

5. Interdependency of subsistence and market economies in the Arctic

Birger Poppel¹

In his address to the Inuit Circumpolar Conference in 1998, Finn Lynge focused on a topic «which has so far received all too little attention and which – to the mind of a growing number of people – is essential in securing a place for hunting cultures in the world of tomorrow. And that is the issue of economic quantification of subsistence values. ... What evades

a monetary assessment has no interest for the statisticians. For governments' economic planners, what cannot be counted in money doesn't exist»². On several occasions, the Arctic Council³ has focused on subsistence activities as part of the lifestyle of the indigenous peoples of the Arctic, and on how subsistence is conditioned by environmental impacts. These concerns are reflected in research contributions developed under the auspices of the Arctic Council, such as the Arctic Monitoring and Assessment Program, the Arctic Human Development Report, the Arctic Climate Impact Assessment Program and a number of other projects⁴. The Arctic Human Development Report stated that: «Customary harvesting practices are not only culturally but also economically important locally, although their role varies by region, ethnic group, urban or rural setting, and generation. This harvesting is important for its contribution to food production and consumption.» Although the importance of the subsistence economy in the Arctic is now becoming more widely recognized, sufficient data are not yet available to give a comprehensive picture of the subsistence activities of economic significance to individuals, households and communities in the Arctic. One of the purposes in launching the Survey of Living Conditions in the Arctic (SLiCA) was to help to fill this gap.

This chapter, which includes some preliminary results from the SLiCA project, aims to contribute to the picture of how subsistence activities and the cash economy are mutually dependent on each other for providing consumption possibilities in the Arctic today, and



Ilulissat, Greenland. Photo: Birger Poppel.

at the same time are part of a lifestyle that represents continuity, sharing and connection to nature. As we show in this chapter, the proportion of food obtained by subsistence activities is quite large for many Arctic communities. Moreover, subsistence activities are embedded in a unique cultural and social context that conditions their value. Quantification of subsistence activities in

economic terms cannot capture the cultural values, but may provide an important input for understanding the economy and living conditions in the Arctic. Hopefully, the information provided in this report and by follow-up activities, e.g., future SLiCA reports, will give statisticians, policy-makers and the public a better basis for understanding the significance of the economy of subsistence activities outside the market sphere. Thus, this information will give a more comprehensive picture of consumption possibilities and well-being of the people in the Arctic.

Subsistence and subsistence activities

Subsistence is a highly disputed theoretical concept within the social sciences and the humanities. The discussion among Arctic social scientists has been focusing on how far into the transition, from wildlife harvest and principles of sharing, to a globalized world governed by the market economy, it is still meaningful to employ the concept of subsistence. To reflect the changing socio-economic conditions of the hunting, herding and fishing societies, a variety of subsistence concepts has been introduced, all stressing the importance of traditional subsistence activities in a mode of production now mixed with the cash economy⁵. One approach suggests defining subsistence as «the concept of meeting basic human needs or requirements by expending the amount of labour and capital required to obtain enough food for personal survival (and the survival of one's family)», and highlights that «subsistence hunting is not only what one lives on; rather it is also what one lives by, because it sustains the life of a culture»⁶. In the present

day setting of many northern indigenous communities, the two sectors often coexist. Another approach points out «the combination of subsistence and commercial wage activities provides the economic basis for the way of life so highly valued in rural communities»⁷.

From an economic viewpoint, it is often emphasized that traditional hunting and fishing activities, taking place at a distance from modern infrastructure and market opportunities, can represent a «barrier» for broader participation in the market and thus limit access to what is provided from the market economy: not only wage income, but also access to credit, subsidies and market-related transfer payments. However, this aspect has only been emphasized in very few empirical studies of the subsistence economy of the Arctic, and should be included in future research.

In a 1992 statement from the Inuit Circumpolar Conference⁸, subsistence is defined as «a highly complex notion that includes vital economic, social, cultural and spiritual dimensions. The harvesting of renewable resources provides Inuit with food, nutrition, clothing, fuel, harvesting equipment and income. Subsistence means much more than mere survival or minimum living standards. ... It enriches and sustains Inuit communities in a manner that promotes cohesiveness, pride and sharing. It also provides an essential link to, and communication with, the natural world of which Inuit are an integral part».

The concept of subsistence has had a prominent position in various discussions of indigenous people's rights in international legislation, conventions and declarations. For example, the International Whaling Commission recognized that aboriginal subsistence whaling is different from commercial whaling, and since 1985 the Commission has set catch limits for stocks with special allowances for aboriginal subsistence whaling. The United Nations Covenant on Civil and Political Rights and the International Covenant on Economic, Social and Cultural Rights, both from 1966, have the following statement of principle: «All peoples may, for their own ends, freely dispose of their natural wealth and resources without prejudice to any obligations arising out of international economic cooperation, based upon the principle of mutual benefit, and international law. In no case may a people be deprived of its own means of subsistence.» This statement of principle introduces in international law the concept of subsistence and thereby states a right for all, including the indigenous peoples of the Arctic.

Rights to land represent a crucial condition for subsistence activities. An example is the Alaska Native Claims Settlement Act (ANCSA), passed in 1971. Through ANCSA, the indigenous peoples of Alaska



Photo: Jack Kruse. Barrow

received designated land and money in exchange for giving up land, which then became public. The indigenous groups also gave up rights to subsistence harvest on public land. In 1980, the United States Congress passed the Alaska National Interest Lands Conservation Act (ANILCA), attempting to return the subsistence rights to the indigenous peoples according to criteria of traditional and direct dependence upon wildlife harvest as the mainstay of livelihood, and local residency⁹.

Land rights are not the only preconditions for subsistence activities in the Arctic. A crucial question today is: To what extent will climate change and other environmental impacts limit the possibilities for subsistence activities in the Arctic? Changes in winds, ocean currents and precipitation may have adverse impacts on fish, birds and mammals, core elements for sustaining life in the Arctic region. Melting ice may diminish the habitat of animals and hunting opportunities. Environmental toxins, with a high degree of accumulation in northern regions, are found in Arctic animals at increasingly high levels, threatening subsistence food production. The World Conservation Strategy Caring for the Earth from 1985 summarizes the perspectives of the indigenous peoples: «Their cultures, economies and identities are inextricably tied to their traditional lands and resources. Hunting, fishing, trapping, gathering, herding or cultivation continue to be carried out for subsistence – food and materials – as well as for income. They provide communities with a sense of continuity with the past and unity with the natural world, reinforcing ethics of sharing and of stewardship of the land.» It is often assumed that indigenous peoples have only two options for their future: to return to their ancient ways of life, or to become assimilated into the dominant society. They should however, also have a third option, to modify their lifestyles, combining the old and the new in ways that maintain and enhance their identity while allowing their economy to evolve¹⁰.

Measurement issues

In order to measure the importance of subsistence activities, the following aspects are essential¹¹:

- economic aspects – income, production and consumption, including the value of the harvest and of the «factors of production», e.g., hunting equipment.
- integrative aspects – the integration of market and subsistence.
- nutritional aspects – including food security, the nutritional value of the diet, and environmental toxins in food
- social aspects – expressing the social order and kinship.
- cultural aspects – including the sharing of food.
- identity aspects – including identity markers, such as language, food, relations to the land, hunting skills and traditions.

In order to quantify the value of Arctic subsistence activities in regional and national economies, the following activities must be examined: hunting, whaling, fishing, herding, animal husbandry, gathering and trapping. To illustrate how the household in the mixed subsistence and cash economy works as a micro-enterprise, a household production model was developed for use in SLiCA study¹². The model illustrates how Arctic households organize productive activities and allocate the factors of production (land, labour, capital) in order to optimize income flows from both the market (public and private sectors) and subsistence spheres of the economy. The model captures both monetary and non-monetary production and consumption within the household. However, the model does not capture the potential barriers to market participation, such as lack of employment or credit¹³. Household income and expenditure are quantified in terms of:

- cash income (wages from public and private sector, sale of commodities from harvest or household production);
- transfers (pensions, social assistance);
- in-kind income from household subsistence production and gifts from mutual aid/sharing;
- household consumption;
- reinvestment/depreciation of the household capital.

Sources of data on subsistence are diverse and include case studies of small communities, administrative registers of regional wildlife management, and regional and national statistical data on licences, quotas, catches of different species, and sales to processing plants. Other sources include harvest monitoring, government studies, species-specific studies, socio-economic impact assessments, claims statements, food security/nutrition studies, combined register and

survey data, community profiles and comparative circumpolar studies. Some regions of the Arctic are rich in administrative data from public registers, e.g., Russia up to the collapse of the Soviet Union¹⁴, and Greenland, where very detailed wildlife harvest records has been registered for more than 200 years.

