



The Political Economy of Northern Regional Development

Vol. I

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1. Introduction to the Project and The First Volume of The Political Economy of Northern Regional Development (POENOR)

*Gorm Winther*¹

1.1. Preface

The purpose of the POENOR project (Political Economy of Northern Regional Development) is to carry out research on sustainable development and Arctic economies. POENOR was established owing to the initiative of the Arctic Council on Arctic human development and owing to the working group on sustainable development and Arctic economies under the International Conference on Arctic research Planning II (ICARP II) in Copenhagen in 2005 and in Potsdam in 2006. After two years of work the final research plan was forwarded to sponsors in 2007 and 2008.² In 2005, the international consortium (IPY ID: 227) on the Political Economy of Northern Regional Development was endorsed by the Joint Committee for the International Polar Year and received financial support from the Commission for Scientific Research in Greenland, the Nordic council of Minis-

¹ Activity leader for the POENOR project since 2005. IPY professor at the Department of Development and Planning, Aalborg University.

² Arctic Human Development Report [<http://www.svs.is/AHDR/>] and ICARP II – Science Plan I: Arctic Development and Sustainable Development, Second International Conference on Arctic Research Planning (ICARP II, Copenhagen, Denmark, 2005. [<http://arcticportal.org/extras/portal/iasc/icarp/ICARP%20overview-0507-4.pdf>])

ters (NCM) Arctic Cooperation Program, The Greenland Home Rule Research Unit and the Obel Family Foundation.³ The planning for the IPY consortium 227 was established during a workshop in Ilulissat in 2005 that was financed by the Nordic Council of Ministers. The three-day workshop assembled researchers, who through forming a workgroup, agreed to endeavor on a project on comparative development in all Arctic regional Economies.⁴ The international consortium consists of 28 participants, and it embraces philosophical, social, geographical, sociological, statistical and economic disciplines. The consortium has participants from all countries with Arctic regions except Sweden and Finland. As part of the funding conditions, the consortium will cooperate with the Arctic Social Indicators project (ASI) – another IPY project financed by the NCM in 2007. The POENOR consortium met at an inaugural workshop at the Klitgården in Skagen, Denmark in 2007, and this book is an anthology of the papers presented by POENOR participants. In November 2008, the second annual workshop took place in Akureyri in Iceland. As a result of both workshops – yearbooks this one being the first – will be published in 2010.

As emphasized in the Arctic Human Development Report and in relation to the ICARP planning process, no rigorous comparative analyses of the arctic regions have been conducted hitherto. The goal of the POENOR project is to approach this work, through the international collaboration just described. The relevance of the project is to create knowledge on Arctic economies and to demonstrate the different degrees in ability to develop. Furthermore, it is the intention to create knowledge of a causal character in relation to development problems and development potentials within the Arctic.

1.2. The approach and research question

The project uses an international lens as a point of departure with a focus on the circumpolar region – containing political and administrative units, which overlap throughout the Arctic, and for which data is readily available.

³ The project was selected to present a case on Arctic IPY social scientific proposals, when The European Science Foundation and The European Polar Board launched the International Polar Year in the European Parliament in Strasbourg February 26 2007.

⁴ Se [http://www.ipy.gl/ilulissat/program/program_final.pdf]

Output in the formal aggregated Arctic economy is equivalent to 25% of the Canadian Economy and 80% of the Saudi economy, and has an output that is larger than the output of the Swedish Economy.⁵ There is also a considerable amount of value added that is created each year. Nevertheless, in terms of monetary currents, there is a larger outflow of incomes and capital, than there are inflows. This phenomenon demands an analysis of the particularities within the structure and function of Arctic regional economies, which results in this dependence upon the “mother economies” of “the South”. Conducive to this analysis is the following research statement:

“Taking the structure and functioning of the Arctic regional economies and the degree of economic dependence as a point of departure, these region’s self-reliance and comparative socio-economic performance is analyzed. The fundamental problem is still the dependency Arctic regions have on their mother economies in the south”

I will elaborate on the terminology of self-reliance below. It suffices to say however, that economic independence is a prerequisite for sovereign Arctic microstates – an issue that is highly relevant in 2009 to Greenlanders with the substitution of Home Rule with greater jurisdictional autonomy due to the new law on self-government. These discussions are relevant for other regions in North America; particularly for self-government in Nunavut, which was established in 1999, but also Nunavik and Nunatsiavut self-government, which shares some similarities with Home Rule Law established in Greenland of 1979.⁶ There are four interrelated approaches, which must be addressed in analyzing the problem of dependence for Arctic economies. These are: globalization, climate change, socio-economic systems, and the level of local/regional vulnerabilities and resilience. The four approaches represent constraints and/or potentials regarding decreasing or increasing the degree of dependence.

In terms of *globalization*, regional competitiveness is an important factor for creating increased self-sufficiency for northern regions. Analysis of

⁵ Arctic Human Development Report p. 70

⁶ Quote: “On December 1, 2005, Labrador Inuit celebrated the beginning of the Nunatsiavut Government. As a regional ethnic government in Newfoundland and Labrador, the Nunatsiavut Government has many of the responsibilities and rights of other governments, such as planning for sustainable economic development, protecting and preserving our Inuit culture and implementing social programs on behalf of our beneficiaries”. [<http://www.nunatsiavut.com/en/indexe.php>]

this kind could involve statistical and econometric methodologies using data on trade, capital and income movements, productivity and technology, and it could involve the issue of export goods and services being either diversified or specialized. Moreover, it includes the very important issue of human and social capital as well as entrepreneurial culture and work ethics.

Additionally, competitiveness statistically speaking, serves as a tool for describing the aggregated Arctic economy's self-sufficiency, and its trade patterns between regions and between sectors. "Holes" in the production linkages or missing interdependencies can be revealed in regional input-output tables that suggest that dependency and economic relations with the "mother economies" determine trade patterns.⁷ Trade statistics, monetary flow analysis and balance of payment statistics can disclose these patterns, and at the same time, tell something about the inter-Arctic trade which does not play a substantial role.⁸ Moreover, such data could reveal the flow of incomes and capital between a region and the centers in "the South". Economic self-sufficiency refers to each regional economy's power to create a value added (wages, rents and profits), that can equalize or reduce the dependence of centers in North America, Scandinavia and Russia. Moreover, the gaps identified in local competences to cope with economy and technology and the need for adaptation of southern transfers of qualifications, can for many Arctic regions explain some of the problems to preconditioning capacity building for self-sufficiency in the globalized market.

Two important factors relating to Arctic dependency are the transnational corporations, which operate in Arctic regions and the transfer incomes from southern capitals to their nation state Arctic regions. The corporations mainly operate in mining and oil and gas production. Mega-projects cannot of course exclude development potentials enhancing the possibilities to create an enhanced economic independence. Requirements for the corporations regarding local employment, competence building and education of the work force, as well as the taxation of corporate profit, are important factors. Nonetheless, the corporations should be considered entities beyond national and regional government control. Capital exports and the boom and bust of northern mining communities tell us the story of a globalized world econ-

⁷ In 2009 Greenland's national income accounting went from income based accounting to production based accounting. Yet national income accounting in Arctic regional economies does not use the same methodology from region to region. A homogenous approach is necessary.

⁸ The Greenland Self-government commission in 2003 including the economic relations between Greenland and Denmark and other countries implemented an analysis of monetary flows.

omy with free mobility of capital and with capital exports based on transfer pricing between subsidiaries of the mother corporation. The question is of course, whether the regions can get significant revenues from taxation. In some cases this has proved impossible. Mining in Greenland for instance never paid off for Greenlandic society.

The globalization issue in this POENOR Yearbook will mainly deal with the issue of southern transnational corporations that operate in Arctic regions. Furthermore, corporations, which operate outside the Arctic but within the global economy, are also within the focus of articles presented here.

An important issue of globalization and the free mobility of factors of production relates to the formulation of policies and reforms, which are impregnated with ideological values. Since the prevalence of the neo-classical paradigm or neo-liberalism (in terms of policy), monetarism and the “Friedmanite” ideology, there has been an acceptance of the free market and private capitalism as being the only road to a prosperous society. Developing countries face neo-liberal conditionalities on obtaining loans from the World Bank and the IMF. The ideology rests on strategies of rolling back the frontiers of the state, while inducing privatizations and liberalization of markets. The Washington Consensus and the break down of the USSR and Eastern Europe represent this paradigm. Supra-national organizations like the OECD also have a homogenous approach to policy recommendations as seen in the OECD report on the Greenland economy in 1999, and in similar country reports from all over the world. Nonetheless, Arctic communities are not typical OECD entities, and they represent a mix of socio-economic systems other than laissez faire markets.

Ongoing *climate changes* these years represent new problems to be analyzed in the context of creating independence in relation to either transfer incomes or to direct investment from corporations in the centers. When the basics still are policy implementation that strengthens the regions ability to promote self-sufficiency, new research is needed as these changes create new problems and options, which impact the ability to develop. Key indicators for development are needed, as are the uncovering of economic and social consequences of climate change in order to create scenarios on impacts to the environment, infrastructure in general including urbanization, energy demand and on sea and other transportation. Analysis of phenomena like these does not only raises questions relevant to the field of

scientific research. It also raises the issue of popular co-determination in the establishment of scenarios and assessments related to this.

In the future it is expected that the Northwest and Northeast Passage will become accessible on an expanded scale, which suggests change in the economics of logistics and the potentials of extracting oil, gas and other non-living resources. Prolonged seasons for fishing and hunting, construction, relocation of housing and infrastructure and repairs and maintenance due to changes in permafrost conditions all represents costs and benefits impacting the Arctic economy. These are new challenges that need to be addressed to ensure qualifications and capacity building. A change in the bio-diversity represents an alteration of the living resource base and the Arctic landscape including coastal and inland regions. This does not only call for environmental impact assessment, it also calls for economic impact assessments and analysis of the resilience of these societies in relation to these new conditions. Furthermore, it raises the question, whether the available competences in handling changes in trades, infrastructure and planning are able to cope with the challenges.⁹

Economically, the global economies are not homogenous places. This calls for an emphasis on a *comparative economic systems analysis* as an approach. Arctic regions are no exception. They span widely – from economies representing remnants of central command systems and dominant state ownership, to markets representing “laissez faire” and dominance of corporate ownership. In between this dichotomy we have a social capitalist Canadian model and a Scandinavian type mixed system model. Besides these systems, the traditional economy still plays a part in the Arctic. Historically the regional economies have practiced different systems over time, which allows for not just cross-country comparisons, but also for cross-sector analysis over time. In accordance with known methods from comparative systems analysis, it is necessary to classify and compare systems. Classifying normally involves types of allocative systems, ownership models, the role of physical and economic planning, types of incentives, sharing, social safety nets and income redistribution and in the political sphere different self-government models and other political models. Empirical comparisons involve dependence indicators and data on macro-economic stability. Moreover, it requires indicators on human development

⁹ Trausti Valsson: *How the World Will Change with Global Warming*, University of Iceland Press or [<http://www3.hi.is/~tv/>]

and social capital data related to the region's present qualifications, competences and social adaptability in relation to handling the need for change. Finally, empirical analysis of the distribution of income and wealth could be a part of comparative system analysis.¹⁰ The work on classifying the Arctic systems as a part of the POENOR project is still under way, and the limitations of databases will determine what is possible in making classifications operational.

Hence, due to this early stage of the POENOR project, this Yearbook will not analyze direct comparisons between different systems on different macroeconomic indicators. Reforming regional economies from one system to another represents another type of comparative systems analysis not conducted here. As suggested above, globalization involves a concept of "modernity" rooted in the notion of the market society. Articles below deal with comparative issues and mainly take privatization and liberalization and alternative reform issues as their point of departure.

The *Local/Regional conditions* are important in defining the social and economic dependency to centers in the south, as well as the impacts of globalization and climate change. They all influence central decision-making, planning and urbanization. The absence of socio-economic analysis may result in a prioritization of the larger towns and cities that are independent of the problems of identifying local business opportunities. Hence, migratory studies are important at the same time as analyzing the different socio-economic conditions of local and regional societies. At this level, differences in the local sustainability of regions and the overall economic performance may demonstrate that societal costs of centralization are high, and that the local settlement's limited capabilities and competences may demonstrate a lack of resilience and a much larger vulnerability. This emphasizes the importance of an analysis of either the dynamics of migration from the local settlements or preserving them. The basis for this is very often related to local competences and learning processes in transforming the new conditions into business and social opportunities. Organizational dependency stabilizes a dominance, which keeps the local communities out of important planning and decision-making processes. In terms of methodology, local studies include social indicators of the presence of dynamic

¹⁰ Distributive analysis based on Lorenz curves and calculations of gini coefficients is still a relatively uncovered field in Arctic statistics. Statistics Greenland has recently presented data on regional distributions and on household income data.

political and business capabilities and competences and the ability and outreach of local authorities to engage in the change processes. Both on a quantitative and a qualitative level, comparisons between local settlements and between regions will offer insights in local development patterns.

To conclude, the 2008 Yearbook does not represent a full-fledged analysis of the problems to decreasing or increasing economic dependence. Each member of the research consortium has been asked to include one or several of the four above approaches in their articles. The terms sustainable development and self-reliance are concepts mentioned in many of the articles. The 2008 workshop in Akureyri brought the consortium further to pinpointing a potential approach theoretically, methodologically and empirically. Future publications will contribute to a clarification on this issue. Yet, the reader is warned, the Yearbook 2008 represents a part of the “brain storming” process of the consortium, and it does not *per se* claim coherence and full adaptation to the problem formulated above.

This does not mean that the Yearbook does not have anything to say. It should be read as a normal periodical with a theme of northern regional development expanded to the form of a yearbook – composed as an anthology of articles. A comprehensive and coherent report/book will finalize the work conceived during the 2007 Skagen workshop, and detailed in this Yearbook.

1.3. What do we mean by “Arctic region”

Besides the geographic demarcation determined by the Polar Circle, there are other definitions of the “Arctic”, which is used by Arctic Monitoring and Assessment Program (AMAP) and the Arctic Human Development Report (AHDR). The AHDR report comprises a preliminary approach to socio-economic analysis, where data compilations could not in all aspects cover AMAPs demarcation (AHDR report pp 17–18). The POENOR project maintains the AHDR demarcation illustrated by the map below.¹¹

¹¹ “People and Politics of the Arctic, Journal of Nordregio no. 4, December vol 7, 2007

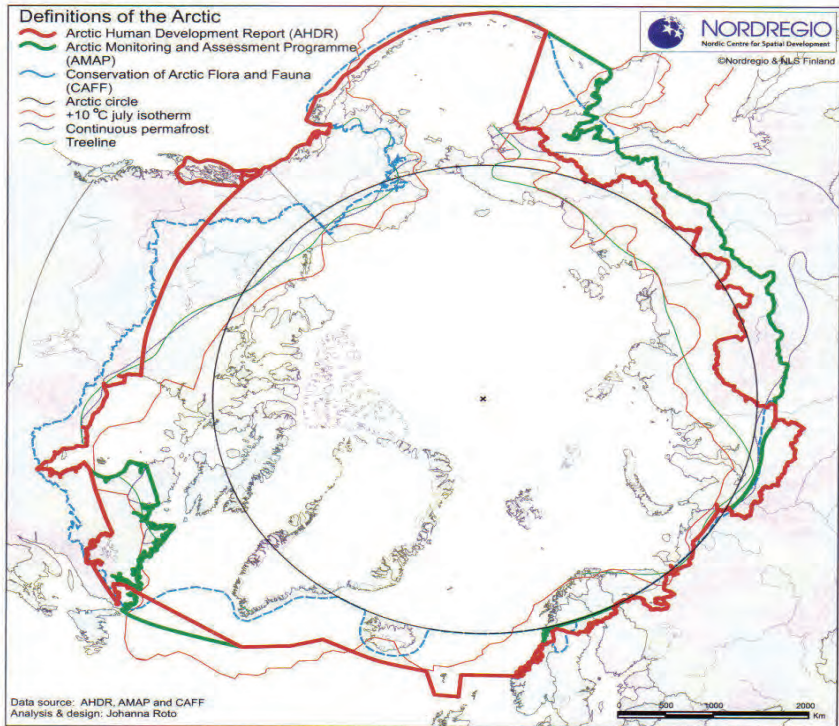


Figure 1.

In the December 2007 issue of the *Journal of NORDREGIO* several demarcations of the Arctic are presented along with the AHDR and AMAP definitions. An eco-system point of departure (CAFF) or a general environmental point of departure (AMAP) along with other physical and geographical boundaries is not operational in social sciences. The AHDR report examines socio-economic conditions, cultural characteristics, along with political and ecological processes. These issues are the most compatible with the intentions of the POENOR project. Moreover, there is a practical issue at play in terms of data compilation. Geographically speaking, it is not on all matters possible to compile data disaggregated. It is difficult for example, to do that on regions in Alaska, and henceforward the whole of Alaska including sub-arctic and temperate regions is included in the AHDR definition. With the exception of Iceland, the aggregate Arctic economy is composed of regional economies, having ties economically,

politically and culturally to their “mother economies” of the south. In most instances, this creates the dependency patterns regarding transfer incomes.

1.4. A decision-theoretic approach to the analysis of Arctic regions

In terms of Economics, the model below can embrace the four approaches to analysis. It is a version I have modified to a regional Arctic economy originally developed by the Norwegian economist Leif Johansen for macroeconomies globally speaking. His decision-theoretic scheme developed as a part of his lectures on macroeconomic planning covers any economy from *laissez faire* markets to central command planned economies.¹² One of the reasons why the model has been modified to Arctic regions is because climate changes as an exogenous factor is of utmost importance for future developments.

Moreover we have a second and a third exogenous factor, because there are two central authorities in the model – the nation state and the self-government state. Globalization itself is an exogenous factor. Dividing the models and adding endogenous factors, this has to do with decision-makers ability to predict or control the impacting factors on the structure and functioning of the Arctic economy.

Climate change, globalization and the nation state (Governments) decisions are beyond the control of either a local central authority (political self-government) or decentralized decision makers (households, enterprises, municipalities and interest articulating associations and organizations). Hence we call the sets Z, C and A exogenous, while the sets S and D are endogenous representing decisions taken within the regional economy. A set is composed of elements representing, either external states and conditions to the Arctic economy, policies of the nation state's or the self-government authority. For example an element *z* belonging to Z may represent the impact of increased oil prices, an increase in international interest rates or exchange rates, changed world market prices on goods and services, or capital exports out of arctic economies. The Element *c* belonging to C could represent climate change and its impacts on access to the resource base. This for example, could be a variable like changes in ocean temperatures, thickness of ice or the measure of the

¹² Leif Johansen: ‘Lectures on Macroeconomic Planning’, vol 1 and 2, North-Holland, 1978

oceans ice area. The element a belonging to the set A represents policies available to the nation state's central authority, and it could be monetary policy from the mother economy in the south (interest rates), fiscal policies (transfer incomes), exchange rate policies (import costs and export revenues for the arctic region).

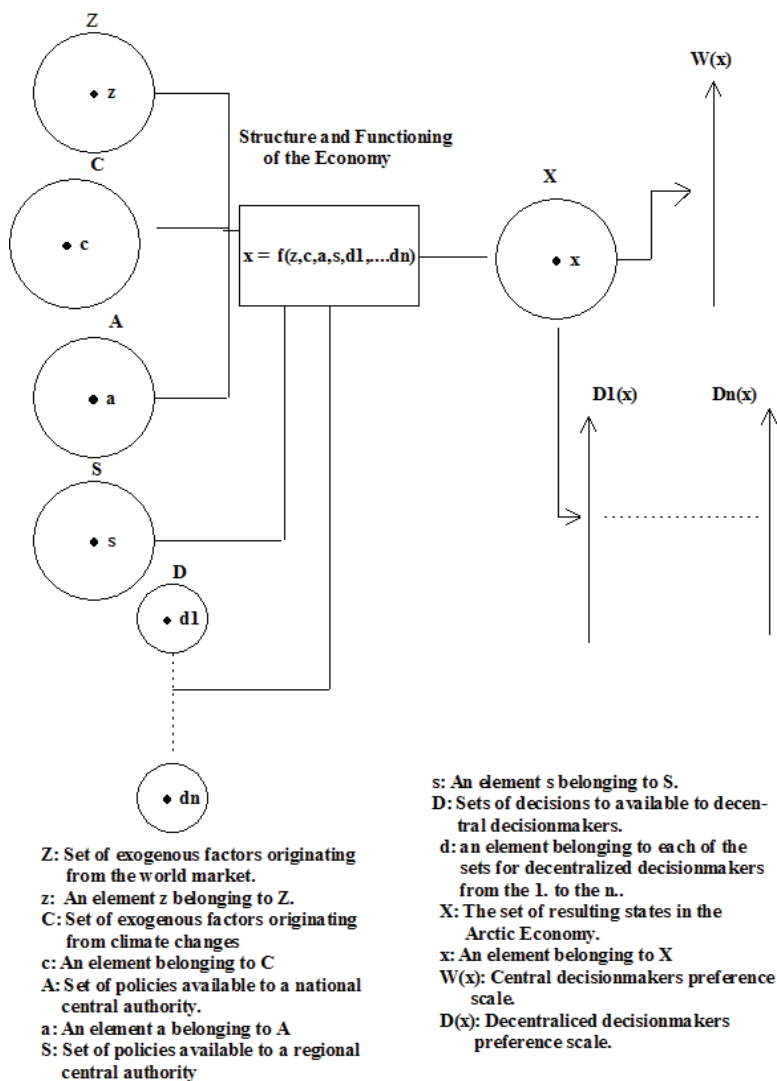


Figure 2. A decision-theoretic scheme for Arctic Economies¹³

¹³ Leif Johansen: Lectures in Macro-economic Planning vol 1, North Holland Publishers, 1978.

Similar with the self-government central authority, it can still adopt its own fiscal policy, industrial policy, labor-market policy, social policy, health and education policy etc. Yet it is influenced by the three exogenous factors, which it cannot entirely control. Hence, forecasting and predicting partly may ease the self-government state's planning processes. The tension between centralized decision-making and decentralized is obvious here. At the same time, it tells us something about the characterization of the economic system. If the decentralized decision makers mainly communicate with vertical streams of information to higher levels in a hierarchy, we have a centralized system – often connected with central planning or a high degree of central control. If the streams mostly are horizontal, we have a system in the opposite end of the dichotomy, representing different types of markets. In between, decentralized decision makers, forms of ownership and activities also characterize the economic system – taking subsistence as a point of departure, the issue at hand is, which other types of ownership structures and activities that co-exist with the traditional Arctic economy.

The issue of centralization versus decentralization, ownership structures and types of economic activities tells us, which economic system is present in the regional Arctic economy, or in the figures terms – about the structure and functioning of the economy.

Combining elements gives a structure and functioning of the economy, hence this is a resulting state x or $x=f(z,c,a,s,d1;.....;dn)$ – of course this can be combined in an infinite many ways (a matrix of structures and “functioning” and a vector of states of the economy x). The structure and functioning of the economy is as well influenced by exogenous factors as the endogenous are, and it is not entirely defined by the issue of centralization versus decentralization in planning. We will discuss that in the next section.

The figure has preference scales $W(x)$ for the central authority and $Dn(x)$ different scales for the number of n decentralized decision makers including the self-government authority. A decision maker can then prioritize between decisions on each preference scale – the question is of course, whether this represents rational decision making based on symmetric information, maximizing behavior and full transparency regarding the outcome of each decisions, or whether it represents a satisficing behavior based on limited knowl-

edge, the second best, rolling and sliding planning or at worst “muddling through”?

Taken as a whole, the scheme could be exemplified like this – say self-government authority has predictions on the resource base of cod and other species in the future, and it has expectations of the world market price for cod steadily increasing and surpassing other species in the future. In addition, there are expectations for cod fishing to provide increased self-reliance, which is attractive to the self-government central authority. Furthermore, it has knowledge on development of interest rates from its negotiations with the nation state. The decentralized decision makers have knowledge of the price development of input prices on cod. This is introduced as a stimulus package from the self-government authority, which aims to introduce cod fishing in the future. All decision makers have expectations of different outcomes of alternative fishing technologies on the preference scales. Yet, cod fishing is highly valuable for the decentralized decision makers and especially for the self-government authority as it yields maximum value added taxes to revenues, which could help decrease economic dependency. Hence this plan is adopted and carried out. If perfect “team solutions” do not exist in all situations including several layers of decision makers, we are moving in to game theory. Conflicts and the introduction of non-cooperative games involve different preference scales. This often entails conflicting interests among decentralized decision-makers themselves, and between the central authority (CA) and the decentralized decision-makers. This does not remove the maximizing procedure, even when limited information is available to decentralized decision-makers. It may however, cause less than an optimal solution unless the self-government authority can guide and regulate the economy in a planned direction using incentive schemes and directives.

Economists having a critical inclination towards mainstream economics have rightly criticized commensurable preferences. This is also the case below in Aslaksen, Glomsrød and Myhr’s article referring standard economics, who argue that the agents of society, companies and consumers are subject to their economic interests as a main motivating force, irrespective of social, cultural and ecological contexts. Ecological economics focuses on the potential of the economic agent to act from responsible self-interest. The authors draw attention to other accounts of rationality besides economic rationality. “Behavior is procedurally rational, when it is the outcome of

appropriate deliberation”. Expressive rationality characterizes actions as rational, when they satisfactorily express rational evaluations of objects and persons: “Practical reason demands that one’s actions adequately express one’s rational attitudes towards the people and things one cares about”. The authors point out:

“Economic valuation methods that only rely on quantitative valuations without taking into account the particular environmental qualities and uncertainties, can appear as “blind” to the natural and cultural values that are difficult to measure. This apparent “blindness” may induce a criticism from other disciplines that questions the relevance of an economic trade-off for valuation of environmental qualities. An alternative is to emphasize that evaluation of environmental values and uncertainties should take place within a particular economic, ecological and social context. Ecological economics focuses on a perspective of multiple stakeholders, each embedded in a social and cultural setting”.

Nonetheless, maximizing procedures have an alternative, which was introduced by Herbert Simon. In relation to the marginalist controversy, Simon introduced *satisficing* as a method that can be integrated into Johansens system.¹⁴ This also means that maximizing utility and profits is not always the incentive for economic behavior, and it could be broadened to include a rationality that is not entirely economic in the neo-classical sense. The responsible consumer may for instance satisfy aspirations, including non-economic behavior, while maximizing other aspirations of a collective and ecological kind. Companies and organizations may be non-profit oriented as presented in Chris Southcott’s article below on the potentials for the social economy in the Canadian North.

¹⁴ Machlup, F. (1946), « Marginal Analysis and Empirical Research », American Economic Review, 36, 519–554. Simon, H. A. (1956). Rational choice and the structure of the environment. Psychological Review, 63, 129–138. Herbert Simon: Theories of Decisionmaking in Economics, American Economic Review, vol 49, 1959. Reprinted in Edwin Mansfield: Microeconomics – Selected readings. Modified to Johansens model in Gorm Winther: Den grønlandske økonomi, planlægning og udviklingsproblemer, Aalborg universitetsforlag, 1988.

1.5. Beyond the decision-theoretic scheme – a multidisciplinary approach?

The decision theoretic scheme could be enhanced in to larger models of the arctic society. The decision model does not contain law and culture and sociological factors as important preconditions for a self-reliant development, and it has not entirely conceptualized self-reliance and its components. Figure 3 was introduced during the POENOR workshop in Skagen by Gerard Duhaime who attempted to introduce a multidisciplinary approach to the project. The preconditions for development have to do with factors of the social system introduced in the figure. Taken as economic factors alone, factors of production such as labor, capital and technology are important factors for development – capital can be both real capital and human capital, and the composition of the factors of production is a precondition for maximizing output Y .

Demographic factors can, regarding labor and human endowments, take the form of capital, and can be a long run factor for development constraints and potentials. Is there availability of labor, education and competences? How many persons will the labor force comprise in the future? How will migration develop to and from the regions (which again may have to do with climate changes and climate belts moving North’)? How many elders have to be provided with welfare?

This is not to say, that it cannot be a part of the Johansen model as this is an element of decision making and planning, at both the central and the decentralized levels of the economy, which are determined as exogenous factors. Migration of labor from the south can on the other hand, have something to do with developments on the world market and price and income incentives.

The inclusion of social factors points to the human development concept explained in Amartya Sen and Martha Nussbaum’s capability approach.¹⁵ Opposed to narrow utilitarianism, human capability takes an extended humanist point of view of needs. Needs, in the Sen-Nussbaum approach fo-

¹⁵ Amartya Sen: *Development and freedom*, 1998. Nussbaum, Martha, and Amartya Sen: *The Quality of Life*. (Oxford: Clarendon Press 1993). Martha Nussbaum: *Women and Human Development*, Cambridge University Press, 2000. This line of thought is also a part of humanistic economics, see Mark A Lutz and Kenneth Lux: *The Challenge of Humanistic Economics*, Bootstrap Press, 1979.

cuses on substantial freedoms. Freedoms argued to be determinants to development include life and bodily health, social needs, and the ability to engage in economic transactions and participate in political activities.

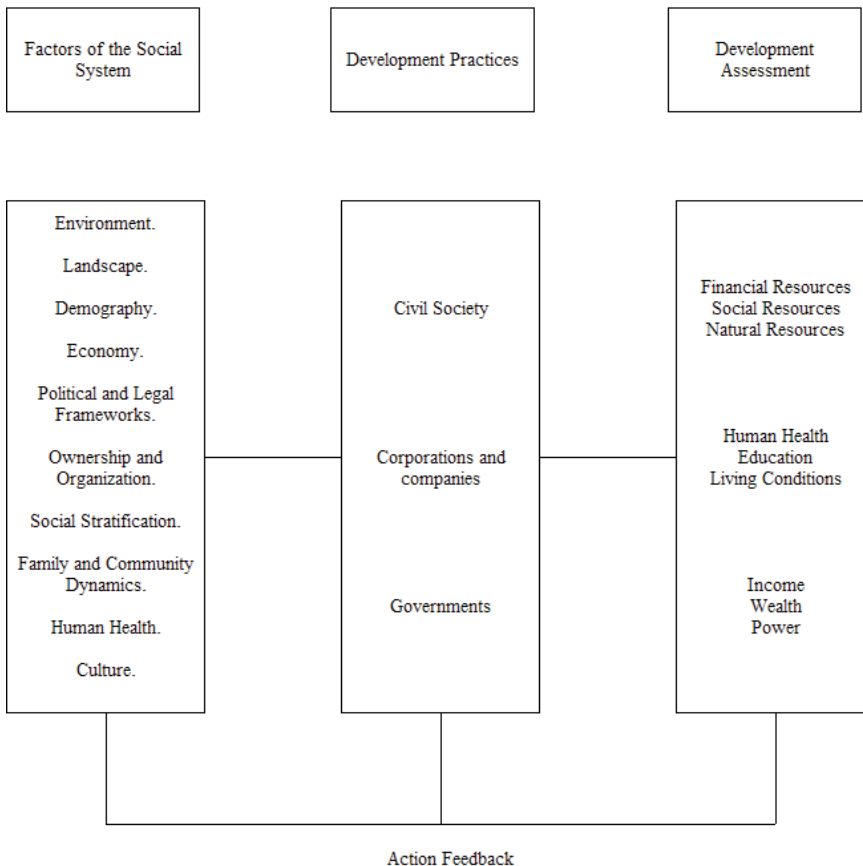


Figure 3. An institutional model¹⁶

Poverty and an extreme unequal distribution of income, power and wealth is a limitation on the fulfillment of human needs and hence a deprivation of exercising each individual's capability. Sen and Nussbaum do not address the issue of participation in economic activities in other ways other than referring to property rights to be held on an equal footing with others. This is major point

¹⁶ Model developed by Gerard Duhaime at the POENOR seminar in Skagen, See Duhaime's article below.

of critique to the Sen-Nussbaum approach, when using it to examine to Arctic societies. Property rights in the traditional meaning of the concept most often imply an unequal distribution of wealth. An equal distribution of wealth refers to a participatory or labor-managed system characterized by democratic control of real, financial, social and natural assets.¹⁷ The question is whether the concept of rational economic man and utilitarian ethics is the right approach to analyze Inuit decision-makers. The “Inuit economic man” may represent elements of utilitarianism and rational decision-making, but the cultural background representing sharing and common harvesting of nature’s living resources points to another direction or a synthesis representing alternative philosophies on human nature. As noted in the SLICA project presented below, the experiences on data compilations called for a revised and expanded concept of welfare, which adapted to the reality of the populations of the North. Although people living in settlements are by far the poorest in Greenland, they still prefer to live in the settlements. The early SLICA survey experiences indicated a need for the development of a new research design for the study of living conditions in Arctic countries and regions, which from an economic, and, especially a cultural point of views, are different from Western Europe and North America.¹⁸ We can add here that this is one example of the neo-classical concept of welfare being inadequate.

The issue of social stratification or distributive aspects, are present in figure 3 as impacting factors and as assessment components. The main issue in neo-classical economics is resource allocation and not the distribution of income, wealth and power. This is yet another analytical constraint on assessing the development of Arctic societies.

The quintessence of this model as an enhancement to our modified Johansen model is, that the last mentioned is a sheer economic model that excludes institutional factors of the social system of an Arctic society. Even though impacts on a self-reliant development path from institutional factors can be difficult to trace in empirical analysis, it would be “economic reductionism” to exclude these factors. As illustrated in figure 4 the output $Y=f(L,C,t,I^*)$ could be higher due to better functioning institutional factors, e.g. extended freedoms and participation ($I^*>I$), that fortify the

¹⁷ Jaroslav Vanek: *The Participatory Economy*, Cornell University Press, 1971, *The general Theory of Labor-managed Market Economies*, Cornell 1970 and (ed) *Self-management, economic Liberation of Man*, Pinguin Books, 1975.

¹⁸ Birger Poppel’s article in the end of this Yearbook.

sheer economic system to a higher degree than $Y=f(L,C,t,I)$. L denotes Labor, C Capital, t technology and I institutional factors.

Enhancing the model and including socio-economic factors also implies an enhanced concept of capital often ascribed to as *social capital* – having reliable and well functioning institutions means, that the problem of asymmetric information and distrust among the systems decision-makers is minimized.

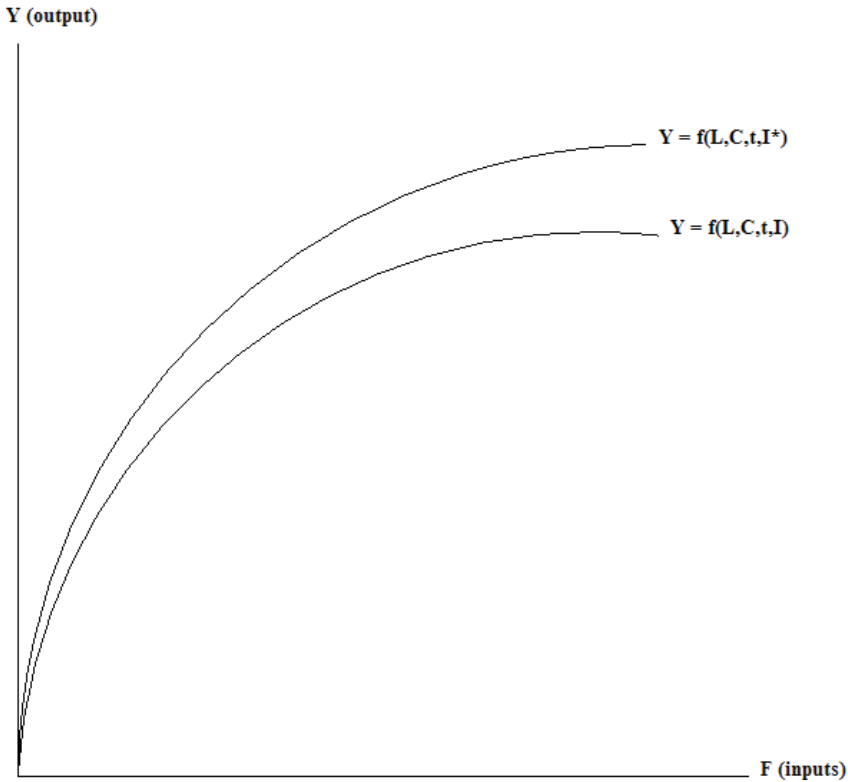


Figure 4. The impact of institutional factors

Development dynamics is understood as interactions between decisions taken by corporations (enterprises), governments and citizens within civil society, but different economic systems is highly compatible with the modified Johansen model in figure 2. Self-reliant development and the regional economy's human and technological capacity to create this devel-

opment in a sustainable and responsible way, still could be part of a decision-theoretic approach as prioritized goals at preference scales.

1.6. Towards a unified concept of “self-reliance”?

Yet, what is self-reliance? Economic independence implies that the absorption (investments and consumption) of an economy is financed by the value added of the economy itself. Yet, regional arctic economies are in some cases dependant on transfer incomes from its nation state economy in the south; and accordingly, the gross disposable national income (Transfers + accumulated value added) is much higher than the gross domestic product (accumulated value added). Moreover, this means that dependence on exogenous factors like financial capital, imports, and technology represent another type of dependence. This other type of dependence is often associated with corporations exporting accumulated profits to companies situated in countries with lower taxes, as seen in third world countries. This dependence can be expanded to include the international financial system, the IMF, and supra-national bodies like the EU. The gist of the matter is whether each regional economy can create a value added, that can be taxed. This added tax base creates substantial increases in revenues for local self-government authorities, that independence gradually is increased. Consequently, economic self-reliance is important, and it is a synonym for economic independence. Economic dependence on either a nation state or trans-national corporations economic control could be substituted by ownership taking the form of regional corporations and community development corporations partly politically controlled at different levels or by local privately held companies or cooperatives. These ownership forms are alternatives and potential carriers of an increased degree of economic independence.

It seems that the dependency can be divided into two concepts, namely *economic* and *organizational* dependency.¹⁹ Organizational dependency represents external experts or techno-structural systems giving powers related to the

¹⁹ The concept of organizational dependency was introduced by Ivar Jonsson in “Reflexive Modernization, Organizational Dependency and Global Systems of Embedded Development – A Post-Colonial View” in *Cultural and Social Research in Greenland*, 95/96, essays in honour of Robert Petersen, Ilisimatusarfik, Nuuk.

“ways of doing things” in southern “mother economies”. This dependency means that local knowledge is not as much included as exogenous expert knowledge in decision-making. Individual choice and devotion from local decision-makers matter, consequently the potential of an agent to influence decisions concerning socio-economic conditions could increase organizational independence. With a higher inclusion of women, empowerment, democratization, economic self-management in companies and less stratification, Arctic societies could reach this stage of development.

The economic implication of a decrease in organizational dependence is often forgotten. However, participation, political self-government and economic self-management in exploiting the resources where possible can increase economic efficiency as often seen in empirical literature on participatory companies, employee ownership and cooperatives. This points back to the institutional factors and the capability approach. Freeing northern residents from organizational dependency implies institution building based on their own socio-cultural factors. This approach would empower people to unleash their capabilities, and strengthens the ability to enhance economic self-reliance.

In essence, the self-reliance concept has both a material and a human dimension, which are interdependent of each other. Human development is a precondition for material development and vice-versa. Human development involves the inclusion of humanism within economics and social sciences, and it involves the fulfillment of needs beyond “*homo oeconomicus*” as indicated in some articles below.²⁰

1.7. The articles

The articles of the POENOR Yearbook mainly focus on socio-economic impacts of globalization, economic systems and climate change. In terms of *comparative systems*, development is described as an evolution from the traditional economic system to a modern system. This involves development towards state or capital controlled systems or mixed systems. This also involves aspects of participatory or stake holding models at the same

²⁰ [<http://www.humanisticeconomics.net/>] – contributors are for instance Simone de Sismondi, Mahatma Gandhi, E.F. Schumacher, Herman Daly, Mark A Lutz and Kenneth Lux and Jaroslav Vanek.

time as it involves a differentiated approach within each of the two ends of the dichotomy. In between central planning and laissez faire markets, there are other systems based on either other planning models or other types of markets. To help us classify Arctic societies, databases presented at the end of this book provide us with access to different data types for empirical comparisons. This approach also involves the dimension of *globalization*.

For the last twenty years, globalization as a neo-liberal economic policy has predominated the political discourse in most countries of the world, including those with Arctic regional economies. Often, these Arctic economies have different types of Government interventions. Either “the percentage of collectivism” is very high as for instance in Greenland and Nunavut, or there are different types of ventures between Government and private companies. Moreover, in the absence of markets – planning, regulations and controls are necessary preconditions for enabling the systems to work. The development globally speaking, as many articles below will show, has a “spin off effect” on Arctic regional economies. Instead of acknowledging state-interventionism as a necessity for a working system, an ideological and euro-centrist approach that reflects neo-liberal policy formulations and the neo-classical school of thought, has formulated the development strategies of Arctic societies. This is not to say that neo-liberalism has prevailed or has been a success. Arctic economies are still not comparable to an OECD economy and probably never will be due to specific Arctic conditions. In order to assess whether the development of system reforms or existing systems have any impact on comparative development performance variables, we need to classify the different systems. These systems have evolved in several ways as indicated by Table 1.

The classification of systems is not just as simple as the matrix suggests. Several of the social coordination mechanisms overlap. For example, a system may have a traditional sector, a dominant state sector, and a small private sector (Greenland). Alternatively, a system may have a traditional sector, a cooperative sector, and a private sector (Nunavik).²¹

It is also possible that a system is composed of a traditional sector co-existing with a former state owned sector (Etatism); or as today it co-exists with the remnants of a former Etatist economy along with a growing capitalist sector (e.g. the Barents region or Chukotka).

²¹ Gorm Winther and Gerard Duhaime: Cooperative societies in Nunavik and Greenland – a Lesson of the Importance of Supporting Structures, *Journal of Rural Cooperation*, 30 (1), 2002.

Table 1. Classification of Arctic Social Systems

Ownership:	Social Co-ordination:			
	Traditional	Planning	Market	Compacts & Agreements
Non-ownership or simple ownership of hunting and fishing equipment	Subsistence economy, (Hunting & fishing, non-monetary relations)	Subsistence Economy in system based on central planning or indicative planning	Subsistence Economy in system based on market allocation	Subsistence Economy in system based on compacts and agreements
State ownership	Subsistence Economy or market socialism an Etatist System	Central planning or indicative planning in an Etatist or marketsocialist system	Market socialism	Compacts and agreements between State owned or socially owned enterprises ²²
Private ownership	Subsistence economy and Capitalism	Indicative planning in a capitalist market system.	Market capitalism	Compact and agreements between private enterprises ²³
Co-operative ownership	Subsistence economy and Cooperative system	Planning in a cooperative system and/or central/indicative planning	Cooperatives in a market capitalist or market socialist economy	Compacts and agreements between co-operatives

Moreover, the classification procedure of for instance, capitalism or etatism²⁴ may cover several systems within each category. Capitalism may be “laissez faire” (e.g. the US), planned (e.g. France) or social (e.g. Scandinavia, Germany and Canada). One way of classifying the systems could be based on the sectoral distribution of economic activities in order to determine a dominant sector. An example of this would be distribution of employment or value added by each sector in order to find differences between the regional arctic systems. This approach could simplify the classification and make comparative analysis

²² The distinction follows Oscar Langes definition of social ownership. Social ownership means, it is all citizens that has a *de facto* control with the assets held in common. State ownership means that a planning bureaucracy control the assets.

²³ Oliver Williamson’s analysis of market and hierarchies refers to such a system creating transaction costs. This system is not based on free pricing and as such it is not a market system in the theoretical sense.

²⁴ Etatism is a system based on a dominant State. Sometimes the term “statism” is used. Such a system has a high percentage of collectivism” (government expenditures share of GDP). It can be the classic Soviet model, remnants of it in Arctic Russia or a modified etatism in Greenland. Gorm Winther: Democracy and Power in Greenland – the Appearance of a New Class?, DIIPER Research series no. 1, Aalborg University 2007: [<http://www.diiper.ihis.aau.dk/research/3397011>]

possible in order to appraise whether systemic factors impede or promote a self-reliant development path.²⁵

The approach of *climate changes* involves impacts on the resource base, on human development, on community development and on macro-economic development. The question is, whether Arctic systems can show resilience to exogenous impacts of the structure and functioning of the economies. Yet, it also involves the presented critique of neo-classical economics being an inadequate approach to a holistic analysis of Arctic social systems. The essence of the POENOR approach described above is that the three approaches the globalization impact, the systemic impact and the climate impact are tangled together as complex impacting structures imposing constraints and possibilities on a self-reliant development path.

Finally, articles on the use of databases (ECONOR), and the databases themselves are presented in this volume. These are necessary prerequisites for implementing the POENOR project's empirical analysis. The situation on data access for comparative analysis has in recent years, improved with access to ARCTICSTAT and SLICA.

As mentioned, the tension between centralized and decentralized decision-makers could in a *comparative systems context* represent a dichotomy scale between plan and market and between state and private ownership. On the other hand it could also reflect the search for a "third way", that is in between the poles of this. *Gerard Duhaime* suggests a comprehensive approach to arctic social scientific research in his article "*Theoretical Foundation for the Study of Arctic Development Models*". His approach constitutes a search for alternatives to development paradigms based on either the state or market. Referring to Amartya Sen's and Martha Nussbaums enhanced model of human capabilities, Duhaime is looking for a way to include local indigenous people in decision-making. In his article, a humanist development model is presented as an alternative to neo-liberal practices, and to state involvement from "the South". The various economic practices for resource exploitation – customary land uses and large-scale extraction activities – are usually seen as separate worlds, a vision that traditional scientific disciplinary barriers have accustomed us to. Du-

²⁵ This work commenced at the POENOR workshop in Akureyri, Iceland. Having classified the systems, it will become possible to analyze classification variables in relation to macro-economic indicators, human development indicators or material well being indicators (the ASI project). Forthcoming POENOR publications will report on the results of these statistical measures.

haime is of the opinion, that the conditions that create these practices, and their impacts, are all part of the same Arctic economic reality in a global context. Mega-scale projects are facing the growing political power of Aboriginal peoples of the Arctic, their claims for local benefits and their concerns for improving living conditions, and for sustaining their communities. Challenges of Arctic development require the drawing of a global picture of the Arctic economy. Comparisons within this global context, of economic practices, their various prerequisites and their various impacts have only recently been initiated. By adopting such an approach, it could be possible to arrive at a comprehensive analysis of Arctic development models and to shed light on their specific effects on local residents’ control over resources, human health and education, social integration, living conditions, economic equity and local participation in decision-making.

Jack Kruse lends some support to Duhaime’s approach regarding the compatibility of analyzing *the traditional economic system and a modern economic system* based on mega-scale projects. Kruse in his article “*Sustainability from a Local Point of View: Alaska’s North Slope and Oil Development*” raises the question whether large-scale multi-national corporations can interact with local communities. He asks whether there are circumstances in which world scale resource development can increase the sustainability of local communities. Based on quantitative interviewing of North Slope Iñupiat in 1977 and 2003, his findings suggest that the Iñupiat were as well or better off than their Iñupiat neighbors in the Bering Straits and Northwest Arctic regions, the indigenous people of Chukotka, and the Greenlandic and Canadian Inuit. Hence it seems, that combining the traditional economy with large-scale capitalism or local “peoples capitalism” (regional corporations) does not reduce human well being. Indicators in the empirical analysis included variables from the Arctic Human Development Report (AHDR) in describing well being as material success, good health, access to education, ties with nature, cultural continuity and fate control. These variables are based on questions asked of community residents in face-to-face interviews. Critical to understanding these results is that the Iñupiat of the North Slope successfully established a regional government in 1972, the North Slope Borough. The Borough’s regional boundary includes Prudhoe Bay Development and the legal right to tax energy development facilities on state land within the Borough, to which the Borough has retained substantial revenues from these taxes. These revenues have

supported a capital improvements program that has employed many North Slope Iñupiat

In the article “*The Social Economy and Economic Development in the Canadian North: Constraints and Opportunities*” Chris Southcott elaborates on Duhaimes “third way” approach as being in between state and private ownership, and planning and free market approaches. The social economy understood as co-operatives, non-profit organizations, voluntary NGOs and other quasi organizations operating in between state and market is a possible instrument to deal with economic challenges faced by communities in Canada’s North by enhancing economic empowerment. A discussion of the region’s economic development shows the constraints and opportunities facing the social economy. While political self-government is in the making it is unfortunately not the same as economic self-management. However, attempts to expand the social economy in Canada’s northern communities must first properly account for several unique characteristics of the region’s economy that may provide constraints or opportunities. The traditional economy of indigenous communities, the role of the state in economic development, and the impact of resource development in the North are important characteristics that impact socio-economic development in the region. How they impact social economic organizations must be properly understood in order for proper policies to be developed that stimulate the growth of the social economy in the region. Southcott has established the Social Economic Research Network for Northern Canada to fulfill such a purpose. It is a network of university-based researchers and representatives of community-based organizations, who operate as partners, to conduct research relevant to the social economy of Canada’s North. The network seeks to mobilize new knowledge that will help develop social economy capacity in northern communities. It has developed a series of key research areas that hope to build on the existing research findings.

In a *comparative system* context the question of decentralization in its traditional approach appears as *privatization and liberalization* reforms. Regarding privatization Hans Aage in “*Enterprise Ownership and resources management in Greenland*”, analyzes the balance between public and private governance within the economic activity in Greenland on the basis of economic theory. In Greenland, all conceivable forms of market failures impair the efficiency of the market. Government interference is

imperative, primarily because of social externalities and resource dependence, but it entails risks of policy failures, i.e. unproductive rent seeking. The advantages of government and market governance are not combined in state owned joint stock companies, which on the contrary, are often (local) monopolies. These monopolies are largely exempted from all types of checks, from the market as well as from government. The inability of government to make long-term commitments is an argument for the devolution of power, and in some cases, even to the market by privatization. However, when strong social externalities and resource management are involved, the arguments points towards either state enterprises with full democratic control, or delegation of policy making power to an independent professional body subject to detailed and binding prescriptions. Contrary to Duhaime and Southcott however, Aage is skeptical about the feasibility of a third way based on democratic ownership and control by members of local communities.

Liberalization, and the introduction of a market society in an arctic region, raises concerns over possible distributive effects and as *a worst-case scenario* poverty. Greenland has hitherto relied on state ownership and planned prices based on cross subsidization. *Gorm Winther* in his article “*The Reform on Uniform Prices and its Consequences for Households in Greenland Settlements*” presents reforms on the uniform price system. Although seldom articulated by political decision-makers, the consequences of reforms appear to encourage an exodus from smaller settlements into towns. The reform package is a gradual transformation on several prices on different goods and services hitherto being uniform and based on cross subsidizing. The case analyzed in the article is the 2005 reform to utility rates for households in settlements. The intention of the reform was to create so-called “cost based pricing” which divided Greenland in two parts – the “competition towns” of Qaqortoq, Nuuk, Sisimiut and Ilulissat did after the first year after the inception of the reform saw an immediate price decrease of 50%, and the remaining part of Greenland should over five years gradually see a 50% price increase. The motive behind a two-tier reform was that tax cuts should equalize price hikes on energy and water in “loser towns and settlements”. Nevertheless, one can hardly doubt that this tax reform will not be able to capture the price and tariff increases of this kind. Settlement household’s purchasing power will be decreased if not compensated in some way, for the massive spending increases. We still, however, need a more

accurate picture of how many households in the “loser cities and settlements” that are affected by the combined tax and price reforms. We also need a more accurate picture of the impact to utility costs for households due to fluctuations in world oil prices.

The *privatization and liberalization* urge is not just something that relates to Greenland, it also relates to Iceland. For the last twenty years, globalization as an economic policy has predominated the political discourse in most countries of the world. Since the nineties, when Iceland privatized its state bank sector, the economic structure and the class structure have been changed. Using the example of Japanese transnational corporations and the Keiretzu, which refers to families or networks that manage these corporations, *Ivar Jonsson* describes changes in Iceland as a kind of “mini-keiretzu”. Consequently in the article “*Approaching the New Transnational Capitalist Class and the mini-keiretzu system in Iceland*”, he sees three privatized banks in Iceland as being the core and base of the growth of three closely knitted webs of related companies in the retailing and transport sectors. These companies and the banks build their strong financial position on oligopoly stricken markets in Iceland that they then use to exploit Icelandic consumers in order to collect oligopoly-rents. Investments abroad in their original branches of industry are based on these rents. A new layer within the Icelandic capitalist power block emerged that was mainly rooted in the financial sector and with direct investments abroad, with a large extent financed by foreign external finance. Jonssons article was written one year before the international economic slump and the severe crisis of the Icelandic economy in 2008. Jonssons future analysis of an “absentee capitalism” in Iceland will be no doubt influenced by these developments. The question is, whether or not this new layer of transnational capitalist class can survive after the collapse of the Icelandic financial sector?

In *Lyudmila Zalkin’s* article “*Local Implications of Housing Reform in Northern Regions of Russia*”, she touches upon yet another element of privatizations – the housing market and the situation regarding upcoming markets for dwellings in Russia. Reforms were established in the nineties, and yet in the North, the implementation still is lagging behind, compared to the average standards in Russia. Some of the reform’s goals have been reached. Markets of dwellings have been established, and tenants have participated actively in dwelling privatization. However, acquisition of

property rights for many people is not associated with new rights and responsibilities. For a majority of people, dwelling privatization may only be a possibility to devolve. On the whole, therefore, the housing reform may follow a direction, which is opposite to the inhabitants' expectations. At the same time people don't think about themselves as being participants in the reforms and don't propose to change the course of events. The situation in Northern Russia is an attempt to move from one economic system of central planning to a market capitalist system. Here we see similarities to Greenland, where privatizations of dwellings have been underway in more than 10 years without obtaining the expected results. Privatization of existing housing complexes in Greenland has failed and although many incentives have been created to encourage private ownership of homes, most housing is still based on renting instead of owning.

Iulie Aslaksen, Solveig Glomsrød and Anne Ingeborg Myhr emphasize in their article "*Climate change and economic system impacts on self-sufficiency constraints and potentials – perspectives from ecological economics*" that both *climate change* and *economic systems* impact arctic economies. Exogenous factors like the impact from *climate changes* and *the global economy* strongly influence the self-sufficiency constraints and potentials of the Arctic societies. Traditional approaches to economic valuation may not be sufficient to capture these relationships. Neo-classical economics and the trade off model look upon nature as a good commensurable with all other goods, and henceforward there is a substitution possibility. The rational self-interest and "homo economicus" is however, not the same as responsible self-interest included in ecological economics. This suggests broader approaches to environmental uncertainties, which take into account ethical values and conflicts of interest. In order to enhance the potential for sustainable development and self-sufficiency, precautionary approaches require the development of processes for the acknowledgement of uncertainties, facilitation of stakeholder participation, recognition of ethical values, and taking into account the traditional ecological knowledge of indigenous people of the Arctic. As do other authors in this book, Aslaksen, Glomsrød and Myhr question the model of centralized decision making. They do so not unequivocally in order to substitute it with the laissez faire market represented by "economic man" and the trade off model, but to consider the participatory decentralized approach of local knowledge. Here we see a parallel to Duhaimes thoughts on a humanized

system framed within Amartya Sen's and Martha Nussbaum's capability approach. We also see parallels within Southcott's article on the social economy in the Canadian North.

Hugo Reinert, Svein Mathiesen and Erik Reinert in their article "*Climate Change and Pastoral Flexibility: A Norwegian Saami Case.*" identify four levels of Saami reindeer herding flexibility in adapting to the impacts of long-term climate change. At the same time their article addresses the impact of climate changes and the issue of centralization versus decentralization in decision-making processes in Northern Norway. The four coping strategies are spatial flexibility, herd structure, production and social organization. By decreasing the loss of pastoral land and counteracting the destruction of ecological niches, herds have the ability to cope with the changes. Enabling and facilitating the restructuring of herds in such a way that diversification can withstand dramatic climate change, is a second coping strategy. A third strategy relates to input – output linkages, decentralizing control from outside monopolized markets in terms of selling reindeer meat. Being a seasonal product, reindeer herders' interests are not served best by outside forces, and this suggests, it is better to devolve a degree of control to the reindeer herders themselves. This leads to a fourth recommendation for decentralizing social organization, which as mentioned by Aslaksen, Glomsrød and Myhr includes an enhancement of local stake holder participation. The Norwegian State as a central authority in the decision-theoretic scheme maintains centralized control over reindeer herding, which is rationalized from thoughts on regulations evolved from traditional agriculture. Association in collectives as was originally the case among Saamis in "siidas" suggests the need to downscale and decentralize in order to reform the structure and functioning of the Saami economy in accordance with traditional systems. The authors final recommendation resembles the article's above mentioning participatory systems as being an alternative to both etatism and market capitalism.

Joan Nymand Larsen's article "*Climate change, natural resource dependency, and supply shocks: The case of Greenland*" describes the volatile cycles of development in post-war Greenland. Lack of diversification and lower per capita incomes create an unstable environment. In general, the instability problem, which is likely to be linked to an uncertainty about availability of public and private resources may complicate development planning and reduce the rate of growth. This problem can be even more

severe due to future impacts from climate change and as such it represent the scenario in the decision-theoretic scheme representing exogenous factors beyond any control from a national or regional central authority and from decentralized decision-makers. Uncertainty is related to the difficulty of modeling the events and obtaining good and reliable data. According to Larsen, climate change and other processes occurring at a rapid pace, combined with limited observational infrastructure, and a lack of timely, appropriate and reliable data and information networks, present the research community with new challenges. One could add here that processes of comprehensive physical and economic planning need these data and models. New demands are placed on access to data for the study and modeling of these global processes, and for understanding, measuring and predicting the impacts of change on social systems at various scales.

Rasmus Ole Rasmussen takes as his point of departure from discussions regarding *consequences of ongoing climate change*. In the article “*Climate Change, Informal Economy and Generation and Gender Responses to Changes*” discussions tend to disregard the fact that there seems to be measures within the communities, which are able to cope with very substantial changes. At the same time the discussions tend to forget that there are other ongoing social processes which, independent of processes of changes in climate, may become much more decisive for the future of many of the settlements. This analysis focuses on three elements. First, it should not be forgotten, that the contemporary climate change is not exceptional. During the last millennium Greenland has been exposed to massive changes in climate, which has had both positive and negative consequences for the living conditions. Second, communities in Greenland tend to react to changes, and here the traditional economy and the role it plays in adjusting community life as well as adjusting to environmental, economic, as social changes is emphasized. This role is not specific to Greenland, and therefore a few references to other parts of the Arctic and their experiences with contemporary informal economic activities are included in the discussion. Third, the discussion focuses on the ongoing social changes, as these changes seems to have much more influence on community life and settlement patterns, that future climate changes may turn out to have. The social changes are much more rapid and showing more influences on restructuring the settlement pattern, compared to the anticipated changes in climate and environment. As Martha Nussbaum referred to above in the

capability approach, Rasmussen puts an emphasis on womens’ freedoms representing another economy than the traditional economy. In terms of demographics this creates an out migration of women and settlements mostly populated by men exercising their traditional trade of hunting and fishing.

As emphasized, of utmost importance for research in development in Arctic regions is *access to databases* and empirical analysis based on these. The Arctic Human Development Report pioneered social scientific analysis and within the field of economic systems. The ECONOR project from Statistics Norway took this work further as did the ARCTICSTAT and the SLICA project. ARCTICSTAT is the only comprehensive social scientific Database available today.

All three, to be presented below, are stepping stones to further data compilations and empirical analysis. In Solveig Glomsrød’s and Iulie Aslaksen’s article “*Presenting the Economy of the North (ECONOR)*” based on ARCTICSTAT and other sources, some basic facts to the Northern regional Economies are introduced. One may get the impression, that the Arctic plays a minor role in the global economy. Yet, the Arctic has abundant natural resources, from petroleum and minerals, to fish and forests. Given the important role of the Arctic as a provider of raw materials of all sorts, natural resource management is crucial, and is likely to become even more so in the future due to climate change. One example is the challenge encountered if there are changes to the migratory pattern or an extension of a fish stock. Another example of possible changes is associated with the management of mineral resources and fossil fuels. Pollution issues will also be of increased importance as economic activity expands in the Arctic. Pollution migrates across borders and affects global public goods like clean air, water, biodiversity and wildlife. These issues will also result in increasing demands on transnational mechanisms for coordination. The authors concludes that among several good reasons for compiling an overview of the circumpolar Arctic economy – there is a need for an information platform from which to assess the sustainability of the Arctic communities in terms of natural wealth management and vulnerability towards global policies and trends.

Gerard Duhaime and *Andre Caron* give a comprehensive overview of the first inter-Arctic database which is taken up in their article “*Analyzing Arctic Social Realities Through ARCTICSTAT*”.²⁶

The currently available statistical data dealing with Arctic populations comes from multiple sources. Such a diversity of sources makes consulting and using this data difficult. ArcticStat was created in order to overcome these difficulties. It is a data bank that contains socioeconomic data dealing with more than 30 Arctic regions grouped as a coherent and systematic whole. This grouping facilitates the description, analysis, interpretation and comparison of the living conditions of Arctic populations. Their article presents the delimitation of the territory covered by ArcticStat, as well as the general method that was used to locate the sources and data, the choice of indicators, and an analysis of the statistical content of ArcticStat. It also highlights certain limitations inherent in this content. Moreover, it proposes a few precautionary remarks to researchers who wish to use the data found in the bank, to make comparisons between the various regions of the Circumpolar Arctic. The warning is framed within examples of important conceptual and methodological differences in the production of the various national agencies from which the data originates.

Birger Poppel in his article “*Some data sources on people, peoples, communities, regions and human activities in dreemland*” presents us with another reference to the comprehensive database SLiCA.²⁷ In the article we are both presented with data access in a Greenlandic context, as well as SLiCA information specific to the Greenland part of SLiCA. The SLiCA model and relevant literature are presented to the reader through annexes. Results from the SLiCA survey are now available on the project web site, in published articles and could be made available by special agreements with the research team. The results have already proven useful to initiatives such as the Arctic Social Indicators project and to a number of other Arctic Council and IPY endorsed projects such as ECONOR and POENOR. SLiCA has linkages to some research projects, which focus on data gathering and management as well as establishing monitoring systems and networks to document the physical and biological changes within the Arctic. Furthermore, descriptive studies of two Greenland municipalities have been part of the point of departure for discussions about community devel-

²⁶ [<http://www.arcticstat.org>]

²⁷ [<http://www.arcticlivingconditions.org>].

opment. SLiCA is both a concept and a set of results. SLiCA as a concept can be applied to future enhancements of the Arctic observation system and it can help inform policy makers, indigenous organizations, and researchers.

The POENOR project does not partake on a complete historical overview of Arctic development. Even so, the Skagen workshop had one presentation relevant to a historical approach to examining Arctic development in, *“Comparative-historical analysis of farming systems and agricultural intensification in medieval and early modern Iceland”* by Jon Haukur Ingimundarsson. Ingimundarsson’s article hypothesis is concerned with the productive farming system of the Icelandic Commonwealth (10th to the 13th century), which developed in conjunction with an elaborate socio-political structure that was supported by a relatively large population compared to the subsequent five centuries. Moreover, this period saw development of a form of mercantile exchange and surplus distribution. The intensive early Icelandic farming system is compared to the characteristics of intensified livestock production and trade during the 19th century, and the first two decades of the 20th century. Specifically, Ingimundarsson first gives an overview of the integration of a broad-based subsistence economy supporting specialized sheep production and yielding surplus wool for export in the “medieval warm period”. Following this overview, he elaborates on a chiefdom formation, or the economic rule of merchant-farmers. As a third issue, Ingimundarsson examines how freeholder production intensified in the context of mercantile activity, rural credit systems, and kin- and municipally-based insurance systems. Fourth, he describes a subsequent de-intensification, and a change to a farming system emphasizing sheep reared for efficient milk and meat production. Finally the rise of rent tenure, communal property rights, and tributary systems in contexts of developing ecclesiastic institutions and colonial relations with Norway is presented.

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2. Theoretical foundation for the study of Arctic development models

G rard Duhaime²⁸

I will never forget the fish, the hundreds of iridescent dead fish that floated on the rancid and oil-saturated water around the wharfs of the refineries. They were the standard welcoming committee. the spectacle that greeted us each time the tugboats pulled us into port. The ugliness was so universal, so profoundly linked with the lucrative activity and the power associated with the money of those who earned it – to the point of distorting the landscapes, totally turning the natural universe upside down – that it began, despite my aversion, to inspire a sort of respect. If we look at things closely, I said to myself that is what the world is all about. Whatever one may think, this ugliness is reality.

Paul Auster, *Le diable par la queue*. 1996. Paris, Acte Sud, Poche 14920, p. 74. (Our translation from French)

2.1. Development models

Development is not some mechanical phenomenon whereby the introduction of capital in a region results in general prosperity, a conception that presupposes that the interrelations between the actors involved follow an inevitable direction. Instead, it is a complex process bringing into play a multiplicity of actors and interrelations. Nevertheless, I suggest that the observation of development is likely to reveal co-occurrences between the aspects of the phenomenon based on models of interrelations between the

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actors. In given regions, one would find similar characteristics concerning, for example, economy, the health and education of the population, the political system, corresponding to certain regular occurrences in the relations between civil society, the State and corporations. I tested this approach in Northern Quebec, subdivided into ten ethno-geographic regions, using nine indicators (Duhaime and Godmaire 2002). This examination revealed four main models (and variations) of northern development, which are mainly distinguished from one another by the type of exploitation of natural resources and the characteristics of the population. In those regions where the exploitation of resources is practiced on a large scale, the populations benefit from the economic spin-offs of development. But the populations do so in different manners, directly because the families earn their living from this development, or indirectly because the populations in question have been able to capitalize on the attraction exerted by resources. In those regions where the exploitation of resources takes place on a small scale, where prosperity is no longer ensured by mechanisms which in the past were efficient, the general situation is deteriorating not only because the economic infrastructure remains weak, but also because the populations do not have the political weight to change things. In this perspective, the ethnic factor would be a determinant that is much less important than the presence of massive resources and the ability to take advantage of these resources locally.

These empirical generalizations suggest that the approach of development “models” in the North may be profitable for underscoring similarities and differences, as well as factors that seem to have a decisive influence on the configuration of development. This approach must now be tested at the circumpolar level, where the differences could be much more marked due to the number and the diversity of the regions, the economic and political systems, whose elucidation could provide insight into the major factors of the processes in question. But there is more. These empirical generalizations may lead to theoretical generalizations, if we are willing to explore their potential. Do these generalizations comprise more than a typology of actors and their relations? Do they correspond to processes whose most important theoretical dimensions have only been explored to a very limited extent? In summary, if we plausibly assume development models, may we not deduce from them a theorization of the development process, where the variations would be but manifestations of more fundamental phenomena?

2.2 Deliberate action

If the observable development reveals similarities and variations, a research initiative that adopts this premiss must address two preliminary questions. First, are the observable models the result of the deliberate action of the actors?

A similar vision would first presuppose that the actors share similar motives for taking action and secondly that they implement coherent methods when carrying out such actions. Development brings into contact the corporation, the government and society in a given geopolitical area. Each of these social actors is pursuing its own interests, which it promotes more or less effectively depending on its capacities. Each of these actors represents realities, whose large complexity can only be mentioned. The corporation is a legal entity bringing together capital with a view to making it flourish. The government is an institution that redistributes the resources levied from corporations and society. Society is all of the social institutions other than the corporation and the government: it is the plural universe of individuals and the multiplicity of their social roles, associations (unions or voluntary associations for example) and institutions (family or church for example). The specific interest of the corporation is to make profits in order to redistribute them among its shareholders. To achieve this goal, the corporation will endeavor to impose its interests and the means to attain them on the other two collective actors, namely the government and society. The government redistributes collectivized resources according to the perception that it has of the common good. The corporation seeks to impose its vision of the common good on the government. Neo-liberal societies have governments that endorse this corporate vision and that seek to impose it on society. Society participates in these interrelations in various ways; it may simply contribute by its consenting silence, which in fact allows the corporation and the government to pursue their own logics; it may participate actively by indicating its preferences or claims; it may endeavor to impose its interests by impassioned representations, revolt or rebellion (Bergeron 1977).

Globalization is the process, whereby the domination of the institutions of western capitalism spreads. It is achieved by the growth of “transnational” corporate practices and by their pressure on national governments, popularized by international political-economic authorities, in order to give free

reign to these practices. It leads to a devalorization of local practices (corporate, governmental and social), to the generalization of the “comprador” mentality and the consumer ideology, and so on (Sklairs 1991). From that moment on, the observable development should obey this fundamental process, and its variations should be less the result of a departure from the process than the impact of local conditions on the process. For example, in a given region, the sharing of the profits of corporations with local forces would not contradict this approach, but would reveal a degree of political organization of civil society rendering it capable of imposing certain constraints on transnational practices. Similarly, the protectionist impulses of a State would reveal local conditions, like the temporary reaction of political powers to certain pernicious effects of globalization. Thus, the actors would approach development based on a vision that would first be imposed by international institutions capable of influencing their actions: more or less imperative recommendations of the International Monetary Fund and the World Bank drawing inspiration from a credit rating assigned to States by agencies “playing the institutions’ tune”, and so on. Put in another way, local players would follow the directions imposed by transnational actors in their development efforts.

This perspective is certainly not invalidated by the contemporary trends toward dismantling the Welfare State, such as the application of budgetary policies promoting a “zero deficit”, the “rationalization” of social policies (namely the systematic reduction of the social safety net created since the generalization of Keynesian policies), the growth of state benefits granted to corporations. While this perspective helps explain a large number of observable phenomena in the transformation of societies, it does have its limitations. Indeed, this perspective would lead us to see opposing trends as temporary failures, as social deviations, which sooner or later would be overcome by the inevitable rationality of neo-liberalism. These limitations are based on a monolithic and misleading vision of social action, whether on the part of the corporation, the State or civil society. Of course, the fundamental motive of a corporation is to maximize its profits; that does not mean, however, that the actions obey uniform or universal mechanisms.

