).

Although the table above does not include an exhaustive list of the development projects and activities that are going on in the Northwest region, it is quite evident that tourism is receiving considerable attention by the public development organizations in the area. Food production, however, seems to be receiving very limited attention by public agents.

It should be stressed that additional projects and programmes are offered by various organizations and institutes. Many of these are administered by organizations that operate at the national level (e.g. by Impra Innovation Center, the Institute for Regional Development, the Icelandic Agricultural Research Institute, etc.). These projects do, therefore, not put their sole focus on the Northwest region, although they might include, or target, firms, individuals or agents within the region. It should also be noted that several projects are run by Hólar University College in Skagafjörður district, which focus on different aspects of rural tourism development in Iceland. Some of these projects have a national focus and do, therefore, also include some initiatives within the Northwest region.

4.0 Findings from the milk production and the dairy industry)

This chapter contains the key findings from the empirical data gathering of the case study of milk production and the dairy industry in the Northwest region.

4.1 Background information

Sixteen interviews were carried out with people involved in milk production and the dairy industry in the study region. Tabel 8 list the categories of interviewees as well as the number of interviewees within each category.

OVERVIEW OF INTERVIEWEES <i>Case study of the milk production and the dairy industry in the Northwest region</i>	Focus (market/operational area)	No. of interviews
<u>Primary production:</u> Dairy farmers (all run as family farms, in all cases a couple was interviewed)	Local/regional	7
<u>Processing:</u> Representatives of dairy plants (processors) within the region Representatives of associated dairy operation (parenting firm)	Local/regional/national National	2 1
<u>Supporting agents:</u> Representatives of economic development corporations Representatives of farming extension service providers Representatives of industry associations Representatives of educational and research institutes	Local/regional Local/regional Local/regional National	1 2 1 2
	Total:	16

Table 8: Categories of informants and number of informants interviewed in association with the case study of the milk production and the dairy industry in the Northwest region.

As seen in the table above, the interviewees included representatives of farm operations and processing firms (dairy plants) as well as representatives of various support agents that are associated with or provide services to the industry both at the regional and national level. The annual turnover of the farms visited was between 11 and 25 millions ISK⁹³, the employment created on the farms was between two and three man-year per farm and the farming experience of the farmers ranged between eight and 33 years. The total annual turnover of the two dairy plants in the region is close to 1.200 millions ISK⁹⁴. The plants create employment of around 20 man-years annually. Both of the dairy plants visited are mature firms, established before the middle of last century.

4.2 Knowledge and competence base

Since the study included both representatives of the primary production (i.e. farming operations) as well as the processing (i.e. dairy plants), the nature of the firms' knowledge and competence base turned out to be quite varied. It is, therefore, reasonable to discuss the knowledge and competence base, at the firm level, based on the two different groups of firms:

⁹³ Exchange rate: ISK / 87 = Euros.

⁹⁴ Exchange rate: ISK / 87 = Euros.

Farming operations: The educational level of the farmers was very diverse. In majority of the farms, however, at least one of those responsible for the farm had a diploma in agricultural studies. There were also examples of farmers with a university degree from agricultural programmes. Generally the younger farmers possessed better education. In majority of cases the farmers expressed that to be successful at their job they really needed a very broad range of competences, i.e. to be "masters of every trade".

With only one exception, the farm representatives had participated in at least one short-term training course in the past 24 months. In all cases these courses were associated with the every day activities at the farm, rather than associated with implementation of novelties of some sort. The most common courses had to do with accounting and computer training. In all cases training had been accessed locally or regionally and provided/organized by local or regional service providers. The farmers generally expressed positive attitudes towards the possibility of participating in further education or training, although few had any direct plans of that sort. Those representatives of different support organizations that are associated with the farming industry (including educational and extension services providers) also generally expressed that in their experience farmers were generally keen on acquiring new knowledge and skill and participating in initiatives in this regard. One of the representatives of the supporting agents also mentioned that many farmers he was acquainted with used the Internet to a great extent to access new information and knowledge.

The farmers generally expressed that the need for good management and computer skills as well as technology know-how were constantly on the rise. In relation to possible future implementations of novelties, majority of the farmers mentioned that the complicated nature of new equipment (for example milking robots or other digital equipment) likely would call for an increased technological know-how. The representatives of the supporting agents generally agreed that due to the diverse nature of farmers' background and overall competences, it was hard to put a finger on the primary needs for new knowledge. A common viewpoint of the support agents, however, was that the overall basic knowledge of farmers could do with some improvement. Here managerial and computer skills were mentioned. Also an important point was raised by one of the supporting agents about the need for improving language skills of farmers for the purpose of improving their opportunities to access new knowledge from abroad (through the internet, journals, etc.). This was especially important in the context of following newest trends in the development of equipment and techniques.

The farmers generally perceive new knowledge and information as accessible. More commonly the interviewees look for sources of information and new knowledge within the region, particularly at the local/regional farming extension service offices. Majority of the farmers interviewed expressed that communication with other farmers as a very important way for getting introduced to novelties. A local or regional focus seemed to be more common in this regard, although visits to farms in other regions of the country were also mentioned as important.

Dairy plants: The employees of the two dairy plants visited, can be divided into two groups. Firstly specifically trained dairy technicians (a specific type of trade) or food production specialists, which accounted for close to half of the employees including the executive managers in both cases. The other half of the employees consisted of general workers who take care of various tasks (mostly not very knowledge intensive). The most evident part of the

official knowledge base, therefore, was in the form of the dairy technicians' expertise. The representatives of both firms expressed that this expertise was the basis for product development within the firm. It should be noted that no training programmes for dairy technicians exist in Iceland. The employees at the operations visited, therefore, had accessed their training abroad (Norway and Denmark).

Participation by the dairy technicians in continuing training or education (post-school training and education) were fairly infrequent, although representatives of both firms expressed that personnel occasionally took part in training courses (on a few years interval). Such courses commonly had to be pursued abroad, although there had been instances where the Icelandic association of dairy technicians had offered courses. Communication or cooperation with domestic educational institutes seemed to be very infrequent if any. In regard to the development of the firms' knowledge and competence base, both representatives highlighted the importance of staying in contact with colleagues (old school mates) from abroad. Also there were examples of apprentices (Icelandic and foreign) staying at the firm for a period of time, in some cases bringing new knowledge with them. The informants' view of what, if any, knowledge and competences were the most lacking to ensure success of new innovation projects, varied. However, there were some direct views expressed that there might be a need for better competences in the field of strategic management and project management that could contribute to better success in this context.