Since the late 1950s, the Canadian Government has carried out a number of Area Economic Surveys, yielding data on local resources, game-catch statistics and land-use maps. In Canada, harvest surveys are usually required in association with land claims documentation and implementation. In Alaska, harvest studies are usually conducted in association with management of subsistence rights. In 1978, the Subsistence Division of the Alaskan Department of Fish and Game began studies that, like the Canadian studies, intended to establish baseline studies of subsistence resource use. Reports have since been published on wild resource harvest and use, seasonality of fishing, hunting, and gathering, methods of harvesting and processing, harvest levels, sharing and trading of subsistence foods, cultural and economic values associated with subsistence, trends in resource use patterns, and resource issues that need resolution¹⁵.

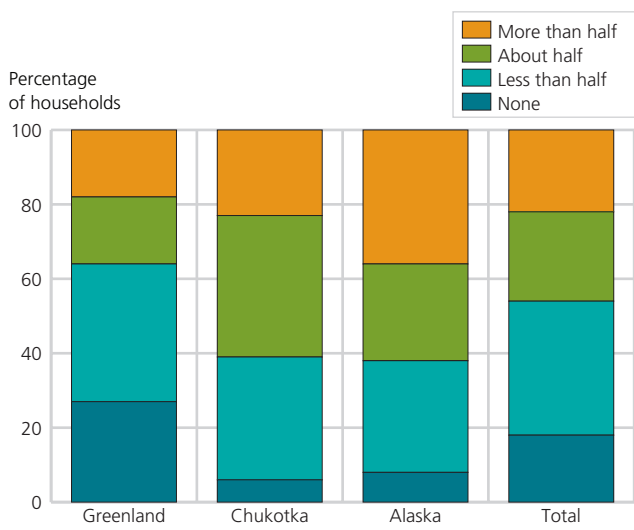
The role of mixed cash and subsistence economies in the Arctic

Realizing that the traditional social indicators and ways of measuring living conditions and individual well-being did not adequately reflect the welfare priorities of the indigenous peoples of the Arctic¹⁶, Statistics Greenland in collaboration and partnership with individual researchers, research institutions and indigenous peoples' organizations initiated the Survey of Living Conditions in the Arctic, SLiCA. The core questionnaire (www.arcticlivingconditions.org) applied by SLiCA offers opportunities to examine and grasp some of the economic, and social, cultural and nutritional significance of subsistence activities. A broad variety of questions have been asked about individual and household activities and behaviour. The importance of a mixed cash and subsistence economy for living conditions in the Arctic is one of five international research topics suggested by the indigenous people's representatives participating in SLiCA.

Preliminary findings of the Survey of Living Conditions in the Arctic, SLiCA

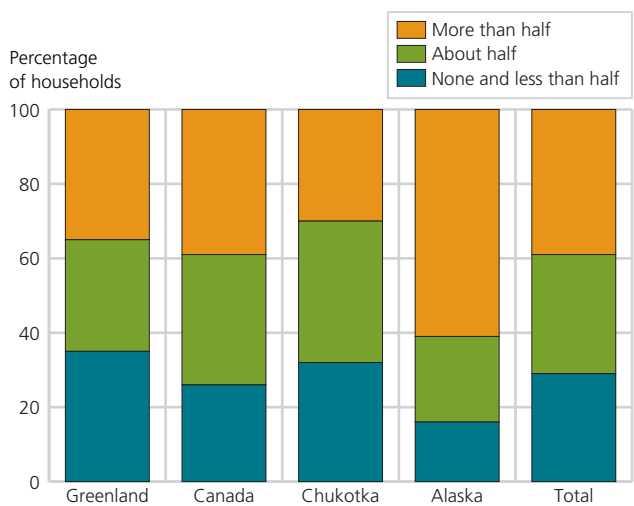
Below, some preliminary findings from SLiCA are presented based on more than 7 000 personal interviews with native adults (aged 15 and above) in Greenland, Canada, Chukotka in Russia, and Alaska¹⁷. Further analyses will be carried out in forthcoming SLiCA reports. In addition to Inuit, the native populations include Evan, Chuvan and Yukagir people living in Chukotka. Since 97 per cent of the population represented is Inuit, we take the liberty to refer to the population in the survey as Inuit adults living in Inuit settlements of the Arctic.

Figure 5.1. Proportion of meat and fish consumption harvested by households. Regional Surveys 2001-2006



Source: SLiCA.

Figure 5.2. Traditional food in household consumption of meat and fish. Regional Surveys 2001-2006

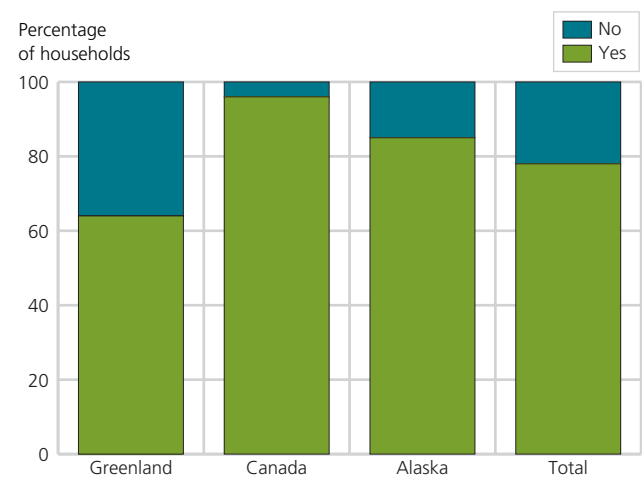


Source: SLiCA.

Meat and fish harvested and eaten by households

One of the SLiCA questions dealt with the proportion of meat and fish consumed by the household that was harvested by the household. The response as depicted in Figure 5.1 supports the hypothesis that subsistence harvesting is still important among the Inuit of the Arctic. In total, five out of ten households report that they harvested about half or more than half 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 than half 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 as slightly less than 40 per cent of the Greenland households re-

Figure 5.3. Traditional food shared with other households. Regional Surveys 2001-2006



Source: SLiCA.

port that they fish, hunt and gather about a half or more of the traditional food supply of the household.

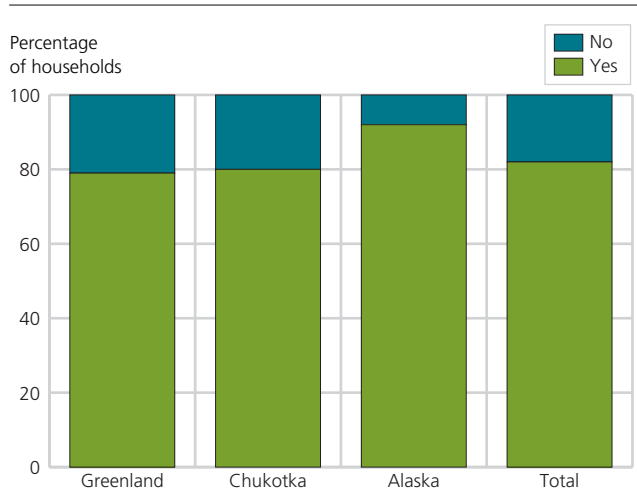
Traditional food in the diet

To get an overall impression of the significance of traditional food (the concept covers several regional words like e.g. nikipaq, kalaalimernit and country food) in the diet of the respondents, everyone in the survey was asked about the proportion of «traditional food» meat and fish, eaten by the household. In the literature traditional food is usually characterised by type of food and type of preparation: locally or regionally harvested, primarily meat from marine or land mammals, fish or wild fowl, but can also include berries, mushrooms or herbs¹⁸. Regarding preparation, food has generally been considered traditional if it was eaten raw or transformed by natural processes (frozen, dried or fermented) or, if prepared, cooked or smoked. The term traditional food was not defined to the respondents which probably means that the term, not least when it comes to the type of preparation, covers a large variety. The proportion of meat and fish that is traditional in all regions comes from different activities and sources:

- the households' own subsistence activities;
- gifts from family or other households;
- sharing due to local traditions and principles;
- food exchange;
- buying food directly from hunters/fishermen, at the local markets, at co-ops or at supermarkets, e.g., Greenland.

Figure 5.2 shows that traditional food accounts for a substantial part of the food supply of the household everywhere in the Arctic. Two of every three Inuit households report that half or more of their household's food consumption is made up by traditional food. Among the Arctic Inuit, traditional food seems to account for the largest part of the households' diet

Figure 5.4. Traditional food received from other households. Regional Surveys 2001-2006



Source: SLiCA.