Observation has shown that, even in this universe where the means and the ends of the action and their relationship are explained to a very high degree, agents find their way according to intuitions and anticipations of the practical meaning, very often leaving the main elements at

the implicit state and embarking, on the basis of the experience acquired in practice, upon practical strategies, in the twofold sense of non-theoretical implicit elements and convenient elements, which are adapted to the requirements and the urgencies of the action. (Bourdieu, 2000, p 20–21; our translation from French)

In summary, while the corporation maintains its course toward its destination, it navigates according to the mariner's art rather than according to an exact science, which would ignore the real constraints associated with the operation of the vessel, headwinds and opposing currents, for instance, and which would result in a shipwreck. The same is true for the action of the State. While the perception of the common good, which presides over the redistribution role played by the State, is dominated by the neo-liberal credo (validated by the predominant current in the economy) that general prosperity is achieved by ensuring the prosperity of private enterprise, thus requiring the abolishment of all impediments to the freedom to "do business", the production of the State does not universally abide by this credo. The production of the State is so diversified, its organization so complex, the questions which the State is called to rule upon belong to so many different fields, and the pressures to which the State is exposed come from so many sources, that the resulting decisions often contradict one another. Civil society itself is characterized by these contradictory trends. In short, development cannot be understood solely as the inevitable result of the deliberate action of the actors who purportedly have a uniform vision of their basic interest, a vision, which at the present time is totally dominated by the ideological apparatus serving globalization.

The examples of the past abundantly show that such a thing as planning from the top does indeed exist and that it exerts an influence on the course of development, as evidenced by the major work sites having presided over the economic organization and local structuring of Greenland, the construction of the villages of the Canadian Arctic, and of course, the Soviet exploitation of the Far North. Contemporary examples also show the clear influence of international economic/political organizations and transnational practices on development. The "structural adjustments" having led to the budgetary deficit reduction policy hit Nunavik much harder than they did Québec as a whole, causing a precipitous decline in public expenditures but also in the purchasing power of residents, just as transnational corporations were taking control of the rich nickel deposits intended for

exports. The same “structural adjustments” having led to the privatization of some of Greenland’s government corporations increased the role played by Danish capital on the island, whereas the island would have preferred to gain more freedom from the metropolis. But there are counter-currents (such as the invention of innovative social policies or the improvement of some of them); above all, there exist results of development which cannot be accounted for by an approach founded on the deliberate action perspective, as if the collective actors were in fact unified entities, having a unique and perfectly coherent conscience; unless, of course, one explains the deleterious phenomena as being deviations brought about by confused souls who are temporarily at the helm, phenomena which should disappear in time. Contrary to the neo-liberal credo, the prosperity of private business does not inevitably lead to “general prosperity” (except where the claim is made that an increase in the GDP is synonymous with general prosperity), but instead accompanies the growth of injustices; nor does the abolition of the obstacles to the flow of capital have the purported effect, increasing instead impoverishment in those countries experiencing massive relocations (where the social net has been overly extended, making assistance to the unemployed more precarious), as well as the injustices in newly invested countries. Moreover, these examples support the criticism of neo-liberalism and the validity of its theoretical argument, which then appears as an ideology rather than as established knowledge.

The determinist approach alone is insufficient to explain change. Inherited from the sociological tradition, it is today complemented, even invalidated, by other approaches that maintain that change is less due to the deliberate intention of meta-actors acting rationally than to the combination of individual choices, partially determined and partially freely consented to. In this perspective, which we consider complementary, that of methodological individualism developed in particular by French sociologist Raymond Boudon, the examination of change presupposes investigating the field of expression of the free arbiter, once the multiple sources of social determination have been established.

Consequently, while development reveals consistencies, similarities and co-occurrences, the latter are perhaps less the expression of a predetermined history than the result of the transformation of history by the reflexivity of actors, by the variations of their perceptions in relation to the basic purposes that cause them to act, by the plurality of the actions which

they take and whose coherence with the ends sought is not necessarily automatic, notably because they are mediatized by a multitude of interactions. From that point on, to understand the sources and the dynamics of development, it becomes necessary to survey the actors and the normative sources of their actions, to examine the relations between them, to show the empirical processes at work and to report on the results, including those, which cannot be explained

2.3. Development meaning

While observable development reveals similarities and variations, in short models, a research that adopts this premise must address two prior questions, as I have mentioned. The second is the moral question, namely that of the *meaning* of development. The neo-liberal vision of development is an ideology dressed up in scientific garb, which claims that the increase in the Gross Domestic Product is empirical proof of its validity. This is an instrumental vision of development, the final purpose of which is the generalization of the market economy across the entire globe, which does not, however, mean that this approach does not work: The peculiarity of an ideology is not only to define a situation and to identify solutions but also to inspire action. In that way, the study of development models should examine the growth indicators and show their various aspects. They would make it possible to check the practical scope of the neo-liberal ideology and to show the mechanisms that make this ideology operative; I hypothesize that they would provide an initial differentiation of the regions. But these indicators alone do not account for the basic aspects of development, discredited by the predominant developmentalist discourse as “externalities”. If the individual is the fundamental source of all economic activity, as Marx maintained, should not the individual be put at the very heart of the notion of development and its analysis. *Moral* development increases the capacity of the individual to make his own choices, increases freedom and is based on foundations such as literacy and education, preserving physical well-being and health, the fair distribution of wealth and the eradication of poverty, access to information, participation in decision-making, in short respect for living communities.

This postulate is not stated with a view to reaching unanimous consent. The advocates of globalization would see in this a fairy-tale and useless normativity, given that these objectives must at any rate ensue from the intercession of the invisible hand of the market, once the conditions of its perfect expression have been achieved through the abolition of the constraints on the accumulation of capital. The most radical forms of *autochtonism* will also inspire differing positions, protesting that a long life in good health and a school education are part of immemorial values. Instead, this postulate is meant to serve as a foundation for the operationalization of this project, to broaden and guide the choice of indicators that should be examined in order to account for development models. Inspired by Amartya Sen and its book *Development as Freedom*, I state that the study of development, whether in the Arctic or elsewhere, should take into account a multiplicity of factors of the social system, examine their influences on the relations between civil society, the corporation, and public administrations as well as these very relations, to arrive at an assessment that underscores the models at work according to whether or not they favor moral development, namely a development promoting the growth of individual and collective freedom (Figure 1). The analytical categories must serve as inspiration for the choice of indicators: the method should be able to make it possible to evaluate the capacities of living communities with respect to the resources in play (financial, social and natural), the living conditions and the relations of power.

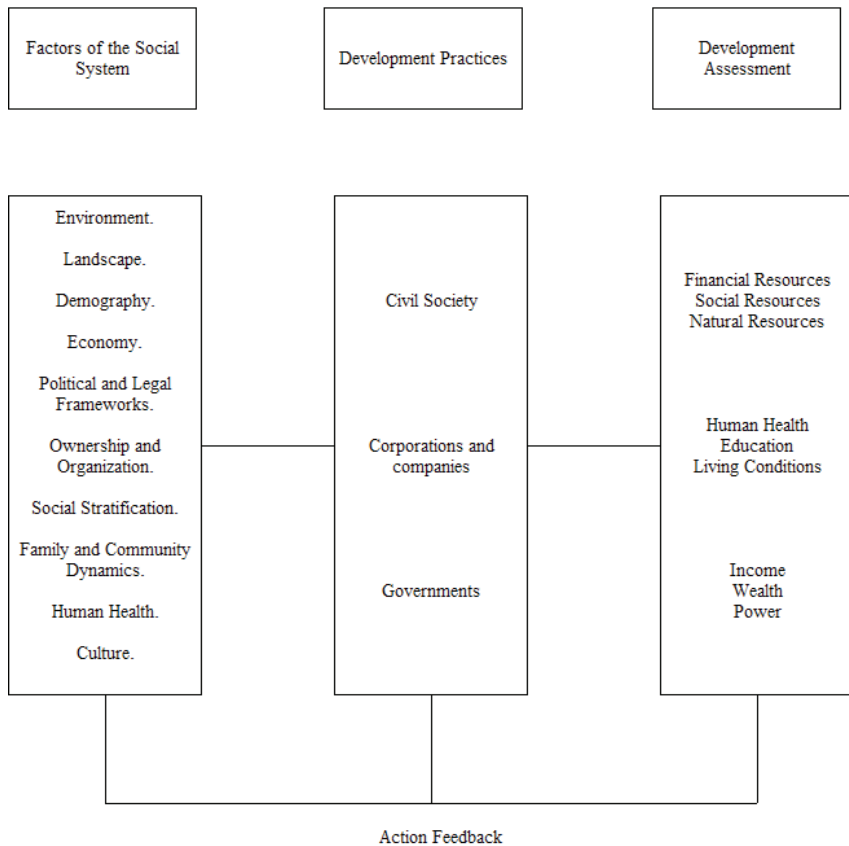


Figure 1. Humanist Development System

2.4. Resources and development

From my point of view, the conciliation of resource exploitation and humanist development is a major stake in the Circumpolar Arctic. Renewable and non-renewable resource exploitation is an essential key for providing an economic basis for Arctic communities; it takes advantage of the extensive wealth of Arctic territories while offering alternatives to dependence.

However, it faces the great vulnerability of natural and human environments. On the one hand, the equilibrium of Arctic ecosystems is fragile and its capacity for restoration is limited by the severe climate conditions. Moreover, rapid climate changes are bringing several transformations that

are affecting both the area and its inhabitants. Renewable resources, especially wildlife, are contaminated by pollutants such as chlorinated organic compounds and heavy metals, transported into the Arctic primarily by air currents and bioaccumulated through the food chain to the human body; environmental impacts of non-renewable resource exploitation generate geographically limited but severe and long-lasting pollution. Finally, resources of both types are threatened by depletion as it happened with cod stocks, or by exhaustion as is happening with mining activities. On the other hand, contemporary Arctic societies are affected by resource exploitation. Economic behaviors of individuals, families and communities are transformed by the extension of monetary incomes. Human health is affected by long-distance and locally generated pollution, and by changes in food intakes resulting from food chain contamination and from the availability of imported industrial food. Customary hunting, fishing and herding are transformed by economic activities such as industrial harvesting for commercial purposes, by political and legal conditions such as land claim settlements or international bans on animal hunting. As a result of these rapid changes, social and cultural settings are fast changing, generating new ways of making a living and making sense of it, but also resulting in major social disruptions. Arctic communities are thus facing the challenge of re-creating their cohesion, if they want not only to survive but to sustain as a socially integrated milieu.

To explore whether Arctic resource exploitation is or is not leading to a humanist development, such a program will have to link the economic practices with conditions that make these practices possible and conditions that ensue from them. This project adopts such an approach, by examining economic practices related to the exploitation of natural resources and their potential for increasing freedom of Arctic residents and communities. Through regional comparisons, it addresses the context in which the economic practices take place and the impacts they generate among Arctic communities.

Different types of resource utilization characterize the development of the Arctic regions. Customary food production still remains of significant economic and social importance in those regions. Subject to local decisions, using local resources for today's local needs with a view to not exhausting them, supported by existing resources throughout various community networks of production, distribution and consumption, customary

food production still carries its symbolic value in the modern-day context. Even some commercial initiatives are inspired by the customary model, such as the so-called local “informal market” in Greenland and programs that support hunting and fishing activities in the Canadian Arctic. In some cases, however, they are no longer operating without external influences. Seals, polar bears and hunting, for instance, are highly impacted by national and international policies and regulations that limit local capacities. Nevertheless, customary activities continue to be a key component for Arctic communities’ health and living conditions.

At the other end of the spectrum, large-scale industries, such as gas and oil exploitation, nickel and copper mines, hydroelectricity and the like, are of primary importance. In several Arctic regions of the circumpolar world where they are the main source of wealth creation, most of these activities are promoted and supported by external sources of capital; they are subject to decisions made without having been influenced by local communities or authorities, and are first related to world markets as opposed to local communities where they are established. Following this same logic, the benefits rarely stay in the region, flowing instead toward shareholders in the rest of the world. Some of these benefits are indeed retained, such as wages and contracts for local enterprises. But they often come with adverse effects. The construction phases of a given project might be completed within a few years, leading to a decreased local work force within the corporations, and making professional training and individual qualifications and skills rapidly outdated and no longer suitable in the fluidity of Arctic economies. Large-scale projects involving the local work force in the Arctic often increase social stratification and inequity in wealth distribution and perceived deprivation; they may change consumption patterns by decreasing the social value of customary practices that may tend to be replaced by market goods and services. While local benefits stop, when the resources are exhausted, long-lasting consequences often persist – industrial waste, tailings and environmental contamination. Since this scale of an industry is central in the Arctic economy, its convergence with concerns for humanist development is an enormous challenge for local and the regional authorities.

Over the last few decades, many economic development projects have promoted sustainability-oriented principles in their implementation e.g. *Impact Benefits Agreements* created for Red Dog Mine in Alaska and

Katinik Mine in Nunavik, local open markets in Greenland, fishery industry in Nunavut and sheep farming in Greenland, proposals for co-management regimes in resource utilization (specifically forestry) in Northernmost Europe to alleviate conflicts between Sami, local, and state authorities. They resulted from negotiation processes between giant corporations and organizations representing Aboriginal People at the local or regional levels. The latest initiatives were supported by the political will of organizations representing Aboriginal People throughout the Arctic world to promote sustainable development as the way to improve the economic, social and cultural conditions of people living in the Arctic. For instance, the Inuit Circumpolar Conference (ICC, 1996) and the Russian Association of Indigenous Peoples of the Russian North (RAIPON, 2001), and the Sami Parliament are all clearly working toward that aim. The entire process is tangibly encouraged by public governments that share such a priority, for instance by the Arctic Council (Arctic Council, 2001, 1996), and by the Canadian Government which has adopted its own action plan for sustainable development. Such initiatives are likely to promote the economic conditions for sustainable development as they contribute to increasing individual and collective wealth, as well as local and regional involvement in the economic development process. They especially shed light on optimal means available to stakeholder organizations to create wealth among their communities.

All these different economic practices for resource exploitation – customary land uses, large-scale extraction activities – are usually seen as separate worlds, a vision that traditional scientific disciplinary barriers have accustomed us to. On the contrary, I am of the opinion that these practices, the conditions that create them and the impacts they generate, are all part of the same Arctic economic reality in a global context. Customary activities at the family level are closely intertwined with world influences and monetary incomes, as mega-scale projects are facing the growing political power of Aboriginal Peoples of the Arctic, their claims for local benefits and their concerns for improving living conditions, and for sustaining their communities. But the Arctic economy as a whole and especially resource exploitation have rarely, if ever, been approached from such a global perspective. Challenges of Arctic development require the drawing of a global picture of the Arctic economy, which has only recently been done to some extent, and the comparing, within this global portrait, of

economic practices, their various prerequisites and their various impacts. By adopting such an approach, it could be possible to arrive at a comprehensive analysis of Arctic development models and to shed light on their specific effects on local residents' control over resources, human health and education, social integration, living conditions, economic equity and the like.

Through this examination, I will check if the development models in play are the result of specific relations between civil society, the corporation and governments, influenced by multiples factors of the social system such as the ownership of resources (land and capital in particular), the characteristics of the political and economic system in which these relations unfold, and so on; if differentiated ties exist according to the models between economic practices and the living conditions of regional populations (health, education etc.) and, consequently, between economic practices and the conditions of individual and collective freedom. Many examples make these hypotheses plausible. The very marked disparities between the northern regions of the Russian Federation (notably between those where oil and gas resources are exploited on a massive scale and the other regions) have only grown following the post-soviet privatizations: the reduction of government services has also been felt much harder in the already disadvantaged regions, increasing impoverishment, food insecurity and emigration. I will check if the large-scale exploitation of non-renewable resources can increase the redistribution of wealth, notably through the creation or improvement of services, provided that the spin-offs are retained locally; but that does not necessarily presuppose an equalization of living conditions, which may remain highly differentiated, which may even grow between population strata (the stratum benefiting from development and the stratum left on the margin of development); nor does it presuppose an increase in the emancipatory capacities, for example, an improvement in schooling or health, since they are subject to other influences that are occasionally more decisive than the growth of wealth alone.

I propose examining, for each of the regions of the Circumpolar Arctic, all of the indicators listed in the ArcticStat bank, working with these indicators to produce summary graphic representations (since coherent statistical analyses are unlikely, given the great diversity of the indicators), and differentiating the models by comparing these graphical representations. I will then take a more in-depth look at certain cases that seem to be typical, by drawing on the databank resulting from the Survey of Living Condi-

tions in the Arctic (SLiCA) when this is possible. Next, I will endeavor to elucidate these models, namely explain their foundations, mechanisms and consequences, by drawing on a vast review of the scientific literature, including theoretical tools that are available in the sociological tradition.

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3. Sustainability from a local point of view: Alaska's North Slope and oil development

*Jack Kruse*²⁹

3.1. Well Being and sustainability

We commonly assume that the actions of multinational corporations to extract petroleum resources in remote areas will conflict with the sustainability of local communities. Such development would seem to typify the opposite of sustainable development. It is a non-renewable resource being developed by non-local corporations possessing vastly more financial resources than local communities.

This is not a paper questioning, whether from a global point of view, petroleum development is sustainable. Rather, our focus is on, whether multi-national, large scale, non-renewable developments can interact with local communities with the net effect of promoting, at least for a matter of decades, the sustainability of these communities. Put in another way: Are there circumstances in which world scale resource developments can increase the sustainability of local communities?

If we were to empirically test the effects of such a development on the sustainability of nearby local communities, what would we measure? If individual well being in its broadest sense increases or stays the same over time, can we say the same about community sustainability? The premise of

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this paper is that individual well being and community sustainability should at least be highly correlated. We use a six-category definition of well-being recommended in the Arctic Human Development Report (2004) as our measure of community sustainability. The AHDR categories of well-being are: material success, health, education, ties with nature, cultural continuity, and fate control. Our measures are based on questions asked of community residents in face-to-face interviews.

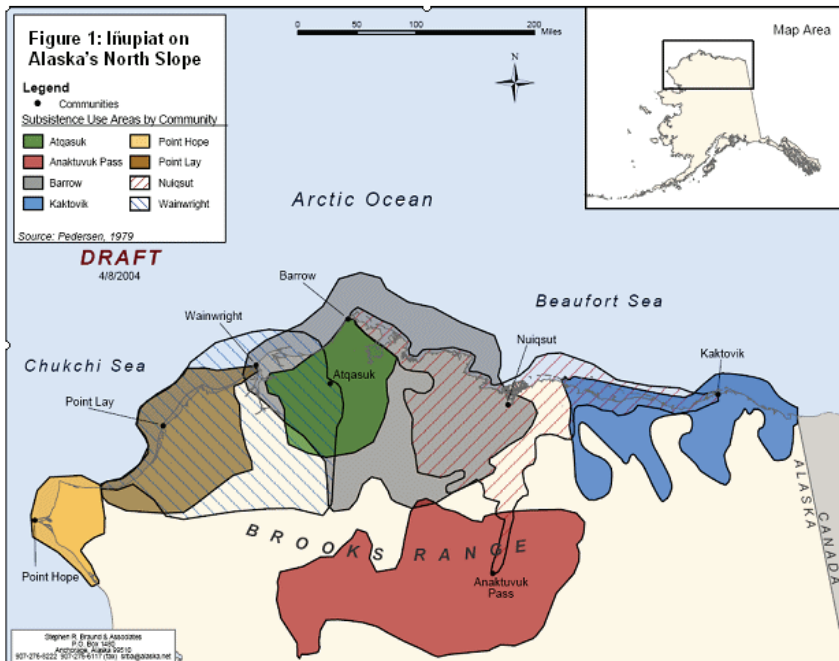


Figure 1: Iñupiat on Alaskas North Slope

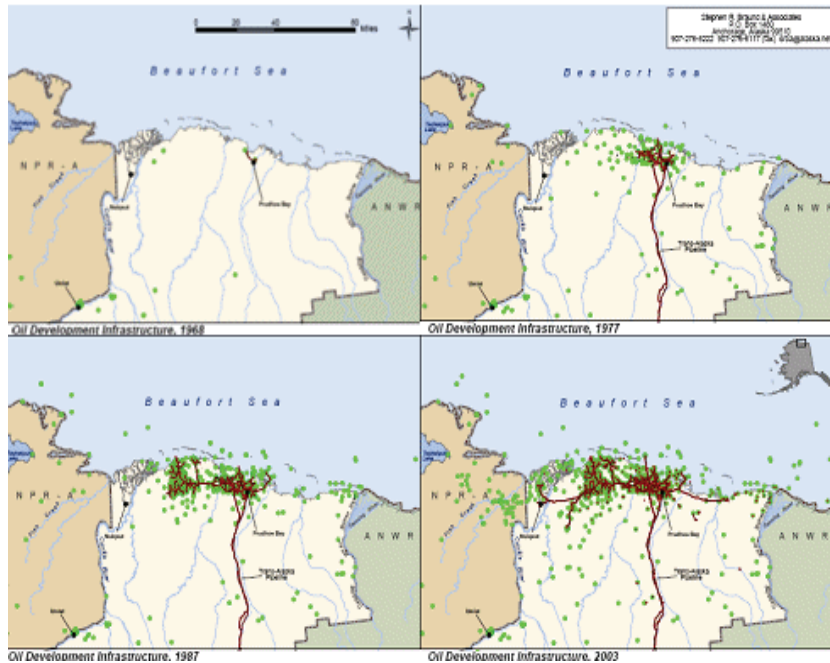


Figure 2: Oil Development of Alaska's North Slope

The North Slope of Alaska is home to the Iñupiat, an Inuit people. In 1977 about 3,500 Iñupiat lived in eight villages on the North Slope (Figure 1). The original Prudhoe oil field is located about 50 miles from the nearest village, Nuiqsut. Since 1977, the development of satellite fields has expanded the footprint of oil development on the North Slope. The Iñupiat actively hunt and fish for much of their food. On land, caribou are a major food resource. The bowhead whale is another major food resource, and bowhead whaling is the heart of Iñupiat culture. Iñupiat hunt, fish, and gather different species.

The development in question is centered on state lands at Prudhoe Bay Alaska (Figure 2). Less than a decade after Alaska became the 49th state in 1959, private companies discovered oil near Prudhoe Bay in 1968.

After a nine-year period of debate and construction of the Trans-Alaska oil pipeline, oil production began in 1977. Since then, more than 13 billion barrels of oil have been produced.

We are close to having a baseline measure of well being for North Slope Iñupiat communities. In 1973 the US National Science Foundation funded

the University of Alaska's Institute of Social and Economic Research (ISER) to investigate the effects of energy development on Alaska's people. In 1977, ISER researchers collaborated with North Slope Borough planning staff to conduct the first probability sample survey of North Slope Borough residents. The original data set of 290 interviews with Iñupiat adults is used as the baseline for comparison in this paper.

Our second dataset comes from the Survey of Living Conditions in the Arctic (SLiCA), conducted on the North Slope in 2003. The SLiCA North Slope data set consists of 212 interviews with Iñupiat adults. Also included as a basis for comparison are results of interviews with indigenous adults in Chukotka (534), Greenland (1062), Canada (4,700), and two other Iñupiat settlement regions in Alaska, the Northwest Arctic Region (204), and Bering Straits Region (247). A grant from the US National Science Foundation funded both US and Russian participation in SLiCA, including data collection in Alaska and Chukotka, design of the international core questionnaire, and preparation and analysis of the international data set.

Armed with the 1977 and 2003 datasets, we can compare sustainability measures over both time and space. We can compare measures for North Slope Iñupiat between 1977 and 2003, and we can compare current results (collected at slightly different times in different countries, but between 2001 and 2006) between the North Slope Iñupiat, Iñupiat in two other Alaska Iñupiat settlement regions, Inuit in northern Canada Inuit settlement regions, Inuit in Greenland, and indigenous people in Chukotka.

3.2. Iñupiat of Alaska's North Slope, 1977 and 2003

Table 1 identifies the measures used for each of the six AHDR categories of well-being. It also displays the direction of change one would hypothesize given the presence of a non-local, non-renewable resource development in a region populated by indigenous people, who actively use local wildlife resources for food.

Table 1. Measures of sustainability and hypothesized change over

Domain	Concept	Hypothesized Direction of Change 1977–2003
Ties with Nature	Subsistence Activity	Decline
	Proportion food from subsistence	Decline
	Amount of fish and game	Decline
	Opportunities to hunt and fish	Decline
Material Success	Work for pay	Not change
	Satisfaction with job opportunities	Not change
	Kinds of things you can buy in stores	Not change
	Cost of living	Not change
	Preference subsistence job both	Decline
Education	Education	Not change
	Satisfaction education services	Not change
Health	Satisfaction with health services	Not change
	Perception drinking, drugs, fighting, stealing	Increase
Cultural Continuity	Sharing and helping	Decline
Fate Control	Voting	Decline
	Say over oil development	Decline
Overall	Satisfaction with village life	Decline

We would expect the number of subsistence activities to decrease in response to one or more of the following changes: decreases in subsistence resources, reduced dependence on local resources due to increased incomes, and reduced time for hunting and fishing due to increased time working. The latter two changes are based on the optimistic assumption that the non-local development would increase local job opportunities. For similar reasons, we would expect a decrease in the proportion of food coming from subsistence harvests. Due to expected conflicts between resource development and local wildlife populations (e.g. disturbance of caribou), we would expect a decrease in satisfaction with the amount of fish and game available locally. Again due to resource conflicts as well as conflicts between resource development and hunting access (e.g. pipelines as barriers to travel), we would expect a decrease in satisfaction with opportunities to hunt and fish.

Optimistically, we might expect non-local resource development to create more job opportunities, drawing Iñupiat into the labor force. Since the Prudhoe Bay development is a remote enclave, separated from the nearest community, a more realistic hypothesis would be that there would be little local employment benefit associated with the development. We therefore would hypothesize that labor force participation and satisfaction with job

opportunities would stay the same. Using the same logic, we would not expect local incomes to increase. Supply links to the development bypass local communities and flow directly between Anchorage and Fairbanks and Prudhoe Bay. Local availability of goods and services in the communities would therefore be expected to remain unchanged. The separation of the development from local economies would also have little expected effect on the cost of living. Barrow already had jet service in 1977, for example so the Prudhoe Bay development would not have caused a decrease in transportation costs to the North Slope.

Although oil development might not bring new jobs to village residents, it might raise resident expectations about wage income. This expectation, coupled with hypothesized conflicts between resource development and subsistence, would lead us to hypothesize that Iñupiat might shift in their preference from a subsistence, or mixed mode of subsistence and wage production, to a preference for wage work.

Concerning the domain of education, the disconnection between resource development and local jobs would mean little change in local incentives for education. There would also be no reason to expect that education services would improve, so we would hypothesize that satisfaction with education services would at best remain unchanged.

Likewise, we would hypothesize that satisfaction with health services would remain unchanged. If the development enclave were completely unassociated with local villages, we might also expect village social problems to remain unchanged. But we might also hypothesize that the presence of even small numbers of non-local workers in villages would introduce new sources of alcohol and drugs, increasing levels of social problems. Since traditional helping and sharing values are maintained in large part through participation in subsistence activities, reduced subsistence resources and local hunting and fishing opportunities would be expected to decrease sharing and helping in communities.

We would expect that the negative effects of a non-locally controlled resource development would undermine Iñupiat perceptions of being in control of their own fate. As a result, we would hypothesize a decrease in civic participation, with fewer Iñupiat choosing to vote. More directly, we would expect a decrease in satisfaction with Iñupiat influence over oil and gas development as the negative impacts of such development materialized.

Overall, we would hypothesize a decrease in Iñupiat satisfaction with life between 1977 and 2003.

Now we turn to our empirical results. In 2003, 61 percent of Iñupiat engaged in five or more subsistence activities in the previous 12 months compared with 27 percent in 1977 (Table 2). Sixty-two percent of households in 2003 reported that half or more of their meat and fish came from their subsistence harvests. In 1977, 37 percent of households reported that half or more of their food (not just meat and fish) came from their household subsistence activities. The two measures differ somewhat, and we would expect that the proportion of meat and fish coming from subsistence would be higher than the proportion of food as a whole (e.g. including vegetables and beverages). The direction of change, however, is not the hypothesized decrease.

Almost half (48 percent) of Iñupiat in 2003 were very satisfied with the amount of fish and game available locally, while in 1977 the figure was only six percent (Table 2). We should explain, that in 1977 caribou harvests were being restricted by the state, and the International Whaling Commission was threatening to close down Iñupiat bowhead whaling. The high absolute level of satisfaction with the amount of fish and game available locally, however, leads us to refute the hypothesis, that resource development would be accompanied by a decrease in satisfaction.

Nine in ten Iñupiat in 2003 were satisfied or very satisfied with opportunities to hunt and fish while 51 percent of Iñupiat in 1977 reported, that they were satisfied with the time, they spent on subsistence (Table 2). Summarizing changes in our measures of ties with nature, we can conservatively conclude that Iñupiat ties with nature have persisted through 25 years of North Slope oil development.

Turning now to the wage economy, 77 percent of Iñupiat adults worked for pay in 2003 compared with 65 percent in 1977 (Table 2). This difference is significant ($p < 0.05$), but not substantial. It likely reflects the continuation of a trend already underway in 1977 for young women to enter the labor force. Iñupiat in 2003 were somewhat less likely to be satisfied with local job opportunities (43 percent “satisfied” or “very satisfied” versus 66 percent “good” or “very good” in 1977). As we shall explain further in the discussion section of this paper, the decline in satisfaction may reflect the fact that village wage opportunities have fallen in recent years.

For much of the intervening years, however, job opportunities exceeded those in 1977.

Satisfaction with the availability of goods and services remained virtually unchanged, while satisfaction with the cost of living improved (35 percent satisfied or very satisfied in 2003 versus three percent “good” or “very good” in 1977, see Table 2). Recall that our hypothesis was that satisfaction with both the availability of goods and services and the cost of living would remain unchanged.

Contrary to our hypothesis that Iñupiat would become more likely to prefer wage employment, we see that two out of three in 2003 continued to prefer a mix of wage employment and subsistence activities (Table 2).

We also did not expect Inupiat to become more educated as a result of oil development. Probably the major factor affecting education levels on the North Slope, however, are increased local educational opportunities. In part, the increase in village high schools in Alaska during the 1980s was a statewide response to a court mandate made possible by state oil revenues. In part, the increase from 14 percent to 25 percent of Iñupiat with more than a high school education is likely due to an increased demand for education in local jobs and increased local education opportunities, as for example, provided by the Barrow college (Table 2).

Table 2. North Slope sustainability comparisons, 1977 versus 2003

	1977 (%)	2003 (%)
Number of Subsistence Activities		
0	32	11
1 or 2	22	15
3 or 4	19	13
5 or more	27	61
Total	100	100
Proportion of Household Food (1977) Meat & Fish (2003) From Household Subsistence Harvest		
Less than half	47	7
About half	16	31
More than half	23	24
All	14	38
Total	100	100
Satisfaction with Amount of Fish and Game Available Locally		
Very Bad/Very Dissatisfied	14	1
Bad/Dissatisfied	22	3
Mixed/Neither Satisfied nor Dissatisfied	37	8
Good/Satisfied	20	39
Very Good/Very Satisfied	6	48
Total	100	100
Satisfied with Time Spent on Subsistence		
No/Mixed, Somewhat, Very Dissatisfied	49	9
Yes/Somewhat, or Very Satisfied	51	91
Total	100	100
Worked for Pay in Past 12 Months		
Yes	65	77
No	35	23
Total	100	100
Satisfaction with Job Opportunities		
Very Bad/Very Dissatisfied	4	17
Bad/Dissatisfied	7	19
Mixed/Neither Satisfied nor Dissatisfied	23	21
Good/Satisfied	49	29
Very Good/Very Satisfied	17	14
Total	100	100
Satisfaction with Availability of Goods (and Services)		
Very Bad/Very Dissatisfied	6	10
Bad/Dissatisfied	13	15
Mixed/Neither Satisfied nor Dissatisfied	27	17
Good/Satisfied	41	40
Very Good/Very Satisfied	12	17
Total	100	100

To be continued.....

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	1977 (%)	2003 (%)
Satisfaction with Cost of Living		
Very Bad/Very Dissatisfied	44	21
Bad/Dissatisfied	30	25
Mixed/Neither Satisfied nor Dissatisfied	23	19
Good/Satisfied	3	25
Very Good/Very Satisfied	0	10
Total	100	100
Preferences for Subsistence and Wage Work		
Mostly Subsistence	13	9
Mostly Wages	18	27
Both	69	65
Total	100	100

Table 3. North Slope sustainability comparisons, 1977 versus 2003

	1977 (%)	2003 (%)
Formal Education		
Less than Elementary	17	6
Elementary or some High School	41	30
High School	27	40
More than High School	14	25
Total	100	100
Satisfaction with School		
Very Bad/Very Dissatisfied	6	3
Bad/Dissatisfied	10	7
Mixed/Neither Satisfied nor Dissatisfied	21	10
Good/Satisfied	52	40
Very Good/Very Satisfied	11	40
Total	100	100
Satisfaction with Health Services		
Very Bad/Very Dissatisfied	2	4
Bad/Dissatisfied	6	14
Mixed/Neither Satisfied nor Dissatisfied	14	12
Good/Satisfied	59	42
Very Good/Very Satisfied	19	28
Total	100	100
Satisfaction with Drinking, Drugs, Fighting, and Stealing (1977) and How Safe Feel Outside at Night (2003)		
Very Bad/Unsafe	48	12
Bad	33	0
Mixed	14	0
Good/Rather Safe	2	34
Very Good/Very Safe	2	55
Total	100	100
Satisfaction with Sharing and Helping (1977), With Community Promotion of Sharing (2003)		
Very Bad/Very Dissatisfied	0	0
Bad/Dissatisfied	5	1
Mixed/Neither Satisfied nor Dissatisfied	26	5
Good/Satisfied	46	36
Very Good/Very Satisfied	23	58
Total	100	100
Number of Elections Voted		
None of last elections	14	16
One	4	5
Two	7	8
Three	11	9
Four	15	9
Five	49	53
Total	100	100

To be continued.....

Continued

	1977 (%)	2003 (%)
Satisfactions with People's Say Over Petroleum Development		
Very Bad/Very Dissatisfied	10	6
Bad/Dissatisfied	18	7
Mixed/Neither Satisfied nor Dissatisfied	36	22
Good/Satisfied	34	39
Very Good/Very Satisfied	3	26
Total	100	100
Satisfaction with Village as a Place to Live		
Very Bad/Very Dissatisfied	1	2
Bad/Dissatisfied	9	4
Mixed/Neither Satisfied nor Dissatisfied	17	10
Good/Satisfied	51	46
Very Good/Very Satisfied	23	38
Total	100	100

Table 4. North Slope sustainability comparisons by region

Men Number of Subsistence activities engage in within last 12 months	North Slope	Northwest Arctic	Bering Strats	Canada	Green-land	Chakotha
	8,7	8,3	9,5	-	5,7	8
	%					
Proportion of Meat and Fish Consumed by household traditional food						
None	7	9	8	1	0	9
Less than half	31	23	36	24	33	34
About half	25	27	25	35	27	29
More than half	37	42	31	39	40	28
Total	100	100	100	100	100	100
Satisfaction with Amount of Fisk and Game Available Locally						
Very satisfied	48	58	24	-	9	5
Somewhat satisfied	39	33	36	-	54	34
Not satisfied or neither	13	9	40	-	37	71
Total	100	100	100	-	100	100
Satisfaction with opportunities of hunt and fish						
Very satisfied	62	66	40	-	13	5
Somewhat satisfied	29	30	33	-	58	25
Not satisfied or neither	9	4	26	-	29	70
Total	100	100	100	-	100	100
Work Status in previous 12 months						
Worked in past 12 months	77	75	73	88	80	86
Did not work in past 12 months	23	25	27	12	20	14
Total	100	100	100	100	100	100
Satisfaction with job opportunities						
Very satisfied	14	15	6	11	4	1
Somewhat satisfied	30	34	24	31	28	9
Not satisfied or neither	57	51	70	57	68	90
Total	100	100	100	100	100	100
Satisfaction wit availability of goods in local stores						
Very satisfied	18	12	10	-	7	2
Somewhat satisfied	42	37	28	-	48	21
Not satisfied or neither	40	51	62	-	46	77
	100	100	100	-	100	100
Satisfaction wit kost of living						
Very satisfied	9	7	2	-	3	2
Somewhat satisfied	27	27	20	-	36	7
Not satisfied or neither	64	66	79	-	60	91
Total	100	100	100	-	100	100
Preferred ways of making a living						
Working on a wage job	27	14	9	-	56	40
Both wage and harvesting, herding or processing	65	74	85	-	14	28
Harvesting, herding or processing	8	12	7	-	30	32
Total	100	100	100	-	100	100

The percentage of Inupiat very satisfied with local education services increased from 11 percent to 40 percent between 1977 and 2003 (Table 3). Satisfaction with health services also increased (19 to 28 percent). We hypothesized no change in satisfaction. In 1977, only four percent of Inupiat perceived the level of drinking, drugs, fighting, and stealing were “good” or “very good” (Table 3).

In 2003 55 percent of Inupiat reported that they felt “very safe” outside at night. While these questions differ, the results do not support the hypothesis that perceptions of local social problems would worsen.

Inupiat perceptions of cultural values also appear to have persisted between 1977 and 2003 (Table 3). Fifty eight percent of Inupiat in 2003 were “very satisfied” with their community’s efforts to promote helping and sharing values. In 1977, 23 percent of Inupiat thought local sharing and helping was “very good”. Again the results are contrary to the hypothesized decline. Turning to fate control, voting participation appears to have remained virtually constant (Table 3). Contrary to our hypothesis, however, satisfaction with Inupiat influence over oil development increased between 1977 and 2003, with 26 percent of Inupiat “very satisfied” in 2003 compared with three percent who rated people’s say over petroleum development “very good” in 1977.

Our final time series comparison is satisfaction with one’s community as a place to live. In 1977, 23 percent of Inupiat felt that their community was a “very good” place to live. In 2003, 38 percent of Inupiat were “very satisfied” with their community as a place to live, a significant increase ($p < 0.05$). We now turn to a comparison of sustainability measures for the North Slope, two other Inupiat settlement regions of Alaska, and three international comparisons: northern Canada, Greenland, and Chukotka.

3.3. Inupiat of Alaska’s North Slope and other Arctic Indigenous Peoples

Alaska’s North Slope has not been the only Arctic region to experience large-scale resource development. We also must keep in mind that there are many other regional differences that may account for variations in our sustainability measures. Other factors being equal, however, we can hypothesize that the large-scale non-locally controlled petroleum development on the North Slope would be associated with lower levels of sustain-

ability among North Slope Inupiat than their Inupiat neighbors in the Northwest Arctic and Bering Straits regions, as well lower than among fellow Inuit in Canada and Greenland. Given the collapse of the Soviet Union, Chukotka is a special case, and we would expect measures to be lower there than on Alaska's North Slope. Before turning to results we should also note that many sustainability measures are not available from the Canada data set.

With the exception of Bering Straits region Iñupiat in 2003 North Slope Iñupiat engaged in as or more a diverse set of subsistence activities as Arctic indigenous residents in our comparison regions (Table 4). North Slope Iñupiat households harvested as high or higher a proportion of their meat and fish. They were somewhat less satisfied in 2003 than Northwest Arctic in Iñupiat with the amount of fish and game available locally, but more satisfied than their Arctic indigenous neighbors. The same is true with regard to their satisfaction with opportunities to hunt and fish.

North Slope Iñupiat participated in the labor force as much as Alaska and Greenland neighbors, and slightly less than their indigenous neighbors in Canada and Chukotka (Table 4). In 2003 they were as or more satisfied with local job opportunities, more satisfied with the local availability of goods and services, and as satisfied with the cost of living. North Slope Iñupiat were somewhat less likely to prefer a combination of wage and subsistence activities than their Inupiat neighbors in 2003, but considerably more likely to do so than Chukotka indigenous adults.

As far as education is concerned, in 2003 North Slope Iñupiat were similar to Iñupiat in the Northwest Arctic and Bering Straits regions. North Slope Iñupiat were more likely than Canadian Inuit in 2003 to have at least a high school education and less likely than Greenland Inuit and Chukotka indigenous adults population.

North Slope Iñupiat was the more likely to be very satisfied with the quality of local education services in 2003 than indigenous adults in any other comparison region. The same was not true with regard to health services, where North Slope Iñupiat were more likely to be very satisfied than Inuit in Greenland or indigenous adults in Chukotka, as likely to be very satisfied as Inuit in Canada and Bering Straits Inupiat, while less likely to be very satisfied with local health services than Northwest Arctic Iñupiat.

Satisfaction with public safety among North Slope Iñupiat was lower than among northern Canadian Inuit and higher than Greenland Inuit and

Chukotka indigenous adults. North Slope Iñupiat were more likely in 2003 to be very satisfied with promotion of helping and sharing values than all but their neighbors in the Northwestern Arctic region, where the level of satisfaction was about the same in 2003.

Voting participation on the North Slope was comparable in 2003 to other Arctic regions (Table 6). One in four North Slope Iñupiat in 2003 were very satisfied with the influence Iñupiat had over the management of resource resources like oil, gas, and minerals. This compares with one-in-five Northwest Arctic Iñupiat, about one-in-ten Bering Straits Iñupiat and only three percent or less of Greenland Inuit and Chukotka indigenous adults.

In 2003, North Slope and Northwest Arctic Iñupiat shared the highest level of overall satisfaction with life in their communities; more than one-in-three were “very satisfied”. In the Bering Straits region, one-in-four were very satisfied, while only one-in-twenty Greenland Inuit and one-in-one-hundred Chukotka indigenous adults were very satisfied.

Table 5. Summary of North Slope sustainability comparisons

Domain	Concept	2003 vs 1977	N. Slope vs Elsewhere
Ties with Nature	Subsistence Activity	Substantially better	Better except in 1 region
	Proportion food from subsistence	Somewhat better	About the same or better
	Amount of fish and game	Substantially better	About the same or better
Materials Success	Opportunities to hunt and fish	Substantially better	About the same or better
	Work for pay	Somewhat better	About the same
	Satisfaction with job opportunities	Somewhat worse	About the same or better
	Kids of things you can buy in stores	About the same	About the same or better
	Cost of living	Substantially better	About the same or better
Education	Preference subsistence jo both	About the same	Same as other Alaska regions
	Education	Somewhat better	About the same except lower than Greenland, Chukotka
	Satisfaction education services	Substantially better	Better
Health	Satisfaction with health services	About the same	About the same or better
	Perception drinking, drugs, fighting, stealing	Somewhat better	Better than some, worse than others
Cultural Continuity	Sharing and helping	Substantially better	Better
Fate Control	Voting	About the same	About the same
	Sayover oil development	Substantially better	Better except same as NW Arctic
Overall	Satisfaction with village life	Somewhat better	Better except same as NW Arctic

3.4. Discussion

We have just seen that, on most measures, Iñupiat were as well or better off in 2003 than they were in 1977. Table 6 summarizes our time and spatial comparisons. We have also seen that North Slope Iñupiat, again on most measures, in 2003 were as well or better off than their Iñupiat neighbors in the Bering Straits and Northwest Arctic regions and as well or better off than the Inuit of northern Canada, the Inuit of Greenland, and the indigenous people of Chukotka.

Our comparisons are far from the results of controlled experiments. North Slope Iñupiat, who were dissatisfied with the effects of development could have moved off the North Slope. Other regions have experienced development as well. All regions have been exposed to a myriad of changes besides development. Still, the picture we see in 2003 is far better than what we might have projected in 1968, when oil was discovered on the North Slope.

What do these results say about the general effects of large-scale development on local communities? Only that there appears to be at least one set of circumstances under which large scale, non-local resource development can take place in a region, while at the same time local community sustainability is maintained or even improves. What are these circumstances?

Critical to understanding the results just presented is that the Iñupiat of the North Slope successfully established a regional government in 1972, the North Slope Borough. The borough's regional boundary includes the Prudhoe Bay development and the borough has the legal right to tax energy development facilities on state land within the Borough. As a result of this power of taxation, the borough has received billions of dollars in oil tax revenues over the past 35 years. Between 1996 and 2006 alone these revenues totalled \$224.8 million (DOLWD 2007). These revenues have supported a capital improvements program that has employed many North Slope Iñupiat (56 percent of North Slope Iñupiat adults worked for the borough at least once in 1977 and 28 percent worked for the borough on the job they worked the most hours on in 2003.). The successful results of the capital improvements program and borough operations expenditures are reflected in the time and spatial comparisons given above.

The borough also funded its own Department of Wildlife Management, normally a state and national activity. It also established a regional Wild-

life Management Advisory Committee. These and other actions made it possible for North Slope Iñupiat to influence resource development activities. None of these actions would have been possible without oil-derived tax revenues, but it also took vision and leadership to understand and even to create opportunities to intervene in the development process.

The Inupiat have also been lucky. A series of offshore lease sales by the federal government in the 1980s failed to produce economically viable offshore petroleum prospects. The Inupiat noticed the effects of offshore exploration activities on the movement of bowhead whales, and they have often testified about their concerns that offshore petroleum development would gravely harm their subsistence way of life. During the period we are comparing, however, most development activities occurred on land as expansions of the Prudhoe Bay development.

As Figure Two illustrates, onshore oil development on the North Slope has expanded greatly over the past thirty years. And more developments are being planned. The cumulative impacts of these expansions may be of an entirely different magnitude than that experienced by the Iñupiat to date. These new developments would largely occur on federal lands, yielding far lower revenues to the North Slope Borough. Taken together, the smaller revenue stream and the cumulative geographic reach of petroleum development may spell the end to the era of local sustainable development. On the other hand, the Inupiat continue to actively intervene in the course of development. They once again prove their ability to create conditions, where local community sustainability is possible along side of non-renewable, non-locally controlled large-scale development.

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4. The social economy and economic development in the Canadian North: Constraints and opportunities

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4.1. Introduction

Few societies have undergone economic transformations with the rapidity that communities in Canada's north have over the past 100 years. These communities have moved from an economy based almost entirely on subsistence hunting and fishing, to an economy dominated by the industrial exploitation of natural resources, to an uncertain future in a world increasingly dominated by a knowledge-based post-industrial culture. These changes have introduced a great deal of stress accompanied by social and economic problems. Recent trends have increased the likelihood of social challenges but some have also offered promise for these communities to become increasingly involved in finding solutions to these challenges. Political trends have shown an increase in self-government and the potential for political empowerment. Unfortunately, the movement towards economic empowerment in these communities has been less evident. The dominance of a dependent economy controlled by large resource corporations is likely to continue into the future as diamond mining and oil and gas development increase in their importance.

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Despite the dominance of large-scale industrial resource exploitation controlled by external institutions, the recent political trends have had an influence on some aspects of the northern Canadian economy. Demands for local input into new environmental and development decisions and the rise of new resource co-management arrangements have opened up a renewed interest in looking at economic alternatives that serve to increase the involvement of these communities in their economies. A new approach that has emerged is linked to the “social economy”. The social economic perspective is an extension of what in the past has been termed community economic development. The social economic perspective seeks to offer, and legitimate, a third option to economic development that in the past has been pushed aside in favor of large-scale private sector resource development and state-based initiatives. It refers to a strategy to develop and enhance both the vitality and social and educational capital of Northern communities through organizations that are more directly controlled by the communities themselves. The social economy refers to those institutions in the community that are neither primarily profit-oriented nor state-driven. It refers to organizations whose primary purpose is to serve social goals in the community and whose structures are based on participatory democratic principles.

This paper attempts to examine the potential for social economic development in Canada’s north. The underlying hypothesis of the paper is that the development of this perspective in the north is heavily dependent on its ability to adapt to several key political economic characteristics that dominate the economies of northern communities. This paper attempts to outline these characteristics and point to their possible impact on any attempt to develop sustainable economic development based on the social economy in Canada’s north. The main characteristics to be discussed are the traditional economy of indigenous communities, the role of the state in economic development, and the impact of resource development in the North. The paper starts by introducing the notion of the social economy. It then gives an overview of the economic history of the Canadian north. This overview highlights the historical development of characteristics that impact the formation of the social economic sector in northern communities. We then discuss the above-mentioned characteristics and the impact, which they are likely to have on social economic development in the region. Finally we conclude with a brief description of a major research project, that

is currently under way dealing these issues. A research plan is outlined which will assist attempts to further develop social economic organizations in the region.

4.2. The social economy

Although the term social economy is not widely used in Northern Canada, the ideas and relationships that are the foundation of what others are now referring to as the social economy are prevalent throughout the North. Much work has been devoted to a definition of the social economy (Lévesque and Mendell, 2004). Chouinard and Fairbain (2002) have noted that, outside Quebec, the social economy is often referred to as community economic development. The central notion of both terms is, that they include economic activities, that are not state-driven and not profit-driven. They include a large “third sector” that is often ignored (Quarter, 1992).

Although no strict agreed upon definition of the social economy exists, its common characteristics are often the fact that social economy organization do not have as their primary purpose to obtain a return on capital. They are, by nature part of a stakeholder economy, whose enterprises are created by and for those with common needs, and accountable to those they are meant to serve. They are generally managed in accordance with the principle of “one member, one vote”. They are flexible and innovative and most are based on voluntary participation, membership and commitment. In the North we intend the definition to include traditional land-based activities, co-operatives, voluntary organizations, unions and other activities, whose primary purpose is not for profit or for the state. (Bouchard et al, 2006)

The social economy is made up of organizations in the not-for-profit sector that seek to enhance the social, economic and environmental conditions of communities. They use the tools and some of the methods of business, on a not-for-profit basis, to provide social, cultural, economic, health and other services to communities. Types of social economy organization in Canada’s north are retail and artistic co-operatives, indigenous rights organizations, recreational and cultural organizations, non-profit organizations, the voluntary sector, charities, foundations, credit unions, and other social enterprises. They operate in areas ranging from housing to commu-

nications and in areas such as recycling, home care, forestry, restaurants, catering, Aboriginal economic development and manufacturing. These enterprises are flexible and sustainable tools that allow communities to address objectives related to social and economic concerns, while furthering goals of community participation and control.

4.3. Historical development of the northern Canadian economy

A proper understanding of the constraints on opportunities for social economic development in the Canadian north should start with a discussion of the historical development of the region. In particular this history stresses the impact of these different economic systems on the autonomous development of these communities. The definition of Northern Canada used in this particular paper refers primarily to the territorial north: that is to say the three territories of the Yukon, the Northwest Territories, and Nunavut. It should also be pointed out that much of what we discuss relation to the territorial north can also apply to Canada's provincial norths.

One way to understand the historical development of the northern Canadian economy is to look at the current economies of communities in the circumpolar region as the accumulation of several layers of economic systems. Here this work is inspired by the earlier work of Tim Ingold who traced the shift of reindeer herding peoples in the circumpolar north through three separate "modes of production" (1980:2). He labeled these modes hunting, pastoralism, and ranching. While Ingold used the term mode of production, this author is less convinced, that the economy of northern Canada can be reduced to an integrated deterministic theoretical system suggested by modes of production. As a result, the chapter refers to the much more open concept of economic systems. Within each of these economic systems one can see similarities in the accompanying social relations but with a great deal of variations. In the classical Marxian sense, a mode of production does not build on a previous mode of production. It eliminates it altogether. The argument in this chapter is that the contemporary economic structures of Canada's north are not universally controlled by one specific mode of production. Rather that each historical economic system leaves a base which continues to influence later systems. One particular economic

system can be dominant but previous economic systems continue to exercise influence in these communities.

While rejecting Ingold's use of mode of production as our main historical typology, the chapter does endorse his evolutionary perspective. It is possible to see general common historical evolutions throughout the history of Canada's northern communities. These changes are not necessarily inevitable or unilinear. Still, it is possible to see a general historical change in these communities as they went from hunting and gathering, to fur harvesting, and to industrial resource exploitation. This discussion sees these communities as the cumulative result of several ideal-type layers of economic systems. The first layer is a system we can call a "traditional hunting and gathering economy". The second layer is a system that we can refer to as pre-industrial colonialism. The third layer can be called industrialism (or modernization). The fourth and most recent layer is that of globalization. The current economy in Canada's north is the product of a combination of these layers. Although the importance of each layer varies from region to region, most are impacted in one way or another by each of these layers.

The hunting and gathering economy was usually the first economic system that occurred in the region. It has received quite a bit of attention from ethnologists and anthropologists both in its current forms and past forms. For our purposes it is enough to point out that this economic system is the most common economic system among the Indigenous peoples of the region. It is still practiced to varying degrees by almost all of the communities.

In Canada's north the traditional hunting and gathering economy has taken many forms but can be generalized as consisting of two main sub-types of subsistence activity: inland hunting and fishing; and maritime hunting.

4.4. Hunting and gathering communities

The hunting and gathering economic system is seen as the one that, while not benign, has the least negative environmental impact. It is the economic system that, in most cases, is portrayed as giving the indigenous communities the greatest autonomy from outside human interference, an autonomy that is often compromised by a heavy dependence on environmental conditions. Sahlins portrayal of hunting and gathering societies and "the original affluent society" tried to show that these communities were not constantly suffering

from starvation but were quite enriched. (Sahlins, 1972) Sahlins notes how primitive exchange in these hunting and gathering societies were based on values of sharing, that are fundamentally different from the profit-oriented values of contemporary capitalism.

Since the 1970s, Brody's vision of Inuit life as being fundamentally different from other types of societies has been very influential. (Brody, 1973) Associated with the notion of autonomy from inequalities, is also a notion of general autonomy from outside human relations. Hunting and gathering societies are often analyzed as being isolated from other societies. In the north especially, geography serves as a barrier to non-local influences prior to the rise of Europe colonialism. This vision of an autonomous existence has been criticized by anthropologists such as Eric Wolf, who have argued, that it is an illusion to view foraging societies as having been isolated from the larger historical changes in human societies. (Wolf, 1982)

The above discussion leads us to see that the image of pre-modern hunting and gathering societies as living independently of outside influences is overly simplistic. While their relative degree of separation from these forces was much more extreme than many other societies, they did have historical links to global economic systems. These links were neither continuous nor constant. They traded for goods when convenient or when forced to. Most of their activities were devoted to their own particular sustenance rather than the needs of a global market. This changed considerably with the rise of furs as a market commodity.

4.5. Pre-industrial colonialism

The creation a demand for furs in a market largely controlled by Europeans had a profound impact on northern communities. The fur trade introduced a new system of relations to the circumpolar world that can best be called pre-industrial colonialism.³¹ Under this system, the circumpolar region came to be much more influenced by outside forces: forces shaped primarily by the

³¹ Another term that might be just as appropriate is mercantilist colonialism. The term pre-industrial colonialism is used primarily to note that the political aspects of the relationship between northern communities and national powers did not undergo any rapid changes with the rise of industrialism while the economic relationships did. Until recently, it was these economic relationships that can be held primarily responsible for changes in these relationships.

economic demands of primarily European peoples. Colonization meant that the indigenous populations of the region now became more directly subjected to the demands of the colonizing power. Europe became the center of economic decision making, while the circumpolar regions, along with other areas of the world, became the periphery, the subservient region. This economic system was made up of several key elements including the fur trade, whaling, European settlement, and the transformation of reindeer herding. The unique aspect of this particular system was that it introduced European domination while maintaining some aspects of traditional activities. Pre-industrial colonialism did not put an end to the traditional hunting and gathering economy. It transformed that system to meet the needs of European and other consumers.

Pre-industrial colonialism impacted communities in Canada's northwest soon after the establishment of Europeans in North America. Indigenous peoples such as the Ottawas and the Hurons had started trading with the French as early as 1550, bringing furs from the northern interior to the rendezvous at Tadoussac in the northern part of the St. Lawrence Valley. Despite knowledge of fur resources in the northwest of Canada, there were still obstacles to the movement of the French into the region of which the most important was the attempt by the Canadian-based administrators of the fur trade to strictly regulate the trade.

These obstacles did not affect the British. They had been gathering quite a bit of information about Hudson's Bay since 1509. For much of the sixteenth and early seventeenth centuries the English had been interested in the area as a possible Northwest Passage to the orient. Unlike the French, the British were not interested in the potential of the region for furs. Despite these intentions, it was the quest for furs, which quickly came to dominate their interests.

In 1667 a group of investors received a royal commission, which gave them the control of trade in whatever lands they may discover. An initial voyage into Hudson's Bay set out in 1668. They returned to England in 1669 with enough furs to ensure a profit for the original investors. In the meantime the loose syndicate of investors had solidified into a more closely-knit company, the Hudson's Bay Company, which included some of the more powerful men in England at the time.

The trading system that was developed was one where the Company established themselves at a mouth of a large river flowing into Hudson's Bay

and James Bay, where their ocean-going ships could find a safe harbourage, and waited for the aboriginals to bring the furs to them via the interior river systems. The trading system established by the Hudson's Bay Company had an immediate impact on the French trading system as furs normally sent southeast were now diverted to James Bay as Natives sought out better prices and better goods for their furs. This led to a system of competition that was to last until the 1820s. Despite attempts by the French to oust the English from Hudson's Bay and James Bay through the use of force, the Hudson's Bay Company was able to maintain control of the more profitable trade northern trade routes.

The French attempted to contain this trade by establishing an inland trade system stretching from the Great Lakes to Northern Alberta. A series of trade posts were established to try and cut off the trade of furs going towards the posts located on Hudson's and James Bay. Eventually this led to the Hudson's Bay Company establishing rival posts inland to counter the French influence. Following the loss of New France to Britain in 1760, the French fur trade system was taken over by a new rival fur trading company, the Northwest Company, whose trade posts eventually stretched from Fort William on Lake Superior to the Mackenzie River delta in the Northwest Territories. It was the competition between these two trading systems that dominated relations between Europeans and the indigenous people of Northern Canada until the 1820s. Each system tended to favour different strategies in order to ensure that they had continued access to the furs that were in such demand in primarily European markets. The French/Northwest system tended to favour the establishment of trading relations through close personal contact with the peoples who were actually harvesting the furs. They established forts inland close to the traditional lands of the harvesters and often established connections through marriage. The Hudson's Bay Company preferred the less expensive system of having the furs brought to the posts on Hudson's Bay and James Bay.

Competition between the two companies eventually led to a forced merger between the two. Following the merger the new Hudson's Bay Company expanded operations into the Yukon in order to deal with competition from the Russian American Fur Company based in Russian occupied Alaska.

No matter which company dominated trade in Alaska or the Canadian North, similar tactics were used in order to ensure that furs were harvested.

The most important of which was the creation of a dependence on European goods, and later European foods, for the survival of these people. (Innis, 1961: 388) Progressively the indigenous peoples of Canada's Northwest would spend more and more of their time harvesting furs in order to meet the demands of the international markets. This meant less and less time spent following the traditional subsistence activities upon which they had depended for their survival in the past. This was possible as long as European goods were available to replace these subsistence activities, but when the world market for furs such as beaver collapsed in the 1840s, the harvesters were faced with the stark reality that the world economy no longer had a demand for the main good that they had depended upon for their survival. This, combined with the inability of these peoples to easily return to their traditional activities resulted in severe hardships. (388)

While the Inuit of Northern Canada escaped the earlier period of the Canadian fur trade relatively unscathed due to the markets preference for furs from Boreal forest-based animals, when the Arctic fox became a fashionable fur in the first decade of the 20th century, they too were exposed to the same changes that the indigenous peoples of the Canadian sub-Arctic were exposed to earlier. (Damas, 2002)

Pre-industrial colonialism of the circumpolar region was not only based on the harvest of furs. Whaling was an important economic activity in the region starting in the 17th century. At that time the world markets started to develop an increased demand for whale products. Prior to the development of petroleum-based products, whale blubber was an important source of oil used for lamps and as a lubricant. Even more sought after was whale baleen, which prior to the discovery of new rubber-based products, was used in such things as corsets. As more accessible whale populations were depleted, whalers started moving into the seas off Greenland and the Eastern Arctic

While production started in the 1700s in the Davis Strait, by the 1840s it was centered round the Cumberland Sound. By the 1860s American whalers had expanded into Hudson's Bay. Whaling was never centered in any area for a long period of time as whale stocks quickly became depleted and new areas had to be found. Initially, contact with the Inuit was sporadic. As was the case with Greenland, at first the Inuit saw little need for the goods that the whalers tried to trade, but as time went on, they started

to learn how to use these products and as such develop a desire for them. (Eber, 1989: 11) By 1851 American whalers started to winter in the region. Wintering had an important impact on the local population.

“...The Inuit left their small scattered camps where bands of relatives lived together to gather at winter harbours and at the shore stations. They put at the service of the newcomers their knowledge of the land, their seamanship, and their labour in the whaleboats. They provided fresh country food and warm, handmade fur clothing. In return the whalers provided their astonishing fire-power and their southern goods. Whaling became a mutual endeavour...” (12)

In the Western North American Arctic, American whalers first arrived in the Bering Strait in 1848. They slowly spread out across the area north of the Chukotka Peninsula and along the North Slope of Alaska. By the 1890s they had arrived at the grounds north of the Mackenzie Delta and had established a base at Herschel Island. Contact in the Western Arctic was more constant in the region and while ...“it started later than did whaling in the east, the western Arctic whaling industry made up for in intensity for what it lacked in longevity.” (Coates, 1985: 137,138) In the west an extensive and relatively constant cooperative relationship was established although the exploitive nature of the whaling industry meant that as one area was depleted, the Inuit had to abandon traditional areas and move with the whalers in order to continue these exchanges. As well, because of the intensity of contact, exchanges were sometimes more destructive to the Inuit in the west Arctic than was the situation in the Eastern Arctic. (Coates, 1985:140)

The whaling boom of in the eastern Arctic had started to decline by the last decade of the 19th century. The earlier efficiency of the whalers meant that it became harder and harder to find whales in the region. In the western Arctic production continued until the first decade of the 20th century, when synthetic products replaced whale baleen and petroleum replaced whale blubber. By 1907 whaling in the North American Arctic had collapsed. The impact on the Inuit was considerable, although it would have been worse had not an Arctic fur trade emerged at the exact time of the collapse of whaling. Coates notes that the transition to fur trading was eased by the fact that whaling was based on relations similar to that of the fur trade. (Coates, 1985: 138,139)

During pre-industrial colonialism, communities in the Canadian north were significantly transformed. This transformation is characterized by a shift from a subsistence-based economy to one, which combines subsistence with a dependence on servicing the economic needs of primarily European populations. The activities that make up these services are not however foreign to these indigenous peoples. In most instances they do not require a radical transformation of their lifestyles. Trapping for the fur trade, whaling, and associated activities such as clothes production, are all extensions of traditional hunting and gathering activities rather. The lifestyles do change as dependence is increased but it is a fundamentally different situation from that brought about by industrialism where these traditional activities became totally devalued. This situation changes radically with the arrival of industrialism in the region.

4.6. Industrialism

The next type of economic system to be introduced into the region was that of industrialism. During the 19th century it spread throughout the European world. By the end of the 19th century it had started to spread to the Canadian north. The essence of industrialism is the pursuit of wealth by the increasing rationalization of the production process. This occurs through the increasing division of labor and the expansion of markets. This process used markets to find the most efficient means of producing and selling a product. As if done by “an invisible hand”, markets, if left unhindered, would find the best way of distributing products and wealth so as to maximize the benefits to everyone. Still, for those who introduced the industrial system to the Canadian north, allowing this region to benefit in the wealth produced by industrialism was not one of the priorities.

It has been pointed out that the industrialism that was introduced into the Canadian north was fundamentally different from the individualistic entrepreneurial capitalism that is often associated with frontier development following the ideas of the American historian Frederick Jackson Turner. In his discussion of the industrial development of the sub-Arctic regions of Canada, historian H.V. Nelles has pointed out how rational planning and close government-industry cooperation was utilized to ensure that both the government and industry would maximize benefits. (Nelles,

2005) Nelles also points to the importance of American capital and industrialists in these regions. Morris Zaslow outlines how the construction of railways in Canada from the 1870s onwards started to open up the northern regions of what is now Ontario, Quebec and the Western provinces. (Zaslow, 1971) Mining and forestry operations started to develop when American and other international markets opened up for these raw materials and when foreign capital became available to develop these operations. Both the federal and provincial governments played a major role in coordinating these developments.

From a symbolic perspective, the Klondike gold rush is probably the most well known mining development in Canada's north. It certainly followed Frederick Jackson Turner's frontier model of development at the beginning. When gold was discovered in the Dawson area of the Yukon in the 1896 it brought a rush of at least 30,000 non-indigenous people in the region in a space of a few years. What Canadian historians have tended to highlight in this development was not the mining of the gold itself but the attempts by the Canadian government to control what was essentially an American development. According to Zaslow, "...In the Yukon Territory we see the interaction between official Canadian policies and Canadian institutions and a community largely comprised of Americans and expressing the American frontier ideology....". (1989:134). While the rush resulted in a short term mining development based on individually owned stakes, after a few years this initial "American frontier" situation had changed considerably. "By 1900 Dawson was a suitable place for orderly family living, and by 1902 it was reported to be as Canadian as Toronto." (Zaslow, 1989: 147)

The Yukon gold rush can be seen as a good example of the inefficiencies of a frontier-type of industrial development in the north. Coates and Morrison describe how the Yukon gold fields had started to change in the first decade of the 20th century.

"...(By 1909) The days of the individual prospector and the mining methods that produced the gold rush were finished as an important economic force...Now the symbol of the goldfields was not the pan but the dredge...Dredges processed tons of gold-bearing gravel each day and could make a profit on a trace of gold in each cubic yard – pay dirt that could not support a miner working with simpler techniques..." (2005: 157)

This need for new technology to rationalize the production process meant that the government had to work closely with the American and British investors who had the capital to purchase and utilize this technology to ensure that conditions would allow them to make a sufficient return on their investments. This meant granting a “virtual monopoly” over many of the resources to run their operations. (Coates and Morrison, 2005: 158) Less than 10 years after the initial discovery of gold, industrial activity in the Canadian north was dominated by a new logic based on close cooperation and planning between the national government and international capital. The distances and conditions in the north meant that the long-term interests of both investors and the government could only be met by long-term planning and a rationalistic exploitation of natural resources.

This was the logic followed in later industrial developments in the Canadian north such as silver and lead mining in the Mayo-Keno region of the Yukon starting in 1906, radium mining in the Great Bear Lake area in the 1930s, and gold mining in the Yellowknife area starting in the 1930s. This logic became even more prevalent following World War 11 where American government actions, with some help from Canada, had rapidly established new transportation systems in the Canadian north such as the Alaska Highway, and a series of northern landing strips and airbases. The legitimized in the eyes of many the superior nature of industrial developments planned by both government officials and industrial interests. Following the war, industrial activity in the territorial north of Canada became almost entirely controlled by federal government as the region became “the bureaucrat’s north”. (Coates, 1985: 1910) The 1950s and early 1960s saw an increased pace of highway construction, a railway to Great Slave Lake and the opening up a new lead/zinc mine at Pine Point and several other mining developments. In the 1960s, when it became apparent that large oil and gas deposits existed in the Mackenzie Delta region, the government ensured that development would be largely controlled from Ottawa.

How can this type of industrialism be best characterized? The fordist model industrialism developed by the Regulation school theorists has several advantages in studying northern industrial development. Fordism differentiates a period, when capitalism was competitive and entrepreneurial to a period, when capitalism was planned. (Jenson, 1989) This planning was in large part due to the desire of capital to become more efficient by investing large amounts of money in a more capital and technology intensive system

of production. In order to allow the safe investment of this capital, the social and economic environment had to be made secure and stable. This required the development of a close relationship between the state and capital. On a secondary level the workers in this new system of production had to be given certain rights and social conditions to ensure stability. In other words, capitalism became more organized.

In northern regions the resource-based fordist industrialism became the dominant model of industrial development for several reasons. One of the most important was the need to become as efficient and as technology dependent as possible because of the geographical situation. Distances and lack of local labour meant that developments usually depended on large capital expenditures. Capital could not be raised unless there was a certainty of sufficient returns. In addition, the fordist model fit with the colonial interests of the national states. Close cooperation between state and capital meant that the national states could continue to exercise a close control of developments and so ensure that national objectives for these regions could be followed.

In the Canadian north industrialism did not initially have a direct effect on indigenous communities. Most industrial developments resulted in separate communities constructed specifically to serve the needs of that particular industrial project. These northern resource dependent communities were particularly pure forms of industrial communities that existed in southern Canada. Indigenous communities often were completely isolated from these developments. They were not isolated however from the welfare state policies that accompanied fordist industrialism. The implementation of these policies had serious impacts on these communities (Damas, 2002; Fossett, 2001)

4.7. Post-industrialism?

Since the 1970s, social scientists have begun to talk about a fundamental transformation occurring in contemporary society. Industrialism is decreasing in importance. New post-industrial forces are superseding the forces of industrialism. According to Bell, advanced capitalist societies were moving from economies dominated by the transformative processes of industrialism to a new type of society emphasizing “the centrality of theoretical

knowledge as the axis around which new technology, economic growth and the stratification of society will be organized”. (Bell, 1973: 112)

Under industrialism, circumpolar regions were at a disadvantage because it was always cheaper to produce goods close to the markets that bought these goods. Apart from those resource industries that had to be in the North, most industries were located in the central regions because that was where the markets were. In a post-industrial knowledge economy, production no longer has to take place close to the main markets. The new information technologies mean geographical space becomes less important for the economy. To a certain extent, people can choose to live and work where they want to instead of where the market wants them to. The potential exists for Northern areas to benefit from this new situation.

4.8. The social economy and the Canadian North

The role and use of social economy organizations is unique in the North given the region's particular conditions. As has been shown above, historically, two types of communities have characterized the North: resource-dependent communities dominated by settler societies and indigenous communities characterized by a mixed economy (Southcott, 2003). Recently a third type of community has gained in importance – the Service Sector community (Bone, 2003). Research on the impact of resource development in Northern communities has shown that a fundamental contradiction exists between the organizational principles of large-scale resource exploitation enterprises and “the local social economy” of these communities (House, 1981). The impact of mega-projects on Northern indigenous communities has been an important issue in recent research (Bone, 2003). These projects are typically industrial in nature and affect the communities in varying ways. Research has indicated that the rapid introduction of fordist-style relations and consumption patterns has conflicted with the traditional hunting and gathering economy and traditions. This conflict has led to serious situations of social instability and the myriad of social problems that this instability brings (Chabot, 2004; Niezen, 1993; Stabler, 1990).

While these are all issues that underlie recent social research on communities in Canada's north, there are three characteristics that can be highlighted as having an important impact on the social economy sector in these

communities. The first is the existence of a mixed economy in the region's indigenous communities. Communities rely not only on wages from labor, but on the continued existence of subsistence hunting and fishing activities. The next characteristic is the continued importance of the state in Canada's north. A colonial culture combined with an economy dominated by "fordist" logic and recent implementation of paternalistic welfare state policies has meant a strong role of the state in the northern economy. Finally, the dependence on large-scale resource exploitation found in northern resource dependent communities could also be seen to have an important impact on the formation of a social economy in the region.