Similar as with the farmers the representatives of the dairy plants expressed that they regard new knowledge and information generally to be accessible. In spite of the fact that new knowledge most often has to be looked for abroad, the representatives expressed that there were accessible channels in place for this purpose and this could not be regarded as a hindering factor for future innovation projects.

4.3 Innovation activity

Innovations can easily be found both at the primary production phase (i.e. at farms) and at the processing phase.

Process innovations that aim at increasing efficiency, reducing costs, as well as improving working conditions seem to be the name of the game concerning innovation in farming. The farm innovations are mostly incremental, can concern pretty much every aspect of the operation, and in many cases appear as series of implementations of new methods or technologies, which sometimes extend over a few years period. Examples of incremental innovation projects at farms are installations of digital feeding systems and the launching of considerable barley cultivation, replacing a total reliance on imported grain. Innovation projects of considerable scale were also found among the farm operations visited. An example of this is the installation of a computerized milking robot at one of the farms visited in Skagafjörður district. The goal of the larger projects is often multifold/complex (increased turnover, improving efficiency, labour reduction, etc.) while the smaller projects most often focus solely on reducing labour or changing working conditions.

The majority of the innovation projects found at farms in this study can be regarded as "in-house innovations", i.e. the projects first and foremost include implementations of something new to each operation. However, novelties at the local and regional level were also found and in the case of one farm innovations that encompassed something new in the national context

were evident. This farm's projects were carried out in close cooperation with the Icelandic Agricultural Research Institute and the Agricultural College.

Innovation in farming seems to be to large extent influenced by age of the farmer. One of the farmers commented on this, in a way that gives a clear indication of the situation:

“We do really have three groups of farmers, pretty much equal in size. The first group consists of farmers that are fairly young, generally wish to expand the operation and increase their production rights, and improve their working conditions and other aspects of the operation. Secondly we have the middle age farmers. Some are still active in developing their operation, while majority of them just wishes to make the most of previous improvements and investments. The latter group does generally not aim at sustaining the competitiveness level of their operation and in that way make it attractive for a future buyer. This group plans to sell their production rights and stay at the farm in their old age. The third group consists of farmers that have already ‘burned up’ their investment/farm and are basically in the position of waiting for the right opportunity to sell their production rights, quit farming, and either stay or leave the farm depending on personal circumstances.”

The farm, as a business operation, seems also to be very much influenced by the fact that it is most often run as a family business and the farm activities are very much influenced and interconnected to the general every day life of the farm family. The development of the operation (innovation projects being no exception) is influenced by this situation. To make the operation more family-friendly, by reducing workload, and in that way increase the quality of life at the farm, in some instances, appears to be the goal of the innovation project.

The appearance of innovations among milk processing firms varied considerably. Product innovations are more apparent, although in some cases these are accompanied by small-scale process innovations. It should, however, be noted that based on the experiences that were revealed by the study's key informants (representatives of firms and supporting agents), large-scale innovation projects are fairly uncommon within the milk processing industry. Nevertheless, in the case of one of the firms visited, an innovation project actually incorporated introduction of a product that was new to the Icelandic market. The study's informants agreed on that expansion of sales is the primary goal of innovation in the milk processing industry. The representatives of the firms, which were visited expressed that there is high interest within their firms to participate in innovation projects in the future. Development of new value-added products is what the informants see as the most attracting innovation projects. Increased cooperation with other branches of the food processing industry is also believed to hold some innovation potentials. The exact project ideas that were mentioned as realistic future projects, however, consisted of initiatives fairly incremental in nature, mostly concerning expansion of existing product lines.

4.4 Cooperation and networks

The innovation processes found in this study varied somewhat in the context of key contributors and networking activities associated with the process. Overall, the processes seem to be based to a considerable extent on each innovators personality and the circumstances of the individual firm.

Innovations at the farm level seem to be primarily based on the farmer's own initiative and informal information gathering, rather than on official requests for advice or information from various institutes or support agents. The key contact persons of farmers in relation to innovation processes are other farmers (colleagues) mostly within the region but also at the national level, as well as other personal contacts (family, friends, etc.). Horizontal networking is, therefore, the name of the game. Other agents that were mentioned as having a vital role in

the process were suppliers/sellers of new equipments, and financial institutes. The financial institutes were commonly mentioned as gatekeepers, since without support/communication/cooperation with these institutes few projects could be launched. A sector-specific financial institute, i.e. the Agricultural Loan Fund, seems to have the strongest role among those. However, in Skagafjörður district financial services offered by the local cooperative, i.e. KS, which also runs the local dairy plant, also has a quite significant role.

In regard to consultation- or advisory services, the local/regional farming extension services seem to be the far most common agent that farmers communicate with in relation to innovation projects. The extension services were also commonly mentioned as likely contributors in the context of possible future innovation projects. The extension services also seem to have a role as intermediary agents, linking farmers with educational institutes and financial institutes. It should be noted that, in some instances, not even the extension services had a role in innovation projects, meaning that these projects took place with out any input from formal advisory services. With one exception, the farmers had no direct linkages to research institutes or the agricultural colleges in association with innovation projects

Ideas originate from various sources. Other farmers (colleagues) are the most common source mentioned and in that context organized farm visits, commonly planned by local/regional cattle farmers associations, create an important communication channel. Equipment exhibits and promotional efforts of equipment suppliers also seem to be an important source of ideas for innovation initiatives.

The processing plants that were studied had extremely extensive cooperation networks with a wide range of players. However, in association with innovation projects it seems reasonable to argue that five groups have the most evident role: 1) representatives of marketing bodies or parental firms, 2) sellers of equipment, packaging and other supplies, 3) other firms in the same field or other fields within the broad spectrum of food processing industry, 4) buyers/clients (e.g. people participating in focus groups and trials of new products), and 5) colleagues and personal contacts, mostly old school-mates abroad. Public research institutes, educational institutes, as well as local or regional economic development corporations, seem to have a very irrelevant role in this context.

4.5 Innovation conditions

Milk production and the dairy industry in Iceland exist in a very rigid business environment, the influential factors being for example a state-controlled production quota system and specific rules affecting the competition among milk processing firms (dairy plants). These overarching characteristics of the business environment greatly affect innovation opportunities and innovation processes within the industry.

