

CHAPTER 7

FOOD CONSUMPTION PATTERNS AND LOCAL MARKETS IN THE ARCTIC

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Abstract: In many parts of the Arctic, imported low quality foods seem to have replaced high quality locally produced food. In the case of Greenland, however, another situation is dominating. Here, local informal markets, in existence for a very long time, not only continue to play an important role in the local economy, but also caused the local agenda to be directed to the commercial sector. The issue examined in this paper is the evolution of food markets in Greenland, and the relationship between imported and locally produced food. A major question is how consumer behaviour is reflected in consumption patterns. The study begins with an exploration of how the issue has been treated in the literature. Next is an analysis of the food supply situation in Greenland by means of different statistical sources, with special emphasis on the connection between the formal and the informal sectors in relation to food production and consumption. The main purpose of the paper is to arrive at a general understanding of the problems of market economies remote regions, and of the dynamics between the commercial and the non-commercial markets in relation to food supply and food consumption patterns. One major conclusion of the study is that the informal market drives the local agenda and consumers' preferences are visible in economies characterized by monopolies, enabling local products to be maintained as important food items.

1. INTRODUCTION

Self-sufficiency and self-reliance are concepts that have been associated with Arctic communities for thousands of years. Despite this perception, there is evidence that interactions in the form of interregional trade and barter have occurred (Marquard & Caulfield 1995), as well as large-scale interaction across the circumpolar north. Such activities have had only a limited impact on food consumption patterns, however, as exchanges were mainly concerned with tools and equipment.

Consumption patterns were somewhat influenced when Europeans invaded the region, brought with them conspicuous consumption, and aroused a taste for foreign items such as sugar and coffee. More serious consequences were felt when trade activities were introduced through colonial relationships, since this often deprived local populations of subsistence provisions, having replaced these with imported goods of less quality, and creating dependency relationship (Rink 1851). The consumption of coffee and sugar continued to be important in exchange relationships, but more often bread and other staples were included.

The greatest impact on consumption patterns, however, arose with the modernization process in the 1950s and 1960s, when a much larger variety of foreign food products were introduced. Especially, the

introduction of supermarkets in the 1970s had serious consequences for consumption patterns—to such a degree that many traditional products began to disappear from the markets (Dahl 1989). The main items available in the supermarkets were imported food, and the abundance and relative variety in supply therefore, increasingly supplanted many traditional food items. It became more convenient, and certainly also fashionable, to serve the imported products.

In many cases, imports did not completely replace local products: subsistence activities were still maintained, and continued to supply country food for a large part of the population. There have been marked differences, however, in the way local products are supplied to individual consumers throughout the Arctic, and these strategies have had serious impacts on present supply patterns.

For most regions of the Arctic, individual subsistence production has been ongoing, but of course limited by commercial activities with monetary wages as the major income source (Usher 1976, Usher & Wenzel 1987, Duerden 1992). It is especially in small settlements that subsistence activities have been—and still are—considered important activities for almost all residents, while in larger settlements the pattern is much more differentiated. For a number of people, gathering of sustenance is still a daily activity, while for a majority of

the population in Europe and North America, and in the Arctic, there is no obvious difference between leisure hunting and fishing—except, of course, for the cultural construct associated with such activities. In general, however, there is a certain division between commercial activities and products on the one hand, and subsistence activities and products on the other.

It has been argued (Usher 1986, Dahl 1989) that the distinction between the cash-based and subsistence sectors are artificial and meaningless, but the division still exist in most parts of the Arctic. In a few cases, however, local and commercial markets have coexisted, and in these cases it seems that the availability of country food through semi-commercial activity has caused country food products to be introduced into the refrigerated counters of the supermarkets.

The following analysis will consider a number of questions relating to food availability and supply in Greenland, with an emphasis on the last century, and focused on changes that have occurred in the last 25 years.

The analysis begins with a discussion of subsistence *versus* commercial food products, focussing on the relationship between commercial and subsistence activities in relation to food supply. This is followed by an analysis of import trade patterns and the availability of commercial food products during the last century, with an emphasis on changes that have taken place in the last 25 years. A third section examines the importance of locally produced food relative to imported food products, and includes a discussion of the relationship between subsistence and commercial activities. Finally, the results of the analysis are set in a sustainable development framework.

2. FOOD CONSUMPTION PATTERNS

The perception and evaluation of different food consumption patterns have taken different paths over time. Consider following three approaches:

1864

'When the Greenlander is arranging his food consumption according to Danish patterns, it ruins him in the same manner as it would ruin us in case we would arrange our consumption according to the patterns found in the Tropical Countries... We have failed by considering products, which are harmless for us, being just as harmless for the Greenlanders; Cotton clothing, bread and coffee is for them just as certain—even slower working—poison as would be Liquor' (Lange 1864:15, cited from Bertelsen 1935:92)

1950

'With the increasing purchasing power of the population, which has been a consequence of the growth of the population and the increase in real wages, the KGH has to a higher degree been aiming its endeavour towards an expansion of the supply service by increasing the business and to consider new lines, which in turn has lead to a demand for the erection of larger and better suited storehouses, shops etc... The maintenance and improvement of the base of existence for the expanding population, however, can only be financed through an increased production or through an increase in transfers' (G50).

1998

'To the Inuit, the traditional diet is not only a way of obtaining the necessary nutrients but it is also a social and cultural issue. Many Inuit feels that only the traditional diet of sea mammals and caribous is sufficiently filling and able to keep them warm. More important, eating traditional food creates a sense of being Inuit and of adhering to the old values. Furthermore, it is a social act to eat traditional food together, comparable to having a cup of coffee at the office or a beer at the pub in western societies... A real Inuk eats and appreciates traditional food, and asking Inuit about their food preferences is, therefore, more than merely a question of taste. It may, in reality, be more or less equivalent to asking whether people are proud of being Inuit' (Bjerregaard & Young 1998).

These three excerpts illustrate very different approaches to the question of food supply and food consumption patterns.

The first quote represents an approach characteristic for the situation since first contact and until WW2—very paternalistic, with a purely commercial approach guiding the *Kongelige Grønlandske Handel* (KGH) or Royal Greenland Trade Company. During the 18th and 19th centuries, the Danish Government's approach to Greenland was to avoid exerting too much influence on the traditional lifestyle. Trade was to be based on buying skin, blubber, and other products from Greenlanders, and merchants were to sell luxury products such as coffee and sugar, as well as tools and weapons. Greenlanders were expected to be self sufficient regarding food supply, and only some of the negative consequences of increased sedentarity caused by colonial activities was to be compensated by the colonialists. Among the negative consequences was diminished access to resources due to the fact that sedentarity reduced the radius of activity, which, in turn, reduced possibilities for adaptation to changes in resource base due to over-exploitation and climatic

change. As a consequence, increased imports of a stable food supply became necessary.

The second quote represents the typical approach dominating the modernization process after WW2, when an increased involvement of Greenlanders in the formal economy was accentuated: wage income was expected to take over substantial portions of the economic activity, and shopping for imported products was expected to replace the former informal activities. The production of local goods was not discouraged, but a modern lifestyle was supposed to gradually move informal and subsistence activities toward formal activities, requiring increased emphasis on 'modern' imported products. This would, of course, also include food, and instead of traditional small shops, supermarkets were established in all larger cities.

The third quote deals with the current development process, focused on the fact that traditional products, being nutritious and healthy, are influencing not only consumption patterns, but also the politics of cultural manifestations. With a focus on self-determination and liberation, there is a need for symbols of identity, and traditional items, including country food, have become important for the creation of an identity based on a distinct cultural manifestation. That such manifestations are closely connected to food preferences by specific generations is illustrated by the differences in priority between the young and the elders. There is a marked preference among the older people to buy traditional products, while the young have an equally marked preference for different types of food, including imported products (Bjerregaard *et al.* 1995).

The evolution of food consumption patterns is affected by complex relationships, which, basically, can be traced to a link between two fundamental dynamic mechanisms—supply and demand.

First, it is a function of supply—i.e., the availability of alternative food sources as well as of country food. Over time, limited availability has, to a high degree, influenced consumption patterns. The availability of imported products may cause particular attitudes toward these products—when scarce, they are considered attractive; when abundant, they seem to be less appealing. The question of availability is also concerned with the relationship between formal, informal and subsistence economies—i.e., whether local food has been an internal or external part of the dynamics of the economy—as well as with the development of settlement structures as carriers of traditional resource usage patterns.

Secondly, it is a function of demand. On the one hand, it reflects the importance of different types of

food sources in meeting health requirements and nutritional standards. Also at stake is the demand created through cultural consciousness about traditions, with the reintroduction of and emphasis on traditional products, as well as the development of new products based on traditional resources. A third element is the increased focus on sustainable development, emphasizing the need to use local resources, and to consider the relative costs of production, as well as absolute costs, which would include costs associated with maintaining the availability of resources. This should include, for example, the true costs of transportation with regeneration of equivalent resources, or costs incurred for environmental restoration as a consequences of CO₂ emissions.

It is not our intention to address all elements that relate to food consumption, but to focus on the structure and changes in food import practices, and how these relate to general food consumption patterns. By doing so, an attempt is made to relate the formal economy—which is closely linked to the supply of imported food—to the informal and subsistence sectors. To put this in perspective, however, we start by considering how other approaches have dealt with this relationship.

2.1 Settlement Structure and Formal, Informal and Subsistence Economy

An important aspect of the dynamic of settlement structures in the Arctic is the fact that local economies are not solely determined by a capital/wage earner rationality, which ultimately has been prescribing concentration and centralization of production as well as settlement. It is, to a very large extent, influenced by other rationalities, such as described by Chayanov (1966) around the turn of the century. In order to grasp some of these rationalities, it is necessary to operate with other types of economic sectors.

There are four major economic sectors that could be said to be determining, or at least influencing, the conditions for development in the Arctic (Rasmussen 1998b).

- 1) On the one hand, there is the dominant formal economy, owing to the fact that the Arctic is not only included, but is an integral part of the capitalism of the northern hemisphere, where wage earning has become the cardinal source of income for a major part of the population.
- 2) However, as in many other parts of the developed world, income transfers also seem to be a constant part of the formal economy in the Arctic. And here

—as in the rest of the world—it is difficult to draw the exact line between income transfers and other activities in the service sector.

- 3) It is a fact that many economic transactions are taking place outside the formalized economy. Local market sales of products and local rendering of services are important in the Arctic, and, in contrast to more southern regions, such activities are often encouraged and facilitated through public services. In Greenland, local markets have not only been a part of the daily life in most larger settlements, but the municipal authorities have taken care of the establishment and maintenance of a rural marketplace open for the non-registered sale of products of hunters and fishermen.
- 4) And last, but not least, subsistence is still playing a crucial role for survival in the Arctic, particularly in small settlements, but in all types of settlements generally. This is probably one of the major differences relative to more southerly regions of the northern hemisphere.