4.9. The mixed economy

Researchers have noted that most indigenous communities in Canada's north can be characterized as having a mixed economy (Abele, 1997; Stabler and Howe, 1990). In this mixed economy, income-in-kind, from the land through traditional economic activities and cash income from wages and social transfers, are shared between community members. The unique aspect of the Northern mixed economy is the relative importance of subsistence activities. Abele makes the case that this mixed economy can only be maintained through state policy measures to regulate land use and to provide social transfers. In the current post-fordist climate the ability of the state to provide these measures is increasingly questioned and as such the mixed economies of these communities are threatened. Stabler and Howe have pointed to the impending crisis arising in the Northwest Territories due to the fiscal austerity of governments and the reduction of social transfers.

Other things such as accelerating resource wage opportunities and destruction of habitat and wildlife patterns also threaten the mixed economy. Youth are being affected by increased exposure to new cultural ideas. Television, videos and the school system are challenging the ability of the mixed economy to adapt. Subsistence activities are being challenged by a desire to engage in other type of activities. These changes make it harder to keep the production from the land as an important part of northern indigenous economies.

Despite these challenges the traditional subsistence hunting and fishing economy continues to exist. It is viewed as important source of food when economic changes turn boom times to bust times. It also continues to exer-

cise a cultural importance and an important part of the identity of these communities. Values characterizing subsistence hunting and fishing are still important basic values for the communities as a whole. These values include the importance of group cooperation and sharing. As such these values do serve as a potential source of encouragement for social economic sector development. The notions of utilitarian self-interest that characterize the private sector do not totally dominate the economic logic existing in indigenous communities. As such social economy organizations have the potential to be seen with a greater degree of legitimacy than in other types of communities. The continued presence of a mixed economy can therefore be seen as opening up opportunities for social economy development.

The mixed economy is not the social economy. There are important differences that research in the north needs to understand. The notions of non-profit activities or democratic decision-making central to the social economy are not central concepts to the mixed economy. The cooperative alternative democratic discourse that characterizes social economy organizations elsewhere in Canada are largely foreign voices in indigenous communities of Canada's north. As such the mixed economy also represents constraints on social economic development.

Many of the activities that dominate the mixed economy can be easily integrated into the social economic paradigm because they both go beyond simple utilitarian economic notions. Sahlins has argued that the traditional economy of indigenous societies can be considered part of the social economy in that much of its pre-capitalist values still play an important role in the region and act in contradiction to the profit-seeking values of contemporary "affluent" society (Sahlins, 1972). Other aspects of the mixed economy that do not fall under a strict capitalistic or state-based economic paradigm are more easily integrated into a social economy paradigm.

4.10. The state and the social economy in the North

The Canadian north has always been a colony to southern interests. Its historical development is profoundly marked by this fact (Coates, 1985). Despite current trends towards increased self-government, the Territorial North is still heavily dependent on the federal government for the provision of services and decision-making. Given this history, it is not surpris-

ing that all of the people who live in the Territorial North rely upon publicly funded education, health care and social welfare.

This historic role of the state, first as a colonial power, then as the provider of common welfare state and modern services means that the social economy in the north had been affected by different forces than other regions of Canada. The state has been more directly involved in the development of services that are usually developed by social economy organizations. The most illustrative example of this is the role of the federal government in the development of consumer and producer co-operatives in the region (MacPherson, 2000). Paternalistic state policies, no matter how well intentioned, can be seen to have had an impact, sometimes positive but often negative, on the development of social economy organizations in the North.

4.11. Resource dependence and the social economy

Historically speaking, communities in the Canadian North exist primarily for two reasons: to provide a homeland for the indigenous peoples of the region or to facilitate the exploitation of a natural resource by non-indigenous outside powers. While whaling and fur harvesting were the initial resources exploited by these outside interests, the creation of permanent communities of non-indigenous peoples was largely a creation of 20th century industrial needs. While the Yukon gold rush at the end of the 19th century has tended to create the image that Northern communities were created by individual adventurers using their entrepreneurial frontier spirit to exploit the Northern wilderness, the historical reality of development of non-indigenous communities in the North is one of the planning and construction of resource dependent communities designed by outside corporations in partnership with the federal government.

These communities were based primarily on mining. The dominance of one main industry means that there exists a high degree of “dependency” in these communities and, because of the cyclical nature of commodity production, they have a high degree of instability. The specific economic characteristics are: one dominant employer who is usually a large industrial corporation based outside the region, the industry is capital intensive and technologically intensive, jobs are primarily unskilled or semi-skilled

“blue-collar” occupations, relatively high wages, few employment opportunities for women, a small retail sector, and a small service sector.

Demographically a highly mobile population, a high degree of youth out-migration, a young population with fewer older people, more males than females, larger families, and greater ethnic diversity characterize these communities. The cultures of these towns tend to be dominated by a high degree of dependency, a “wage-earner” culture (as opposed to a “stakeholder” culture), a male-dominated blue-collar culture, lower levels of formal education, and a negative environment for women.

Sociologists such as Lucas and Himelfarb have shown these towns to be different than agricultural-based and fishing-based communities. (Himelfarb, 1982) According to Lucas, fishing towns, agricultural towns and tourist towns, while they may be resource-dependent, are not single industry communities. Such communities are made up of “small capitalists (and) entrepreneurs”, who have a lifestyle, which “differentiates them from the population of a community with a single industry base,” (Lucas, 1971: 14)

These particular socio-economic conditions lead to a social economy that can be seen to differ from other types of communities. The absence of a stakeholder culture and the lack of economic empowerment can be seen to engender a lack of commitment to the community and a culture of dependence that can be seen to negatively affect the development of social economy organizations. Previous research has shown that other than recreational-oriented organizations, there are few non-profit or voluntary organizations (Himelfarb, 1982).

4.12. Researching the potential of the social economy in Northern Canada

A recent grant from the Social Sciences and Humanities Research Council of Canada has provided funding for a Northern social sciences research network to study the potential for the development of the social economy in Northern Canada. The main objective is to create a network of university and college-based researchers and representatives of community-based organizations, operating as partners, to conduct research relevant to the social economy in Canada’s North. In addition to the above, the overarching objectives of the program are: to support research, and help mobilize

new knowledge, that will help develop social economy capacity in Northern communities; contribute to defining policies by evaluating government policies and programs applicable to the social economy; improve the performance of organizations and enterprises in areas that are important to the social economy in Canada's North; demonstrate through, for example inventories, statistics, comparative analyses the actual and potential contribution of the social economy to the various sectors of the economy of Canada's North; contribute to a Northern perspective on debates relating to sustainable development; develop Northern Canada's international contribution to, and visibility in, areas relevant to the social economy; and ensure the development of research capacity and the training of Northern students in the area of the social economy through their participation in research projects and through the development of curricula.

The network will be organized around four research themes. The first theme is the conceptualizing, inventorying, and evaluating of the Northern social economy. The other three themes are related to the specific characteristics underlying the social economy of the North as discussed above. In regards to the first theme, an important initial task of the network will be to establish the social economy as a research priority and to solidify linkages between social economy organizations, the territorial colleges, and university-based researchers. This will be partially achieved through establishing a categorization and inventory of existing social economy organizations. Using questionnaire surveys and interviews, the problems and issues facing these organizations will be investigated in an attempt to delineate both the issues obstructing social economy development in the North and the best available assets to enhance this development.

The next theme tries to examine impact of resource dependence on social economy organizations in Canada's north. It builds on previous research that has examined the importance and effect of varying resource regimes on Northern communities. (Lucas, 1971; Bernard, 1977; Berger, 1978; Cox, 1975; House, 1981, Simard, 1982; Osherenko and Young, 1989; Duhaime; 1991; Elias, 1991,1995). Recent research has added to this (Southcott, 2000; Myers, 2001; Caulfield, 2000 and 2004; McPherson, 2003; Duhaime, 2004). Projects associated with this theme would look at the past, present and potential impact of varying resource extraction regimes on the development of the social economy and the evolution of government programs. It would examine differing resource regimes based on the type of resource, the condi-

tions of the resource development, and co-management conditions. Using a variety of indicators, research would attempt to determine which conditions best promote social economic development.

Differing co-management regimes will be highlighted and comparisons will be made. Traditional renewable resource management arrangements may be crucial to the social economy of Northern indigenous communities (Berkes, 1987; Feit, 1991; Collings, 1997). Case studies of these systems will be compared to new co-management regimes associated with non-renewable resource development projects (Hensel and Morrow, 1998). The potential for co-management regimes to enhance social economic endeavors and community resilience could be evaluated (Berkes and Folke, 1998).

Linked to co-management is the larger picture of devolution. Decolonization has taken many forms in the Canadian North (Broderstad and Dahl, 2004; Saku, 2002). These include the creation of Nunavut, the Nunavik Political Accord, 1984 Inuvialuit Agreement and Yukon First Nation Land Claims Settlement Act to name a few (Hicks, 1999). The impact of these varying arrangements on social economic development needs to be studied. Another project will evaluate the experiences and contributions of small-scale community resource-based enterprises. Such enterprises will be related to evolving economic development regimes in the North as was as past evaluation of small-scale enterprises (Myers, 1996). A study of these enterprises will help to define the potential contribution of such “alternative” development to the social economy of Northern communities.

The third theme examines the impact of state policies on social economy organizations in northern communities. Given the historical importance of the state in the development of Northern communities and the importance of public sector employment in the region (Rea, 1968; Irwin, 1988; Salter and Salter, 1997) a series of research projects would look at the past, present and potential impact of the state and public policy on the social economic development in the North. One project would build upon past research which examined the state promotion of co-operatives in the North (MacPherson, 2000; Hammond Ketilson and MacPherson, 2001). These co-operatives have become the dominant business structures in many Northern communities. This research would link with research currently being undertaken by Hammond Ketilson and MacPherson on Aboriginal co-operatives in the North.

Education is an important resource for the development of the social economy in the North. Past education policies and practices have been shown to have severe negative consequences for social cohesion – especially in Indigenous communities (Lamothe and Lemire, 1994; Darnell and Hoem, 1996; Vick-Westgate, 2002). How can we use the educational institutions in the North to better stimulate the social economy? A research project would examine current educational practices and curricula with a view to assessing their impact the social economy.

One area where the social economy can have a positive influence in Northern communities is in improving health and well-being. Here researchers stress the importance of local civic involvement as an important determinant of ones’ well-being. (Hild and Stordahl, 2004) Active participation in ones community has been shown to be potentially one of the most effective ways of combating the social pathologies that exist in many of these communities (Bjerregaard, P. and Young, T. Kue, 1998). Case study analysis of situations where volunteering and other aspects of the social economy has been used to enhance social capital and community engagement resulting in improved situations of well-being can help find ways of better utilizing the social economy to promote community health (Gibson and Gibson, 1999).

The forth and final theme will examine the impact of traditional subsistence activities in social economy formation. As mentioned above, traditional economic and social activities of Northern indigenous communities are in themselves a model of social economy. (Wenzel, 1995, Wenzel et al, 2000; Nuttall 1991; Proulx and Gauthier, 2005) A key objective for research in this theme area is a better understanding of the relationship between sharing, a subsistence economy, traditional indigenous cultures and values, and social cohesion in Northern communities. One project would look at the transformation that this traditional model of social economy has undergone as it was exposed to new influences. Certain research indicates that the importance of the traditional social economy of sharing is being transformed (Stern, 2001; Chabot, 2004). Others note that despite changes the importance of the sharing economy remains central to community integration in Northern indigenous communities (Condon et al, 1995; Collings et al, 1998; Wenzel, 2000). Traditional activities are now portrayed as important coping strategies for indigenous communities faced by global influences (Martin, 2001). In many cases the responses have not been appropriate to meet the needs of the peo-

ple (Zamparo and Spraggon, 2005) Research looking at the evolution and effective performance of the traditional sharing social economy of Northern indigenous communities needs to continue.

4.13. Conclusions

Recent economic transformations in the Canada's north have created many challenges for communities in the region. The social economy is a possible instrument to deal with these challenges by enhancing both the vitality and social and educational capital of Northern communities through organizations that are more directly controlled by the communities themselves. Attempts to expand the social economy in the region's communities must first properly understand several unique characteristics of the region's economy as they characteristics offer both constraints and opportunities. The above discussion of the region's economic development has shown that the traditional economy of indigenous communities, the role of the state in economic development, and the impact of resource development in the North are all important characteristics that impact social economic development in the region. How they impact social economic organizations must be properly understood in order for proper policies to be developed that stimulate the growth of the social economy in the region.

The Social Economic Research Network for Northern Canada has been developed for such a purpose. It is a network of university and college-based researchers and representatives of community-based organizations, operating as partners, which is conducting research relevant to the social economy in Canada's North. The Network seeks to mobilize new knowledge that will help develop social economy capacity in Northern communities. It has developed a series of key research areas that hope to build on the existing research findings. A research plan is outlined which will assist attempts to further develop social economic organizations in the region

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5. Enterprise Ownership and Resources Management in Greenland

*Hans Aage*³²

Is not the State a question? All society is divided in opinion on the subject of the State. Nobody loves it, great numbers dislike it, and suffer conscientious scruples to allegiance. And the only defence set up, is, the fear of doing worse in disorganizing. (Ralph Waldo Emerson, 1850. *Montaigne, or the Sceptic*)³³

5.1. The privatization surge

During the past three decennia a surge of enthusiasm for privatizations and liberalization of markets has flooded the world. This enthusiasm overtook the coasts of Greenland some years ago. “The heaviness of the public sector” should be reduced by means of “privatization or liquidation of government owned enterprises”, “outsourcing of more activities” and creating “real prices” that “genuine reflect costs”.³⁴ In Greenland these reforms meant changes to the time-honored system of uniform price system.³⁵ All this has been established as dogma, and it is often easy to get away with

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³³ Emerson, 1987:89–90.

³⁴ The uniform price system before reforms were implemented after the millennium was based on the concept of goods and services having the same price, wherever sold in Greenland. The uniform price system was based on cross subsidizing.

³⁵ Fællesudvalget, 2003:5,8,55; jf. OECD, 1999; Motzfeldt, 2000:6,9,11; Paldam, 2000; Grønlands Erhvervsråd, 2002; Aage, 2003b, 2003a:10–11. The global enthusiasm appears to become less buoyant because of problems, among other things from the privatization of railways and health care in England, *The Economist*, 29 June 2002, pp 71–73.

postulating these changes indiscriminately and without argumentation. The Joint Committee for Business Development in Greenland recommended in 2003, that there ought to be a 50 per cent reduction in government owned enterprises as well as 50 percent increase in outsourcing of public services to private providers, and by 2014, that there ought to be a reduction of government owned housing “by 5 per cent annually”.³⁶ The joint committee cheerfully assumes that this will create “market mechanisms”, a “sustainable economy”, “entrepreneurs and gazelle enterprises” and a “branding” of Greenland. There is however, no trace of attempts to critique or evaluate the probability of achieving the goals of these reforms – namely economic independence and growth in Greenland.

Unfortunately it is not that simple. The question is how economic decisions should be made, how to strike a balance between market and state, between on the one hand individual decisions in the market, where each person seeks his own advantage, and influence is determined by the size of his purse, and on the other hand collective decisions in the political process. In terms of collective decisions everybody in principle has equal influence through voting. Hence, what is the optimal balance between private and public governance in economic life in Greenland? Below some arguments are presented which are based upon economic theory, and these arguments are relevant when forming an opinion about this complicated question.

5.2. State and market

Government and private companies differ fundamentally, because money owned and spent by a private company, is owned by the company, whereas money in a government owned company is always taxpayer’s money. One’s own money and taxpayers’ money are completely different types of funds. This difference asserts itself even though in both types of companies, owners can be far removed from employees, who actually perform the work. Contrary to government companies, a private company has a direct incentive to maximize profits by saving costs and by producing – and inventing – the types of output that the public is prepared to pay for.

³⁶ Fællesudvalget, 2003:8,55,60,74.

The incentive to earn profits is at the same time a limitation of the private company. It is forced to maximize profits in order to survive. A government company is not to the same degree, compelled to keep costs low, but neither is it limited by profit requirements. It can take some social considerations into account.

In many situations there is a coincidence between private profit incentives and broader interests of society. Even if everybody only seeks his own advantage, all activity in society is in a sense, directed towards the common good by “the invisible hand of the market”. This is an expression first used in 1776 by Adam Smith, which marked the dawn of economic welfare theory.

The starting point of the theory addresses the important and very general problem of coordinating decisions concerning resource allocation in an optimal way, when the given variables are: individual preferences, technical possibilities, and initial resources.

This is a prolific formulation of many types of problems, but not of all types of problems. The general theoretical results are two fundamental theorems on welfare theory concerning perfectly competitive markets, which constitute the essence of microeconomic theory – an explicit formulation of what the invisible hand of Adam Smith can accomplish:

- Every competitive economy is Pareto efficient.
- Every Pareto efficient resource allocation can be attained through a competitive market mechanism, with the appropriate initial redistributions.³⁷

This means, that in a well functioning competitive market, resources are not wasted so nobody may benefit from them. This is the meaning of the very broad optimality concept of Pareto – it is a minimum requirement concerning optimality, which nobody could possibly reject. Only obvious waste is ruled out, and there are generally a large number of Pareto optimal allocations, which could differ in many respects, especially concerning impact upon income distribution. The great advantage of Pareto’s broad concept of optimality is that it does not require arbitrary interpersonal comparisons of utility. Nevertheless, it gives rise to the two powerful fundamental theorems of welfare theory. Therefore, the market is a potent

³⁷ Stiglitz, 2000:60.

democratic mechanism, where individuals can express their preferences very effectively through their consumption patterns. In a free competitive market there will be no waste. To leave the market to itself without political interference is in many cases an excellent solution. The market has an important merit, namely that its incentives work well. In other words, it is not difficult to make producers maximize their profits or to make consumers maximize their personal utility as they do this themselves. On the other hand, it becomes problematic for efficiency, if there are incentives for government employed bureaucrats, who are reluctant taxpayers, and at the same time they still enjoy free public services.

5.3. Market failures

Much can be said in favor of free markets. But the fundamental theorems of welfare theory, i.e. the invisible hand of the market only works for the common good if kept in check by competition and other restrictions. There are many cases, where the market mechanism does not function appropriately, and where political governance therefore is necessary. These so-called market failures are classic examples within economics textbooks.³⁸ These market failures are described in further detail below with reference to Greenland's economy:

- Imperfect competition.
- Public goods.
- Externalities.
- Incomplete markets.
- Imperfect information.
- Macroeconomic disturbances.³⁹

To these six examples there should be added two further problems related to market equilibrium and Pareto optimality:

- Distribution.
- Merit goods.

³⁸Fællesudvalget (2003:18).

³⁹Stiglitz, 2000:85–87.

It is characteristic for the Greenland economy that the efficiency of the market is impaired by all conceivable forms of market failures, massively predominant and overwhelming everywhere.

Imperfect competition, which limits market efficiency, is endemic in Greenland because of its vast landscape, its dispersed extension of geography and its small numbers of population. Because of the scattered settlements, even small artisan shops and service enterprises often enjoy local monopoly power in isolated parts of the market. However, the economy is dominated by a small number of large companies. Of the total 15.618 employees within production companies, Royal Greenland alone accounts for 2.306 (15 percent). A further 7.004 persons (45 percent) are employed by one of the 11 largest companies which are either fully or partly state owned. In comparison, about 12.000 persons are employed in public administration and services.⁴⁰

Often large companies are natural monopolies. This means that there are unexploited economies of scale in the trade concerned, so that it would be inefficient if there were a competitive market with more than one company. There are many natural monopolies in Greenland, where the total economy is too small for companies to reach an efficient size. It is hard to imagine many competing companies within sectors like retail trade, transportation or energy supply, because fixed costs (e.g. administration costs), become large as compared to turnovers, when there are more than one or a few companies.

Externalities are economic activities that have production costs, which are not reflected in prices or accounts. The effects are external to the economic agent, who caused them, and the market is unable to handle these types of activities in an optimal way. Air pollution is an important example of a negative effect, for which the market cannot collect any payment. In Greenland, social and cultural effects of company decisions are heavy externalities. For example, the relocation of just one company may erase the basis of existence for an entire smaller town or village.

Imperfect information, or totally absent markets are further sources of inoptimality. Together these two failures create an important market failure, possibly the most damaging of all. The market is myopic with a short time horizon. This results in a market that is not capable of allocating optimally for the long run or making decisions for the distant future. This could include

⁴⁰ Grønland 2005:138,146–148, 332.

impacting investments in infrastructure, which carry great weight in Greenland – where information is sparse, where unborn generations are part of the problem, and where there is no market price formation at all. Long run considerations are not the *forte* of the market.

Free markets may well create macroeconomic disequilibria, first of all unemployment. Unexploited resources in small, isolated towns and villages in Greenland necessitate political intervention for the sake of efficiency, but also for the sake of income distribution. As a rationale for political action, distribution effects are outside the very broad optimality criterion of welfare theory; Pareto's criterion is satisfied, if resources are not wasted and provide utility for someone regardless of the distribution of utility. However, distribution is a paramount political issue, which is for example an important part of the justification for maintaining the system of uniform prices of water, electricity, and heating. This is also justified in sustaining habitation and production in small towns and villages and in Greenland at large despite adverse conditions.

Finally, some policy measures are justified by reference to so-called merit goods, which are types of goods that we as members of society inflict upon, or take away from ourselves for no other reason than our best interest. This is the case even if we unfortunately do not comprehend it and as individuals, are not willing to pay for them, respectively abstain from them voluntarily. Examples are compulsory education, subsidies for kindergartens in kind rather than in cash, subsidized theatres, bans on narcotics and gambling, and excise duties on alcoholic beverages. Often, other reasons are also invoked, particularly the distribution and externality arguments. This paternalism is completely outside the logic of the optimization. As the problem formulated above indicates – the sovereignty of consumers' preferences is the basic principle, and the fixed point, on which the whole theory turns.

5.4. Natural resources

Together these peculiarities imply that in Greenland, it is not the exception but the rule, that the invisible hand of the market badly needs assistance from visible and firm political intervention. Furthermore, a weighty market failure has not even been mentioned yet, namely the so-called public goods. The concept of public goods does not refer to, whether they are

produced by private companies or by government, but rather to specific features related to their consumption.

The fundamental theorems of welfare theory apply to private goods only, of which consumption is rival (if one person consumes the particular good, other people cannot do it simultaneously) and exclusive (the owner can prevent other people from consuming the good and thus collect payment for it). When these conditions are not fulfilled, various types of public goods emerge, which the market cannot allocate optimally, as indicated with table 1. In the last example, fish stocks were shown to be of vital importance to Greenland's economy by constituting 87 per cent of exports.⁴¹ Unlike a navigation buoy, a fish stock is not a pure public good. The use of a buoy by one vessel does not preclude other vessels from doing the same. However, fish that are caught by one fishing-boat cannot be caught by another boat. However, an attempt to prevent boats from exploiting fish in the sea is almost as complicated as preventing boats from utilizing the buoys.

Table 1. Consumption patterns and types of goods

Rival consumption exclusion	Private goods	Food items, clothing health care
Non-rival consumption Non exclusion	Pure public goods	Navigation buoys, snow clearing, police
Non-rival consumption exclusion	Ticket goods	A bride, seats in a football stadium
Rival consumption non exclusion	Common goods	Clean air, fish stocks

If exploitation of a fish stock is determined by individual decisions in the market, the result will be economic overfishing, exactly like a common, which can be used freely by all peasants in a village; over grazing will be the end result, hence the phrase “the tragedy of the commons”. The explanation is that new fishing-boats will start fishing, as long as the cost of a new boat (the marginal cost) is less than the average return of fishing. A new fisherman is only concerned with his private return. This return is equal to the average, as all boats get the same catch, and he does not take into account that his new boat will reduce the catches of the boats already in operation. A maximum total catch for all fishing-boats together in a

⁴¹ Grønland 2005:304.

single year requires that new boats are added only as long as the marginal cost is less than the net increase of total catch (the marginal catch), which in turn, is less than the average catch. On top of this, come more far reaching complications related to biological over fishing, which may damage fish stocks in the long run. It appears that the problem of overfishing may be interpreted as an externality problem, cf. the example of clean air as a common public good, and air pollution as an externality.

The solution is that the privilege of exploiting the fish stock (and the privilege of exploiting the atmosphere) should be bestowed upon one single owner.⁴² Whether the owner is an individual person or the state, it is in the interest of the owner, to guarantee, that exploitation is regulated optimally. With this solution, one important economic problem of common goods can be solved. The other big question is regarding who or where the proceeds of harvesting should go. Ownership rights, or the privilege of exploiting the fish stock has a value in money terms called resource rent. There are weighty arguments that say resource rents should go to Greenland's Home Rule government, either by taxation or equivalently, by public ownership. These arguments are compatible with widespread notions of justice – that user rights of natural resources should belong to the people and not to any particular individual. Moreover, taxation of the resource rent – which does not originate in any productive activity, but simply from ownership of the resource – is a rare example of an efficient tax in that, it will not distort economic decisions. Another example of this kind of tax is a head tax or other types of lump-sum taxes. Most other taxes, like an income tax or an alcohol tax, inflict distortions upon economic activity. In these particular cases, a distortion of the supply of labor and a (beneficial) distortion of alcohol consumption are incurred.

In Greenland, the fisheries' resource rents have traditionally been given away for free, to private fisher-boat owners by "grandfathering". Grandfathering is the passing on a form of tradable fishing quotas for shrimps for an indefinite span of years. However, in principle, it is possible to cancel them with a given notice of five years.⁴³ Several procedures for confiscating resource rents are possible. Examples of such a procedure could include the selling of permits by auction for the highest bid, taxing permits, or by taxing the value of catches less wage costs and other costs. The last

⁴² Coase's theorem (1960) about externalities; Milgrom & Roberts, 1992:293–305.

⁴³ Benchmarkingudvalget, 2003:104–107,121,146–147; DRUG, 2006:76.

procedure has been in use in Iceland for a number of years, at a 6 per cent rate of taxation, which is expected to increase to 9.5 per cent.⁴⁴ Auctioning of quotas is very seldom used. Among the problems regarding this approach is, that it has proved difficult to prevent collusion between the relatively few buyers, and that it is also difficult to determine the time limit of quotas.

“The impartial committee”⁴⁵ rejects selling quotas by auction for the reason, that it will increase income uncertainty in fisheries. This conclusion is supported by the “the advisory committee”, which shares this judgment concerning quotas for short time periods. The argument appears hard to understand. The major income uncertainty in fisheries is caused by instability of world market prices for shrimp. For example shrimp prices were cut by half from 2001 to 2004.⁴⁶ Price fluctuations like these will be absorbed by quota prices, if quotas are sold by annual auctions. Therefore, annual auctions will stabilize income in fisheries and the transfer income risk (as well as resource rent) to the Home Rule government. If auctions do not function properly, it is relatively simple to tax away the resource rent instead.

There is a certain limited trading of shrimp quotas, but prices are not known to the public or to the government, so the size of the resource rent is therefore also unknown.⁴⁷ “The impartial committee” observes, that “it is likely that some people earn even rather large amounts of money in fisheries”, but adds, that it is “also relevant to appreciate that private (risk willing) capital is accumulated in society”.⁴⁸ Resource rent is not mentioned at all by “the joint committee”, which confines itself to a disapproval of “the public domination”.⁴⁹

Because of distinctive features of the fisheries, significant political regulation is imperative. Collective political decisions by government and individual decision makers in the market are generally closely interwoven in all modern societies. Government can intervene in the economy in a multitude of ways. There is a whole spectrum of government regulatory procedures, ranging from full government rights of ownership and disposition, to various forms of branch and enterprise specific regulations (like

⁴⁴ DRUG, 2006:86.

⁴⁵ DRUG, 2006:76–77.

⁴⁶ Grønland 2005:181–182.

⁴⁷ DRUG, 2006:76; Lund, 2006.

⁴⁸ Det uvildige udvalg, 2005:81.

⁴⁹ Fællesudvalget, 2003:24–25; cf. Paldam, 1994:81–84, 160–182.

specific laws), to inspection obligations, concessions and leasing, subsidies, business support schemes and specific taxes and duties. At the other end of the spectrum are the most general legal and taxation systems, and traditional macroeconomic policy.

This also applies to ownership rights. The contrast between public and private ownership of productive capital and resources is easily exaggerated. Ownership rights are made up of several elements, which can be separated and divided, namely the right of using capital and resources, the right to receive income from them, and the right of realizing their value by sale. Taxation of profits, in combination with tax exemption of losses, corresponds to government ownership of part of the right of income. Taxation of capital and the auctioning of fishing permits correspond to government ownership of part of the capital value. In Greenland's fisheries, government intervention of all three types of ownership rights (user, income and capital value rights) by regulation, taxation and quota prices must by necessity, be so thorough, that it comes close to the *planned economy* end of the spectrum.

5.5. Policy failures

Thus there are urgent arguments in favor of "public domination"⁵⁰ in Greenland's economy. Moreover, the fact that the market mechanism is not particularly prevalent is a problem much too easily overlooked by privatization and market-fetishism invocations. Classic welfare theory and the two fundamental theorems do not speculate very much about, who the particular market agents are, except that they attempt to maximize profits and utility. But evidently, agents who can acquire a monopoly, for example in retail trade or fisheries, must be big agents. Generally, the typical production agent is not a single person, but a big company like a joint stock company with many employees and owners. A big company is a vertical organization governed by long-term contracts for lines of command and relations of authority. A big company is exactly the antipode of the market, which is a horizontal structure, where buyers and sellers meet and agree on a price and a quantity from deal to deal. When theory proves that the market is efficient, the ques-

⁵⁰ Fællesudvalget, 2003:25.

tion arises over, why the typical production agent in the market, is an alien structure to the market – namely a company (in contrast to consumer agents, who are typically single persons and price takers).

The answer to this riddle is not very surprising; that anything else would be too awkward, or in other words, that transaction costs would otherwise become prohibitive.⁵¹ Thus, there exists practically no proper labor market. Although the market for day laborers or dockers with *stevedores* as buyers are examples, and so are markets for slaves and “indentured labor”.⁵² Most contracts for buying and selling of labor are long term, complicated and incomplete.

One could be inclined to believe that the same argument should imply that big government is a functional structure like big companies. Unfortunately there is a decisive difference between companies and government. While size is not the issue, many multinational companies have turnovers that exceed those of many national governments. The difference is that companies are governed by money power and private ownership rights, whereas the state is governed politically and has a monopoly of collecting taxes and using coercion.

From this follows the notion that government is not compelled to maximize profits and is able to take broader social considerations into account in order to correct market failures. But these presumptive advantages are more or less counterbalanced by the fact that government has less incentive to limit costs, such as corruption costs. This is due to the fact that civil servants, contrary to private company employees, never use their own money (or the company’s money) but the money of the taxpayer. As mentioned in the introduction, these two moneys are completely different things. This gives rise to policy failures, which according to the privatization and market-ideology, are normally much more harmful than the market failures, they were supposed to correct.

Yet, policy failures cannot be ignored. Unless the political system is permeated by honesty and incorruptibility, there is a risk that economic activity becomes deflected towards “rent-seeking”. “Rent-seeking” is profitable, but usually entails an unproductive activity such as seeking tax fa-

⁵¹ Coase’s theorem (1937) on the nature of firms; Milgrom & Roberts, 1992:38.

⁵² A person, particularly in England and the colonies in the 17th and 18th century, who sold the disposal of their persons and labor power for long periods, often 7–10 years, either voluntarily or because they were criminals or indebted.

vors, monopoly concessions, subsidies and resource rents.⁵³ These activities are also labeled DUP (directly unproductive profit-seeking). The larger the public sector, the larger the risk. In the case of Greenland, “rents” are enormous, because of resource rents, and because of the so-called “block grant” – which is a cash payment equal to 1/3 of Greenlandic GDP paid by the Danish government to Greenland’s Home Rule government.⁵⁴

5.6. Government owned joint stock companies.

Now, as one could possibly imagine, government owned joint stock companies would be the perfect mean, which could combine the advantages of government ownership and private enterprise. Government owned joint stock companies are private legal subjects, the majority of shares to which are owned by government.

In Denmark they became the predominant form of public enterprise during the 1990’s. For example, the public energy company, DONG, and the bridges across the Great Belt and the Öresund are organized in this way.

In Greenland, companies owned by the Home Rule government dominate the business sector. Among the 40 largest companies in 2001, government controls 14. These 14 companies account for 68 percent of turnover and 79 percent of employment engaged by the total 40 companies.

However, governments owned joint stock companies do not appear to combine all the advantages of privately and publicly owned firms. Rather, government owned joint stock companies combine all the disadvantages. This becomes evident by inspecting the types of governance used in these three types of firms, and how the pursuit of its own interests by management is constrained by market forces and the political process, respectively.

Private firms are monitored by shareholders, banks and other creditors, customers, and by the risk of hostile take-over. Firms owned purely by government, on the other hand, are subject to political monitoring like other parts of public administration. This monitoring is unfortunately not always as efficient as numerous cases have demonstrated in Danish local administrations – where intimacy is often a problem (fortunately Danish municipalities are not allowed to engage in normal business activity).

⁵³ Winther, 2006; Greiffenberg et al., 2003.

⁵⁴ Lund, 2003; Aage, 2005.

Government owned joint stock companies violate the golden rule that economic responsibility and economic decision-making capability should always go together. Responsibility and decision-making are largely exempt from all these monitoring mechanisms. Political monitoring is weak as it does not figure in the budget, and it is not subject to laws on public insight into public administration.

Market monitoring is not very powerful either. These companies are often natural monopolies, like the bridges across the Great Belt and the Øresund. Shareholder control on the part of government is often lenient, and will become even more lax in the future as a government committee report concerning government owned joint stock companies in 2003 explicitly recommended, that ministers should not have power of instruction towards government representatives in company boards. The committee refers to the 65 law on joint stock companies, which attaches shareholder decision-making competence to the general meeting of shareholders.⁵⁵ Even if this is not unheard of, dominant shareholders in private companies cooperate with members of the board, who were appointed by them.

Table 2. Ownership, turnover, and the number of employees in Greenland's 40 biggest companies (according to turnover) in 2001.

Ownership	number of companies		turnover million DKK		number of employees	
		%		%		%
Private ownership	26	65%	2.077	31%	1.190	22%
government owned	7	18%	3.020	45%	3.121	57%
Partly government owned	3	8%	1.210	18%	974	18%
subsidiary companies of totally/ partly government owned	4	10%	359	5%	193	4%
Total	40	101%	6.667	99%	5.478	101%

Source: Fællesudvalget, 2003:25

Creditor monitoring is limited as well because credit to government owned joint stock companies is virtually guilt-edged for banks, who can trust the government's power to collect taxes as being reliable collateral. When Royal Greenland is able to obtain credit on favorable terms from the international capital markets, it due to widespread expectations among banks, that the Home Rule Government will never allow Royal Greenland to go bankrupt. Expectations like these are backed by hard evidence. In 2001 for

⁵⁵ Finansministeriet et al., 2003:33–37.

example, the government supplied 200 million DKK to Royal Greenland to overcome acute problems. Other companies like KNI and Royal Arctic Line also received crisis support from government in recent years.⁵⁶ The Home Rule government accepts a liability as a guarantor *de facto*, if not *de jure*, in return for favorable credit terms for companies.

The presumption is that government owned joint stock companies have neither private firm's incentives to keep costs low nor state enterprises' capabilities of taking broader social considerations into account. A government owned joint stock company is not the best, but the worst of all conceivable types of company structures.

The opportunities for "rent-seeking" of suspect character increase simultaneously with the weakening of market and policy monitoring.⁵⁷ This is not to say that government owned joint stock companies never function properly.⁵⁸ This was indeed the general experience with government owned joint stock companies created in Denmark in the 1990's, even though it is not possible to conclude, whether or not this reconstruction of existing state owned enterprise affected efficiency.⁵⁹

Government owned joint stock companies might also be preferable to outright privatization, as some possibility for beneficial government monitoring is preserved. For example, the British government insisted on privatizing tracks and other fixed capital of the railways in 1996, although they are a natural monopoly. In the first years, the private owner, Railtrack, financed huge profits to shareholders by selling off landed property and by neglecting maintenance and investments for improvements, which came close to asset stripping of the company. When the poor state of tracks eventually caused some serious railway accidents and recurring delays, the company was finally renationalized in 2001 in order to forestall bankruptcy.⁶⁰ The Home Rule government owned Arctic Umiaq Line must also be considered a natural monopoly. It was privatized in 2005-2006, but in the course of less than one year, it had to be renationalized at a reportedly loss of 100–150 million DKK to the government.⁶¹

⁵⁶ Politiken, 27. marts 2003; Paldam, 2000:41.

⁵⁷ An illustrative description with reference to Greenland is provided by Paldam, 2000:39–43.

⁵⁸ But the opposite is more widespread, cf. Paldam, 2000:38.

⁵⁹ Greve, 2000:100.

⁶⁰ The Economist, 17 October 2001, pp 17,39–40; Aage, 2003a:15–17.

⁶¹ Sermitsiak' 47 (29. september 2006, nr. 39):37, Erhverv1, (13. oktober 2006, nr. 41):2.

Pure private firms, and pure state firms, can also function properly just as health care in Denmark and Greenland, the postal service, and the Danish State Railways have in the past.⁶² All evidence indicates that Danish public firms were efficient and well managed, as compared to corresponding public and private firms in other countries. As the evidence is far from convincing, it is strange, that the superior efficiency of private, as compared to public firms is now firmly established as dogma.

Whilst it is now possible to privatize just about anything, it is not necessarily sensible. The recurring theme of “winners and losers” that seems to inevitably follow privatization reforms is worrying, as is the speed and inevitability with which such reforms is sold to the populace. Much of the journey on which we are embarking, as we reshape government is being undertaken on faith.⁶³ There is a “folk theorem” (or what would be a folk theorem, were it true) that says that anything the government can do, the private sector can do as well or better.⁶⁴

Documentation for allegedly large savings on production costs by privatizing and outsourcing is remarkably poor. While outsourcing cost reductions at rates of 20–30 per cent are often flung out,⁶⁵ more careful meta-analyses seem to indicate, that savings are rather at rates around 6–12 per cent, and are widely varying.⁶⁶ It should be added, that very little is known about two other important entries – namely deterioration of quality and administrative costs⁶⁷ except that “private providers have stronger incentives to slacken on quality”.⁶⁸

5.7. The long run

How do we explain the proliferation of government owned joint stock companies? It cannot *a priori*, be excluded, that it is an expression of an inconsiderate, ideological swell of fashion, that the origin of which as regards to Denmark, can be traced to intensified requirements from the EU for liber-

⁶² DSB is an abbreviation of the Danish State Railways (de danske Statsbaner).

⁶³ Hodge, 2000:246.

⁶⁴ Stiglitz, 1994:31

⁶⁵ DØR, 2004:229; Paldam, 2000:37

⁶⁶ Hodge, 2000:155.

⁶⁷ Aage, 2003a:12–17.

⁶⁸ DØR, 2004:274,224.

alization of the public sector.⁶⁹ More rational reasons are also possible for government to give up its direct, democratic control of its activities for the purpose of leaving governance to a narrower, private profit maximization approach. This is related to the limitations of political governance, and oddly enough they stem from the very far-reaching powers of government themselves, which stand in the way for credible commitments. Government is capable of revoking most of its decisions later on.

The economic advantages of privatization are derived from the inability of government to make certain commitments, in particular, the commitment to competition and the commitment not to subsidize.⁷⁰

Very often, problems of the inability of government to make commitments emerge when a balance has to be struck between short term gains on one hand and the prevention of long term problems on the other. As mentioned above long-term considerations are not the *forte* of the market. Indeed, it is not the *forte* of politicians either, as there is always an election no more than four years ahead. It is a temptation to go for short-term benefits at the expense of foregoing long term goals. Although contrary to private firms, government in principle has the possibility of taking social considerations into account. Paradoxically, privatization may be a solution to this dilemma. It can provide a method to guarantee social considerations exactly, because private firms are compelled to stick to narrow profit seeking.

The first and classic example is, that it is difficult for government to commit itself to not subsidize ailing public firms. For this reason, these firms have a well-founded expectation, that government will bail them out in an emergency. It creates less political trouble to subsidize, than to close down. In the long run, subsidizing may conserve an inefficient business structure and reduce incentives for cost efficiency. A “hard budget constraint” may improve economic efficiency, which is one among other, long-term social considerations.

This efficiency argument can justify full privatization, if competition works, and if conditions for market efficiency are fulfilled. In Greenland they are not. There, full privatization will prove brutal as well as hazardous. Efficiency arguments have been invoked as reasons for creating government owned joint stock companies in Denmark.⁷¹ It is hardly convinc-

⁶⁹ Greve, 2000:100–103; Finansministeriet, 1993:7,59.

⁷⁰ Stiglitz, 1994:179.

⁷¹ Finansministeriet, 1993:57–73.

ing however, that the weakening of political monitoring without correspondingly strengthening market monitoring should improve efficiency for companies like DONG, the bridges across the Great Belt and the Øresund and Royal Greenland. These are all big companies, who enjoy a local monopoly and are subject to rather soft budget constraints.

A second example is the neglect of long-term maintenance. It is more exciting to initiate new spectacular projects, rather than using money one year after another on something as dull as maintenance of for example rail tracks, which consequently have been postponed for years in Denmark. There is a parallel problem of upkeep for Home Rule government owned housing, which recently called forth extra grants from Denmark. The proposal to let the Labor Market Additional Pension Fund in Denmark be in charge of railway investment is not rationalized by cost savings. It undoubtedly becomes more expensive, because the fund is inserted as an extra link in need of a profit, and furthermore, with no prior experience concerning railways. The rationale is that the state once and for all commits itself to spending large amounts of money for several years on railway renovation, which is not subject to annual budget approvals.⁷²

The so-called public-private partnerships probably are also rationalized in this way. Similar arguments are possible as justification for organizing the bridges across the Great Belt and the Øresund. In the case of government owned joint stock companies, it is probably legitimate to lift direct political control from the rates policy, but it is hardly evident.

A third example is that certain painful and impossible political decisions are transformed into private conflicts of economic interest – as for example, the conflict in the Spring 2006 between Royal Greenland and the fishermen's organizations concerning trading prices of shrimp.⁷³ The issue was the income of fishermen, and that the Home Rule government was tempted by short term yields, thereby paving the way for future claims from the fishermen and from everybody else. The construction of a government owned Joint Stock Company partly lifts the problem out of the political sphere.

A fourth example, very much like the preceding ones, is that sensitive long-term decisions are masked as market determined, commercial and

⁷² Politiken, 14.–15. august 2006.

⁷³ *Sermitsiaq* 47 (14. april 2006, nr. 15):6, (21. april 2006, nr. 16):7, (27. oktober 2006, nr. 43):10–11.

economic inevitabilities. The system of uniform prices is a major form of subsidization for habitation and production in small town and villages across Greenland. Arguments in favor of its abolition are mainly coined as purely economic arguments about “spurious” prices versus “cost true” market prices, and competitiveness in “growth regions”.⁷⁴ However, there is a possibility that savings due the abolition, will accrue to enterprises that in the past, were not entitled to the specific low energy and water prices for the fisheries industry. The savings will be absorbed as monopoly profits rather than they will reduce prices.⁷⁵

5.8. Democracy

Thus, it is conceivable to argue that social considerations can be sustained by transferring direct political control to private, economic interests fully or partly through privatization, outsourcing, or by means of government owned joint stock companies. The risk is however, that private profit seeking becomes the prevailing force.

In Greenland, there are crucial arguments in favor of preserving a strong political weft of collective political decision making rather than individual decisions making in the market. This need is connected to weighty social and cultural considerations and a massive resource dependence.

Any private firm even Greenland must know the initial conditions and marks for the bearing. When carrying out policy for a whole nation, matters are not as simple as they are in a private firm. It is impracticable to escape the problem that matters must be considered in their entirety, and that things are connected and cannot be separated. When a local firm earns profits and employs more workers, everybody becomes wealthier. Those who increase in wealth, become more competent by working, and become more enthusiastic about education. In this context, social tensions and problems are reduced. Contrariwise is it in the case of liquidations. The problem and challenge is to spur productive business activity in Greenland. This process is subject to the condition, that living standards in Greenland should be at the same level as in Denmark’s towns and villages. When carrying out business policy, it is impossible not to carry out social, re-

⁷⁴ Fællesudvalget, 2003:8,15,61; Sermitsiak’ 47 (14. marts 2006, nr. 12):14–15.

⁷⁵ Fællesudvalget, 2003:33.

gional, and labor market policy simultaneously. According to “the joint committee” there ought to be “a clear separation of commercial goals and distributional considerations”, so that enterprises do not “risk to ending up as employment projects”.⁷⁶ However, this is not feasible, because the realistic options are either to pay public subventions as business subsidies, or to pay public subventions as social benefits. If decisions are left to the market, and if market efficiency is the dominant criterion, then business activity in Greenland will become minuscule.⁷⁷ Royal Greenland would then move fish processing to the biggest towns, to Denmark, and to other countries. If Greenland is left at the mercy of the market, it is easy to imagine, that first villages and later on the whole of Greenland will become depopulated.

Questions like these cannot be left to market mechanisms. Outright privatization of Royal Greenland is the object of an on-going debate, and it is partly effectuated for the KNI.⁷⁸ It is hardly a solution just as privatization is not the solution for efficient regulation of fisheries. However, democratic control can be improved by transforming government owned joint stock companies into proper state enterprises, which are subjected to direct and full political governance. This is especially true if complete public insight is assured concerning circumstances and arrangements as far as international business competition allows, and if strong, independent audit functions are an integral part of enterprise governance. The most inexpensive solution undoubtedly would be to employ Danish civil servants in this attempt. As a democratic mechanism, the market possesses great advantages, but for theoretical and empirical reasons, this claim is insufficient, when the economy is small, or when social and cultural externalities are large, or when natural resources are significant – as is the case in Greenland.

Concerning natural resources, it may well be argued, that the political system should delegate its decision making power, but arguably, not to the market mechanism. It is difficult to explain, why for example the Danish energy company, DONG, is organized as a government owned joint stock company. Delegation of power is a possible solution to the inadequacies of the political system concerning long-term objectives – namely the tempta-

⁷⁶ Fællesudvalget, 2003:5,13.

⁷⁷ Lund, 2005.

⁷⁸ Winther, 2003:122–123; Politiken, 27. marts 2003.

tion to reap short-term gains instead of preventing long-term losses or catastrophes. Delegation to private markets is not the only possibility, and rarely the best one. Another possibility is self-governance, i.e. that those directly involved make the decisions themselves. This has proven workable in some cases regarding cultural affairs and for university research. In the economic sphere, this has been attempted in employee ownership and employee governance. In Greenland,⁷⁹ although successful examples exist, especially in small enterprises with large amounts of human capital like a group of dentists working together, the overall experience is not particularly promising, neither in theoretical, nor in practical terms.

A third possibility is that democratically elected politicians voluntarily delegate their decision making power to an independent body of professionals, who firstly enjoy confidence and secondly are constrained by strict prescriptions. In health care, procedures like this are used for deciding certain painful or impossible priorities, as they are left to physicians. In monetary policy the system has proved efficient; the problem is that politicians are tempted to finance public expenditures by printing money rather than by collecting taxes, and it is easy and fine in the short run, but a catastrophe in the long run. The solution is to have a more or less independent central bank in charge of monetary policy. In some cases an even more radical solution has been used, namely to leave monetary policy to so-called currency boards, which are obliged to issue local currency only to the extent, that it is covered by reserves of foreign, hard currency. Still more drastic was the currency reform in West Germany in 1948, when confidence in the new currency system was guaranteed by an occupational power, as the new D-Mark notes were flown in from the USA.

There are strong parallels between governance of a monetary system and governance of a renewable natural resource. In both cases, direct democratic control has proved highly problematic. Efficient and sustainable long-term exploitation of fish stocks and fair distribution of the returns, including the difficult problems of the distribution between living and future generations, is a principal issue for democracy in Greenland. There are thus sensible arguments in favor of delegating governance to an environment board as a suitable form of indirect democratic governance.

⁷⁹ Winther, 2003:123–128.

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6. A partial reform of the uniform price system and the consequences on households in Greenland settlements⁸⁰

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6.1. Introduction

The main purpose with this article is to use critical analysis to elucidate problems related to the 2004 and 2005 proposal, and adoption of a reform of the price system on utilities in Greenland. The uniform price system had until 2001 existed all over in Greenland since the days of Danish colonialism. The system continued to exist throughout the post-colonial development stage, where since 1979 administration of most of Greenland's affairs was done through the Home Rule government. The drafts and data related to them, allow us to do calculations on the consequences to household incomes and migration. It is not a secret any more, that political and administrative decision-makers in Nuuk have adopted the same policy on migration as the Danes did back in the sixties, when trying to enforce a speedy exodus of

⁸⁰ This article was finished in 2006, and it does not include recent developments such as an increasing up going trend in utility and fuel prices in Greenland. The primary data used was compiled in 2005 from the KNI Pilersuisoq Inc., the Nukissiorffit Inc. and the Home Rule Government. Moreover, the partial data and information was obtained from Egil Borchersen Arctic Technology centre Sisimiut, Niels Mønsted, the municipality of Uummanaq and Olafur Nielsen, the Home Rule dept. of Housing and Infrastructure. Secondary data was compiled from publications from statistics Greenland.

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labor from the settlements and smaller towns into the larger towns. The second phase of reforms deals with the pricing of utilities (electricity, heating and water).

The rapid speed of the utility pricing reform process that began in 2004 did not leave much room for public debate. The final legislation was publicly available, when the “Landstinget” (Home Rule parliament) in 2004 had its fall gathering. Here, it was finally initiated after the adjournment. The time constraints did set limits for voicing alternative calculations. Actually the short time frame made alternatives impossible, because the database, which the calculations were based on, was not made publicly available, but through parts of enclosed material within different reports. By and large, it seemed that the partial reform on utility pricing was hastened through the home rule parliament “Landstinget” without the necessary time for municipalities and other decentralized decision-makers to come up with alternative analyses.

The public debate that took place on the partial reforms revealed that politicians in the ruling coalition and home rule civil servants, tried to play down the negative economic impact of the reforms to Greenland wage earning families in small towns and in settlements. For instance, it was said that worries on seeing the same urbanization patterns as in the sixties were exaggerations. People do not just move due to price increases on utilities. These arguments were used to explain the price reform being part of a reform package in 2004, which also contained tax breaks for low-income families in an attempt to equalize a fall in real incomes.

The reform aimed at so-called “cost based pricing”, meaning that the four professed competition towns of Qaqortoq, Nuuk, Sisimiut and Ilulissat should have lower prices, because of economies of scale, while the rest of Greenland should have higher prices. The reform process should be gradual. But this process was already in 2005, complicated by price hikes on gas oil, petroleum and regular gas. The energy forms of gas oil and petroleum are crucial for the settlements. They are used for heating houses and for transport of hunters outside the settlements and towns.

In this paper I will point out that it was problematic to assume, that the utility price reforms would not impact low-income families in settlements and smaller towns. This is done by looking at the tax reforms’ effect on income brackets and on the falling purchasing power in settlement households. In 2005, Rasmussen emphasized an encroaching poverty within the settlements

among households partially or fully based on subsistence income. The distribution of income in Greenland in general is extremely skewed with a gini-coefficient higher than in the US. This problem can only be made worse as a consequence of the dramatic price increases on energy in the years since 2004 (Rasmussen, 2005, Rasmussen and Petersen, 2006).

I present an alternative to the price reforms. In 1998 a working group published a report (The so-called FANG report) with a suggestion to a solidarity reform.⁸² The idea in this report was to hold settlements and outskirt districts indemnified. This was not the central principle in the 2005 reforms implemented on utility prices. Even if we take the tax breaks into consideration, it is clear that a non-defined amount of families in some towns and all settlements will feel the combined effect from reform as a net-increase of the cost of energy (Winther, 2005, 2006).⁸³

6.2. The total reform package

Table 1 provides an overview of the reform package including the reform on utility prices. Not all reforms mentioned in the table have been carried through. In 2001, the Home Rule government approved a so-called liberalization of the air traffic, which called for a segmentation of the future market into two parts – the competition routes and the routes based on service contracts. There was no change in the expectations of the reforms. Introducing so-called cost based pricing should have led to price decreases. Already in 2001, this proved to be wrong, because airport taxes and other costs contributed to price hikes for air tickets.

⁸² The Association of Private Businessmen in Greenland (Foreningen af private Næringsdrivende i Grønland). The group had as one of its members the Danish supply sider Martin Paldam and the CEO of the Greenland Bank Frank Kristensen. It is to this day a paradox, that the actual reform implemented contains less solidarity than the suggestions in the FANG report.

⁸³ The calculations here are solely based on data as they were in 2004. Later changes may have modified more current results. Yet, considering the price hikes internationally on oil and gas, a full-scale implementation of the gradual reforms probably will change the picture to an even more drastic situation.

Table 1. Overview of the total reforms

Company:	Before reform:	After Reform:
Air Greenland	Cross Subsidized Tickets	Liberalization in 2001
Royal Arctic Line	Uniform System of Freight Rates	7 levels of rates in 2003
Nukissiorfiit	Uniform pricing of Utilities	Annual rate increases of 10% from 2005 in settlements and smaller towns
KNI Inc.	Subsidies to Transport of Goods and services to smaller towns and settlements through service contracts	Abolishment and decreases of agreed payments in service contracts
Tele Greenland	Cross Subsidizing in relation to deficit on Supply Obligations	Not implemented yet

It is imperative when assessing the consequences of abandoning the uniform price system, that we approach this study to address the totality of partial reforms and their impacts on Households and Enterprises. Looking at Table 1, it is obvious that the totality of reforms can have in depth, ongoing impacts on local communities not being profitable in the neo-classical micro-economic sense. Before the reforms were initiated, the principle was that goods and services should cost the same throughout Greenland. After 2001, airfares, freight rates, utility rates and prices on goods and services in the settlements increased, as will rates for telecommunication in the future. This raises the living costs in settlements and outskirt regions, and if the “economic laws” behind the policies work as expected – among mainstream economists, civil servants and politicians – this could promote a transfer of populations from local communities to the more competitive towns. Going beyond the narrow approach, which aims for a swift migration of labor through use of disincentives (to stay in the local community) and material incentives (to shift to a full consumerist life in the competition towns), one needs to analyze the long-term implications (including the socio-economic) of the reform packages. In terms of the macroeconomic effects, the long run costs include the incurred costs of moving a large segment of the population (i.e. establishing housing, infrastructure, health facilities, education etc.) along with the hidden costs related to social complaints on health problems, alcoholism, drug addiction, unemployment and marginalization. These social problems were quite apparent after the tremendous material leap forward following the great reforms of the central planners in Copenhagen during the sixties.

Such an approach suggests, that we need to calculate both benefits and costs of the total reform. Furthermore, one should try to forecast behavioral changes due to price changes through establishing representative calculations on the effects of the total changes in costs and expenses for enterprises and households. Finally, the distributive changes are crucial in understanding the social effects and problems created by the reforms. This Paper however, only presents the impacts of the partial reforms to utility pricing. Additional data needs to be compiled, before we can step further towards understanding the situation completely.

6.3. Tax reform and income in the settlements

As indicated, the reforms to utility pricing should be seen in combination with the partial tax reform implemented in 2004. The idea was that the reforms should compensate the worst-off households in smaller towns and settlements.

The combined intention of the two reforms was to change and simplify the income distribution policy in the following ways: A person's deductions and standard deductions, when computing the final tax were increased by 10.000 kr., and at the same time the Home Rule Government issued a taxed percentage for the common municipality tax, that was increased by 2 percent.⁸⁴

Uniform prices on electricity, water and heating were rearranged from January 2005. The subsidy to water and electricity for the fishing industry was gradually to be removed over an undefined time frame. For the households, another principle was introduced. The adaptation to so-called prices based on "real costs" should cumulative after the first five years had reached 50% of the real cost level. The block grant from the Home Rule to the municipalities should be rearranged, so that a

⁸⁴ There are several tax technicalities related to this. First the issue of deductions, these are related to all income earners paying income tax, while the standard deduction substitutes actual costs to interest, union fees, unemployment insurance, child allowances and expenses related to personal business operations. In this way there is always a tax-free bottom bracket of the total income. In 2004 it went from 48.000 kr. To 58.000 kr.. The common tax paid to municipalities covers common municipality expenses, and it is a part of an equalization scheme, where poorer municipalities are subsidized from this pool of revenue.

coordinated distribution of grants and tax burdens related to the equalization for the municipalities could take place.

Greenland has a proportionate tax system as opposed to the Danish State progressive state tax system. However, when the tax-free bottom bracket in the proportional system is increased, there is a certain progression in taxation that ensures partial compensation for lower income groups. This is explained by the magnitude of incomes – the more earned kroner the tax-free deduction is distributed over, the less deduction per each marginal earned krone is achieved.

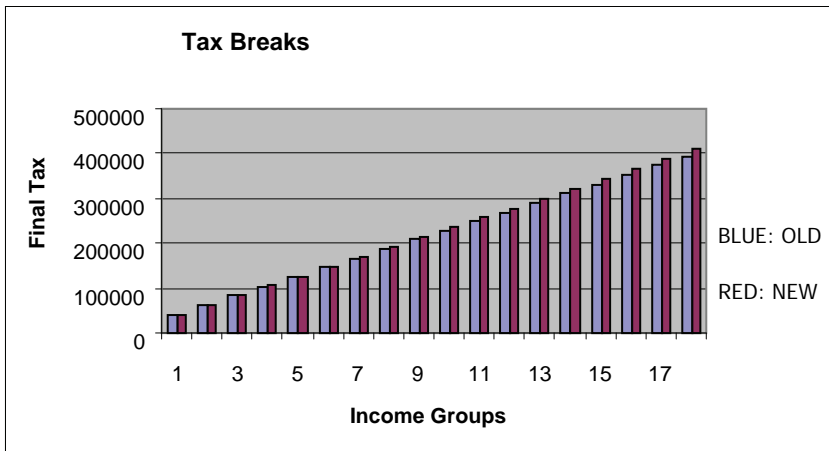


Figure 1. Tax breaks without proportional stretches⁸⁵
(Left blue columns are the old final tax, and right red columns are the new)

The argument for an increase in taxation is that the economically “strong” citizens have an income big enough to provide themselves with all necessary goods and services – including durable goods. Additionally, these citizens also have a lot more for savings, other wealth creation and luxury consumption. From marginal earned Kroner, they can pay more to cover costs related to the reforms of uniform pricing. The difference between the old and the new final tax is illustrated in figure 1. This shows that the dif-

⁸⁵ A proportional stretch refers to a progressive system with several tax percentages of the income liable for taxing. Several stretches for instance two divide the diagram in to say the first 8 brackets with a lower percentage and the last 8 with a higher. In this case the final tax paid for the last krone would increase even more, when compared to the old final tax. Moreover, if a progression was implemented as a part of the reform in 2004, this would have raised revenues even more than seen in figure 1. Comparing to the first brackets, the last brackets increase would be relative higher than in the figure and the trend takes a steeper partial linearity for the second 8 brackets.

ference in change between the old and the new final tax in 2005 is modest. The figure consists of 18 income examples at 50.000 kr. intervals -starting with the lowest annual income of 150.000 kr. and ending with an annual income of 1.000.000 kroner. The figure is solely illustrative. The Greenland tax system is relative simple, when compared to the Danish system, so hypothetical calculations can easily be made. The figure only illustrates personal incomes and not household incomes. Households with double incomes have doubled deductions. The crucial question is: how much (*ceteris paribus*) does households incomes improve or deteriorate, when exposed to price increases relating to the reforms and price increases on fluid fuels that are due to changes at the world market? Are the tax breaks enough to compensate?

One should recall Social compensations *not* regulated after the inception of the reform. The lack of regulations in this sense adds further deterioration to living conditions. Subsidies to rents for low-income families, that safeguard their purchasing power on other essential goods and services, do not cover expenses to utilities.

The first bracket in figure 1 shows the final tax for an annual income of 150.000 kr, the second for 200.000 kr., the third 250.000 kr. and so on. Immediately it is evident that for the lower brackets, few see actual tax breaks after the tax reform. Mostly, the final tax paid increases. The tax breaks are mainly for the two first brackets, and they are already negligible for the second bracket. Going in to further detail (with income brackets at 10.000 kr. intervals), we get a more detailed picture as seen in table 2.

Table 2. Tax breaks for different incomes

Gross Income	Old Final Tax	New Final Tax	Tax Break
140.000	42.228	39.928	2.300
150.000	46.368	44.268	2.100
160.000	50.508	48.608	1.900
170.000	54.648	52.948	1.700
180.000	58.788	57.288	1.500
190.000	62.928	61.628	1.300
200.000	67.068	65.968	1.100
210.000	71.208	70.308	900
220.000	75.348	74.648	700
230.000	79.488	78.988	500
240.000	83.628	83.328	300
250.000	85.698	85.498	200
260.000	87.768	87.668	100
270.000	91.908	92.008	-100

Table two's detailed calculations give a clearer picture. Incomes from the 140.000 kr. bracket will take the greatest advantage of the reforms. The Workers who make the annual minimum wage for as organized worker in the Greenland trade unions (SIK) fall into this category. An annual income between 260.000 kr. and 270.000 kr. does not constitute an advantage. In 2005, this income level (at fixed working hours) would then be some 125 to 130 kr. per hour. Going below the 140.000 kr. – the gains from the reforms would be even higher for incomes taxable after the deductions. I will include examples of this in the coming calculations on household incomes. Here with the examples, it suffices to say, that the issue is whether the gains from the reforms give net gains or net losses, when including increased expenses due to the price increases on utilities.

6.4. Energy consumption in the settlements

Incomes in the settlements are either based on fishermen and hunters with very low monetary incomes, which are then supplemented with harvesting for own consumption, or on sole wage earners often the wives of fishermen or hunters. Moreover, there is a third household category on social transfer incomes in at least half a year, where a person is entitled to help.

It is an open question, whether calculations on heating consumption in the settlement households have ever been made. The Greenland settlement statistics contains uncertainties related to problems with the data compilations. Basic statistics are difficult to work with. Hence, estimates are necessarily based on the capacity of typical primitive heating technologies used in the settlements. Housing is based on small households, where heating is for one to two ship stoves that cook or melt ice. This is evident from table 3, from which we can see that more than 90% of the housing are family houses with an average housing area of approximately 87 square meters.

Other local information for the North Greenland outskirt districts (in and above the old Uummannaq Municipality) indicate that very little housing that was build before 2001 is larger than the 69 square meters. This type of house is characteristic of the "Illorput House". This house type is a standard house for "self-builders" – easy to build and obtainable with support from the Home Rule government.

I have added some estimates on the consumption of energy and water in table 4 below, where different calculation examples are provided on the basis of different housing areas. It should be emphasized here, that the examples cannot be taken as representative for all households. Like in earlier drafts from the Home Rule administration, such a representative study still remains to be seen.

The table follows an assumption of one room per person in larger houses. This holds statistically true, but not in practice, because there are many cases of larger houses being occupied by singles, couples, or a single parent with children. There are however, smaller houses being occupied with many people, so that one person per room is impossible. Despite this, small-scale housing statistics on occupied rooms in the inter-municipality statistics (from Statistics Greenland for 2004) show, that there is approximately one room available per inhabitant in the settlements. In other words, the housing areas are very small, yet they can be divided in several rooms (bathroom and kitchen being excluded). This tells us that the density of housing in relation to the area of the house can be high, but one does not in all cases see several people occupying the same room.

Table 3: Types of housing in Greenland Settlements in 1998

N=3.372	%	Average Area
1-2 family houses	93.8	87.3
Row houses	4.3	76.9
Housing with floors	0.5	64.5
Other types	1.4	41.2

Kilde: Statistics Greenland, 2006.

From the available statistics, it is not possible to determine the specifics of individual households within the settlements. In 2004 the number of houses in the settlements was at 3430 units with an average unit (bath room, kitchen and outer walls) being 56 square meters. The counting of inhabited rooms despite the size was 10.327 rooms or 1.1 rooms per inhabitant. On average there were 2.8 inhabitants per housing unit, which corresponds with the assumption of one available room per person.

Table 4 has included water consumption per household, assuming each household has an individually countable consumption. Often water is fetched from common tap houses, and this of course raises the question,

whether estimated consumption rates from the suppliers are correct, and whether water is a free good in the settlements.

Regarding heating, in northern Greenland only a few older houses built by the Greenland Technical Organization (GTO) are heated by petroleum. Houses build in the period 1978–2000 had mostly 69 square meters area. Later, smaller housing dimensions became the norm. Now if we take the North Greenland districts as our point of departure, most of the houses are heated with gasoil (diesel). As such we will in the following, exclude petroleum as a heating source – assuming that this gives a pretty good picture of the conditions in Greenland settlements in general.⁸⁶

Table 4. Size of housing with energy and water consumption per house in settlements in 2004

Rooms	Houses	area ^a	El	Per House: Water	Heat
<i>Houses/ship stoves:</i>			<i>Kwh</i>	<i>m³</i>	<i>Litres</i>
1	846 ^b	40	2000 ^c	120	1742 ^d
2	165	40	2000 ^e	120	1742 ^d
3	1039	50	2500 ^f	200	3485 ^g
4	653	69	2500 ^f	275	3485 ^g
5	329	75	3000	300	
6	49	85	3250	340	
7	6	100	5000	340	
<i>Houses heated with oil fired boilers</i>					<i>Consumption</i>
1	-				-
2	-				-
3	-				-
4	216				2904
5	109				2904
6	6				2904
7	2				2904
a	estimated Mean				
b	for amount of rooms not reported (25 houses) estimated by the frequency distribution of the remaining houses.				
c	occupied by a single				
d	House with one Stove				
e	occupied by a couple without children				
f	occupied by a couple with children				
g	House with two stoves				

⁸⁶ E-mails from Niels Mønsted, Ummannaaq municipality and from Olafur Nielsen, Home Rule Dept. for Housing and Infra structure, Juli 2006

This is partially confirmed by other data related to the consumption of gas and petroleum used in small scale fishing and hunting activities and heat garnished by petroleum stoves. I have worked with KNI Inc's data on budgeted consumption quantities of gasoil (diesel), petroleum and regular gas both in total consumption rates and for each settlement. The figure for total consumption of all settlements shows, that the use of petroleum was 22% of the consumption of gasoil. This confirms that North Greenland settlements to a certain degree represent the rest of the country. The reason why petroleum is in less demand is due to the use of ship stoves, which require the same fuel as ship engines. These engines run on gasoil (diesel). Additionally, some stoves function less efficiently on petroleum, because they are built for a thicker fluid.

Taking the Housing Statistics as our point of departure (the settlement statistics), one can estimate a distribution on housing areas, rooms and members of the household as suggested in table 4. The estimated quantities of electricity and water follow model calculations delivered by the supplier of electricity and water "Nukissiorfiit". This company also delivers heating in towns, but in the settlements neither central heating services nor district-heating services are provided.

Decisive for the estimates is the amount of persons per household. Nonetheless it can be assumed, that large oscillations in the consumption of heating do not take place. Often the small houses need the same amount of heating. This is because many heating systems are without regulation technologies that would automatically bring temperatures down in warmer periods. Instead, many houses often maintain a constant high temperature, adjusted to cold periods. The consumption related to washing, cooking, electronic devices etc. is probably the same, whether one or two people occupy a house.

An estimated 10% of the settlement houses have fuel oil burners (the North Greenland number). In the following it is assumed, that these are distributed over larger households with the same weight as in the total count. In the case of oil burners and water borne systems, considerable savings can be realized. According to some settlement residents, it is possible to halve consumption by introducing this technology.

A part of the heat generated by ship stoves disappears up through the chimney, and in addition, they are difficult to regulate downward without the flame fading out. Typically then, more heat than necessary is consumed. A Danish company delivers ship stoves to heat vessels and settle-

ment houses. Taking company data as our point of departure, it is possible to estimate settlement household consumption of heating. In table 4 an estimate is made on how the households could heat the dwelling area using either one or two stoves. The oldest households in the settlements had two stoves of the same type as the company delivers typically a 66MK stove.⁸⁷

The medium type of house, built from approximately 1985 to 1990, was suited with two to three smaller 66MK stoves. The construction of these houses did not include the issue of, whether future residents wanted to use an electric stove or a gas stove in the kitchen. This foregone choice is not included in the computations. The newest “do it yourself” “Illorput” house is delivered with two newer types of stoves (the 67MS ship stoves), which include a hot water tank and three to four radiators. Typically only one of the stoves is in use at a time, and we integrate this assumption in the calculations, while data on smaller households are assumed to have two 66MK stoves running.

On the basis of technical data, the volume of consumption of gasoil is estimated as indicated in Table 4 for the two types of stoves and for the households with fuel oil burners and a water-borne heating system. The Danish company delivering to summer houses and ships in Denmark denotes a minimum and a maximum of oil per. hour consumption, where we use the maximum consumption. The use of the maximum consumption is rationalized by the fact, that the warming of a summerhouse in Denmark can hardly be compared with the warming of the settlement houses in the Arctic using the same stove. For a 66MK oven, the maximum consumption is disclosed to be 0.3 per liter pr. hour with a space heating at maximum of 23 cubic meters with insulation. A 67MS stove on the other hand, it is set to be 1 liter per hour with a minimal space heating without insulation at 62 cubic meters and at 103 cubic meters with insulation.

The table contains some inaccuracies because an “educated guess” immediately infer, that larger buildings with more than two stoves is unlikely to occur, because it would be very expensive to heat, when you calculate the yields the stoves can provide. Cubic measurements can be estimated on the basis of building code requirements for 2.1 meters from floor to ceiling – the “illorput” houses are 2.3 m. from floor to the ceiling inside. A mean of the height of a settlement house could then be 2.2 cubic meters.⁸⁸

⁸⁷ This is not a general technical conceptualization but a company number for the product

⁸⁸ E-mail from Egil Borchersen, Center for Arktisk teknologi.