The factor that was most commonly mentioned as hindering for innovation, by the farmers, was associated with the very nature of the production quota system. In this context the farmers saw innovations and expansion go hand in hand. The high (and constantly increasing) market price of production rights is regarded a barrier for those who want to enlarge their production units. At the same time this is seen as hindering for innovation, since larger units create higher revenues, which allow for greater investments in new technology and other initiatives at the farm that can be considered as innovations. Apart from the high price of the production rights, the farmers, who were visited, generally did not seem to be overwhelmed

by different hindering factors. Although, few additional factors were mentioned, the farmers more commonly mentioned that it were actually up to themselves to be determined enough to see new ideas through. The representatives of the support agents, however, agreed on several factors, in addition to the production quota system, that they regarded as possible barriers for innovation in farming. The most commonly mentioned factor by this group were problems with funding of new initiatives (access to loans and high interest rates), lack of access to specialized advisory services in the field of financial management (cost-benefit analysis) as well as in regard to agricultural engineering (advice on new technology and buildings).

The limited size of the Icelandic market for dairy products and the fact that exporting of Icelandic dairy products is very underdeveloped, is probably the most obvious barrier for extensive innovations within the milk processing industry. This was clearly reflected in the views of those interviewed who were associated with the milk processing industry. From the processing perspective, lack of time and human resources was also seen as a major hindering factor for innovations (incremental and large scale). Financial risk, as well as high costs of finance, were also mentioned as barriers, especially for the smaller firms. In the view of the representative of a dairy corporation located outside the region (parent company to one of the dairy plants within the region), lack of initiative and strategic efforts by the regional dairy plant was believed to stand in the way of potential innovations. Lastly, lack of effective channels for distribution and marketing was regarded a serious challenge by several of the respondents at least in the context of certain types of products.

A minority of the representatives of both farm operations and processing firms had any awareness of specific official policy measures, which target economic development or innovation facilitation at the local, regional, or national level. In those instances where the informants indicated some knowledge of such initiatives for the national level, the aspect best known seemed to be the fact that the policy mainly targets other regions than the Northwest region. Also, in those instances where the informants possessed some knowledge of the national policy environment, the name of the Institute for regional development commonly came up in association with the discussion. Not a single representative of the farms or the processing firms had any awareness of any specific innovation policy (science and technology policy).

The representatives of the supporting agents generally knew that a national development policy for rural regions existed. Knowledge of the actual policy document and the associated plan, however seemed to be very incomplete, and only one of the representatives could name the policy document with its official name. Majority of the supporting agents were aware of the recently approved policy document of the National association of cattle farmers and seemed to associate it with innovation and future development of the industry.

The interviewees generally expressed that they experienced quite mixed general attitudes towards entrepreneurship and innovations in their local surroundings (community morale). Majority of the informants, however, saw the morale as more to the positive side than to the negative side.

The strong leadership role taken by the local cooperative in Skagafjörður district (KS) was mentioned by almost all interviewees, who were knowledgeable on the local circumstances in Skagafjörður district, as a very facilitating factor for the development of milk production and the dairy industry within Skagafjörður district. The cooperative, which also runs the local

dairy plant, has in the past decade or so actively encouraged farmers to increase their production by assisting farmers financing the purchases of production rights (provision of loans with very low interest rates). This strategic move by KS seems to have increased optimism and the innovation efforts within the industry in the district.

5.0 Findings from the study of the tourism industry

This chapter contains the key findings from the empirical data gathering of the case study of tourism industry in the Northwest region. As noted earlier the study focused specially on those aspects of the industry, which utilizes special aspects of the study areas' culture and natural environment to create various recreational services offered to tourists.

5.1 Background information

Sixteen interviews were carried out with people involved in the tourism industry in the Northwest region. Table 9 list the categories of interviewees as well as the number of interviewees within each category.

OVERVIEW OF INTERVIEWEES <i>Case study of the milk production and the dairy industry in the Northwest region</i>	Focus (market/operational area)	No. of interviews
<u>Tourism operators:</u> Representatives of firms offering recreational services to tourists	Varying	8
<u>Supporting agents:</u> Representatives of economic development corporations	Local/regional	3
Representative of a marketing bureau	Regional	1
Representatives of industry associations	National	2
Representatives of a tourism association (grass root organization)	Regional	1
Representatives of educational and research institutes	National	1
	Total:	16

Table 9: Categories of informants and number of informants interviewed in association with the case study of the tourism industry in the Northwest region.

As seen in the table above, the interviewees included representatives of tourism operators as well as representatives of various support agents which are associated with or provide services to the industry at the local, regional and national level. Majority of the tourism firms visited were less than 10 years old, although there were also examples of firms with over 20 years experience in the industry. The annual turnover of the firms most commonly were between 5 and 40 millions ISK⁹⁵, and the number of man-years were between three and seven. Most commonly, majority of the firms' clients were foreign visitors.

5.2 Knowledge and competence base

The educational level and background of the representatives of the tourism firms turned out to be very varied. Most of the interviewees could be regarded as multitalented people, who usually possessed varied occupational experiences. The interviewees include a carpenter, a mechanic, a chef, a sailor (ship captain), and a teacher, to name some examples. One of the

⁹⁵ Exchange rate: ISK / 87 = Euros.

representatives possessed a diploma in tourism studies. With one exception, the interviewees did not possess a university degree. The interviewees indicated that majority of the jobs at their firms did not call for higher education. However, some of the interviewees highlighted that to be able to successfully run a tourism operation a very broad range of skills and competences were needed, this especially applied to the smaller businesses where specialization of employees is limited. Also the importance of good social skills and sensitivity for customers' needs, as well as good language skills, were stressed as extremely important aspects of the competence base necessary for succeeding in the industry.

Majority of the firms expressed the view that improved knowledge and competence base would strengthen the firm's innovation potential for the future. Basic business administration skills and marketing know-how were commonly mentioned as areas that could do with some improvement. A vast majority of the firms aim to participate in short term training courses regularly and majority of the interviewees named a course recently completed. Majority of the firm representative (regardless of the size of business) expressed that they would like to be more active in gathering of new knowledge and competences. They also generally expressed that they would prefer being able to access training within the region, since having to travel to places outside the region (e.g. to Reykjavík) would be both costly and time-consuming. The lack of time and financial resources were seen as the main hindering factors for more active development of the knowledge and competence base. It should be noted that the interviewees commonly associated the discussion of their needs for new knowledge with the every day activities of the firm, rather than with the implementation of specific novelties. There were, however, some exceptions from this, particularly with the more recently established firms.