Almost since first contact with Europeans, barter economic relations occurred, and influenced communities in many ways. But, it was mainly through the introduction of the wage incomes that the monetary economy really took hold, and during the latter part of the 20th century it has more or less been the dominating economic activities (Marquardt & Caulfield 1995). Especially, the economic changes that have taken place since WW2 are very similar to those that occurred in more southern areas in matters related to the structure and importance of the formal economy. Even though the Arctic, for most people, is seen as a region dominated by hunting, fishing and large-scale mining activities, the current formal economic structure is by far dominated by the tertiary sector (see the introduction to this section of the book), with its various services—public and private, productive and unproductive—that Robinson and Ghostkeeper (1987) refer to as the 'Next Economy,' emphasizing the information and service industries as key elements. This, however, does not diminish the importance of the three other sectors mentioned above. On the contrary, there seems to be a certain relationship between the development of an economy dominated by non-productive activities and the parallel development of an informal sector.

2.2 Measuring Activities in the Informal and Subsistence Sectors

A few general comments are in order, regarding the informal and subsistence sectors, mainly based on

Rasmussen (1998a, 1998b), but with reference to several central points of view relative to the main purpose of this working paper.

According to Caulfield (1992), Duhaime (1991), Kruse (1991), and Dahl (1989), the informal and subsistence sectors are considered to be not only crucial for the survival of small communities, but are, indeed, integral parts—even a prerequisite—for formal economic activities. In traditional economic analyses, these sectors are considered alien to modern capitalism and market economies, and therefore classified as remnants of the past that do not have any real importance (Paldam 1994). They have even been said to be obstructions to economic development. The problem, however, is that the economic analysis of subsistence activities is considered foreign to anthropological and cultural ecological analyses, that focus on: the material outcomes of such activities (Wolfe & Walker 1987); the time spent on various activities; and, the energetic balance between input and output in production activities (Scientific American 1971), the social and cultural importance (Condon *et al.* 1994), or the interaction between several of these elements. Usher and Wenzel (1987) in providing an overview of studies conducted in Canada, describe and analyze the hunting and trapping economies of native Northerners, and clearly show the importance of subsistence activities. Berkes (1990) emphasizes how subsistence fisheries have been more or less ignored for a long time, due (in part) to limited published material on their extent and significance. At the same time, however, he stresses that analyses clearly show this type of activity not as an incidental cultural remnant from the past, but as a critical economic activity.

One problem when dealing with these different sectors, is the lack of basic information about activities related to Arctic economies. Even Usher and Wenzel's (1987) determined efforts to bridge the purely economic and biological approaches to the question of harvest statistics found that most studies, including analyses of harvest and diet data, were relying primarily on participant observation gathered from extended periods in the field or by recall surveys. In addition to these main sources, however, they found a variety of other documentation on native harvest activities, and discussed the potential values and limitations of the sources, which included administrative records, commercial and sport harvest records, scholarly social science studies, government planning studies, socioeconomic impacts assessments and claims statements, nutrition studies, and biological and wildlife management studies. These sources had several

limitations, mainly because none seemed to be comprehensive, and therefore required extensive. Also, a substantial number of assumptions had to be made to render records from the various sources comparable. In the case of Alaska, the governmental Division of Subsistence of the fisheries and game authorities is responsible for conducting surveys in various communities, but a general overview of subsistence activities for the entire state does not exist. In the case of Greenland, there are several sources that document formal economic activities, but there exist no general records of transactions at the municipal *Kalaalliminniarfik*, nor have there been any attempts (even on a short term basis) to quantify the activities taking place.

The KGH (The Royal Greenland Trade Company) authorities and the colonial state, however, did make several other attempts to obtain a more complete register of activities. One of the purposes of this exercise was to determine when it would be necessary to provide additional supplies to the trade posts in order to prevent situations of famine. One of the tools was to keep track of hunting activities by means of *fangstlister*—hunting lists—i.e., comprehensive lists of all hunted and trapped resources. Local hunters were responsible for keeping the records, and in many cases the lists were very accurate, while in others they only partly reflected the actual situation. The tradition of keeping records of hunting activities disappeared when Home Rule was established, but the quality of the registers suffered severely during the 60s and 70s. And in no cases were the character and quality of the lists such that a link between formal and the informal sector activities could be created.

A few researchers have since taken steps to study the interaction between the different sectors, and in many cases the key is food supply and nutrition. Wolfe and Walker (1987) show how the harvesting of fish, land and marine mammals, and other wildlife resources occurs in Alaskan communities at very different levels, and how subsistence harvests contribute substantially to the welfare of many rural communities. Kruse (1991) shows how subsistence activities actually have increased in the North Slope Borough during the last decades. This is contrary to Green and Green (1987) who show that country food is only commercially available in a few communities in Northern Canada, and that most non-natives—i.e., 42% of northern residents—rely exclusively on imported foods. As a consequence, native residents have been changing their dietary habits, and are using a large variety of market foods in place of traditional country food.

In Greenland, in addition to the hunting lists mentioned above, occasional surveys have been conducted, in an attempt to provide 'site-specific' overviews of the importance of subsistence and informal activities. These surveys were conducted especially in relation to the modernization process, and were meant to be used as tools in that process, but never really served as such. (A few of the surveys are mentioned later).

Marquardt and Caulfield (1995), in their analysis of local market development in Greenland, however, clearly demonstrate not only that subsistence activities are co-existent with the formal economy, but at the same time stress how the discourse has been including subsistence and informal marketing as important development factors. Through their analysis, they demonstrate how local markets—the *Kalaalliminniarfik* and the KGH (Royal Greenland Trade Company)—arose in the 18th century to meet the needs of the employees of the church. They show how local markets were used as a kind of 'leveller,' providing equal access to imported goods for hunters and their countrymen working for colonial authorities. The markets operated as redistribution channels through which hunters were able to obtain the funding necessary to buy European goods, while Greenlandic and Danish salaried employees were able to access valued country foods, locally produced items of clothing, and other goods. One of the major conclusions was that, without the local market, there might have been a clearer separation between subsistence and commercial activities; local markets served to integrate the two systems. Local markets have continued to exist, providing residents of most major towns with a system through which nearly all types of country food are available and exchanged. The entire market structure, including such elements as the building maintenance and water supply, etc., is a responsibility of municipal authorities.

An important conclusion regarding development in the Arctic is that it is not valid to focus only on either the formal or the subsistence sector; the existence of the informal sector must be taken into account. The informal sector, or economy, can be defined as any subsistence activity used in exchange or for monetary value, through a local market or between people, but not registered by any formal authority, such as the taxation authorities (Rasmussen 1998b). It falls somewhere between subsistence, i.e., hunting and fishing for one's own or family survival, and the formal economy where products from hunting and fishing are sold to registered authorities. It can thus be seen as creating a link between the two sectors, which is what

Usher (1986) emphasized in his discussion of the complexities of the relationship between domestic/subsistence and commercial production, and more clearly when Dahl (1989) specified that the traditional distinctions between subsistence and cash-based economies are more or less artificial and meaningless, because the two sectors are thoroughly interwoven and interdependent.

What should also be kept in mind is that, even though it may seem difficult to measure the economic importance of subsistence and informal activities, it may be even more difficult to measure the cultural importance of specific activities and to convert them into economically comparable measures!

3. THE ROLE OF COUNTRY FOOD

It is not our intention to delve into a deeper analysis of the different roles that country food may play, but to outline some of the major discussions, with a special focus on three dominant elements: the economic, the subsistence, and the cultural value of country food.

3.1 Country Food as Economic Value

One major issue is how to convert the products of subsistence hunting and fishing into economic values. It raises the question as to which set of values should be used as criteria.

The approaches to the analyses differ, however, most commonly registers of frequency of consumption of country food such as those provided by Statistics Greenland (1995), or registers of volume, e.g., Berkes (1990) and Wolfe and Walker (1987) are used. In order to assign economic values to informal and subsistence activities, however, one the problem remains—how to convert volume (the most frequent measure of the activity), or frequency of consumption or hunting activity, into a specific value. What is a suitable conversion factor?

One method would be to use a replacement value, i.e., what the same volume of product would cost if purchased in the free market; or, the price of imported food of equivalent nutritional value; or finally, the commercial sale price, i.e., what price could be sought from a local producer for an equal quantity of product.

Roots (1981) argued that it is difficult to account for the success or failure of northern resource management in an appropriate manner because the basis of value is constantly changing. Just as inflation can nullify expected benefits in monetary terms, or make nonsense out of carefully laid financial plans, so can changing values profoundly alter the net worth of

resources or the benefits to society from their management.

A very straightforward approach was taken by Chabot (1998), who focused on the replacement value, i.e., what would have to be bought in order to get equivalent caloric and nutritional value. She identifies marked differences in household types, and thus differences in the economic importance of subsistence production. Three main classifications are used to characterize the Nunavik region in Northern Quebec:

- Households in which at least one of the heads is employed (48% of the households): the gross monetary income level is about \$9,200 and the gross replacement value of the harvest valued at \$1,800. Harvest activities, therefore, play a certain role in the economy of these households.
- Households in which none of the heads is employed (26% of the households): the gross monetary income level is at about \$5,100, and the gross replacement value of the harvest \$6,000. For such households, harvest activities are crucial for the total economy.
- Households with single-parents, predominantly single mothers (22% of the household): the gross monetary income level is at about \$6,000, and the gross replacement value of the harvest considerably lower at about \$300. Only a minor part of the economy, therefore, stems from harvest activities.
- On average, about 26% of the gross monetary income, including the replacement value of harvest activities, stems from the harvest, either through sale or personal consumption of products.

The results, in many ways, are comparable with those of Rasmussen (1998b) for Greenland; who focused on differences in settlement type, rather than social group. Results show that a little more than 30% of incomes in small settlements stem from the informal and subsistence sectors, while the rate is closer to 12% in larger settlements. In mid-size settlements (500 to 1,000 inhabitants), the average value of informal and subsistence activities is about 25%, which is very close to the average value described by Chabot (1998). One major distinction is the relatively high occurrence of the informal sale of products in Greenland—about 10% of the total harvest is sold on the local markets—while this activity is more or less absent in Northern Quebec.

Without assigning specific values to production activities, Usher (1976, 1986) stresses how the distinction between domestic and commercial products is not valid in Canada, due to the commercialization of

traditional products, and the growing consumption of country food by non-local people. A somewhat similar approach is taken by Wolfe and Walker (1987), who emphasize the value of subsistence activities, without assigning a specific monetary value to them.

3.2 Country Food as Subsistence Economy

Another approach is to focus on the importance of subsistence activities alone.

A large body of literature describes the character and structure of subsistence production in, as well as outside, the Arctic. In a substantial part of the literature, subsistence food production is seen primarily as a means of securing sustenance. In such contexts, the emphasis is on the quantity of species in use (as determined through the traditional registers of the Alaskan Division of Subsistence), on the ecological rationale of production (e.g., through the exchange of energy in the system), or on the balance of nutritional elements in the system (Scientific American 1971). The calculations are usually based on thorough and detailed fieldwork studies in a certain number of communities, and therefore are not very useful for generalizations.

As an extension of this approach, Lyster (1997) creates a general model of resource flow, in order to assess total production in different sectors within Greenland. The registers of formal economic activities of Statistics Greenland are used as a basis for the model. These registers include all sales of fish and hunting products through formal authorities. In addition to this are registers of hunting activities based on yearly reports, required for everyone who wishes to obtain a hunting permit. To obtain a quantitative measure of activities outside the formal sector, Lyster uses two qualitative approaches: the *Living Condition Survey* designed by Statistics Greenland, and the *Health and Lifestyle Survey* designed by a group of health scientists. Both analyses are presented elsewhere in this volume. The key element in both is a register of the frequency of country food consumption, converted to quantities, which provides a complete overview of resource flow.