Nevertheless with such figures in mind, the estimate in table 4 is low, when 66MK stoves are used. If an ideal situation occurs regarding the heating of small un-insulated houses, the 67 MS is probably the stove the “rational consumer” uses. This is because, it at least in an un-insulated house (under Danish conditions), can heat 62 cubic meters. Even if there is insulation, a stove (based on Danish figures) can barely heat up the house. If a house that is 40–69 square meters, uses a 67 MS stove, the heating economy is better even when un-insulated (again Danish figures). It is not enough to have one stove turned on, while under extreme cold conditions. Whichever of the two stoves are used, we estimate the same consumption – one 66Mk stove can barely heat the little house with a consumption of 1742 liters even if the house is isolated, and a 67 MS can if the house is un-insulated or better isolated.

Results differ, if a water-born heating system and a fuel oil burner is installed. In table 4 we assume, that if all larger houses are heated using this technique, expenditures can be reduced with 50%.

After calculating a 24 hours period of consumption and assuming that heating is regulated with the same temperature as indicated above, we can estimate an eight month heating season, or a consumption of 242 days as demonstrated in table 4.

The maximal estimate for the stoves deviates quite a lot from estimates based on local knowledge. For the 66MK stove the consumption rate for 24 hours is not more than 7.2 liters, while for the 67MS, it is 24 liters. Local estimates without looking into types of stoves, suggest a 24 hours consumption of some 12 – 18 liters. The median and mean is here 15 liters per 24 hours, and thereby represents a consumption rate, that is double the max value for the 66MK, which was given by the company. Hence, alternative calculations based on local knowledge yields another and more costly results. The annual consumption is then 4095 liters for the ship stove and 2048 for the fuel oil burner.

6.5. Different estimates on the consumption of utilities and water in the settlements.

Price increases have already occurred due to the reform on uniform prices and due to increases in world market prices. The estimated consumption is

based on historical data. While we may predict future developments based on those, we cannot predict it accurately, if recent changes are as volatile as seen with changes with oil prices. One problem here is the elasticity of demand – it is possible to make a prediction for water consumption, but we do not have sufficient data for other utilities.⁸⁹ In the following, the elasticity is not analyzed.

From the data we have, we can establish an average household with three members living in a house of 56 m² with three rooms. The male is assumed to be a hunter and fisherman, the woman a wage earner or receiver of social transfers and the child is 14 years old. According to a report on the Greenland Hunters trade, it is often the case, that a family's earnings follows this pattern with the woman's income being relatively fixed and the man's based on hunting and fishing – is quite oscillating (Rasmussen, 2004).

The data in table 5 and 6 is based on price information on utilities from the energy company Nukissiorfiit, while other prices on gasoil, petroleum and fuel stems from data obtained from the KNI inc.. The consumption of electricity and water is based on model calculations done by Nukissiorfiit. The consumption of gas oil assumes a household using two stoves, and the consumption of petroleum and fuel is based on KNI estimates of hunters' activities, when out camping and hunting in smaller boats.

Depending on the method of heating calculation, it is possible to compute a price index with 2004 as the basic year. In table 6, a detailed computation pattern is presented by first using the data on the consumption of gas oil with two 66MK stoves.⁹⁰

⁸⁹ Oil in Greenland is bought as futures securing a fixed price for a period. Nonetheless, the volatility is still there after the period has expired. In the case of oil and electricity our database was not sufficient. And the price increases due to the reform also created an abrupt time series.

⁹⁰ Calculations performed in 2005.

Table 5. Consumption of utilities and water for an average family in an outskirt settlement in North Greenland in 2005 – house 56 m³, 3 persons in the household.

The Households	Quantity	Unit price	Expenditure
<i>Consumption of Electricity and water:</i>			
Consumption of electricity	2800	2.84	7952.00 kr.
Consumption of water	224	26.64	5967.36 kr.
<i>Consumption of Gas oil:</i>			
(2 66MK's)	3485	3.81	13277.85 kr.
Consumption of petroleum	514	3.91	2009.74 kr.
Consumption of Fuel	1199	3.86	4628.14 kr.
<i>Alternative Heating:</i>			
Gas oil (1 ovn 67MS)*	1742	3.81	6638.54 kr.
Fuel Oil Burner	2904	3.81	3319.27 kr.
<i>Local Knowledge:</i>			
Gas Oil	3630	3.81	13830.00 kr.
Fuel Oil Burner	1815	3.81	6915.15 kr.

* A stove with a maximal heating effect of 103 insulated m³ is assumed.

Using a Laspeyres index, we assume fixed quantities and variable prices. Consequently, table 6 tells us, how much an average household in 2005 and 2006 should have paid, if the quantities consumed remained unchanged at the 2004 level.

Table 6. Calculation of a Laspeyre Price index House 56 m³, 3 persons in the household.*

	2004	2005	2006
Electricity	6328	7532	7952
Water	4843	5551	5967
Gas oil	8469	12093	13278
Petroleum	1347	1835	2010
Fuel	3441	3741	4628
Total expenditures (66MK):	24427	30751	33835
Index (66MK)	100	126	139
<i>Index other heating techniques, other expenditures unchanged:</i>			
67MS	100	122	135
Fuel oil burner	100	118	129

* Inaccuracies due to rounding

The other indices follow the same procedure using table 5's calculations. The cost saving heating techniques gives the households lower expenditures. The increase in heating expenditures shows a variance between 29 and 36 percentage points in table 6 using expenditures calculations for 3 years. The average annual growth in expenditures is approximately 16%,

while the expenditures relative to 2004 increases with 39% for the calculations based on the 66MK stove.

The results of the calculations do not match the Statistic Greenland's consumer price index entirely. Usually, the GS index uses the initial year in determining the fixed amount, while the index used in table 6 takes an end-year as its point of departure due to lack of data. GS uses 1995 as the starting year. In addition, the GS index includes both towns and settlements, including cities receiving price cuts as a result of the reform on uniform prices. The most recent detailed price index from GS includes entries on electricity, liquid fuels and heating. As far as Nukissiorfiit tariffs systems of heat are maintained in cities, it is hardly price discrimination, which unilaterally materializes. It is not, that the four "competitive cities" get lower prices than other cities, villages and remote districts – rather it is an increase in world market oil prices materializing.

The January prices in GS's CPI show that since 2004, there has been an average annual increase of 10%, while the figures for liquid fuels alone indicates an annual average increase of 22%. The development from January 2004 to 2006 showed an increase from index 106.1 to 128.8 for total energy consumption, and for liquid fuels alone – from 112,3 to 166.6. Accordingly, considerable price increases in this area are partly due to the reform of uniform pricing and partly due to the fact that world market developments may have worsened the purchasing power for settlement households. This could perhaps be equalized by the tax breaks. We will look into that below.

It is often said, that a Laspeyre index illustrates the "most stupid consumer in the world", because he neither is influenced by price increases nor will he substitute expensive goods with cheaper goods. Nonetheless, electricity, water, gas oil, petroleum and fuel have limited substitution possibilities, since they are necessities for living in settlements. Due to this the demand is inelastic. What happens in reality is that families substitutes food items with non-food items, when prices on utilities, gas oil, petroleum and fuel increase.⁹¹ This also means, that country food substitutes imported food items.

⁹¹ The Home Rule Owned and Operated retail chain KNI Pilersuisoq Inc. supplying the settlements and some towns has experienced these patterns of consumption in the settlement stores.

6.6. Do the tax breaks equalize the price increases?

We will not use the model prices, that earlier were presented in the Home Rule government and Nukissiorfiits report on the development in prices from 2005 – 09.⁹² Development has already deemed these figures somewhat unrealistic, even though they still lie within a small margin of error. In short, the assumption was that charges in settlements and smaller towns could increase cumulatively with 50% within the whole period, or maximum with 10% per year. In the four competition towns of Qaqortoq, Nuuk, Sisimiut and Ilulissat the idea was that an immediate price decrease of 50% should take place.⁹³

These percentages should be put in relation to the costs, because the aim is to implement so-called “real cost prices”. Using the actual prices instead of model prices raises the question of, whether price increases are due to planning or exogenous factors related to price increases stemming from the world market? I will not get in to details here, but it should be mentioned as a “rule of thumb”, that if the oil price in Greenland increases by 10%, the price of electricity increases by 9% per Kwh.. Price increases due to fluctuations in the \$ exchange rate can be dealt with by buying dollar futures, which is done by the KNI Pilersuisoq Inc.. The development in world market prices represents the same. The insecure factor these days is the oscillating prices and the question of, whether oil prices will remain high. If they do, it may mean, that in coming years, buying of futures leads to, that our average settlement family’s purchasing power will diminish further.

In table 7 our point of departure is an average income increase of 2%, which is close to the development of minimum wages at the Greenland labor-market. The 2% does not in all cases reflect the true picture. Some trades see higher wage increases than others. This raises the question, whether the prices on country food follows the development in minimum wages. The modest increases in table 7 are due to the 2% that is distributed over the goods and services in the CPI from Statistics Greenland. Fuel and energy only represent a minor weight in the Greenland CPI. Hence, the income in table 7 is adjusted upwards with this weight under the assump-

⁹² The Home Rule proposal for the transition and equalization of the uniform price system for power, water and heat.

⁹³ This has never been implemented due to unexpected price increases on imported oil.

tion, that price changes on remaining goods and services also are to be covered by the 2% average increase with the same weight as in the CPI.

Table 7. Average household of three in a 56 m² house with two 66MK stoves – purchase power changes^a

	2004	2005	2006*
Household income	263.000	263.526	264.053
End tax	69.305	64.026	64.255
Disposable income	193.695	199.500	199.798
I. Annual change		5.805	298
Expenditures: Energy, Water and fuel			
Electricity	6.328	7.532	7.952
Water	4.843	5.551	5.967
Gas oil	8.469	12.093	13.278
Petroleum	1.347	1.835	2.010
Benzin	3.441	3.741	4.628
Total	24.427	30.752	33.835
II. Annual Change		6.324	3.084
Annual change in purchasing power (2 66 MK ovne) I-II		-520	-2.785

* Danish Kroner. Calculated using price catalogue from Nukissiorfiit no. 12. January 2006 (roundings are made)

With the new deductions built into the tax reforms, and despite an increase in the tax rate, it is illustrated that the tax relief almost offsets the expenditure increase the first year. After this, it is followed by a moderate growth in income in the following year. The net added expenditures for the household are the difference between the annual change in the disposable income and household expenditures on energy and water. The first year shows a modest net additional cost for the household of 520 kr., while the second year shows a stronger negative development. The household's disposable income is reduced this year by 2,785 kroner, or 232 kroner per month. It is apparent, that if the reforms to uniform prices are implemented as planned, there will be a sustained additional squeeze on the budgets of the settlement households for the years after 2006.

6.7. Computing different cases of households 2005–09

Using the income relations in the settlements as our point of departure, we can roughly estimate household incomes in this way:

- A single fisherman or hunter with or without income from fishing and hunting lives in a 40 square meter house.
- A single woman with one child, on welfare, lives in a 40 square meter house.
- A hunter's family where the husband is self-employed and the wife is a wage earner lives in a 69 square meter house with a child.
- A hunter's family where the husband is self-employed and the woman depends on welfare lives in a 69 square meter house with a child.
- A worker's family lives in a 69 square meter house with two children.
- A family of 4 children lives in a 69 square meter house.

Table 8 below finalizes the calculations with examples of different household's disposable amounts after tax breaks and price increases.

The heating calculation here is based on one 67MS stove or 1742 liters of gas oil per household. This time our estimate includes the whole reform period of 2005 – 09, which is the time horizon for gradual increases in charges towards a 50% cumulative increase in utilities in 2009.

Additionally, the households have expenditures on gasoil, petroleum and fuel, where a conservative estimate of 2% increases are added annually. These are also added to the model prices on electricity – every time oil increases with 3 Danish øre per liter, electricity increases by 1 øre. As is again showed, the tax reform has had the intended effect the first year with respect to offsetting the planned rate increases. The households got a net tax relief.⁹⁴ But the following years the disposable amount is impaired with some 2000 to 3000 Danish kroner after tax. Each of the following years with the projected increases in the price of electricity and fuel represents a further deterioration of household's welfare on top of the already computed ones

⁹⁴ The hunter living below what normally would be considered a poverty line is however struck severely. His annual income is some 40.000 to 50.000 kroner.

If the tendency with price hikes on oil since 2005 remains at a high steady level, our estimated increase of 2% is much too cautious. The expenditures for households in settlements will become even higher!

Table 8: Calculated disposable income effects 2005–2009 for an array of households in settlements

	Annual Change, disposable income (Danish Kroner):				
	2005	2006	2007	2008	2009
Hunter	-2879	-2077	-985	-602	- 582
Mother (1 child)	4938	-2068	-976	- 593	- 573
Hunter and wageearner, no kids	3428	-2166	-1188	- 721	- 709
Family both Wageearners, 2 kids					
Hunter and woman on welfare, 2 kids					
Hunter and wageearner, 4 kids	1946	-2348	-1451	-1010	-1028

(Lowest energy consumption of gas oil – one ship stove of the 67 MS type)

Table 9 shows that the portion of disposable income going towards utilities is increasing. This means a fall in total revenues in KNI Pilersuisoq's settlement stores, because households substitute food for non-food items.⁹⁵

The cost of electricity, fuel and water in Table 9 represents an ever-increasing proportion of disposable income after taxes. It is especially the poorest of households that will lose purchasing power in the settlement store. The loss of purchasing power may again be expected to lead to the substitution of “non-food” items with “food” items, because a hunter always has necessary operating expenses, to cover his own “business”.

Table 9. Energy and water expenditures share of total disposable incomes for an array of settlements households

	Share per year (%)					
	2004	2005	2006	2007	2008	2009
Hunter	32.8	39.9	44.1	46.2	47.5	48.8
Mother on Welfare, one kid	22.5	24.8	27.5	28.8	29.6	30.4
Hunter and wage-earner, no kids	11.8	13.9	15.3	16.1	16.7	17.2
Wage-earner family, two kids	9.2	10.9	12.1	12.8	13.3	13.8
Hunter and woman on welfare, two kids	15.8	18.2	20.0	21.2	22.0	22.8
Hunter and Wage-earner, four kids	13.0	15.2	16.7	17.8	18.4	19.1

⁹⁵ This should be seen in the context of another of the partial reforms the cuts in the service contracts between KNI Pilersuisoq Inc. and the Home Rule Government regarding servicing the settlements with goods and services. The gist of the matter here is that the liberalization may hit the stores supply, and hence we have yet another deterioration of living conditions in settlements

6.8. The Uniform Price Report of 1997

There is no doubt that for some households, the tax reform will fail to capture the price and tariff increases of the kind, we have just counted on. In addition, there is a bill for the other parts of the overall reform presented in Table 1 above. Settlement household's purchasing power will decrease if not compensated in some way for the spending increases. We still, however, need a more accurate picture of how many households in the "losing cities" and the settlements are impacted by the combined reforms as well as by increases in the price of oil.⁹⁶

In 1997, the association of private businessmen in Greenland and the "Siumut-Atassut" Home Rule Government coalition reviewed the uniform price system and proposed two alternatives (FANG report, 1997).⁹⁷ The aim of reform was then, partly based on commercial stability, and partly based on a solidarity principle, which was taken out of the "Siumut-IA" Home Rule coalition government's final proposal for reforms of utility prices in 2005. In 1997 the solidarity principle was interpreted in two ways:

- Unconditioned solidarity, which means that no group fares worse, than it is now.
- Social solidarity, which means that no low-income group fares worse than it is now.

It was recommended, that the social solidarity principle should be pursued, so that the total cost of financing the elimination of cross subsidies on freight, telecommunications, retail prices, energy and water, and air traffic was financed by a general tax increase across Greenland.

An increase in the Home Rule Government tax of 4% was recommended, which in 1997, should have been enough to cover cross subsidies of 135 million kr. or in 2003 prices approximately equal to 220 million kr.. To the extent that there would be savings options on public budgets, this could help to lower the marginal tax rate. The group behind the report did not move beyond, what the Home Rule Government did in 2005. It is now

⁹⁶ dividing in "winner" and "looser" towns refers to the towns experiencing price decreases and vice versa.

⁹⁷ FANG is an abbreviation for "Foreningen af private næringsdrivende i Grønland" (The Association for Private Businessmen in Greenland).

however the common municipal tax, that increases with fewer percentage points and not the Home Rule Government tax. This is very surprising because the coalition in 2005 was a “centre-left wing government”, while the authors to the FANG report were a Danish supply side professor and a neo-liberal CEO from the Greenland Bank.

Probably inspired by economic reforms in China, the element of solidarity translated into a zoning of the Greenland economy, henceforth consisted of a so-called free zone, and a normal zone. In terms of distributive impacts, the “*Pareto-efficiency*” jargon was translated into the rule that no group in the free zone should be made better off, while at the same time, groups in the normal zone should be made worse off. It was at this point, that the Home Rule government’s final proposal on uniform price reforms differed from the early report in 1997.

The report suggested that in relation to free municipal zones:

“On this basis (proposal for liberalization, GW) we propose a compensation system for the current uniform price system taking the form of a zoning of the economy. The basis for zoning is to seek liberalization, where it will lead to economic benefits. In the areas where it is expected that deregulation would have significant adverse effects, we suggest a preservation of the current uniform pricing system taking the form of maximum pricing. Hence, a breakdown in 2 zones – in the free zone a liberalization is implemented, while the rest of the country maintains a uniform pricing system”

And later regarding the price level in the normal zone, it was clearly stated (page 14):

“In the normal zone services are delivered to the current price level, and thus the social compensation system is preserved for this zone, while at the same time this zone is protected from the adverse effects of liberalization (my emphasis, GW)”

The uniform price committee in 1997 acknowledged that an introduction of a pure market economy could not be implemented across Greenland (page 14). It was noted, that there are geographical locations with a limited market basis that could not underpin a realization of business gains. This could cause distortions in the form of extremely high prices or a range of services that would disappear!

The free zone should include the four so-called “competitive cities” Qaqortoq, Nuuk, Sisimiut and Ilulissat, while the remainder of Greenland could volunteer to join the free zone if the local municipal council wished. By introducing “cost based” prices in the free zone, future incentives could mean the establishment of new businesses and the strengthening of existing businesses competing in the import and export business. Eventually real wages in the free zone should rise, which would attract workers. Economies of scale in the free zone could then be realized.

Two financial solutions were discussed in this connection. The first, the *self-finance model* could imply, that it would be taxpayers in the free zone, which finance the removal of the uniform price system. This would mean that taxpayers in the rest of the country would not be affected by the imposition of the zone model. A differentiated national tax could finance the reform. To counteract settlements in the free zone being hit, a solidarity fund was proposed, whose purpose was to re-compensate all settlements in Greenland for charge increases and tax increases.

The second model was the *mutual funding* model based on the idea that all incomes in Greenland through a general tax increase would pay for the removal of cross-subsidization. It was in this context that it was recommended that low-income groups should be compensated through the establishment of a solidarity fund.

Whatever model, it should be said, that the initial presentation of the report and its proposals were socially balanced, while at the same time, there was a process of liberalization beginning. This could be effective, given that “flex price problems” and monopoly problems related to “fixed pricing” or “price hiking” could be solved. The original paper in 1997 would not lead to additional “net bills” to be paid by some families in “looser towns” and in settlements outside competitive towns. This would probably require the opposite of the neo-liberal philosophy regarding deregulation and “cost based” pricing, that took place with the actual implementation of the reform on utility pricing.

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7. The transnational capitalist class and the mini-Keiretzu system in Iceland⁹⁸

*Ivar Jonsson*⁹⁹

For the last twenty years, globalization as an economic policy has predominated the political discourse in most countries of the world. The worldwide globalization lobby is strong, and one gets the feeling that a fundamental change is taking place in the world economy and that a new base for worldwide prosperity is being born. This picture does not seem to reflect reality. International economic activity has increased in rather limited areas in terms of branches of industry and geography (L. Weiss 1998 and I. Jonsson 2006). However, the social and political impact of this increased trans-nationalization is relatively much greater than the changes in the economic base. In this paper we will discuss the case of Iceland. The discussion is to be considered as the first part of a research project that observes how the relative mismatch in the development of the economy and socio-political structures appear in the emergence of a new transnational capitalist class (TNCC) with roots in Iceland. The rise of the new TNCC has not only undermined the balance of power between class fractions and power blocs, but emerges as well in new forms of lifestyle within the emerging leisure class.

The final part of the research project will discuss the impact of the socio-economic structural change on social and environmental policy during recent years. The main aim of this paper is to discuss the growth of the transna-

⁹⁸ This article was finished in December 2007, before the international economic crisis set in.

⁹⁹ Professor, the Bifrost Business School, Iceland and former associate professor at “Ilisimatusarfik” (The University of Greenland).

tional sector in the economy of Iceland and describe the main features of the analysis that will follow in later parts of this research project.

7.1. Introduction

In the ideal world of capitalism as presented by Adam Smith in his book *The Wealth of Nations*, published more than 200 years ago, there is no space for economic or political privileges, or exploitation by any minority group within society. Impersonal transactions in perfectly competitive markets by free, and totally independent or “sovereign” individuals, hinders the concentration of wealth and power. As a consequence equality, law and order in society are secured. This happy state of society has never existed as there is neither an “invincible hand” nor a mechanism that secures optimal use of resources and optimal level of production through the transactions of “self loving” and competing individuals. More importantly for our discussion, it is even more unlikely that such a state of happiness will exist in very small economies (I. Jonsson 1995). Small economies suffer from greater problems of oligopoly and monopoly than larger economies, and as a consequence the underlying trend towards undemocratic governance and oligarchy is strong. Micro-economies like the Icelandic economy suffer from structural strains due to its small size, oligopoly and oligarchic trends. In recent years this situation has in many ways been intensified by intensive trans-nationalization of companies in the retailing, financial and transport sectors. Hitherto unknown levels of concentration and centralization of capital and wealth has created a new trans-national class that threatens not only democracy and sovereignty of individual citizens, but also entrepreneurship and endogenous sources of economic growth.

The core of the matter may be summarized along these lines:

- a) Following privatization of the state bank sector in Iceland in the 1990s, a kind of mini-keiretzu system developed in which three privatized banks became the core and base of the growth of three closely knitted webs of related companies in the retailing and transport sectors.¹⁰⁰ These com-

¹⁰⁰ Keiretzu, refers to families or networks that manage Japanese corporations

panies and the banks built their strong financial position on oligopoly stricken markets, which they use to exploit Icelandic consumers in order to collect oligopoly-rents on which they base their investment abroad in their original branches of industry. Having accumulated substantial investments abroad, they have a capital base and securities large enough to have foreign banks finance their further investments on top of loans from the Icelandic banks and shares bought by pension funds in the Icelandic companies. This strategy enables the companies to overcome the shortcomings of the small home market, and create new sources of capital accumulation.

- b) Icelandic consumers finance their consumption by loans from the oligopoly mini-keiretsu banks. As a consequence, indebtedness of the Icelandic population has increased tremendously along the road, so that Iceland is now the most indebted nation in the world.
- c) Since the 1990s, the governments have deregulated the financial market and helped outward foreign direct investment (OFDI)¹⁰¹. OFDI leads to a spiral of depreciation of the local money (the Icelandic krona); it leads to increasing inflation due to increasing prices of imported goods and increasing wages as a response to inflation. Moreover, it leads to decreasing investment in domestic industries as profit margins are expected to lower due to higher wages and real costs of production. The government has responded to this scenario with a strategy, that has increased demand for the krona. The government allowed the building of one of Europe's largest hydropower plants (Karahnjukavirkjun) in order to foster large increase in inward foreign direct investment (IFDI) in the aluminum industry by transnational companies. In addition, Icelandic bonds have been issued in European financial markets that have appealed to foreign investors due to their high interest rate. These bonds have stimulated considerable demand for kronas. However, in the long run this strategy is problematic, as the krona is vulnerable to the consequences of speculation and shifting mood in international bond markets. As the nominal exchange rate of the krona has tended to fall after construction periods in the hydropower and aluminum plant sectors, the central bank had to increase the interest rate level to prevent inflation from rising. The level of interest rates in Iceland is now more than dou-

¹⁰¹ Usually called "outward offensive" or "Viking offensive" by the transnational capitalist class.

ble the rate than in the other Nordic countries. Higher interest rates undermine the profitability of investment in domestic production and industries. The result is creeping stagnation in the local economy.

- d) The class system has transformed over the last 15 years, from a relatively homogeneous class system into a polarized class system – in which the social cleavage between the transnational capitalist class and the traditional capitalist class is deepening alongside the increasing polarization between wage earners and the capitalist classes.
- e) We will now discuss the development highlighted above in more detail and start with analyzing the transformation of the economic base of the class system in Iceland.

7.2. The transformation of the transnational sector in Iceland

The process of globalization and de-regulation in the world economy has changed the conditions of class formation in many countries. This development has led to an increase in a group of people that has been called “the transnational capitalist class”. Globalization is set about by forces such as mass media, corporations, global economic forces, institutions, structural policies and global marketing (L. Sklair 2001: 2). These forces or structures and networks are realized by active strategies and actions of individuals, who belong to an emerging new “transnational capitalist class” that

“...pursues people and resources all over the world in its insatiable desire for private profit and eternal accumulation. This new class is ... composed of corporate executives, globalizing bureaucrats and politicians, globalizing professionals, and consumerist elites.” (L. Sklair 2001: 4).

It is through consumerism, that globalization is legitimized and reproduced. This is an ideology, that presumes that the meaning and value of our lives are to be found principally in what we possess, which can never be totally satisfied with our possessions (a feeling that is constantly created by ever-changing fashion and style). This ideology also assumes, that the goods and services we consume are best provided by the free market driven by profit maximization (ibid: 6).

As we will discuss below, Icelandic companies that have become transnational in recent years have grown extremely fast. As a consequence, a

new transnational class appears to have emerged and grown fast. The figure below highlights our framework to analyze the development of the class system in Iceland since the 1970s.

As the framework highlights, the TNCC1 has emerged as a new actor in Icelandic society and has passed other classes in terms of income and economic power. This new class distinguishes itself from the other two fractions of the TNCC with reference to income and economic power. By economic power, we refer to power within companies and their number of employees, relations between companies regarding investment and interlocking directorship and influences on economic policy formation of governments.

As a consequence, TNCC1 has gained a hegemonic position in the Icelandic society. The different categories of classes presented in the figure refer to:

The transnational capitalist class: fraction I = main owners of shares in international companies with roots in Iceland (TNCC1); fraction II = managers of TNCs' plants located in Iceland (TNCC2); fraction III = managers of governmental bodies and state apparatuses that work on building the infrastructure of transnational capital accumulation and legitimize it ideologically (TNCC3).

The domestic capitalist class (DCC) is constituted by class fractions such as: the domestically based classes of wholesalers and retailers and fishing capitalists as well as the small group of manufacturing capitalists (DCC1); Another fraction of DCC refers to managers of governmental bodies and state apparatuses, that work on building the infrastructure of domestic capital accumulation and legitimize it ideologically (DCC2).

The state and stakeholders bureaucratic class (SSBC) consists of managers of ministries and institutions within the spheres of the welfare state, the judicial system and foreign affairs. Furthermore, this includes employees of interest groups who concentrate on societal distribution of income and life chances.

The wage earning classes (WEC) consists of scientists, specialists, skilled and unskilled labor, that work in jobs that are not part of societal power centers in which social policy formation takes place. Following the projects on building the hydropower plant, Karahnjukavirkjun, in East-Iceland, the building of new aluminum plant there and enlarging aluminum

plants in West Iceland, a large number of foreign workers have been hired by TNCs like Impreglio and Bechtel.

As a consequence to this increase in numbers, foreign workers have become a much larger group within the WEC than ever before. As the social conditions experienced by these workers are much worse than workers of Icelandic nationality, the WEC is arguably split into WEC1 (workers of Icelandic nationality) and WEC2 (foreign workers).

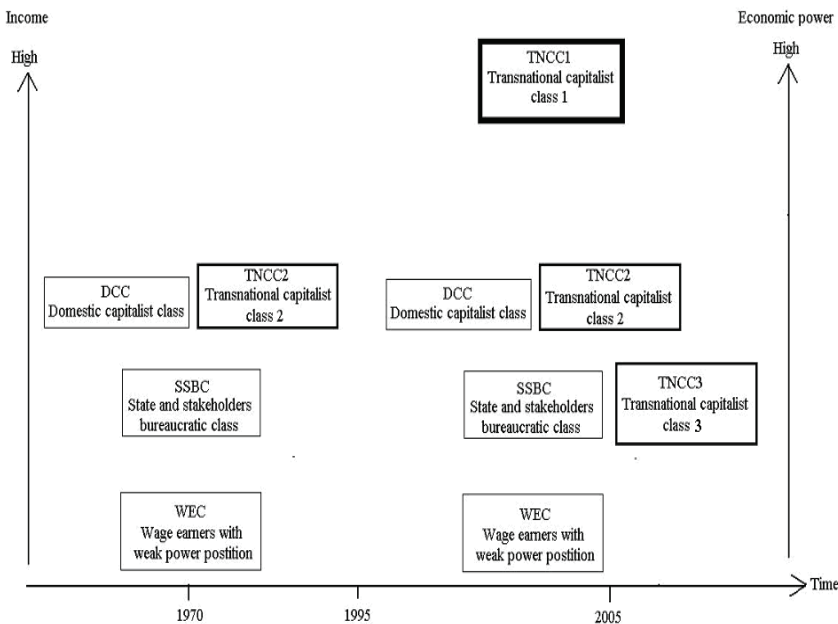


Figure 1. The transformation of the class system in Iceland since the 1990s

7.2.1. The growth of the transnational sector in Iceland

The growth of the transnational sector indicates that the transnational capitalist class in Iceland has grown in recent years. This is particularly true in terms of the new TNCC1. We will now focus on the growth of this sector in reference to the scale of production and number of employees. We will first highlight the transnational sector of inward direct investment and then observe the new transnational sector of outward direct investment

7.2.2. *The transnational sector of inward direct investment*

The bulk of inward foreign direct investment is in the aluminum and ferro-silicon industry. In recent years investment in this sector has increased fast, and so has its production. This development appears clearly in the export statistics as the structure of export has changed rapidly in recent years. Fish and other marine products accounted for 51% of merchandise exports and 34% of total exports in 2006. This figure was 82% and 60% respectively in 1991. Led by aluminum melting and medical and pharmaceutical products, exports of manufactured goods have been growing rapidly in importance and accounted for 38% of merchandise exports in 2006. The export of services has also soared, as the economy becomes increasingly service-oriented. Services now account for almost 35% of total export revenues while in 1990 the share was 26% (Central Bank of Iceland 2007).

Table 1. Foreign direct investment position, by type of investment

Year	Inward investment ¹		Total
	Equity	Intra-company loans	
1989	7,886	-1,259	6,627
1990	7,418	710	8,129
1991	5,864	3,335	9,199
1992	5,652	2,225	7,877
1993	5,880	2,620	8,500
1994	6,610	2,045	8,655
1995	7,448	972	8,419
1996	7,719	5,616	13,335
1997	14,364	9,882	24,246
1998	24,006	8,297	32,303
1999	25,062	9,598	34,660
2000	33,177	8,959	42,136
2001	62,872	7,780	70,652
2002	56,116	8,176	64,292
2003	61,670	23,040	84,709
2004	94,152	33,293	127,445
2004	236,853	59,697	296,550
2005	413,078	125,329	538,407

Source: Central Bank of Iceland 2007

Investments by TNCs in the electricity intensive sector of aluminum production have increased, following the strategy to build the new mega hydropower plant, Karahjukavirkjun. The large-scale investment projects in the aluminum and power sectors launched in 1997 are nearing completion. When these projects are completed in 2009, the total production capacity of aluminum melters in Iceland will be 800 thousand tonnes per year (tpy), up from 270 thousand tpy in 2005.

Power capacity needs to be stepped up by 80% to supply them with sufficient energy. The long-term impact of these investments will increase the share of aluminum in total merchandise exports so there will increase from 20% in 2005 to roughly 40% in 2009 (*ibid.*).

Table 2. Direct investment from abroad: Inflows by industrial sector

(Millions of kronur)	1998	1999	2000	2001	2002	2003	2004	2005	2006
<i>Total</i>	10.839	4.958	13.463	16.912	7.987	24.475	51.704	194.062	271.764
Metal and mechanical products	1.709	567	-74	409	1.773	1.071	20.258	41.168	64.934
Financial activities	3.268	-255	559	2.473	686	-771	93	146.898	162.206

Source: Central Bank of Iceland

Inward direct foreign investment has increased fast in recent years. This is particularly true concerning 2005 and 2006 as can be seen from table 1.

It is interesting to note that the main source of inward foreign investment in equities has not been the TNCs of the aluminum industry, but investors in the financial sector. As appears in the following table 2 (see Appendix 1 below for more details).

The development highlighted above has strengthened the power position of the TNCC2 – particularly in terms of regional policy formation as the TNCs in the aluminum sector are effective in creating jobs over short periods.

7.2.3. The new transnational sector of outward direct investment

Liberalization of cross-border capital movements has resulted in profound change in the composition of residents' financial asset portfolios. Before full liberalization in 1995, residents owned only approximately €156 million (13 b. kr) in foreign securities. By the end of 2006, this figure had increased to €12.7 billion (1,200 b.kr), or the equivalent of 105% of Iceland's GDP. In 1995, Iceland's outward investment stock was equivalent

to approximately 14.5% of GDP. Eleven years later, in 2006, it had risen more than twenty-six-fold to 396% (Central Bank of Iceland 2007).

Figure 3 and 4 below show, that there was a turning point in 2004 as outward foreign investment increased from around 4 billion Euros in 2003 to over 23 billion Euros in 2006. The main reason for this shift was the privatization of former state banks and the deregulation of financial markets. International acquisitions and internal growth led to tenfold the growth of the banks' turnover between 2000 and 2006 as acquisitions and internal growth led to tenfold the growth of the banks' turnover between 2000 and 2006.

The three commercial banks have subsidiaries and branch offices in e.g. the UK, USA, Scandinavia and continental Europe (Central Bank of Iceland 2007). Figure 5 below highlights the development of the bank system since 1990.

The transformation of the bank system and the de-regulation of the economy have had considerable impact on the class system in Iceland. The trans-nationalization of the banks and the retailing sector has created a new group of wealthy people, who have the bulk of their income stemming from investments abroad.

This development is the main reason for the polarization of Icelandic society with foreign workers on the low end of the spectrum and the new transnational class on the top end. We shall now observe the base of this new class in terms of the companies they own.

7.2.4. The size of the new transnational sector of companies leading the outward foreign direct investment

The rise of the new TNCC1 in Iceland raises the question: Who are they, and where do they come from? The TNCC1 comes from the main companies in the financial and retail sectors, but some companies in other sectors have also trans-nationalized fast in recent years¹⁰². It is worth keeping in mind when looking at the figures below, that the population of Iceland was 304.334 in 2006 and the labor force was counted at 174.600 people. The GDP in 2006 was 1.162 billion ISK, or around 9,3 billion GBP. The GNP of Iceland in 2006 amounted 1.076 billion ISK or around 8,6 billion GBP.

¹⁰² Information on the companies was collected from their respective annually reports and homepages during October to December 2007.

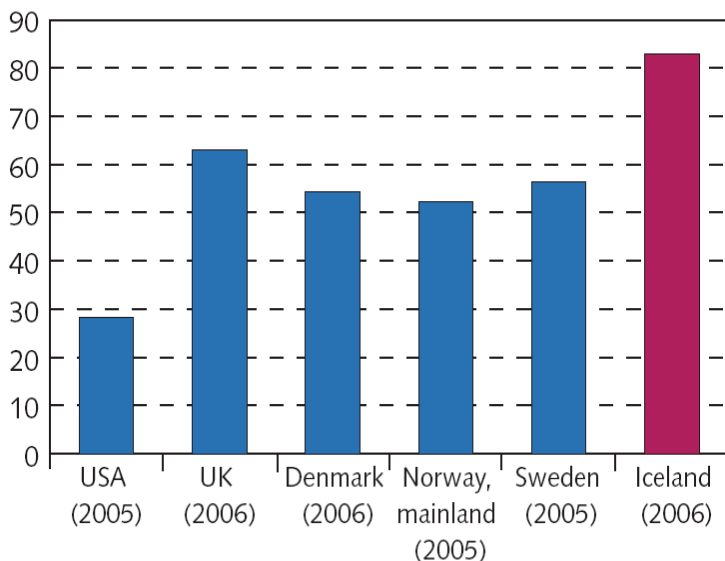


Figure 3. Outward direct foreign investments (% of GDP in different countries).

Source: Central bank of Iceland, 2007

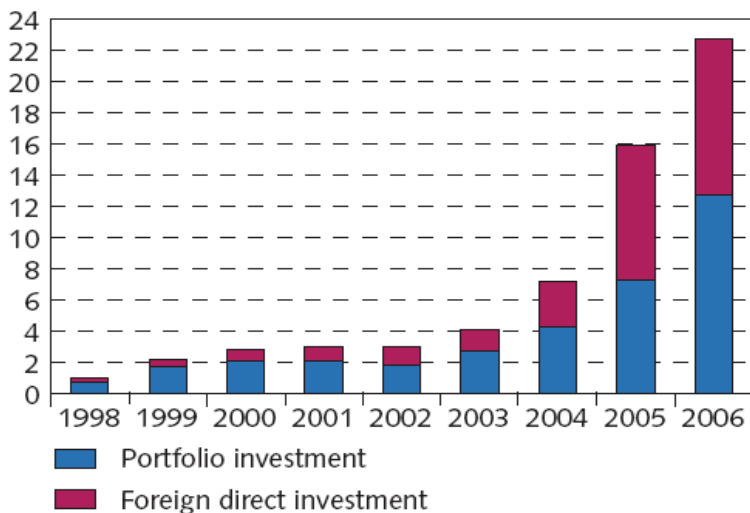


Figure 4. Outward foreign direct investments and portfolio capital owned abroad by residents (at year end) 1998 – 2006.

Source: Central bank of Iceland, 2007

7.3. The structure of the transnational sector

The sectors, where the transnational companies operate are the financial sector, the fishing and food sector, the retail and real estate sector, pharmaceutical products and sea freight.

7.3.1. The financial sector:

- Kaupthing Bank (Total assets 42,9 billion GBP in 2006 and operating income 1,4 billion GBP, 2700 employees of which 1100 in Iceland)
- Landsbankinn (Total assets 16,4 billion GBP, net operating revenue 0,7 billion GBP. Number of employees 2313 in 2006 of which 61% in Iceland, 19% in UK and Ireland, 19% in Continental Europe and 1% in USA)
- Straumur-Burdaras (investment bank) (total assets 6,9 million EUR, net operating income 2006: 0,3 billion GBP, number of employees around 450 of which 112 are located in Iceland and 187 in Finland)
- Glitnir (net operating income 2006: 0,5 billion GBP)
- Pension funds (have wide range of investments in the companies in the transnational sector as well as foreign companies)
- Norvik (3000 employees worldwide in retailing of foods, furniture, sportswear and timber processing plants as well as owning banks in Latvia and Russia. By 2004, Norvik was Iceland's tenth largest company with a total turnover of over 221 million GBP).

7.3.2. Fishing and food sector:

- Samherji (Operating revenues was around 0,19 billion GBP in 2006 Owns enterprises in Iceland, Faroe Islands, Germany, Poland, U.K and Canary Islands)
- Bakkavör (20000 employees in 8 countries, 55 factories, turnover 1 billion GBP in 2006).

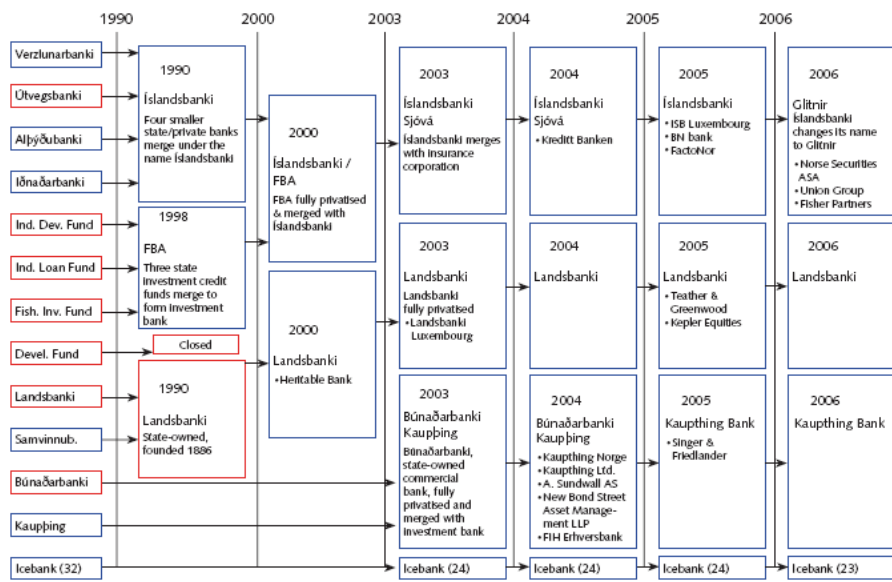


Figure 5. *The Development of the bank System of Iceland.*

Source: Central Bank of Iceland 2007

7.3.5. Retailing and real estate:

- Baugur Group (75000 employees, 3000 stores worldwide, turnover 9,8 billion GBP. Baugur Group owns 27% in 365 the largest media company in Iceland)

7.3.6. Other sectors

- Actavis (pharmaceutical – Turnover in 2006 around 2,1 billion GBP with approximately 11000 employees in 40 countries, 500 in Iceland)
- Eimskip (sea freight) (Total assets 0,9 billion GBP and 0,5 billion GBP in operating revenues in 2006, 9500 employees of which 8500 work abroad in 13 countries)
- Samskip (sea freight) (Total assets 0,06 billion GBP and 0,17 billion GBP turnover in 2004. In 2006 the company had around 1400 employees in 14 countries)
- FL-Group (Total assets 2,1 billion GBP in 2006 and investment income around 0,34 billion GBP. Among shares in companies that FL-Group

had shares in 2006 are the Icelandic bank Glitnir. (30.4%), AMR Corporation.(6,0%), Finnair Oyj (22.4%), Royal Unibrew. (24.4%), Bang & Olufsen (10.4%) and Aktiv Kapital (13.3%).

7.4. Analyzing class relations – where to go from here

The discussion above is but a part of a larger research project. The main object of the research to follow will be on the economic, political and social relations of the new transnational capitalist class in Iceland. Hence, the emphasis will be on the concentration as well as the centralization of capital in the Icelandic economy. The development of concentration of capital will be approached in terms of market shares of main companies in the different branches of industry that will be analyzed. Concerning centralization of capital, the focus will be on the interlocking directorship (see I. Jonsson and F. Jonsson 1992 and J. Scott and Griff 1985) in terms of managers that are also board members of the companies within the transnational sector. Furthermore, interlocking shareholding will be analyzed in terms of intra- and inter-company ownership of shares.

As for political relations, the relations of the companies in the transnational sector and their managers with ties to political parties, interest groups and media will be observed and analyzed in terms being the “inner circle” of the transnational capitalist class (M. Useem 1984 and F. Jonsson and I. Jonsson 1992).

Concerning social relations of the TNCC, the polarization of Icelandic society will be analyzed both in terms of income distribution and the Gini-index, as well as in terms of life-style patterns, and in particular, regarding “leisure-class” behavior) cf. T. Veblen (2007) and M. Weber’s (1974) concept of “status”.

Finally, the transformation of the Icelandic socio-economy and the role of the new transnational capitalist class will be analyzed in terms of the emerging “absentee capitalism” (I. Jonsson 2006). A development of this sort would presume, that the new transnational class would in that case move the headquarters of companies to the metropolises of the richest developed countries, and direct their companies around the globe from there. As a consequence, the new transnational capitalist class of Iceland would live abroad.

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Appendix

Direct investment from abroad: Inflows by industrial sector (Millions of kronur)

	1998	1999	2000	2001	2002	2003	2004	2005	2006
Total	10,899	4,958	13,463	16,912	7,987	25,475	51,704	194,062	271,764
Agriculture & fishing	-21	55	3	-21	-4	3	1	1	1
Mining & quarrying of which:	165	1	23	62	-140	-8	-3	-5	-6
Extraction of petroleum and gas	-	-	-	-	-	-	-	-	-
Manufacturing	1,764	2,801	11,458	1,317	5,287	5,137	25,294	43,420	85,107
<i>of which:</i>									
Food products	-46	2,344	1,173	-1,927	423	553	475	1,082	16,566
Textile and wood activities	-8	-	-2	-	-	-	-	-	-
Petroleum, chemical, rubber and plastic products	100	-110	4,004	2,592	1,056	3,380	2,992	2,654	3,462
Metal and mechanical products	1,700	567	-74	409	1,773	1,071	20,258	41,168	64,934
Office machinery, computers, media, tv and communication equipments	-	-	6,355	243	2,036	133	1,570	1,484	145
Vehicles and other transport equipment	-	-	-	-	-	-	-	-	-
Electricity, gas & water	-	-	-	-	-	-	-	-	-
Construction	529	535	165	1,808	43	-16	112	194	237
Trade & repairs	2,176	705	1,103	-162	6,093	-6,665	276	21	5,100
Hotel & restaurants	-	-	-4	-1	154	13	31	1	-16
Transport & communication	-33	-294	126	19	1,054	-1,095	-3,089	2,995	1,638
<i>of which:</i>									
Land, sea and air transport	131	-138	-151	-22	2,372	-1,043	2,036	1,241	3,215
Telecommunications	-164	-156	276	41	-1,918	-52	-5,125	1,754	-1,576
Financial activities of which:	3,268	-255	559	2,473	686	-771	93	146,989	162,206
Monetary industries	-	-	-	-	-	-	-	-	-
Other financial intermediation of which:	3,268	-255	559	202	655	-771	93	146,898	162,206
Financial holding companies, Insurance & activities auxiliary to insurance	-	-	-	2,272	30	-	-	-	-
Other financial intermediation and insurance activities, software, research, management holding etc.	2,874	1,292	6	12,826	-5,234	28,963	28,117	620	17,527
<i>of which:</i>									
Real estate	-	-	-	-	-	-	-	-	-
Other services	119	118	23	-1,108	47	-85	873	-83	-30

8. Local implications of housing reforms in the northern regions of Russia

*Lyudmila Zalkind*¹⁰³

One of the major recent developing reorganizations taking place in the Russian economy has been a reform of the housing sector. This is important, given that changes in the housing sphere have marked influences on the macroeconomic situation as a whole – since expenditures in connection with housing are responsible for considerable proportions of both the federal and the regional budgets. At the same time, the construction of new houses is considered to be one of the main ways to stimulate economic growth.

8.1. Outline of the housing reforms

The Russian housing reform began in the middle of 1990s just as many of the other more recent reforms in Russia. The main goals and tasks of these reforms were formulated in the legislation “Principles of Federal Housing Policy” (1992) and within the acts: Federal Program “Dwelling” (1993), and the Concepts of Housing Reform in the Russian Federation (1997).

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The goals of the reforms included:

- Establishing a free market for houses.
- Improvement of housing quality.
- Improvement of housing services.

The reduction to budget expenditures for communal and housing services – through the establishment of a market for housing – aimed at increasing the housing quality, improving housing services, as well as providing an overall reduction of federal and regional budget expenditures. In order to achieve the reform's goals, four major policy measures were planned:

- The privatization of dwellings.
- The de-monopolization of the communal and housing services market through a liberalization of both the demand and supply.
- Changing the state subsidiary policy in two ways 1) A gradual reduction of state subsidies for housing and communal services, and 2) A transition from subsidizing municipal communal services to subsidizing low-income people
- A rise of prices for communal and housing services aiming at increasing the attractiveness of this type of business

8.2. Changes of housing ownership and management

The federal government was interested in a fast privatization of housing. In the Soviet period, all multi-dwelling buildings were state or municipal property. Hence, the object of property ownership was only buildings considered to be units with single dwellings. In 1991 however, the new Law of Dwelling Privatization was adopted, and special state agencies were established throughout the country. Property rights to individual dwellings were given to the tenants without payment, and the tenants only paid the costs of issuing the documents of ownership – showing that the dwellings had become their private property. But after the private sector appeared in households with individual objects of property, tenement-houses also began to be split up. Flats became legal units, with economic and legal liability. Still, even if there was no ownership but only *usu fruct* rights to flats dur-

ing the Soviet Period, the rights of *usu fructus* also encompassed other rights such as¹⁰⁴:

- Rent support helping to realize income entitlements.
- Registration of grand children that enabled inheritance rights.
- Flat exchange options, including pro forma marriages.
- The registration of relatives, enabling the realization of other rights.

In many ways, the rights up till the late 1980s were more or less informal interests, which could be seen as a legal framework defined through a common property perspective. This however gave way for the Law of Dwelling privatization through on one hand the legalization of actual regulations encouraged by a decrease in transaction costs, and on the other hand through the definition of a new set of legal relationships and property rights.

According to the law, flats in multi-dwelling buildings could be property of different owners. These owners at the same time, received additional property rights or so-called “common property of the multi-dwelling building”, which included such things as the walls, the roof, sanitation system, land, etc. The common property became a joint ownership of all dwelling owners in a specific building encompassing also the corresponding maintenance responsibility. Hence, privatization of dwelling entails serious consequences for the tenants. There are consequences not only through the disposal rights of the flat, but also through the possibilities for disposal of adjacent land and the responsibility for the maintenance of the building.

Passing property rights to the current tenants therefore included the transition of management responsibilities. Before the change, a special municipal company conducted management of the house. Now, according to the Housing Code (2004), the responsibility of the housing management had been turned over to an assembly of dwelling owners. This new organization was supposed to elect one out of three possible forms of management schemes:

- A direct management by the dwelling owners.
- An association of dwelling owners, a housing co-operative, or another form of a consumers’ co-operative.
- A private or municipal management company.

¹⁰⁴ Under Onore’s classifications of rights (Kapelyushnikov, 1990).

Every dwelling owner of a specific house should be officially informed of, when an assembly is held (date, time, place, agenda). An assembly is legitimate, when more than 50% of the dwelling owners of the house are in attendance.

According to the Housing Code, all dwelling owners are required to participate in the management and assembly of the house. If an assembly is not convened, or if there is no quorum, the municipality appoints a management company to be responsible for the management of the house.

8.3. Description of housing in the Northern Region

In the 1970s and 1980s, the social development of the Russian North was given the special attention of the State. Most of the housing was built during this time with standard designs of central Russia. But the quality of the houses and the housing design did not meet the requirements determined by the northern conditions, e.g. due to limited insulation and thus limited heat-retaining (Gavrilova, 2002). At the same time a large number of the houses were built as temporary buildings and even as camps. Accordingly, northern regions today are on average characterized by a level of depreciation higher than 50%. In some northern territories the level is even more critical and is as high as 70%. This situation implies that actual expenses for major repairs do not provide funding for the rebuilding of housing. Similarly, the depreciation of heating and sanitary system is higher than 60%¹⁰⁵. The share of ramshackle and hazardous housing is responsible for more than 10% of the available housing in Koryakia, Sakha-Yakutia and Taimyr. These dangerous forms of housing in other northern regions contribute with shares between 3% and 9%. (Russian Regions, 2005)

In all northern regions (except Evenkia), the share of housing service expenses in household expenditure is higher than the average level in Russia (Russian Regions, 2006). In the northern region, the cost of housing service is 5–6 times higher than in central parts of Russia. Among the explanations of these differences are for example the higher levels of transport cost, as –

¹⁰⁵ See for example, Committee for Northern and Aboriginal Affairs (2006).

ell as the costs of building materials and other commodity costs, which are at a considerably higher level than the Russian norm.

8.4. Building new houses in the North

Until 1991, the volume of construction of houses in all northern regions per person was higher than the Russian average. The dynamics of the construction are presented in table 1 below. During the 1990s however, there was an economic recession in Russia, which led to a reduced construction activity in all Russian regions. A construction boom was experienced in the beginning of 2000, but this was not the case for all northern regions.

The Northern regions may be divided into two groups. The first group includes 5 regions, where the volume of new construction has turned out to be rather close to the Russian average. These are the so-called “oil regions” which include the Khanty-Mansi, the Yamalo-Nenets, and the Nenets Autonomus Okrugs (AO). The group also includes the Sakha-Yakutia Republic, which is the main gold and diamond mine region in Russia, as well as Chukotka, which in 2002-2005, also demonstrated a high rate of construction growth. The growth started with the arrival of a new governor, the oligarch R. Abramovich. In 2006, however, the Chuckchee boom was reversed into a recession. This change may partly be explained by governor’s loosing interest in the “Chukotka project”¹⁰⁶. However, the main part of housing for newcomers had already been built when this happened.

The second group includes 8 northern regions, which have demonstrated a low level of new construction. During 2000–2006 the volume of construction of new housing was as low as 4% compared to 50% of at Russian average. For instance the volume of construction has been zero since 1998 in Koryakia. In 2006 an earthquake destroyed three settlements. The federal government decided to subsidize house building for tenants in these settlements, so in 2006–2007, new houses were built as substitutes for the destroyed ones (Kolch, 2007). In spite of the fact that Evenkia is an oil region, the level of construction was generally low. There was however, a short increase caused by the involvement of SC “NK Yukos” in socio-economic development of Evenkia in 2003.

¹⁰⁶ According to NES agencies, in 2006 Governor R/Abramovich submitted an application for resignation and was not fired.

Table 1. Residential building commissioning, square metres per 1,000 persons

	1990	1995	2000	2001	2002	2003	2004	2005	2006
Kvanty-Mansi AO	663	569	257	488	475	400	479	394	509
Yamalo-Nenets AO	976	398	195	235	356	247	288	320	467
Sakha-Yakutia	665	629	258	374	264	276	252	275	304
Nenets AO	445	250	297	291	116	227	198	776	182
Chukotka AO	595	71	17	181	244	389	493	475	131
Evenkia AO	494	400	56	113	114	400	172	231	135
Komi	537	346	252	113	147	159	142	161	182
Karelia	450	234	86	108	96	119	135	126	158
Arkhangelsk oblast	423	138	57	74	80	71	80	91	151
Magadan oblast	505	79	31	37	17	39	23	52	82
Taimyr AO	492	71	52	128	0	175	0	3	0
Koryakia AO	796	171	0	0	0	0	0	0	434
Russian Federation	417	277	225	227	247	267	307	326	390

8.5. Privatization and housing management

The share of privatized dwellings reached a level of 50% by the beginning of 2000. This percentage has now reached 77% in Russia. The level in northern regions is indicated below in table 2. The difference to the general level in Russia is due to various reasons.

In the case of the Murmansk region there are some restricted military towns, and in general, people employed by the military are not interested in privatization since the employment is time-limited and characterized by temporary residence. Hence, the level of dwelling privatization is very low in these towns.

The Koryakia, Chukotka and Evenkia regions, where the low level of privatization is connected to a lack of demand for dwellings, represent another case. However, as a whole, it is difficult to give an unambiguous evaluation due to the slow increase in dwelling privatization in the North. A higher level of temporary housing such as could explain this illustrated by the case of the Murmansk region. Another explanation may be found in the low incomes of people in northern regions, as well as in the negative expectations of socio-economic development of the territories.

8.6. Housing reforms – The inhabitants’ opinion

A case study on the public evaluation of the consequences of the housing reform was conducted in the town of Apatity, in the Murmansk region in 2006. It was a special survey that involved the participation of 500 households.¹⁰⁷

An overall estimation of the housing reform suggests that in spite of a general negative attitude to any reform, people’s opinion turned out to be both positive and negative. Table 3 shows the results of answers to the question: “What do you expect for yourself and your family in relation to the housing reform?”

The answers were more or less divided in half – a group of 37% showing optimism and another group of 41% being pessimists. The ratio relates to the people’s expectations and is reflective of two different groups of evaluations.

Table 2. Level of dwelling privatization, % of housind

	1999 (%)	2001 (%)	2003 (%)	2005 (%)
Korvokia AO	33,0	34,0	31,6	35,5
Chukotka AO	23,5	27,0	27,9	29,7
Magadan oblast	42,2	47,0	50,5	54,4
Sakha-Yakutia	53,0	61,0	66,1	68,0
Taimyr AO	38,2	40,0	44,6	51,2
Evenkia AO	25,0	35,0	33,1	36,6
Yamalo-Nenets AO	34,2	45,0	51,8	57,8
Khanty-Mansi AO	40,0	51,0	53,7	66,5
Komi	36,0	52,0	55,6	54,4
Nenets AO	43,5	52,0	55,0	53,6
Arkhangelsk oblast	42,0	49,0	52,9	61,3
Murmansk oblast	45,4	48,0	54,0	62,2
Karelia	48,7	42,0	47,5	54,3
Russian Federation	58,1	64,0	68,3	73,7

¹⁰⁷ Universal set of the survey was population of an area of Apatity (size of universal set – 1616 householders). Sample: size – 498 householders; random, step – 3; miscalculation $\Delta = \pm 4,5\%$.

The housing reform created expectations of improvements of housing services, appearance of new forms of housing services, new options for participation in house management, and a rise of security as illustrated in figure 1. Nevertheless, today's results of the housing reform are far from what people expected. This is illustrated on the upper figure depicting the expectations (yellow or light="I hope for", green or dark="I fear") and on the lower figure, regarding the evaluation of the outcome (yellow or light ="It happened; green or dark="It did not happen"). The hopes were high regarding improvements, but it was accompanied by a fear of rise in prices. The outcome was disappointing regarding the improvements, while the only expectation fulfilled was the rise in prices!

Table 3. Answers to the question: "What do you expect for yourself and your family in relation to the housing reform?"

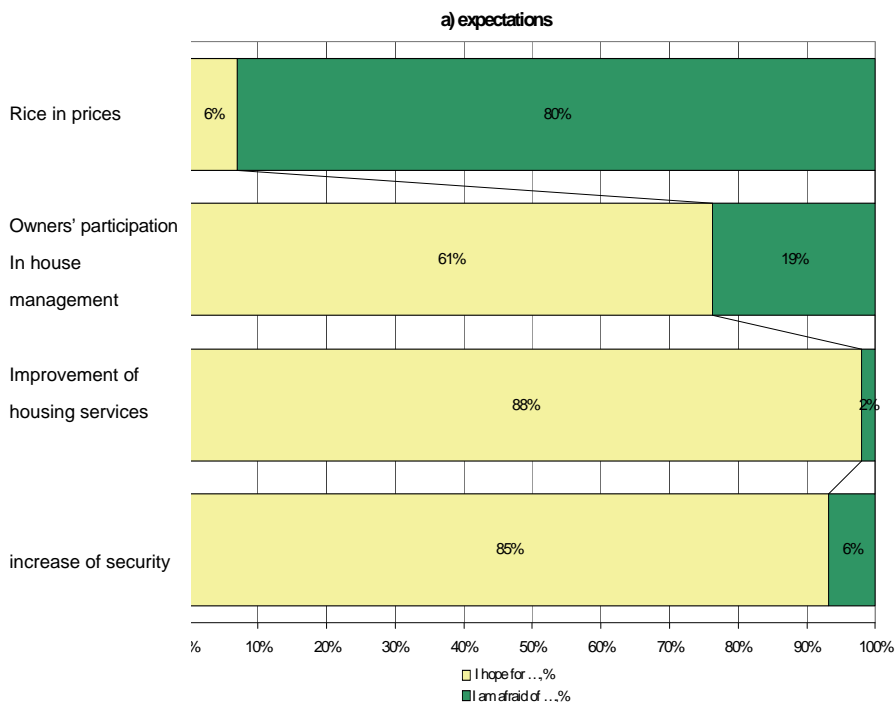
	Total (%)	Including	
		Dwelling owners (%)	Tenant (%)
Only good	15,6	16,0	14,0
More good, than bad	21,8	22,0	20,0
More bad, than good	25,3	26,0	24,0
Only bad	16,0	16,0	16,0
Can not answer	17,4	17,0	18,0
Other answers	3,9	2,8	6,9

It is therefore not difficult to understand the pessimistic evaluations of the housing reform, where the results in many ways turned out to be opposite to the expectations. At the same time, an explanation for the optimism evident in table 3 may be in connection to preconcieved notions about the housing reform process in general.

8.7. Dwelling privatization

Most people (44%) reported that they privatized their flats "for their children". Some people (27%) wanted to move, which was easier after the privatization. It was generally a surprise, that as much as 17% of the people perceived the privatization as "a good investment". Other answers included statements like "I want to have my own property", "I want to be an

owner” or “property is better than nothing”. Among municipal tenants, there were people who wanted to privatize the dwellings, but were not able to do so for different reasons. Around 22% did not have the necessary money, while 20% did not have the time, and another 10% were afraid of high taxes. However, 50% of tenants thought, they should do it as a savings for their children, while a total of 24% of the tenants refused the dwelling privatization. As a consequence, around 80% of the population was interested in privatization. So in reality, both the state and the sampled respondents were in favor of the privatization. This enabled the state to carry out the process quite quickly. Consequently, in Apatity in the middle of 2007, as much as 73% of the dwellings were privatized!



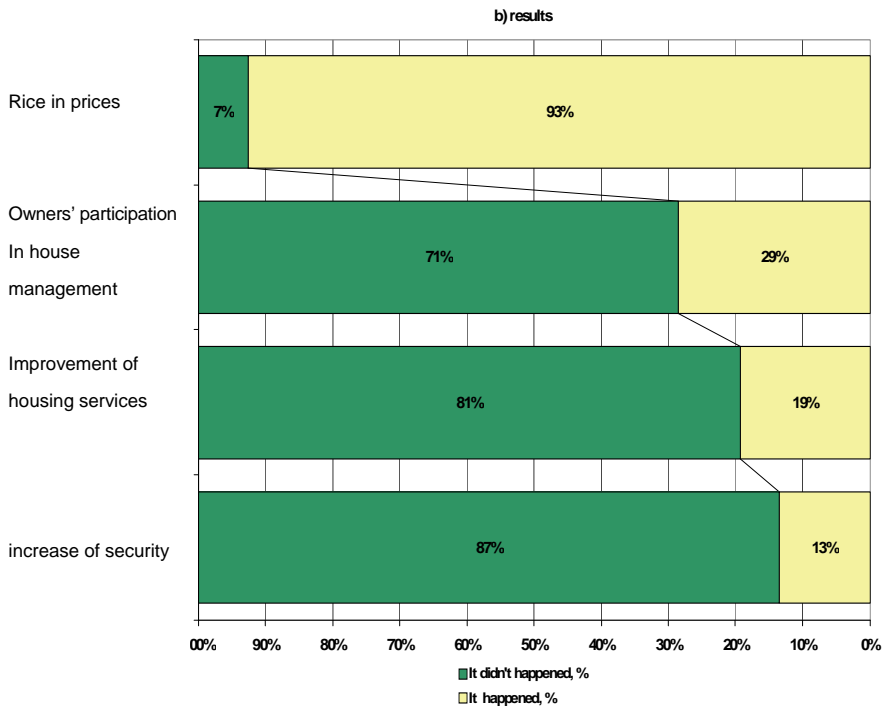


Figure 1. A Comparison of the expectations and opinions of results.

8.8. House management

In this case study, we tested the awareness of the inhabitants regarding the different forms of housing management. In the questionnaire, the respondents could choose more than one answer. The most known form of management was the dwellers' association, which included 36% of the responses. The second most common answer was the private company organization included 21% of the responses. The least common answer was the self-management type, which was indicated in only 16% of the responses.

Another question was related to the possibilities of changing the management form. About 18% of the respondents thought that it would be possible to organize the association in their house, while 30% thought that such a change would be impossible. In relation to a private management company, opinions were divided into three groups. The first group consisted of 25%, who wanted to keep the municipal company, because they

were afraid of changes. The second group (34%), would have liked to have a private company, and higher quality of services at higher prices. The third group (21%), preferred a cheap private firm.

The survey concludes, that among other things there may be a quite low information level and at the same time a rather high degree of opinion differentiation. Relevant housing legislation does not automatically include stimulus for a majority of the population in order to instigate changes in the housing sphere. The tenants, who may be ready for changes, are more or less hostages of a majority. Correspondingly, new forms of house management could be unclaimed in many cases, and hence municipal company management will be kept.

8.9. Conclusion

The housing reform seems to be among many reforms in Russia that are far from completion. Parts of the goals of the reform have been reached. A market for dwellings has been established and tenants have participated actively in dwelling privatization. The northern region is however, lagging behind the Russian average in both the rate of privatization and the volume of housing construction.

Acquisition of property rights for many people is not associated with new rights and responsibilities. For a majority of people, dwelling privatization may only be a possibility to devolve. On the whole, therefore, the housing reform may follow a direction, which is opposite to the inhabitants' expectations. At the same time, people don't think about themselves as being participants in the reform process, nor do they think they possess the ability to change the course of events.

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9. Climate change and economic system impacts on self-sufficiency constraints and potentials – Perspectives from ecological economics¹⁰⁸

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Arctic nature and societies are strongly impacted by climate change as well as global economic development. The impacts of Climate change are expected to change Arctic nature and livelihood far beyond what is observed now. The Arctic economy has considerable wealth in natural resources, from petroleum and minerals to fish and forests. Arctic nature provides resources for the world market and subsistence livelihoods for indigenous and local people. Hunting, fishing, herding and gathering still have large importance for providing food as well as maintaining social relations and cultural values. Research initiatives of Arctic Council, the Arctic Human Development Report (AHDR 2004) and the Arctic Climate Impact Assessment (ACIA 2005), have given important knowledge about Arctic societies and how they are impacted by climate change. The intertwined nature of the subsistence and market economies is characteristic for the

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Arctic societies, as described in the report from the ECONOR project (Glomsrød and Aslaksen (eds.) 2006). Climate change impacts and other environmental problems can dramatically affect the conditions for subsistence activities and the well-being of the indigenous and local people. Knowledge about these changes is crucial for identifying conditions for economic, environmental and cultural sustainability and self-sufficiency in the Arctic, within the framework of the global economy.

Given the substantial environmental uncertainties affecting the Arctic, the irreversibility of climate change impacts, and the complex ethical issues involved, we argue that an economic valuation and risk management should be supplemented with other approaches. The value of Arctic nature should reflect its importance in subsistence production, biodiversity protection and ecosystem services. The ecological value of the Arctic is intertwined with the cultural values, and traditional ecological knowledge that is crucial for improving the information basis for sustainable development. The research area of ecological economics suggests broader approaches to environmental uncertainties, taking into account ethical values and conflicts of interest. In this paper, we discuss how perspectives from ecological economics can be helpful in evaluating the uncertainties of climate change impacts and economic system impacts on nature and society in the Arctic. This perspective provides a framework for addressing consequences for self-sufficiency constraints and potentials.

9.1. Uncertainty, valuation and ecological economics

The Arctic ecosystems and social systems are unique on a global scale and represent a valuable part of our common ecological and cultural world heritage. To develop precautionary strategies for sustainable development, interdisciplinary approaches are needed, including approaches based on ecological economics (Costanza 1989, 2001; Norgaard 1994; O'Neill 1993, 1996, 2007). Ecological economics suggests broader evaluation methods are needed for assessing uncertainty and accommodating scientific disagreements. This includes diverse perspectives on the value of nature, including stakeholder participation and deliberative processes. (Vatn 2005). In ecological economics, the focus on uncertainties in valuation and complexities in ethics leads to a broader approach to environ-

mental risk and value, with an increased focus on the process of knowledge generation and value assessment (Funtowicz and Ravetz 1991, 1994). Taking into account potential harm to different stakeholders implies a wider context than what cost-benefit analysis includes. New institutions for participatory processes are needed to strengthen dialogue between stakeholders and secure the role of less powerful stakeholders. For example, cooperation between indigenous people across the Arctic represents an emerging institutional framework for a stronger voice.

Ecological economics expands the perspectives of traditional mainstream economics in several respects: In traditional mainstream economics, nature is seen as a “good” similar to other (produced) goods, and there is no particular priority given to the valuation of nature in the sense that is the basis for life-sustaining processes. This approach to valuation of nature presupposes that there is a trade-off between the value of nature and other values, values are supposed to be commensurable: a loss of nature is assumed to be compensated by a gain in other values. Ecological economics, on the other hand, explicitly recognizes that nature is the basis for life, and that valuation of nature requires valuation methods beyond monetary valuation (O’Neill 1996). Economy and ecology are derived from the same Greek word, *oikos*, meaning house, our home on planet Earth, and a wise economic household management must take into account the ecological limits of the Earth. Ecological economics thus recognizes that the value of nature is a much more complex concept than what is suggested by the market-based value concepts of traditional economics.

In traditional economics, the appropriate value concept from the viewpoint of society is “opportunity cost”, suggesting that the value of preserving a particular quality of nature or culture should be weighed against the cost of another opportunity forgone, irrespective of the inherent qualities of nature. Ecological economics approaches the valuation of nature in terms of the qualities it expresses. O’Neill, Holland and Light (2007) argue for the spatio-temporal particularity of nature:

The history and the location of a particular place in nature matter, giving the place a particular quality. Nature qualities and the cultural values embedded in that particular nature must be understood and valued through their representation of a particular place at a particular time. The place and time where they belong gives nature and culture their distinct value, a value that cannot be replaced. The complexity of valuation of nature is compounded when the qualities of nature are intertwined with cultural values.

Standard economics emphasizes that the agents of society, companies and consumers, are subject to their economic interests as being the main motivating force, irrespective of social, cultural and ecological context. Ecological economics focuses on the potential of the economic agent to act on responsible self-interest. There are other accounts of rationality besides economic rationality:

“Behaviour is procedurally rational when it is the outcome of appropriate deliberation” (Simon 1976).

Expressive rationality characterizes actions as rational when they satisfactorily express rational evaluations of objects and persons:

“Practical reason demands that one’s actions adequately express one’s rational attitudes towards the people and things one cares about” (Anderson 1993).

In traditional economics, environmental problems are conceptualized as externalities, external to the responsibility of the economic decision-maker. Ecological economics draws attention to the assumptions underlying the notion of the “Economic man”. Spash (2002) refers to the institutional economist K.W. Kapp (1950) who criticized the concept of externality as not taking into account that “the pushing of damages onto others and avoiding the associated costs is to be expected as a normal and prevalent activity of the successful economic agent” (Kapp quoted in Spash 2002, p. 5).