5.3 Innovation activity

Examples of innovation projects can easily be found within the tourism industry in the Northwest region. In this respect the firms visited could broadly be divided into two groups. Firstly a group of fairly young firms, which had been operating for five years or less, and secondly a group of mature firms with over 20 years experience.

The group of the younger firms in most cases were still in the process of firmly establishing their operation. This process in many cases included a series of small improvements and additions to their product range. These small steps could, in many cases be regarded, as incremental innovations, based on the definitions of the concept of innovation, which this study is built on. Some of these projects also included development of products that were new to the regional market. The level of novelty of the innovations found, therefore, in some cases exceeded the "in house" level. Basic expansion and increased revenues seemed to be the primary goal of innovation projects found at the younger firms.

The innovation activities found among the mature firms were also mostly associated with product innovations, commonly with the aim of adding new products to an already established product range (e.g. adding a bird watching tour to a previous range of other outdoor activity tours). The goal of these projects was, therefore, to create a greater variety of products. Innovative activities of these firms generally also aimed at finding ways to extend the tourism season and in that way creating increased turnover on a yearly basis. Examples of process innovations were also found among the mature firms, e.g. the initiation of a new marketing strategy aiming at increasing direct marketing to end-buyers instead of going through multilevel marketing channels. Another example of a process innovation was found

at a horse-rental and horse-touring firm. This firm had recently contracted local experts in horsemanship to provide the horses for all tours, instead of having the firm owning its own horses. The aim of this project was to improve the overall quality of the services.

5.4 Cooperation and networks

The level of cooperation and networking found among the tourism firms varied considerably. Innovation processes reached from being almost entirely based on the innovator's own initiative to being a complex interactive process including a variety of players. Generally the smaller and younger firms rely to a greater extent on communication with various support service providers in relation to innovation projects, while the more mature and larger firms carry out their project more independently and/or rely more on direct relations with clients or client groups (travel agencies) as well as on relations with various personal contacts. The younger and smaller firms also primarily network with local, regional and in some cases national agents. While the larger and more mature operations prefer to network with agents at either the national level or most preferably agents abroad.

Majority of the firm representatives had been in contact with one or several financial institutes of various sorts in relation to the development of innovation projects. The representatives commonly expressed some frustration in regard to services of financial institutes and the overall access to funding.

Majority of the firm representatives had been in some contact with the local and regional economic development organizations and tourism development officers, although the smaller firms generally regarded such contacts as more valuable than the larger ones. Some of the firms, which were visited, were members in the Icelandic Travel Industry Association (SAF). These firms generally had positive experiences associated with their membership and regarded the association as a source for advice in relation to innovation projects. Other firms and the industry association were also regarded as important sources of ideas for new innovation projects, although ideas seem to originate from various other sources as well.

The more recently established firms seem to seek for advice and training at educational institutes in associations with innovation projects. While the larger and more mature firms more uncommonly do. Hólar College, which is located in the Northwest region and offers courses and programs in various fields related to rural tourism, was the educational institute most commonly mentioned by those firms that were active in this arena.

5.5 Innovation conditions

Tourism, as an organized industry, is a fairly young phenomenon in rural Iceland. Majority of firms are relatively young and the development of support services, industry coherence, as well as research and education, is still very much in a changing phase. Most regions in Iceland, the Northwest region included, however, possess a handful of mature firms, which in the last couple of decades have experienced great expansion and drastic changes of the business environment for the industry. The views of the representatives of the mature firms, who contributed to this study, were very much affected by the fact that these firms have survived rather turbulent times.

An overall lesson from this study is that tourism in the Northwest region seems to be a very tough business. Usually it seems to take many years to establish a profitable business.

Meanwhile the firms struggle to make ends meet with revenues that hardly allow for minimum wages and very low, if any, return on investment. The seasonality within the industry is furthermore a great challenge. All these general factors of the business environment also affect the innovation potentials and the general motivations of firms.

The factor that was most commonly mentioned as hindering for innovation by the study's informants was the high cost of finance, as well as the unavailability of venture capital or development grants. This seems to affect those firms that solely focus on recreational service in the most severe way, since they have more difficulties in providing the necessary collaterals. The recently established firms' access to markets, more precisely finding marketing channels that work, also seems to cause considerable bottleneck problems for innovation processes.

A minority of the firm representatives expressed much awareness of specific official policy measures, which target general economic development or innovation facilitation at the local, regional, or national level. Also not a single interviewee (firms and supporting agents) had knowledge of any specific innovation policy (science and technology policy). The representatives of the supporting agents generally had some awareness of the existence of a development policy for rural regions at the national level. Knowledge of the actual policy document and the associated plan, however, seemed to be quite limited. A vast majority of the supporting agents had some knowledge of the currently on-going policy initiative of the Ministry of transportation. The visibility of this industry-specific initiative, therefore, seems to be quite good.

Some of the interviewees expressed that they experienced quite positive community morale in their home community while others found the community morale quite pessimistic and discouraging for innovation activities. No clear trends were, therefore, found in regard to the general attitudes towards entrepreneurship and innovations in the innovators' environment.

6.0 Conclusions

The Northwest region of Iceland fits well the criteria of the ISP project for the selection of study regions. The region includes a mixture of sparsely populated communities and small urban centers. It is located in a considerable driving distance from Iceland's only major urban area, i.e. the capital area, and does not include a major research- or university center. The region is traditionally a food-production region, and hence is shaped by the traditional economic structure of rural Iceland. Tourism development has, furthermore, very much been looked at as a strategy towards diversification of the local economies within the region. Tourism is currently an important part of the regional economic landscape and a considerable amount of tourism development efforts are taking place.

In the following paragraphs the main conclusions of the Icelandic contribution to the ISP study will be summed up, with the project's key research themes forming the basis for the structure of the discussion. It should be reaffirmed that the chosen research approach, i.e. a case study approach, is not a survey, where reliability relies on the characteristics of the data collection tools, the sampling techniques and the sample size. It should also be emphasized that when choosing the types of research tools for the project and when designing the actual tools and procedures, the intention was not to collect data for statistical inference. Generalizations from the conclusions below should, therefore, be approached with caution. The case study approach, however, allows for systemic analysis and the identification of common themes, patterns and trends. The results of such an analysis, therefore, should add to our knowledge on innovation processes within the chosen sectors in rural Iceland and in that way contribute to a discussion on the design and implementation of innovation policy and innovation facilitation practice in the rural context.