As an extension of this model, other case studies are focussing on establishing a more theoretical framework, encompassing the material basis that characterizes subsistence production, and the social and cultural construction, that describes the superstructure of the society.

Harris (1979) emphasizes how an analysis of the modes of production of non-capitalist societies includes not only the means and relations of production, but also the means and relations of reproduction. Christiansen (1975) follows in line with this approach when he

characterizes the relationships in subsistence production as a 'syndrome,' i.e., describing it as a comprehensive framework encompassing environmental, social, and cultural relationships, with a dynamic all its own.

3.3 Country Food and Associative Solidarity

Using the cultural-materialistic approach, Harris (this volume) illustrates an important tradition in anthropological analyses; most often anthropologists have emphasized social rather than material relationships. Very often, it is the notion of reciprocity that is seen as creating a material basis for social interactions, and more or less holding society together.

Wolf expands on the concept by stressing community relations as an important framework—a 'super-household' model. Variations in knowledge and experiences between generations, as well as in personal experiences and qualifications, gives individuals in a community diverse abilities in providing for themselves and their families. To compensate for these differences, the community creates extended social relations, and a basis for the redistribution of subsistence production. This, he characterized as 'super-households.'

Martin (1998) emphasizes the function of more than one social network. First, he demonstrates how solidarity in two Nunavik communities, Kuujjuarapik and Umiujaq, is linked to the food redistribution system. It is a system operated locally, where the medium is the municipality—the municipal freezer—managed through a program created by regional authorities. At the same time, food is also central to another form of solidarity, namely the circulation of food within the family network, working on the principle of gift giving, and integrating each person into the network by creating obligations between family members.

In the classifications above, the informal sale of products on the local market is considered a component of basic commodity production, but the authors do not make any attempt to determine the level of income stemming from this sector. In addition to an analysis of the social and cultural importance of hunting activities in a West Greenland community, this element is used in analyses conducted by Caulfield (1997), who stresses the mixed character of the economy in a municipality being assessed, including the wage sector, a basic commodity production sector, and a household production sector. He recognizes household production as a major activity, accounting for the total amount of meat produced, but does not assign it any monetary value.

4. CASE STUDIES

The main purpose of this chapter is to attach certain realities to the concepts discussed in Chapter 2. An empirical approach to the analysis of food consumption patterns in Greenland is used, and case studies presented in three different sections.

The first section provides an introduction to the problem, with a short presentation of examples showing how the question has been approached in previous analyses of the development process. The examples include mainly those previously published only in Danish by Danish authorities.

The second section contains the main presentation. By means of different statistical sources, an overview of the *de-facto* development of food consumption patterns is provided. The presentation considers general patterns of food consumption during the 20th century, with an emphasis on consumption of imported food, and focusing on development over the last three decades.

The third section presents a short discussion of important relationships between the formal and informal sectors relative to food consumption and distribution patterns.

4.1 Different Approaches in Greenland

In this empirical analysis of food consumption patterns, the focus is on how the question has been approached in discussions in administrative and research activities connected to Greenland. The presentation is based mainly on examples previously only published in Danish by researchers and administrators closely connected to Danish authorities.

In his report, Bertelsen (1935) presents a comparative analysis of food supply in Greenland, based on 30 years of investigations—1901 to 1930—and attempts to estimate the importance of imported food for the total diet of Greenlanders. His calculations are based on the assumption that adult males consume 4,260, adult females 5,000, adolescents of both sexes 5,200, and infants (less than 2 years of age) 1,160 calories every day. In 1901, imported food accounted for approximately 17% of the required calories, according to the estimates provided above. But by 1930 the situation had changed drastically, with as much as 63% of the required calories supplied through imports, mainly as sugar and cereals (Bertelsen 1935:86-89). The limitation of the figures in providing a precise picture of the situation, owing to the uneven distribution of traditional food, is discussed. Limited storage facilities cause an abundance of locally produced food to be

consumed when food is available, while at other times there may be a substantial lack of food. In periods of surplus, actual consumption could be as high as 4-5 kilos of seal meat and blubber, which translates to a total as high as 7,000-10,000 calories per day (Bertelsen 1935:95). According to Bertelsen, consumption levels of this magnitude have been confirmed through other observations, e.g., Rink, Rae, etc. Such consumption rates drastically change the composition of food from different sources compared to the estimate based on calorie requirements.

In Beretninger (1955), an analysis of available data and information provided by physicians was compiled into a brief account of the state of health of West-Greenlanders that focused on the nutritional status. The time span covered was 1949 to 1953, and a core document was a survey conducted on 13 families with a total of 92 consumers, chosen from different occupational groups, and from towns both in north and south West-Greenland. The main focus of the analysis was on observations related to the quality of country food, measured by the content of vitamins, minerals and other nutritional elements, which led to some very marked conclusions. First, country food generally has a much higher nutritional value than imported food, because, among other reasons, imported food contains fewer calories and essential vitamins (Beretninger 1955:121). Second, that the diets of people in settlements as a rule, have a higher nutritive value than those in towns (Beretninger 1955:121). An attempt was made to consider the patterns related to imported food consumption, the characteristics of imported food, and the relationship between imported food and Greenlandic provisions.

Besides a general characteristic of the distribution of imported *versus* locally produced food, an important finding was that the caloric values of imported food was based mainly on cereals, which accounted for 54-59% of the calories, while sugar accounted for 26-43%. Dairy products, vegetables and meat accounted for less than 10%. In this way, consumption patterns in the early 1950s was rather similar to the structure that has dominated since import activities began, i.e., with the main focus on cheap calories. Colonial administrators' reason for this, from the start, had been to prevent starvation among Greenlanders by compensating the negative consequences of export of traditional staples by the cheapest means possible.

Boserup (1963), in his important work on economic policy, provides an overview of the formal income distribution, compared to the value of subsistence production for the years 1947 to 1960, with

Table 1: Income Structure 1947-1960, According to Boserup (1963)

| | 1947 | | 1955 | | 1960 | |
|----------------|-----------|------------|------------|------------|------------|------------|
| | mill. Kr | % | mill. Kr | % | mill. Kr | % |
| Formal incomes | 53 | 63.9 | 260 | 74.4 | 473 | 78.8 |
| Transfers | 2 | 2.4 | 15 | 4.3 | 30 | 5.0 |
| Subsistence | 28 | 33.7 | 70 | 20.3 | 97 | 16.2 |
| TOTAL | 83 | 100 | 345 | 100 | 600 | 100 |

hunting list data (see later) as the main basis for assigning a formal value to subsistence production. Among the important findings was that the formal economic activities show a marked increase—eight times—during the period in question, while there is a much smaller increase in the subsistence sector. Table 1 summarizes the major findings regarding individual and household incomes (Boserup 1963:304).

A general increase in economic activity is obvious. Total incomes show an increase more than 7 times within 13 years, from 83 million dkr. in 1947 to 343 million in 1955 and to 600 million in 1960. Subsistence activities also expanded more than three times, from 28 million in 1955 to 97 million in 1960. It is clear, however, that the largest increases are related to transfers, which witnessed a 15 times increase. The main trend is an increased dominance of formal economic activities, and—as indicated indirectly by the relationship between the formal and the informal sectors—a change in food consumption patterns toward more imported food.

In an analysis covering 1968-69, another attempt was made to evaluate the importance of the informal sector (SU28 1971). By means of a relatively small survey, the average wage income for Greenlanders in 1968-69 was estimated to be 26.433 kr., while the value of informal income was as low as 4% of total income, with an average value of 1.055 kr. This average, disguises the fact that there are marked differences between the various groups. By the time the survey was conducted, there were only a limited number of households where wages were the major source of income (SU28 1971:14). As another measure of informal activities, and a more precise evaluation of consumption of country food, the survey included an evaluation of how much of the total income was spent on food, and, of this, how much could be attributed to the consumption of locally produced products. Almost 1/3 of the total income, or an average of 9.590 kr, was spent

on food and food products, and of this, 1,418 kr was attributed to the consumption of country food (SU28 1971:23). What wasn't included in this survey, however, was the value of production for home-consumption.

During the last few years, the informal sector and country food production has regained focus. Two studies are especially worth mentioning.

The first is an analysis of living conditions conducted by Statistics Greenland in 1994, that was based on a survey which included a stratified sample of 1,500 individuals—persons more than 18 years of age. The survey consisted of 147 questions concerning economic conditions, consumption patterns, dwellings, and leisure time activities. The municipalities of Nuuk, Kangaatsiaq, Paamiut, Qaqortoq, and Sisimiut were selected as representative of different types of municipalities. With 1,121 of the 1,500 questionnaires returned—a total encompassing approximately 3% of the target group—the sample is estimated to be representative for the purpose of this study. The following tables, drawn with data from Statistics Greenland (1995) summarizes the main findings relative to food consumption patterns:

Differences in consumption patterns between Greenlanders and non-Greenlanders is obvious, according to Table 2. Note that the statistics include birthplace, since there is nothing specifically ethnic to characterize a person as a Greenlander, other than 'place of birth.' Greenlanders are considered those who were born in Greenland and lived there for their first two years. The figures also show that the vast majority of the population is consuming country food several times each week.

It is not surprising that country food is more frequently consumed in the villages, as shown on Table 3. Here, consumption of country food occurs at every second day. But still, country food consumption is also rather frequent in larger ones.

Table 2: Frequency of Consumption of Country Food —% of Population in Relation to Origin

| Place of birth | 3-4 or more times every week | 1-2 times every week | 2-3 times every month | Seldom or never | Not known |
|-------------------|------------------------------|----------------------|-----------------------|-----------------|-----------|
| Born in Greenland | 51 | 25 | 11 | 8 | 6 |
| Born in Denmark | 13 | 34 | 22 | 29 | 3 |
| Born elsewhere | 13 | 50 | 31 | 6 | - |
| Not known | - | 75 | - | 25 | - |

When related to income (Table 4), there is a general tendency toward more frequent consumption country food when the income level is low, while those at higher income levels seem to consume country food less frequently. A partial explanation is that the average income is higher for people born outside Greenland, just as income levels are higher in the larger settlements as compared to the smaller settlements.

In summary, the study shows that country food plays an important role in food consumption patterns. One problem with the survey, however, is that there is no way to convert consumption frequency into volume or value.

Another approach was used in *The Greenland Health Profile Investigation* (Bjerregaard *et al.* 1995), initiated in 1992, which included interviews of 1728 adults from 38 towns and villages, covering all regions of Greenland. The main purpose of the study was to gather information about how people perceive their health conditions, and to undertake an evaluation of the population's health habits and daily life.

Among the main findings regarding food consumption, certain facts should be emphasized. Table 5 shows results on age group and place of residence (Bjerregaard *et al.* 1995: 204). Results show that

Greenlanders consumes country food almost every day, and older persons consume it more often (42 times every month for people over 60 years of age) than younger (23 times every month for those between 18 and 24 years of age), just as males consume it more often (33 times per month) than females (28 times). More than half of the population actually prepares a meal every day, using animals they or their families have hunted or fished. The investigation also illustrated that almost all Greenlanders perceive country food as being import for health.