Economic valuation methods that only rely on quantitative valuations without taking into account the particular environmental qualities and uncertainties, can appear as “blind” to the natural and cultural values that are difficult to measure. This apparent “blindness” may induce a criticism from other disciplines that questions the relevance of economic trade-off for valuation of environmental qualities. An alternative is to emphasize

that evaluation of environmental values and uncertainties should take place within a particular economic, ecological and social context (Aslaksen and Myhr 2007). Ecological economics focuses on a perspective of multiple stakeholders, each embedded in a social and cultural setting.

Taking the specific ecological and social context into account provides a basis for precautionary approaches. Precautionary approaches require development of processes for acknowledging uncertainties, facilitation of stakeholder participation, recognition of ethical values, and accounting for the value of traditional ecological knowledge of Arctic indigenous people. Combining traditional and scientific knowledge about nature is an important part of understanding the resilience capacity of ecological and social systems, and enhancing the potential for sustainable development and self-sufficiency.

The different perspectives of traditional economics and ecological economics become more apparent in their approaches to climate change policy. For example, the approach to uncertainty within ecological economics involves a distinction between weak and strong uncertainties. Weak uncertainty refers to the lack of knowledge about future events, which can be characterized in terms of risk and probabilities, given from observation (objective probabilities) or by expert advice (subjective probabilities). Strong uncertainty refers to a lack of knowledge about the future, which involves ignorance. Future possible outcomes may be unknown in which case, attributing probabilities to unknown states may be meaningless.

Other approaches other than standard methods of risk analysis are needed, involving stakeholder participation, ethical values and precautionary perspectives. Moreover, the use of discounting to reduce future values raises ethical issues not dealt with in traditional economics. Analysis of regulatory approaches, such as tradable permits, uses market models that may not capture crucial aspects of the institutional, technological and political context. The essence of the economic argument is that the best action can be determined by comparing consequences. A harmful action is justified by creating enough goods to compensate (Spash, 2002).

Some of the differences between ecological economics and traditional economics, as discussed above, are briefly summarized in Figure 1.

Figure 1. Perspectives from ecological economics on valuation of nature

Topic	Traditional economics	Ecological economics
Compare value of nature and other values	Values are commensurable Nature has no particular priority over other goods	Nature is the basis for life Valuation of nature requires methods beyond monetary valuation Ethics
Nature and culture in context	Externality Opportunity cost	Value of nature and culture are intertwined Traditional ecological knowledge (TEK)
Relationship of humans and nature	Instrumental value of nature	Spatio-temporal particularity of nature
Motivation	Self-interest	Responsible self-interest
Interests	Aggregate interests	Stakeholder interests
Future	Economic growth	Sustainable development
Uncertainty	Risk management Probability assessment Weak uncertainty	Precaution Case-by-case evaluation Strong uncertainty

9.2. Traditional ecological knowledge

In a broader approach to environmental uncertainty, a precautionary perspective recommends that traditional ecological knowledge is appropriately acknowledged. Traditional ecological knowledge is defined as the knowledge, practice, and beliefs about dynamic relationships between living beings and the environment; a knowledge which has evolved in adaptive processes and been handed down from generation to generation (Berkes 1999, Ingold 2000, Selin 2003). In the Arctic, traditional ecological knowledge about animal migrations, ice patterns, vegetation and weather is important in order to supplement and enrich scientific data on the impacts of climate change (ACIA 2005). The concept of resilience refers to the capacity of an ecosystem or social system to recover and regenerate after harmful exposure to stress (Berkes, Colding and Folke 2000). Combining traditional and scientific knowledge about ecology is considered an important part of understanding the resilience capacity of ecological and social systems, as well as identifying factors that can enhance it (Gadgil, Olsson, Berkes and Folke 2003). Traditional ecological

knowledge is embodied in practices and stories (narratives) that provide a systematic outline of the information relevant to particular habitats, ecosystems and landscapes (Helander and Mustonen 2004).

Reindeer herding is an example of how traditional ecological knowledge is relevant for the adaptation to the impacts of climate change. The texture of snow and ice is an important determinant for reindeer in accessing food. In reindeer herding, “reading” nature is the ongoing process of observing and evaluating grazing pastures and weather conditions. The texture of snow and ice, wind directions, the sequence of changes in nature, are all factors, which determine access to pastures and the behavior of the reindeer herd (Heikkilä 2006). This information can serve as a basis for improved perception of the impacts of climate change.

Taking traditional ecological knowledge into account reminds us that there are multiple ways of knowing the world, and that the categories of knowledge may not be as well defined as suggested by modern science. Awareness of traditional ecological knowledge should encourage the development of participatory, community-based resource management systems that allow diverse approaches to knowledge, practices and beliefs.

9.3. The precautionary principle

The precautionary principle has been suggested as an approach to handle situations with large environmental uncertainty and potentially irreversible consequences. The goal of the precautionary principle is to protect human beings and the environment against hazards, by avoiding damage before it takes place. The purpose of the precautionary principle is to provide guidelines for evaluating new technologies, new economic activities, or new public policies, in situations with strong uncertainty about environmental hazards. A report by UNESCO (2005) suggests the following definition: “When human activities may lead to morally unacceptable harm that is scientifically plausible but uncertain, actions shall be taken to avoid or diminish that harm.”

Some economic activities in the Arctic pose considerable risk to the vulnerable nature. Petroleum exploration, mining, transportation, tourism and other activities have the potential to considerably alter the Arctic environment (Ford et al. 2006). The challenge is to develop sustainable eco-

conomic activities, like for example sustainable tourism that can ensure that new economic activity benefit indigenous and other local people (Duhaime, Rasmussen and Comtois 1998).

An important task for future assessments of self-sufficiency constraints and potentials is to conduct vulnerability studies of Arctic communities. These studies can better provide a basis for evaluating both environmental and social change. The perspectives, knowledge and concerns of indigenous people and other local Arctic residents are essential (ACIA 2005, pp. 1020). Studies of climate change impacts need to be conducted in the framework of stakeholder involvement, with dialogue between local residents, industry and government. As some will gain and others lose from the impacts of climate change and changing economic opportunities, stakeholder involvement is necessary to represent the diverging interests; and evaluate how self-sufficiency constraints and potentials are affected.

As a particular illustration of the precautionary principle, we suggest the framework used in a report published by the European Environmental Agency (EEA 2001) that has re-examined the histories of a number of previous environmental problems in terms of the precautionary principle. They emphasize the “late lessons” for precaution that can be drawn from previous environmental problems, where “early warnings” of harm were available, but not heeded. Based on experiences from the past, the report suggests guidelines for precautionary strategies that will enhance the potential for sustainability and self-sufficiency (Box 1). The final words of the ACIA report serve as a reminder to the importance of applying the precautionary principle for sustainable development and enhanced self-sufficiency in the Arctic: “While more studies and a better understanding of the expected changes are important, action must begin to be taken to address current and anticipated changes before the scale of changes and impacts further reduces the options available for prevention, mitigation and adaptation” (ACIA 2005, 1020).

A further application of this framework, to cases of environmental uncertainty in the Arctic, is the topic of our ongoing research and thus beyond the scope of the present paper. Here we briefly outline some examples from case studies of Saami reindeer herding (ACIA 2005, 978; Reinert 2006, Tyler et al. 2007) to illustrate some of the main points of the framework suggested by “Late lessons from early warnings”. The ACIA (2005) report points out that the reindeer herding is not only affected by climate change,

but also by the political and socio-economic environment in which it exists (ACIA 2007, pp. 971). The flexibility to move reindeer herds between summer and winter pastures represents an important part of the traditional adaptive strategy, which may be challenged by climate change and difficult ice and snow conditions (ACIA 2007, pp. 981).

Box 1. "Late lessons from early warnings"

1. Acknowledge and respond to ignorance, as well as uncertainty and risk, in technology appraisal and public policy-making
2. Provide adequate long-term environmental and health monitoring and research into early warnings
3. Identify and work to reduce "blind spots" and gaps in scientific knowledge
4. Identify and reduce interdisciplinary obstacles to learning
5. Ensure that real world conditions are adequately accounted for in regulatory appraisal
6. Systematically scrutinize the claimed justifications and benefits alongside the potential risks
7. Evaluate a range of alternative options for meeting needs alongside the option under appraisal, and promote more robust, diverse and adaptable technologies so as to minimize the costs of surprises and maximize the benefits of innovation
8. Ensure use of "lay" and local knowledge as well as relevant specialist expertise in the appraisal
9. Take full account of the assumptions and values of different social groups
10. Maintain the regulatory independence of interested parties while retaining an inclusive approach to information and opinion gathering
11. Identify and reduce institutional obstacles to learning and action
12. Avoid "paralysis by analysis" by acting to reduce potential harm when there are reasonable grounds for concern

Source: EEA (2001).

Box 1. Late lessons from early warnings

To enhance the adaptive capacity and self-sufficiency of reindeer herding, as well as traditional hunting, fishing and herding activities in other Arctic regions, stakeholder participation of indigenous people is crucial. Indigenous people's participation is crucial because of their reliance on the changing environment, and because their adaptive capacity has sustained their livelihood in the Arctic environment. For example, indigenous people's observations of weather patterns and animal movements contribute to the understanding of climate change (ACIA 2005, pp. 992). Involvement of indigenous and other local people will contribute to an adaptive and precautionary perspective by accounting for qualities, values and uncertainties that are easily overlooked in risk assessments. Indigenous people

therefore help in obtaining a more complete understanding of the interrelations between livelihood, climate change, economic development and public policy.

An important point is that public policies need to be evaluated in terms of real world conditions. Reindeer herding is strongly impacted by climate change, and a precautionary approach needs to evaluate: to what extent policy measures are in accordance with strategies of adaptation. This means that stakeholder participation is crucial, and that indigenous and lay knowledge should be taken into account, with traditional ecological knowledge being of particular importance. In Saami reindeer herding in Norway, management of herd size and composition including the killing of reindeer and the processing of meat is influenced by models of agricultural husbandry, where the relevance for reindeer herding may be questioned (ACIA 2005, 978; Reinert 2006, Tyler et al. 2007). Such influence may increase the vulnerability of reindeer herding to the impacts of climate change. It is therefore important to reconsider management practices and policies to see how strategies of adaptation to climate change can be developed and improved.

In Norway, important advances in legislation have been achieved, in order to secure the cultural survival of the Saami people. These important legal changes recognize the importance the natural environment has on the securing the cultural continuity of the Saami people. The lifestyle and culture of the Saami are crucially dependent on securing land rights where their reindeer graze, and are able to be herded between the winter pastures on the inland tundra and the summer pastures on the coastal meadows. However, for the Saami people living on the coast and who are dependent on small-scale coastal fisheries, the situation is much more precarious. The survival of their culture will depend on fishery management policy. In a study of coastal zone management in Norway, Buanes et al. (2004) explores stakeholder participation involving Saami fjord fishermen in Northern Norway. Traditional economic viewpoints are used in arguing that large-scale fisheries are more profitable, and that it is too expensive for society to maintain populations in remote areas. It is important to consider alternative economic perspectives that highlight the context of valuation of cultural values embedded in valuation of nature. If this outlook is applied to the fish stocks in the waters of Northern Norway, they would have a higher value than a market price of fish due, simply due to the spatio-

temporal particularity these fish stocks have as a basis for of livelihood for indigenous and local people. The cultural landscapes of the coastal communities also have a higher value due to the cultural values embedded in the nature qualities.

The high degree of public involvement in the preparatory work in legislating the rights of the Saami in the coast fisheries, is a good example of taking real world conditions into account, as well as the interests, assumptions and values of different social groups. A high degree of public involvement and contact between local people and the experts provides a basis for systematically scrutinizing the justifications, benefits and potential risks, as called for in the “late lessons” framework.

9.4. Conclusion

Increased activity in petroleum exploration, the manufacturing industry, transportation, tourism and other services has the potential to alter the Arctic environment considerably. Precautionary approaches require the development of processes for acknowledging uncertainties, facilitation of stakeholder participation, recognition of ethical values, and taking into account the traditional ecological knowledge of indigenous people in the Arctic. Combining traditional and scientific knowledge about nature is an important part of understanding the resilience capacity of ecological and social systems, enhancing the potential for sustainable development and promoting self-sufficiency.

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10. Climate Change and Pastoral Flexibility: A Norwegian Saami Case¹¹⁰

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The Scandinavian Sámi are one of more than twenty circumpolar ethnic groups that traditionally practice reindeer herding. Climate change will likely affect the practice of pastoralism in Sámi areas severely. Winter temperatures may increase significantly, while changes in precipitation and wind will affect snow patterns. Traditional Sámi pastoralism is well adapted to handling rapid change in extreme and often unpredictable environments, and past responses to climatic variability may offer clues as to how long-term and permanent climate change can be successfully managed. The paper argues that the key to successful management lies in maximizing herder flexibility in responding to changing conditions. Between the four nation-states that currently include Sámi pastoralism within their territories – Norway, Sweden, Finland and Russia – have a surprising amount of variety in their systems of governance. Due to limitations of space, our discussion here focuses specifically on the Norwegian case. We propose that in the face of climate change, timely adjustments are made to national governance structures, aimed specifically at maintaining and re-establishing conditions for pastoral flexibility. This will be key to ensuring the survival of Sámi reindeer herding – both as culture and as economic practice.

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10.1. Background

Indigenous reindeer pastoralism has been practiced in the Sámi areas of Scandinavia and Russia for centuries. The gradual solidification of national borders in the region – e.g. the border treaty between Norway and Sweden in 1751, and the border closure with Finland in 1852 (Eidheim 1999) – has had a dramatic impact on reindeer herding practices. Increasingly circumscribed by territorial sovereignty claims and the systems of governance established within them, reindeer herding has over time, developed differently within each respective country. (Jernsletten and Klovov 2002). Our discussion in this paper will focus specifically on the case of reindeer herding in Norway, drawing mostly on examples from the district (*fylke*) of Finnmark: the northern-most district of the country. Finnmark is subject to the most extreme climatic conditions as well as being home to the densest concentration of both reindeer and reindeer pastoralists (Reindrifftsforvaltningen 2008).

For most of the last two centuries, the Norwegian state has strongly pursued an assimilationist policy of “Norwegianization” towards the indigenous Sámi population. In recent years, particularly following the large-scale Sámi ethno-political mobilization during the second half of the 20th century, “Norwegianization” has generally given way to a more progressive stance on indigenous issues. Norway is today a signatory of ILO Convention 169 concerning indigenous and tribal peoples, and in certain respects – land rights, for example – the situation of the Sámi in Norway compares favorably to those in neighboring countries. All is not well, however – particularly in the case of reindeer pastoralism. Under the guise of “scientific rationalization” and “modernization”, the ongoing reform and restructuring of the reindeer herding sector has often continued along markedly ethnocentric lines; extending, for example, to the legal invisibility of traditional Sámi terminology and the introduction of key terms or concepts derived from sedentary Norwegian agriculture. Over the last two generations, the interventions of the Norwegian state have dramatically rearranged the face of herding itself, in a lasting and mostly irreversible manner. These changes coincide with radical shifts in lifestyle and consumption patterns, the mechanization of herding practice, increasing dependence on the cash market, demographic trends, as well as escalating tourism and other forms of regional development: e.g. road-building,

windmill parks, nature reserves, hydroelectric complexes. The current long-term prospects of reindeer pastoralism look precarious; factor in the likelihood of drastic and permanent climate change in the near future, and the question of sheer *survival* – of the practice, the culture and of the reindeer herding community – becomes pressing.

In the remainder of the report we identify four levels of pastoral flexibility as being particularly significant for meeting and adapting to the effects of long-term and permanent climate change. We also examine some of the principal factors that are currently impacting on this flexibility, including the role of the Norwegian state and its current system of governance. In the closing section, we consider some of the ways in which nation-states may not just hinder but also *assist* indigenous practices – specifically, Scandinavian reindeer pastoralism – in confronting and adapting to climate change.

10.2. Spatial flexibility

Reindeer are migratory animals. Herders exercise a distinct but limited degree of control over their movements, or their “territorial bindings” (Magga, Oskal and Sara 2001). The reindeer have a degree of autonomy, and often seek out necessary or favorable conditions on their own – locating grazing grounds, or patches of snow to escape insects for example. Under difficult conditions, this autonomy needs to be complemented by the skilled practice of human herders. The complex landscape of the north offers a plenitude of ecological niches; one of the key skills of herding lies in identifying and making use of these niches to meet the shifting needs and requirements of the herd. This, in turn, requires the ongoing and finely tuned observation of pastures, temperature conditions, ice and snow qualities, weather systems and wind directions: all factors which determine access to pastures and the behavior of the herd (Heikkilä 2006). Such monitoring is particularly important on the winter pastures, where the availability of feed through snow becomes vital and where, under certain circumstances, the ability to rapidly move a herd to appropriate grazing grounds can determine life or death for a large number of animals. Qualities of the snow-cover – such as density, hardness and depth – are key to determining access to forage, and therefore the suitability of winter grazing

grounds (Tyler et al. 2007). These qualities can vary rapidly and over short distances, depending on local landscape features, weather systems and other factors (Sara 2001).

Climate change will likely significantly impact reindeer herding areas (ACIA 2005). The paradox of extreme climates is that often – at least to local users who possess the necessary know-how and familiarity of the landscape – it is precisely the extreme climactic variation, which makes the land habitable (Ingold 2000). This applies to reindeer herding as it does elsewhere. As one herder put it:

“The more landscape types one has – that is, alternatives with which to meet different situations – the more secure reindeer pastoralism will be over a longer period of time. Contrariwise, in a uniform landscape without alternatives one is left helpless when faced with natural changes (within a season, between years) (Mikkel Nils Sara, quoted in Paine 1992).”

Presently, and for the last few decades, the range of spatial options available to Norwegian reindeer herders has been shrinking at an increasingly rapid rate. This is spun on by factors such as escalating motorization, real-estate and infrastructure developments, competing territorial claims by other stakeholders and the exponential growth of the regional tourism industry. Compounding this is a pattern of piecemeal restitutions for territorial losses where the value of an area of land is calculated in isolation without factoring the systemic or aggregated effect of multiple losses on long-term viability (Bjørklund and Brantenberg 1981). This has contributed to placing the spatial economy of reindeer pastoralism, at least in Norway, in a state of acute pressure. The damage caused by progressive loss of spatial options, as ecological niches disappear in the transfer of ownership to other actors, is compounded by structures of spatial governance that are often rigid and inflexible. The system of grazing districts sections off pastoral space, imposing strict timetables for migrations and establishing penalties for infringement. Similarly, national borders divide territories and limit potential access to ecological niches.

At least in Norway, one of the central problems in the state management of reindeer pastoralism has also been the insufficient appreciation, on the part of administrative bodies, of the complexities and unstable character of pastoral space itself. Appropriately, reindeer herders themselves refer to the “barnyard thinking” of the administration; shorthand for the assump-

tion, which often underwrites interventions and policy that the spaces of herding operate as stable, controlled, regulated and predictable environments – similar, in nature, to a barnyard. As we discuss in the next section, key environmental variables that significantly condition pastoral practice in Finnmark – such as predator loss and the loss of animals to extreme climatic conditions – have often been ruled out, explicitly, from the scientific models that underwrote management policy (Lenvik 1988, 1990; see also Reinert 2006). Effectively, the environments of the far north have been assumed to present an environment similar to the more placid south: controlled, offering stable climatic conditions. This has created severe discrepancies between theory and practice.

This “barnyard metaphor” has had serious implications for the relationship between administrative theory and pastoral practice. A successful system of reindeer herding governance must be premised on the assumption of an environment that is not stable and unchanging – but rather *inherently unstable*, and subject to rapid changes that may be cyclical but which are also generally unpredictable in nature. Any strategy at the national level to build climate change sustainability in reindeer pastoralism must urgently take this into account.

10.3. Herd structure

Crop diversification is a well-known adaptive strategy, particularly among cultivators in extreme environments (e.g. Bradshaw, Dolan and Smit 2004). By maximizing phenotype variation within their crops, Peruvian potato cultivators create robust crops with a wide spectrum of resistances, thus minimizing the risk of catastrophic crop failure caused by any specific given factor (van der Ploeg 1993). In comparison, mono-crop production produces (potentially) higher yields but requires carefully controlled environments and – due to genetic homogeneity – remains highly vulnerable to specific threats, such as pathogens or weather conditions, which can wipe out entire crops (Scott 1998). In the context of reindeer pastoralism, genetic and morphological variability within the herd – that is, compositional diversity – offers similar advantages. Not coincidentally, traditional definitions of a “beautiful herd” emphasize diversity and the interplay of different traits as an element of aesthetic appreciation (Oskal 2000, Magga 2006).

Conceived as one of the key points for rationalization – and thus, of interventions to raise productivity – the problem of herd structure illustrates succinctly the tricky entanglements of knowledge and power that inform relationships between herders and the state. At the most basic level, the problem concerns gender ratios. In the 1960s, reindeer herds in Finnmark typically comprised a large number of adult males – somewhere between a quarter and half, many of which were castrates (Paine 1994). Large males were required for transportation purposes, to help keep the herd gathered and the general level of activity of the females low. Bulls helped protect the herd from predators, and could more easily break crusted snow and ice, which opened the snow pack and provided access to underlying vegetation for the herd. Although there is considerable variation, today in large part due to efforts to “scientifically” maximize productivity – few herds in Finnmark comprise more than 10% large bulls (Nilsen 1998). The elimination of bulls is a result of incorporating reindeer herding into the output-maximizing mass production paradigm of scientifically rationalized agriculture.

In the name of maximizing meat output, scientific rationalization has shifted the ratios between males and females within herds. For the same reason, it has also tended to reduce and simplify genetic and morphological diversity within the herd. This reduction also reduces complex sets of traits to the simple standard for maximizing meat production. The traditional structural diversity of reindeer herds represents a coping strategy, aimed at reducing their vulnerability to the effects of unfavorable environmental conditions. In a manner analogous to crop diversification, the presence of a wide range of genetic traits and resistances within the herd serves to distribute and offset the risks associated with extreme and unpredictable environments. This principle is alien to the practices and ideologies of modern agricultural mass production (Scott 1998).

The rationalization-driven demand for higher meat yields has led to an overall homogenization of herds, with compositional ratios and animal traits selected to maximize the meat output of individual animals (Reinert 2006). While apparently rational, one danger of this strategy lies in its elimination of *survival value* from the meat output equation. In excluding survivability as a variable, it posits that the herd exists in a safe and perfectly controlled environment. In practice of course, particularly in the far north, this is anything but the case. By ensuring the survival of the herd as a whole and preventing the loss of other animals, reindeer with an *indi-*

vidually low meat output may play a vital but indirect role in maximizing the productivity of the herd. Consider an influential statement by the agricultural scientist Dag Lenvik:

“Within normal sheep rearing, meat production based on old uncastrated rams is unthinkable. No sheep farmer would use the winter feed – the marginal factor – on a herd of rams that produce less meat than the ewes can produce through the yield of lambs. Today, the line of thinking should be the same in reindeer herding. Male animals that are superfluous from the point of view of procreation occupy grazing grounds that could be employed, instead, for cows... A herd of male animals larger than what is necessary for good insemination results should in that case be based on factors other than meat production... such as tourism or special management techniques” (Lenvik 1990: 31–32)

To Lenvik, survival simply *does not figure as a variable* – his thinking on herd structure is entirely contained within the “barnyard metaphor”. He assumes that pastoral space operates as a safe, stable and homogeneous space and that herd structure can therefore be reduced to the question of maximized meat output. The article makes no mention of environmental or climatic variations at all, except to exclude them as potential factors to explain differences between herding in Finnmark and Trøndelag, to which Lenvik categorically states are “not due to predators or other natural circumstances” (1990: 34). In the context of our argument, Lenvik approach serves as an example – denoting the problematic relationship between the high-modernist, state-endorsed discourse of scientific agriculture, and the knowledge forms and practices of reindeer pastoralism. Significantly, Lenvik himself is today no longer directly involved in reindeer herding administration, and in recent years there has been a move towards greater recognition of the impact of local environmental variables on reindeer herding practice, particularly in Finnmark. Analogously, forms of indigenous herding knowledge today benefit from a greater degree of recognition, and there are coherent efforts to integrate them in both scientific research and policy.

Of course, simplified herd structures and an increased orientation towards maximizing meat-output have not only been the result of managerial ideology, or state-backed efforts at scientific rationalization; practical factors also play their part. For example, the increasing prevalence of extensive herding methods driven by factors such as the mechanization of herding practice, larger herd sizes and changing demographic patterns (Beach 1981) – have

contributed to a changed relationship between herder and the herd in traditional practices. For example, herders spend less time in close contact with individual animals, and decreased engagement with the herd takes place on different terms (Paine 1994). More and more, herding practices require less knowledge of individual animals for managing the herd as an aggregate. With this change, the complex classificatory taxonomies of traits and characteristics that were relevant two generations have adapted accordingly (Björklund 2004). Over the course of the 20th century, herd structures have also changed to meet the changing requirements of herders themselves. This change is exemplified in herd structure's increased integration into the market, and their dependence on commercially available products such as fuel for snowmobiles (Pelto 1973). These factors off-set the significance of state administration and any future policies that address herd structure as being a problem for climate change adaptation.

The consequences of simplified herd structures and reduced heterogeneity remain largely unknown, and circulate at the anecdotal level. For example, some herders say the dispersion pattern of female-dominated herds across the landscape has changed (Reinert et al. in press). According to herders, a herd with few bulls is also far more “nervous” and more exposed to predators than a traditional herd. There is need for further analysis of this – but given, what we know, it seems reasonable to assume, that the effects of altered herd structures on climate change vulnerability will be negative. As part of an overall strategy to ensure adaptive capacity, we would recommend that increased morphological and genetic variation within the herd be encouraged. Despite the increased recognition granted to indigenous herding knowledge, there is still a pressing need to systematically address the problematic relationships between scientific and traditional knowledge in reindeer herding – both in herd structure and elsewhere.

10.4. Production

Meat-production has been one of the key areas for state intervention into pastoral practice for the last few decades – certainly, since the first reindeer herding agreement of 1976. Keywords here have been rationalization, industrial mass production, orientation towards mono-crop meat production, regularization of production cycles (that is, stabilizing the meat output of the

industry), centralization of production facilities and the professionalization of the herder community. This is one area, where the environmentally conditioned specificity of pastoral practice manifests in force. Fresh reindeer meat is a seasonal product. Animals are only slaughtered during autumn and winter. Decisions concerning which and how many animals to slaughter are also made, year by year, on the basis of long-term strategies, cash-flow situations, the overall condition of the herd and estimates concerning coming years or market fluctuations. The supply curve for reindeer meat is thus irregular, both within any given year and between years – with production peaking at certain times of the year, and an oscillating annual output that depends on conditions that may range from the overall state of grazing grounds to the degree of financial insecurity perceived within the industry. Traditional models of pastoral accumulation – which emphasized “capital on the hoof” and often minimized its translation, through slaughter, into standard forms of capital – reflected the need to anticipate “bad years” by maximizing the number of animals (Ingold 1980). Environmental irregularity and unpredictability are encoded in traditional herder knowledge – in the form of maxims, proverbs, anecdotes, and folklore (Helander and Mustonen 2004, Nergård 2006). In expressing this unpredictability is the Sámi saying, “One year is not the next year’s brother”. In the face of this, one of the administration goals has been to regularize production in order to stabilize the meat output of the herding industry. As in the case of herd structures, this aim is based on a theoretical misrepresentation of the inherently cyclic or unpredictable aspects of herding practice – ill-informed at best, dangerous at worst.

The pressing demand for a stable and invariable meat output curtails the adaptive flexibility of herders. Ensuring productive flexibility is a complex, composite problem. The demand for stable output is generated not only by the state, but also by the market. This is a common problem. For decades, within the regime of centralization, the marketing of reindeer meat was delegated to outside actors, whose interests were at odds with those of reindeer pastoralists (Reinert 2002). In this sense, the market and the structure of the reindeer-meat commodity chain are both implicated as factors that affect the climate change resilience of reindeer pastoralism. The common practice of establishing reindeer meat as a seasonal or cyclically available commodity, with an irregular supply curve, will likely contribute to easing the impacts of long-term climate change.

It is worth emphasizing again that flexible productivity or, the ability to regulate the out-take of animals through slaughter in response to shifting conditions – is a key adaptive strategy in the pastoral tool-box. Within the traditional subsistence economy, this was made possible in turn by the flexible organization of livelihoods. Reindeer pastoralism represented one of several key economic activities, and, in bad years, it was supplemented by activities such as hunting, fishing and berry harvesting (e.g. Berg et al. 2003). Clearly, conditions have changed and this is no longer the viable strategy, it once was. Reindeer herding remains a seasonal activity however, and there are still traces of this flexible adaptation, that for example is apparent, in the prevalence of multiple-income herder households (Nilsen and Mosli 1994). We would suggest that measures aimed at enabling a more flexible approach to production, and to the practice of pastoralism itself would help increase the adaptive capacity of the industry as a whole. More flexible approaches would include for example, relaxing requirements associated with the loss of herding licenses. An important element of such a strategy might be to devolve a degree of control – e.g. over the issue of herding licenses – to the industry itself. This would relate to the fourth aspect of flexibility that we identify as central to climate change adaptation, namely social organization.

10.5. Social organization

Historically, flexibility has played a key role in the social organization of herding labor. Individual herders associated in working within collectives called *siidas*, have a degree of flexibility in moving between them. Extended kinship networks provided recruitment grounds for temporary labor when required (Bjørklund 1991; Paine 1994). The general secretary of World Reindeer Herders' Association has stated that "nothing is liable to arouse more disturbance within reindeer husbandry than encroachments on its internal organisation" (Turi 2002: 71). In the Norwegian case, the Reindeer Herding Act of 1978 introduced a rigid and completely alien organizational structure, built around nuclear family units organized within geographically defined districts. Until relatively recently, the *siida* working collective was made completely invisible within the legal and organization optic of the administration (Jonassen and Kalstad 2003). Reindeer ear-marks – the tradi-

tional, individually held marks of ownership that are assigned at birth, were regulated in new ways that created new distributions of ownership and disrupting relationships between herders and other communities that were mediated through the flow of living reindeer as property (Bjørklund and Eidheim 1999). Such restrictions of traditional forms of pastoral organization represented a serious institutional constraint on the adaptive flexibility of herders. In many ways, this re-structuring of the reindeer herding industry by the administration has been a determining factor in *producing* the so-called “tragedy of the commons” in Norwegian reindeer herding (Hardin 1968). Relevant changes to reindeer herding were characterized by the by disruption of complex networks of social relations, patterns of collaboration and informal codes that regulated pasture ground allocation and resource utilization—the administration created an entirely new world of conflict on the tundra (e.g. Berg 1996; Bjørklund 1999; Paine 1992).

The Norwegian governance system presents a case of very strong bureaucratic centralization – more so, perhaps, than in other Scandinavian countries. To supervise less than 600 individual herding units, the Reindeer Herding Administration employs more than 50 people (Lie and Nygaard 2000; Reindrifftsforvaltningen 2008). In addition to this fifty, there are also people employed in the Ministry of Agriculture. In turn, this extensive administrative structure produces a constant flow of highly detailed, frequently changing regulations. On one level, the extensive bureaucratization does provide a social and economic safety net for herders. These administrative structures are capable of providing support or subsidies in bad years, and mitigating the financial impact of climatic damage. Of course, things are never as simple as that. Incentive structures and subsidy systems create patterns of dependence (Paine 1977). This dependence is evident in Norway, where reindeer pastoralism and Sámi interests have historically been constructed in terms dictated by the shifting interests of central powers (Bjørklund 1995). This has meant that excessive reliance on the state has also left herders at the mercy of unpredictable shifts in policy and public opinion. This unpredictability is evident in a remark made by a herder to one of the authors:

“Before, we were used to working with an unpredictable nature. Now we also have to work with an unpredictable government administration.”

Importantly, the need to navigate extensive regulatory and bureaucratic structures also prevents rapid adjustment, on the part of herders, to emergent situations.

There are signs of a general move towards greater local autonomy. This move is exemplified in the opening of hygiene and food safety regulations to facilitate the establishment of mobile slaughterhouses for reindeer (H. Reinert 2007). Many of the structural changes, that have taken place in the herding industry, are complex and will be extremely difficult to reverse. A significant step towards re-establishing flexibility and local forms of organization would be to down-scale and decentralize the bureaucratic structure, devolving a greater degree of flexibility and control to the herders and the industry itself like for example, in the regulation of herding licenses.

10.6. Conclusion

Indigenous production systems in extreme, variable and unpredictable climates are based on risk minimization strategies such as crop diversification, and skilled, flexible utilization of existing ecological and climatic niches. In such areas, long-term climate change will magnify already extreme weather conditions, with unpredictable effects. The variables and the coping mechanisms involved in previous extreme climate events are similar in kind to the skills that will be required to understand, and adjust to permanent climatic change. Adaptive responses to dramatic environmental change are often encoded in traditional knowledge. In Norwegian reindeer pastoralism, dramatic “bad years” have occurred in living memory, and there are reindeer herders today, who have lived through severe but temporary climatic turns. Their knowledge and experience will be a crucial resource in responding to future changes. The aim, in developing robust strategies for adapting to climate change, must be to draw on this knowledge and experience, in order to understand and strengthen the highly efficient coping mechanisms that have made survival already possible for centuries.

Traditionally, the challenges posed to reindeer pastoralism by an unpredictable climate have been met through skilled adaptive practice that fully utilized the options presented by a wide range of ecological niches. Theoretically at least, reindeer herders presently have available to them, a

number of options and strategies by which to counteract and circumvent the negative effects of climatic change. In practice, however, these options are limited by a wide range of factors that reduce adaptive flexibility – *including* systems of herding governance that operate at the nation-state level. Any strategy to build adaptive capacity at the national level will need to consider ways in which to maintain, and where necessary, re-create conditions for the exercise of pastoral flexibility. Given their regulatory functions and the history of herder-state relations, nation-states such as Norway could easily be represented as obstacles to such flexibility. This is a counter-productive approach, however.

Perhaps the key question that our discussion here raises is this: how can national systems of governance be adjusted to *assist* the process of building pastoral adaptive capacity, and increase herder resilience to the potentially devastating effects – short-term and long-term – of climate change? In closing, we suggest four very general avenues of possible action:

- Enabling and facilitating the restructuring of herds to decrease vulnerability to adverse climatic conditions. Diversified herd structures will probably be able to better withstand dramatic climate change and predators.
- Ensuring spatial flexibility and a wide range of adaptive options, primarily by halting the permanent loss of pastoral lands and the destruction of currently accessible ecological niches. This entails halting or limiting the appropriation of current pastoral land for other purposes, such as infrastructure development. This may also include loosening border controls and restrictions on reindeer migration between Scandinavian countries.
- Establishing and maintaining a solid economic base for pastoralists, enabling them to absorb the costs associated with climatic change. In the Norwegian case, this includes specifically facilitating herder ownership and control over the later stages of the commodity chain – including production, marketing and distribution (Reinert 2002, 2006).
- Down-scaling the bureaucratic structure and devolving control to herders and the herding industry itself, both at the local and national level

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11. Climate change, natural resource dependency, and supply shocks: The case of Greenland

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The effects of global change are felt across the Arctic with the spread and growth of industrial development and the growing role and presence of multinational corporations becoming a reality throughout much of the region. This combined with climate change is expected to contribute to some of the major physical, ecological, sociological, and economic changes already under way. Arctic societies feel the stress of these larger on going processes through the impact on both subsistence and large-scale resource exploitation. The effect of change depends on various adaptive capabilities in the Arctic, with these often being compromised due to limitations with respect to technology, wealth, institutions, infrastructure, and human resources.

The following article presents a brief and preliminary look at global change with a focus on Greenland's formal economy, primary resources, and trade dependency. Reference is made to existing findings on the possible future consequences of climate change. The discussion includes a look at options for modeling the economic impacts of climate change, including a structural change framework for estimating the economic impacts of resource supply shocks.

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11.1. Climate change and northern economies

Many communities in the North face a multitude of socio-economic challenges and resource constraints that limit their economic prospects and lower the speed of adjustment to economic change. These may include: a narrow and climate sensitive resource base in combination with weak or undeveloped infrastructure and institutions; a small and scattered population base; and remoteness, lack of accessibility, geographical isolation and long distance to markets. Within this context vulnerability and adaptive capacity varies depending on a range of factors including economic wealth, technology, and human resources.

The narrow and natural resource based economy is a central characteristic of the formal and market based economy in the Arctic. It is also a key source of economic instability and raises the vulnerability to climate change in many local communities. Limited manufacturing and processing takes place locally, and a large share of food and other products consumed are imported (Larsen, 2002). Production costs tend to be high in the Arctic partly because key factors of production, such as labor, capital and technology, are imported to meet resource demand. This also reduces competitiveness relative to manufactures located outside the Arctic region. Resource extraction activities are characterized by high costs, and resource development is typically conducted on a large scale to achieve economies of scale and to lower the costs of operating in remote regions far from external markets. This helps explain the growing role and presence of multinational corporations who are more likely to have the capacity to undertake development on a larger scale. Their role and presence in the Arctic is growing as the region undergoes further development and becomes increasingly integrated with the global economy (e.g. Sutyryn et al, 2005).

Climate change and globalization can be expected to alter the composition and stock and flow of resources, although the nature and extent of this is highly uncertain and at best speculative. The ACIA science report (2005), IPCC (2007) report, and others, describe several possible impacts of projected climate change which highlight the sheer range of possible costs and benefits, and their associated uncertainty. For example, in the marine ecological system and fisheries sector expected impacts may include changes in stock and species, alteration of fish migration routes, changes to harvesting costs, and increased stock productivity and yield,

with some commercial fish species becoming both more plentiful and an engine of new economic growth, while others – such as shrimp around Greenland – may migrate further north or disappear altogether from commercial harvesting. At the same time, reports suggest that increased maritime activity could in the worst case scenario lead to potentially devastating oil spills, the pollution of commercial fishing grounds and endangerment of key species, thereby adding considerable stress to Arctic economies and livelihoods. In the agricultural sector climate scenarios point to more positive agricultural yields and economic activities with impacts including vegetation shifts and possible expansion of agricultural opportunities. Reported climate projections also highlight the mining and petroleum sector, where impacts such as less production costs off-shore, higher costs on-shore, and a shorter season for mining can be expected; possible increased mining costs as permafrost melt will make it more difficult to build and move heavy equipment just as it may increase the risks to infrastructure. (e.g. Glomsrød et al., 2006; ACIA, 2005; IPCC, 2007). While some of the climate change projections and their associated consequences may point to an uncertain future for the Arctic, they are expected to be gradual and will depend on factors such as availability of resources and the importance of nature based activities to the region. People and economies will surely adapt, but at a cost and speed that is still unknown. Local as well as regional economies – whether market or subsistence based – may feel the impacts of change. Nature based activities in the Arctic are no doubt sensitive to climate change, but there is great uncertainty as to which will be impacted negatively and which positively. Abrupt change, however, would have significant consequences for our ecosystems, human structures and nature based economies, with small northern communities being more impacted as adaptive capabilities may already be severely compromised (see e.g. Budreau et al, 2006; Berkes et al, 2003). The AHDR (2004) and the ICARP II science reports (2005) argued that new threats and challenges to indigenous social and cultural sustainability have appeared with an increasingly rapid pace of externally forced and disruptive social change, including the withdrawal from traditional hunting, fishing or herding economies. Serious implications for local and regional economies may emerge if the consequences of global change continue to impinge – and at a rapid rate – on both subsistence and commercial wild-

life harvesting and fishing, with serious implications for traditional diet and cultural identity (ACIA, 2005).

11.2. Fisheries and primary-export trade in Greenland

Small size of internal markets and a narrow resource base are basic structural features that contribute to making the Greenland economy heavily dependent on external trade as a key source of income. The region's export trade is largely concentrated in a few commercial marine species whose yield and productivity is sensitive to changes in ocean temperature. Three main characteristics describe trade in Greenland: trade is heavily concentrated in a few primary products, notably shrimp and halibut; imports, which span a full range of manufactured goods, are predominantly used for consumption and intermediate inputs; and the majority of trade is with Denmark, though with a significant share being re-exported to other countries. Fisheries in Greenland are of considerable economic importance to the region, constituting the main source of economic activity and export revenue. But the period since the 1990s has been characterized by periods of negative and slow economic growth, much of which can be attributed to swings in marine harvest, export volume and earnings, thus emphasizing the extreme economic vulnerability of the region (e.g. Politisk Økonomisk Redegørelse, 2006). Economic vulnerability and annual deviations from trends in exports and regional income can – as one would expect for a small economy such as Greenland – be largely attributed to a lack of economic diversification, a heavy reliance on natural resources, and the associated narrow export trade that constitutes a primary source of regional income. In more recent years a declining world price of shrimp has contributed to a significant decline in export revenues despite larger export volumes. The high concentration in exports together with its high share in the region's GDP helps explain the volatility of the formal economy, where even small shocks and disturbances can have large and lasting impacts. At the same time, the persistence of economic instability must be viewed in combination with constraints on the region's human, physical and financial resource endowment.

The modernization of Greenland fisheries, which began on a broader scale in the 1950s and 1960s, including the subsequent expansion of the

export base, signaled the beginning of marine export as a central component of the formal economy in Greenland. While exports can be an engine of growth they may also be a cause of economic instability. Climate change and its consequences for natural resources may be a factor in raising the level of economic vulnerability. Improved utilization of a country's factors of production, expanded factor endowments, and the creation of linkage effects are some of the well-known potential benefits that may follow an export-promotion strategy. A strategy of primary export trade – such as seen in the case of Greenland – may prove to be largely ineffective however. Weaknesses may result, when markets for primary products grow slowly, when earnings are unstable due to price fluctuations, and when expected diversification around the export industry including linkage creation may be nonexistent or limited. Significant instability and fluctuations in earnings may result if production is concentrated in one or a few products, and if exports are geared only to a few external markets. A country will remain heavily dependent on imports of both final and intermediate products, as well as imported personnel in many cases.

A study by Agnarsson and Arnason (2003) has linked the major depressions in Iceland to changes in fisheries, and Vestergaard and Arnason (2004) have studied the relationship between GDP and real export value of fish products for the Greenland economy. Similarly, my research findings on the impact of primary export trade in Greenland suggest that while primary exports have fuelled economic growth, they have also resulted in economic instability which has had a dampening effect on growth, and thus leading to a lower rate of GDP growth than might have been achieved with more diversified exports (Larsen, 2004). Climate change presents potentially new challenges for the narrow and resource dependent Greenland economy, with the possibility for increased future economic volatility and associated consequences for regional growth prospects.

11.3. Primary resources and trade dependency in Greenland

Economic dependency can be defined as a condition where the growth of income of a country is substantially, if not entirely, dependent on external factors, essentially exports, imports and external finance and technology (e.g. Stein, 1979; Green, 1970). Economic dependency continues to be a

factor describing the economy of Greenland, although the level of dependency has been falling. Greenland's dependency on external markets is characterized in part by continued financial, trade and technological ties to Denmark (Larsen, 2002). In very general terms, economic structures of dependent economies can be characterized by a number of distinct features, often including very few and weak relationships between different economic sectors where only a small fraction of production serves as inputs into other sectors of the domestic economy. Resource use tends to be less flexible than in the case of more developed economies, with significant constraints on the ability of product-mix to adapt to the effects of external shocks and disturbances. Economic growth tends to be highly dependent on external factors, with external demand changes being largely central to making full use of productive capacity and in justifying and financing large-scale investment to expand capacity. There exists a significant disparity between the structure of domestic demand and domestic resource-use, which can be reflected in very high export and import coefficients. And lastly, domestic institutions tend to be significantly directed and controlled by the external environment. Many small, open and resource dependent economies, including Greenland and other small regional economies of the north, may fit into this framework at some level. Small regional economies of the north are often characterized by weak resource mobility and restraints on the ability to develop economic substitutes. This presents impediments to effectively minimizing the adverse consequences of external shocks and disturbances. In contrast, less economically dependent economies tend to have higher degrees of flexibility, a well developed resource endowment, and broader economic diversification, which permit them to minimize the adverse effects of external shocks and disturbances through the utilization of domestic and foreign substitute resources. Climate change may alter the composition and concentration of production and trade in Greenland with possible negative consequences for the degree of economic stability and future income generation and growth.

Greenland's narrow resource base is obvious to any observer, yet the calculation of the numerical level of trade concentration is useful because it allows more systematic analysis of the relationship between trade concentration, trade dependency, and economic growth and instability. Greenland's narrow trade can be measured using the Hirschman-Gini coefficient of concentration and a three-digit Standard International Trade Classification

(SITC) code. The computed trade concentration indices show the degree of Greenland's external trade concentration in the period since the 1950s. It has been characterized by high commodity and geographic export, with exports being concentrated in a few products and exported to relatively few markets of destination. The computed indices also measure the low commodity import concentration and high geographic import concentration, with imports highly diversified but with few countries of origin (Larsen, 2002). Exports in Greenland consist mainly of primary commodities, notably fish (shrimp, halibut, and cod) and until more recently, raw materials (zinc, lead, and cryolite). The primary export ratio has fluctuated in the range of approximately 86 to 96 per cent in the period since the 1950s. Currently about 93 per cent of total export revenue accrues from primary exports, and fish exports account for close to 100 per cent of total primary export revenue. Not only are Greenland's exports concentrated in a limited number of primary products, but the larger share of exports is either non-processed or only semi-processed which effectively means that Greenland is losing value added, while at the same time forgoing an opportunity to create employment and economic opportunities domestically. A reduction in export concentration in more recent years reflects an effort to expand diversification in fish species harvested, and the modernization of fish processing plants to enable further processing. For now, the level of concentration in commodity export remains high however. With only a limited number of key commercial fish species this may render vulnerability to projected climate change particularly high, not least in a worst case scenario where changing ocean temperature could cause the disappearance of key species such as shrimp for example. On the other extreme, and as discussed in ACIA (2005), moderate warming is predicted to improve conditions for some of the most commercial species, and earlier examples exist with cod at Greenland and the Norwegian spring-spawning herring.

11.4. Commercial fish harvest and instability in Greenland

Based on the estimation of dynamic time-series models, and using annual macroeconomic data covering the period since the 1950s, my research findings on the relationship between selected indicators of dependency, economic growth and instability in Greenland suggest that a positive asso-

ciation exists between growth and some indicators of dependency (Larsen, 2002, 2004, 2007). Specifically, test results based on econometric modeling indicate that while trade concentration is not an explanatory factor in the economic growth process in Greenland, primary exports have been able to produce trickle-down effects that have been a contributing factor in economic growth in Greenland's post-colonial history. Theories have been developed to analyze the development of primary exporting countries. Among these is the staple theory (H.A. Innis (1915); R.E. Baldwin (1956); D.C. North (1959); Watkins (1963)), which examines the development of primary exporting countries in terms of various characteristics of a country's staple. A staple is here defined as a primary product that faces a large and growing demand in world markets, does not require elaborate processing, and has a high enough value-weight ratio to bear transportation costs. A central feature of the staple theory is the spread of effects and the process of diversification around the export base and the process of economic development that follows. Benefits to primary-export-led growth may include improved utilization of existing factors, expanded factor endowments, and linkage effects. The resulting linkage effects are referred to as backward, forward, and final demand linkages. Empirical evidence in the literature have suggested to the contrary, however, that primary exports may not be so effective in leading the way to economic development as suggested by theory. This is because markets for primary products often grow too slowly to fuel growth, and earnings may be unstable due to price fluctuations, just as the expected diversification around the export industry and the creation of linkages tends to be weak or non-existent. Empirical evidence in the case of Greenland does however support the primary-export theory, as it suggests that trade in primary exports has been statistically significant in fuelling economic growth. At the same time, a number of challenges may persist in developing strategies to realize long-run sustained growth. These challenges include the existing limits on resource flexibility, the constraints on entering into new and foreign markets and the difficulties associated with a very small and scattered population base which presents barriers to achieving economies of scale in domestic markets. In addition, the region is now faced with new challenges posed by climate change, which may alter the composition, availability and value of commercial species in the region's export trade.

Macroeconomic instability can be measured as squared deviations from trend values, with the basic problem being fluctuations around an estimated trend (Love, 1987; Khalaf, N. 1979). Using this approach, I performed econometric tests for the case of Greenland, using annual trade data from 1950 to the present. The results show that fluctuations from an estimated trend in an export instability index help explain annual variability in growth of GDP, and that export earnings instability is significant. Thus, relying on a few primary resources is – as we would expect – a key source of instability in the Greenland economy (Larsen, 2004). Naturally, not all deviations are problematic in as much as they reflect long term shifts in consumer tastes, technology, or factor supplies. Empirical research furthermore shows that the degree of instability has a dampening effect on growth. Specifically, an empirical investigation into the association and direction of causation between economic instability and economic growth in Greenland shows that economic instability is negatively associated with economic growth, i.e. economic instability is a deterrent to economic growth (Larsen, 2004; 2007). Economic fluctuations are undesirable when they serve no useful purpose but only serve to trigger fluctuations in other variables such as government revenue and investment, which may have an impact on short run macroeconomic stability and long run economic development. It is the sporadic elements of deviations from some “normal” level of earnings that are likely to be the greater cause of concern as opposed to regularly reversing deviations. For instance, it is possible for income to fluctuate over time and yet be known in advance with certainty. Events that are predictable or certain do not necessarily have adverse consequences, since regularly reversing fluctuations make it easier to predict the level of exports and income each year and to judge the correct timing for implementing stabilization policies. In Arctic regions, however, the scope for corrective action in response to economic deviations may be more limited due to various resource constraints including limits to economic and political autonomy. Local and regional governments may therefore be less able to undertake effective offsetting policies to minimize shock effects, even if they could predict the future accurately.

Lack of economic diversification and constraints on resource flexibility in Greenland provide part of the explanation for the relationship between economic instability and the uneven economic growth record. The negative association suggests a difficulty in predicting and reacting optimally to

shocks to the domestic economy and in applying the correct timing for stabilization policies. Climate change may render not only weather but also economic fluctuations less predictable. In general, a limited degree of economic diversification coupled with low per capita incomes can be important factors explaining the level of economic instability, as this creates an environment in which resources cannot easily be transferred. The instability problem, which can be linked to an uncertainty about availability of public and private resources may complicate development planning and subsequently reduce the rate of growth of the economy below a rate, which could have been attained under greater certainty.

Most northern coastal communities have an economic dependence as well as a historical and cultural attachment to the fisheries. O'Brien and Leichenko, (2000) argue that small fishery dependent societies are under continuous pressure, with these societies being subject to a "double exposure" where climate change occurs simultaneously with economic marginalization. As discussed by Bærenholdt and Aarsæther (2001), Aarsæther et al. (2004), AHDR (2004), Lindkvist (2000) and others, many factors contribute to a community's "coping capacity". The future of these settlements may depend on their ability to adapt to increased competition, efficiency, deregulation, and liberalization of the markets, as much as on the accessibility of fishing resources for their local production systems.

11.5. Abrupt climate change and modeling

Economic impacts of climate change are predicted to be significantly larger under a scenario of abrupt change, as for example in the case of a possible fast melt of the Greenland ice sheet. Possible econometric approaches to estimating the impacts of abrupt change might include time-series approaches, sectoral approaches, and capital-stock-depreciation estimates. Structural change analysis using the Phillip Perron (1989) method for analyzing impacts of economic shocks to time series data could also be considered, and would provide a test for the presence and nature of structural change associated with economic impacts of climate change. The structural change approach has its point of departure in a debate over the dynamic properties of macroeconomic time series, with the main issue being the long run response to trending data series to a current shock to a macroeco-

conomic series. Using statistical techniques developed by Dickey and Fuller (1979; 1981), Nelson and Plosser (1982) argued that random shocks have permanent effects on long run levels of most macroeconomic aggregates (Zivot et al.; 1992). Empirical evidence has suggested that macroeconomic fluctuations are not transitory and hence that most macroeconomic time series have a unit root, which is an attribute of statistical models of time series whose autoregressive parameter is one. Unit root tests can be used to determine whether trending data should be first differenced or regressed on deterministic functions of time to render data stationary. Perron (1988; 1989) found evidence to the contrary this view, i.e. that most macroeconomic time series are not characterized by the presence of a unit root, and that fluctuations are indeed transitory. Perron found, that most macroeconomic variables are not characterized by unit root processes as widely as believed, but rather, are trend stationary processes coupled with structural breaks. He found that when a macroeconomic time series has a structural break, the various Dickey-Fuller and Phillips-Perron test statistics are biased toward the non-rejection of a unit root, even when the series is stationary within each sub-period occurring before and after the breakpoint. The Perron test procedure could be employed for example, as a possible alternative method to test for the economic impacts of abrupt climate change with a sudden change in the stock of commercial fish species. Using the Perron test procedure for structural change analysis, I performed a macroeconomic time series analysis of structural change in Greenland, using data since the 1950s. This included econometric tests for the presence of permanent level breaks and one-time pulse changes in the real export and real GDP macroeconomic time series (Larsen, 2007a). The Perron procedure was used to test for structural change with the economic impacts from a closure of zinc and lead mines and the dramatic fall in cod stock around year 1990. Greenland experienced a shock to its natural resource supply and a subsequent major decrease in the region's export base in 1990. The negative supply shock occurred with the closure in 1990 of the Maarmorilik mine. The economic impact on the export base was made worse by the disappearance of the cod from Greenlandic waters around the same time. My econometric test results showed clear evidence of a statistically significant negative level shift in the Greenland economy in the year of the shock to the region's natural resource supply and the subsequent decline in the export base. The unit root problem disappeared, when the

negative level shock was accounted for. Hence, the processes became stationary, thus suggesting that the 1990 shocks led to structural change and were a cause of economic instability in Greenland (Ibid.). The economic impacts of a possible disappearance of shrimp from Greenlandic waters, or a north bound migration of the species with a projected increase in ocean temperature could be estimated using this approach. Also, the economic effect of a projected increase in the volume of cod and the associated change in export receipts could be estimated. The approach would require data on the projected change in the volume of the fish species and estimation of future export revenue.

Further research on the economic impacts of climate change is needed in the area of economic modeling with emphasis on particular commercial marine species. Further research is needed on local communities where adaptive capacities are compromised or where projected climate change is expected to add stress to an already weakened economic structure.

The expected socio-economic impacts of climate change are still highly uncertain. Uncertainty is related to the difficulty of modeling the climate events and obtaining good and reliable data. New research challenges are presented as climate change and other processes occurring at a rapid pace are combined with limited observational infrastructure, and a lack of timely, appropriate and reliable data and information networks, including the spatial scale and topical breadth of the research issues related to climate change. New demands are placed on access to data for the study and modeling of these global processes, and for understanding, measuring and predicting the impacts of change on social systems at various scales; and understanding their links with the rest of the world and their feedback mechanisms. Unlike more southern regions and economies at the national level, we lack disaggregated data for the regional and community level to help make accurate estimates of these impacts.

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12. Climate change, the informal economy and generation and gender response to changes

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12.1. Introduction

In the context of contemporary discussions regarding the consequences of ongoing climate changes, there is a tendency to focus on sudden, recent, and short-term external changes, considering them to be decisive for future changes. Therefore, these discussions tend to disregard the fact that there seems to be measures within the communities, which are able to cope with very substantial changes. At the same time most discussions tend to forget that there are other ongoing social processes which – independent of the processes of a changing climate – may become much more decisive for the future of many of these settlements.

In adding to the discussion on some of the components which may become important – even decisive – in understanding climactic changes, this paper focuses on three elements: The first discussion will look into the fact that contemporary climate change is not an exceptional situation in Greenland. Throughout the current millenium Greenland has been exposed to massive changes in climate. These changes have had both positive and negative consequences for living conditions. During the last few centuries,

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Greenland has experienced changes in climate, which have substantially exceeded the present ongoing processes. It is therefore relevant to be reminded of, how these changes were managed.

The second discussion will look more in depth into how communities in Greenland tend to react to changes, and how the informal economy plays a role in adjusting community life to the environmental, economic, as social changes. This role is not exceptional for Greenland, and therefore a few references to experiences with contemporary informal economic activities in other parts of the Arctic will be included in the discussion. The comparison of differences is important because the general perception often is, that life in the Circumpolar North is quite similar. The reality, however, is that the present settlement structure represents marked differences in goals, measures, and in means in which people live in the Arctic. But it is, however, also clear that the informal economy and the subsistence sector are playing crucial parts in the development process, as a means of maintaining a meaningful everyday life in a changing environment.

The third discussion will focus on the ongoing social changes, as these changes seems to have much more influence on community life and settlement pattern than future climate changes may turn out to have. The social changes are much more rapid and have more influences on restructuring the settlement pattern. At the same time, however, the anticipated changes in climate may enhance the consequences of these social changes.

12.2. Climate changes

During the 20th century several major socio-economic shifts occurred in Greenland. All of these changes are describable as being social adjustments to real world realities (Rasmussen 2007d; Rasmussen and Tommasini 2003) that have been induced by the interactions between the natural systems, i.e. climate change and changes in resource base, and then reflected through changes in the socio-economic and socio-technical system of resource exploitation.

12.2.1. First Shift – from Hunting to Fishing – sedentarization

The first shift, from a sea mammal based economy to fisheries, occurred during the 1910–20's. Mainly due to a marked increase in sea temperature, this shift resulted in a decrease in the sea mammal stock and an increase in fish stock. Combined with a population concentration around the trade posts in Greenland and declining world market for blubber and sealskin, cod became the dominating species and fundamental resource for the economy (Rasmussen and Hamilton 2001).

The first commercial fishery began in Ilulissat in the 1890s (Nørrevang et al. 1971). This was followed by a new initiative in 1904 that enabled the sale of Greenland halibut in Ilulissat, and Arctic char in other parts of Greenland (Smidt 1989). In the beginning of the 20th century foreign fisheries for halibut started around Sisimiut, just as the first commercial fishery for Greenland halibut was established in the fjords around Qaqortoq in Southern Greenland. This was followed by the building of the first processing plants for salted cod along the coast. Access to this new activity, and especially access to processing and storing facilities, resulted in the establishment of a series of settlements that were determined by their accessibility to fisheries. A substantial part of present day villages were established in this connection.

After World War II a new development process was initiated, aiming at reducing the backwardness of the economy and improving the very modest living conditions by bringing a modern standard of living to the population. The G50-plan emphasized the need for new private initiatives to stimulate economic development, but after a number of years it became obvious that the privatization had not succeeded. The subsequent G60-plan stressed that public activities were necessary to create a take-off situation for the home economy so private access to public funding was seen as a way of invigorating the private business (Poppel 1997). Attempts to expand and industrialize fisheries during the 1950s and 1960s, however, had only relative success in creating a commercial and self-contained economic activity. Even though the capacity of the fleet was doubled from 1965 to 1975, the total volume of fish continued to be on more or less the same level. In addition, a reduction in water temperature had substantial impact on the reproduction of the cod stock. Thus, a combination of over-exploitation and a reduction in sea temperature prevented the cod from spawning, and practically wiped out the cod stock within a few years, lead-

ing to the need for a revised approach in renewable resource exploitation (Rasmussen and Hamilton 2001).

12.2.2. Second Shift – from Cod to Shrimp – Concentration

The second important shift was instigated by the change in sea temperature, and occurred during the 1980's. The change in temperature, which was causing a drastic decline in the cod stock, occurred at the same time of a marked increase in the shrimp stock. Until the 1950s, primarily inshore vessels pursued shrimps on inshore banks. However, the combination of cooling water and a reduced cod stock led to a massive expansion in shrimp fisheries (Buch, Pedersen and Ribergaard 2003). It became clear that the changes in the cod stock were permanent. So the 5-year development plan in 1984 aimed at investments from cod fisheries towards the much more promising shrimp fisheries. The shift was supported through massive investments in new fishing gear and offshore vessels, which led to a shift from inshore to offshore fisheries, and an eventual mono economy based on shrimp (Rasmussen and Tommasini 2003). With a major fleet of offshore boats, the question of processing close to fishing grounds became irrelevant. The mobility of the big boats enabled them to bring the catches to whatever harbor offered processing facilities. With consecutive improvements in processing technologies and by moving processing from land to sea – the main processing activities were concentrated in the municipal centers, making most of the villages obsolete.

12.2.3. Third Shift – from Mono-resource to Increased Diversity – Dentrailization

The third shift includes the ongoing process towards a more diversified focus on fisheries. Fisheries contribute 85% of the total export value. Shrimp is still the backbone of the economy, representing more than 50% of the export value, with Greenland Halibut being the major contributor in the Northern Regions by contributing another 20% of the export value. In addition, there are regional economic contributions from snowcrab, lump-sucker roe, and other local available resources (Statistics Greenland, 2007). By now the shrimp fisheries have been developed to its maximum. The cooling of waters, however, have contributed to a new expansion of fisher-

ies for Greenland halibut, and during recent years, there has also been an increase in fishing for snow crab. Parallel to the development of fisheries however, is the fact that hunting for both land and sea-mammals still contributes to both subsistence and commercial activities. The latter is especially prominent in areas where there are limited possibilities for fisheries and commercial hunting activities are therefore a major contributor to the local economies. At the same time it has become obvious that there are limitations on the expansion of economies based on renewable resources. The concept of “the three pillars” – Fishing, Minerals and Tourism – was developed in the 1990s as a strategy for further development. More recently the concept of “land based activities” has been included as a cornerstone for future economic development, and if these steps succeed, changes in the situation of resource dependency may eventually appear.

12.2.4. A fourth Shift?

A fourth shift may be under way that is caused by the present warming process, indicated by the reduction of sea ice cover, and the returning of the cod (Rasmussen 2005). It is however, too early to have a precise understanding of the possible consequences of such a shift. And – as will be discussed – such changes may be overridden by other ongoing social changes.

12.2.5. Responses

In general, a settlement structure can be considered to be a materialized image of an optimization process involving three characteristics: the potentials of nature, the technological and technical skills of humans, and the institutional and organizational structures of society. The natural potentials are transmitted or manifested through society’s understanding of what is considered a resource. What is realized as potentials is also based on the technological and technical skills a society possesses (Rasmussen, 1996). The institutional and organizational structures are on one hand required as a mediator between the natural potentials and the technological and technical skills, but at the same time also part of distinct dynamics between the individuals and their social organization of activities.

As infrastructures and settlements are more or less durable characteristics of societies, they usually do not reflect the actual characteristics of

man/nature relationships, but can be considered a composite of both contemporary and past processes. The changes in settlement structures are delayed due to different adjustment characteristics of societies, but also simply due to the mere fact that physical structures like houses, processing plants and larger constructs can be difficult to get rid of. At the same time, as social and economic processes seems to become less independent on both specific resources and climate conditions, the settlement pattern increasingly seems to be dependent on socio-economic and political processes. A specific settlement pattern is seldom reflective of a specific necessity, but instead, is part of a negotiation process, where material reasons may be reflected but often overruled by political means and measures. The present settlement pattern in the Arctic is based on decisions made decades or even centuries ago, and is reflective of a rationale specific to that time including for instance, a dispersed pattern made to take advantage of all available resources. These rationales, however, may no longer be valid, but the settlements and the physical structures are still there, becoming a part of other rationales. In the case of Greenland the settlement structure is reflecting four different rationales. One of centralization, established during the 17th and 18th century by means of a limited number of trade posts serving the vast coastal areas of Greenland. One of decentralization, with the establishing of a larger number of settlements in order to provide production and processing facilities close to fish resources, especially the cod fisheries which boomed from a temperature increase in the beginning of the 20th century. A new rationale emphasizing concentration of activities in larger settlements was established in connection with the modernization processes during the 1950's and 1960's. This process of concentration later led to a shift from cod to shrimp fisheries during the 1970's and into the 1980's. And finally during the last 20 years, there has been a rationale of centralization – of services and activities – reflected through the political measures of Home Rule.

12.2.6. Patterns of Change

As discussed above, changes in climate and in resources have been crucial factors influencing the socio-economic changes and development, which has characterized Greenland during the last 150 years. A contemporary focus on non-renewable resources as being a basis for the future economy

does not change the fact that the current living conditions in Greenland will also experience future social changes due to environment dynamics, similar to situations characterizing the last centuries. And if the relationship is not a consequence of a direct connection between resource exploitation and climate, it will be through the dependency that is characterizing the informal economic activities.

12.3. Informal Economy

Terms such as “Black Economy”, “Hidden Economy”, or “Moonshine Work” are used with negative inference to describe the informal sector or informal economies. The use of these terms exemplify the difficulty economies, which are based on formal rule and law, have in accepting activities, which are more or less out of formal control. An important factor in this connection is the fact that these types of activities are diverse, from organized and random crime, through tax avoidance to simple subsistence activities. The negative connotations are therefore often reflecting the reaction of law-abiding citizens to what they consider activities, which do not conform to the legal and/or moral setting. As will be argued below, however, this is a rather narrow interpretation of activities that might not only be individual or group based approaches to survival strategies, but also beneficial for societies in general.

12.3.1. The definition

In the following discussion a definition of informal activities is given that does not reflect any moral positioning, but simply the fact that there are activities with economic implications that are not part of the formalized economic system. This includes:

- Economic transactions that are not registered by any formal authority.
- Economic transactions that involve a realized (money exchanged) as an unrealized economic component (commodity exchange, gift giving etc.).
- Economic transactions that are related to renewable resource extraction.

Consequently, the informal economy –or the informal sector, as these two concepts are used interchangeable – is somewhere in between subsistence, i.e. hunting and fishing for own or family survival, and the formal economy where products from hunting and fishing are sold to registered and registering authorities.

12.3.2. The Role of the Informal Sector

The informal sector creates a kind of linkage between the formal and the subsistence sectors. This is what is emphasized when Usher (1986) describes the complexity of the relationship between domestic/subsistence and commercial production, and when Dahl (1989) shows how the distinctions between subsistence and cash-based economic sectors are more or less artificial and meaningless, as the two sectors are thoroughly interwoven. In the Arctic – as in other places – the local economies are rarely determined by the one dimensional capital/wage earner rationalities, but influenced – and even overruled – by other rationalities as described by Chayanov (Chanyanov 1966). These rationalities can to some degree be reflected through other economic categories, and it is in this connection that the concept of informal economy becomes important, as it opens up for an interpretation in economic terms of the dynamics of both large, but especially small communities in the Arctic (Rasmussen 1999, Caulfield 1992; Duhaime 1991; Duhaime, Fréchette, Robichaud, 1996).

The case of Greenland is in this connection of special interest. As Marquardt and Caulfield (1995) show, subsistence and informal marketing has been important development factors since the early colonial time. The local markets – the Kalaaliminerniarfik – arose in the 18th century with the specific purpose of meeting the needs of the employees of the church, the KGH (Royal Greenland Trade Company) and its predecessors. But at the same time the local markets served as a “leveler” of the differences between Greenlandic hunters and their countrymen who worked for the colonial authorities. Local markets served as a redistribution channel whereby hunters received European goods, while Greenlandic and Danish salaried employees received valued country foods and locally produced items such as clothing and other goods.

What is hereby stressed is the fact that an important part of understanding both resilience and variation in Arctic communities, as well as their

economic perspectives is not only to compare the formal and the subsistence sector, but to also take into account the informal sector. This is a perspective that is emphasized in a very recent report on the Economy of the North (Glomsrød and Aslaksen 2006).

12.3.3. Valuing the Informal Economy

There are two major problems connected to understanding the informal sector. On one hand, it is difficult to get access to basic data. On the other hand it is difficult to convert the basic data – usually qualitative observations related to participant observations made possible by extended field residence, or by harvest and/or diet data through recall surveys – into economic categories. The approach to the analysis differs, but is dominated either by registration the frequency of consumption of country foods such as through Statistics Greenland (1993), the ongoing SLICA analysis, or registration of volume, for instance Berkes (1990) and Wolfe and Walker (1987). A more general approach often taken is the assigning of economic values to the informal and subsistence activities. This is done either through the replacement value, i.e. what the price would be if the same volume of products would have been bought in the shop, or through the commercial sale price, i.e. what the price would be if the quantity should have been sold to a local producer. Roots (1981), however, emphasizes that such accounting is difficult because the base of value is constantly changing. In the case of Greenland however, an objective exchange scale is more easy to create than in most other places in the Arctic, as the informal sector and the existence of local markets has resulted in a situation where price setting on the informal market, and in informal relations, tend to be very close to official shop prices. Consequently the open market price is very close to the real value of the products. Hunters and fishers today, however, have at least four possibilities of marketing country foods: to sell them privately within a community, to local institutions, through the local market or to the processing plants. Only by sale to the processing plant the price level is considerably lower than in the three other situations. So in the case of Greenland the conversion is rather easy. And this is the rationale behind figure 1 and 2 (based on Rasmussen 2005) on next page.

12.3.4. Informal Economic Activities in Greenland

There are two different views on the informal economic activities presented in the following. The first is on the differences between informal activities in towns and villages (Figure 1), and the other is on regional/municipal differences in the role of the informal sector in the economy as such (Figure 2).

In figure 1 the graph shows the total money value and its distribution between main categories of informal relations in both towns and villages in Greenland. The total value of informal economic activities accounts to around 130 million DKK, more or less equally divided between towns and villages. All towns and many villages have a local marketplace, organized and maintained by the municipal authorities in cooperation with KNAPK, the Hunters and Fishermen's organization. To put the numbers in perspective, the total value of all landings of hunting and fishing products from the small and medium scale activities (excluding the large off-shore fisheries that has no direct impact in towns and villages) is around 4–500 million DKK. So as indicated through the level shown, this is a very important activity both in towns and villages, however with a substantial larger market in the towns, simply because of the larger share of population in these places.