Innovation activity

Building on the ISP project's relatively broad definition of the concept of 'innovation', it turned out to be an easy task to find examples of innovative firms in the Northwest region. This applies to both sectors studied, i.e. the tourism sector and the milk production and the dairy industry. Although many of the innovations found were small-scale and not representing implementation of novelties that can be regarded as 'new under the sun', these examples demonstrate that innovation is possible and currently taking place in the study region. For those firms that actively participate in innovation, the innovation process commonly seems to be considered necessary to stay in business and in that way seems to be looked upon as a survival strategy. Although the discussion above describes a pretty picture, it should be stressed that for many of the firms found in the Northwest region, success has evidently not come easy, but is a result of a great determination, hard work, entrepreneurial spirit and sometimes a sprinkle of luck. The attitude described above, i.e. to consider innovation as a necessity for survival, also seems to be a crucial ingredient.

Based on the findings described above, it can be argued that it is important that policy maker and rural development practitioners (e.g. economic development officers, community leaders, leaders of industry associations, etc.) adopt and promote a certain attitude towards doing business and carrying out initiatives, among colleagues and clients. These agents have a key role in creating an understanding that innovation is a cross-sectoral phenomenon, that it is possible, and indeed necessary for firms and organizations to maintain their edge. Such an

advocacy role, calls for the use of efforts that aim to raise the awareness of the importance of innovation, among businesses, entrepreneurs, public organizations and the public. The existence of examples, as those found by the ISP project, should strengthen such efforts and encourage policy makers to take on a proactive approach aiming at facilitating innovation in rural regions.

Knowledge and competence base

Various forms of practical knowledge and gained experience, as well as personal traits such as entrepreneurial spirit, are the most evident building blocks for innovation in the firms studied. This applies both to the tourism firms and the agrifood firms. In addition, trade- and craftsmanship, and/or certain types of technical know-how are also important both in farming and food processing, while various occupational experiences and social skills seem to be important building blocks for innovation within the tourism sector. As can be seen from the above, the knowledge and competence base, which innovations are drawn from, could be regarded as informal and generated by experience, rather than building on scientific knowledge generated by university education. The firms, furthermore, have limited contact or cooperation with educational institutes in general, as well as with research organizations. Although some of the firm representatives seem to be quite active in seeking new knowledge, this is most often not directly linked to innovation projects, but rather to the every day practical activities within the firm (e.g. accounting, computer use, etc.). The primary common need for strengthening the knowledge and competence base (identified by both tourism and food processing representatives), were needs for more extensive knowledge on markets, marketing and sales. Utilization of educational offerings seems to be highly sector-oriented. This applies to a certain extent both to the tourism firms and the agrifood firms, but is especially evident among farmers who seem to be quite locked within the agricultural education system.

Given the nature of innovation activities and the current status of the knowledge and competence base found by the study, policy makers should aim at strengthening the role of educational institutes within the Northwest region, especially their input and involvement in various general capacity building efforts as well as their outreach to firms. Specific relevant knowledge areas also seem to call for increased attention, e.g. areas such as marketing and product development. Sectoral lock-in also seems to limit farmers' utilization of programmes of value for alternative farm activities and of value for the general broadening of their basic knowledge base. A broad range of educational institutes should, therefore, have a role and unconventional institutes/players should be included in the discussion on further development of educational offerings within the region.

Cooperation and networks

Horizontal relations (firm to firm) seem to be an extremely important part of the systemic aspect of innovation processes. This applies to both of the sectors that were studied. Clients, suppliers, personal contacts, and colleagues play a key role in the innovation process; in most cases a quite stronger role than various public support providers.

In regard to consultation- or advisory services, the local/regional farming extension services seem to be the only (if any) agents that have a quite significant role in farmers' innovation activities. The extension services also link farmers with institutes at the national level. The

processing plants, however, had hardly any contact with the local or regional support service providers (e.g. the economic development corporation), but seem to rely almost solely on the above-mentioned horizontal relations on a national or even international level.

The level of cooperation and networking found among the tourism firms varied considerably. Generally the smaller and younger firms rely to a greater extent on communication with various support service providers in relation to innovation projects, while the more mature and larger firms carry out their project more independently and/or rely more on direct relations with clients or client groups (travel agencies) and personal contacts. The younger and smaller firms also primarily network with local, regional and in some cases national agents, while the larger and more mature operations prefer to network with agents at either the national level or most preferably agents abroad. The majority of the tourism firm representatives had been in contact with several financial institutes in relation to innovation projects. The representatives commonly expressed some frustration in regard to services of financial institutes and the overall access to funding.

Again sectoral lock-in is very much a central theme of the findings, i.e. firms primarily look for cooperation, advice and consultation from agents within their industry sector. The sectors, which were studied, both have a key role in the economic landscape of the Northwest region and could evidently benefit from more cooperation, e.g. in relation to branding of products, marketing, and alternative farming practices such as farm tourism. In Skagafjörður district there are already some development initiatives taking place that aim at creating better linkages between the production of local food and tourism⁹⁶. Such initiatives should be strengthened and considered as a strategy in other parts of the region. It should, however, be kept in mind that it is very important that such initiatives are not solely building on the work of (cross-sectoral) development workers, but actively including industry groups and industry leaders, who can ensure commitment of the relevant sectors to such projects.

Policy situation and innovation conditions

Transparency of the national cross-sectoral policy environment (including both the policy of the Science and Technology Policy Council and the rural development policy) seems to be fairly poor. Awareness and familiarity with different policy initiatives is limited, especially among firm representatives, but also among many of the representatives of the different support organizations. This applies to both sectors. Awareness and familiarity with industry specific policies of the state, as well as policies set by industry associations, however, seem to be considerably better. The findings above can be interpreted in at least two ways. Firstly we can argue that the visibility and coherence of the cross-sectoral policy environment should be improved with an emphasis on reaching the attention of the so-called end users. Secondly we need to ask how we can make cross-sectoral policy measures, both innovation policy and rural policy, more conscious of the needs of specific industry sectors, but at the same time encouraging cross-sectoral cooperation that can appeal to different industry actors.