As regards settlement type, this analysis clearly shows a much more frequent use of country food in villages, as compared to towns.

The findings in this analysis fully agree with those from the *Living Condition Analysis* above. A common characteristic of both is a focus on quality and frequency, rather than on volume and value, which limits the analysis in several respects. It ignores the potential of converting the registers into specific economic measures, which, therefore also prevents an evaluation of the relationship between the formal, informal, and subsistence sectors.

Table 3: Frequency of Consumption of Country Food —% of Population in Relation to Settlement Type

| Settlement type | 3-4 or more every week | 1-2 times every week | 2-3 times every month | Seldom or never | Not known |
|--------------------------|------------------------|----------------------|-----------------------|-----------------|-----------|
| Towns / <i>Byer</i> | 38 | 29 | 14 | 12 | 6 |
| Villages / <i>Bygder</i> | 74 | 13 | 5 | 2 | 5 |
| Not known | - | - | - | - | - |

Table 4: Frequency of Consumption of Country Food—% of Population in Relation to Income Structure for Families with Two Providers

| Total formal income Dkr. | 3-4 or more every week | 1-2 times every week | 2-3 times every month | Seldom or never | Not known |
|--------------------------|------------------------|----------------------|-----------------------|-----------------|-----------|
| -49.000 | 61 | 14 | 10 | 6 | 10 |
| 50.000-99.000 | 64 | 19 | 10 | 4 | 3 |
| 100.000-149.000 | 54 | 26 | 9 | 8 | 2 |
| 150.000-199.000 | 42 | 21 | 24 | 8 | 4 |
| 200.000-249.000 | 53 | 28 | 9 | 8 | 1 |
| 250.000-299.000 | 47 | 30 | 16 | 8 | - |
| 300.000-349.000 | 35 | 31 | 16 | 16 | 2 |
| 350.000-399.000 | 39 | 36 | 17 | 8 | - |
| 400.000- | 29 | 36 | 19 | 16 | - |
| Not known | 47 | 20 | 6 | 14 | 12 |

Table 5: Prevalence of Consumption of Traditional Food 4 or More Times per Week Among the Inuit of Greenland

| Age group | Residence in towns | Residence in villages |
|-----------|--------------------|-----------------------|
| | % | % |
| 18-24 | 24.2 | 63.8 |
| 25-34 | 33.2 | 67.3 |
| 35-59 | 50.9 | 88.6 |
| 60+ | 64.9 | 88.2 |
| Total | 43 | 78.2 |

5. TRENDS IN COMMERCIAL FOOD DISTRIBUTION PATTERNS IN GREENLAND

This section of the analysis presents the main empirical data. It is based on several statistical sources, and attempts to provide an overview of the *de-facto* development of food consumption. Thanks to a long history of registers—first kept by colonial and then by national administration, and then finally by Home Rule authorities—it is possible to get a rather good idea of how consumption patterns are reflected through formal distribution channels. The selected data have been

analyzed for general patterns of food consumption during the 20th century, as the intention is to provide an overview of the development of commercially available food, with an emphasis on consumption of imported food, and focusing on the last three decades.

5.1 General Trends

Several characteristics of the general food consumption pattern in Greenland are presented in the figures that follow. The focus is on the value of products. For comparative purposes, all data have been converted to 1995 values by means of a generalized consumer price index covering 1899 to 1997. Details about the price index and its sources are provided in Appendix A.

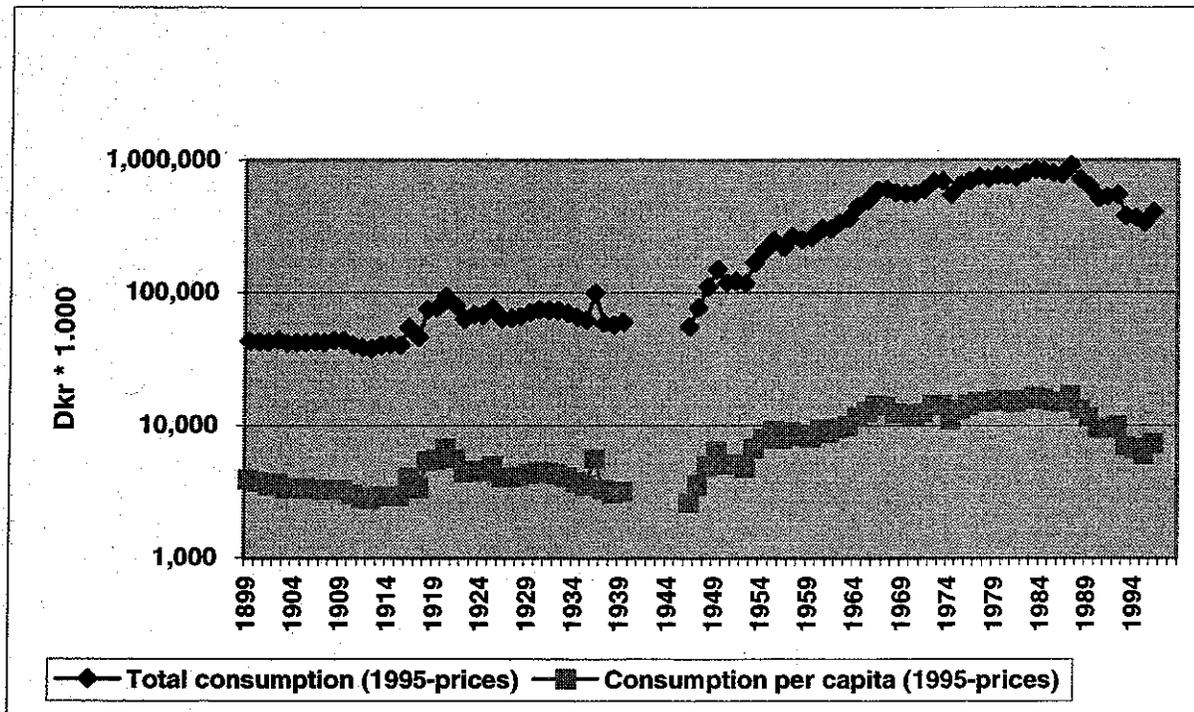


Figure 1: Import and per capita consumption of food in Greenland 1899-1996

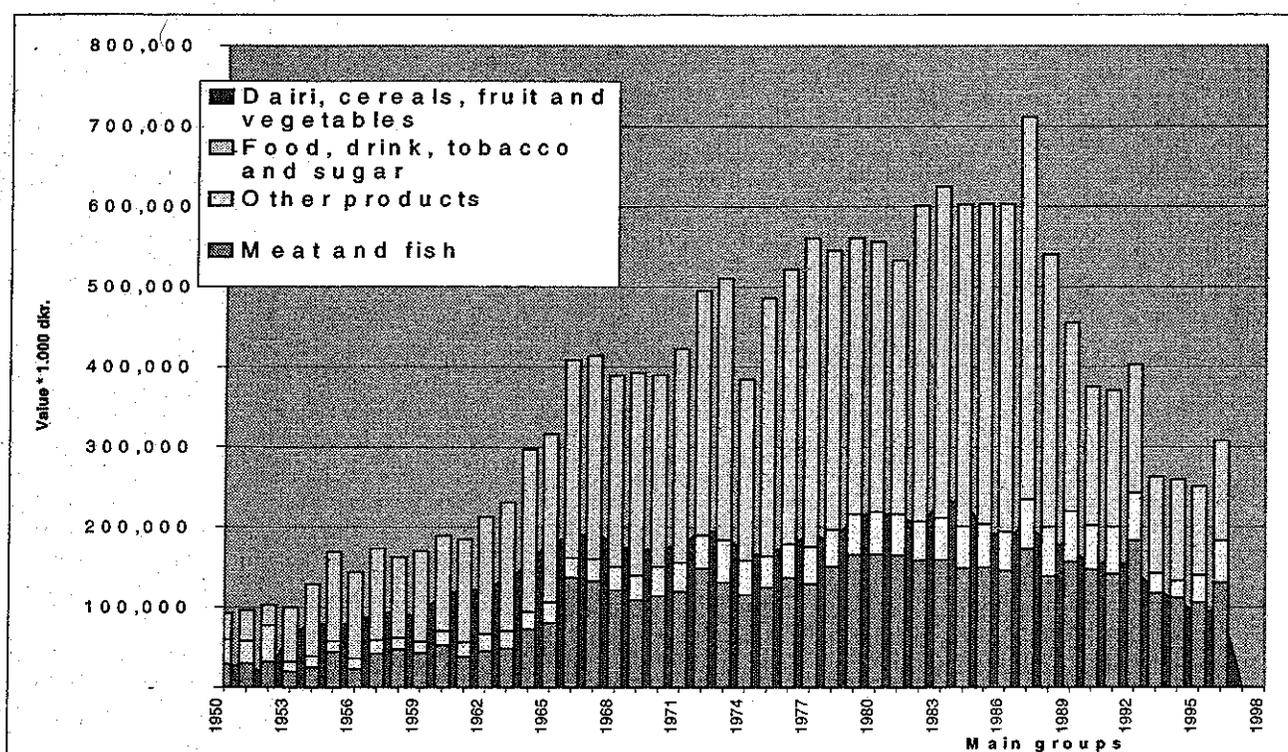


Figure 2: Import of food and food related products 1950-1996 in four main groups

products. For comparative purposes, all data have been converted to 1995 values by means of a generalized consumer price index covering 1899 to 1997. Details about the price index and its sources are provided in Appendix A. The conversion to 1995 prices is very important to keep in mind when referring to absolute price levels.

Figure 1 provides an overview of food imports to Greenland since 1899, showing the value of total consumption (in 1995 prices), and the average consumption per capita. Several patterns emerge.

First, the total increase in food imports, at least for some periods, is reflective of population increases. From the turn of the century to the mid 1950s, the import value of food was rather stable at about 5,000-7,000 dkr. per capita, so the increase in the total import value from about 50 to 150 million dkr. was due to a general increase in total population. As a result of industrialization in the 50s and 60s, a marked increase in consumption of imported foods began in the late 1950s, topping out in the mid 1980s at about 20,000 dkr. per capita.

The most marked change, however, is the marked decrease in imported food products in the late 1980s. From a total import value of more than 900 million dkr., it dropped to the current level of about 400 million dkr. Measured per capita, this is a decrease from 20,000 dkr. to 8,000 dkr., or less than half the previous value.

Figure 2 illustrates imports to Greenland in the main Standard International Trade Classification (SITC) categories: 0 to 11, covering food and food-related products, while in Figure 3, the 12 groups have been reclassified into four main sets: 1) beverages and stimulants, 2) meat and fish products, 3) dairy products, fruit and vegetables, and cereals, and 4) other products.

The first impression is the marked difference in the import structure pre- and post-modernization. Before 1950, imports consisted mainly of such staples as cereals, but a variety of meat and dairy products, as well as sugar, were of some importance.

During the 1950s the variety of imports increased substantially. The import of all food types expanded, with a clear dominance of beverages, as well as meat and meat products. Fruit and vegetables contribute a substantial amount, while most other food groups had more limited importance. The total value of imports expanded from the pre-1952 level at about 100 mil. dkr. to more than 600 mil. dkr. by the mid sixties, and continued to grow to about 800-900 mil dkr. by the late 1980s.