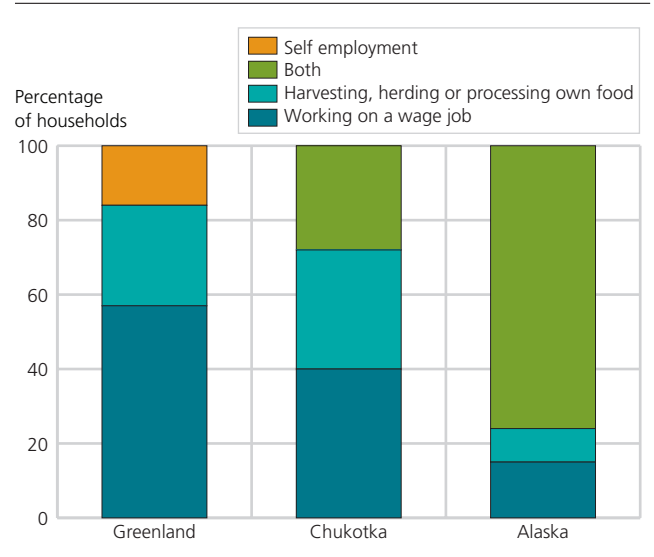
in Alaska, whereas the proportion of traditional food consumed by Inuit households of Greenland, Canada and Chukotka is somewhat smaller. It should be noted that the percentage of households that do not consume traditional food at all is below one per cent.

Some questions in the SLiCA questionnaire focus on sharing and exchange of traditional food. The findings are presented below (note that only Greenland and Alaska are represented in both figures). Figure 5.3 shows that in Greenland, Canada and Alaska, the sharing of traditional food is still an important and enduring tradition. In Canada, 96 per cent of Inuit households in the Arctic share traditional food with other households. The corresponding figures for Alaska and Greenland are 85 per cent and 64 per cent, respectively.

The same pattern appears when traditional food received from other households is compared for Greenland, Chukotka and Alaska in Figure 5.4. On average, 80 per cent of the households report that they received traditional food from others. Alaska ranks highest with 92 per cent, while 80 per cent of the households in Chukotka and 79 per cent in Greenland received food from others.

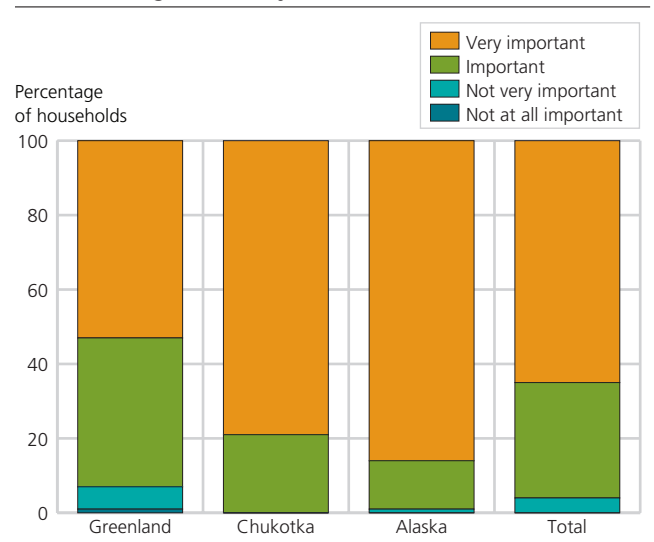
In all the communities, sharing food is perceived as an important part of social relations, with different types of social and cultural motivation. The food sharing can be seen as a form of «social security», providing food for those who lack food; it can strengthen social relations through the demand for «reciprocity»; and it can be a form of «conspicuous consumption», showing the relative wealth of those with abundant food supply. In Greenland and Chukotka, buying traditional food is quite common. Seven out of ten Greenland Inuit households buy traditional food in a 12-month period. In Chukotka, more than five out of ten indigenous households buy traditional food.

Figure 5.5. Preferred lifestyle. Regional Surveys 2001-2006



Source: SLiCA.

Figure 5.6. Importance of subsistence activities: hunting/fishing, gathering, preserving traditional food. Regional Surveys 2001-2006



Source: SLiCA.

Well-being and quality of life

To get a better understanding of the role of subsistence activities in the lives of the Inuit, a number of questions were asked about satisfaction with different aspects of the respondents' lives, traditional Inuit values, and the importance of different activities for maintaining an Inuit identity. The economic development over the last 50 years has meant that most inhabitants of the Arctic, including the Arctic indigenous peoples, take part in market activities as full-time or part-time wage earners, as self-employed people and as consumers. Thus, the SLiCA questionnaire includes questions on the respondents' satisfaction with the degree of market participation, and which lifestyle they would prefer: wage employment or harvesting, herding and processing their own food, or a

combination of market and subsistence activities. The Alaska and Greenland answers to the question concerning satisfaction with a combination of market and subsistence activities are very similar. More than 80 per cent of Inuit adults in Greenland and Alaska are either somewhat satisfied or very satisfied with the combination of production activities that they pursue. The corresponding figure in Chukotka is 60 per cent. Comparable Canadian data are not available.

Figure 5.5 shows preferred lifestyle. In Chukotka and Alaska respondents were asked about their preferred lifestyle, being able to choose between wage employment, harvest, herding and food processing or a combination of both wage employment and subsistence activities. More than 75 per cent of the Alaska Inupiat prefer a combination of harvesting, herding or processing and a wage job, whereas only 15 per cent prefer wage employment and one out of ten subsistence activities as the sole activity. In Chukotka a little more than one out of four indigenous persons would prefer a combination of activities, whereas 40 per cent prefer wage employment and 32 per cent choose harvest, herding and food processing activities as their preferred lifestyle. In Greenland the question was asked differently including the possibility of choosing self employment. Almost 60 per cent of the Greenlandic Inuit prefer wage jobs, a little more than one out of four prefer harvest, herding and food processing activities and one out of seven choose self employment as preferred lifestyle. Though all respondents in Greenland were asked about preferences for a combination of the different activities, the responses were distinctly distributed between the response alternatives, not indicating combinations of alternatives, as in Alaska and Chukotka. The reasons for these marked differences are to be further analysed, but e.g. the criteria to get professional hunters' status and taxation policies in Greenland might be considered obstacles to preferring a combination of production activities.



Photo: Birger Poppel.

Table 5.1. Hunters and harvested animals. Canada. Annual average 1996-2001

Species	Number of animals harvested	Number of hunters
Caribou	25 000	3 000
Ringed seal	25 000	2 700
Ptarmigan	14 000	1 500
Eider duck	6 000	950
Arctic char	200 000	3 200
Mussels	25 000	71

Source: NWHS.

To some extent, different preferences across the regions may reflect what the respondents perceive as possible and available options. It might therefore also reflect the fact that employment opportunities and the conditions for subsistence activities differ between the regions.

Traditional values

All respondents were asked a number of questions on traditional values and urged to indicate how important they found different activities and customs for maintaining their Inuit identity. Figure 5.6 shows the respondents' evaluation of three subsistence activities in which they engage: hunting and fishing, harvesting of wild berries and plants (gathering), and preserving traditional food.

Figure 5.6 shows that almost all Inuit adults consider hunting/fishing, gathering and traditional food preserving activities important to their Inuit identity. To conclude, the preliminary findings reported in these figures show that subsistence activities among the Inuits in the Arctic are highly important as contributions to the diet, to consumption possibilities and to cultural identity. The fact that it is difficult to distinguish between the motivations for different aspects of subsistence activities reflects the intertwined nature of economy and culture in the Arctic.

Subsistence activities in Canada

In Canada, only the Northwest Territories seem to have a continuous record of native harvests, starting in 1975 with the James Bay and Northern Quebec Agreement. In 1982, aboriginal rights were placed under the protection of the Canadian Constitution as charter rights. A recent study¹⁹ reports from surveys that «compare Inuvialuit use of the Beaufort Sea and its resources in the 1960s and the 1990s», and shows that, «contrary to many predictions in the 1960s, subsistence harvesting persists as a significant economic as well as cultural preoccupation in the lives of Inuvialuit today».

The Nunavut Land Claims Agreement (NLCA) from 1993 required that: «A Nunavut

Wildlife Harvest Study (NWHs) shall be undertaken in, and cover, each of the three regions of the Nunavut Settlement area». The purpose of the NWHs was to establish current harvest levels, to contribute to the sound management of wildlife resources, document the levels and patterns of Inuit use of wildlife resources for the purpose of determining the basic needs level, and analyse biological, ecological and harvest data pertinent to management of wildlife in the Nunavut Settlement Area. The basic needs level was defined as the amount of harvest that is currently taken for domestic and cultural purposes.

As a result, the NWHs was conducted over 1996–2001. It was the largest wildlife harvest survey ever undertaken in Canada. A total of 6 017 hunters were surveyed. The mean annual response rate was 82 per cent. This comprehensive study contained detailed information on 86 wildlife species within the following categories: big game, fur bearers, small game, marine mammals, waterfowls, other birds, eggs, feathers, fish and shellfish. Data were presented on harvest estimates, reported hunter responses, calculated recall periods between harvest and interview, and number of hunters harvesting each species.