Specific planning for economic and social issues for the Northwest region does not exist and it seems quite evident that many aspects of the regional cooperation could do with some improvements for the purpose of maximizing the regional capacity, creating stronger

⁹⁶ See further information on the project '*Food Chest Skagafjörður*' at <http://www.holar.is/matur/ensk.htm>.

bargaining power and minimizing problems associated with the peripheral location of the region. This applies especially to cooperation between various agents from the region's different districts, i.e. Skagafjörður district on one hand and Húnavatnssýslur counties on the other. In addition to planning issues and other issues adhering under the region's different municipal government, examples of cooperation arenas that should be strengthened include cooperation between tourism firms and cooperation between some of the support agents, e.g. the agricultural extension services that operate within the region. Many players, therefore, evidently have a role in strengthening the regional cooperation, including municipal leaders, economic development practitioners, and leaders of industry associations.

A broad range of support agents offer services to firms on the local, regional, and national level and could be regarded as having a role in innovation facilitation in the Northwest region. The findings of the study, however, indicate that many of these agents play a fairly insignificant part in the context of innovation activities of firms in the region. This indicates that many of the support agents should strengthen their outreach to the business community for the purpose of improving their visibility and their level of effectiveness.

When looking at the two sectors studied, there seems to be a considerable imbalance between the attention, which the two sectors are receiving in the form of specific development projects organized by public support agents. Tourism is receiving a considerable attention, while farming and food processing receive a very limited attention⁹⁷. This imbalance is especially evident in the efforts of agents that operate on a cross-sectoral level, e.g. the regional economic development corporation and local economic development officers. The industry structure of farming and food processing exists in a very rigid business environment, is built on long-standing tradition and controlled by a few strong operations (processors). The tourism sector is, on the other hand, built up by many, varied, mostly young, and relatively vulnerable players and the industry structure and coherence is still very much in a changing phase. In spite of these evident differences between the two sectors, there are evidently some opportunities for innovation within both of them. It, therefore, seems reasonable to argue that both sectors deserve some attention and that public agents should aim at facilitating innovation in both sectors for the purpose of strengthening the regional economy and sustaining its competitive status. Blönduósbær municipality has in its economic development policy put a special emphasis on the strengthening of the food sector and some concrete development projects are already in the process. In this respect Blönduósbær has taken an initiative, which others should follow. Especially since the municipality alone, has limited capacity to reach major milestones and could do with some assistance from other regional and national agents.

Systemic aspect of innovation processes

⁹⁷ Note: It should be emphasized that here we are referring to specific innovation-related projects or task forces, not the general services meant for supporting the every-day activities of firms.

Some evident differences were found in the systemic aspect of innovation processes between the case on tourism and the case on the milk production and the dairy industry. The systemic aspect, however, seems to be quite sector-oriented in both cases, rather than oriented towards the defined geographical study area, i.e. the Northwest region.

- *Agrifood*: The systemic aspect is purely sectoral. Firms rely on relations with other agents within the sector and with sector-specific service providers. This is especially evident in the primary production phase (farming), where the local and regional environment is the most important platform of networking.
- *Tourism*: the systemic aspect has weak geographical underpinnings. The (rural/peripheral) location of the firm is, therefore, not a crucial element. Firms seem to seek for direct relations with partners at the national and/or international level.

From the findings above, we conclude that we should be cautious of using the term *regional innovation systems* to describe the systemic aspect of the innovations found in the Northwest region. This conclusion should encourage local and regional support agents to strengthen their role as intermediary agents between local firms and national and international support agents and business networks.

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Appendix A: Research context summary

Research context of the case studies																	
General profile of the study area																	
Name of study area/region	Northwest region (Norðurland vestra)																
Size of study area/region (km ²)	Approximately 12.000 km ²																
Main districts or no. of municipalities	Two main districts: 1) East and West Húnavatnssýsla district, 2) Skagafjörður district. Together including 12 municipalities																
Current population number	9.151 (Dec. 2003, source: Statistics Iceland)																
Recent development of population number	14% decrease since 1980																
% of population living in rural settings	The region includes five small urban communities, which together account for 67% of the population, the rest of the population (33%) lives in rural settings																
Main urban centers and their population number	Sauðárkrúkur (approx. 2600), Siglufjörður (approx. 1440), Blönduós (approx. 890), Skagaströnd (approx. 590), Hvammstangi (approx. 580)																
Employment by economic sectors	Primary production: Agriculture (11%), fishing (5%) Industry/manufacturing: Fish processing (8%), other manufacturing (10%) Electricity & water supply and construction (8%) Various services (56%) <i>Statistics Iceland (2004)</i>																
The area's "economic background":	The region is in a traditional sense a food production region, both seafood and agrifood.																
Coverage of innovation and entrepreneurship in key policy documents:	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;"><u>No. of documents</u> few/some/many</th> <th style="text-align: left;"><u>Extent of covering</u> deep/mod./shallow</th> <th style="text-align: left;"><u>Focus</u> broad/sectoral</th> </tr> </thead> <tbody> <tr> <td><i>National level</i></td> <td>some</td> <td>mod.</td> </tr> <tr> <td><i>Regional/local level</i></td> <td>few</td> <td>mod.</td> </tr> <tr> <td></td> <td></td> <td>broad</td> </tr> <tr> <td></td> <td></td> <td>broad</td> </tr> </tbody> </table>		<u>No. of documents</u> few/some/many	<u>Extent of covering</u> deep/mod./shallow	<u>Focus</u> broad/sectoral	<i>National level</i>	some	mod.	<i>Regional/local level</i>	few	mod.			broad			broad
<u>No. of documents</u> few/some/many	<u>Extent of covering</u> deep/mod./shallow	<u>Focus</u> broad/sectoral															
<i>National level</i>	some	mod.															
<i>Regional/local level</i>	few	mod.															
		broad															
		broad															
Agrifood production in the study area (the branches chosen)																	
<i>Note: The study area in this case is defined as Skagafjörður district on the Eastern part of Húnavatnssýsla district</i>																	
Branches that the study focused on	Milk production and the dairy industry																
Main products produced in the region within the branches chosen	Several types of cheese, flavored sour milk, fresh milk and cream, milk powder, butter, skyr (a special yogurt like product)																
Structure of the value chain, which links are operating in the region?	Farmers, processing firms.																
<i>Primary production (farming)</i>																	
Number of farms and recent development of it	94 dairy farms (June 2004), the number has gone somewhat down in recent years																
Average size of farms and recent development of it	29 cows, annual production of roughly 155.000 liters (2003) The average size of farms has been increasing in recent years.																
Production quantities and recent development of it	14.597.000 liters of milk in 2003, 27% increase since 1993																
Proportional share of the area in national production	13 % of national production in 2003																
<i>Processing, distribution and marketing</i>																	
Number of processing operations/firms	Two																
Most common size of firms (man years)	Around 10 man-years																
Total turnover of the chosen industry branches	1.200 millions ISK. <i>Exchange rate: ISK / 87 = Euros.</i>																
Recent trends within the industry branches (scale)	Increased turnover of the industry in recent years, especially in Skagafjörður district.																
Markets, where are products primarily sold?	Regionally and nationally																
Presence in the region, and official role of the	<u>Presence</u>	<u>Official role</u>															