In the late 1980s a drastic change was evidenced, by a decrease in imports to about 400 mil kr. by 1995. The reduction occurred in several food groups. A major event was the establishment of the Nuuk Imeq factory in 1988 for the bottling of beer and soft drinks, which brought a decrease in the import value of beverages from more than 300 million dkr. to less than 100 million, accounting for almost half of the reduction. But there were also decreases in many other categories, so the general trend is a marked reduction in the dependency on imported food.

There is no doubt that the increase in food imports from 1950 to the late 1980s resulted from a marked change in consumption patterns, and a shift from locally produced to imported products. During the same period, the shares in the family budget were slightly modified, with increased expenses related to durable products while non-durable products experienced a decrease, with varying effects on consumption patterns. However, the main trends comply with those shown on the graphs.

The reason for the trends rests partly with a population increase that occurred through the period. In order to compensate for this, the four graphs presented in Figure 4 provide further details for each of the four main food groups, based on a calculation of consumption per capita, that reflect the changes as they relate to individual consumption patterns. The pattern seems to be more or less the same for three of the four food groups. An explanation for the import patterns related to beverages has been given above. As regards the large groups of 'dairy products, fruit and vegetables, and cereal products,' the patterns reflect a general decrease in the price of several of these products not only in Greenland, but on the world market as well. As Greenland is not member of the EU, the world market price determines the retail price. The general decrease in world market prices causes the costs of these imports to decrease. Another reason for the decrease would be improved transportation technologies, which reduced individual prices, and, at the same time, caused an increase in consumption levels.

A portion of the decrease in the import of staples has been counterbalanced by an increase in the consumption of meat and fish, a pattern similar to that experienced in North America and Western Europe, until health became a major issue in the 80s, causing another change in preferences. The latter change, however, has not been experienced in Greenland. Therefore, a relatively limited reduction in the consumption of meat and fish, seems to produce a dual effect: it reflects an overall increase in the consumption of meat and fish products, and a major shift in consumption patterns, from imported to locally produced meat and fish products.

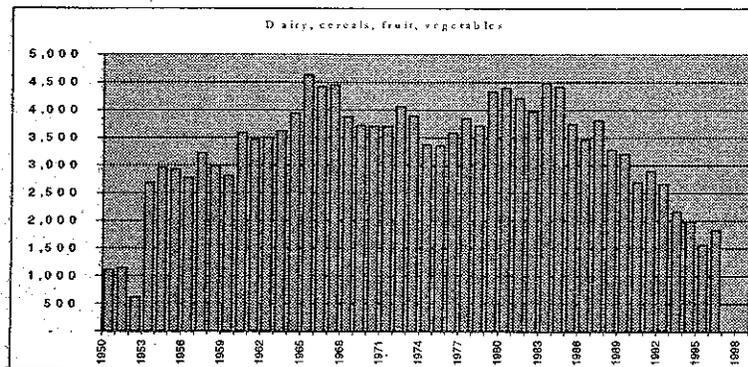
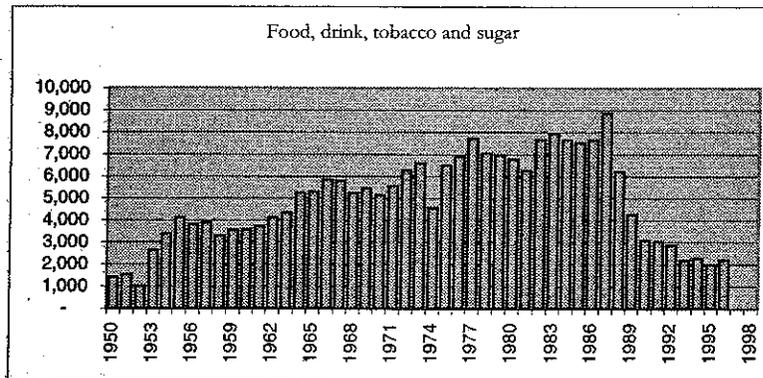
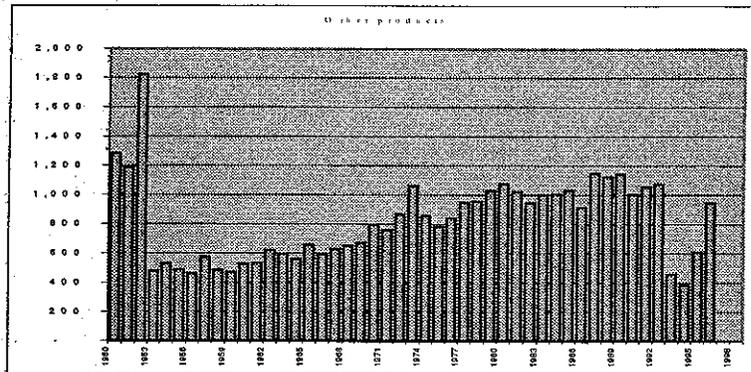
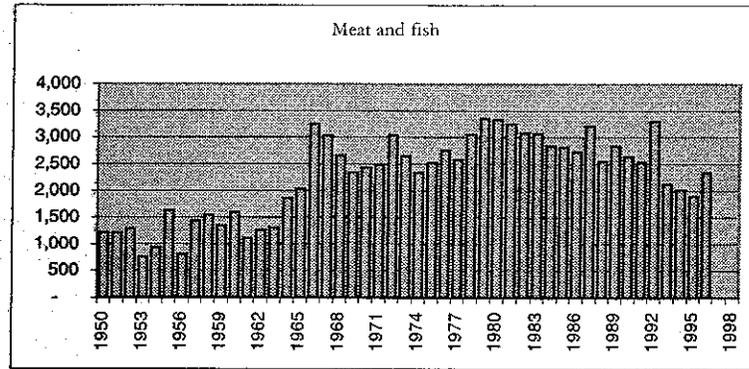


Figure 4: Greenland import of food and food related products 1960-1996—details of the four main groups. Figures show the average value of consumption per capita.

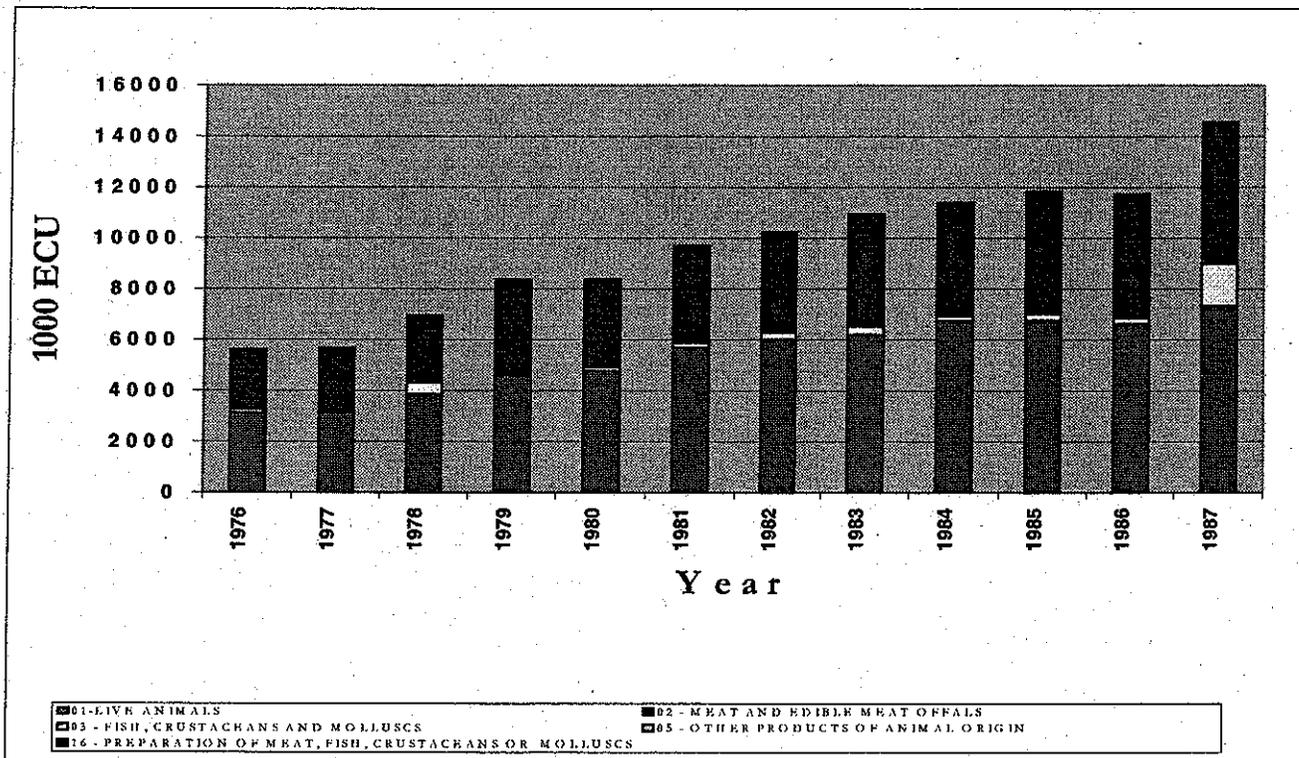


Figure 5: Greenland—Import from EU 1976-1987 in SITC Groups

5.2 Trade with EU

One source of more detailed statistics are data available from EU, even though this information is available only for a limited time span—1976 to 1992. After this, a major re-arrangement of the statistical approach in EU took place, causing detailed data about trade with Greenland to be abandoned. The information available through EUROSTAT is useful in the sense that it gives very good coverage of total imports to Greenland, because most trade activities dealing with food are with EU countries, and primarily with Denmark.

In most years, more than 95% of the imports of meat and fish have been from EU countries. Figure 5 provides an overview of the situation based on EU trade statistics. The general trend, to a certain degree, resembles what has already been seen on previous figures. In the other graphs, import values have been adjusted to 1995 values by means of the consumer price index; therefore the figures are directly comparable. Maximum import levels were experienced in the late 1970s and early 1980s, but with a general tendency toward reduction by the late 80s, and into the 90s. This decrease seems to be more pronounced than the general trend, which was the result of increased imports of meat products from other countries after Greenland left the EU in 1985.

Two groups of food products dominate in most years, with meat and meat products accounting for nearly half of the imports during the specific period, and prepared products of meat, fish, crustaceans and molluscs accounting, more or less, for the remaining fifty percent. Data for the latest years available (1991 and 1992) show the import of fish, crustaceans and molluscs suddenly dominating. These products had played a more marked role in a few years prior, for instance in 1978 and in 1987 and 1989, but not to the same degree as in 1991 and 1992. The overall trend, however, is the same as what was shown before—a steady decrease in food imports. The reasons are likely the same, namely the substitution of imported meat and fish products with local products.

Figures 6a-c provide further details on the main groups shown on Figure 4 for the years 1976 to 1987.