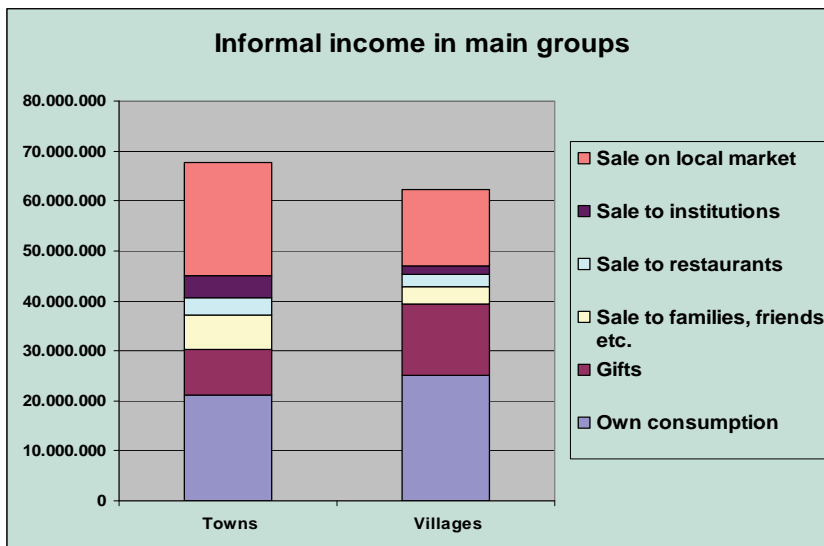


Figure 1. Informal economy in towns and villages in Greenland. The data show replacement value in DKK in the main groups of activities

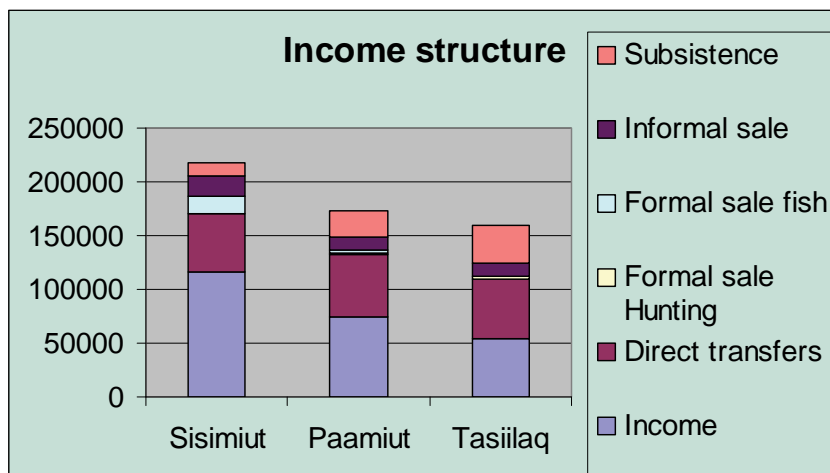


Figure 2. Main sources of income in three settlements, Sisimiut with a thriving self sustained economy, Paamiut with a stagnating dependen economy, and Tasiilaq with a detached economy. For a discussion of the three concepts, see Rasmussen and Tommasini, 2003

Sales to institutions include sales to kindergartens, old age homes etc., and accounts for only a small part of the informal economy. These sales are important, however, because they provide these institutions with fresh country-food. Similarly, the sale to restaurants accounts for a small part of the informal economy. The activity is increasing as tourism becomes more widespread.

Sale to families and friends is an important activity in the towns, while the habit of gift giving, i.e. distributing the products for free, is much more widespread in the villages.

The subsistence production, i.e. products for individual consumption, is an important element in both towns and villages, but is by far the largest activity in the villages.

In order to get a fuller picture of the importance of the informal economy in relation to other income sources, the graph on figure 2 above shows the main income sources for three different places in Greenland. The figures show the average income per person in each of the places. The income is provided primarily through formal incomes sources such as wages. Second to formal wages is income from the direct transfers category, which includes pensions, child support, social support and benefits. The formal sale category, which includes sale to local processing units and other busi-

nesses approved by the authorities, is subdivided in the two groups, fish products and hunting products. The informal sale category includes all the categories shown on figure 1 except own consumption, which is presented in this graph as the category subsistence.

The graph shows differentiation in the importance of the various income categories throughout different regions. These municipalities have been chosen in order to show the three corners of a triangle which would include other settlements in Greenland in between them: Sisimiut on the West-coast, one of the largest towns and characterized by a thriving economy which could be characterized as a self sustaining economy; Paamiut, also on the West-coast, which used to be a centre for cod processing, but after the cod disappeared the town has been on a steady decline, and therefore representing a highly dependent economy; and Tasiilaq on the East-coast, a town which never has become an integrated part of the Greenland economy, and therefore is characterized as a detached economy.

Sisimiut has its major income source from wage earnings, both in connection with land-based activities and those within fishery sector such as work on trawlers and in fish plants. There are substantial contributions from transfers, typically in the form of child support, old age pensions etc., but also contributions from the formal sale of fish products. On top of this, there are contributions from the informal sale especially from the local market and finally from subsistence production.

In Paamiut the incomes from wage work contributes to the economy, but on an equal base with the transfer payments because many of the wage earning opportunities vanished when cod fisheries disappeared. There is a small contribution from the formal sale of fish products, just as there is some informal sale on the local market and to institutions. Compared to Sisimiut, however, subsistence production plays a substantially larger role.

In Tasiilaq the three sectors – formal incomes, transfer payments, and informal and subsistence activities are almost equal in size. The subsistence production category is especially decisive for the individual economy, compared to the two other places.

In relation to settlement size the formal economy, i.e. wage incomes and incomes in connection with the sale of hunting and fishing products to registered producers, clearly dominates within the larger settlements, while also playing an important role for the small settlements. Of equal importance within the small settlements, are the transfers, which in absolute

values, are of the same size as in the larger settlements, but due to generally higher incomes in larger places, the relative role of the transfers is diminished. Informal economic activities are important in all settlement types, but most markedly in the mid-sized settlements. This is partly due to the fact, that many hunters and fishermen from medium sized settlements are bringing their products to the markets in the large towns, where the market is larger. The subsistence sector is present at all levels, but most represented within the small settlements.

12.3.5. Coping with Changes

The patterns described above seems to be compliant with for instance the observations of Wolfe and Walker (1987) by showing how the combination of subsistence and commercial-wage activities provide the economic basis for the way of life in many rural communities. And besides the lever function in relation to the formal market economy, there is no doubt that the subsistence sector has been a crucial element in the resilience and continuous existence of many of the small settlements – “bygder” – in Greenland. And this is a pattern, which seems to continue in the future in Greenland and in the Arctic in general. Moreover, there are a variety of other contexts where the informal economy seems to be of importance in relation to the communities’ ability to cope with ongoing changes.

One thing, which seems to be absent in both Canada and Alaska is a market place where informal economic transactions can take place. The lack of a market place seems to have some implications for the maintenance of traditional food as the Arctic is moving into more commercialized economies. As in the rest of Arctic North-America, the trade monopolies in Greenland tended to serve as a carrier for more southern food habits, and bring along alien products such as pork, beef, and especially poultry. This process partly succeeded in Canada, and for decades it also seemed to be the case in the large settlements in Greenland as well. But due to the availability of country food at the local market, and thereby the maintenance of a continuing demand, the products were introduced in the shops during the 80’s, and are today considered staple foods in all types of settlements (Rasmussen 1998b).

A general characteristic of the role of both subsistence and informal economy in the North is that they can be characterized as being a “means

of coping with crisis”. This pattern has definitely been seen in connection with an analysis of informal economic activities in Greenland and in the Russian north¹¹⁴, as well as in rural areas in Denmark¹¹⁵.

Here is a list of rationales emphasized in the surveys:

- The informal economy providing support to dwindling pension economies, especially in connection with the economic consequences of devaluation of the Ruble in the late 1990s.
- Adjusting abnormalities in wage work arrangements, for instance in situations where salaries to employees have been postponed due to lack of funding of the employer.
- Adjusting economic discrepancies in families and among relatives.
- Individual survival strategies or more collectively organized approaches to coping with crisis.
- Enabling the maintenance of links to the formal economy for persons otherwise outside the formal sector, and thereby providing a re-distribution of formal economies.
- Maintaining local production, which may not be possible within a formal system due to regulations, monopolies and similar obstacles.
- Provides local products available and accessible for a larger audience, such as in situations where the commercial value is low, but markets still exist.
- And in Russia as in Greenland, providing the basic means of existence in otherwise condemned settlements.

The informal economy is, in the settings described here, much more than what is usually thought of when referring to “black economy”. The informal economy in many ways seems to be a “problem solver”, both in rela-

¹¹⁴ A number of surveys have been done in NW Russia, on the Kola Peninsula, in the Karelian Republic and in the Leningrad district, from 1998 to 2007. The surveys have been based on field work registration of different types of informal economic activities, and interviews with both contributors and consumers of these informal economic activities. The results are going to be published in 2008.

¹¹⁵ In a report by Rasmussen (2007a) regarding informal economic activities on the island Samsø in Denmark, three important roles are identified. First for the economy of the participants, who in many cases are pensioners where informal economic activities are providing substantial additions to an otherwise limited pension. Second, by contributing to the survival and maintenance of a local community which otherwise would be economically challenged. And thirdly, by providing a connection between local inhabitants and tourists, as the informal economic relations seems to provide the tourists with a feeling of “belonging” and an experience of “authenticity”.

tion to risk and insecurity management. It is able to establish linkages between households, and between subsistence and the formal economy, while generating a economic base for many communities. In contrary to expectations, the informal economy is becoming increasingly important as Arctic communities are becoming more dependent on tourism. When tourists are visiting northern towns and villages they are not only expecting to get access to locally produced handicrafts, but also to meet the craftsmen themselves, visiting the informal marketplace, seeing how the pieces are produced, how the fish is caught and dried – all these elements contributes to the sense of relating to the place in a way which becomes an increasingly important part of the touristic experience, and thereby becomes a major attraction (Rasmussen 2007a).

12.4. Generation and Gender relations

As emphasized above, marked regional gender and generational differences in aspirations and development perspectives have evolved over the last 10–15 years. These changes have been characterized by a pattern of out-migration of women (especially from rural areas), and a female dominance within medium and high education (Rauhut et. al 2008). This is not a situation only characterizing the Nordic countries. It is a pattern, which has emerged in most of the developed countries, and relates to some general tendencies in relation to changes in the gendered division of labor, and in economic development in general (Rasmussen 2007b; Rasmussen 2007c). Moreover, it is a situation that requires a new typology in order to describe the changing regional characteristics. This typology should at least emphasize the two key components: aspiration backgrounds for out-migration and the role of education in connection with economic development. These factors seem to become indicative of a new regional re-structuring.

12.4.1. Out-migration Patterns

As discussed in several reports (Hamilton 2003; Hamilton and Butler 2001; Hamilton, Haedrich and Duncan 2004; Hamilton and Otterstad 1998; Hamilton and Seyfrit 1994; Rasmussen 2005), similar patterns regarding gender differences in affinity to rural community life seem to characterize northern

communities. More females than males tend to migrate permanently away from their home community and region. This migration is on one hand to look for job opportunities, which better fit their qualifications, but also social and cultural opportunities outside those characterizing the traditional economic activities in their communities. These patterns are similar to what is found in for instance rural areas experiencing restructuring and decline of the agriculture sector that is parallel to the growth of the service sector. These economic and social changes fundamentally affect women. Indicators from EU research as well as research in North America reveal that the employment rates for both men and women are lower in rural areas; just as unemployment combined with a lack of diversification in employment is more common for women than for rural men.

The rural areas are experiencing marked demographic, social and cultural changes. As the process of change in the dependency structures become more evident, women tend to experience negative short and long-term consequences in careers, earnings and pensions. This has severe consequences for migration patterns that contribute to a continuing out-migration of young and well-trained persons. As the majority of those who leave are women, there are negative impact on the social life and economy of the rural area. Negative impacts include effects on opportunities for marriage, the maintenance of family life and family structures, and cultural activities (Rauhut et. al 2008; Rasmussen 2005).

12.4.2. Response to Challenges

The relatively high number of women employed in the service sector has been argued to represent “an escape valve” from the traditional rural structure based on highly mechanized, masculine primary sector activities towards a new, more diversified socio-economic structure in which women are able to participate, and receive a salary and social protection. These patterns can be seen as being connected to a number of gender-related differences in aspirations and approaches to change.

In relation to questions on work and work-related activities, the perceptions of customary male activities related to renewable resource exploitation seem to be “sticky”. The male discourse – and even more the prevailing discourse in respect to males – has difficulty in moving on from what once were key activities, but which now constitutes only a miniscule part

of the available jobs. It characterizes the whole circumpolar North as having only between 5% and 20% of the economic activities being actually related to the primary sector, but this fact is very seldom revealed. Instead, the stereotypical images of the North consistent with hunting, fishing, kayaks, dog-sledges, reindeer etc. are prevalent in the dominant framework, giving identity to the maintaining of a traditional paternalistic system. The maintenance of this view impairs the development of images that might provide an authentic framework for the upcoming generation.

Contrary to the above is the belief that females are socialized into collective activities, more attentive to other's needs, and consequently are much more open to change (Rasmussen 2007c; Hansen 1992; Petersen 2002; Nathansen 2004). As a result of this, women become less limited by specific job characteristics. Males seem to be socialized into paths of dependency often creating difficulties in accepting other paths and changes, while females tend to be socialized into situations where adjustment and change are required. This enables females to move to new job categories and job options, and enables them much better adjusted to change through the educational system.

12.4.3. Development Requires Space for Women and the Generation

Since WWII, there has been a re-creation of spaces for indigenous peoples in the North that has included the establishment of relative autonomy and new spaces for development of aboriginal societies and cultures. The process, however, seems to have stagnated with a repetition of stereotypes instead of showing new perspectives. The focus on traditions as they are reflected in traditional male activities has been at the expense of losing part of the next generation, as well as showing a marked gender bias. Even the structures of gender relations, which have undergone changes during the last decades have not always been to the betterment of women's roles and status. Improvement in the lives of indigenous women has too often been sacrificed for the preservation of a broader societal harmony. There are numerous situations where women have participated in the struggles to liberate their nations, and then afterwards find themselves under new masters, this time in the guise of their own men (Green 2007). Very often when the traditional gendered practices of hunting and fishing turns out to be of limited value to the community, violence has become a key means of

maintaining the power structure (Rasmussen 2007c). As a consequence many women and future generations in general, are seeking opportunities outside their communities to look for options where they are appreciated due to their skills, knowledge, and personal qualities, and not because they are needed to re-produce a stagnated patriarchy. This process does not cease through a repeated focus on traditional activities such as hunting, fishing, mining etc. – jobs only appealing to a certain group of males. In order for the North to play an active part in a globally shared culture and economy, there is a need for new initiatives that offer opportunities to well educated females and younger generations.

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13. Presenting the Economy of the North¹¹⁶

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The purpose of the ECONOR project and the report *Economy of the North* is to give a comprehensive overview of the Arctic economy. This also includes the subsistence economy of the indigenous people within the region. The report discusses the importance of the Arctic economy from a global perspective, with particular focus on natural resources. The report also discusses the likely effects climate change will have on the Arctic economy. These particular impacts being more relevant as temperature increases are expected to be more extreme and rapid in the Arctic region than elsewhere. With the focus on economics, this report complements the perspective of the Arctic Human Development Report (AHDR 20004). This overview of the Arctic economy may help policy makers better understand the position of various stakeholders including large scale commercial interests, local and central governments, the indigenous peoples, and Arctic citizens as a whole.

In 2002, the population of the circumpolar Arctic was estimated at approximately 10 million. The Arctic share of global population is only 0.16 per cent. With respect to the share of global production of goods and ser-

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vices in terms of measured gross domestic product (GDP), the Arctic share is somewhat higher at 0.44 per cent. While these numbers could give the impression that the Arctic plays a minor role in the global economy, the picture changes radically if we look at the relative importance raw resources have to the world. The Arctic has abundant natural resources, from petroleum and minerals, to fish and forests. Given the important role the Arctic has as a provider of raw materials of all sorts, natural resource management is crucial, and is likely to become even more crucial in the future due to climate change. One example of a challenge encountered if the migratory patterns or extension of a fish stock change. Another example is associated with the management of mineral resources and fossil fuels. Pollution issues will also be of increased importance as economic activity expands in the Arctic. Since pollution migrates across borders and affect global public goods like clean air, water, biodiversity and wildlife, these issues will also result in increasing demands on transnational mechanisms for coordination.

The Arctic regions belong to different nations. A consequence of this is that information on social and economic issues have been dispersed and not easily available at the circumpolar level. This clearly applies to the information on the economy. Among several of the good reasons for compiling an overview of the circumpolar Arctic economy is the need for an information platform from where to assess the sustainability of the Arctic communities in terms of natural wealth management and vulnerability towards global policies and trends. A central task of this report is to contribute to filling this gap by presenting a comprehensive overview of the scale and structure of the circumpolar Arctic economy.

The Arctic is made up of 28 separate regions in 8 different countries: Arctic Russia includes the Republics of Karelia and Komi, the Murmansk and Arkhangelsk Oblasts, the Yamalo-Nenets and Khanty-Mansi Autonomous Okrugs, the Taimyr and Evenkia former Autonomous Okrugs, the Republic of Sakha, the Magadan Oblast, and the Chukotka and Koryakia Autonomous Okrugs. The North American Arctic includes Alaska and the Northern territories of Canada (Northwest Territories, Yukon, Nunavut). The European Arctic consists of Greenland, Faroe Islands, Iceland and Arctic Norway (including the Svalbard Archipelago and Jan Mayen), Arctic Sweden and Arctic Finland.

In resource rich communities within the Arctic, the sustainability of wealth management is particularly important. Resources that have been extracted from the ground represent a loss in wealth that should not be counted as income. However, by national account conventions it is still included as income. Because the natural wealth is not explicitly accounted for, it can easily be consumed contrary to principles of long-term sustainability.

13.1. The economy of the Arctic

The primary sector in the Arctic consists primarily of two types of activities, large-scale extraction of non-renewable resources and harvesting of renewable resources. The secondary sector (industry) plays a substantial role in some Arctic regions. The tertiary sector (service industries) accounts for more than 50 per cent of economic activity.

The three Russian regions of Khanty-Mansi, Yamalo-Nenets and Sakha, and Alaska generate more than 60 per cent of Arctic economic activity. Large-scale resource extraction activities are a major feature of the economy of these regions. Northern Russia is a major producer of oil and natural gas, representing two-thirds of all circumpolar economic activity. When combined with the economy of Alaska, their combined proportion reaches three-quarters.

Arctic Russia's production is very concentrated in the regions of the Yamalo-Nenets, Khanty-Mansi and Chukotka. Other Russian regions have per capita GDP below the circumpolar average. Figures 1 and 2 illustrate GDP and GDP per capita for the Arctic regions.

When the circumpolar Arctic regions are analyzed according to their per capita economic output, Figure 2 shows that the Canadian Northwest Territories have the highest per capita gross domestic product. This situation is due to a low population density combined with significant diamond production.

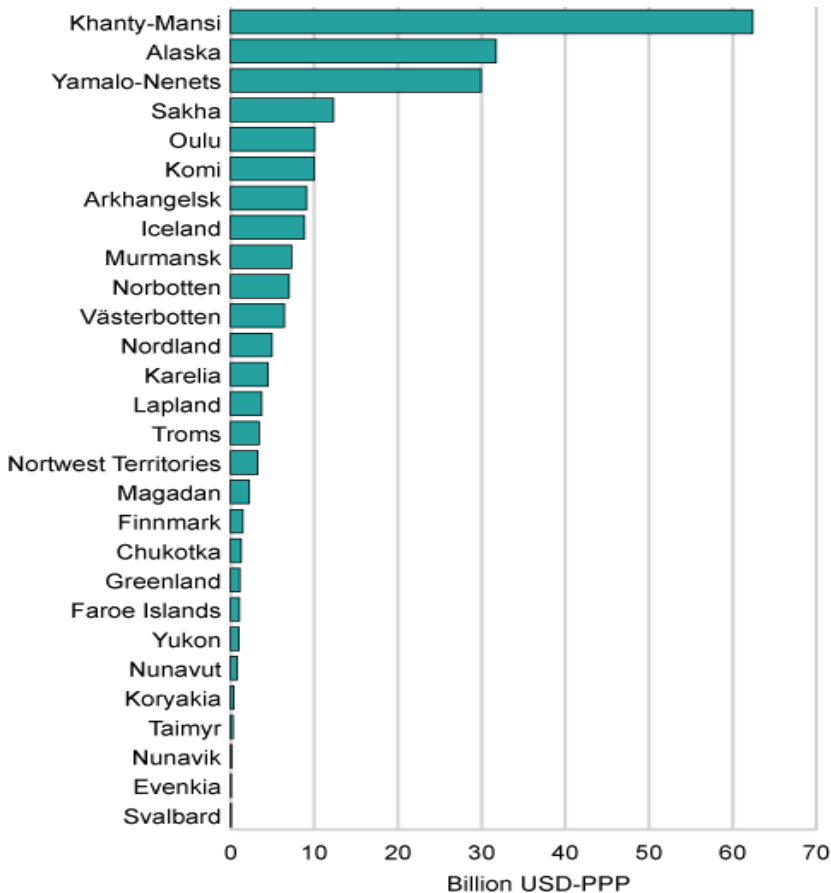


Figure 1. GDP, Arctic Regions. 2003. Billion USD-PPP

Practically all the Arctic regions of Scandinavia, along with Iceland, Greenland and the Faroe Islands, have a GDP per capita around the average for the circumpolar Arctic. These regions all have relatively diversified economies, a relatively high standard of living and denser economic development than elsewhere in the Arctic countries.

One should be aware that high GDP per capita levels do not automatically transform to high levels of disposable income and/or consumption. This is particularly true in the regions with substantial extractive industries. On the one hand, resource rents and return to capital may be transferred out of the region to capital owners. Although, these figures will still add to regional GDP, they will not be available for consumption or saving in the region.

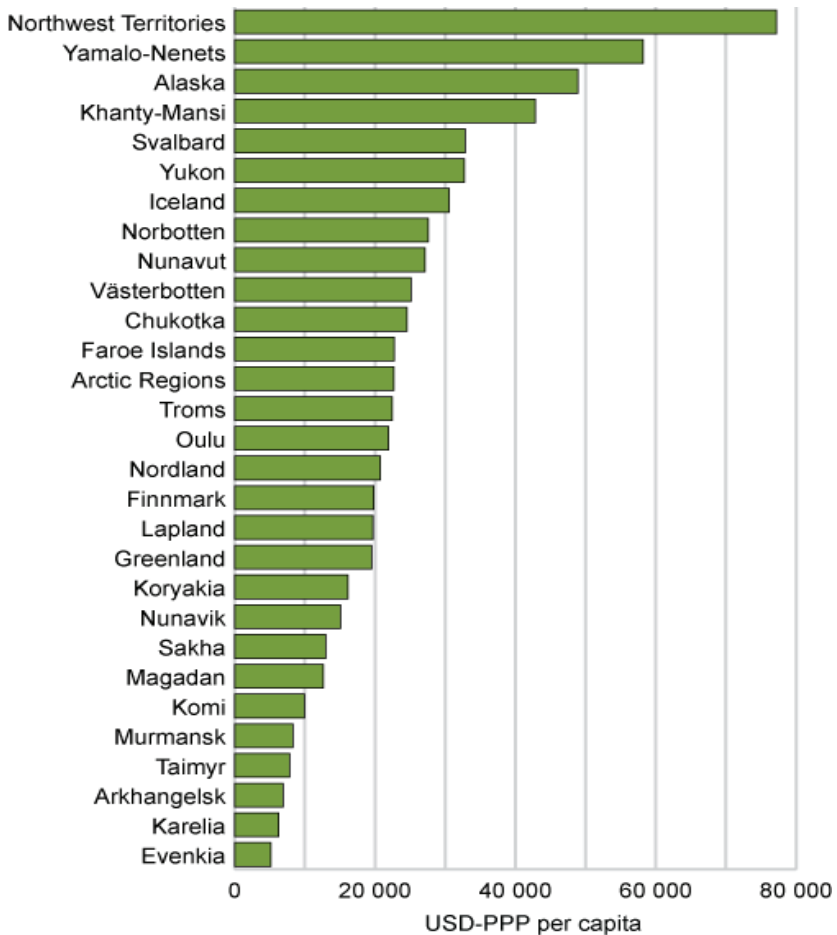


Figure 2. GDP, Arctic Regions. 2003. USD-PPP per capita

On the other hand, direct state transfers will contribute to per capita levels of disposable income and/or consumption, but will not show up in regional GDP figures. Hence, a ranking of regional disposable income or consumption levels in the Arctic may show a different pattern from GDP per capita.

Figure 3 shows the composition of industries in the main Arctic regions, while Figure 4 shows the composition of the resource-based industries. Iceland, whose fishing industry continues to be important, also has a developed tourism industry, as do the Arctic portions of the Scandinavian countries due to ship and road infrastructure. Greenland is a major exporter of shrimp for world markets, and also has a relatively large tertiary sector. In Finland, the

manufacturing sector, which is relatively undeveloped everywhere else, has undergone a remarkable boom in the Oulu region due to the presence of the mobile telephone industry.

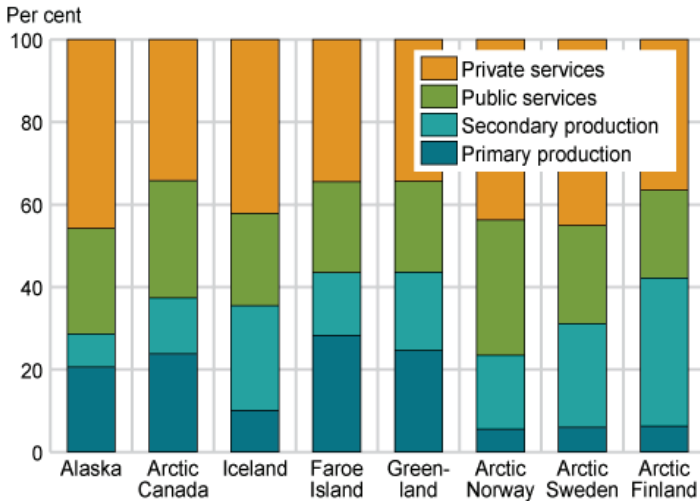


Figure 3. Value added by main industry in Arctic regions (except Russia). 2002 (Per cent of regional GDP).

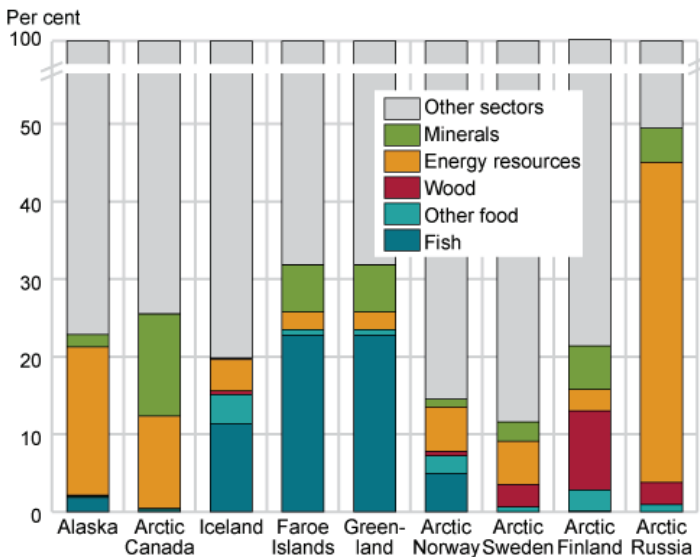


Figure 4. Value added. Natural resource based and other industries by Arctic regions. 2002 (Per cent of regional GDP).

When contemplating the Arctic economies, the comment is frequently made that the raw materials are exported out of the Arctic region with minimal local processing. The share of manufacturing is still low in Arctic regions. Economic diversity is a kind of insurance to the societies. However, secondary industries do not necessarily provide diversification. For instance, in fishery intensive economies, the fish processing industry closely follows the cycles of the primary fisheries rather than reducing the problems of resource and market vulnerability.

13.2. Arctic natural resources

The Arctic is richly endowed with petroleum, minerals, fish and forests that increasingly attract interest and mobilize the purchasing power of the global economy. Petroleum production in the Arctic is mainly taking place in Alaska and Northern Russia. The Arctic shares of global oil and gas production are 10.5 and 25.5 per cent, respectively. Further, according to a US Geological Survey completed in 2000, Arctic shares of global proven and undiscovered reserves of oil and gas are around 14 and 23 per cent, respectively. Hence, the Arctic is likely to continue to play a major role in the global energy supply.

The Arctic holds 5.3 and 21.7 percent of the total proven global reserves of oil and gas. Almost all of the Arctic proven gas reserves are found in Russia.

Besides proven reserves, there probably exist large endowments of undiscovered petroleum resources. Based on geological evidence and methods, such undiscovered resources can be assessed. The Arctic share amounts to 20.5 per cent and 27.6 per cent of undiscovered oil and gas, respectively.

In addition to oil and gas, the Arctic region contains other abundant mineral resources, in particular nickel, cobalt, tungsten, palladium and platinum. Many known reserves are not exploited because of their inaccessibility. Arctic Russia extracts the largest amount of minerals, but the other Arctic nations also have important extractive industries providing raw materials to the world economy.

Million barrels of
oil equivalents per day

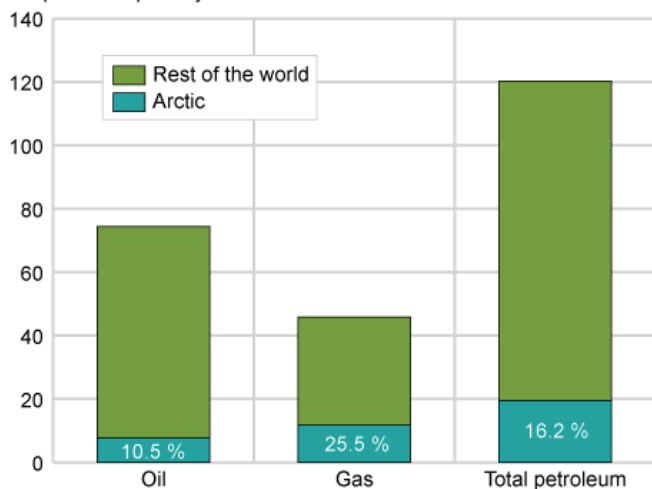


Figure 5. Arctic share of global petroleum production. 2002

Billion boe

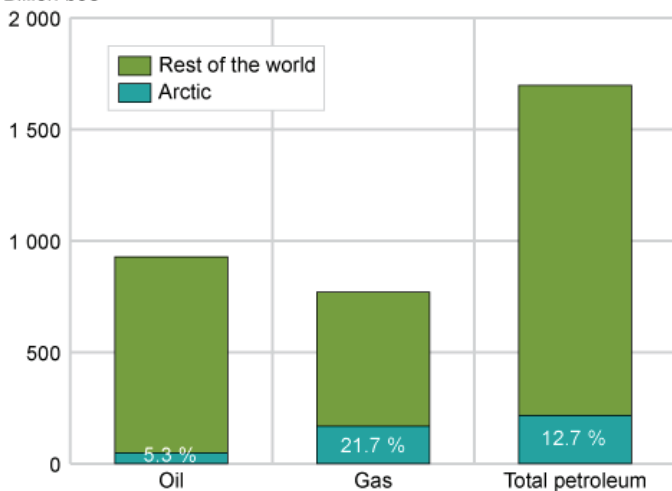


Figure 6. Arctic share of proven petroleum reserves 2002 Quantities indicated with reasonable certainty from geological and engineering information that that can be recovered in the future from known reservoirs under existing economic operating conditions.

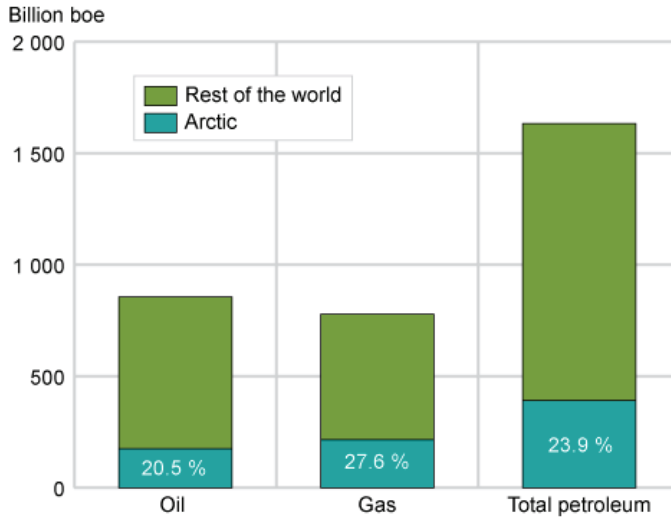


Figure 7. Arctic share of undiscovered petroleum resources. 2002

The catch of fish in the Arctic in 2002 amounted to around 10 per cent of the world catch. In addition to the marine wild fish catch, there are Arctic fisheries of shrimp and snow crab. In 2002, the Arctic catch of these two species was 5.3 per cent of the global catch of crustaceans. The total Arctic fish farming of salmon and trout was around 7.7 per cent of the world aquaculture production of these species.

The forests of the Arctic make up 8 percent of global wood volume. These forests represent the largest natural forests in the world, but most of the boreal forests are uncultivated due to the harsh climate, remoteness and lack of infrastructure. Only 2.2 per cent of total wood removal, in million cubic meters, takes place in the Arctic.

13.3. Subsistence and market economies in the Arctic

Although the importance of the subsistence economy in the Arctic is now becoming more widely recognized, sufficient data is not yet available to give a comprehensive picture of subsistence activities. One of the purposes in launching the Survey of Living Conditions in the Arctic (SLiCA) was to help to fill this gap. SLiCA is based on more than 7 000 personal inter-

views with native adults (aged 15 and above) in Greenland, Canada, Alaska, and the Chukotka region in Russia.

Figure 8 shows the proportion of meat and fish harvested and consumed by Arctic households is still high within Inuit communities. In total, five out of ten households report that they harvested about half or more of all the meat and fish the family ate. Six out of ten Inuit households in Chukotka and Alaska report that they harvested about half or more of their meat and fish consumption, whereas less than ten per cent did not harvest at all. For Greenland, the harvest activity is smaller than Chukotka and Alaska with less than 40 per cent of the Greenland households reporting that they fish, hunt and gather half of their household traditional.

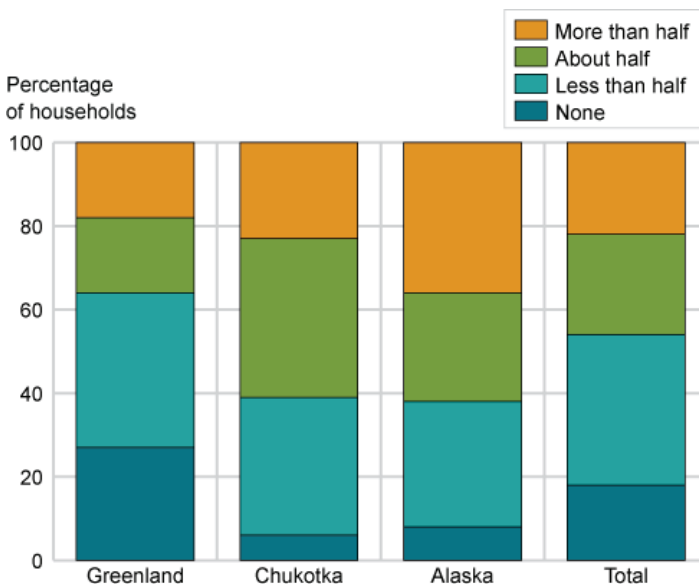


Figure 8. *Proportion of meat and fish consumption harvested by households. Regional Surveys 2001–2006*

A socio-economic analysis of Greenland hunters was conducted in 2003–2005, that surveyed their attitudes towards hunting, what they caught, and their expenses for hunting and fishing equipment (Rasmussen 2005). Estimating the total value of informal supply leads to an estimate of 182 million DKK. Table 1 shows that the total informal production is almost as large as total value of sales for hunting activities.

Reindeer and caribou represent principle subsistence resources for many indigenous people in the rural regions of the Arctic. Their value as nutritional and economic resource is closely connected to their value in maintaining culture and identity. The sustainability of reindeer and caribou herding and hunting relates to ecology, socio-economic conditions and the transmission of cultural traditions from one generation to the next, as well as political processes at a regional, national and international levels (Jernsletten and Klovov 2002, Ulvevadet and Klovov 2004).

Climate change can substantially influence the conditions for subsistence in the Arctic. The different signs of climate change have been a growing concern for Arctic residents. These signs include longer sea ice-free seasons, soil erosion, melting glaciers creating torrents in place of streams and unpredictable weather. Moreover, environmental toxins, with a high degree of accumulation in northern regions, are found in Arctic animals at increasingly high levels.

Table 1. Total estimated sales value and value of informal economic activities by professional and leisure-time hunters in Greenland. Annual average 1993–2002. Million DKK

	Professional hunters	Leisure-time hunters	Total
Sale	196	10	206
Informal value	130	52	182

Source: Rasmussen (2005).

Today, indigenous peoples live in greatly circumscribed social and economic situation. Their hunting and herding activities are determined to a large extent, by resource management regimes and local, regional, and global economic market situations that reduce their ability to adapt and cope with climate variability and change. While they experience stress from other sources, which threaten their lifestyles and cultures, climate change magnifies these threats. (Weller 2005).

13.4. Concluding remarks

The ACIA (2005) report concludes that climate change impacts are likely to be larger and more rapid in the Arctic than in any other region. Economic activities, including subsistence activities, can be strongly affected

by climate change. As more attention is brought to the intertwined nature of the market economy and subsistence economy and its importance for the well being of Arctic peoples – an important challenge for analysts and policy-makers is to develop measures to understand how subsistence activities are impacted by climate change. Subsistence activities can be included as sustainable development indicators, or as «satellite accounts» to the national accounts (United Nations 1993).

A continued effort by Arctic statistical agencies and researchers to extract and compile economic, environmental and social statistics for the Arctic regions is necessary to improve our knowledge base. More information is needed on disposable income, consumption and social welfare within regions. Measurements to social welfare should be oriented towards understanding the implications of climate change and trans-boundary pollution. More research is needed on Arctic natural resources, with focus on management strategies for sustainable development.

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14. Analyzing Arctic Social Realities – ArcticStat

Andrée Caron¹¹⁹ and Gérard Duhaime¹²⁰

Up until recently, it was hard to make interregional or international comparisons concerning Arctic regions in the domain of social realities. When data existed, they were scattered, not always available, and their internal and external validity was not always explicitly proven. The standardization and computerization of data produced by national agencies have helped improve this situation. In response to the growing and specific requests from government organizations, in particular those of the United Nations and the Organization for Economic Co-operation and Development, a certain standardization of concepts and methods has gradually taken place, extending first to domains such as demography and the System of National Accounts. Moreover, the agencies have published methodological notes specifying the conceptual and methodological characteristics of their own production. Still today, the American and Canadian systems of national accounts exhibit differences, just as do the European systems. Work seeking to increase this standardization, under the additional impetus of continental unification in America and in Europe, is continuing and is giving rise to new classifications, for example.

Despite these efforts, comparisons were laborious, if not impossible, for a very long time. The first attempts that we made, beginning at the end of

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the 1980s, met with numerous obstacles. It was necessary to find a representative who would be willing to transmit, by mail or in person during scientific events, sets of data and metadata; a long and complex dialogue had to be maintained in order to render the data comparable. The secrecy surrounding the data emanating from the USSR made valid comparisons impossible, not because one could not gain access to statistics (in the years immediately following the collapse of the Soviet Empire, documents of this nature could be bought on the street), but mainly because it was virtually impossible to evaluate the validity of such data, because the conceptual differences underlying the calculations of the macroeconomic aggregates such as the Gross Domestic Product were fundamental and because, more often than not, the data concerning Arctic regions could not be found or were very fragmented.

The computerization of data produced by national agencies, which became generalized around the 1970s (in Canada, the first census, the data of which were available in electronic format, was that of 1971), but above all the availability of their socioeconomic databanks on the Internet, beginning in the mid-1990s, altered the ability to do research. Data and metadata gradually became more abundant and more readily accessible. But the burden had not been reduced decisively. To arrive at valid comparisons, the researcher had to complete a large number of long and complex steps, the success of which was still uncertain. Armed with patience, the researcher first had to find the web sites of each national agency. The situation was not as straightforward as one might think. In most countries, several agencies divvy up the work. In Canada, Statistics Canada produces multiple sets of basic data published on its site; these data are then reused and republished by provincial and territorial agencies, which also produce exclusive surveys. A similar situation may be found in the United States where it is even more complex. Not only does the U.S. Census Bureau supply data to state agencies, not only do state agencies produce their own exclusive data, there are also several other national agencies that are responsible for sets of specialized data in the economy, education and health fields, for example. Data concerning the Russian Federation are available not only on the web site of Rosstat (which used to be known as Goskomstat Russia prior to 2004), but also on para-State or even private sites, the validity of which is considered doubtful from the perspective of the national agency. Certain agencies occasionally experience partial service

interruptions for extended periods of time. Once the sites have been identified, the researcher must then navigate through these labyrinths, each having its own unique interface and occasionally being characterized by a disconcerting complexity, in order to find the data sets she needs for her work. Specialists sometimes get lost in these sites, much like archaeologists in the pyramids. Besides, the researcher does not always have the opportunity to dig very deeply, realizing that some sites produce data only in the national language. During the initial years of operation on the Internet of these sites, the researcher often had no other possibility than to transcribe by hand the data found or, in the best of cases, to print these data. Computer development had not yet made it possible to select, paste on a virtual clipboard and then copy these data into a spreadsheet program or a word-processing program. It was only exceptionally that the researcher was able to request custom-tailored compilations, for example isolating a given region in particular. The researcher often came to the realization that regional data did not exist. But when such data were indeed available, the absence of flexibility in the geographical divisions did not always allow the researcher to have access to the data covering Arctic areas, or on the contrary, the extreme dis-aggregation of data in census areas required almost monastic patience to combine all of the data concerning an Arctic region in particular. In Russia, the availability of data grew after the difficult 1990s. The web site of Rosstat is impressive, especially when one compares the abundance of data available on the site to the scarcity, even the secrecy, of the previous period. Nevertheless, data concerning the Arctic regions are not found on the site: to have access to such data, one still has to proceed by mail order and the data are delivered in Russian only. Up until just recently, the geographical division on the site reproduced the political division in “subjects of the Federation”, with the end result that the researcher interested in the Arctic regions had to resign himself to including in his compilations what clearly were southern portions of republics overlapping the polar circle, comprised in the aggregate statistics (and then to overstate the results) or, conversely, to exclude them (and thus understate the results).

Today, several of these pitfalls have been partially lifted. But others remain. The conceptual and methodological differences have far from disappeared, and they are not likely to disappear over the short term. Rosstat announced major efforts to make the data dealing with the Federa-

tion more easily comparable with those concerning Europe. In the meantime, concordances help guide the data conversion work. Similarly, it is still impossible to obtain basic dis-aggregations in such domains as demography, health and education for example, in order to grasp the reality of the Aboriginal People inhabiting the North. This is particularly true in Finland and Sweden, where the national agencies are not authorized to gather data on ethnic affiliation. This situation is not limited to the Arctic. Indeed, the United Nations Permanent Forum described the improvement of the statistical coverage of the Aboriginal People as being an urgent priority on Indigenous Issues in 2004. A survey of statistical agencies publishing disaggregated data for the Aboriginal People, conducted by the Statistics Division of the United Nations Department of Economic and Social Affairs, concludes that barely 80 national agencies publish such data, and do so for three indicators only (ethnicity, language and religion). The situation is such that the Permanent Forum invited those national agencies that do not already do so to modify their practices so that, in the future, the data can be disaggregated to report on the situation of the Aboriginal People. A group of international agencies associated with the United Nations, the Inter-Agency Support Group, has undertaken work promoting the collection of social statistical data concerning Aboriginal realities.

Finally, other barriers have recently been erected. Certain agencies such as Statistics Finland and Statistics Canada now apply a cost recovery policy to the dissemination of some of their products. This policy limits free public access to data subsets and requires that the researcher purchase them. This obligation is frequent in the case of data dealing with specific regions and all the more so, for indicators that are not deemed to be of “sufficient generality” to be available free of charge. Hence, the difficulty of carrying out systematic comparative studies continues to be major.

That is why we began the construction of the ArcticStat databank in 2002. It was designed, within the context of a one-stop, systematic and easy-to-use framework, to help researchers identify all of the existing tables in the agencies in question dealing with the socioeconomic realities of the Circumpolar Arctic regions.

An experimental phase preceded the design and development of the actual databank. The purpose of this phase was to check if it was indeed possible, in a precise domain of human activity, to identify on the agencies’ websites tables dealing with each of the Arctic regions of all the countries

in question, to process the tables in such a way as to make them comparable and from there, to produce a global description and analysis (where the Arctic can be considered as one “region” within the meaning of global geopolitics) and regional (where each of the regions can be compared to the others). We chose the measurement of the economy. To carry out the work, it was necessary to compile: demographic data, which are invaluable for making *per capita* calculations; economic data, measurements of the Gross Domestic Product according to various calculation methods, including the industrial distribution of economic activity; data on the industrial distribution of the labor force to make up for possible shortcomings in GDP data; data on exchange rates and price indices to convert data into a single reference currency, and to tie them to a single reference year. The initiative was conclusive, but took a long time: one year of work in all, most of which was devoted to the search for and the processing of data. It led to the publication of “Economics Systems”, in the *Arctic Human Development Report* (Duhaime *et al.* 2004), the first comprehensive portrait of the economy of the Circumpolar Arctic based on rigorously comparable statistical data. Based on this experimentation, the construction of ArctiStat was carried out in the following years. Even before putting the databank into service, we had made sufficient progress to update this economic portrait, published under the title of “The Economy of the Circumpolar Arctic”, in *The Economy of the North* (Duhaime & Caron 2006). This operation was also conclusive: it took only a few weeks to locate all of the necessary data.

The two publications just mentioned were the result of ambitious projects supported by the Arctic Council. From a methodological standpoint, our colleagues arrived in both cases at the very same conclusions that we had reached earlier. To carry out “Arctic Demography” within the context of the AHDR, Bogoyavlenskiy and Siggner (2004) had to devote most of the time and the resources allotted to them to collecting data. The same constraints were encountered by McDonald, Glomsrød and Mäenpää (2006), when working on “Arctic Economy within the Arctic Nations” as part of *The Economy of the North*. In short, they faced the same main obstacle to making systematic circumpolar comparisons based on official statistics: the difficulty of finding data.

These initiatives under the aegis of the Arctic Council represented important breakthroughs in the field of circumpolar social knowledge. How-

ever, the approach used in both cases was the same: the comparisons were conceptualized and carried out according to compartmentalized approaches, reproducing more or less the structure of the fields of state competence. AHDR proposes separate descriptions and analyses concerning demography, culture, economy, health, education; ECONOR proposes examining one of these fields in greater detail from a pronounced single-disciplinary standpoint. What are the relationships between demography and economy in the Circumpolar Arctic? Between economy and education? Between education and health? These works do not answer this type of question.

The existence of ArcticStat henceforth makes it possible to overcome these limitations, which up until now had been insurmountable. By radically reducing the time devoted to locating data, this bank offers a new research capacity, namely that of analyzing in an integrated manner a vast set of valid, easy-to-find and easy-to-process data, dealing with a diversity of fields of human activity.

14.1. ArcticStat an Overview

ArcticStat is a permanent, public and independent statistical database dealing with the countries, regions and populations of the Circumpolar Arctic. ArcticStat was born out of that vision to increase the research capacity by taking advantage of already existing data. It is an open-access web-based circumpolar socioeconomic statistical database bringing together in a systematic and coherent whole, data dealing with the population, language, health, education, economy, employment and other social realities. ArcticStat covers the Arctic regions of countries that are members of the Arctic Council: United States, Canada, Greenland, Iceland, Faroe Islands, Norway, Sweden, Finland and the Russian Federation.

ArcticStat was created by the Canada Research Chair on Comparative Aboriginal Condition of Université Laval in Québec, Canada. The core financial contribution was provided by the Canada Foundation for Innovation; the Louis-Edmond-Hamelin Chair provided additional financial contributions for Northern Research in Social Sciences, and Indian and Northern Affairs Canada.

ArcticStat was presented to the Arctic Council during the meeting of the Sustainable Development Working Group held in March 2006 in Salekhard in the Russian Federation. It was received very enthusiastically and obtained unanimous support. It was presented a second time to the Arctic Council during the Senior Arctic Officials’ meeting held in May in Syktyvkar, Russian Federation. Once again, ArcticStat was fully supported and received special mention from Norway as being an “outstanding project”. The Arctic Council officially endorsed ArcticStat during the ministerial meeting held in Salekhard at the end of October 2006. ArcticStat is also an official activity of the International Polar Year.

14.1.1. Design

ArcticStat operates mainly as a portal linking users directly to the relevant tables on the statistical agencies’ web sites; when this procedure is not possible, users have access to tables directly stored in the ArcticStat database. The ArcticStat web site has been designed as a user-friendly tool, based on three simple indexes from which users can choose: countries and regions, indicators and sub-indicators, and different years. Map-based research is also offered through an interactive circumpolar map.

14.1.2. Geography

There are several different definitions of the Arctic according to whether one relies on physical, geographical, political or administrative characteristics. The territory chosen for ArcticStat draws inspiration from the regions covered by 3 scientific and political organizations dedicated to the Arctic: the Arctic Monitoring and Assessment Program (AMAP), the Barents Euro-Arctic Council (BEAC) and the Northern Forum (NF). The territory of ArcticStat is as inclusive as possible. It covers all of the populations living in an Arctic region as well as the populations having characteristics that are similar to those of Arctic populations or living in a similar environment.

14.1.3. AMAP (*Arctic Monitoring and Assessment Program*).

AMAP is an international organization concerned about the environment and based in Oslo, Norway. Its main objective is to provide the governments of the 8 countries having a portion of their territory in the Arctic regions with reliable and sufficient information on these regions as well as scientific opinions on the actions that should be taken to combat contaminants in the air, soil and the Arctic Ocean. Founded in 1991, AMAP is one of the 4 organizations that make up the Arctic Environmental Protection Strategy (AEPS)¹²¹, an intergovernmental agreement seeking mainly to protect from pollution the ecosystems of the Arctic as well as the human, animal and plant populations that are part of these ecosystems. This agreement was passed in 1991 in Rovaniemi, Finland during the First Arctic Ministerial Conference¹²² that was attended by the Ministers of the Environment of 8 Arctic countries. Since June 1997, it is the Arctic Council¹²³ which has been responsible for the continuity of the works undertaken within the context of the AEPS, including those of AMAP.

AMAP basically covers the land and marine regions located north of the 66th parallel (polar circle) as well as those located north of the 62nd parallel in Asia and north of the 60th parallel in North America. This extension to the south of the polar circle makes it possible to include the marine regions located north of the Aleutian Islands in Alaska; Hudson Bay in Canada and certain parts of the North Atlantic including the Labrador Sea (Tables below).

¹²¹ The three other programs making up the AEPS are: “Conservation of Arctic Flora and Fauna” (CAFF), dealing with Arctic wildlife and plants, “Emergency Prevention, Preparedness and Response” (EPPR), the objective of which is to provide a framework for future cooperation to deal with environmental emergencies, and “Protection of the Arctic Marine Environment” (PAME), which is in charge of taking preventive or restoration measures in relation to Arctic marine pollution.

¹²² Afterwards, other ministerial conferences were held: in 1993 in Nuuk, Greenland, in 1996 in Inuvik, Canada and in 2002 in Inari, Finland. These meetings gave birth to a fifth organization, “Sustainable Development and Utilization” (SDU), the chief mandate of which is to propose strategies to governments to help them achieve their sustainable development objectives in the Arctic.

¹²³ The Arctic Council was created in September 1996 in Ottawa, Canada under the auspices of the Ministers of Foreign Affairs of the 8 Arctic countries. In June 1997, the Council took under its responsibility the organizations and programs created at the time of the adoption of AEPS (Arctic Environmental Protection Strategy) and set up the “Sustainable Development Working Group” (SDWG). The mandate of the Council is to promote cooperation, coordination and interaction between Arctic countries on common questions, in particular those that concern sustainable development and the protection of the environment. The Council endeavours to establish common policies on the basis of research and recommendations made by the 5 working groups as well as their subgroups.

14.1.4. BEAC

The Barents Euro-Arctic Council (BEAC) is an intergovernmental cooperation organization for the Barents Sea region. The European Commission created BEAC in January 1993 at the time of the signing of the Kirkenes Declaration by the various Ministers of Foreign Affairs of Northern Europe and the Russian Federation as well¹²⁴. The main objective of BEAC is to promote sustainable economic and social development in the Barents Sea region and thereby contribute to the peaceful development of Northern Europe¹²⁵. The territory covered by BEAC is the same as that making up the Barents Sea region (Tables below).

14.1.5. Northern Forum

The Northern Forum is a non-profit international organization located in Anchorage, Alaska and founded in November 1991 following a series of international conferences on northern questions¹²⁶. The Northern Forum has given itself two missions: improving the quality of life of the inhabitants of the member regions by giving regional political leaders the means to take up common challenges; and supporting sustainable development as

¹²⁴ BEAC is made up of 7 participants: one representative of Denmark, Sweden, Finland, Iceland, Norway, the Russian Federation and the European Union as well as 9 observers from Canada, France, Germany, Italy, Japan, Holland, Poland, the United Kingdom and the United States.

¹²⁵ Over the years, BEAC has broadened its activities by setting up several working groups. The main ones are: "Working Group on Economic Co-operation", "Working Group on Energy", "Working Group on Environment", "Programme Board on Exchange Grants/Higher Education and Research", "Ad Hoc Group on Health and Related Social Issues", "Working Group on the Northern Sea Route", "Steering Committee for the Barents Euro-Arctic Pan-European Transport Area", "Working Group on Youth Policy" and "Working Group on Emergency and Rescue Services Co-operation".

¹²⁶ The first international conference on northern questions was held in Japan in 1974. This conference allowed the participants, political leaders from several regions of Canada and the United States as well as representatives of three Scandinavian countries to ascertain that they shared several concerns and challenges that needed to be taken up. These stakeholders came to the conclusion that better communication and more cooperation could greatly help improve the quality of life of their fellow citizens. The second international conference was held in Alberta, Canada in 1979. This conference, in which 22 political leaders took part, dealt mainly with the interactions between the development of natural resources, the protection of the environment, and housing facilities. The third conference, which brought together some 600 delegates, was held in 1990 in Anchorage, Alaska. The participants recommended the setting up of a permanent organization that would make possible regular meetings between the leaders of the member regions in order to discuss common environmental, human, economic and technological concerns and to implement means to resolve them. The fourth conference was the one that officially inaugurated the Northern Forum. It took place in Anchorage, Alaska in 1991.

well as the setting up of socioeconomic cooperation initiatives between member regions and between these regions and the rest of the world. The Northern Forum is made up of representatives of 25 regional or provincial governments of 10 northern countries¹²⁷ which have in common several characteristics that distinguish them from the rest of the world: an economy based on the extraction of natural resources, limited development infrastructures, a lack of local capital, a harsh climate, vulnerable ecosystems, sparse, heterogeneous and largely Aboriginal populations.

The territory covered by the Northern Forum is vast and scattered: it does not include all of the regions located north of the polar circle (all of Northern Canada and Greenland are not members of this organizations) but it comprises several regions that are far away (Japan, Korea, Sakhalin region in Russia, Mongolia) (Tables below).

14.2. An inclusive approach

The combination of the territories covered by AMAP and BEAC made it possible to make a first geographical delimitation of the circumpolar world. The latter included all of the regions located to the north of the polar circle and a few regions located to the south. But this delimitation was not totally inclusive: the Svalbard Archipelago was absent as were four Russian regions contiguous to the polar circle. Out of a concern to include all of the populations having characteristics similar to those of Arctic populations or populations living in a similar environment, the Russian regions contiguous to the polar circle and covered by the Northern Forum were added. They include one administrative region (Magadan) and three autonomous districts (Koryak, Khanty-Mansii and Evenk). The Svalbard Archipelago, a Norwegian territory, was also added (See map 1 and tables below).

¹²⁷ They are Canada (Alberta), the United States (Alaska), the Republic of China (Heilongjiang), Finland (Finnish Lapland and Oulu), Iceland (Akureyri), Japan (Hokkaido), Mongolia (Dornod Aimag), the Republic of Korea, the Russian Federation (Arkhangelsk, Chukchi, St-Petersburg, Evenk, Kamchatka, Khanty-Mansii, Magadan, Nenets, the Republic of Komi, the Republic of Sakha, Sakhalin, Volodga, Yamal-Nenets) and Sweden (Norrbotten and Västerbotten).

14.2.1. Assembling of maps

Identifying the regions that are a part of the chosen geographical delimitation, the boundaries of these regions and their respective capitals made a survey of the available geographical maps. Once this was done, a cartographer assembled a series of maps. The material put at the cartographer's disposal was made up of maps on which the chosen regions were identified, as well as a list of place names in English. This map was supposed to include countries, regions, capitals, oceans, seas, bays, straits and the polar circle. The result of this operation was an original map that is rather bare and that may be consulted on the ArcticStat site. The map was produced using the English version of the MapInfo Professional software.

14.2.2. Place names

The consulted sources (Internet sites, books, geographical maps, atlases, encyclopedias, scientific journals) use virtually all the same place names, except for the regions of the Russian Federation (Table 2 below). The place names used in *Territories of the Russian Federation 2001* were finally chosen as this publication presents the spellings most often found elsewhere.

14.3. General method for locating sources

14.3.1. Saturation method

The statistical data were located using the so-called saturation method applied to the Internet. For each country, the starting point was the national statistical agency. A first exhaustive search of the agency's site made it possible to locate and identify a list of available indicators. A search was done using each of the links proposed by the official statistical agency. A third search having the proposed links as its starting point was made, and so on, until the proposed links brought the researcher back to the starting point, or until they contained no statistical data, or their content strayed too far away from the subject matter of the search.



Table 1. Geographical Divisions

Countries	AMAP	Barents Euro-Arctic Council	Northern Forum	ArcticStat
United States	Alaska	No	Alaska (whole territory)	Alaska (whole territory)
Canada	Yukon Territory	No	Yukon Territory	Yukon Territory
	Northwest Territories	No	No	Northwest Territories
	Nunavut Territory	No	No	Nunavut Territory
	Nunavik	No	No	Nunavik
	Labrador	No	No	Labrador
	No	No	Alberta	Alberta
Denmark	Greenland	No	No	Greenland
	Faroe Islands	No	No	Faroe Islands
Iceland	Whole Territory	No	Akureyri	Whole Territory
Norway	Finnmark	Finnmark	No	Finnmark
	Troms	Troms	No	Troms
	Nordland	Nordland	No	Nordland
	No	No	No	Svalbard
Sweden	Norrbottn	Norrbottn	Norrbottn	Norrbottn
	No	Vasterbotten	Vasterbotten	Vasterbotten
Finland	Lapland	Lapland	Lapland	Lapland
	No	Oulu	Oulu	Oulu
Russian Federation	No	Republic of Karelia	No	Republic of Karelia
	No	Republic of Komi	Republic of Komi	Republic of Komi
	No	Arkhangelsk O.	Arkhangelsk O.	Arkhangelsk O.
	Nenets A.O.	Nenets A.O.	Nenets A.O.	Nenets A.O.
	Murmansk O.	Murmansk O.	No	Murmansk O.
	No	No	Khanty-Mansii A.O.	Khanty-Mansii A.O.
	Yamal-Nenets A.O.	No	Yamal-Nenets A.O.	Yamal-Nenets A.O.
	Taimyr (Dolgan-Nenets) A.O.	No	No	Taimyr (Dolgan-Nenets) A.O.
	No	No	Evenk A.O.	Evenk A.O.
	Republic of Sakha (Yakutia)	No	Republic of Sakha (Yakutia)	Republic of Sakha (Yakutia)
	No	No	Magadan O.	Magadan O.
	Chukchi O.	No	Chukchi A.O.	Chukchi A.O.
	No	No	Kamtschatka O.	No
	No	No	Koryak A.O.	Koryak A.O.
	No	No	St-Petesbourg	No
	No	No	Sakhalin A.O.	No
	No	No	Vologda A.O.	No
China	No	No	Heilongjiang	No
Japan	No	No	Hokkaido	No
Mongolia	No	No	Dornod, Aimag	No
Republic of Korea	No	No	Republic of Korea	No

Notes:

O. = Oblast

A.O. = Autonomous Okrug

Table 2. Countries, regions and capitals. English Toponyms.

Countries	Regions	Capitals
United-States	Alaska	Juneau
Canada	Yukon Territory	Whitehorse
	Northwest Territories	Yellowknife
	Nunavut Territory	Iqaluit
	Nunavik	Kujjuaq
	Labrador	Happy Valley-Goose Bay
Denmark	Greenland	Nuuk
	Faroe Islands	Thorshavn
Iceland	Iceland	Reykjavik
Norway	Finnmark	Vadso
	Troms	Tromso
	Nordland	Bodo
	Svalbard	Longyearbyen
Sweden	Norrbottn	Lulea
	Vasterbotten	Umea
Finland	Oulu	Oulu
	Lapland	Rovaniemi
Russian Federation	Republic of Karelia	Petrozavodsk
	Republic of Komi	Syktvykar
	Arkhangelsk Oblast	Arkhangelsk
	Nenets Autonomous Okrug	Naryan-Mar
	Murmansk Oblast	Murmansk
	Khanty-Mansi Autonomous Okrug	Khanty-Mansiisk
	Yamal-Nenets Autonomous Okrug	Salekhard
	Taimyr (Dolgan-Nenets) Autonomous Okrug	Dudinka
	Evenk Autonomous Okrug	Tura
	Republic of Sakha	Yakutsk
	Magadan Oblast	Magadan
	Chukchi Autonomous Okrug	Anadyr
	Koryak Autonomous Okrug	Palana

Source for the Russian Federation: Territories of the Russian Federation 2001. The national statistical agencies from which the data of ArcticStat are taken are: the U.S. Census Bureau, Bureau of Economic Analysis, Statistics Canada, Statistics Greenland, Statistics Faroe Islands, Statistics Iceland, Statistics Norway, Statistics Sweden, Statistics Finland and Rosstat.

Table 3. Sources of the data.

Countries and regions	Sources of the data ()
United States	U.S. Census Bureau (Internet)
Alaska	Bureau of Economic Analysis (Internet) Alaska Department of Labor and Workforce Development (Internet)
Canada	
Yukon Territory	Statistics Canada (Internet)
Northwest Territory	Statistics Canada (Internet)
Nunavut Territory	Statistics Canada (Internet)
Nunavik	Statistics Canada (Internet)
Labrador	Statistics Canada (Internet), Newfoundland Statistics Agency (Internet)
Greenland	Statistics Greenland (Internet)
Faroe Islands	Statistics Faroe Islands (Internet)
Iceland	Statistics Iceland (Internet)
Norway	
Nordland	Statistics Norway (Internet)
Troms	Statistics Norway (Internet)
Finnmark	Statistics Norway (Internet)
Svalbard	Statistics Norway (Internet)
Sweden	
Norrbottnen	Statistics Sweden (Internet)
Vasterbotten	Statistics Sweden (Internet)
Finland	
Oulu	Statistics Finland (Internet)
Lapland	Statistics Finland (Internet)
Russian Federation	
Republic of Karelia	Rosstat, NUPI – Center for Russian Studies Database (Internet)
Republic of Komi	Rosstat, NUPI – Center for Russian Studies Database (Internet)
Arkhangelsk Oblast	Rosstat, NUPI – Center for Russian Studies Database (Internet)
Nenets Autonomous Okrug	Rosstat, NUPI – Center for Russian Studies Database (Internet)
Murmansk Oblast	Rosstat, NUPI – Center for Russian Studies Database (Internet)
Khanty-Mansi Autonomous Okrug	Rosstat, NUPI – Center for Russian Studies Database (Internet)
Yamal-Nenets Autonomous Okrug	Rosstat, NUPI – Center for Russian Studies Database (Internet)
Taimyr (Dolgan-Nenets) Autonomous Okrug	Rosstat, NUPI – Center for Russian Studies Database (Internet)
Evenk Autonomous Okrug	Rosstat, NUPI – Center for Russian Studies Database (Internet)
Republic of Sakha (Yakutia)	Rosstat, NUPI – Center for Russian Studies Database (Internet)
Magadan Oblast	Rosstat, NUPI – Center for Russian Studies Database (Internet)
Koryak Autonomous Okrug	Rosstat, NUPI – Center for Russian Studies Database (Internet)
Chukchi Autonomous Okrug	Rosstat, NUPI – Center for Russian Studies Database (Internet)

14.3.2. Inclusion criteria

The saturation method made it possible to amass a large quantity of data. Only those statistics provided by national agencies were kept because they are public, available and, contrary to those found on other sites, recurrent

and of proven validity. These criteria are essential for the subsequent comparison work in space and time.

In those cases where the national statistical agencies did not provide the data sought, or where the data were not sufficiently detailed, use was made of the data of regional or provincial agencies. This is the case, for example, of the Alaska Department of Labour and the Newfoundland Statistical agency, which use the data provided by national agencies, by presenting them in a more detailed or more precise manner when processing regional data (See above table 3).

14.3.3. Importing data

The search for data was carried out as follows: (1) find the site of the national statistical agency; (2) use, where available, the English version of the site; (3) locate all the sections that present data on the site, (4) locate, in each of these sections, the general indicator sought (population, Gross Domestic Product, manpower); (5) locate the specific variables related to the general indicator (age and sex, region, year); (6) index the table in the administrative site, (7) append its URL address, (8) copy and append the table in PDF format. All of these operations are complex, in particular locating elements on the web sites of agencies and indexing. Indeed, each agency has a site having its own characteristics and which imposes diversified ways of doing research; while some sites permit easy and fast navigation, others are highly complex. As for indexing, it presupposes an exhaustive analysis of the content of each of the tables, and its categorization. The final list of indicators and sub-indicators is the result of these multiple analyses, and was developed after repeated work spanning more than two years. The refinement of the indicators and sub-indicators is an on-going operation, in particular within a context where indicators and tables are added to report on the pertinent statistical production of agencies.

14.3.4. Chosen indicators and sub-indicators

At the time ArcticStat was put into service on the Internet, it contained 8 main statistical indicators and 63 sub-indicators (Appendix 1). The prime goal of ArcticStat is to facilitate comparative research on the demographical, social and economic characteristics of the populations of the Arctic

regions. The indicators and sub-indicators were chosen with this goal in mind. This section provides some examples of the selected indicators and sub-indicators, as well as the criteria used in their selection.

To permit comparative research concerning the population, which is namely a main indicator, two fundamental demographical sub-indicators were first chosen according to this goal: the number of people by age and sex. These are basics common to most statistical agencies and which are used in fundamental calculations such as the dependency ratio, the femininity ratio, and so on. Afterwards, the numbers of sub-indicators increased according to the existence and availability of data and access to data to better describe not only the demographic structure (civil status, density, ethnicity, citizenship, geographic origin, language, etc.), but also the movements of the population (mobility, migration).

To permit comparative research concerning the economy of Arctic regions, the main indicator called “Regional Accounts” is declined into various sub-indicators among which the Gross Product (GDP). The GDP describes the economic structure of a country or a region and makes it possible to compare this structure with those of other countries or regions. There are three ways of calculating the GDP: by industries (what used to be at the cost of factors), by income and by spending. The GDP by industry allows researchers to compare the relative weight of the various branches of economic activity of two or more regions. The GDP by income is mainly useful for calculating income (personal and disposable) per inhabitant. The GDP by spending makes it possible to analyze the weight of the various economic agents, namely governments, enterprises and consumers.

ArcticStat also proposes a series of indicators and sub-indicators in other fundamental social fields, such as vital statistics, housing, households and families, education, labor force, personal income, etc. At the time that ArcticStat went into service, it did not have data specifically concerning the health field. Indicators and sub-indicators concerning this crucial and complex field will be added in the year following its entry into service.

14.4. Limitations of the data

While ArcticStat brings together data on a wide range of socioeconomic realities of Arctic regions, it does not cover all possible aspects. First, the

data included in the databank follow ArcticStat's editorial orientations. Secondly, these data are limited by the production of statistical agencies and the availability of data free of charge and accessible in English.

ArcticStat is updated periodically to contain, wherever possible, the most recent data available. However, ArcticStat is not responsible for the policies and practices of statistical agencies, the errors in the tables originating from these agencies, or the use made of such tables. The conceptual and methodological clarifications presented in the original tables from the national agencies have been kept in full and can be readily consulted. Moreover, the ArcticStat site will propose a page of meta-data, which will list, by country, the main concepts and methods applicable to the indexed tables. That way, the user can make an appropriate reading of each of the tables, adequately understand the content thereof, and carry out the necessary operations to reconcile the conceptual differences and make valid comparisons.

14.5. Analysis of the content of ArcticStat

A summary analysis of the content of ArcticStat at the time of its launching, on October 1, 2007, reveals several variations in the statistical coverage by national agencies.

14.5.1. Total number of tables per country

The total number of tables available in ArcticStat varies considerably from one country to the next: approximately 1,300 in Alaska and 57 in Finland (Table 4). This situation is explained in part by the different approaches of the agencies. The U.S. Census Bureau produces, for a specific indicator, a separate table each year. Statistics Canada, which ranks second in terms of the total number of tables in ArcticStat, produces a table per region, per census, with the end result that the same table appears at least 3 times in ArcticStat (once for the Yukon, once for the Northwest Territories and once for Nunavut), 4 times if the table is available for Labrador and 5 times if it is available for Nunavik. Other agencies, which *a priori*, are less well represented in ArcticStat, do not have fewer data in reality. For example, Statistics Norway makes available to its users pull-down menus making it

possible to build a single table which may contain, for the same indicator, the four Norwegian regions covered by ArcticStat and a large number of years. Statistics Iceland, Statistics Greenland and Statistics Faroe Islands have also adopted this method for presenting their data.

The great variation in the number of tables available in ArcticStat is also explained by the availability of data translated into English. In Alaska and in Canada, the data are produced directly in English (and also in French for Statistics Canada), which does not limit the number of potentially relevant tables for ArcticStat. On the web sites of Statistics Iceland and Statistics Norway, the number of tables translated into English is very high. The same cannot be said for other agencies. Statistics Sweden and Statistics Finland are agencies which produce a large quantity of data in the original language but which only a small percentage is being translated into English. That explains why Sweden and Finland are among the countries with the smallest statistical coverage in ArcticStat. As for Rosstat, it does not translate into English any regional data. The data that are available in English on the agency's site always deal with the Russian Federation as a whole. Yet the total number of tables coming from this agency is greater than that of Statistics Sweden, Statistics Finland, Statistics Greenland and Statistics Faroe Islands. This situation may be explained by the fact that the ArcticStat team took charge of their translation with the close collaboration of Rosstat; the end result of this procedure is that the Russian data included in ArcticStat are exclusive in terms of their availability of English.