following, in innovation facilitation in the chosen branches <i>Universities or other education institutes</i> <i>Government or private non-profit research institutes</i> <i>Commercial laboratories /R&D enterprises</i> <i>Public regulatory authorities</i> <i>Development agencies and business consultants/experts</i> <i>Industry associations and/or professional networks</i> <i>Interest groups and/or public sphere movements</i> <i>Financial institutions/actors</i>	Weak/moderate/strong weak weak weak moderate strong farming/s, processing/w farming/s, processing/m moderate	Weak/moderate/strong weak weak weak weak-moderate moderate strong farming/s, processing/m moderate
Tourism in the study area		
Number of firms	The Icelandic Tourist Board Registry includes around 115 tourism firms located in the Northwest region, the Board's register is, however, not fully exhaustive.	
Number of overnight stays in the year 2003 and recent development of it	69.053 in 2003, (5,1% increase from previous year)	
Proportional share in overnight stays in the country as a whole (2003)	3,5%	
Most common service (product) types	Broad product range, e.g. food and accommodation services, as well as various recreational services, i.e. salmon and trout fishing, activities associated with horseback riding and the Icelandic horse, several museums and cultural activities	
Most common size of firms (man years)	No comprehensive statistics, most firms are small family-run operations that hire some extra summer employees.	
Market/clients (division between foreign and domestic visitors)	Close to 50% of the overnight stays sold in 2003 were bought by foreign visitors and 50% were bought by Icelanders.	
Characteristics of service and marketing systems: which links exist within the region?	A considerable number of private tourism firms, but few common marketing bodies, exist within the region Quite a few support service agents operate within the region.	
Presence and official role of the following in innovation facilitation <i>Universities or other education institutes</i> <i>Government or private non-profit research institutes</i> <i>Commercial laboratories /R&D enterprises</i> <i>Public regulatory authorities</i> <i>Development agencies and business consultants/experts</i> <i>Industry associations and/or professional networks</i> <i>Interest groups and/or public sphere movements</i> <i>Financial institutions/actors</i>	<u>Presence</u> Weak/moderate/strong moderate-strong moderate weak moderate moderate weak weak-moderate moderate	<u>Official role</u> Weak/moderate/strong moderate-strong moderate moderate weak weak strong moderate moderate moderate

Appendix B: Short stories of good practice

Through the ISP project process, a number of examples of “good practice” have been identified. The following “short stories” include examples of how innovation has successfully taken place and/or has been facilitated in the selected study regions.

Example of good practice

Theme: Innovation activity

Topic: Innovations and renewal processes at Keldudalur farm

Further information: Þórarinn Leifsson and Guðrún Lárusdóttir (contact persons), <http://www.keldudalur.is>, keldudalur@keldudalur.is,

Key description: Keldudalur farm is an example of an Icelandic farm that has been exceptionally active in implementing various novelties in the past few years. These include extensive changes of production methods, e.g. application of new technologies for milking and livestock feeding as well as application and development of new methods for cultivation and handling of barley and other field crops.

The operation: Keldudalur is a mixed farm, located in Skagafjörður district in the Northwest region of Iceland. The livestock includes cows, sheep and horses although the emphasis is on milk production. The Keldudalur operation has also recently got involved in tourism, offering accommodation on the farm. Keldudalur is a family farm, where three generations have a role in the farming activities. The main responsibility of the farm is, however, in the hands of Þórarinn and Guðrún, who have operated the farm since 1996 when they took over from Þórarinn's parents. Both Þórarinn and Guðrún possess a B.Sc. degree from Hvanneyri Agricultural University. The annual turnover of the farm is approximately 22 millions ISK (262.000 Euros), and the annual labour need is approximately 3 man-years. The milk production accounts for approximately 80% of the annual turnover. There are 50 dairy cows on the farm and the annual production rights of the farm are 215.000 liters. The milk that is produced in Keldudalur is processed by dairy plant in a neighbouring town (Sauðárkrúkur), which is operated by the local cooperative.

Innovative elements: In the last few years various novelties have been implemented on Keldudalur farm, concerning pretty much every aspect of the operation. Extensive restoration has been made on the existing cow barn, new annexes added, and new computerized equipment installed both for milking and feeding. The renovation process in Keldudalur has been used as a source of ideas for farmers all over Iceland who have gone through similar processes more recently. Þórarinn and Guðrún have also been pioneers in the cultivation and handling of barley for animal feeding. In cooperation with Hvanneyri Agricultural College they have developed methods to store barley, which can be considered a novelty in the national context. Utilization of home-grown barley in Keldudalur has decreased the reliance on imported grain considerably.

In the same period, Þórarinn and Guðrún have also bought additional production quota. Expansion and innovations have, therefore, gone hand in hand. According to Þórarinn and Guðrún, the main goal of the various innovation projects on the farm is to increase the profitability and efficiency on the farm. The expansion of the operation has produced higher turnovers, although the workload has stayed relatively the same due to the utilization of new technologies and methods. The overall changes allow for increased salaries to be drawn from the operation and have therefore improved the livelihood of the owners.

Example of good practice**Theme: Knowledge and competences****Topic: Hestasport ehf. - importer of knowledge for product development in adventure tourism****Further information: Magnús Sigmundsson (contact person), tel. 453-8383, see also <http://www.riding.is>, <http://www.rafting.is>**

Key description: Hestasport ehf. is a mature firm in the field of adventure tourism, which has been active in product innovation and has developed unique competences for a particular type of services, i.e. whitewater rafting tours. To achieve this, the firm has successfully utilized fairly inaccessible knowledge and competences from abroad.