The NWHs estimated neither the nutritional nor the money value of the catch to individuals, households, communities or regions. However, replacement value for the four main food species in Nunavut can be estimated from the NWHs data and from the Nunavut Wildlife Management Board. Replacement value is defined as the amount of money one would have to pay to purchase the harvested amount of meat and fish from a store. The replacement value of food harvested by Nunavut Inuit has been estimated at between 30 and 35 million CDD per year²⁰.

In 2006, the first results from the combined «2001 Aboriginal Peoples Survey and Survey of Living Conditions in the Arctic» were published²¹. More than 4 700 Inuit adults (15 years of age and over) were asked about their harvest activities (hunting, fishing, trapping and gathering), and their perceptions of the future for harvesting. A summary of the results published in the report concerning harvest and country food shows that seven in ten Inuit adults in the Canadian Arctic harvested traditional food in the year before the survey. The average within the regions varied from roughly eight out of ten Inuit adults in Nunavik (81 per cent) and Labrador (76 per cent) to less than six out of ten in the Inuvialuit region (55 per cent). On average, more men (80 per cent) harvested than women (63 per cent) and the tendency that men were more likely to harvest was reflected in all age groups. Middle-aged men and women (45–54 years of age) were most likely to harvest and nine out of ten men, compared with seven out of ten women, were most likely to prepare for the harvest.

The respondents were asked about their perceptions of the future for harvesting, and 49 per cent thought that harvesting would remain the same over the next five years, whereas 21 per cent thought the activities would increase. The main reason stated for increasing activity was that more household members would take part in harvesting. Of the respondents, 13 per cent were of the opinion that harvesting activities would decrease and, of those, one-third referred to fewer resources to harvest or fish and game becoming scarcer. In almost four out of ten Inuit households, country food made up more than half of the fish and meat eaten. In another third of the Inuit households, about half of the fish and meat eaten was country food. Most households (almost 80 per cent) in Nunavik answered that at least half of the fish and meat eaten was country food. In Labrador, the percentage was 66, whereas 45 per cent of the Inuit children in the Canadian Arctic had wild meat five days or more a week and 20 per cent fish or seafood. The diet of the children varied over the Arctic. In Labrador, the fewest Inuit children ate wild meat and fish. In Nunavik, in the Nunavut and Inuvialuit regions, between 45 and 50 per cent of the children ate wild meat at least five days a week and between 14 per cent in the Inuvialuit region and 30 per cent in Nunavut had fish or seafood five days or more. Finally, the study confirmed that the tradition of sharing country food is still alive, as nine out of ten households reported sharing with family and/or community members.



Barrow. Bowhead in lead. Photo: Jack Kruse

Subsistence activities in Greenland

Archaeological studies of settlements along the coasts of Greenland document that, not only did the different groups of Inuit migrating to Greenland live from hunting and fishing, but there has also been a diversified exploitation of wildlife. The excavations at Qeqertasussuk in the vicinity of Qasigianguit in Disco Bay contain a particularly extensive example, with relics from 45 different species (mammals, fowl, fish, mussels and snails) as well as tackle – including some made of whalebone and baleen, contributing to the picture of a diversified use of living resources.²² For more than 250 years, hunting for food and clothing and maintaining social relationships and cultural tra-

ditions has coexisted with hunting for trade. Income from this trading is, to some extent, a condition for continued hunting, by providing necessary cash income to buy hunting gear and boats²³.

The political and economic changes in the period after the Second World War led to profound changes in the traditional Greenland fishing and hunting culture, and hence in the traditional social structures. The transition to a monetary economy, the educational mobility and increased urbanization have meant that the norm, value and prestige systems in Greenland society today are no longer so closely linked to subsistence production in extended families in small closed communities²⁴. Social values have increasingly become linked to wage earning in a more globalized and open society. In 1945, it was estimated that 66 per cent of the labour force in a population of 21 412 individuals were involved in hunting and fishing. In 1996, this proportion had decreased to approximately 25 per cent. This figure also includes people working in the modern fishing industry. However, community studies from the 1970s and more recent studies of local Greenlandic communities and settlements confirm that the introduction of wage labour in the Greenlandic society has by no means brought hunting and fishing for personal consumption, for sharing, or for local sale, to an end. Two studies²⁵ conducted from 2003 to 2006 contribute data to the understanding of the subsistence economy and the way it is mixed with the cash economy in contemporary Greenland.

In 1994, Statistics Greenland conducted a living conditions survey including the importance of subsistence activities to the Greenlanders. This was measured as the participation in (subsistence) hunting and fishing activities and as the contribution to the food supply of the various households. According to the survey, 67 per cent of those with wage labour as their main income source were engaged in small-scale fishing and/or hunting (the corresponding figure for the inhabitants of towns²⁶ was 28 per cent). In total, 80 per cent of the households in the settlements hunt sea or land mammals and/or fish for the consumption of the household (or the sled dogs) as a necessary supplement to their wage incomes²⁷. These figures show the importance to the Greenlandic Inuit of having access to hunting and fishing activities and a significant difference between ways of life in towns and settlements.

Socio-economic analysis of the Greenland hunters

A socio-economic analysis of the Greenland hunters was conducted in 2003–2005, surveying their catches by species, expenses on hunting and fishing equipment, and attitudes to professional hunting²⁸. The study combined register data and personal survey data. In the period surveyed (1987–2002), a total number of 36 931 people (27 711 men and 9 220 women) were engaged in fishing and hunting activities. From



Photo: Birger Poppel.

1993 to 2002, the number of people with a professional/full-time hunter's licence was reduced from 6 560 to 3 083, whereas the number of people with a leisure-time hunter's licence increased from 6 554 to 8 398. The average age of professional hunters increased due to the lower recruitment of young hunters. The average size of the hunters' households was equal to that of other households except in the settlements where there were more large and single-person households. There are, on average, more professional/full-time hunter's licences in households in the settlements than in the towns. Whereas the profession of hunting tended to continue from one generation to the next, it now seems that being a professional hunter ranks low among the youth and is given low priority in recommendations from parents. If the decrease in the number of professional hunters continues, the profession will be extinct within a generation. A recruitment of a minimum of 40 new hunters annually would mean that the current number of hunters could be maintained.

The *formal economy* includes all economic transactions that are officially recorded and represent potential tax objects, whereas the *informal economy* includes all other economic activities. Estimating the total value of informal supply leads to an estimate between 80 and 180 million DKK at purchaser prices, at the local market. The proportion of the total value coming from the catches of professional hunters is 80–90 per cent, whereas the contribution by leisure-time hunters amounts to 10–20 per cent. The value of

Table 5.2. Contribution of professional hunters to the informal economy in Greenland. Annual average 1993-2002. Million DKK

Type of activity	Total value
Own consumption	46
Gifts	24
Private sale	10
Sale to restaurants	6
Sale to institutions	6
Sale at market	38
Total	130

Source: Rasmussen (2005).

Table 5.3. Value of informal production by professional and leisure-time hunters in Greenland. 2004. Million DKK

Activity	Total value
Professionals	130
Leisure-time hunters	52
Total	182

Source: Rasmussen (2005).

Table 5.4. Variable costs for professional hunters and fishermen in Greenland. 2004. Million DKK

Equipment	Towns	Settlements	Total
Boats	34	32	66
Snowmobiles	2	2	4
Dog sledges	10	11	21
Other types	33	29	62
Total	79	74	153

Source: Rasmussen (2005).

the catches that are not sold to production plants or used to feed sledge dogs is estimated to be roughly 130 million DKK. This number can be broken down into the following categories as shown in Table 5.2. A little more than half of the informal transactions come from activities within the towns and the rest comes from activities in the settlements. A third of the value comes from hunting marine and terrestrial mammals and fowl, and two-thirds comes from fish and fish products. The total value of the catches of leisure-time hunters is estimated at 52 million DKK (see Table 5.3). Hence, the total value of informal production is 182 million DKK.

To estimate the contribution of informal production to the Greenlandic GDP, it is necessary to estimate and subtract the variable costs of production. Table 5.4 shows that variable costs for professional hunters amount to 153 million DKK, however, this number comprises both the formal (market) and informal (subsistence) activities of the professional hunters.

In order to calculate the contribution to GDP of informal subsistence activities, the costs need to be allocated between formal and informal activities. It is estimated that informal activities represent 40 per cent of the costs, or 61 million DKK for the professional hunters. The costs for leisure-time hunters are unknown. Assume that these costs are zero. Then the value

Table 5.5. Investments by professional and leisure-time hunters in Greenland. 2004. Million DKK

Type of equipment	Towns	Settlements	Total
Boats	73	89	162
Snowmobiles	3	3	6
Dog sledges	4	5	9
Other types	47	41	88
Total	127	138	265

Source: Rasmussen (2005).