A third reason explains the variation in the total number of tables in ArcticStat: data that are only available in return for payment. A significant portion of the production of Statistics Canada (mainly economic data) is not found in ArcticStat because these data are only available for a price, which is often high, and because agreements must be reached with this agency concerning the large-scale distribution of these data. The same is true for certain data produced by Statistics Finland, but to a lesser extent.

Finally, the resources available to the agencies explain the variation per country of the number of tables found in ArcticStat. The U.S. Census Bureau and Statistics Canada are agencies that have considerable human, material and financial resources in comparison with European agencies (with the exception of Rosstat which employs more than 10,000 people) and in particular Statistics Greenland and Statistics Faroe Islands. The

latter have very few resources and employ a very small number of individuals (only 15 people worked for Statistics Faroe Islands in 2006). As a result, the production of these agencies is very limited; Statistics Greenland produced its last Statistical Yearbook in 2001–2002, and Statistics Faroe Islands withdrew the English version of its web site for more than three years.

Table 4. Number of tables by indicator and country. First Version of ArcticStat, October the 1st 2007.

	Alaska	Canada	Faroe Islands	Finland	Green-land	Iceland	Nor-way	Swe-den	Rus-sia
Total	1306	630	70	57	75	279	275	74	108
Dwellings	255	54	0	11	6	2	21	2	18
Education	84	97	19	6	13	89	93	7	44
Households and Families	269	89	0	5	0	4	30	0	0
Labour Force	162	117	13	7	9	28	30	16	33
Personal and Household Income	555	174	1	1	5	20	28	10	23
Population	220	215	24	25	29	63	57	25	28
Regional Accounts	9	2	6	4	5	34	12	9	22
Vital Statistics	8	13	10	10	14	46	15	10	23

In summary, despite a significant variation in the total number of tables, the Arctic regions of North America, those of Norway and Iceland are represented in a similar manner in ArcticStat and benefit from good statistical coverage. As for the other Arctic regions, they are much less documented, particularly the Finnish regions, as the data are often limited by the policies of the agencies that produce these data and the resources available to them.

14.5.2. Statistical coverage of indicators and sub-indicators

The statistical coverage of the indicators and sub-indicators found in ArcticStat are also characterized by a major variation from one country to the next (Appendix 2). There is an abundance of data on households and families for Alaska and to a lesser extent for Canada, but such data are lacking for the Faroe Islands, Greenland, Sweden and the Russian Federation. There is also a great variation in the data on housing ranging from over two hundred tables for Alaska to only two tables for Iceland and Sweden, and no table for

the Faroe Islands. The incomes of individuals and households generally benefit from a better coverage, but there is only one table of this category for Finland and the Faroe Islands. Regional economic data have only a minimal coverage everywhere and in particular in Canada. This situation is the result of a combination of factors, some being due to editorial decisions made by the ArcticStat team and others being attributable to the policies of the agencies. All of the tables produced by an agency concerning an indicator are not necessarily found in ArcticStat. Not only must they have been translated into English, they must also contain data aggregated at a regional level and be compiled on an annual basis. These three criteria dictate the selection of the tables that will be included in ArcticStat. It follows that a more or less significant number of tables is rejected, depending on the agency. For their part, agencies do not place the same importance on all indicators. Statistics Canada produces many statistics on the income of individuals and households but much less information on vital statistics. Statistics Iceland produces extensive data on education and vital statistics but few data on housing and households. Rosstat places great importance on data related to education but not on the realities concerning families and households. Statistics Norway generates much more data on education than it does on manpower. Statistics Greenland is more interested in vital statistics than statistics dealing with housing. Clearly, the statistical production of the various agencies is not uniform and this is reflected in the content of ArcticStat.

These policies particularly impact the data on Aboriginal populations (Appendix 2). An examination of the content of ArcticStat reveals that these data are characterized by a clear split between North American and European Arctic regions. Indeed, while there are numerous data for Alaska and Canada, they are almost non-existent for the other countries. The U.S. Census Bureau inserts in its questionnaires several questions, which are intended to isolate the characteristics of the Aboriginal populations living on its territory. The results include the Census American Indian and Alaska Native Summary File, which are entirely devoted to Aboriginal realities. Statistics Canada carries out, on a recurrent basis, several surveys specifically intended to better document Aboriginal realities, the most important of which is the Aboriginal People Survey. The European agencies, for their part, show little or no interest in this question. To learn about the realities of the Aboriginal people who inhabit their territories, it is necessary to resort to the data produced within the context of scientific research, which

most of the time tends to be limited to a specific aspect and which are non-recurrent in nature.

In summary, despite all the efforts made by the ArcticStat team to “exhaust” the data produced by the agencies concerning a given indicator, major gaps remain with the end result that the circumpolar comparison of certain realities remains difficult or can only be achieved by comparing certain regions, or should rely on other sources from monographs and scientific literature.

14.6. Precautionary remarks concerning circumpolar comparative research

In an ideal world, all data would be available, both those concerning local populations and those specifically applying to Aboriginal peoples, and they would be available for all regions; each indicator would be based on an identical concept regardless of the population or the region to which it applies. However, not all of the data are available; those dealing specifically with Aboriginal populations are missing; the indicators are characterized by significant conceptual differences. All of these limitations must be considered when processing data to permit their comparison, and at the time of their interpretation. In this section, we will illustrate the type of difficulties that a user encounters when making international comparisons, by taking as an example the data concerning the population, economic activity and manpower.

14.6.1. Analysis and interpretation of demographic data

Most of the population data come from national censuses. The other data come from specific surveys, for example the Aboriginal People Survey carried out by Statistics Canada in 2001 and in 2006.

It is relatively easy to find data on total populations, but for various reason this is not the case for Aboriginal populations (Appendix 2). The Norwegian and Swedish national agencies do not record data on their Aboriginal populations with the end result that these data are included in those

related to the total population¹²⁸. The Finnish national agency reports on the Aboriginal population according to mother tongue¹²⁹. In Greenland, the data do not distinguish the ethnic affiliation, but rather the fact of whether or not the person was born in Greenland. In the Russian Federation, the ethnic composition of each of the subjects of the Federation is not very detailed and is presented in percentage only. To obtain a more precise statistical description, it is necessary to call on other sources, such as those existing at the Center for Russian Studies¹³⁰, a research group attached to the Norwegian Institute of International Affairs (NUPI)¹³¹.

Moreover, the “Aboriginal” concept, when used, differs from one country to the next. The consequence of this situation may be to overestimate the number of Aboriginal people (this would be the case for Greenland) or to underestimate it (this would be the case for Finland). The total or near-total absence of data on the Aboriginal populations of northern Norway and Sweden limits the circumpolar comparisons to the total populations and prevents a systematic circumpolar comparison on Aboriginal populations. The demographic data of the Russian Federation date back to the last census conducted in 1989. Since then, there has been an exodus of Arctic populations to the south, which results in an over-estimate of the current

¹²⁸ Statistics Norway recently made available on its web site data on the Sami population but these data are limited in number and, for the most part, are presented in the form of texts or illustrations (except for the data on the Sameting Election).

¹²⁹ According to a representative of the Finnish agency, this approach significantly underestimates the likely number of Aboriginal people of this country. AMAP (1997) emphasizes that it is difficult to account for the Sami population because ethnicity is not always part of the concepts used in national population censuses and because there are several definitions of Sami ethnicity. On the basis of mother tongue, AMAP reports that there were approximately 35,000 people who spoke one of the Sami dialects: 20,000 in Norway, 10,000 in Sweden, 3,000 in Finland and 1,000 in Russia (AMAP, 1997). In its 2002 report entitled “Human Health in the Arctic”, AMAP estimates that this number is between 50,000 and 70,000 people. These figures are greater than what we obtained: none in Norway and in Sweden and about 1,600 in Finland. According to the Center for Russian Studies, there are approximately 1,600 in Russia.

¹³⁰ The Center for Russian Studies was created in 1995 with the financial support of the Norwegian Ministry of Defence and Foreign Affairs. The creation of this working group was based on the need to produce more knowledge about Russia. This need emerged following the development of bilateral relations between Russia and Norway and multilateral relations between the Barents Region and the Baltic Region.

¹³¹ The NUPI was created in 1959 by the Norwegian Parliament in order to promote a better understanding of international questions on the part of leaders and the general public. The NUPI has prepared and set up a wide range of research activities and has published extensive information on international questions. The institute is independent of Norwegian foreign policy and the government’s economic relations.

number of inhabitants in these regions, Aboriginal and non-Aboriginal inhabitants combined.

14.6.2. Analysis and interpretation of economic data

The economic data come from various surveys conducted by national statistical agencies: Gross Domestic Product, labor market, education and employment, provincial or regional economic accounts. When the national agencies do not offer the information sought, monographs must be used. This is the case notably of Nunavik. However, this situation is exceptional.

The most frequently used economic indicator at the national level is the Gross Domestic Product (GDP). The GDP describes the economic structure of a country or a region and makes it possible to compare it with those of other countries or regions.

Comparative research based on measurements of the GDP pose two major difficulties. The first difficulty concerns the three calculation methods commonly used to determine the GDP. An exhaustive search revealed that only Statistics Canada provides the data calculated according to these three methods, with the other countries providing one and occasionally two methods. The second difficulty concerns the regional aspect of the data. The national GDP is an indicator calculated by all of the national statistical agencies, but this is not the case for the regional GDP. The latter is either absent from the available economic data, or provided in its entirety without details on the branches of economic activity, or available on a sporadic basis rather than recurrently.

Research on manpower is also characterized by a major limitation: national agencies rarely provide economic data concerning the Aboriginal population. The number of jobs by branch of economic activity refers, in most cases, to the total populations of the regions. Consequently, the comparison of the standards of living between the Aboriginal people and the rest of the population is not possible by resorting solely to the available sources. As the case may be, more refined analyses must report on the data available elsewhere, notably in the scientific literature.

Research on income poses the same type of difficulties as those noted for research on the GDP: absence of data, data calculated at the national level only, data available for only one of the indicators, non-existence of data by ethnic group.

Moreover, the interpretation of economic data calls for far greater caution since the conceptual differences require that choices be made and these choices affect the results. Some countries propose branches of economic activity that are the aggregation of activities, some of which traditionally belong to the primary sector and others to the secondary sector. For example, Statistics Sweden aggregates the manufacturing sectors and natural resource extraction activities. This approach occasionally makes the detailed analysis of either one of these activities impossible and limits the comparison of the results without resorting to other sources. These national specificities force the researcher to re-categorize the data originating from the national accounts system. To perform this task, the researcher can use concordance tables that are or will be available on the meta-data page of ArcticStat.

Economic data are characterized by another major limitation: they only concern total populations. National statistical agencies do not generally provide economic data that apply specifically to population segments, such as Aboriginal populations. To obtain such data, it is necessary, most of the time, to resort to monographs that are limited in space and time. Occasionally, the researcher will be able to opt for the examination of “control” regions whose population, for example, would be Aboriginal in the majority, in order to check if there are specificities. Consequently, the examination of the Arctic economy must be made cautiously since numerous research initiatives have shown that everywhere the standard of living of the Aboriginal populations is lower than that of the rest of the population on the territory. If this is true, the available data will underestimate the economic well-being of non-Aboriginal populations whereas it will overestimate that of Aboriginal populations.

14.7. Conclusion

The added value offered by ArcticStat includes: greatly facilitating fact-finding in the field of Arctic statistics; drastically reducing the time required to identify sources and to navigate through them, a process that is often complex and that differs from one statistical agency to the next; and permitting systematic and valid comparisons at the level of the circumpolar

regions (such comparisons were very difficult in the past owing to the wide dispersion of data).

The simple concept developed for the construction of ArcticStat may offer replicable solutions to the problem of gathering multiple data. Its indexation procedure, which is systematic and exhaustive, offers a major potential, as does its map-based research device.

ArcticStat facilitates research for the scientific community. Moreover, it enables national, regional and local governments, as well as the Arctic Council to rely on updated, valid and potentially comparable information to guide public policies. This clearinghouse may increase information exchanges between Arctic researchers and countries. Finally, ArcticStat is being used as a pedagogical resource for teaching, research and dissemination, especially for those stakeholders involved in Arctic programs, such as the universities affiliated with the University of the Arctic.

Challenges have been successfully dealt with over the last years, such as raising core funding, data identification, indexing procedures, design and development of a user-friendly searchable web page including a map-based interface, design and development of a fully functional and adaptable administrative section.

But other challenges still lie ahead. The main challenge that ArcticStat faces is to successfully hold discussions with all the data-providers, mainly the national statistical agencies of the eight Arctic countries. These discussions are important, since they can ensure the long-term sustainability of the database.

These discussions should lead to permanent collaboration between ArcticStat and each statistical agency. They should also lead to the creation of an Advisory Board, where the ArcticStat management team and participant agencies can meet on a regular basis to discuss all methodological and conceptual orientations of the database. The Advisory Board would be responsible for studying and proposing solutions to the problem of translating the tables that are already available in their original language, of producing new data, particularly on Aboriginal populations, that would be needed to better understand the realities of the Arctic population and of trying to overcome the conceptual differences between the national statistical agencies.

But the discussions are complex, just as are the solutions required to ensure the sustainability of ArcticStat. All of the agencies with which we

have held discussions, have given their consent, allowing ArcticStat to make use of their databases. However, certain agencies have imposed at times significant restrictions, which will also need to be discussed: for example, some tables of fundamental interest are only available on a pay-per-use basis. In the meantime, we have set up a monitoring program in order to keep the database as up to date as possible. That way, the progress for research that has come with the creation of ArcticStat should be maintained and gradually improved.

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Appendix 1 (continued over the next pages)

Indicators and sub-indicators. First Version of ArcticStat, October the 1st 2007

Dwellings

Characteristics of Occupants

Refers to the characteristics of individuals or households that occupy the dwelling: age, sex, civil status, worker status, type of family or household, income of the occupants, year in which they moved in, etc.

Ethnicity

Refers to the ethnic affiliation or the nationality or the immigrant status of the individuals who occupy the dwelling.

Number of Occupants

Refers to the number of individuals who live in the same dwelling or to the individual/room ratio.

Number of Rooms/Floor Space

Refers to the number of rooms in a dwelling or its size measured in square feet or metres.

Tenure Status

Refers to the status of the occupants of the dwelling in terms of ownership: owner, tenant, etc.

Type

Refers to the type of dwelling: detached house, apartment, rooming house, social, municipal, public housing, etc. This sub-indicator also includes data dealing with the occupancy, the location and the condition of the dwellings.

Year of Construction

Refers to the year in which the dwelling was built.

Education

Accounts

Refers to the costs related to education, all data combined, private or public sector.

Age

Refers to the breakdown of students or staff according to their age. This sub-indicator is also indexed to identify the tables containing data on adult education even if there is no age as such in the table.

Educational Attainment

Refers to the breakdown of students, staff or the population as a whole according to the highest level of schooling attained or completed.

Enrolment/Drop-Out

Refers to the number of enrolments or students or to the number of persons who drop out, whatever the level of education, the type of program or the type of school.

Ethnicity

Refers to the ethnic affiliation or the nationality or the immigrant status of students or teachers. This sub-indicator also refers to any other information – number of enrolments, number of teachers, success rate, drop-out rate – related to ethnicity, nationality or immigrant status.

Field of Study/Program

Field of Study refers to the breakdown of students or staff in the different study programs: social studies, cabinet-making, electricity, language and literature, accounting, etc. Program refers to general, vocational or professional programs.

Language

Refers to the language of instruction or the language spoken by students or staff.

Level of Education

Refers to the level of instruction: preschool, elementary, secondary, tertiary, etc.

Sex

Refers to the breakdown of students or staff according to their sex.

Staff

Refers to staff – teachers, directors, specialized staff, support staff – all data combined.

Type of School/Ownership

Type of School refers to the various types of schools regardless of the level of instruction offered: specialized schools, popular education, remote education, grammar schools, comprehensive school, etc. Ownership refers to the ownership status of schools: private, public, municipal, county, state or other schools.

Households and Families

Age

Refers to the age of the head of the household or family. This sub-indicator is also indexed to identify the tables containing data on children or seniors even if there is no age as such in the table.

Ethnicity

Refers to the ethnic affiliation or the nationality or the immigrant status of the individuals who make up a household or a family.

Sex

Refers to the sex of the head of the household or the family. This sub-indicator is also indexed to identify the tables containing data on families headed by women.

Size

Refers to the number of persons per household or per family or to the average number of persons per household or per family.

Type

Refers to the types of households: person living alone, married couple with or without children, single-parent family, etc.

Labor Force

Age

Refers to the age of employees, unemployed persons, retired persons, volunteers, etc.

Class of Worker

Refers to employees according to whether they work full time or part time, whether they are salaried employees, self-employed workers, business owners, seasonal workers, contract workers, temporary workers, supernumerary employees, etc.

Education

Refers to the level of schooling attained or completed or the educational training of employees, unemployed persons, retired persons, etc. This sub-indicator is also indexed to identify the tables dealing with work/studies.

Ethnicity

Refers to the ethnic affiliation or the nationality or the immigrant status of employees, unemployed persons, retired persons, etc.

Industry/Agent

Industry refers to the distribution of jobs, employees or unemployed persons in the various economic activities: agriculture, forestry, commerce, transportation, food service industry, education, health, etc. Agent refers to the public administration, all levels combined: municipal, provincial, federal, etc.; and to businesses, all types combined: private, public, cooperatives, corporations, non-profit organizations, etc.

Labor Status

Refers to the status of an individual in relation to the labor market: unemployed person, retired person, volunteer, housewife, etc.

Occupation

Refers to the distribution of jobs, employees or unemployed persons in the various types of jobs: manager, health care worker, store employee, teacher, mechanic, etc.

Sex

Refers to the breakdown of employees, unemployed persons, retired persons, volunteers, etc., according to their sex.

Personal/Household Income

Age

Refers to the age of individuals or that of the head of the household.

Education

Refers to the income of individuals according to their level of schooling.

Ethnicity

Refers to the ethnic affiliation or the nationality or the immigrant status of the individuals or households.

Households/Families

Refers to the income of households or families.

Industry/Occupation

Refers to the income of individuals according to the type of industry in which they work or the type of job that they hold. This sub-indicator also includes incomes earned from jobs related to the public administration, all levels combined.

Labor Status/Class of Worker

Labor Status refers to the income of individuals according to whether they are employees, retirees, unemployed persons, volunteers, housewives, etc. Class of Worker refers to the income of individuals according to whether they work full time or part time, to whether they are salaried employees, self-employed workers, business owners, seasonal workers, contract workers, temporary workers, supernumerary employees, etc.

Person

Refers to the income of individuals.

Poverty Status

Refers to the poverty status of individuals, households or families.

Sex

Refers to the breakdown of individuals or heads of households according to their sex.

Source

Refers to the various sources of income of an individual, a family or a household: earnings, transfer income, interest, rent, business income, pension income etc.

Population

Age

Refers to the breakdown of individuals according to their age regardless of the unity of the age groups.

Civil Status

Refers to the breakdown of individuals according to their civil status: single, married, common law spouse, divorced, etc.

Density

Refers to the population density, namely the number of persons per square kilometer or per square mile.

Ethnicity/Citizenship

Refers to the breakdown of individuals according to their affiliation with an ethnic group or according to their citizenship. This sub-indicator also includes the breakdown of the population according to nationality or race.

Geographic Origin

Refers to the breakdown of the population according to the place of birth of individuals. This place may be a country or any other geographical division of the world, as well as the categories: born in, born out, place of birth, native, foreign born.

Language

Refers to the breakdown of individuals according to the language(s) understood, written, spoken and used.

Mobility/Migration

Refers to the tables dealing with population movements containing the following categories: internal migration, immigration, emigration, residence one year ago, moved, entered, etc.

Projection

Refers to the changes in the size of the population. This sub-indicator is based on projected data and refers to the future.

Religion

Refers to the breakdown of individuals according to their religion including atheism.

Sex

Refers to the breakdown of individuals according to their sex.

Territorial Subdivisions

Refers to the breakdown of individuals – not that of households – on the territory: municipalities, settlements, capital and regions, densely populated regions and sparsely populated regions, etc.

Regional Accounts

Economic Activity

Refers to the breakdown of sectors, branches and industries that make up the economic activity of a country or a region. This sub-indicator also comprises the Four Pillars of Greenland.

Gross Product

Refers to the Gross Domestic Product of a country or a region. This sub-indicator comprises various calculations methods: revenue method, expenditure method, at the cost of factors, etc. various monetary bases: in constant money, in current money, etc. This sub-indicator also includes the Gross National Product.

Output

Refers to the value of production of industrial branches and sectors.

Value Added

Refers to the value added in the economy by industrial branches and sectors. This sub-indicator also includes the gross value added.

Vital Statistics

Adoption

Refers to the number of children adopted, whether officially or unofficially.

Age

Refers to the age of individuals in relation to vital statistics. This sub-indicator is also indexed to identify the tables dealing with infant mortality.

Birth

Refers to the number of births and the fertility rate.

Death

Refers to the number of deaths and life expectancy.

Divorce and Separation

Refers to the number of divorces or separations or to certain related characteristics: presence or absence of children, custody of children, etc.

Ethnicity

Refers to the ethnic affiliation or the nationality or the immigrant status of the individuals in relation to vital statistics.

Marriage and Cohabitation

Refers to the number of marriages or common law unions or to certain related characteristics: duration of the union, type of marriage, etc.

Population Change

Refers to changes in the size of the population. This sub-indicator is based on real data and refers to the past. It also comprises data dealing with increases and decreases of population.

Sex

Refers to the sex of individuals in relation to vital statistics.

Appendix 2 (Continued over the next pages)

Number of tables by indicator, sub-indicator and country. First Version of Arctic-Stat, October the 1st 2007

	Ala-ska	Ca-nada	Faroe s	Fin-land	Green-land	Ice-land	Nor-way	Swe-den	Rus-sia
Total	1306	630	70	57	75	279	275	74	108
Dwellings	255	54	0	11	6	2	21	2	18
Characteristics of Occupants	95	7	0	0	0	0	6	0	0
Ethnicity	33	5	0	0	0	0	0	0	0
Number of Occupants	54	18	0	1	1	0	2	0	0
Number of Rooms/Floor Space	46	8	0	2	2	2	5	0	13
Tenure Status	194	36	0	1	0	0	11	0	1
Type	56	26	0	5	2	2	10	2	3
Year of Construction	39	20	0	4	2	0	5	0	1
Education	84	97	19	6	13	89	93	7	44
Accounts	0	5	2	1	2	0	6	0	0
Age	37	84	2	0	0	39	30	2	0
Educational Attainment	52	75	1	2	4	27	4	4	5
Enrolment/ Drop-out	44	46	14	2	8	51	72	3	31
Ethnicity	13	17	0	0	1	1	4	0	0
Field of Study/Program	0	36	8	0	6	15	20	0	17
Language	4	2	0	1	0	6	9	0	0
Level of Education	34	2	16	3	7	82	78	3	37
Sex	50	84	12	1	1	60	26	5	0
Staff	0	1	1	0	2	26	8	0	0
Type of School/ Ownership	14	0	13	2	1	31	49	3	40
Households and Families	269	89	0	5	0	4	30	0	0
Age	157	33	0	1	0	2	16	0	0
Ethnicity	53	5	0	0	0	0	0	0	0
Sex	147	24	0	0	0	4	1	0	0
Size	78	37	0	1	0	2	6	0	0
Type	190	70	0	3	0	4	24	0	0
Labour Force	162	117	13	7	9	28	30	16	33
Age	31	67	8	0	2	9	6	3	2
Class of Worker	9	61	3	2	1	0	6	2	0
Education	55	24	0	0	4	6	7	0	2
Ethnicity	21	17	0	0	0	1	2	0	0
Industry/Agent	47	48	3	2	6	6	11	8	17
Labor Status	63	54	7	4	6	13	6	0	22
Occupation	33	46	0	0	0	4	5	5	0
Sex	120	107	12	1	5	26	15	12	3

	Ala-ska	Ca-nada	Faroe s	Fin-land	Green-land	Ice-land	Nor-way	Swe-den	Rus-sia
Personal and Household Income	555	174	1	1	5	20	28	10	23
Age	109	54	0	0	1	4	6	0	0
Education	18	33	0	0	1	0	1	0	0
Ethnicity	91	35	0	0	0	0	0	0	0
Household/ Families	361	58	0	0	2	6	12	4	13
Industry/ Occupation	14	1	0	0	1	8	4	1	0
Labor Status/ Class of Worker	99	49	0	0	0	1	3	0	1
Person	193	132	1	1	4	16	18	8	21
Poverty Status	156	0	0	0	0	0	0	0	15
Sex	204	125	0	0	0	13	6	2	0
Source	204	107	0	1	1	16	14	5	17
Population	220	215	24	25	29	63	57	25	28
Age	90	122	13	12	16	39	28	7	4
Civil Status	59	46	1	0	1	4	6	2	0
Ethnicity/ Citizenship	104	55	4	3	1	17	6	3	1
Geographic Origin	60	42	3	3	16	12	3	0	0
Density	3	14	0	1	1	1	3	3	1
Language	37	88	0	6	0	0	0	0	1
Mobility/ Migration	53	94	7	8	12	11	19	10	3
Projection	0	0	0	0	3	3	4	0	0
Religion	0	28	0	0	0	5	0	0	0
Sex	99	135	16	12	16	53	23	12	14
Territorial Subdivision	1	19	10	3	10	12	21	8	4
Regional Accounts	9	2	6	4	5	34	12	9	22
Economic Activity	8	0	1	1	3	19	8	2	16
Gross Product	4	2	6	0	4	28	3	8	19
Output	0	0	1	1	1	6	5	0	14
Value Added	0	0	1	4	0	8	6	0	1
Vital Statistics	8	13	10	9	14	46	15	10	23
Adoption	0	0	0	0	0	6	1	0	0
Age	2	1	5	2	10	30	3	2	3
Birth	6	9	6	7	6	15	4	6	15
Death	0	8	7	4	9	16	7	7	17
Divorce and Separation	0	1	1	2	0	17	3	1	3
Ethnicity	1	0	0	0	0	0	0	0	0
Marriage and Cohabitation	2	1	1	2	0	14	2	1	3
Population Change	0	0	3	5	3	3	1	4	16
Sex	2	5	6	2	9	30	5	6	14

15. Some data sources on people, peoples, communities, regions and human activities in Greenland

*Birger Poppel*¹³²

Until recently little effort had been made to do comparable studies of the Arctic regions within the Arctic social sciences. Most Arctic social science have focused on community or regional analyses, while the official statistics have been “national” in the sense, that the national statistical institutes of the Arctic States simply included the Arctic regions as part of their reporting of national statistics.

For several reasons, this picture has been changing during the last part of the 20th century. The key role of the Arctic is now recognized from several perspectives. Geopolitical issues, access to resources, trans-border pollution and climate change are important examples. Also changed, is the political organization among Arctic Indigenous peoples, and the achievements they have made in their struggles for political autonomy and the rights to the lands, they have long occupied. As a result, there are now political and corporate regional institutions defining Arctic regions. Last but not least, the creation of the Arctic Council¹³³ (AC) has led to discus-

¹³² Research Project Chief for the Survey of Living Conditions in the Arctic SLiCA, at Ilisimatusarfik, the University of Greenland. Second activity leader for the POENOR-project (The Political Economy of Northern Regional Development).

¹³³ The Arctic Council was founded in 1996 based on the experiences from the collaboration between the eight Arctic States and the Indigenous peoples of the Arctic in the Arctic Environmental Protection Strategy, AEPS. Arctic Council is a high level international collaborative organization including the eight Arctic States, the Permanent Participants (five organizations representing the indigenous peoples of the Arctic)

sions about a number of different policies, areas and conditions of common concern throughout the Arctic. There has not least been concern about the living conditions of the indigenous peoples and other Arctic residents. The discussions on people and Arctic societies have highlighted the need to address the lack of knowledge, when it comes to human activities and societal development as well as impacts due to rapid change.

To fill the gaps of knowledge, research projects and assessments focusing on different aspect of living in the Arctic have been introduced to the different working groups of the AC for endorsement¹³⁴. Furthermore, major undertakings of the Arctic Council on climate change, pollution and resource exploitation have included analyses of impacts on people and Arctic communities¹³⁵.

The Arctic Council's endorsed projects focusing on human activities, indigenous peoples and other Arctic residents have led to an increase in publications on these matters. The following are projects that have been endorsed by the Arctic council, and which contribute to the knowledge base on Arctic societies and peoples (the year of endorsement/publication is listed in brackets)¹³⁶: Survey of Living Conditions in the Arctic: Inuit, Sámi and the Indigenous Peoples of Chukotka, SLiCA (2000/2007); Family-Based Reindeer Herding and Hunting Economies, and the Status and Management of Wild Reindeer/Caribou Populations (2002/2004); Women's participation in decision-making processes in Arctic fisheries resource management (2002/2004); Arctic Human Development Report, AHDR (2002), The Economies of the North, ECONOR, (2004/2006); Women and Natural Resource Management in the Rural North (2004/2006).¹³⁷

¹³⁴ The scientific work of the Arctic Council is carried out in six expert working groups focusing on such issues as monitoring, assessing and preventing pollution in the Arctic, climate change, biodiversity conservation and sustainable use, emergency preparedness and prevention, and the living conditions of the Arctic residents. See http://arctic-council.org/section/working_groups for information about the AC-endorsed projects and published reports.

¹³⁵ The Arctic Climate Impact Assessment (ACIA), and The Arctic Monitoring and Assessment Program (AMAP)

¹³⁶ A list of all publications can be found on <http://portal.sdwg.org/content.php?doc=23>.

¹³⁷ A publication on Arctic Social Indicators, ASI endorsed by the AC in 2006 will be published in 2009.

15.1. Data sources on people and human activities in Greenland

Greenland is often – and for good reasons – characterized as one of the societies in the world that has been well covered by statistics. The societal development is fairly well described and documented. It is a fact that most central areas and fields important to societal development in Greenland (e.g. population, occupation, harvest, consumption and temperature) from the early time of colonization have been registered, reported, processed, analyzed, and disseminated.

At the same time however, robust time series covering several decades only exist in relatively few areas. Reasons for the scarcity of robust time series include, among others, differences in data collection, changes of definitions and categories, and variations in the quality of data collected. Furthermore, data collected have been handled differently over the years due to organizational changes and different foci depending on the changing purposes of the end-users. Finally, it should be noted that definitions of variables and documentation for the data collection (what in total is called “meta data”) have not always been kept for future users.

The basic data include the following sources:

- Official statistics.¹³⁸
- Reports (so far unpublished) – archival data.¹³⁹

¹³⁸ Since the beginning of the 20th century statistics on individuals, sectors and institutions and the overall Greenlandic economic development have been mainly produced and published by Grønlands Styrelse (The Greenland Administration, 1908–1955); Ministeriet for Grønland (Ministry of Greenland 1955–1987), Grønlands Hjemmestyre (Greenland Home Rule Government, since 1979), Statens Statistiske Bureau (The Danish Statistical Bureau, 1850–1913), Det statistiske Departement (The Danish Statistical Department, 1913–1966) Danmarks Statistik (Statistics Denmark, since 1966), Grønlands Statistik, (Statistics Greenland, since 1989). Among the published statistical summaries and annual reports – e.g. Statistiske Meddelelser (Statistical Information) (1912); Sammen drag af Statistiske oplysninger om Grønland (Summary of statistical information regarding Greenland) 1942–1946: I–VII; Folke-, bolig- og erhvervstællinger (Population censuses including information about housing conditions and professions) conducted by the official statistical agencies. Grønland. Årsberetninger udarbejdet af Ministeriet for Grønland i perioden 1968–1989 (Greenland. Annual reports by the Ministry of Greenland/Prime Ministers Department during the period: 1968–1989); Grønland – Kalaallit Nunaat. Statistiske årbøger (Greenland. Statistical Yearbooks) have been published by Statistics Greenland since 1990. Since the foundation of Statistics Greenland all data published by SG are stored electronically.

¹³⁹ Among the most prominent examples are archival data from the Greenland Administration; the Ministry of Greenland; the Royal Greenland Trading Company (Kongelig Grønlandske Handel

- Research reports and scientific investigations – including assessments, societal descriptions and review reports on Greenland as well as on communities, towns and settlements, municipalities and regions^{140 141}
- and surveys/survey data¹⁴² – the basic data are most often stored electronically.
- Reports – developed to prepare for new legislation.¹⁴³
- Grey literature – e.g. reports and assessments prepared for administrative and political purposes.¹⁴⁴

In the following sections, three of these sources will be dealt with in more detail: the public administrative registers, and two surveys on living conditions in Greenland: the *Greenland survey of living conditions* conducted in

(KGH)); and the Greenland Technical Organisation (Grønlands Tekniske Organisation (GTO)). The archival data includes e.g. catch reports (fangstlister) and data on sales to the fish processing plants.

¹⁴⁰ A few works will be listed to exemplify the comprehensive production of research within this category: Amdrup, Bobe, Jensen og Steensby (eds.) (1921): *Grønland i Tohundredaaret* for Hans Egedes Landing. (Greenland in the bicentenary of Hans Egede's landing) Published by The Commission for the Management of the Geological and Geographical Surveys in Greenland.

Berthelsen (1935–1943): *Grønlandsk Medicinsk Statistik og Nosografi*. (Medicinal Statistics and Nosology) Meddelelser om Grønland, MoG vol. 117 (1–4). KVUG.

Mattox, W. G. 1973. *Fishing in West Greenland 1910–1966*. The Development of a new native industry. Meddelelser om Grønland bind, MoG vol. 197, 1. København. C.A. Reitzels Forlag.

Research reports from “The Committee on social research in Greenland” published in the period 1961–1968 – see Appendix B.

Trap Danmark, Grønland. (Greenland) Volume XIV, Gads Forlag, 1970.

From, Just Jensen, Friis and Kjær (1973): *Levevilkår og sociale problemer i Vestgrønland*. (Living Conditions and Social Problems in West Greenland). Vol. 64. Danish Institute on Social Research, SFI. Copenhagen 1975.

¹⁴¹ A draft bibliography on Economic analyses on Greenland is attached as Appendix A.

¹⁴² Since the beginning of the 1990's a number of enquires and researchers, and public as well as private institutions and enterprises have conducted interview-based surveys. Most of these studies have led to published results, and the databases containing the basic data in most cases still exist: some are stored with Statistics Greenland, some at “Dansk Dataarkiv” and some in private research archives. The Greenland Living Conditions Survey from 1994, (conducted by Statistics Greenland), the Greenland Health profile (conducted by the Danish National Institute of Public Health), *Socioøkonomisk Analyse af Fangererhvervet* (2005) (The socio-economic analysis of the Hunting Trade) by Rasmus Ole Rasmussen and The Greenlandic part of the Survey of Living Conditions, SLiCa as well as a number of surveys of political attitudes etc. all serve as examples of such surveys.

¹⁴³ The surveys conducted and the reports published as part of fulfilling the mandates of “The Judicial Expedition” (1947–1950) and the Commissions of 1950 and 1960 respectively are prominent examples in this field.

¹⁴⁴ There is a variety of publications in this field including investigations into different industries (e.g. hunting, fisheries, sheep breeding, and tourism), energy supply, spatial planning, education at different levels etc.

1994, and the Greenlandic part of the *Survey of Living Conditions in the Arctic*, which *SLiCA* conducted in 2003–2006.

15.1.1. Public administrative registers: a special, and especially useful, resource for official statistics in Greenland

The data compiled by Statistics Greenland are primarily based on reports from various public authorities. The enhanced capability of computers has allowed the opportunity to realize the full statistical potential data by the merging of data sets from different registers. By this, we have endeavored to analyze Greenland's recent social development using data already captured for administrative use. These data are either compiled as tables or forms or they are contained within electronic administrative registers. That is, data sets consisting of a number of variables related to a certain identification code. Among the advantages of creating statistical registers on the basis of captured administrative data are, that data collection costs and the response burden are lower than if the data were collected through special surveys. In addition, reliance on administrative data means that Statistics Greenland can better ensure the ultimate quality of the individual data through repeated application and testing in various contexts.

Administrative registers contain the data required to produce reportable statistics, not the statistics themselves. Processing and troubleshooting are present, when data are to be transformed into viable statistics. As experience shows, the starting point is far from ideal. Register data are often incomplete or incorrect. Additional problems may arise with respect to obtaining relevant information from a specific inquiry. As is the case with censuses or interview surveys, register-based inquiries involve a thorough processing and troubleshooting process before data are ready to serve as the basic elements in the creation of a statistical register, and actual production of statistics.

Register data can pertain to individuals, individual enterprises or by categories defined in accordance with international agreements – as in the case of economic statistical registers. At present, the following three main groups of registers¹⁴⁵ are sources of official register-based statistics:

¹⁴⁵ In Appendix C, all registers are listed including the time-span they are covering.

- Personal statistics: covering data on demographics, housing, education, labor market activities and unemployment, personal and family incomes, social benefits and crime.
- Statistics on trade and industries: including a register of enterprises (GER: Grønlands ErhvervsRegister – Greenland's Range on Trade and Industry) and covering tourism, consumer prices, foreign trade and renewable resource harvesting.
- General economic statistics: public finances, balance of payments, national income accounts.

15.1.2. The 1994 Greenland Living Conditions Survey and its Methodological Implications¹⁴⁶

In 1994, Statistics Greenland carried out the first study of living conditions in Greenland since the introduction of Home Rule^{147 148}. The questionnaire consisted of 147 questions answered by 1.121 respondents.¹⁴⁹ Because research within the field of living conditions was at a pioneering stage in Greenland, the research design for such studies was very much a copy of the Scandinavian model which included living conditions indicators based on Scandinavian traditions (Eriksen & Uusitalo 1987, Hansen 1990). The questionnaire primarily focused on material well being (e.g. income, employment, education, and housing). The survey produced a substantial amount of information as well as many questions that could not be answered without a design that also addressed causal relationships.

¹⁴⁶ Appendix B contains a tentative bibliography on research in living conditions in Greenland.

¹⁴⁷ In 1973, The Danish Institute of Social Research conducted a Survey of Living Conditions: Social problems in Greenland.

¹⁴⁸ In 1993–1994 the Danish Institute for Clinical Epidemiology (DICE) conducted a national Health Interview Survey aimed at giving a description of health, lifestyle, living conditions and the use of the health care system in Greenland for analyzing the association of disease and symptoms with lifestyle and living conditions.

¹⁴⁹ Following a decision of the Greenland Parliament Statistics, Greenland conducted a survey among 1500 randomly selected respondents (age 18 years and above). During the personal interview the respondents were asked 147 questions about housing, education, labor market associations, private economic affairs, consumption, and leisure time use. Furthermore, two separate special surveys were conducted in the municipalities of Tasiilaq and Upernavik to gather thorough knowledge about living conditions in the outlying districts.

The fact that the people living in Greenlandic settlements¹⁵⁰ generally scored low on most of the living conditions measures and still choose to stay in the settlements indicates, that the underlying concept of welfare, and hence the welfare dimensions employed in the survey, was incomplete (Andersen and Poppel 2002; Poppel 2006). These experiences called for a revised and expanded concept of welfare adapted to the reality of the Greenlandic population. Furthermore, these early survey experiences indicated a need for the development of a new research design for the study of living conditions in Arctic countries and regions, which from an economic and, especially a cultural point of view are different from Western Europe and North America. This is the case for all the countries in the Arctic in which Inuit and Saami peoples are living. (Andersen and Poppel 2002; Andersen 2006; Poppel 2006).

15.1.3. The Survey of Living Conditions in the Arctic/SLiCA

In 1997, Statistics Greenland started developing the preconditions for a living conditions survey, which addressed the welfare priorities of Arctic residents by focusing on the Arctic's indigenous residents. The project was at first planned to be conducted in Greenland, but it soon gathered other interested parties. At an international workshop in May 1998 in Slagelse,¹⁵¹ representatives for Arctic residents (the indigenous peoples' regional and national organizations¹⁵²) with Arctic social scientists and research institutions inside and outside the Arctic, decided to create a new research design to conduct a coordinated set of living condition surveys among indigenous peoples¹⁵³ (Andersen and Poppel 2002; Andersen 2006; Poppel 2006).

¹⁵⁰ Since the introduction of Home Rule Government in 1979, the figures on total population in the settlements have been stable until recently (roughly 10.000), whereas the percentage of total population has been slightly declining from 20% in 1980 to 17% in 2007 (ca. 9.000 inhabitants).

¹⁵¹ For further information about the meeting, see [<http://www.arcticlivingconditions.org/>] → Project history → Slagelse98.

¹⁵² Inuit Circumpolar Council, ICC; the Same Council and the Russian Association of the Indigenous Peoples of the North, RAIPON.

¹⁵³ The survey includes Inuit in Greenland, Canada and Alaska, the indigenous peoples of Chukotka and on the Kola Peninsula and the Saami in Northern Norway and Sweden. So far the Saami of Finland have not been included due to lack of funding.

15.1.3.1 SLiCA objectives:

The major objectives of the SLiCA-project are:

- To develop a new research design for comparative investigations of the living conditions of the Inuit and Saami populations in the Arctic.
- To map the living conditions among the Inuit and Saami in the Arctic.
- To conduct a comparative and dynamic social analysis of the causal relations between different individual resources and between individual well-being and different political, economic, cultural and technological settings.
- To improve the basis for decision-making in relation to policy planning and implementation.
- To establish an interdisciplinary network of researchers and research institutions engaged in living conditions research in the Arctic.
- To increase the knowledge among indigenous peoples regarding their own, and other indigenous peoples, history and living conditions.
- To educate and involve post docs, PhD-students, candidates and undergraduates in the SLiCA project.

In 2001, the partnership between international researchers and indigenous representatives of the respondents resulted in an agreement on a common “core questionnaire”¹⁵⁴ for all regions included in the Survey of Living Conditions in the Arctic, SLiCA. The completion of the standardized SLiCA core questionnaire in 2001 signaled the ending of SLiCA phase I.

15.2. Developing the international SLiCA questionnaire

The questionnaire was developed through discussions by the local, regional, national, and international SLiCA workshops and team meetings. The content of the questionnaire emerged from early discussions on social goals and the multiple dimensions of conditions dimensions. The syntheses

¹⁵⁴ For different reasons, adjustments have been made in the SLiCA questionnaires used in the participating countries and regions. In Canada, collaboration between the Canadian SLiCA team and Statistics Canada’s Aboriginal Peoples’ Survey, APS 2001 resulted in a joint SLiCA-APS questionnaire. Due to these differences, international comparisons including all countries and regions are not possible for all variables. Further information can be found on the project website: [www.arcticlivingconditions.org.]

and recommendations from the discussions between researchers and indigenous representatives were brought to concluding discussions in the International SLiCA Management Board¹⁵⁵. The management board itself is made of both researchers and representatives from indigenous groups. The process is outlined in figure 1 below.

As figure 1 indicates, selecting the broad social goals and the living conditions as well as agreeing on the individual resources, which were to be focused on, was a joint effort by the indigenous representatives and the researchers. Operationalization of the individual resources into actual questions was initially envisioned as the responsibility of the research team. In practice however, indigenous representatives both individually and through the indigenous oversight groups, contributed significantly to the development of questionnaire measures themselves.

15.2.1. The SliCA Living Conditions Dimensions

The ambition was to develop indicators reflecting the welfare priorities of Arctic indigenous peoples, and at the same time, increase the understanding of relationships among both new and traditional dimensions of living conditions. It was decided to develop indicators with each of the dimensions listed in table 1.

15.2.2. From living conditions dimensions via individual resources to questions

Within each dimension a number of individual resources were defined and from there, the operationalization into questions began. To take an example: An overall social goal defined by indigenous partners was condensed into “cultural continuity”. Language was considered a very important living condition dimension within this overall goal. Individual language resources include “understanding”, “speaking”, “reading” and “writing” the language in question. Having singled out the most relevant individual resources, the final step before pilot testing was phrasing the questions, which were to be directed at the respondents. In this example, respondents were asked to rate their ability to understand, speak, read, and write a lan-

¹⁵⁵ The discussions are documented on the project web site: [www.arcticlivingconditions.org.]

guage on a scale defined by the categories: “very well”, “relatively well”, “with effort”, “a few words”, and “not at all”.

Roughly 200 questions (closed and open-ended questions) were included in the international SLiCA core questionnaire¹⁵⁶. The questions were grouped in eight sections:

- Family relationships.
- Background.
- Productive activities in the market and the informal sector.
- Health (physical and mental and partly through a self administered questionnaire).
- Housing conditions and living standard.
- Activities (leisure time, community activities, political activities and political attitudes).
- Inuit/Saami values, religion and spirituality.

Communication and Technology	Health
Community Viability	Household economy
Discrimination	Housing
Education	Identity management
Employment/Harvest	Justice/Safety
Environment/Resource management	Language
Family relations and social networks	Mobility
	Political resources
	Religion/spirituality

Figure 1. SLiCA Living Conditions Dimensions

¹⁵⁶ A part of the interview was conducted using a self-administered questionnaire containing a number of sensitive questions concerning e.g. smoking and drinking habits, use of drugs and domestic violence. The self-administered questionnaire was filled out by the respondent and put into an envelope that was sealed and not opened until the coding and data entry process was going to take place.

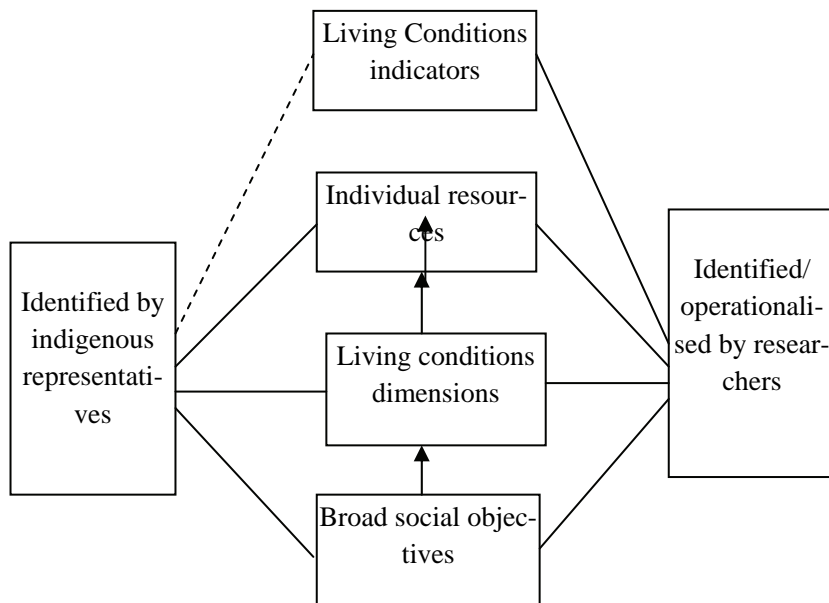


Figure 1. The process of defining indicators of living conditions¹⁵⁷

15.2.3. The local community and the environment

SLiCA's objective was not only to measure living standards of individuals and households, but also to focus on all resources – material as well as non-material – that individuals can apply to enhance their living conditions. In addition, SLiCA's design incorporates both objective and subjective components of understanding living conditions, the latter theoretically including satisfaction, expectations, and aspirations (Andersen 2006; Poppel 2008). As operationalized, SLiCA's subjective component focused on measures of satisfaction. "The SLiCA Data description" (Appendix D) summarizes the topics covered by the international core data set of SLiCA¹⁵⁸.

¹⁵⁷ Kruse and Hannah 1998, Andersen, 1999, Kruse and Poppel 2008

¹⁵⁸ The international core data dictionary with information also about analytic variables is accessible at [<http://classic.ipy.org/development/eoi/>] → Science Plans: SLiCA data description.

15.3. The interviews

Interviews were conducted face-to-face in the principal language of the respondent. Statistics Canada was responsible for fieldwork and data processing in Canada. The average interview length was 60 minutes in Canada (using a shorter questionnaire) and 90 minutes elsewhere. Interview data from Alaska, Greenland, and Chukotka as well as for Sápmi: Norway, Sweden and the Kola Peninsula were separately coded, processed¹⁵⁹ and stored, using the Statistical Package for the Social Sciences (SPSS). Due to the involvement of Statistics Canada, Canadian data is subject to the Canadian Privacy Act. Application of the provisions of this act requires the research team to merge the Canadian data with that of the other three regions within secure analysis laboratories in Canada.

The 90-minute interviews produced 950 variables per respondent. Thus, one observation record in the raw data file consists of 950 variables. There are a total of 7,200 observations. A combination of difference in scheduling and interview length resulted in a more limited Canadian data set. The 950 variables in the international data set were used to produce 398 analytic variables. The Canadian data set includes 129 of these 398 analytic variables. We therefore report some results without Canadian comparisons.

An important analytic feature of the data file is that it is possible to test hypotheses about relationships among variables. For example, we may hypothesize that income is related to education. We can use the observed level of co-variation between income and education to test the null hypothesis, or that there is no relationship between education and income. While an observed co-variation does not prove that higher education leads to increased income, it lends support to the hypothesis. Since all the variables in a single observation are linked, it is possible to test multivariate hypotheses as well.

15.3.1. The SLiCA target population

The SLiCA target population is defined by three elements: (1) indigenous individuals¹⁶⁰ aged 16 (in Greenland and Canada: 15+) and over; (2) resid-

¹⁵⁹ The coding was done by Jack Kruse and Marg Kruse

¹⁶⁰ For Greenland, the sample includes immigrants who are mostly individuals that migrated to Greenland from Denmark. The share of respondents that are Greenlanders (i.e. individuals born in

ing in households; (3) in a traditional settlement region. The current settlement regions are defined and shown in figure 2, and as follows: Alaska; Canada; Greenland and Chukotka, Russia.

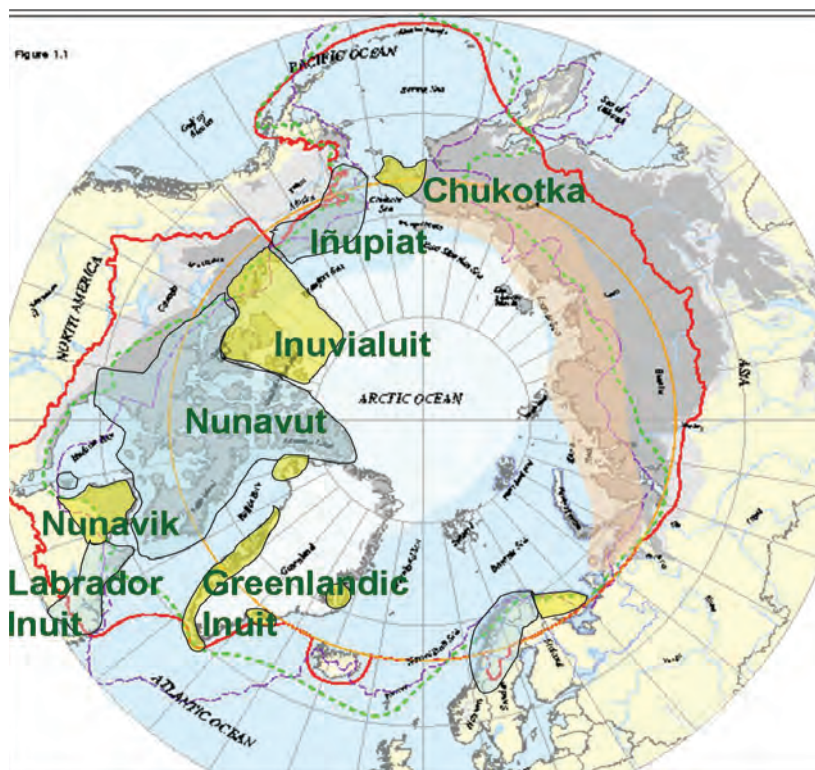


Figure 2. The Inuit and Sami settlement regions, the Kola Peninsula and Chukotka

The indigenous peoples represented by the data include Inuit in Alaska, Canada, Greenland and Chukchi, Inuit, Even, Chuvan, and Yukagir in Chukotka. Probability sampling procedures were used in each country to ensure, that each adult had a known probability of selection¹⁶¹. Results are weighted to properly reflect these probabilities. For reasons of cost and logistics, SLiCA's target population did not include the Yupik traditional

Greenland) and non-Greenlanders (i.e. individuals born outside Greenland) corresponds to the two population groups' shares of the total population.

¹⁶¹ The sampling procedure applied in Greenland is outlined in Appendix E.

settlement regions in Alaska, or the vast indigenous settlement region between Russia's Kola Peninsula and Chukotka. For ease of reference, we refer to SLiCA results of the first part of the study pertaining to Arctic Inuit people.

Please keep in mind, that technically the results do not include all Arctic Inuit people¹⁶² and do include Chukotka indigenous peoples other than Inuit. The second part of the SLiCA study¹⁶³ covers Sápmi (Sameland), the area that is traditionally inhabited by Sámi. Sápmi includes the Norwegian districts of Nordland, Troms and Finnmark, the Swedish district of Nordbotten, and the Russian Kola Peninsula¹⁶⁴.

15.3.2. The SLiCA sample summary – response rates and sampling errors

Table 2 summarizes the main figures regarding the total population of the SLiCA study, the sample, the response rate and the maximum estimated sampling error.

Table 2. The SLiCA Sample Summary. ¹⁶⁵

Indigenous Settlement Region	Indigenous Adults	Sample Size	Response Rate	Maximum estimated sampling error (plus or minus %s)
Northern Alaska	11.000	700	84%	4%
Chukotka	20.000	600	85%	4%
Canada	22.000	4.700	83%	1%
Greenland	43.000	1.450	83%	3%
Indigenous Settlement Regions	93.000	7.200	83%	1%

As indicated in the table, the response rates exceeded 80 percent in all regions. Nevertheless, we did observe a bias in favor of female respondents that we addressed as a final sampling weight.

¹⁶² SLiCA's target population did not include Yupik traditional settlement regions in Alaska nor the indigenous groups occupying the vast territory between Russia's Kola Peninsula and Chukotka.

¹⁶³ Interviewing has been concluded in Sweden in 2006 and in Norway and the Kola Peninsula in 2008. Data entry is concluded and preliminary results are expected to be available in the second half of 2009.

¹⁶⁴ Due to lack of funding it has not yet been possible to include the Sámi of Finland: the Lapland district.

¹⁶⁵ The total adult population in Greenland 15+ was as the time of sampling: 43.000 (37.500 born in Greenland and 5.500 born outside Greenland).

Results for Arctic indigenous settlement regions as a whole are subject to a maximum estimated sampling error of plus or minus one percentage point. Regional comparisons have sampling errors of one to four percentage points. Breakdowns for subpopulations and more refined geography are subject to larger sampling errors.

15.3.3. The SLiCA unit(s) of analyses: different levels of aggregation and various categorizations

It has been a prerequisite for the development of the SLiCA research design, that it should be possible to carry out causal analyses based on the interviews. The international core questionnaire employed in the Greenland part of SLiCA makes it possible to analyze empirical relationships between the respondents' background and resources, satisfaction with different aspects of life as well as general satisfaction with life as whole. Apart from the questions originating from the international core questionnaire, a number of questions specifically designed by the research and focus groups of the Greenlandic SLiCA team have been included in the Greenlandic survey¹⁶⁶.

Even though the sampling unit is at the individual level, the respondent is asked about characteristics of the household: age, gender, and participation in a broad array of both formal (e.g. wage jobs) and informal (e.g. care of children) household activities. Furthermore, the respondent is asked to report on the household's housing conditions and income.

Taking into account differences in regional and community sampling probabilities and differences in response rates by gender, the sampling procedures applied ensure that the SLiCA sample is representative, and the subsequent weighing procedures make it possible to generalize responses to entire populations by: "country", "region", "region/place size", "gender" and "age groups". Such population breakdowns are reported on the project website, www.arcticlivingconditions.org. These levels of aggregation are defined as follows:

¹⁶⁶ A more thorough elucidation of the methodological and theoretical aspects of the study, as well as the development of the process, can be found in Andersen and Poppel 2002; Andersen et al 2002; Kruse et al 2008 and on the project web-site: [www.arcticlivingconditions.org.]

- The national level: Inuit settlement regions in Chukotka¹⁶⁷, Northern Alaska, the Canadian Arctic, and Greenland.
- The regional level: (to get yet another categorization to compare, different parts of the Arctic “regional capitals” were singled out to be then compared with “other communities”¹⁶⁸; this categorization is included in the outline below in square brackets).
- Chukotka (“regional capital” “other communities”)
- Western Chukotka (Western region in Chukotka)
- Anadyr (Anadyr region in Chukotka) Central Chukotka (Central region in Chukotka)
- Eastern Chukotka (Eastern region in Chukotka) – (‘Eastern Chukotka’¹⁶⁹ and “Other Chukotka”)
- Inuit settlement regions in Northern Alaska (“regional capital” “other communities”)
- Bering Straits (Bering Straits region in Alaska) – (“Nome” and “Other Bering Strait”)
- NANA (Northwest Arctic Borough in Alaska) – (“Kotzebue” and “Other NW Arctic”)
- North Slope (North Slope Borough in Alaska) – (“Barrow” and “Other North Slope”)
- Inuit settlement regions in the Canadian Arctic (“regional capital” “other communities”)
- Inuvialuit (“Inuvik” and “Other Inuvialuit”)
- Nunavik (“Kuujjuaq” and “Other Nunavik”)
- Nunavut (“Iqaluit” and “Other Nunavut”)
- Labrador (“Happy Valley-Goose Bay” and “Other Labrador”)
- Greenland (“regional capital” “other communities”)
- North Greenland (Nordgrønland)
- Disco Bay (North-western region in Greenland: Diskobugten)
- Middle Greenland (Midtgrønland) – (“Nuuk” and “Other Midtgrønland”)
- South Greenland (Sydgrønland)
- East Greenland (Østgrønland)

¹⁶⁷ In Chukotka Siberian Yupik (the Chukotkan branch of Inuit) as well as other indigenous peoples: SLiCA includes Chukchi, Evan, Chuva and Yukagir.

¹⁶⁸ Further information can be found on www.arcticlivingconditions.org.

¹⁶⁹ Most of the Inuit of Chukotka (i.e. Siberian Yupik) live in the Eastern Region.

- Gender: In the “SLiCA Release” (Poppel et al 2007) on the project web site all the processed variables are broken down by gender for “All Inuit”. The organization of the data makes it possible to make gender based comparisons on a national and/or regional level.
- Age group: As all respondents are asked about their age as well as the age of any other household member the point of departure in breaking down the data is one-year age groups. To ensure a manageable lay out of the tables the following age-groups are used in the “SLiCA Release” (2007): “15/16–24”; “25–34”; “35–44”; “45–54”; “55–64”; and “65 +”.

15.3.4. Different categorizations of SLiCA variables – a few examples

Apart from the more obvious ways of breaking down the data outlined above, the questions asked and the organization of data facilitates different ways of breaking down SLiCA-data and thus analyzing different distributions. Individuals can for instance be categorized and analyzed according to:

- Marital status.
- Level of education.
- Labor market affiliation (e.g. status as employed/unemployed; wage earners; self-employed; fishermen/hunters; recipients of transfer income etc.)

In the same way households can be categorized into a number of units of analyses like:

- Households with/without kids.
- Single parent’s/couple’s households.
- Households by incomes (e.g. households above or below a poverty line).
- Households by primary income source (e.g. wage, earnings from self-employment, subsistence activities, transfer incomes etc.).
- Households living in towns/settlements; in different regions/municipalities.

The above mentioned are just a few examples to give an idea about the variety of “unit of analyses” that may be the point of departure for analyses based on the SLiCA data.

15.3.5. *Protection, handling and conditions for use of SLiCA data*

All SLiCA data are based on information attached to either the respondent, or the respondent's household. The data are gathered and stored according to national legislation and regulations. In some cases, data are stored in accordance to regional regulations based on formal agreements between the national/regional SLiCA team and the organization representing the indigenous peoples in the region.¹⁷⁰ Two examples are the Canadian and the Greenlandic national legislations. Canadian data are as mentioned, subject to the Canadian Privacy Act due to the involvement of Statistics Canada. Parallel to this, are the Greenlandic data that are subject to the Act of Public Registers as Statistics Greenland initiated SLiCA in Greenland.

The International SLiCA team is committed to conduct the research in partnership with the indigenous peoples and to follow ethical standards from the very beginning phases of the project. The ethical standards applied are the IASSA Guiding Principles for the Conduct of Research¹⁷¹.

The SLiCA team has developed a special project for a Remote Access Analyses System (see below). Until then, the SLiCA team is open to share data with qualified researchers who commit to meeting the conditions of use of the data set. See the project web site: www.arcticlivingconditions.org → Methods → data files (data sharing conditions).¹⁷²

15.4. The Greenland part of SLiCA

Interviewing in Greenland was conducted over a period from December 2003 to August 2006. The Greenlandic data comes from 1200 personal interviews: 88% with Greenlanders and 12% with non-Greenlanders reflecting the relative share of the two population groups in the age group 15+. For historical reasons, the Greenlandic sample includes both the indigenous population (the Greenlandic Inuit) and the immigrated (mainly Danish) part

¹⁷⁰ See also "Conditions for Use of the Data on the project web site www.arcticlivingconditions.org.

¹⁷¹ The Guiding Principles for the Conduct of Research was adopted by IASSA (International Arctic Social Sciences Association) General Assembly convened in Copenhagen May 23, 1998, during the Third International Congress of Arctic Social Sciences (ICASS III).

¹⁷² The "data sharing conditions" published on the SLiCA web site were agreed upon with the Alaskan Native Management Board. Parallel conditions will have to be met in the other countries/regions.

of the population. Residents in Greenland are registered by place of birth and not by self-identified ethnic belonging. Thus the sampling criterion has been place on birthplace. Based on analyses of Greenlandic SLiCA background data it is possible to examine whether the birthplace criterion correlates with self identified ethnic belonging. Survey results confirm that “born in Greenland” is a good predictor for self-identified Greenlandic ethnic belonging as 92% of people born in Greenland identify themselves as “Greenlandic” and 6% as “Both Greenlandic and Danish”. This finding indicates that the correlation found in Bjerregaard et al 1995 is still valid.

The sample is generated from a population list¹⁷³. The sample is randomly selected in eight towns and 22 settlements in the eight municipalities (Upernavik, Ilulissat, Aasiaat, Nuuk, Paamiut, Qaqortoq, Nanortalik and Ammassalik municipalities) representing the five regions: Nordgrønland (Northern Greenland), Diskobugten (Disco Bay), Midtgrønland (Mid Greenland), Sydgrønland (Southern Greenland) and Østgrønland (East Greenland).

In total, 1200 interviews were conducted in Greenland. To be able to carry through multivariate analyses, there was an over sampling among the population in the settlements. Following the validation and data entry procedures, the survey data have been weighed to reflect the demographic composition of the total population with regard to gender and age groups and mirror the variation between regions, towns and settlements

15.5. A concluding note on sharing SLiCA data – developing the “tools” and the International Polar Year, IPY.

As mentioned above, the SLiCA data can be shared if certain conditions are met. Hence, we were also looking for the appropriate way and tools to share SLiCA data. While the first phase of the SLiCA analysis only involved the work of the project team itself. By making the data more available, the second phase of analysis facilitates broader research and policy analysis of communities. The SLiCA international team is committed to make the international data set available to the scientific community, indigenous communities of the Arctic, and to other Arctic residents as well

¹⁷³ The Greenland Central Personal Register (CPR) containing demographical information about all residents in Greenland.

as to political and administrative decision makers at the local, regional, national and international levels for further analysis. Making the data more accessible means providing greater opportunities to access individual records of answers given during the interview processes in interviews conducted around the Arctic. A major challenge of this phase is to make SLiCA data available and accessible, while maintaining the confidentiality of results. The SLiCA researchers promised that individual answers could not be traced to the respondent. While it is easy to remove names, addresses and other identifying information, the remaining data might still be used to identify individuals. (NSF proposal 2005; IPY proposal 2006)

The original intent of the Survey of Living Conditions in the Arctic project team was to make the full dataset available on a CD-Rom after removing all individual identifiers, and collapsing response categories for variables such as location (e.g. place), occupation, and income. This was done to remove the risk of identifying individual respondents. While the need for collapsing response categories was anticipated, the degree to which this would pose a constraint for multivariate analyses was not anticipated. The experience of the project team from the data analyses process has convinced the team that the CD dataset approach would require such extensive grouping of response categories, that it would severely limit the range of research questions, which could be addressed. (NSF proposal 2005)

An alternative approach to providing a CD-Rom, is to make the dataset available within one or more secure analysis laboratories. The SLiCA team has been conducting its international analysis within such a laboratory system in Canada¹⁷⁴. However, this approach is costly to researchers in terms of both travel expenses and time. The secure laboratory approach is also a more labor-intensive system to maintain. (NSF proposal 2005; IPY proposal 2006)

To live up to the fundamental objectives and obligations agreed upon within the SLiCA project team and thus between researchers and indigenous peoples (and based upon the experience gathered), the SLiCA project team proposed a development within the SLiCA project: the SLiCA Remote Access Analysis System (SLiCA RAAS). When the IPY organizers

¹⁷⁴ To be able to compare the Canadian data that were a product of a partnership between SLiCA and Statistics Canada's Aboriginal Peoples Survey, 2001 with data from the other Inuit inhabited regions data analyses had to be completed within Stat Can's facilities.

called for “Expressions of intent” followed by calls for “Fuller proposals” the SLiCA group explained that:

“We further realize that the challenge of providing analytically robust social science data sets and protecting the confidentiality of respondents is common in the Arctic social sciences. We therefore propose to contribute to the IPY goal of expanding our understanding of human dimensions of change in the Arctic by collaborating with an international team to apply and extend the concepts of remote access analysis to the SLiCA international database.” (IPY proposal 2006)

The fundamental objective of Remote Access Analysis is to provide researchers with access to a micro data set for analysis (in the case of SLiCA, this means the individual records of respondents to the SLiCA questionnaire) from their own computers. We further propose, to extend this capability to work with restricted datasets, where the sensitivity of data is sufficiently high to warrant restriction of access to the raw data. Researchers, indigenous organizations and political and administrative authorities at different levels will be able to conduct analyses, while being able to view the micro data set itself. (NSF proposal 2005).

An additional benefit to the remote access analysis system is that it will be available to researchers and analysts through a secure internet connection. Thus, researchers, widely dispersed Arctic indigenous organizations and communities, and local political and administrative authorities will be able to conduct individual analyses and more easily collaborate, without incurring travel expenses. It is furthermore the objective to apply a full array of statistical analysis techniques to the dataset, while ensuring that the individual records remain unseen. The remote access analysis system will also be programmed so that researchers and others cannot inadvertently request analyses, which could reveal the identity of individual respondents. (NSF proposal 2005)

The SLiCA-RAAS component will focus on the spatio-temporal variability of socio-environmental conditions. SLiCA-RAAS will contribute to the objectives of assessing the socio-economic impacts of potential future changes in the transitional zones, by incorporating results into an expert information system. This system can then be utilized for estimating climate change responses, sustainable ecosystem management and landscape planning in support of policy decisions. This system will also be used as a tool in forecasting ecosystem changes and options for mitigation, by allowing the

ability to exchange methods on climate change monitoring, sustainable land use strategies, science/policy issues.

SLiCA-RAAS aims at contributing to the IPY goal of expanding the understanding on the human dimensions of the Arctic by collaborating with an international team, to apply and extend the concepts of remote access analysis to the SLiCA international database. The Remote Access Analysis System can be applied to other Arctic datasets. These possibilities will be further explored once it has been applied to SLiCA.

[<http://classic.ipy.org/development/eoi/proposal-details.php?id=386>]

15.6. SLiCA data collaboration

Results from the SLiCA survey are available on the project web site, in published articles¹⁷⁵ and by special agreements with the research team. These results have already proven useful to such initiatives as the Arctic Social Indicators initiative of the Arctic Council, and to a number of other endorsed IPY and Arctic Council/SDWG projects^{176 177}. SLiCA has linkages to some research projects focusing on data gathering and management. It also has linkages to the establishment of observational and monitoring systems and networks aimed at documenting the physical, biological and societal changes within the Arctic¹⁷⁸. Furthermore, descriptive studies of two Greenlandic municipalities¹⁷⁹ have formed the basis of discussions on community development.

¹⁷⁵ An updated list of SLiCA articles can be found on www.arcticlivingconditions.org → SLiCA-related Elements of the Sustainable Development Working Group Report.

¹⁷⁶ Arctic Social Indicators (ASI); The Economy of the North (ECONOR); ArcticStat; The Arctic Human Health Initiative (AHHI).

¹⁷⁷ The Arctic Human Health Initiative (AHHI) IPY#167; The Political Economy of Northern Regional Development, POENOR IPY#227; Social Indicator Project (ASI) IPY#462; Consortium for coordination of Observation and Monitoring of the Arctic for Assessment and Research (COMAAR) IPY#305; Study of Environmental Arctic Change, (SEARCH) IPY#916; Present day processes, Past changes, and Spatiotemporal variability of biotic, abiotic and socio-environmental conditions and resource components along and across the Arctic delimitation zone, (PPS Arctic) IPY#151.

¹⁷⁸ ISAC-SEARCH: International Study of Arctic Change/Study of Environmental Arctic Change; Indicator Database of Arctic Community Change, INDACC; Arctic Observations Network – Arctic Social Indicators: Phase two (AON-SIP2).

¹⁷⁹ The two municipalities using SLiCA municipal profiles: Nuuk where the municipal profile became part of project: “Developing the competences” and Paamiut where the municipal profile became part of a project: “Paamiut, asasaraa” (My Dear Paamiut).

It is useful to view SLiCA as both a concept and a set of results. SLiCA as a concept can be applied to future enhancements of the Arctic observation system. SLiCA as a set of results can inform policy makers, indigenous organizations, and researchers. Through the decade over which SLiCA has taken place, we have learned a great deal about measurement, collaboration, field procedures, merging data sets, analysis, and data dissemination and discussion. Perhaps the most important SLiCA contribution is in its aiding the development of an Arctic community built on collaboration between indigenous peoples and researchers.

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Appendix A

Economic analyses of Greenland (English translations of Danish titles in square brackets)

This tentative bibliography on economic analyses of Greenland only includes publications focusing on the national, regional and/or sector economic development in Greenland. Thus statistical publications, anthologies, thematic issues/volumes of scientific journals, proceedings from workshops, seminars, conferences and congresses as well as grey literature (with a few exceptions) are not included in this draft.