The operation: Hestasport ehf. is operated in Skagafjörður district in the Northwest region of Iceland. Hestasport is one of the oldest adventure tourism firms in Iceland with over 30 years experience as a riding tour operator. In addition to various activities associated with the Icelandic horse, the firm also started to offer river rafting tours in 1992, which at that time could be considered quite a novelty on the Icelandic market. Currently the firm offers a range of different riding and river rafting tours, as well as accommodation in country cottages. Package deals are offered, which include a pick-up service at the international airport (around four hours drive from Skagafjörður district), accommodation, meals, and selected or assorted adventure trips (activities á la carte). The firm employs around 20 people over the summertime (approx. 6 man-years on an annual basis). Hestasport's customer group consist of a mix of Icelanders and foreign visitors, with foreign visitors dominating the group of riding tour buyers, while Icelandic buyers account for around 60-70% of the river rafting customers.

Innovative elements: In the last decade or so Hestasport has been successful in developing the sport of whitewater rafting as a tourism product. The firm has been a pioneer in this field of adventure tourism in Iceland. When the firm started to offer river-rafting tours, knowledge and experience of the sport and the necessary competences to develop it as a tourism product were very scarce within the country. However, to be able to successfully offer this new product the firm needed skilled staff, i.e. professional guides with experience of difficult rapids and knowledge on the necessary safety measures. In other words to be able to successfully introduce this new innovative product to the market, the firm needed new knowledge and skills, which were neither possessed by the firm nor easily accessible at that time. The firm's initial approach to this challenge was to send one staff person abroad for training as well as hiring another, which had received training abroad, more precisely in Nepal. However, this did not turn out to be sufficient, since the demand for the rafting tours grew fairly fast. By utilizing the firms' contacts, additional skilled guides were hired from abroad. In the past few years, Hestasport has employed certified guides from various countries, including Nepal, New Zealand, Australia, Canada, Austria, and France. These employees have brought in important knowledge and competences, which have been absorbed by the firm's other staff and has widened the firm's networks in the international context. Now the firm's owner is considering setting up a training program for river rafting guides, and by that broadening the scope of the firm as well as extending the business season. Hestasport has worked closely with the state authorities in developing the necessary regulatory frameworks and safety guidelines for the sport of whitewater rafting in Iceland.

Example of good practice**Theme: Cooperation and networks****Topic: Innovation in culture-based tourism, by Grettistak development initiative****Further information: Pétur Jónsson (contact person), tel. +354 8605970, see also <http://www.grettistak.is> (only in Icelandic) and <http://www.northernperiphery.net/main-projects.asp?intent=details&theid=44>**

Key description: Grettistak is a young organization that aims at building a platform for innovation in tourism within Húnaþing vestra municipality through a cooperative approach.

The operation: Grettistak is an organization, which was formally established in 2002 in Húnaþing vestra municipality in Húnavatnssýsla district in the Northwest region of Iceland. The organization was initiated as a cooperative effort of the municipality, a local tourism association and a local cultural museum. The organization is, therefore, built on a cooperative approach. The organization's mandate is to facilitate cultural and economic growth in Húnaþing municipality by utilizing cultural heritage and history of the area, especially the Icelandic sagas with an emphasis on Grettis saga. The supporting objectives are to make the Húnaþing vestra more visible as a tourism destination, where the areas cultural assets should form the core attraction, as well as building a joint platform, which private firms and individuals in the area can utilize in their development efforts. The organization is lead by a board, which has active interactions with representative of tourism firms and public entities in the area through meetings and consultation. The organization does not have permanent staff, but consultants and other staff are hired for particular tasks. The annual turnover of Grettistak is around 10 millions ISK (approximately 120.000 Euros).

Recent projects that the organization has been involved in are improvements of signing and designated walking tracks, an annual cultural festival, as well as participation in an EU funded development project called Destination Viking. Participation in this international development project is seen as a source of ideas for further development, as well as source of new knowledge for local actors that aim at initiating new projects in the cultural tourism.

Innovative elements: Grettistak is a young organization that was established as a cooperative initiative with the aim to build a platform for innovation in tourism within Húnaþing vestra municipality. So far it is hard to measure any hardcore results from the project but the organization seems to build on a well planned and ambitious approach. The strong emphasis on the cooperative aspect of the organization, both the basic structure and operational methods of the organization as well as strong efforts to developed networks abroad through the Destination Viking project, can also be considered likely to contribute to the innovation potential in the area.

Example of good practice**Theme: Innovation conditions****Topic: The northern coastal experience project (NORCE)****Further information:** <http://www.northernperiphery.net/main-projects.asp?intent=details&theid=66>

Key description: The NORCE project is a transnational development project focusing on heritage-based tourism. The project can be regarded as an initiative aiming at improving the conditions for innovation, through the exchange of experiences and ideas between the project partners and the facilitation of local networks, and the development of new products and marketing strategies at the local level.

The operation: NORCE is an ongoing transnational development project receiving its core funding from the Northern Periphery Programme (NPP). NPP is one of thirteen Interreg IIIB programmes aiming at encouraging and supporting transnational co-operation between the regions of Europe. The NORCE project includes 15 partners from Iceland, Greenland, Norway, Faroe Islands, Sweden, Scotland and Newfoundland Canada. The project is lead by the Regional Development Institute of Northwest Iceland (ANVEST).

NORCE's mandate is to establish a network of coastal heritage sites throughout the Northern Periphery region. Through the project, a joint information strategy for these sites will be developed and information for key end-users, such as local tourist organizations, SMEs and transportation providers, will be produced. The strategy will promote and integrate the relevant physical connections with cultural links. The project will also assist individual areas to develop and promote particular aspects of their cultural heritage, so that they can function more effectively as part of the network. The project will further seek to strengthen cultural links between the participating organizations through the transfer of information and the use of exchange visits by project participants.

The project started in May 2004 and is scheduled to be completed in June 2007. The project has a budget of 1.187.500,- Euros for the three years period.

Innovative elements: The NORCE project will promote and enhance the cultural coastal assets of the North Atlantic region through highlighting their shared elements, as well as their individually distinct characters. The project has, therefore, both a strong inward and a strong outward focus. The project emphasizes learning from the experiences and situations of the partners from different countries as well as the development of local networks, which will allow for a dissemination of information on coastal heritage sites in a local context and can be utilized in product development and marketing strategies. Although the project is still early in its duration period it can easily be regarded as an initiative that improves the conditions for innovation, through the facilitation of economic diversification and heritage-based tourism.