Table 5.6. 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).

minus costs, 121 million DKK, for hunting activities within the informal economy contributed roughly to 1.3 per cent of the total Greenlandic GDP of 9 040 million DKK, in 2001. Although the value of the subsistence activities might seem negligible when measured as a fraction of GDP, the subsistence activities contribute substantially to household consumption and well-being. More focus on consumption data on a circumpolar basis is needed to document the contribution of subsistence to household consumption and well-being.

The survey shows that cash income and subsistence are of vital importance for the hunters and fishermen. There are major regional differences in hunters' cash incomes. On average, the cash income of hunters in North and East Greenland is about 65 000 DKK, and in other regions of Greenland about 130 000 DKK. The hunter's contribution to total household income amounts to between 40 per cent for hunters in North and East Greenland and 25 per cent for hunters in the rest of Greenland. A large number of hunters are single or members of low-income households, for which the products from hunting and fishing for the household's diet are of great significance. When the total value of professional hunting activities, 130 million DKK, is divided by the number of hunters, we find that each hunter contributes to the household with hunting and fishing products plus cash from private sales worth 42 000 DKK.

Table 5.5 shows that investments (including vessels, outboard motors, snow mobiles, dog sledges, rifles, shotguns, fishing nets and other equipment) were estimated at 265 million DKK.

Table 5.6 shows that the total informal production is almost as large as total sales value for hunting activities.



Chukotka race. Photo: Jack Kruse

Reindeer husbandry

Reindeer and caribou represent principle subsistence resources for many indigenous people of the rural regions of the Arctic²⁹. 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 tradition from one generation to the next, as well as political processes at a regional, national and international level. The following brief presentations of reindeer husbandry in Norway, Sweden and Russia give an introduction to the topic and present some findings from two recent reports on reindeer herding and hunting³⁰.

Reindeer husbandry in Norway³¹

Reindeer husbandry in Norway is organized within six official grazing areas. Each grazing area is divided into districts containing several production units with a licence that determines each individual herder's grazing rights. The «1978 Reindeer Husbandry Act» introduced the production unit to restrict individual access to the industry and to avoid overgrazing. The oldest and original indigenous organization in reindeer husbandry is the *siida*. A *siida* is a herding partnership based on bilateral kin relations and has existed as a cultural institution for hundreds of years. The *siida* is at the same time an extended family and an organization of the labour force. Family members may be members of different *siidas* during winter and summer. When the herd is grazing on winter pasture, a family unit may belong to one *siida* and, while the herd is grazing on summer pasture, they may be members of another *siida*. This flexible organization of the herd and their owners is determined by the grazing conditions of the herds, and depends on family patterns derived from interfamily relationships.

Each reindeer has an individual owner. All deer owned by a nuclear family constitute one or several licensed production units. In this extended family, they make a *siida* that now and traditionally, in legal

terms, has an assigned grazing area at its disposal. The six herding districts in Norway consist of almost 600 production units. Although there are only approximately 600 licensed production units in Norway, as many as 2 200 family members are, in one way or the other, involved in daily or periodical reindeer herding activities. Reindeer husbandry is, thus, a family business that requires the efforts of several *siida* members.

The concept of value entirely focused on economics only explains, to a limited extent, the values in a herding world. Throughout the Arctic region in the areas where herding is taking place, hunting and herding were the original basis for human existence in these remote landscapes. From time immemorial, different indigenous groups hunted the migrating reindeer herds and, from the mid 1600s, started keeping them in herds. This fact must be considered when the economy of the herding business is to be accounted for. There are no alternatives to careful handling of the pastures in sustaining reindeer herding and the culture and livelihood it gives rise to. A myopic understanding of improving the economy immediately brings reindeer herding into conflict with issues affecting the sustainability of the herders' way of life. If, for example, the number of reindeer is increased for the purpose of improving income in the short-run, this strategy will result in overgrazed pastures that in the longer run will badly affect the economy of the *siida*, as has happened in Norway, Sweden, and Finland³².



Photo: Jens-Ivar Nergård

Originally, the herding business was a way of living rather than a way of earning money. To a large extent, reindeer herding works as an informal subsistence economy. Each *siida* or production unit should be concerned with a whole range of issues affecting the business. The herding activity cannot be separated from the responsibility the herding world must take for the Saami traditions, as a whole. For a long time, especially from the 1850s to 1970, when the Norwegian authorities pursued a rather harsh policy



Photo: Jens-Ivar Nergård

towards the Saami, the herding *siidas* were the stronghold of the Saami language and Saami tradition. Herding has always been seen, by the outsider, as the leading Saami activity. When the Saami identity revitalized in the 1980s, reindeer herding had a leading effect on the process, politically and symbolically.

Reindeer herding has gained knowledge from experience through generations.³³ Even though the *siida* members have ownership of the herd in legal terms, they are, at the same time, taking care of it on behalf of the next generation. Being responsible for its own grazing land means that each *siida* needs sophisticated knowledge and skills to handle the herd within its particular landscape. To this responsibility belongs the knowledge of experience gained through generations of handling the herd in the particular areas the *siida* has at its disposal. This knowledge is referred to, by the outsider, as indigenous or traditional knowledge and is sometimes seen as less valuable and reliable than modern scientific knowledge. Traditional knowledge is sometimes handled within a spiritual frame of reference.³⁴ One reason this knowledge is seen as somewhat obscure from an outsider's point of view is its attachment to the traditional narratives, having a strong cultural and religious flavour. The experience of previous generations is, using a Malinowskian term, called *sacralizen* and communicated with narratives about the landscape handed down from one generation to the next³⁵. Together with the sophisticated knowledge of an actual landscape, this experience works as a leading principle for harvesting of nature and natural resources – also seen as a protection against overloading grazing land with herds that are too large. In order to keep the herds in the best possible condition, the grazing areas must likewise, be kept in the best condition. This is perhaps the most important source of the values that have guided the traditional herding economy for hundreds of years to the present day. This is also the most important source of conflict with the Norwegian authorities over strategies to improve the economy of Nor-



Photo: Jens-Ivar Nergård

wegian reindeer husbandry, avoid overgrazing, and promote sustainable development.

The composition of animal categories within a reindeer herd is an important issue to address. Reindeer are considered herd animals, which mean that they prefer to graze and move together. The female reindeer graze in large groups, while the male reindeer sometimes stray in search of more remote pasture areas. However, the female reindeer tend to follow the movements of the males, resulting in the relocation of several smaller groups consisting of male reindeer, female reindeer and calves. When the animals scatter, the herd grazes in several different places, which tends to secure the quality of the pastures.

A herd with fewer male reindeer tends to graze in a more concentrated area, often with damaging effects on the pastures. When grazing exceeds the carrying capacity, the land is overgrazed. A policy that aims to improve the pastures and regain carrying capacity must include traditional herders' knowledge of herd structure, herd composition and balanced grazing. Overgrazing is, thus, not just the result of increased animal numbers, but also a consequence of compositional and structural change within the herd.

The average production unit within a *siida* is partly commercial and partly based on subsistence production, where women, especially, contribute largely to the economy. Women quite rarely feature as owners of the *siida* production units (less than 10 per cent), but they take part in herding activities in their spare time away from their work in the home village of the herding family. They are active members of the herding unit when the calves are marked during the summer season and during the slaughtering season in late September. They are responsible for preserving the skins and preparing them as raw material for *doudji*, i.e. craft. In many families, this craft contributes to the economy in terms of products for sale during the tourist season and as production of suitable clothes, such as footwear (*skaller*, *komager*), coats (*pesker*),

etc. Women also receive income from paid employment in the village. Women are the important teachers of Saami knowledge and tradition to their children. This teaching always takes a practical form. Hence, women are largely the carriers of the cultural capital of the *siida* and herding family. An overall goal of the *siida*, and the nuclear family, is the maintenance of Saami tradition, Saami language and Saami customs. This maintenance entails a wide range of activities taking non-economic forms. The very maintenance of Saami tradition, of herding knowledge, understanding nature, and sharing natural resources is the basis of the herding economy.

Reindeer husbandry in Sweden³⁶

Reindeer are herded over an area of approximately 160 000 square kilometres, or about 34 per cent of the area of Sweden. The topography includes a varying landscape where forest, tundra and high mountains are all important pastures. The reindeer industry is divided into two main groups: forest and mountain reindeer husbandry. The first group stays in the forest during both summer and winter, while the second group uses the forest only as winter pasture and the rest of the year is spent in the mountain regions on both sides of the Norwegian–Swedish border.