The details about meat and edible fats, the largest group with a rather constant import value around 80 million dkr. for the period, does not provide many further details about consumption patterns. It shows that poultry contributes only a small percentage of the supply, while the major portion is from pork and beef. It is more or less the same for fish, crustaceans and molluscs, with the major portion as chilled or frozen products, while only a limited portion is imported as

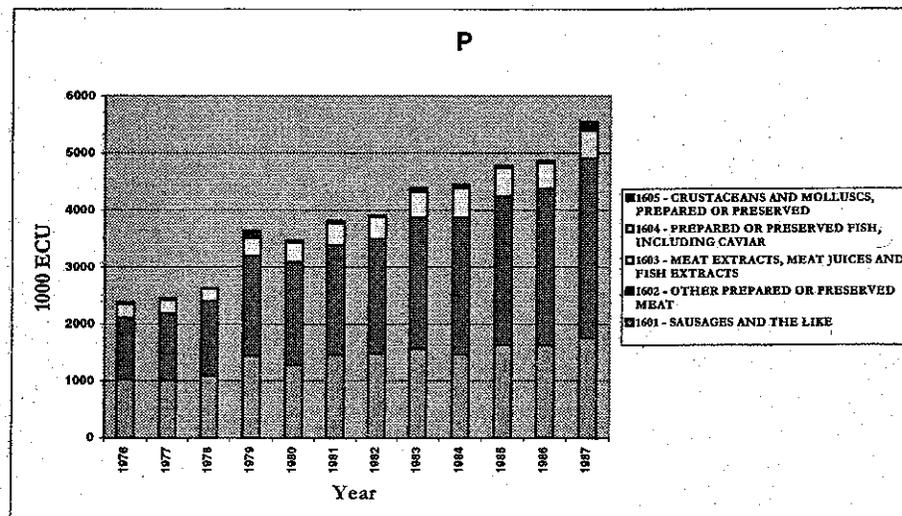
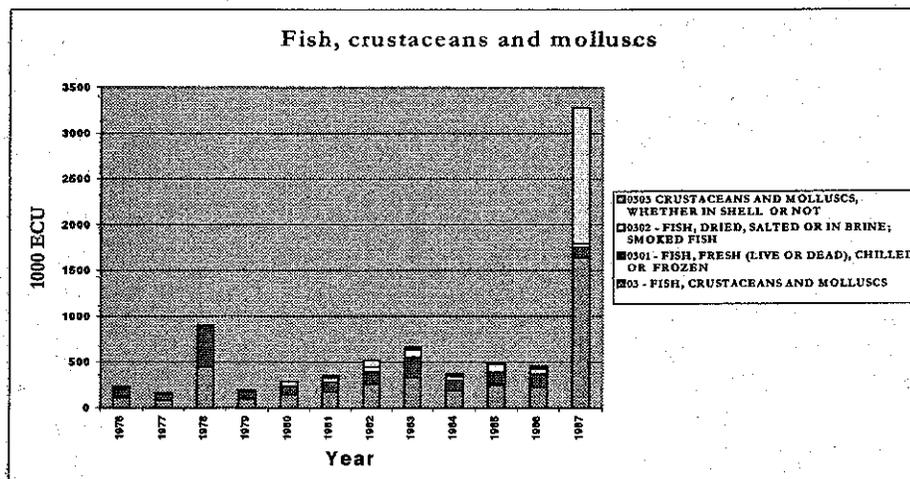
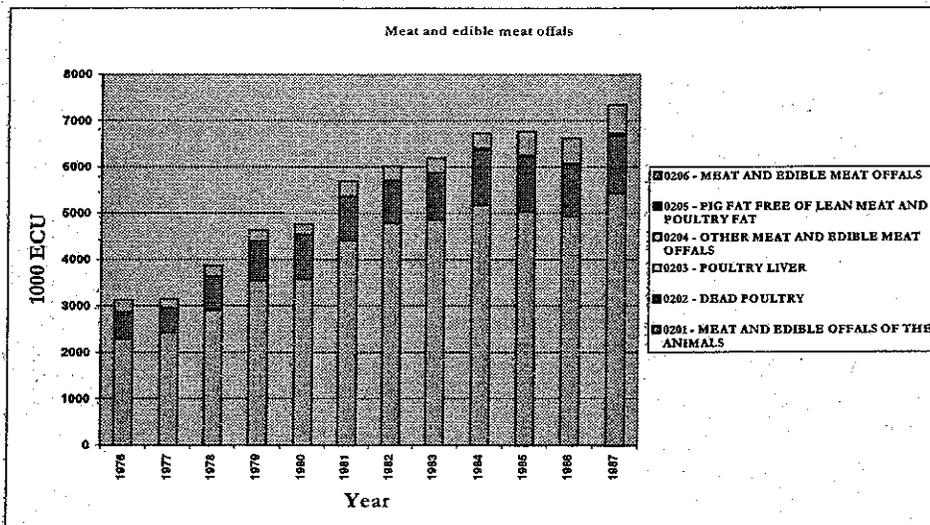


Figure 6: Greenland - Import from EU 1976-1987 - details of major SITC groups

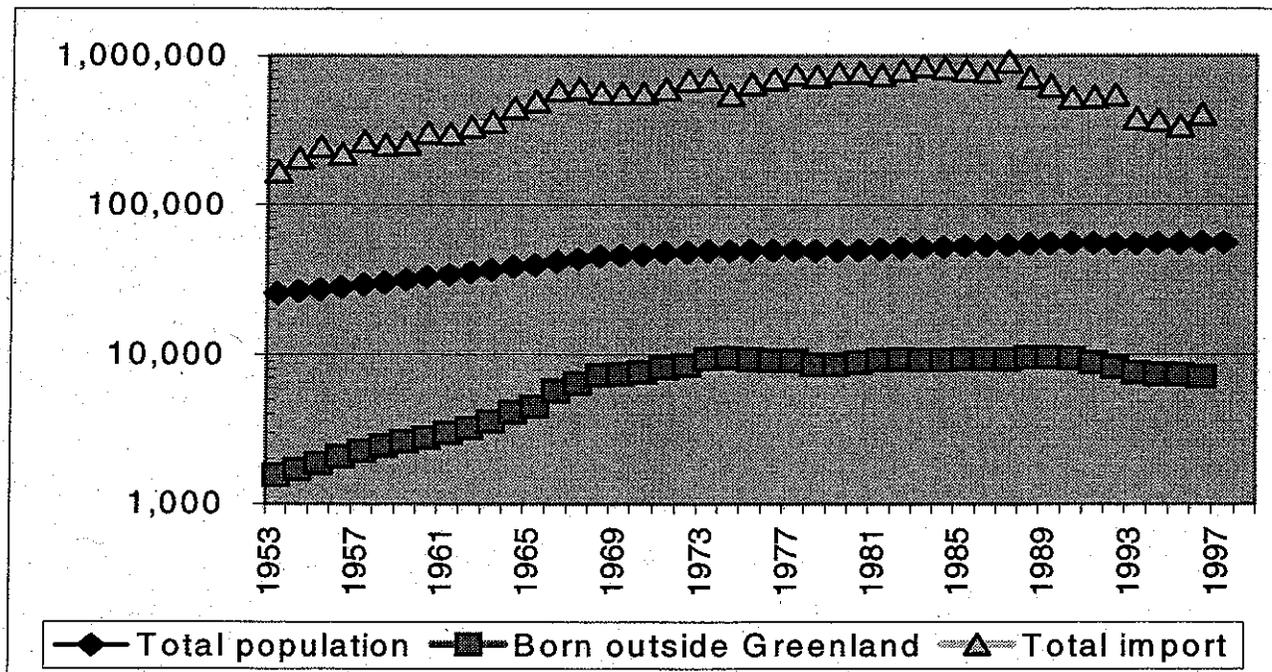


Figure 7: Per capita import of food to Greenland and the population development

brine or salted, dried, or smoked products. In both cases, fresh products are the main import items, and are therefore easily substituted with local products. As for prepared products, these consist mainly of preserved crustaceans and molluscs, with a slight increase in value over 11 years. Sausages and like products seem to be a rather large group, but exhibit a marked decline in value during the period considered.

Consequently, the main observation is a marked tendency toward a decrease in imported products, and replacement with locally produced items.

5.3 Explanations

Two questions need to be addressed, however, with regard to import patterns, in order to determine whether this trend is the result of a general change in consumption patterns due to a move toward locally produced products. The first is whether the results reflect a change in population structure; the other is whether a decrease in import value is owing to a general decline in world market prices rather than a reduction in import volume. Unfortunately, there is only limited material available to consider this more closely. Nevertheless, a few sources are available that seem to

support this observation, and this issue will be scrutinized a little bit further.

The first question was whether the change in import patterns was due to a change in population structure. Figure 1 illustrated that an increase in imported products during the 1950s and 1960s was partly the result of an increase in the total population, but it was also noted that the decrease in consumption of imported products in the 1990s was not due to a substantial change in population. In Figure 7, it becomes even more clear that there is no such trend; it also confirms that the changes are not due to changes in the number of non-Greenlanders in the country. Especially, the increase in imported food follows quite closely on the increase in imported labour during the 1950s and 1960s, but definitely not the decline during the 1980s and 1990s.

Another reason for the decrease could be a change in import prices due a decline in the world market prices. The graphs presented in Figure 8 focus on this question. Using data from EUROSTAT, and prices regulated to 1995 levels based on the consumer price index, they illustrate a substantial decrease in prices for all products during the 1980s. Most marked is the drop

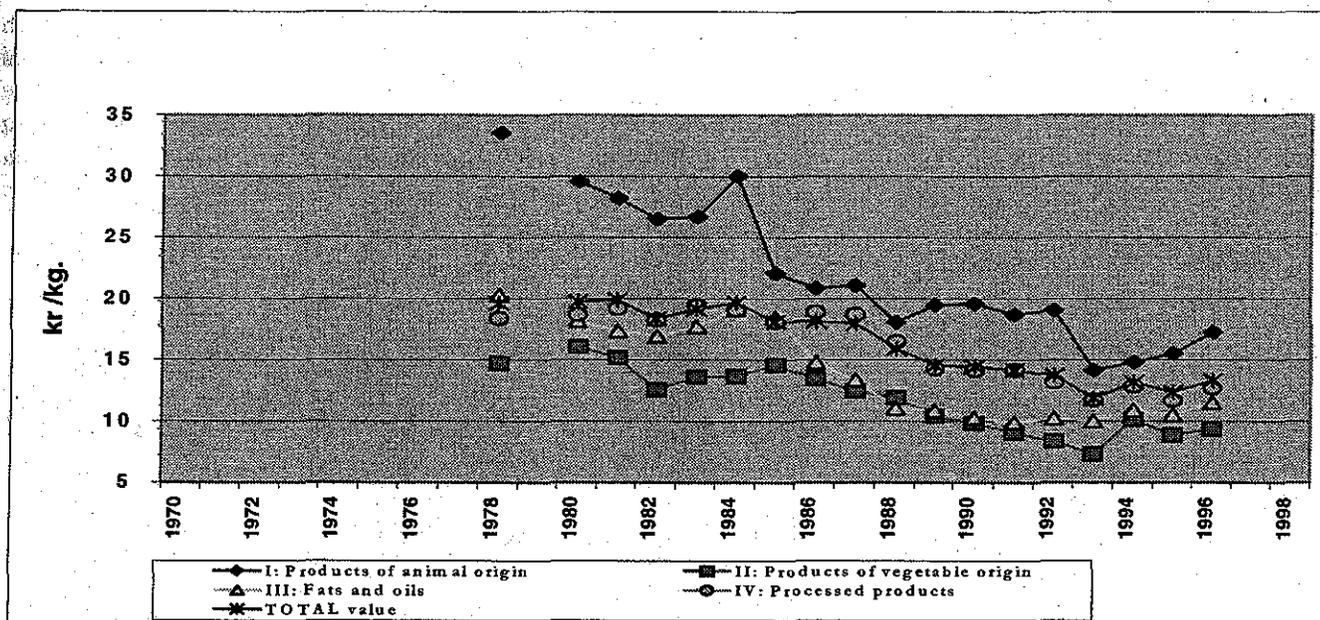


Figure 8: Development of import prices, Greenland

in price for products of animal origin, from more than 30 Dkr. per kg. in 1978 to less than 15 Dkr. per kg. in 1993. Price drops are less marked, but still substantial, for all other products during the same period. But most surprising is the shift in prices after 1993, when there seems to be a marked increase in prices for all products. This trend is counter to any hypothesis that a decline in import value in the 1990s was caused by a general reduction in import prices.