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- Kriminalloven og det vestgrønlandske samfund I – (The criminal code and the West Greenlandic society I)
- Kriminalloven og det vestgrønlandske samfund II – (The criminal code and the West Greenlandic society II)
- Befolkningssituationen i Vestgrønland – (The population development in West Greenland)

Samarbejdsproblemer mellem grønlandere og danskere i Vestgrønland – (The relationship between Greenlanders and Danes in West Greenland)

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Publikationer på baggrund af 1994–levevilkårsundersøgelsen: (Reports based on the 1994–Living Conditions Survey – all in Danish and some in Greenlandic.

Nr. 1 Kalaallit Nunaanni inooriaaseq / Levevilkår i Grønland på henholdsvis grønlandsk og dansk. (Living Conditions in Greenland)

Nr. 2 Avislæsningsvaner i Grønland. (Newspaper reading habits in Greenland)

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Survey of Living Conditions in the Arctic: SLiCA Results by Jack Kruse, Birger Poppel, Gérard Duhaime, Larissa Abryutina Anchorage: Institute of Social and Economic Research, University of Alaska Anchorage. (2007). www.arcticlivingconditions.org.

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Den arktiske Levevilkårsundersøgelse, SLiCA – et komparativt og transnationalt projekt (The Survey of Living Conditions in the Arctic, SLiCA – a Comparative and Transnational Project) by Birger Poppel In: Hanne Petersen (ed.) *Grønland i verdenssamfundet* (2006).

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Appendix C

Statistical registers operated by Statistics Greenland and the period covered by the registers. * = Data are registered by individuals (persons or enterprises)

Statistical domain	Statistical register	Time span
Income & A11-tax forms		1988-*
National Final Taxes		1988-*
Accounts	National Accounts	1986-
Consumption	Consumer price indices	1971-
Public Finances	Public incomes/spending	1986-
Foreign Trade	Import/export	1985-
Balance of Payments		2001-
Renewable Resource Harvesting	Purchase of Primary Products	1987-*
	Catches	1990-*
	Fisherman's Handbook	1989-
Enterprises	GER (register of enterprises)	2001*
Annual accounts		2001*
Tourism	Hotels	1995-*
Airline passengers		1997-
Unemployment	Unemployed	1994 (1988)-*
Demography	Status	1977-*
Births		1973-*
Deaths		1973-*
Relocation		1981-*
Housing	Dwellings	1990-*
Education		1975-*
Crime	Offenders/offences/sanctions	1991-*
Social Benefits		1999-*

Appendix D.

Survey of Living Conditions in the Arctic: Data Description

The international core data set of the Survey of Living Conditions in the Arctic covers the following topics:

Section A: Individual Characteristics

Persons by age, sex, relationship, ethnicity

Duration of residence in community/ other residence locations

Section B: Production

Wage employment activity by person – (all variables for 12 months)
Social relationships supporting wage employment
Hunting and fishing activity by person
Social relationships for hunting and fishing
Aggregate harvest consumed by household
Aggregate harvest shared by household
Aggregate harvest received by household
Childcare by person
Country food processing by person
Crafts, art, production activities by person
Non-wage income to household, including transfer payments

Section C: Production Resources

Part 1: Health

Hearing, speaking, seeing, walking, carrying, mobility
Learning, emotional health
Wage work activity constraints
Hunting and fishing activity constraints
Household work activity constraints

Part 2: Wage employment Resources

Formal education
Job training
Months want to work, not want to work
Perceived job opportunity options
Experience in non-local employment
Transportation constraints
Childcare constraints
Job satisfaction
Job expectations
Job aspirations

Part 3: Hunting, Fishing, Processing Resources

Education in hunting, fishing, processing
Aboriginal language use
Shared equipment, gas, money, labor
Abundance of major wildlife resources
Health of major wildlife resources
Perceived harvest constraints
Regulations
Weather/climate (sea ice, fall storms, deeps snows)
Accessibility (e.g. barriers to travel)
Equipment
Commercial markets
Processing capabilities
Food storage
Hunting/Fishing/Processing satisfaction
Hunting/Fishing/Processing expectations
Hunting/Fishing/Processing aspirations

Part 4: Political Resources

Influence on wage employment
Influence on formal education
Influence on hunting, fishing
Influence on traditional education
Aspirations for influence
Expectations for influence

Section D: Expenditures and Consumption

Household budget

Household time use: work, domestic, leisure

Food: sufficiency, diet, in-kind supplements

Water: quality, sufficiency

Housing: type, condition, subsidies

Utilities: heat, electricity, light, cooking

Clothing

Equipment, supplies

Health care: accessibility, cost

Section E: Social Relationships & Ethnic Identity

Where you go for different kinds of help

Gifting, sharing

Ethnic identity

Section F: Community Resources

Communication

Transportation

Section G: Subjective Well-being

Spirituality

Social relationships

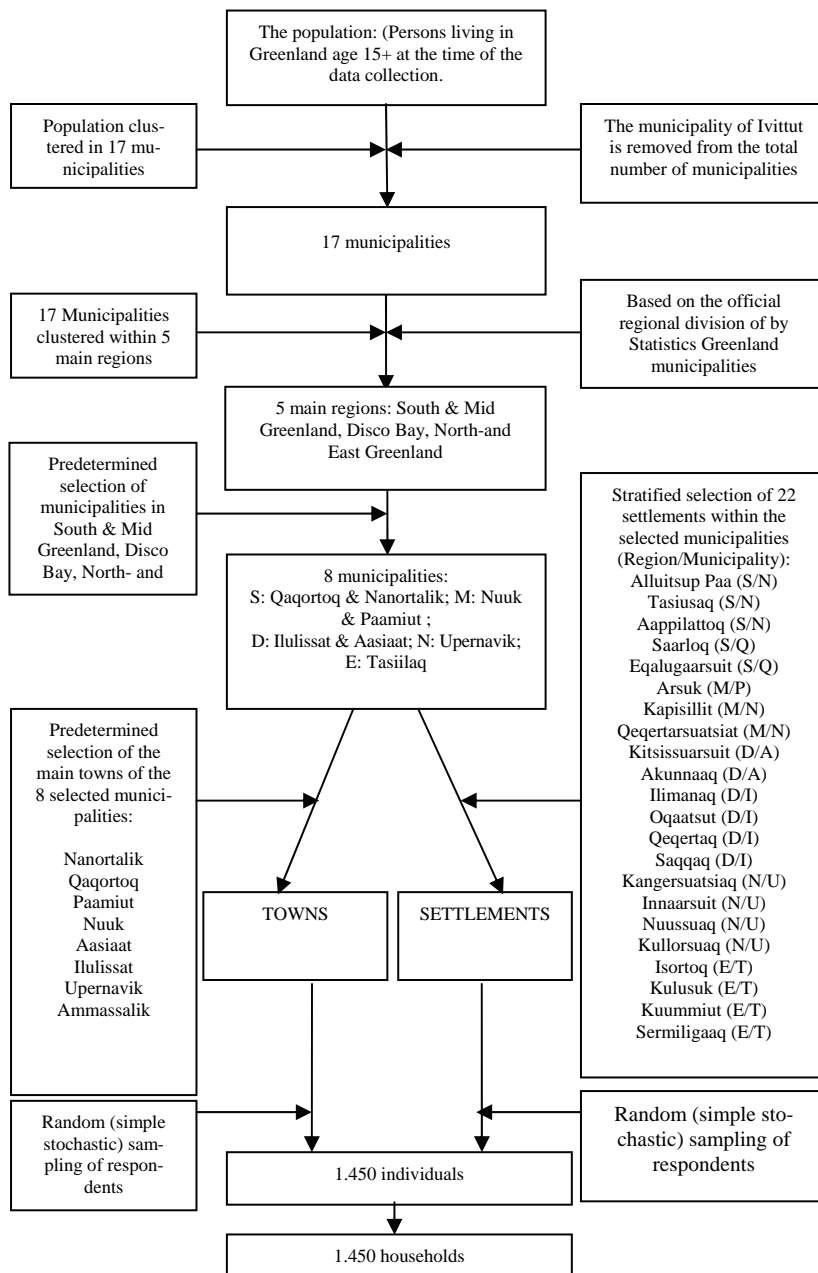
Social support

Social adjustment

Ethnic identity

Appendix E.

SLiCA Greenland – sample design. The complex sample design and selected geographical areas for SLiCA in Greenland



16. Comparative-historical analysis of farming systems and agricultural intensification in medieval and early modern Iceland

*Jón Haukur Ingimundarson*¹⁸⁰

Scholarly research on farming systems in medieval and early modern Iceland generally assumes a perennial type of “natural subsistence economy” and lacks a strong focus on market and tribute production, as well as the class relations among farmers. This approach underestimates the political and economic significance of domestic and foreign trade, which especially involved the export of wool products. This approach also lacks a systematic analysis of tributary and tenure relations, as they developed in conjunction with changes in farming methods. Attempting to fill this gap in research, I conducted an ethnographic study on the farming systems of Iceland by employing a historical-comparative method for examining economic documents in new problem-oriented ways (Ingimundarson 1995). In interpreting information and archaeological evidence as well as developing hypotheses on changing farming systems in early Iceland, I have interviewed and shared my documents with farmers and agricultural scientists in two Icelandic farming communities. Through this, I have employed a careful understanding regarding intensified livestock production in the 19th and early 20th centuries.

¹⁸⁰ Senior Scientist Stefansson Arctic Institute and University of Akureyri, Iceland

The following examination is concerned with the productive farming system of the Icelandic Commonwealth (10th to the 13th century), which developed in conjunction with an elaborate sociopolitical structure, and supported a relatively large population (compared to subsequent five centuries). This examination also looks at the forms of mercantile exchange and surplus distribution characteristic of this farming system. Furthermore, this intensive early Icelandic farming system is compared to the characteristics of intensified livestock production and trade during the 19th century and the first two decades of the 20th century. Specifically, I will describe a) the integration of a broad-based subsistence economy which supported specialized sheep production and yielded surplus wool for export in the “medieval warm period,” b) chiefdom formation in terms of the economic rule of merchant-farmers, c) freeholder production intensification in the context of mercantile activity, rural credit systems, and kin- and municipally-based insurance systems d) subsequent disintensification and a change to a farming system emphasizing sheep reared for efficient milk and meat production, e) and the rise of rent tenure, communal property rights, and tributary systems in contexts of developing ecclesiastic institutions and colonial relations with Norway.

16.1. The Early Icelandic Settlement and Commonwealth Periods

Permanent settlement in Iceland began in the second half of the 9th century. Most of the settlers came from Norway and the British Isles and brought domesticated animals and seeds of grain and grasses. It is estimated that about half of the island’s area was covered with vegetation, whereas today, half of this area has been deprived of vegetation and soil. A positive feedback process is evident where wood cutting, forest fires, over grazing by domesticated animals combined with worsening climatic conditions and periodic volcanic eruptions led to vegetation decline and soil erosion. The climate was on the average, relatively hospitable during the first 3–4 centuries of settlement, which coincided with the Medieval Climatic Optimum (10th to the 13th century). The very severe last two decades of the 13th century may have marked the beginning of the so-called “Little Ice Age” – the period of irregular cooling in the North Atlantic that lasted into the

19th century. The Icelandic population is frequently estimated to have been around 60,000 in 965, as high as 104,000 in 1100, around 40,000 in 1404, and 40,623 in 1785. Reduction in the population size after the Commonwealth period reveals to be consequential to economic deterioration, colonial rule, climatic conditions, epidemics and natural disasters.

Society during the period of the Commonwealth (from the establishment of the National parliament (alþing) of 36 chiefdoms in 930 until submission to the Norwegian King in 1264) is often described as a time of affluence with the island having many freeholders, of which, 4560 were thingtax-payers in 1095. All free male farmers could attend alþing with their relations, for two weeks in June, if they owned a certain minimum amount of property (one cow per adult member in their household). Alþing was the center of the legislature and authority. However, the “executive powers” and actual administration of the law, was left up to the various courts, for which the 36 chieftains (goðar) were responsible for. Courts were held at “spring assemblies” in twelve places around the country, and again in the fall at “autumn assemblies”. These assemblies were loci where economic activities were organized, and prices and economic transactions were negotiated and authorized.

Christianity became an official religion in the year 1000, and prominent farmers built their own churches for the surrounding community. Tithe was introduced in 1097 as universal tax amounting to a yearly payment of one percent of all debt-free property, excluding church property. This revenue was to be distributed in equal parts for the maintenance of the bishop at Skálholt or Hólar, the needy/poor, priests and churches.

The subsistence base was broad during the Settlement and Commonwealth periods compared to the subsequent ages under the rule of Norway and then Denmark (after 1388). Cattle, sheep and horse rearing were supplemented with some rearing of pigs, goat and geese. Fishing in the sea, rivers, and lakes was always practiced, along with seal and fox hunting, fowling, and some gathering of eggs and plants. Whales could be hunted at times and a drifted whale constituted a significant source. Evident during this time, however, is the high emphasis on the exploitation of terrestrial resources. In contrast, the 14th century saw a significant growth in commercial as well as subsistence fisheries. Juridical farm units held private yet sometimes shared property rights with regard to land use for hay-making, grazing, rivers, lakes, beaches, and forests, as well as land around

mountain dairies. The entire country was divided into ca. 165 municipalities (hreppar), the administrations of which were formally independent of the authority of the chieftains.

The most important exports during the Commonwealth period were homespun cloth made of sheep wool (called *vaðmál*), tufted wool cloaks, weather-skins (of castrated male sheep) and lambskins. Luxury goods like fox skin, cat skin, seal skin, falcons and horses were also exported. Butter and cheese from cattle were exported by the 13th century, while cod did not become a significant export item until the 14th and 15th centuries. Norway, where wool products were in demand, was the most important commercial contact. Icelanders also traded with people on the British Isles and with the Norse Greenlanders. Icelandic woolens and skins were exported to England, but more in the latter part of the Commonwealth period. Icelanders were in need of sizeable timber, tar, wax, ready-made ships and grain. Among other things, they imported tools, fine clothes, weapons, religious articles and items of conspicuous consumption. Icelanders based their monetary value upon silver, but because a great deal of trade (domestic and foreign) consisted of exchange by barter, homespun and milch-cows/dairy cattle were important in monetary standards. The value of land was expressed in terms of “long-hundred” (120) ells of homespun.

In the period 1262–1264 chieftains submitted, one by one, to annexation by Norway. By that time Icelanders had become entirely dependent on Norwegian merchants, who were now buying woolens from England and Europe’s western seaboard, where the wool industry was thriving at new heights.

Scholars do not agree on how to characterize the Icelandic Commonwealth in terms of social stratification or mode of production. They do tend to concur on these issues with respect to the periods before and after the Commonwealth. During the “Age of Settlement” (874–930), there was large-scale domestic production among large households that was based on extended kinship relations and slavery. After the Commonwealth during the late 13th century, a complicated system of dependent land tenure and leasing domesticates had been established as the predominant mode of production. Scholarship on the Commonwealth period has, in a variety of ways, portrayed the existence of classes as chieftains, freeholder-farmers, churchwarden-farmers, and landless laborers and to a lesser extent, slaves, freedmen, tenants and cottagers and ecclesiastics. It emphasizes a free-

holder-chieftain dichotomy and notes, after 1100, a transformation towards a confrontation between powerful freeholders and churchwardens, against the chieftains. (Karlsson 1972, 1980, 2004; Þorláksson 1982; Hastrup 1985; Byock 1988; Miller 1990; Samson 1992).

Until the 1960's, the opinion dominated that foreign trade had been very significant, and a crucial aspect of the economy during the Commonwealth period (Melsteð 1907–15; Jóhannesson 1974; Þorláksson 1991:5). More recent views overwhelmingly emphasize subsistence production (see Þorsteinsson 1964, 1966; Miller 1990:77–110; Eggertsson 1991; G. Pálsson 1991; Aðalsteinsson 1991; Durrenberger 1992, 1991; Samson 1992), implying some type of “natural economy” or a “domestic mode of production”, while downplaying the significance of markets and commercial mentality. Significantly, however, in his book *Icelandic Enterprise* economic historian Bruce Gelsinger (1981) emphasizes the Commonwealth trade relations with Norway and Britain, and especially trade involving home-spun, cloaks, skins, and dairy products for grain, timber and ships. According to Gelsinger, commercial prosperity was attained from 930–1022 when trade was almost exclusively in the hands of Icelanders. A powerful merchant class did develop in Norway in the 11th century, but as Icelandic chieftains controlled relative prices in Iceland, the value and distribution of goods brought in by foreigners was subject to their authority.

Scholars have neglected the political and economic significance of trade involving the export of wool products from medieval Iceland. It has yet to be noticed, that the early Icelandic farming systems, sociopolitical institutions, and class relations, (including those among the freeholders), reflect mercantile conditions of exchange and market production incentives. My attempt is to show that domestic credit exchanges at fairs and market places – overseen for some time by 3 chieftains at each of 12 “spring assemblies” (*vorþing*) and price-districts (Jóhannesson 1974:320) – and the foreign markets were key to land tenure and productive relations and farming systems prior to 1200.

16.2. Intensification and disintensification of medieval Icelandic farming and the return of production and trade intensification in the 19th century.

Historians, literary scholars and archaeologists have long concluded that during the Commonwealth period – in contrast or relative to the subsequent late 13th to early 19th century – the cattle to sheep ratio was high, the farming economy diversified, and older wethers (castrated rams) were strongly emphasized in sheep herds (Amorosi 1992; Amorosi and McGovern 1989); Sigurjónsson 1970:51–78; Þorsteinsson 1953:129; Steindórrsson 1948–1949; Thoroddsen 1919:213–222, 281; Guðjónsson 1949:84–89, 91; Sigurðsson 1861:16; Þorláksson 1991). These particular farming system characteristics and changes are commonly used in describing the conditions and changes to climate and ecological succession, that was impacted by human habitation. Most academic scholars adhere to the assumption that in order to describe farming practices in Commonwealth Iceland – when the production of surplus wool was imperative – one should disregard certain “modern perspectives” like economic incentives and farming system changes of the 19th and 20th centuries.

My interpretive model for looking at Northern farming derives from my ethnographic and historical document research, as well as certain facts and inferences drawn from 19th and 20th century writings on farming – including publications in modern experimental-agriculture science. Furthermore, I have studied the evidence on medieval farming in the light of comparisons with livestock production in the early 19th to the early 20th centuries. This entails identifying the different steps taken by farmers in this recent period towards more intensive economic strategies. These recent steps towards (modern) intensive livestock production include the processes by which fodder production and the production of wethers and cattle were increased in different parts of the country. This includes times when land that was owned by freeholders, was intensively cultivated and enclosed to protect hay-fields, and when farmers ceased to take milk from their ewes and began culling summer-old lambs, instead of newborn and winter-old lambs. My suggestion is that, in view of these specific changes, this recent process reversed the outcome of an earlier process, that is, a major transformation in herding systems and overall resource exploitation that began with the collapse of “the Commonwealth trade enterprise” and the development of dependent

land tenure, which continued with interruptions throughout the “Little Ice Age” into early modern times.

I gathered data on past and present farming strategies by engaging Icelandic farmers, agricultural scientists and farming documents. I noticed early on, that the production and processing of commercial wool causes direct reduction in the milk yield and meat production efficiency (Ingimundarson 1989:23–26). This particular finding, to be described in further detail below, allows me to define different means and levels of intensification, especially in reference to contingencies involving specialization in Northern sheep-herding. A problem-oriented approach to the farming systems during the mercantile Commonwealth period makes us look at deployment of labor in wool processing, trade and management at specialized sheep-rearing as it was contingent upon a broad subsistence base and numerous cattle conservation methods, and privatization in strategic ownership, and at a subsequent transformation, beginning in the 12th century, into a tributary and communal mode along with disintensification – when livestock proportions in fact shifted away from cattle in favor of sheep as a source of direct subsistence, and butter, cheese and fish became the chief export products. I therefore propose a “dual economy” model for examining the Icelandic Commonwealth period. This model acknowledges the regional integration of broad-based subsistence economies with wool production for export.

16.2.1. Intensification-step one, for increasing wool yield: many old wethers

Nineteenth century guide books relating to the rearing of livestock and farming improvements (Stephensen 1808:164; Einarsson 1879:47, 59–62) tell us that the annual yield of washed wool from fertile ewes is 1–1.25 kg., compared to a 1.75–2.5 kg. annual clip from wethers, which are two years and older. Furthermore, wethers provide high wool yield until they are 6–7 year old, whereas the annual wool yield from fertile ewes decreases drastically after their third or fourth year. Wethers were shorn or plucked before they would be driven onto pasture around mid-May, but the ewes not until early June if they had lambs (Ingimundarson 1995: 64–65).

Studies of livestock records, export records, and improvements in sheep rearing and wool processing techniques reveal the ways in which farmers in

Northeast Iceland managed to radically increase wool production and maintain it at high levels – before, during, and after the climatically hospitable second quarter of the 19th century. As Kristjánsson and Gunnlaugsson (1990:35–37) have shown, there was a six-fold increase in the population of wethers (two years and older), in Iceland’s East and the North quarter during the first part of the 19th century. They attribute this increase only to the fact that settlement expanded into the northeast interior during the warm period (of the early 19th century), and that the north and the northeast is particularly suitable for grazing by sheep. Other important factors to consider are that Danish monopoly on trade had been lifted in 1787 (Gunnarsson 1983, 1987), and that the export of wool products from Northeast Iceland dramatically increased after 1800 (and throughout the first half of the 19th century). This increase materialized first, in the form of raw wool, then fleeced skins, then homespun, yarn and knitted wares (Andrésson 1988:238–253; Stefánsson 1952:21–30). New efficient types of looms were imported. Weaving and textile work became an increasingly common occupation. The number of harbors involved in the export trade increased, and mercantile farmers’ associations were formed. Furthermore, farmers in *Norður-Múlasýsla* county began to selectively breed sheep with a focus on obtaining higher wool yield of better quality. They also focused on increasing the numbers of older wethers in their sheep flocks drastically (H. Stefánsson 1952:28–47, 56–74).

In the Commonwealth period prior to the early 13th century, older wethers were relatively numerous. While wethers yield significantly more wool than ewes, a herding strategy of having a high proportion of wethers has low meat and milk production efficiency. Hence, the keeping of many wethers and letting them grow to be old is a strong sign that the economy was led by incentives to produce a surplus of wool and skins – much of which would be exported as finished products. Two price lists dated to the 12th century- one issued by the National Assembly (*Diplomatarium Islandicum* 1:162–167) and the other by the Árnes district “spring-assembly” (*Diplomatarium Islandicum* 1:315–317) reveal a uniquely strong emphasis on commercial wool products in Icelandic history. The price table of the National Assembly highlights exportable products, and at the top of the list are processed wool, cloaks and skins. It first states that 6 ells of new and unused homespun (*vaðmál*) shall be worth one legal *eyrir*. Then, tufted wool cloaks are characterized in terms of length, width and quality, and their value is determined at two *aurar* (plural for *eyrir*). Six fleeced lamb-

skins (with the wool) and six shorn wetherskins are of equal value, and worth one legal *eyrir*.

16.2.2. Intensification-step two, for increasing wool yield: ewes in fleece, with lambs, and well sustained

Housing and the amount and quality of hay have critical effects on fleece weight, and on how many lambs will be born and survive (Ingimundarson 1995:69–70; Thorsteinsson and Þorgeirsson 1989; Einarsson 1879; Þorbergsson 1915:108–109). In order to maintain high wool yields from their ewes Commonwealth farmers would have provided their ewes with quality housing, good grazing and much winter fodder of good quality. Enclosures, private ownership, shared access through private contracts, and the intensive cultivation of land appear to characterize farming systems during the Commonwealth period. These characteristics can be looked at as being parts of an over-all intensive livestock production strategy, marked by mercantile incentives.

The Old Commonwealth law code (*Grágás*) includes numerous stipulations dictating that farmers shall erect sizeable fences of sod and/or stone around their hayfields, grain fields, hay storages, outlying meadows, marshy meadows, as well as certain grazing areas that are called *afrétt* (see *Grágás* 1992:321–324; also Þorsteinsson and Grímsdóttir 1989:84–87). Surveys by modern researchers have revealed the structural remains of those Early Icelandic fences and walls (Róbertsdóttir and Jóhannesson 1986; Þórarinnsson 1981; Eldjárn 1977). *Grágás* also includes numerous passages referring to the application of dung as natural fertilizer on home fields and outlying meadows (see Thoroddsen 1919:118–124; Jóhannesson 1974:293–294, 348; Þorsteinsson and Grímsdóttir 1989:84–87; Óskarsson 1992). Dung from livestock may have become an increasingly important source of fuel instead of fertilizer towards and during the early modern period, as fewer farmers had access to brushwood and driftwood as the climate became less hospitable.

The modern term for mountain pasture as communal property is *afréttur* (plural *afréttir*). Interior grazing areas with near universal access are called *almenningar*. The word *afréttur* does not occur in documents dated from the Commonwealth period. Instead, the word which one encounters in the *Grágás*’ inventories and ecclesiastical charters is *afrétt*, which liter-

ally means “enclosure”. Grágás (1992:342) defines *afrétt* as grazing land which two or more men own together. This definition is also made in Iceland’s oldest surviving farm inventory, dated 1140 (*Diplomatarium Islandicum* 1:178–180). The earliest documented description of shared grazing arrangements which evoke notions of communal access to land use, appear in the 1220 charter/inventory for the church of Gaulverjabær, near the bishop’s see at Skálholt (*Diplomatarium Islandicum* 1:403–404). As for *almenningur* (the common landed property which implies universal access), it is mentioned in the oldest surviving special charter, which dates to 1245 (*Diplomatarium Islandicum* 1:403–404). I infer that dependent land tenure and communal access to grazing on formerly private-owned land, developed simultaneously. Ecclesiastical institutions may have led these developments, from the mercantile ownership rights of freeholders to feudal and the prebendal mode of production.

In 1800, Icelanders numbered around 50,000. The majority of household heads during this time were tenants and cotters, many of them living on land owned by the church, the Danish Crown or by secular landlords. In the decades around 1900, when most farms had become freeholds (again), farming households gradually began to adopt increasingly intensive strategies for rearing livestock. Several essays (including T. Bjarnason 1884; Ásmundsson 1888:3–9; Sveinsson 1882) were published urging farmers to utilize dung more extensively for fertilizing their fields, as “ancient men”, i.e. the early Icelanders, had done. Farmers began to systematically fertilize their fields, erect walls around their home field, and to cultivate, flatten, dry up and enclose new land for making more hay (Þórólfsson 1901). These were critical steps taken towards (modern) intensive livestock production in Iceland.

16.2.3. Intensification-step three for increasing wool yield: many cows and finished suckling lambs

As referred to above, researchers have long noted that during most of the Commonwealth period, dairy cows and dry cattle were relatively numerous in relation to sheep. This is a distinct difference to the period from 13th century to 19th century. Given the necessary favorable climatic and environmental conditions during the first three centuries of settlement, Icelandic farmers raised many cattle for the meat, relied on their dairy cows for their

own milk consumption, and allowed the culling of numerous lambs aged five to six months. This intensive farming system was based on large-scale cattle production that also emphasized high yield for wool and sheepskins, and required that ewes not be milked for human consumption. It has been assumed that, just like farmers in early modern times, Commonwealth farmers relied significantly on sheep for dairy products (Aðalsteinsson 1991:289–290, 1981; Jóhannesson 1974:290–291; Sigurjónsson 1970; Guðjónsson 1949:92; Thoroddsen 1919:281–282; Ásmundsson 1888:17). This assumption has been maintained in spite of a lack of evidence from quite an extensive documentation of subsistence activities, and in spite of obvious evidence to the contrary.

We must take one brief look at the changes towards intensive livestock production around 1900 before we analyze the Early-Icelandic evidence on lamb and cattle production. Icelandic farmers ceased to take milk from their ewes and to cull newborn and yearling lambs in the first decades of the 20th century. This occurred concurrently with a dramatic increase in the heads of dairy cows and the increases in the production and exchange of fodder. These changes resulted in farmers that would and could cull numerous summer-old suckling lambs (*dilkar*) which yielded substantial meat, fleeces and fleeced skins. Earlier, when farmers were still milking their ewes, they had to sustain lambs through one winter, and through a critical second summer growth spurt, before the sheep would reproduce their own or yield significant meat, wool, and fleece.

During the Commonwealth period, fleeced lambskins were an important export item. The price table issued by *alþing* (*Diplomatarium Islandicum* 1: 162–167) lists fleeced lambskin at the top of the list, along with homespun and tufted wool cloaks. This clearly tells us that, to some extent at least, Commonwealth farmers would cull lambs at five to six months. This also means however, that they did not exploit ewes for their milk (for human consumption), because lambs need much of their mother's milk if they are to have a first summer growth spurt.

It is also helpful to look at the tithe law of 1097. This first and oldest tithe law (*Diplomatarium Islandicum* 1:70–162) stipulates what constitutes acceptable tithe currencies. Homespun (*vaðmál*), tufted wool cloaks (*varrafeldir*) and fleeced lambskins (*lambagærur*) are highlighted among acceptable forms of payment. This shows us that the tithe law stimulated the production of exportable products among lesser and larger farmers –

which the churchwardens, leading freeholders, chieftains, and bishops appropriated. It is important to add that the tithe law that was instituted in 1097 was not adhered to during the 13th century and thereafter. Instead, individual ecclesiastical charters stipulate what is acceptable tithe currency for individual parishes (see Þorsteinsson and Grímsdóttir 1989:103–106). One notices that butter, cheese, hay, blubber and the winterfeeding of live-stock had become dominant forms of tithe payment in the 13th century, whereas fish is increasingly mentioned after 1300. The economic ruling classes were only able to siphon from farmers and fishing-peasants' surpluses – which were in accordance with peasants' changing economic survival strategies.

It is a critical fact that weaning and penned lambs are not mentioned in *Grágás*, price tables, the sagas, or inventories dating to the Commonwealth period. On the other hand, the earliest dated manuscript of the so-called *Búalög* ("Farming-laws"), dated around 1400. This manuscript includes prices on both weaning and penned lambs (*Búalög* 1966:18). Neither this manuscript nor the comprehensive "Farming-laws" of 1775 include the category or term *dálkur* (suckling lamb). We could say that the term and category of *dálkur*, or finished suckling lamb, was brought back into common use by the end of the 19th century. This historical evidence suggests that large and small Commonwealth farmers, generally reared finished suckling lambs. However, these farmers where by the 14th century, increasingly exploiting the ewes for the milk, and as a result their production and processing of wool had decreased.

My attempt has been to show that, towards the end of the Commonwealth period, sheep became an increasingly important source of subsistence, as opposed to a source of wool surplus. Radical changes in livestock production in Iceland reflect the cooling of the climate, vegetation decline, and population pressure. They also reflect the collapse of the wool-export economy, and the development of a tributary mode of production.

16.3. Relations of production and distribution: From the chieftdoms of the merchant-farmers to the “dark ages” of colonial rule and tributary relations

So far I have provided an overview of the Commonwealth period’s regional integration of broad-based subsistence economies with wool production for export. In the section below I attempt to show how trade enterprises were facilitated through class, domestic markets and municipal institutions. I am primarily concerned here with the period from the 10th century until in the late-12th century, when rent tenure systems and other tributary forms of surplus extraction (i.e. various taxes) were becoming increasingly prevalent.

The first, salient issue that concerns me is how surplus production was stimulated, exchanged and appropriated in society as a whole. This occurred during a time when chieftains were influential administrators and negotiators, and acted on authority that was contingent on a powerful economic ruling class of the wealthy merchant farmers. Merchant-farmers were freeholders who, as leaders in powerful kin groups, controlled a broad subsistence base on extensive and private kin- based landholdings – partly through dependent-farms. A strong cattle component in herds supported a sheep-rearing strategy with emphasis on wool yield on these large landholdings. A considerable cattle component characterized herds on many smallholdings as well. A sizeable and sustainable cattle rearing required better land with substantial hay and construction. Without these requirements, many groups of commoners (smallhold-yeomanry), participated in domestic credit exchanges, specializing in commercial wool products. In other words, not only did merchant-farmers exploit a broad subsistence base as a way of supporting a wool-yielding, sheep-rearing strategy of their own. Merchant farmers plugged into a surplus labor-power, and generated or realized surplus wool products from commoners, whose participation in credit exchange would have been their way of coping. This also constituted an exploitation of class. Foreign trade encouraged population growth and labor intensity.

The earlier mentioned price tables issued by the Árnes “spring-assembly” and by the National Assembly at Alþing (*Diplomatarium Islandicum* I: 315–317, 162–167) should aid our inferences about the farming systems and organization of domestic trade when Icelanders were ac-

tive as merchants abroad. An important function of each “spring assembly” (Þorláksson 1979: 140–42), was to organize economic transactions and to authorize or negotiate prices, in particular, setting the value for a standard cow (*kúgildi*) in terms of ells of homespun cloth and þinglagsaurar (Jóhannesson 1974:333, *Diplomatarium Islandicum* I: 316). This is shown on the list issued by the Árnes, things, which also presents the relative values for different domestic animals and agricultural products, fish, wax, linens as well as silver and gold. The register issued by *Alþing* includes a similar, yet longer list of livestock and goods (excluding fish); however, prices are set only in terms of the value of a cow. In addition, a separate list shows in terms of *eyrir*, the prices for homespun, tufted wool cloaks (*vararfeldir*), foxskins, fleeced lambskins, shorn wetherskins, catskins, striped russet, as well as gold, silver, iron, iron tools, linen and wax. We can infer that commoner households’ indirect participation in the export economy by way of local credit systems and labor markets constituted their dependency on subsistence sources (other than sheep) which merchant-farmers owned and controlled.

Scholars have celebrated the autonomy of the medieval hreppar (municipal) administrations, being independent of the authority of chieftaincies (see Benediktsson 1974:185–186; Stein-Wilkeshuis 1982:347). While relatives were also required to provide proscribed assistance to their poorer kin, documented functions of these communal units were to compensate farmers for the loss of cattle and housing (but not for the loss of sheep) and to provide tithe relief for the poor. The disjuncture of responsibility that separated chiefdoms and municipalities indicates to me, that chieftains were not primary agents of redistribution as much as it underscores merchant-farmers’ interests. During the heyday of Icelandic trade enterprise these municipalities, as well as the kin-based support system, collectively helped neighboring household units to ensure each other’s reproduction (in face of severe subsistence risks and without cost to wealthy farmers) maintained semi-proletarianized labor-power through winters. This guarantee profited these merchant-farmers from whom communal funds purchased replacement cattle. It also preserved the incentives for wool products in sheep rearing among commoners.

The weakening of the indigenous economic ruling class of merchant-farmers ultimately led to the demise of mercantile Chiefdoms in Iceland, during a period which Jóhannesson (1974) referred to as the “death throes

of the Commonwealth". I hypothesize that chieftaincies and ecclesiastical institutions deriving tributary income (through tithes, rent and special taxes), gradually gained independence from the hegemonic block of merchant-farmers, while becoming dependent on Norwegian merchants' activities. This dependency led to the submission to the Norwegian King in 1264. A mercantile family farm system of land tenure was gradually replaced by a curious system, which had both prebendal and feudal characteristics, including sharecropping arrangements. Landowners rented out land along with a few head of dairy cattle, expecting payments in animals, dairy products and labor service. Tithe collectors demanded these forms of payment as well. The expansion of rent-tenure systems and an increasing concentration of land during the 12th century corresponded with the tendency among smallholders to rely on sheep as the primary means of subsistence. This entailed a production strategy of which considerable surplus wool would not be an outcome. Furthermore, in a period of worsening climatic conditions and vegetation decline, frequent severe seasons in the early 1180's and through to the first decade of the 13th century (Ogilvie 1984:141, 1991) led to an increasing number of smallholders who had lost both control and direct access to cattle and their products on domestic market. This also led to smallholders to lose the ability and incentive to cultivate hayfields, produce quality hay for cattle and ewes, rear wethers, and provide milk for their lambs. Given the collapse of the woolen export economy and its associated local credit systems, the lower peasantry need not be depicted as having been mere passive victims of feudalization and colonial-state formation, which began first under Norway then Denmark. The lower peasants' struggle for access to more land, (including the formerly privately administered enclosures (*afrétt*)), and against the constant construction and reconstruction of fences, may have been relatively resolved by the type of rent-tenure system that could provide more income.

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Resume

Artiklerne.

Artiklerne i POENOR projektets årbog fokuserer hovedsageligt på påvirkninger fra økonomiske systemer, globaliseringen og klimaændringer i de nordlige regioner. I forbindelse med *komparativ økonomisk systemanalyse* beskrives udvikling som bevægelse fra den traditionelle økonomi til en moderne økonomi. Dette indebærer en udvikling mod enten statsstyrede eller kapitalstyrede systemer, ligesom det involverer en differentieret tilnærmelse indenfor hvert af dikotomiens yderpoler. Mellem centraldirigeret økonomi og „laissez faire“ markeder er der andre systemer, som er baserede på enten andre planlægningsmodeller eller andre markedsformer. Med henblik på at hjælpe med at klassificere systemer præsenteres databaser og beregninger i forbindelse med deskriptiv statistisk analyse i årbogens afsluttende kapitler.

Den systemiske analyse inddrager også *globaliseringsaspektet*, idet de sidste 20 års neo-liberale økonomiske politik globalt set har domineret den økonomisk-politiske diskurs i de fleste lande. Dette inkluderer også de nordlige regionaløkonomier, hvor man ser forskellige grader af offentlige indgreb, der er mere eksplicite end i „den typiske OECD økonomi“. Enten er „kollektivismeprocenten“ meget høj som set i Nunavut og Grønland, eller der er forskellige „joint ventures“ mellem det offentlige og private selskaber. Offentlig drift er sine steder en uundgåelig konsekvens af de geografiske betingelser. Endvidere skal man huske, at fraværet af markedsmekanismer i fjerntliggende egne, byer og bosteder gør planlægning og regulering nødvendigt. Den globale udvikling har imidlertid, som mange af artiklerne viser, en „spin off“ virkning på de nordlige regionaløkonomier. I stedet for at anerkende statsinterventionisme som en nødvendighed for at systemerne kan fungere, forsøger man at formulere udviklingsstra-

tegieer baseret på en ideologisk og euro-centreret for-forståelse. Neo-liberale politiske anbefalinger er rodfæstet i neo-klassiske og klassiske doktriner og de dominerer fortsat diskursen om optimale udviklingsstrategier. Dette betyder ikke, at neo-liberalismen har været en succes. Nordlige økonomier kan stadig ikke sammenlignes med en OECD økonomi, og de vil sandsynligvis aldrig kunne blive det.

Skal der en gang i fremtiden foretages komparativ analyse er det nødvendigt først at vurdere, hvordan den systemiske udvikling eller eksisterende systemer, der ikke har ændret sig, kan klassificeres. Disse systemer har udviklet sig i forskellig retning som illustreret med tabellen nedenfor. Klassifikationen af systemer er ikke så simpel som matrixen måske antyder. Adskillige sociale koordinationsmekanismer overlapper hinanden.

Table 1. Klassifikation af arktiske systemer

Ejerform:	Sociale koordineringsmekanismer:			
	Traditionel	Planlægning	Marked	Aftaler & kontrakter
Ingen ejendom eller simpel ejendom af udstyr til jagt og fiskeri	Subsistensøkonomi (jagt og fiskeri ikke-monetære relationer)	Subsistensøkonomi i et system baseret på central planlægning eller indikativ planlægning.	Subsistensøkonomi i et markedsøkonomisk system	Subsistensøkonomi et system baseret på forhandlinger og kontrakter
Statseje	Subsistensøkonomi eller markedsocialisme et etatistisk system.	Central planlægning eller indikativ planlægning i hhv. et etatistisk eller markedsocialistisk system	Markeds-socialisme	Aftaler og kontrakter mellem statsejede eller samfundsejede virksomheder
Privateje	Subsistensøkonomi og kapitalisme	Indiativ planlægning i et kapitalistisk markedsystem.	Markeds-kapitalisme	Aftaler og kontrakter mellem privatejede virksomheder
Ko-operativt eller andelseje	Subsistensøkonomi og kooperative systemer.	Planlægning i et kooperativt system og/eller central/indikativ planlægning	Kooperativer i et markeds-kapitalistisk, eller markeds-socialistisk system.	Aftaler og kontrakter mellem kooperative virksomheder

Et system kan f.eks. have en traditionel sektor, en dominerende statslig sektor, og en lille privat sektor (Grønland). Alternativt kan systemet have en traditionel sektor, et kooperativ sektor, og en privat sektor (Nunavik). Det er også muligt, at et system består af en traditionel sektor, der fungerer sideløbende med en tidligere statsejet sektor (Etatisme), eller som i dag

anvendes parallelt med resterne af en tidligere Etatistisk økonomi sammen med en voksende traditionel kapitalistisk sektor (f.eks Barents-regionen).

Klassificeringsproceduren kan endvidere i forbindelse med f.eks. kapitalisme eller etatisme omfatte flere forskellige systemer inden for hver kategori.¹⁸¹ Kapitalismen kan være „laissez faire“ (fx USA), planlagt (fx Frankrig) eller social (f.eks Skandinavien, Tyskland og Canada). En måde at klassificere systemerne kan basere sig på på fordelingen af økonomiske aktiviteter. Et eksempel herpå er fordelingen af beskæftigelse og værditilvækst af hver sektor med henblik på at finde forskelle mellem de regionale arktiske systemer. Dette tilgang kunne forenkle klassificeringen og gøre sammenlignende analyser mulige med henblik på at afdække systemiske faktorer, der hæmmer eller fremmer en selvåret udviklingsvej.

Den næste tilnærmelse til analyse *klimaændringer* involverer spørgsmålet om, hvordan disse påvirker ressourcenasen, menneskelig udvikling, lokalsamfundsudvikling og makroøkonomisk udvikling i nordlige regionaløkonomier. Spørgsmålet går på hvorvidt arktiske systemer er modstandsdygtige overfor eksogene faktorer. Komparativt set har økonomierne forskellige strukturer og funktionsmåder jf. tabel 1, og disse påvirker på sin side de resulterende tilstande, der kausalt forklares ved endogene faktorer (systemimmanente faktorer) og eksogene faktorer (klima, verdensmarked, globalisering, energipriser, valutakurser, internationale rentespænd, kapitaleksort etc.)

Hertil kommer den politiske diskurs, der hviler på den neo-klassiske teori og en forherligelse af det frie marked. Denne tilnærmelse kan næppe betegnes som adækvat i forbindelse med en holistisk analyse af de nordlige økonomiske systemer. Essensen af POENOR projektet er, at de tre tilnærmelser globaliseringspåvirkninger, systemiske påvirkninger og klimaændringernes påvirkning er vævet sammen som et kompleks af påvirkningsfaktorer. Dette repræsenterer både restriktioner og potentialer m.h.t. en selvåret udviklingsvej.

Som antydnet kan modsætninger mellem centrale og decentrale beslutningstagere i en komparativ systemkontekst representere en dikotomi mellem plan og marked og mellem offentlig og privat ejendomsret. På den

¹⁸¹ Etatisme er et system baseret på en dominerende stat. Nogle gange anvendes udtrykket »etatisme« andre gange »statisme«. Et sådant system har en høj procentdel af kollektivismen (offentlige udgifter andel af BNP), der er tale om statseje og om planøkonomi. Det kan være den klassiske sovjetiske model, rester af denne i det arktiske Rusland eller en modificeret etatisme som i Grønland. Se Gorm Winther: Demokrati og magt i Grønland – fremkomsten af en ny klasse? (DIIPER Research Series No. 1, Aalborg Universitet 2007: [<http://www.diiipr.ihis.aau.dk / research/3397011>]).

anden side kan dette også lede til refleksioner om „en tredje vej“ mellem disse yderpoler. Gerard Duhaime præsenterer en sammenfattende diskussion af arktisk samfundsvidenskabelig forskning i sin artikel „Theoretical Foundation for the Study of Arctic Development Models’. Hans analyse-tilnærmelse udgør en søgen efter alternativer til udviklingsparadigmer baseret på enten stat eller marked. I denne forbindelse inddrages Amartya Sens og Martha Nussbaums udvidede behovsmodel baseret på menneskelige kapaciteter. Duhaime er på udkig efter en måde at inddrage de lokale oprindelige folk i beslutningsprocesserne på. I artiklen præsenteres en humanistisk tilnærmelse til udvikling af menneskelige kapaciteter som et alternativ til den neo-liberale opfattelse af menneskelig behovsopfyldelse og som et alternativ til statslig involvering fra sydlige „moder-økonomier’. De forskellige økonomiske metoder til ressourceudnyttelse – traditionel udnyttelse af naturen og jorden eller storstilede udvinding af olie, gas og råstoffer – betragtes normalt som adskilte verdener i en vision, traditionelle videnskabelige disciplinære barrierer har vænnet os til. Duhaime mener, at betingelserne, som skaber disse praksisformer og deres effekter alle er en del af den samme arktiske økonomiske realitet i en global sammenhæng. Projekter i mega-skala konfronteres med den politiske magt hos oprindelige folk og deres krav om, at lokalsamfundene kan drage fordele af projekterne. Hertil kommer lokalbefolkningernes bekymringer for egne levilkår, og muligheden for at skabe en bæredygtig udvikling. Udfordringer m.h.t. arktisk udvikling kræver, at der tegnes et sammenfattende billede af den arktiske økonomi. Sammenligninger af økonomisk praksis, de forskellige forudsætninger og de forskellige påvirkninger indenfor denne globale kontekst er først for nyligt blevet indledt. Ved at tage denne tilnærmelse op kan det blive muligt, at skabe en omfattende analyse af arktiske udviklingsmodeller og kaste lys over specifikke effekter m.h.t. lokalbefolkningernes kontrol over ressourcerne, sundhed, uddannelse, social integration, levilkår, økonomisk lighed og lokal deltagelse i beslutninger.

Jack Kruse giver en vis støtte til Duhaimes tese om affinitet mellem et traditionelt økonomisk system og et moderne system baseret på megaskalaprosjekter. Han rejser i artiklen „*Sustainability from a Local Point of View: Alaska’s North Slope and Oil Development*“ spørgsmålet om det er muligt, at multinationale stor-skala projekter og en udvikling, der ikke er bæredygtig, kan interagere med lokalsamfund på en positiv måde? På grundlag af kvantitative spørgemetoder i forbindelse med interviewing af

North Slope Iñupiat i 1977 og i 2003 synes resultaterne at bekræfte, at Iñupiat i North Slope var lige så godt eller bedre stillet end deres Iñupiat naboer ved Beringsstrædet og de nordvestlige arktiske regioner og bedre end de oprindelige folk i Chukotka i det nordøstlige Rusland samt Inuit i Grønland og Arktisk Canada. Følgelig ser det ud som om, at kombinationer mellem traditionel økonomi og „storskala-kapitalisme“ eller lokal „folkekapitalisme“ (regionale selskaber) ikke reducerer menneskelig velfærd. Indikatorer i empirisk analyse af menneskelig velfærd fra *Arctic Human Development Report* (AHDR) inkluderer variablene materielle ressourcer, godt helbred, adgang til uddannelse, bånd med naturen, kulturel kontinuitet og kontrol over egen skæbne. Variablene fremkommer ved interviewing „face to face“ af lokale beboere i North Slope. Essentielt for forståelsen af resultaterne er, at Iñupiat etablerede en regional regering „*The North Slope Borough*“ med succes i 1972. Indenfor den regionale grænse administrerer North Slopes regering Prudhoe Bays udvikling. Man har en lovfæstet ret til at beskatte olieproduktionen på statslig jord indenfor regionen, og man har modtaget betydelige indtægter fra denne beskatning. Disse indtægter har finansieret *The Capital Improvement Program* – The North Slope Borough har gennem dette program tjent sociale og økonomiske behov hos Iñupiat på tre felter nemlig udvikling af det største program af sin slags i Alaska, dannelsen af den næststørste regionale administration i delstaten og tilvejebringelsen af en bred vifte af sociale ydelser, infrastruktur, og en udbygget sundheds- og uddannelsessektor. Hertil kommer betydelige beskæftigelsesmæssige effekter af programmet.

I artiklen „*The Social Economy and Economic Development in the Canadian North: Constraints and Opportunities*“ operationaliserer Chris Southcott Duhaimes „tredje vej“. Den sociale økonomi kan ultrakort beskrives som virksomheder, organisationer eller netværk, der har et socialt sigte; der skal være demokratisk styring og økonomisk gevinst må ikke være hovedmålsætningen.¹⁸² Den sociale økonomi forstået som kooperativer, selvejende institutioner, frivillige NGO'er og netværk, der alle arbejder mellem stat og marked, er et muligt instrument til at tage fat på udfordringer i Canadas nordlige regioner, ligesom den er et instrument til at sikre en øget lokal deltagelse. Forsøg på at ekspandere socialøkonomien i det nordlige Canada må imidlertid først tage højde for adskillige unikke karak-

¹⁸² se kooperationens hjemmeside [www.socialoekonomi.dk]

teristika for en regions økonomi, der kan skabe både restriktioner og potentialer. Den traditionelle økonomi, statens rolle m.h.t. økonomisk udvikling og udviklingen af ressourceudnyttelsen er alle vigtige karakteristika, der påvirker regionernes socio-økonomiske udvikling. Hvordan disse påvirker økonomiske organisationer må forstås rigtigt med henblik på at udvikle de rette politikker, der kan stimulere væksten i det nordlige Canadas social-økonomi. Southcott står bag etableringen af *„Social Research Network for Northern Canada’*, hvor formålet netop er dette. Netværket består af universitetsforskere og lokalsamfunds-baserede organisationer, der fungerer som partnere i projektet. Det er endvidere en målsætning at mobilisere ny viden, der kan hjælpe til med at udvikle socialøkonomiske kapaciteter i de nordlige canadiske lokalsamfund. Man har defineret en række af kerneområder i projektet, hvor man håber at bygge videre på eksisterende forskningsresultater.

I en komparativ system-kontekst fremtræder decentraliseringsaspektet som reformer med henblik på privatisering og liberalisering. M.h.t. privatiseringer analyserer *Hans Aage* med afsæt i mikroøkonomisk teori balancen mellem offentlig og privat drift i artiklen *„Enterprise Ownership and resources management in Greenland“*. I Grønland er markeds-efficiens forhindret af alle tænkelige former for markedssvigt. Statsinterventionisme er nødvendig primært på grund af eksternaliteter og ressource-afhængighed, men dette kan indebære risici for en mislykket politik på grund af overrentesøgning. Fordelene ved statslig styring eller markedsstyring kombineres ikke i offentlige aktieselskaber, der ofte er lokale monopoler. Monopolerne er i det store hele unddraget enhver form for „checks“ fra markedet eller det offentlige. Landsstyrets manglende evne til at indgå i langsigtede forpligtelser er bestemt et argument for, at magten decentraliseres, og dette i nogle tilfælde endda til markedet gennem privatisering. Argumenterne peger imidlertid, når sociale eksternaliteter og ressourcekontrol er involveret, mod enten statsvirksomheder med fuld demokratisk kontrol eller mod uddelegering af magt til et uafhængigt professionelt organ bundet af detaljerede og bindende og foreskrevne regler. Modsat Duhaime og Southcott er Aage imidlertid skeptisk m.h.t. demokratisk medejerskab og kontrol hos borgere i lokalsamfundene.

Liberalisering og indførelse af markedssamfundet i en arktisk region giver anledning til bekymring over mulige fordelingsmæssige konsekvenser, og som et *worst case scenario* fattigdom. Grønland har indtil for nyligt

baseret sig på hjemmestyreejede foretagender og planlagte priser ved hjælp af krydssubsidiering. I artiklen *„The Reform on Uniform Prices and its Consequences for Households in Greenland Settlements“* præsenterer redaktøren af denne årbog ensprisreformerne. Om end det sjældent siges direkte af de politiske beslutningstagere, synes strategien bag reformerne at indeholde et ønske om at skabe en „exodus“ fra bygder og mindre byer ind til de fire store byer i Grønland. Reformpakken udgør en gradvis transformation af forskellige priser på forskellige varer og tjenesteydelser, der hidtil har været baseret på princippet om, at en vare eller en ydelse skal koste det samme uanset, hvor man bor. „Casen“ der analyseres i artiklen er reformen i 2005 vedrørende taksterne på energi og vand. Intentionen om en gradvis overgang til „kostægte“ priser på energi og vand opdeler Grønland i to. „Konkurrencebyerne“, Qaqortoq, Nuuk, Sisimiut og Ilulissat skulle det første år efter reformens trådte i kraft have en prisnedsættelse på 50 % og den resterende del af Grønland skulle så over fem år gradvist se en stigning på 50 %. Intentionen bag denne todelte reform var også en kombination af skattelettelser og prisreformen, hvor skattelettelserne skulle udligne prisstigningerne på energi og vand i „taberbyerne“ og bygderne. Ikke desto mindre viser beregninger, at skattereformen i 2004 ikke er nok. Nogle husholdningers købekraft vil blive drastisk forringet, hvis ikke der kompenseres yderligere. Spørgsmålet er imidlertid, hvor mange husholdninger, der rammes drastisk og set i lyset af olieprisstigninger er det også et spørgsmål om forringelserne ikke bliver endnu større.

Privatiserings og liberaliseringsbølgen er ikke kun noget, der relaterer sig til Grønland, de relaterer sig også aktuelt til den islandske økonomi. Siden 90'erne, da Island privatiserede sin statslige banksektor, har den økonomiske struktur og den sociale klassestruktur ændret sig. Ivar Jonsson beskriver i sin artikel *„Approaching the New Transnational Capitalist Class and the mini-keiretzu system in Iceland“*, ændringerne i Island som en „mini-keiritzu“. Japanske transnationale selskaber er omfattet af Keiretzu begrebet, der refererer til familier eller netværk, der leder disse selskaber. I denne sammenhæng ser Jonsson de tre privatiserede banker som kernen og grundlaget for tre tæt sammenstrikkede „spindelvæv“ bestående af selskaber i detail- og transportsektoren. Disse selskaber og bankerne opbyggede stærke finansielle positioner som oligopoler med henblik på at realisere oligopolrenter hos forbrugerne. Udenlandske investeringer bl.a. i Danmark var delvist baserede på disse oligopolrenter. Et nyt lag opstod

indenfor den islandske borgerlige magtblok. Denne var forankret i den finansielle sektor og lånefinansiering fra udenlandske banker blev investeret i udlandet. Jonssons artikel blev skrevet et år før den internationale økonomiske krise og den alvorlige krise for den islandske økonomi slog igennem. Jonssons analyse vil sikkert kunne påvirkes af den seneste udvikling. Spørgsmålet er om dette nye lag indenfor den islandske borgerlige magtblok har kunnet overleve den finansielle sektors kollaps i Island?

I *Lyudmila Zalkin's* artikel „*Local Implications of Housing Reform in Northern Regions of Russia*“ præsenteres vi for endnu et element i privatiserings og liberaliseringsbølgen i nordlige regionaløkonomier – denne gang boligmarkedet og situationen m.h.t. en privatisering af lejligheder i det nordlige Rusland. Den empiriske analyse i artiklen henter sit udgangspunkt i en stikprøve af respondenter i byen Apatiti på Kolahalvøen.

Reformer blev igangsat i 90'erne, og dog er gennemførelsen af reformerne stadig forsinkede, når man sammenligner med resten af den russiske føderation. Nogle reformmålsætninger er implementerede. Markeder er etablerede og nogle lejere har deltaget aktivt i privatiseringsprocesserne, men erhvervelse af ejendomsret for mange mennesker er ikke forbundet med nye rettigheder og pligter. For et flertal af mennesker, kan privatisering kun være en mulighed for at overdrage en mulighed til andre, fordi man ikke har råd. Boligreformen må derfor ud fra en helhedsbetragtning siges ikke at følge beboernes forventninger. På samme tid opfatter man ikke sig selv som værende en del af reformerne, og man kommer ikke med forslag, der kan ændre forløbet.

Iulie Aslaksen, Solveig Glomsrød og Anne Ingeborg Myhr understreger i deres artikel „*Climate change and economic system impacts on self-sufficiency constraints and potentials – perspectives from ecological economics*“, at både klimaændringer og økonomiske systemer har en effekt på arktiske økonomier. De eksogene faktorer i det arktiske beslutningsteoretiske skema (se introduction side 31), klimaændringer og den globale økonomi påvirker både restriktioner og potentialer m.h.t. at skabe en selvåret udvikling. Traditionel økonomisk teori og tilnærmelser m.h.t. en værdisættelse er måske ikke tilstrækkelige værktøjer til at indfange dette. Neoklassisk økonomi og „trade off“ modeller ser naturen som et gode, der er kommensurabelt med alle andre goder, og følgelig er der substitutionsmuligheder mellem naturen og goder fremstillet indenfor det markedøkonomiske system. Rationel egeninteresse repræsenteret ved „homo oeconomicus“ udgør imidlertid ikke den samme egeninteresse som det ansvarlige

individ i den økologiske økonomi. Dette antyder, at det er nødvendigt med en bredere tilgang i forbindelse med usikkerhed omkring miljøets tilstand. En sådan tilgang tager hensyn til etiske værdier og interessekonflikter. For at forbedre mulighederne for en bæredygtig udvikling og for selvforsyning kræver forebyggende tiltag udvikling af metoder, hvor anerkendelse af usikkerheder indgår, hvor fremme af interessenterne deltagelse indgår og hvor anerkendelse af etiske værdier indgår under hensyntagen til den traditionelle økologiske viden oprindelige folk i Arktis besidder. Som andre bidragydere i denne bog sætter de tre forfattere spørgsmålstegn ved den centralistiske model. Dette er ikke ensbetydende med, at man erstatter den centralistiske model med et „laissez faire“ marked, „homo oeconomicus“ og „trade off“ modellen. I stedet peges der på en partcipatorisk model med udgangspunkt i lokal viden. Man aner her en parallel til Duhaimes tanker om et humaniseret system der tager afsæt i Amartya Sens og Martha Nussbaum tilgang omkring menneskelige kapaciteter. Der er også en parallel til Southcott's artikel om den sociale økonomi i det nordlige Canada.

Hugo Reinert, Svein Mathiesen og Erik Reinert identificerer i deres artikel „*Climate Change and Pastoral Flexibility: A Norwegian Saami Case*“ fire niveauer for fleksibel tilpasning af rensdyravl til langsigtede klimaændringer. Artiklen behandler også spørgsmålet om centralisme eller decentralisme i Nordnorge. I den forbindelse er der fire mestringsstrategier – rumlig fleksibilitet, rensdyrflokkenes struktur, produktion og social organisation. Ved at mindske tabet af jordarealer for rensdyravl og modvirke ødelæggelsen af økologiske nicher, giver man rensdyr-besætninger muligheden for at mestre forandringer. Den anden mestringsstrategi hviler på aktivering og facilitering med henblik på at omstrukturere besætninger så diversificering kan modstå dramatiske klimaændringer. Den tredje strategi hænger sammen med input-output relationer, hvor monopsonisme dominerer afsætningen af rensdyrkød.¹⁸³ Afsætningen af rensdyr er sæsonbestemt og det monopsonistiske marked tjener ikke rensdyravlernes interesser. Dette antyder, at det var bedre, hvis rensdyravlerne selv kunne kontrollere afsætningen af kød. Dette leder så til den fjerde mestringsstrategi, der hviler på ideen om en decentraliseret organisation. Som foreslået af Aslaksen, Glomsrød og Myhr inkluderer en sådan strategi lokale interessenters deltagelse og kontrol. Den norske stat som en central beslutningstager bevarer kontrollen over rensdy-

¹⁸³ Et monopson er et marked med en køber/få købere og mange sælgere. Dette indebærer, at køber(e) kan misbruge en dominerende stilling til at trykke priserne på kød nedad.

ravlen, hvilket hviler på koncepter og reguleringer kendt fra traditionelt landbrug. Sammenslutninger af samiske rensdyravlere i kollektiver – de såkaldte „siidas“ – var den oprindelige sociale organisationsform blandt avlerne. Dette antyder et behov for at nedskalere og decentralisere med henblik på at reformere den samiske økonomi i overensstemmelse med et traditionelt økonomisk system. Forfatternes endelige anbefaling falder i tråd med artiklerne ovenfor, hvor et partipatorisk system ses som et alternativ til både etatisme og markeds kapitalisme.

Joan Nymand Larsen's artikel „*Climate change, natural resource dependency, and supply shocks: The case of Greenland*“ beskriver det cykliske forløb som karakteriserer udviklingen i efterkrigstidens Grønland. Manglen på et diversificeret output og lavere indkomster pr. capita skaber et ustabilt miljø. Generelt set kan den manglende stabilitet, som sandsynligvis er forbundet med usikkerhed om tilgængeligheden af offentlige og private ressourcer, komplicerer udviklingen, planlægningen og den økonomiske vækst. Dette problem kan blive endnu mere alvorligt på grund af de fremtidige konsekvenser af klimaforandringer. Usikkerheder relaterer sig til, at det er svært at modellere de forskellige udfald og til, at det er svært at få fat i gode og pålidelige data. Ifølge Larsen præsenteres forskermiljøerne for nye udfordringer på grund af klimaændringerne kombineret med andre processer, der dukker op i et hastigt tempo – hertil kommer en begrænset observationel infrastruktur, manglen på tidssvarende, korrekte og pålidelige data og informationsnetværk. Der er i høj grad et behov for omfattende databaser, sofistikeret datafangst og udvikling og styring af tidssvarende informationssystemer.

Rasmus Ole Rasmussen tager sit udgangspunkt i diskussioner angående konsekvenserne af de klimaændringer, der er under udvikling. I artiklen „*Climate Change, Informal Economy and Generation and Gender Responses to Changes*“ argumenteres der for, at diskussionerne tenderer til at ignorere det faktum, at der kan være foranstaltninger og ressourcer indenfor lokalsamfundene, som er i stand til at mestre de store ændringer. På samme tid tenderer diskussionerne til at glemme, at der er andre sociale processer i gang, der uafhængigt af klimaændringerne kan vise sig at være endnu mere afgørende for bygdernes fremtid. Rasmussens analyse fokuserer på tre elementer. For det første skal man ikke glemme, at de klimaforandringer, vi ser nu ikke er ekceptionelle. Indenfor de sidste hundrede år har Grønland været udsat for massive klimaændringer, der haft både negative og positive konsekvenser for levevilkårene. For det andet tenderer

grønlandske lokalsamfund til at reagere på de ændringer, hvor den traditionelle økonomis rolle m.h.t. at tilpasse lokalsamfundslivet til miljømæssige, økonomiske og sociale forandringer er vigtig. Dette er ikke specielt for Grønland, hvorfor andre dele af Arktis og erfaringerne der m.h.t. informelle økonomiske aktiviteter også indgår i Rasmussens argumenter. For det tredje fokuseres der på sociale forandringer, fordi disse, som antydnet, kan have en større indflydelse på bygdelivet og bygdestrukturen end klimaændringerne måske har. Som Martha Nussbaum og kapacitetsteorien lægger Rasmussen vægt på kvinders frihed, som repræsenterer en anden økonomi end den traditionelle. I demografiske termer betyder dette, at bygdekvinde rejser til byerne og den moderne økonomi, mens bygderne derfor mestendels befolkes af mænd, der udøver det traditionelle erhverv.

Som Antydnet af Joan Nymand Larsen er adgang til databaser og empirisk analyse baseret på disse yderst vigtig. *The Arctic Human Development Report* udgør her et pionerarbejde indenfor samfundsvidenskabelig analyse. ECONOR projektet fra Norges Statistik, ARCTICSTAT og SLICA projektet førte dette arbejde videre. ARCTICSTAT er den eneste omfattende samfundsvidenskabelige database, der er til rådighed i dag.

I Solveig Glomsrød's og Iulie Aslaksen's artikel „*Presenting the Economy of the North (ECONOR)*“ baseret på ARCTICSTAT og andre kilder, præsenteres grundlæggende statistisk analyse af de nordlige regionale økonomier. Man kunne måske få det indtryk, at den aggregerede arktiske økonomi spiller en mindre rolle i den globale økonomi, hvilket langtfra er tilfældet. Der er i Arktis store ressourcemængder fra olie og mineraler til havets ressourcer og skovene. Givet den vigtige rolle Arktis spiller, som udbyder af råmaterialer af alle slags er styring af og kontrol med ressourcerne vigtig, og dette vil sandsynligvis blive endnu vigtigere i fremtiden på grund af klimaændringerne. Et eksempel er den udfordring som ændringer af fiskebestandenes vandringer og en forøgelse af ressourcemængden stiller. En anden er forbundet med mulige ændringer og kontrollen med den lettere adgang til mineraler og fossile brændstoffer. Forureningsproblemer vil også indtage en stadig vigtigere rolle som økonomiske aktiviteter ekspanderer i Arktis. Forurening breder sig over landegrænser og påvirker globale offentlige goder som ren luft, vand, biodiversitet og dyrelivet. Dette vil også resultere i et stigende behov for supranationale reguleringsmekanismer. Forfatterne konkluderer, at der blandt adskillige gode grunde for at indsamle sig et overblik over den arktiske økonomi, især er et behov for

at skabe en informationsplatform fra hvilken, man kan vurdere de arktiske samfunds bæredygtighed med udgangspunkt i kontrol af naturrigdommene og sårbarheden i forhold til globale politikker og tendenser.

Gerard Duhaime og *Andre Caron* giver et omfattende overblik over den første internationale samfundsvidenskabelige database i deres artikel „*Analyzing Arctic Social Realities Through ARCTICSTAT*“.¹⁸⁴ De foreliggende statistiske data, der beskæftiger sig med arktiske befolkninger kommer fra flere kilder. En sådan mangfoldighed af kilder gør søgning og brug af disse data vanskelig. ARCTICSTAT blev oprettet med henblik på at overvinde disse vanskeligheder. Det er en databank, der indeholder socio-økonomiske data dækkende mere end 30 arktiske regioner grupperet som et sammenhængende og systematisk hele. Denne gruppering letter beskrivelse, analyse, fortolkning og sammenligning af levevilkårene for arktiske befolkninger. Duhaimes og Carons artikel præsenterer afgrænsningen af det område, der er omfattet af ARCTICSTAT, samt den generelle metode, der blev brugt til at lokalisere kilder og data, valget af indikatorer og en analyse af det statistiske indhold. Fofatterne fremhæver også visse begrænsninger forbundet med databasen, og de advarer forskere, der ønsker at bruge de data, der findes i databanken, komparativt. Advarslen er formuleret med eksempler på vigtige begrebsmæssige og metodiske forskelle i produktionen af de forskellige nationale kontorer, hvorfra de indsamlede oplysninger stammer.

Birger Poppel præsenter i sin artikel „*Some data sources on people, peoples, communities, regions and human activities in the Arctic*“ en anden omfattende database SliCA.¹⁸⁵ I artiklen introduceres både adgang til samfundsvidenskabelige data i Grønland såvel som den Grønlandsspecifikke del af SliCA. SliCA modellen og relevant litteratur fremstilles i artiklens appendix. Resultaterne af SliCA i form af et omfattende tabelmateriale er nu tilgængeligt på projektets webside og i publicerede videnskabelige artikler og formidling til den grønlandske presse.¹⁸⁶ Materialet kan endvidere gøres tilgængeligt gennem aftaler med SliCA forsker teamet. Resultaterne har allerede vist sig nyttige i forbindelse med initiativer som projektet vedrørende arktiske sociale indikatorer (ASI projektet) og en række andre projekter intieret af Arktisk Råd samt godkendte projekter under det internationale polarår som ECONOR og POENOR projekterne. SliCA har

¹⁸⁴ [<http://www.arcticstat.org/>] Arctic Statistic Socio-economic Data Base

¹⁸⁵ [<http://www.arcticlivingconditions.org/>] Survey of Living Conditions in the Arctic

¹⁸⁶ Tidsskriftet Samfundsøkonomen nr. 1 2007, endvidere en kronikserie i avisen Sermitsiaq i 2009.

forbindelser til en række forskningsprojekter, der fokuserer på dataindsamling og – forvaltning, samt på oprettelse af overvågningssystemer og netværk dannet med henblik på, at dokumentere de fysiske og biologiske ændringer i Arktis. Desuden har deskriptive undersøgelser af to grønlandske kommuner været en del af udgangspunktet for diskussioner om udvikling af lokalsamfund. SLiCA er både et begreb og et sæt af resultater. SLiCA som et begreb kan anvendes til fremtidige forbedringer af arktiske observationer, og projektet kan bidrage til at informere de politiske beslutningstagere, oprindelige folks organisationer og forskere.

POENOR projektet omfatter ikke en komplet historisk oversigt over Arktis og sub-arktis udvikling. Alligevel havde Skagen workshopen en præsentation relevant i forhold til en historisk analyse af komparative systemer over et længere tidsspand. Artiklen *„Comparative-historical analysis of farming systems and agricultural intensification in medieval and early modern Iceland“* af Jon Haukur Ingimundarsson drejer sig om landbrugssystemet i det islandske rige (10. til det 13. århundrede), som udviklede sig i forbindelse med en udviklet socio-politisk struktur understøttet af en relativ stor befolkning i forhold til de efterfølgende fem århundreder. Denne periode var endvidere kendetegnet ved, at man udviklede en merkantil udveksling og fordeling af den overskydende produktion. Det intensive tidlige islandske landbrugssystem sammenlignes med karakteristika på intensiveret animalsk produktion og handel i løbet af det 19. århundrede og de første to årtier i det 20. århundrede. Konkret giver Ingimundarsson for det første et overblik over en selvforsynende traditionel økonomi, som understøttede specialiseret fårehold, og som gav overskud af uld til eksport i „den varme middelalderperiode“. Efterfølgende uddyber han for det andet, hvordan dannelsen af et ledelsessystem var baseret på et lag af handelsmænd og bønder. For det tredje undersøger Ingimundarsson, hvordan produktioner baseret på et selveje, der gik i arv indenfor familien, intensiveredes indenfor rammerne af merkantile aktiviteter, kreditsystemer i landdistrikterne og slægts- og lokalt baserede forsikringssystemer. For det fjerde beskriver han en efterfølgende deintensivering og en ændring til et landbrugssystem baseret på fåreavl, hvor bestandene blev opdrættet til effektiv mælk og kød-produktion. Endelig for det femte præsenteres frembruddet af lejebaserede driftsformer, fælles ejendomsret og tributære systemer indenfor rammerne af gejstlige institutioner og koloniale relationer til Norge.