The Swedish Reindeer Herding Act 1971 regulates all reindeer herding activity in Sweden. As with the Norwegian case, the Act secures reindeer herding as an exclusive right for the Saami people of Sweden, and is of profound importance. Sweden, like Norway, has one exception to this rule: a limited reindeer herding area below Lappmarksgränsen (the Saami territory border) in the Kalix and Torne river valleys in Norrbotten. This area is called the «Concession area» and the reindeer owners are a mixture of Saami concession holders and local farmers.

Reindeer herding is closely connected to membership in a Saami Village. The designated pasture areas for reindeer husbandry are within the borders of the Saami Village. There are 51 Saami villages in Sweden. The northernmost Saami village is located in the county of Norrbotten and the southernmost is situated in the county of Jämtland. According to the Swedish Reindeer Herding Act, a Saami village is defined as an organization that manages reindeer herding in a designated geographical area. A Saami village is an economic unit, and rights concerning hunting, fishing and use of the forest are connected to membership in a Saami village, and it presumes active participation of its members in reindeer herding. The reindeer industry in Sweden, including concession areas, involves approximately 950 private family business units distributed over the 51 Saami villages. A management unit can be defined as an economic enterprise managed by a responsible reindeer herder and his/her household/family.

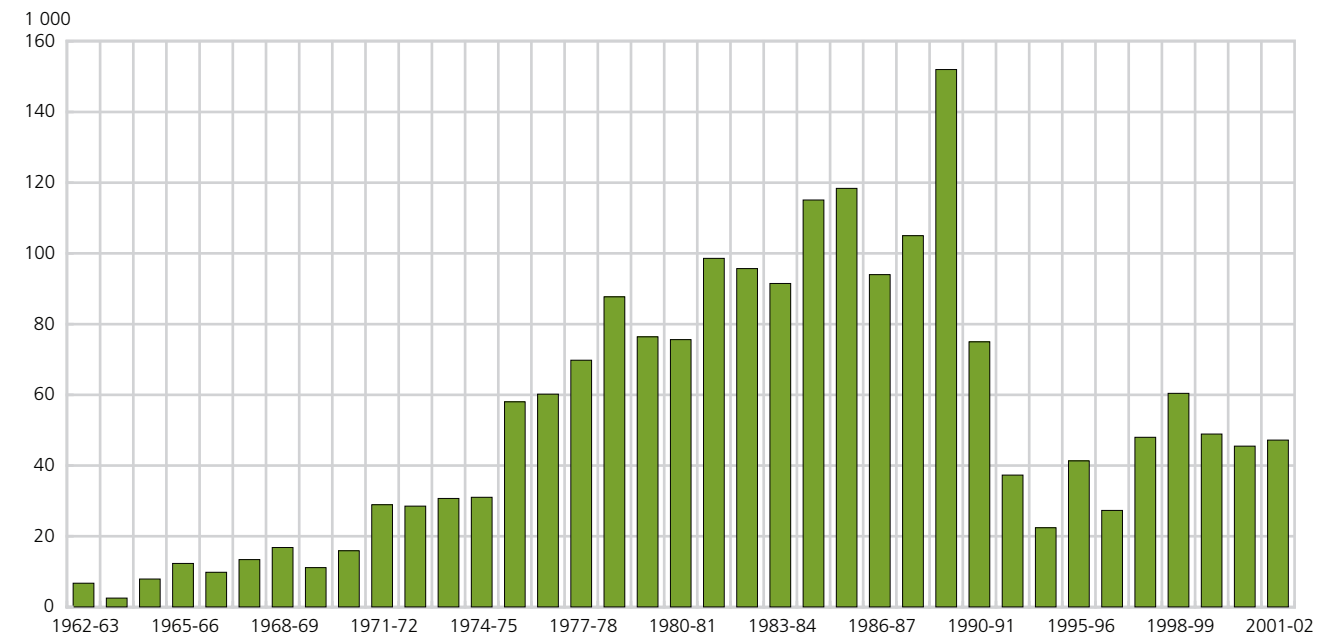
One difference between the economic structure of the Swedish reindeer industry and that of other Fennoscandinavian countries is the right to hunt moose, in addition to fishing and berry picking. Fishing is generally no longer an important source of income, except for areas such as Jokkmokk. However, the right to hunt moose is assigned to members of the Saami villages and generates a substantial income for many of the reindeer owners.

The price of reindeer meat is relatively low today, while the industrial costs are fairly high. The generally low income from reindeer husbandry often means that a supplementary income is required. Often it is the women who provide the family with income from sources other than herding. This, in turn, leads to a reindeer industry dominated by men, although men often have to work part-time as well, outside the industry. A reindeer owner could have income from different sources, but reindeer meat, compensation for loss of reindeer and income from sale of skins, antlers, hunting and fishing are important. For an average reindeer owner, the income from meat is 43 per cent, compensation for loss of reindeer is up to 20 per cent, and the additional earning (hunting, fishing) amounts to 26 per cent. In addition, the average income from wages received from the Saami village amounts to 11 per cent. The situation with loss of pastures connected to infrastructure development is a major threat to the reindeer industry in Sweden. A joint effort between national authorities and the reindeer industry is needed to secure the remaining grazing areas.

Reindeer husbandry in Russia

Reindeer herding and hunting is the economic and cultural basis of many northern indigenous peoples in Russia³⁷. The sharp decline in harvesting of wild reindeer in the early 1990s, see Figure 5.7, coincided with an increase in family-owned reindeer, see Figure 5.8, in line with a move towards more private ownership, following the breakdown of the Soviet Union. As illustrated in Figure 5.7, major changes in the harvest of wild reindeer took place during the 1970s and 1980s, with a sharp decline in harvest level at the beginning of the 1990s.

The reindeer husbandry areas of Russia can be divided into three zones, which differ concerning the state of the industry, trends in change and perspective on future development. The North-western zone includes tundra and forest tundra from the western borders of the Russian Federation to the Yenisei River. This is the territory of Saami, Nenets, and Komi-izhemtsy reindeer husbandry. Although this region is under intensive exploration for gas and petroleum, reindeer husbandry here is comparatively stable. The number of reindeer in this area has remained constant or been slightly reduced during the last decade. Conditions

Figure 5.7. Harvesting of wild reindeer in Russia. 1 000

Source: Ulvevadet and Klovov (2004), Figure 3.8, p. 85.

for reindeer husbandry are comparatively favourable because of market conditions.

The North-eastern zone includes areas of tundra, forest tundra and the northern mountainous taiga to the east of the Yenisei River. Meat-productive reindeer husbandry is the occupation of the Evens, Chukchi and Koriaks. The number of reindeer in this region is reduced, resulting in increasing poverty of the indigenous population. To stabilize the situation and stop the decline in the number of reindeer, financial support for reindeer herders' families from regional budgets is granted, but there is no clear effect. The future of the industry is uncertain. Reindeer husbandry here seems to develop only with other branches of the traditional economy (hunting wild reindeer, fur animals, sea mammals, fishing) as part of a common economic undertaking.

The Siberian Taiga zone includes all reindeer husbandry regions of the Siberian taiga (except northern mountainous areas). Here, many indigenous people are engaged in reindeer husbandry. In the European part of the territory, taiga reindeer husbandry has disappeared. In the Siberian taiga, it has rapidly diminished; the area has been divided into separate isolated lots with a few hundred reindeer in each. The populations of domesticated and wild reindeer in Russia are now nearly equal in number, see Figure 5.8. According to official data from 1999 there were 1 232 000 wild reindeer in Russia. About half of the stock of domesticated reindeer is owned by reindeer herder families and about half by collective and state reindeer enterprises.