5.4 The Case of Poultry

The development of freezing technology introduced poultry as a food import item in the early 50's, but it took some time before it became substantial. Figure 9 illustrates the growing importance of poultry in Greenland, showing the volume of imported products (in tons).

Until 1977, available statistics only give poultry a very general classification, but from 1978 onward, poultry products are subdivided and considered in several different sub-groups. After a slow increase in the 1960s and 70s, poultry consumption reached its maximum in the 1980s. One of the reasons for this increased popularity was that poultry producers in Denmark saw a potential market for bone products normally considered waste. It was shown to be a product well suited for use in a traditional Greenlandic dish—*Suaasat*—a heavy soup made using whatever meat or fish is available, cooked with rice and potatoes. The reason for its popularity was that it was marketed at a

very competitive price. This product is, counted with split chickens known as 'Saturday chicken' and registered as 'Hens and Chickens—split' on the graph. This class accounts for approximately 50% of total poultry consumption. The other major products of consumption are whole frozen hens and chickens. In addition, there is a relatively constant consumption of ducks and geese, traditional products used at Christmas and on other occasions throughout the year.

The increased consumption of turkeys, characteristic of European as well as North-American markets during the last years, has also become a trend in Greenland, though still on a very small scale. The most marked development, however, is the drastic decline in poultry consumption after 1989, to two thirds' the previous consumption level. This follows the general trend in food consumption, though it shows a drastic decline in a very short period of time. Part of this trend could be attributed to a change in the statistical base; but the trend is nevertheless very clear.

Figure 10 illustrates changes in consumption patterns per capita, as well in volume (in value). The development process is quite significant, starting in the early 1950s at about 100 grams equivalent to 10 dkr. per capita, increasing to about 10-15 kg, a value around 500 dkr. for most of the 60s, 70s and 80s, but dropping below 10 kg. and as low as 100 kroner per capita at the start of the 1990s. In addition to changes in consumption patterns, the graph shows a general decline in prices over the last 15 years.

Just as it was suggested that food imports generally could be connected to an imported Danish labour force, this hypothesis could also be applied to poultry consumption. The increase in consumption occurred more or less at the same time as the marked increase in immigration of Danish professionals, just as the decline

occurred parallel to the move away from a Danish labour force in the 1990s. Figure 11 shows the total consumption of poultry products, together with the population increase and the number of immigrant residents in Greenland at the time of registration.

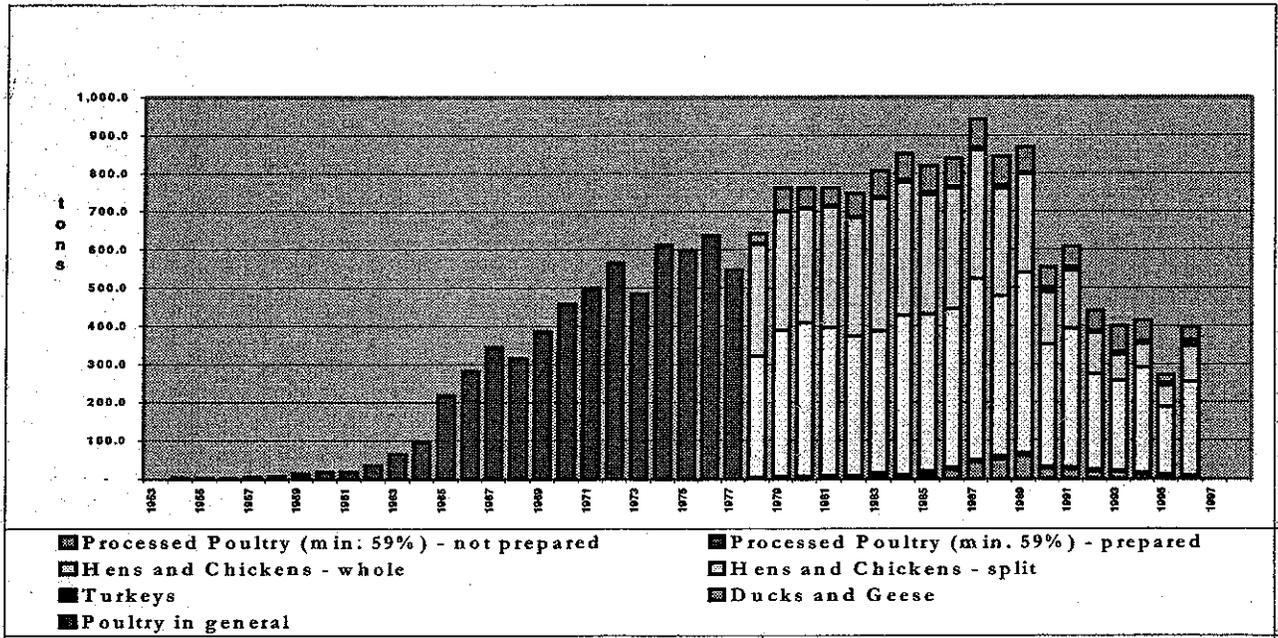


Figure 9: Consumption of poultry products, Greenland 1953-1997

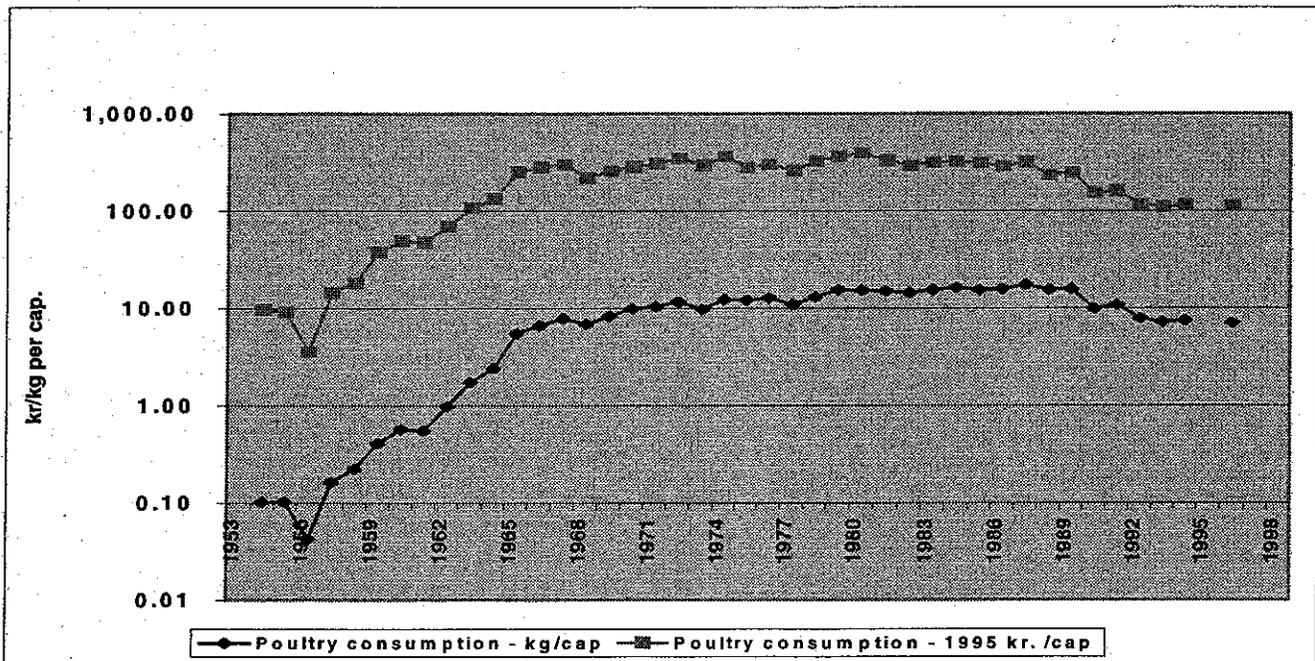


Figure 10: Consumption of poultry products per capita, Greenland 1953-1997

It is quite clear that, except for the first 15 years, there is a rather close connection between changes in poultry consumption and the immigrant population growth, which may indicate that the decrease of poultry consumption in the last 10 years could be related to the a decline in the immigrant population, but this is

certainly not the only reason. In the case of poultry, an important explanation for a general increase in consumption is the increased availability of country foods in the shops.