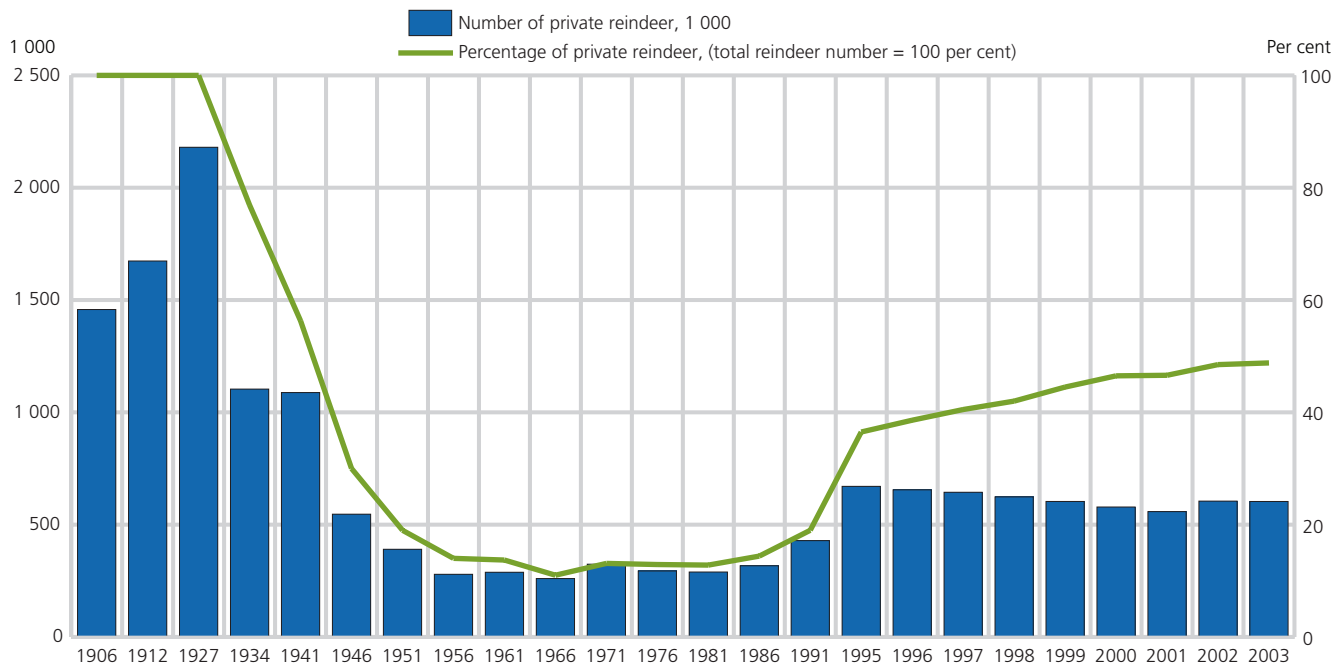
In contrast to other countries, Russia does not have any legislation that determines the legal status of reindeer husbandry. The reindeer economy is regulated

by by-laws and is implied in other laws. Thus, it is subjected to management and legislation for land use, agriculture, the rights of indigenous peoples, legislation on ecology and use of mineral resources. Recent legislation has set the rules for compensation-inflicted damages on the landowners, lessors and users of the land. This has been very important for all reindeer enterprises affected by industrial companies in the areas of extraction of oil, gas and other mineral resources.

The Russian Ministry of Agriculture manages the reindeer economy at a federal level. The Department of Agriculture within each Regional Administration is responsible for reindeer management at the regional level. Traditional family-based reindeer husbandry has been subject to major changes in external conditions. In the Soviet period, most reindeer husbandry was organized as collective farms or state enterprises and the herders and their families worked in «brigades». After the reforms in the 1990s, a partial return to the family-based reindeer economy took place.

As is the situation of reindeer husbandry elsewhere in the Arctic, the basic unit in Russia is also the family. The family is the main contributor to the transfer of herding skills and habits, mother-tongue languages, traditional skills and cultural values and worldviews. There are four ways of operating the family-based reindeer economy:

- the traditional organization of family nomadism (there are 3 000–4 000 nomadic families, mostly Nenets);
- the semi-traditional way of organizing the husbandry (typically found in the brigades of the collective

Figure 5.8. Number of family-owned (private) reindeer in Russia

Source: Ulvevadet and Klokov (2004): 64, Figure 3.2, p. 64.

reindeer enterprises. Women are partly restrained from living in the tundra);

- the neo-traditional type of organization where the herder families are integrated into the market economy;
- disintegrated family husbandry: the husband working in a herding brigade while the wife lives permanently in a settlement where she might have a paid job.

To conclude, «In general we find that most of the reindeer economy in Russia is based on subsistence. Despite the fact that most reindeer owners between 1970 and 1980 received relatively high salaries from their reindeer enterprises and were also considered to be prosperous among other indigenous people, many of them fell into poverty after the transition to a market economy.»³⁸ The following income sources are important to family-based reindeer husbandry in Russia: salaries from reindeer enterprises, pensions and welfare payments, sale of reindeer meat, skin and fish, sale of clothes and shoes made out of reindeer skin and sale of private reindeer. Nomadic reindeer husbandry is practically impossible without extra work including hunting, fishing and gathering: «If average incomes are below the level of 500–600 USD a year, the indigenous population is compelled to return from reindeer husbandry to other forms of economic activity, such as subsistence fishing and hunting near villages.»³⁹

Subsistence and climate change

Climate change can substantially influence the conditions for subsistence in the Arctic. The different signs of climate change, e.g., longer sea ice-free seasons,

soil erosion; melting glaciers creating torrents in place of streams, and still more unpredictable weather, have been of growing concern to both indigenous peoples and other Arctic residents. One of the key conclusions of the Arctic Climate Impact Assessment (ACIA) was that numbers of marine species dependent on sea ice, including polar bears, ice-living seals, walrus and some marine birds are very likely to decline, with some species facing extinction. Moreover, environmental toxins, with a high degree of accumulation in northern regions, are found in Arctic animals at increasingly high levels.

To summarize, «For the indigenous population, and particularly for those people who depend on hunting, herding, and fishing for a living, climate change is likely to be a matter of cultural survival, however. Their uniqueness as people with cultures based on harvesting marine mammals, hunting, herding caribou and reindeer or fishing, is at risk because climate change is likely to deprive them of access to their traditional food resources ... Today, the indigenous peoples live in greatly circumscribed social and economic situations and 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 that threaten their lifestyles and cultures, climate change magnifies these threats.»⁴⁰

Concluding remarks

This brief introduction into the complex reality of subsistence and subsistence activities as a means to

maintaining a cultural identity and livelihood among Arctic indigenous peoples, points to the following conclusions.

- Hunting, herding, fishing and gathering activities continue to be of major significance to the indigenous peoples of the Arctic in providing food, social relationships and cultural identity.
- Subsistence activities and the cash economy jointly provide the consumption possibilities, and the subsistence activities are an integrated part of a lifestyle that embodies the importance of continuity, sharing and connection to nature.
- Sufficient and comparative data on the subsistence economy and its importance for household consumption and well-being are not yet available on a circumpolar basis.
- Gaps in knowledge on the value of harvesting, consumption of wildlife, costs of harvesting and the economic significance to the households of the Arctic imply a lack of recognition of activities that are crucial to indigenous peoples and a lack of recognition of the indigenous people's contribution to the total production and consumption in society.
- In international and some national legislation, subsistence is not considered part of, nor linked, to the modern cash economy. Rather, subsistence activities are seen as existing separately from market-oriented activities.
- More relevant statistics are needed to evaluate the development of central economic indicators of importance to the indigenous population groups – and hence to evaluate development according to international conventions, as, for example, agreed upon in the International Labour Organization (ILO) Convention No 169: The Indigenous and Tribal Populations Convention from 1989.⁴¹
- Continued documentation is needed on the location, participation levels and costs of subsistence harvesting activities. Circumpolar, standardized, comparative and reliable data on subsistence production and consumption are required. Proven and up-to-date methods to generalize about cost levels and the relationship of inputs to outputs in the subsistence activities and environmental impact assessment are also required. Dialogue between the different end-users and stakeholders: indigenous representatives and other Arctic residents, data producers at local, regional and national level – including statistical institutions, other stakeholders and policy-makers at regional, national and international levels, must take place.
- Further research is needed into the link between the subsistence sector and the market sector, and the potential consequences for households and communities of diminishing foundations for local subsistence activities. Subsistence activities, in a similar way as unpaid household work in «satellite accounts», i.e., supplementary accounts to the national accounts⁴², should be measured in order to ensure that the value of subsistence activities is taken into account. Research should also be undertaken into economic development that facilitates the continuation of subsistence activities and a subsistence mode of production mixed with market activities. The effect of climate change on the subsistence way of living also requires more research.
- To further document the significance of subsistence activities within the subsistence-based mixed economies of the Arctic, to develop analyses and recommendations and to contribute to the follow up on the above-mentioned recommendations, a working group within the ECONOR project should be created.

Notes

- 1 Birger Poppel is formerly Head of Statistics Greenland, is Senior Researcher at Ilisimatusarfik, University of Greenland and Project Chief, Survey of Living Conditions in the Arctic/SLiCA, www.arcticlivingconditions.org. The sections in this chapter on reindeer husbandry in Norway and Sweden are written by Jens-Ivar Nergård and Johnny-Leo Jernsletten, respectively, both at University of Tromsø, Norway. The author is grateful to Iulie Aslaksen, Yvon Csonka, Jens Dahl, Rune Fjellheim, Solveig Glomsrød, Jack Hicks, Jack Kruse, Finn Lyng, Peter Nielsen, Carl Christian Olsen (Puju) and Rasmus Ole Rasmussen for helpful comments.
- 2 Lyng, F. (1998): *Subsistence Value and Ethics*. Address to the General Assembly of the Inuit Circumpolar Council. Nuuk.
- 3 The Arctic Council members are the eight Arctic countries: Canada, Denmark/Greenland/The Faroe Islands, Finland, Iceland, Norway, Russia, Sweden, USA, and organizations of the Indigenous Peoples of the Arctic: Aleut International Association, Arctic Athabaskan Council, Gwich'in Council International, Inuit Circumpolar Conference, Russian Association of Indigenous Peoples of the North, and Saami Council.
- 4 AMAP (1998): *Arctic Monitoring and Assessment Program*, Arctic Council. 1998. AHDR (2004): *Arctic Human Development Report*. Arctic Council. 2004. ACIA (2005): *Arctic Climate Impact Assessment Program*. Arctic Council. 2005.
- 5 Among others the following terms have been used: mixed cash/subsistence or subsistence-based economies, see Hovelrud-Broda, G. (1997): *The Seal: Integration of an East Greenlandic Economy*. A Dissertation Presented to the Faculty of Graduate School of Arts and Sciences, Brandeis University, Dept. of Anthropology; mixed subsistence-market systems / mixed subsistence-cash economies, see Wolfe, R.J. (1998): *Subsistence Economies in Rural Alaska*. *Cultural Survival Quarterly* 22:3. Alaska Department of Fish and Game. Division of Subsistence. Juneau, Alaska; mixed subsistence-based economies in which the harvesting of country food for primarily domestic consumption plays a significant role in their economies and cultures, see Usher, P. J. (2003): *Environment, race and nation reconsidered: reflections on Aboriginal land claims in Canada*. Wiley Lecture. *The Canadian Geographer/Le Géographe canadien* 47:4, 365–382.
- 6 Kassam, K.-A. (2004): *Hunting, Subsistence*. In: Mark Nuttall: *Encyclopedia of the Arctic*, Routledge, New York.
- 7 Wolfe, R.J. and R.J. Walker (1987): *Subsistence economies in Alaska: Productivity, geography, and development impacts*. *Arctic Anthropology* 24:56–81.
- 8 Inuit Circumpolar Council 1992: *Principles and Elements for a Comprehensive Arctic Policy*. Centre for Northern Studies and Research. Montreal, Quebec. Inuit Circumpolar Council is an

- NGO representing approximately 150 000 Inuit living in the Arctic regions of Alaska, Canada, Greenland and Chukotka, Russia (<http://www.inuit.org/>).
- 9 Huntington, H.P. (1992): *Wildlife Management and Subsistence Hunting in Alaska*. Seattle: University Press. ANILCA, *Alaska National Interests Land Conservation Act*. 1980. Pub. L. No 96-497, 94 Stat. 2371. ANCSA, *Alaska Native Claims Settlement Act*. 1971. Pub. L. No 92203, 85 Stat. 688.
 - 10 Beazley, M. (1993): *Caring for the Earth: A Strategy for Survival*. Published in association with IUCN, UNEP and WWF.
 - 11 See e.g. Kruse, J. (1991): Alaska Inupiat Subsistence and Wage Employment Patterns: Understanding individual Choice. *Human Organization*, 50(4):317–326, Rasmussen, R.O. (2000): Formal economy, renewable resources and structural change in West Greenland. *Économie contemporaine. Present-day economy. Études/Inuit/Studies* 24(1):41–78, Dahl, J. (1989): The Integrative and Cultural Role of Hunting and Subsistence in Greenland, *Etudes Inuit Studies* 13(1):23–42, Hertz, O. (1995): *Økologi og Levevilkår i Arktis: Uummannarmiut*. Christian Ejlers' Forlag. Mellemfolkeligt Samvirke, Krupnik, I. (1993): *Arctic Adaptations: Native Whalers and Reindeer Herders of Northern Eurasia*. Dartmouth College, University Press of New England, Hanover and London, Hovelsrud-Broda, G. (1997), see note 5, Duhaime, G. et al. (2002): Food Consumption Patterns and Socioeconomic Factors among the Inuit of Nunavik. *Ecology of Food and Nutrition*, 41, 91–118, Duhaime, G. and N. Bernard (2006): *Arctic Food Security*. (To be published 2006/07), Nuttall, M. (1992): *Arctic Homelands: Kinship Community and Development in Northwest Greenland*. University of Toronto Press, Huntington, H.P. (1992), see note 9, Wolfe, R.J. (1998), see note 5, Wenzel, G. et al. (2000): *The Social Economy of Sharing: Resource Allocation and Modern Hunter-Gatherers*. Senri Ethnological Studies. National Museum of Ethnology, Osaka, Lynge, F. (1998), see note 2, Gumbay (2003): *Making a Living: Place and the Commoditisation of Country Foods in a Nunavik Community*. A thesis submitted to the Department of Geography, Queen's University, Kingston, Ontario, Canada. Moreover, household activities like cooking, cleaning, childcare, etc. are included in SLiCA, but not analyzed in this chapter. Despite the fact that these activities are crucial to family well-being everywhere in the world, they are usually not accounted for in economic valuation. For a discussion and analysis of unvalued housework see e.g. Waring, M. (1988): *If Women Counted*. Macmillan, London.
 - 12 Usher, P.J., G. Duhaime and E. Searles. (2003): The Household as an Economic Unit in Arctic Aboriginal Communities, and its Measurement by Means of a Comprehensive Survey, *Social Indicators Research*. 61: 175-203. Kluwer Academic Publishers.
 - 13 Kruse, J. (1991): Alaska Inupiat Subsistence and Wage Employment Patterns: Understanding individual Choice. *Human Organization*, 50(4):317–326.
 - 14 Krupnik, I. (1993): *Arctic Adaptations: Native Whalers and Reindeer Herders of Northern Eurasia*. Dartmouth College, University Press of New England, Hanover and London.
 - 15 www.subsistence.adfg.state.ak.us.
 - 16 Andersen, T. and B. Poppel (2002): Living Conditions in the Arctic. In: Michael R. Hagerty, Vogel, J. and Møller, V. ed.: *Assessing Quality of Life and Living Conditions to Guide National Policy. The State of the Art*. Social Indicators Research Series, Vol. 11. Kluwer Academic Publishers. Reprinted from: Social Indicator Research 58, Nos. 1-3 (June 2002): 91-216, 2002, Andersen, T. (2006): *Living Conditions Research in the Arctic. How to measure Living Conditions and Individual Well-being among Inuit and Sami in the Arctic*. To be published 2006/07.
 - 17 The development of the analytical concepts, the database and the SPSS syntax is chiefly the result of the joint efforts of Jack Kruse, Program Director and Marg Kruse, Research Assistant.
 - 18 Petersen, R. (1985): The Use of Certain Symbols in Connection with Greenlandic Identity. In: Brøsted et al. (eds). *The Quest for Nationhood of Indigenous Peoples*. Bergen: Universitetsforlaget, Roepstorff, A. (1997): Den symbolske betydning af Kalaalimernit [The Symbolic Significance of Kalaalimernit]. *Kalaalimernit. Inussuk – Arktisk Forskningsjournal* 1, 1997.
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 - 21 Statistics Canada (2006): Harvesting and community well-being among Inuit in the Arctic: Preliminary findings from the 2001 Aboriginal Peoples Survey – Survey of Living Conditions in the Arctic. Ottawa.
 - 22 Bjarne Grønnow og Morten Meldgaard i *Naturens Verden* 1988: 11–12.
 - 23 Marquardt, O. and R.A. Caulfield (1996): Development of West Greenlandic Markets for Country Foods since the 18th Century. *Arctic*, 49(2):107–119.
 - 24 Hertz, O. (1995): *Økologi og Levevilkår i Arktis: Uummannarmiut*. Christian Ejlers' Forlag. Mellemfolkeligt Samvirke.
 - 25 Rasmussen, R.O. (2005): *Socioøkonomisk analyse af fangerhvervet i Grønland [Socio-economic analysis of the Greenland hunters]*. Prepared under contract to the Greenland Home Rule Government, Department of Fisheries and Hunting, Poppel, B. (2006): *Levevilkår i Grønland 2004-06 [Living Conditions in Greenland 2004-06]* forthcoming.
 - 26 There is no official distinction between the concepts of «towns» and «settlements» in Greenland. In practice, however, the «capitals» of the 18 municipalities are classified as towns, while other inhabited places are classified as settlements. The number of persons living in different towns ranges from 550 to 14 000, whereas the population in the settlements varies from 25 to 500 persons.
 - 27 Andersen, T. (1995): *Living Conditions in Greenlandic Settlements*. Statistics Greenland. Nuuk.
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