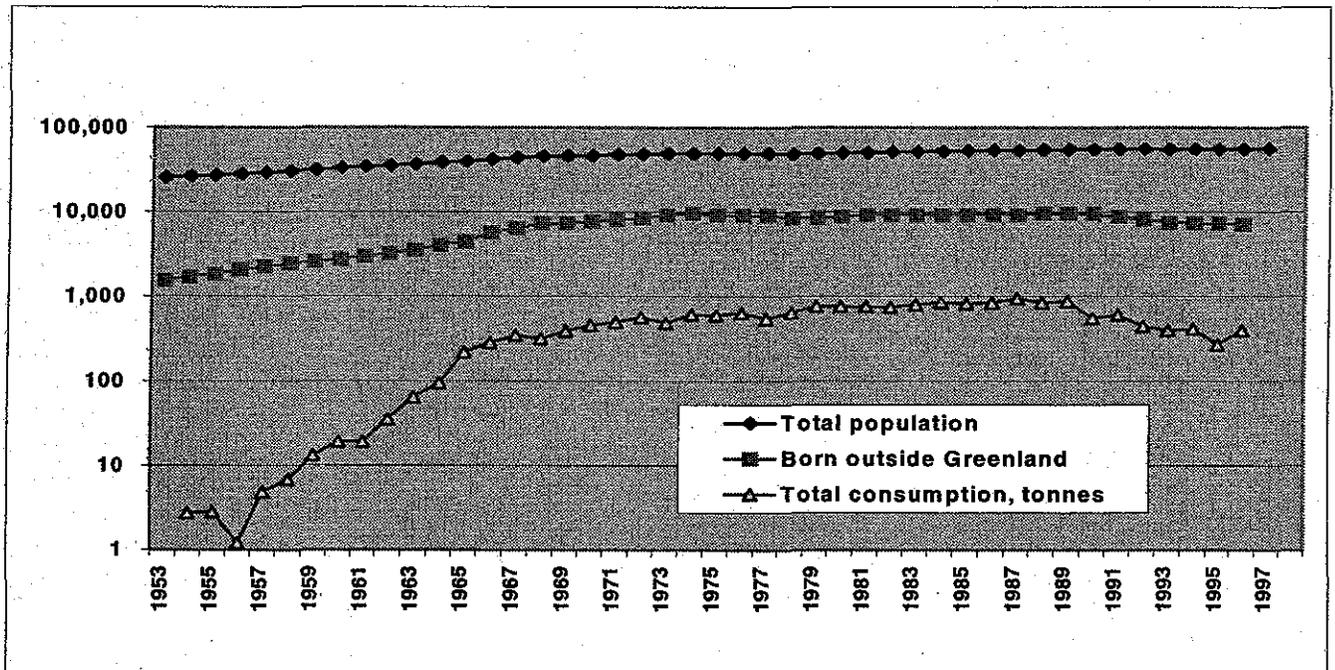


Figure 11: Poultry consumption and population development, Greenland 1953-1997

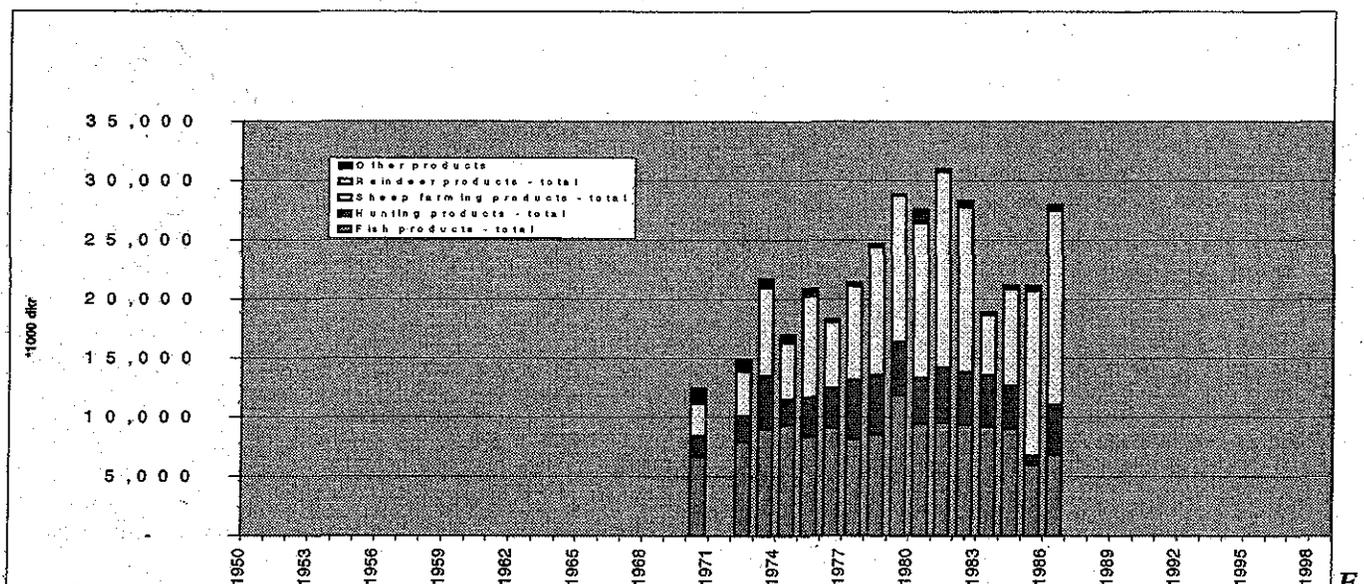


Figure 12: KGH sale of products from Greenland

Exactly how these two figures relate, is unfortunately, not available at this time—neither concerning the subsistence nor the informal and the formal sale of country food products. An idea of the importance is given through the *Living Condition and Health* surveys mentioned earlier, but as already discussed, none of these surveys puts precise figures on consumption patterns, nor do they consider changes in patterns. Only a few hints are available through formal sources, one of which is discussed below.

5.5 Formal Distribution of Country Food in Greenland

While KGH still was in charge, distribution records were kept for a certain number of years on the distribution of country foods produced in Greenland. Data is available for the period 1970 to 1986. For the purposes of statistical comparison, the data have also been converted to 1995 consumer prices level.

Figure 12 shows the value of products from Greenland sold by KGH using five different groups of products. In general, the development seems to confirm the general trend—that is, an increase in the distribution of country food produced in Greenland. Fish and fish products seem to be an enduring part of the range of products, just as are the products of hunting. But the most remarkable trend is the increase in products from sheep farming. During these years, a remarkable availability of sheep products seems to have evolved, thereby contributing considerably to the general food supply situation in Greenland.

6. CONSUMPTION PATTERNS AND THE FORMAL, INFORMAL AND SUBSISTENCE SECTORS

6.1 Implications for Sustainable Development

6.1.1 Consumption patterns and the economic sectors

As discussed above, it may be difficult to create a precise link between the subsistence and commercial sectors, because it is difficult to get a 'true' conversion factor between the two groups. Using a replacement value may be valid, but in the case of Greenland there is no need for such a conversion. In fact, it would probably be easier to create an objective exchange scale for Greenland than for most other places in the Arctic, since the informal sector and the set prices close to

official shop prices, which would indicate that open market prices are closer to the real value of the product. Hunters and fishers today have at least four options for marketing country foods: sell privately within a community, to local institutions, at the local market or to processing plants. It is only in sales to processing plants that prices are considerably lower. In the case of Greenland, therefore, the conversion is rather easy. This is the rationale behind Figure 13 (based on Rasmussen 1997a). The data are the result of an inquiry made among members of KNAPK—the Small Scale Fishermen's Organization—in 1995/1996 (Rasmussen 1996b). The graph gives a clear indication of the importance of various activities, depending on settlement size.

The formal economy, i.e., wage incomes and income from the sale of hunting and fishing products to registered producers, is clearly dominating the large settlements, but it also plays an important role in smaller ones. Of equal importance in small settlements are transfers, which, in absolute values, are equal to those in larger settlements, but due to generally higher incomes, they play a more limited role in the latter. Informal economic activities are important in all sectors, but most markedly in the mid-sized settlements. This is due partly to the fact that many hunters and fishermen from medium sized settlements bring their products to market in the larger towns where there are more customers. The subsistence sector is present in all areas, but most prominent in small settlements, where 1/5 of the total economy seems to stem from subsistence hunting and fishing, while subsistence contributes only 1/10 of the household income in the medium-sized settlements and approximately 1/20 of the income in the largest settlements. It is important to keep in mind that there are marked differences in income level between settlement sizes. The average income in large settlements is more than double that of small settlements, so in absolute terms, the difference is much more limited than the figures seem to indicate.

A general pattern in all settlement types is that the informal and subsistence sectors seem to be of importance, accounting for 1/8 of income in large 1/4 in medium sized, and 1/3 in small settlements. This pattern agrees with observations made by Wolfe and Walker (1987) who demonstrated how subsistence and commercial-wage activities provide the economic basis for the lifestyle so highly valued in rural communities.

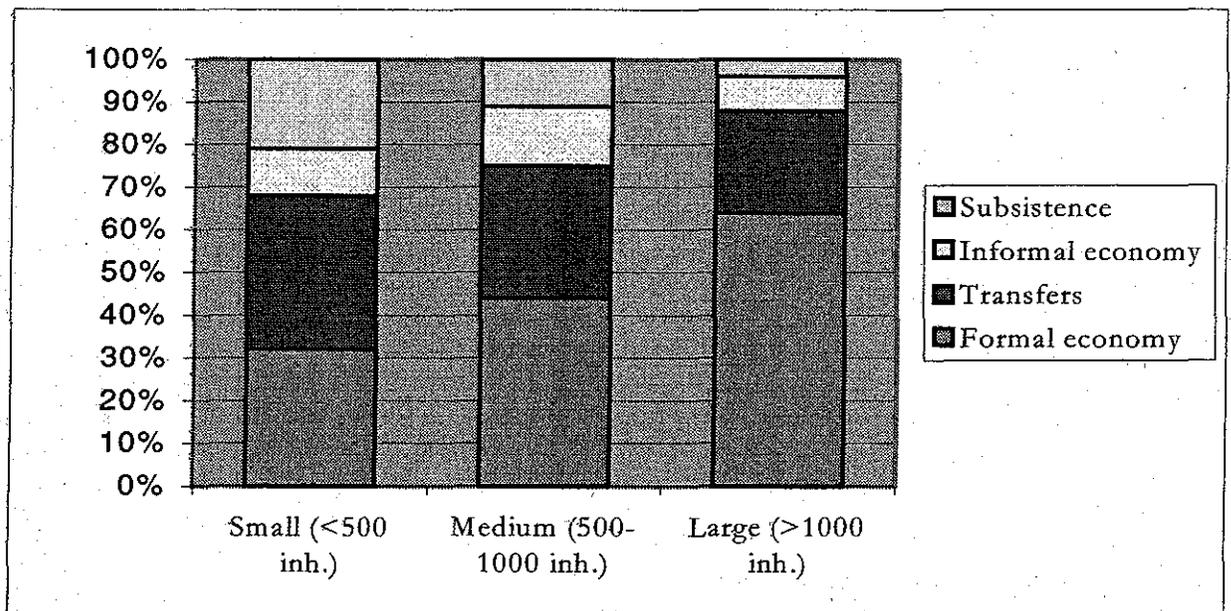


Figure 13: Formal, informal and subsistence economy

In rural communities there is a great desire to maintain this aspect of a region's economy in light of economic changes developing primarily from urban centres. Marquardt and Caulfield (1995) also stress the importance of local markets as levelers between hunters, fishermen, and wage earners, and as channels for redistributing European goods in exchange for valued country foods, locally produced items of clothing, and other goods. But it also serves as a lever for bringing country food into the retail market. As in Arctic North America, trade monopolies tend to serve as a carrier for more southern food habits, introducing foreign products such as pork, beef, and especially poultry. This process partly succeeded in Canada, and for decades it seemed to be doing the same in Greenland, at least in the large settlements.

In the last 5 decades, two shifts in the food supply system seem to have occurred in Greenland. First, there was a change from a subsistence to a formal economy and a commercial exchange of imported products, and another shift from commercial imported to locally produced products. Parallel to this, however, the informal market has served as a 'preserver' of the local exchange base of country food products.

Due to the monopolistic nature of food supply systems in many regions of the Arctic, normal 'open market' mechanisms have not had the opportunity to react to consumer preferences in an ordinary way. Instead, the informal market seems to have served as an important vehicle for the introduction and expansion of

local product sales, thereby serving as a gauge of consumer demand, parallel to the 'green consumer.' Due to the availability of country food at the local market, and the maintenance of a continuing demand, products introduced to the markets during the 80s, are today considered staple foods in all types of settlements (Rasmussen 1998b). Besides its function as a gauge of the formal market economy, undoubtedly the subsistence sector has been crucial for the resilience and survival of the small-scale settlement, or *bygder*—a pattern which seems important for the future in Greenland, and the Arctic in general.

6.2 Implications for Sustainable Development

It is clear that the informal economy and the subsistence sector are playing a crucial role in development—and will likely continue to do so in the future. In this regard, it is important to emphasize that food supply and availability, as the most important elements of these sectors, have implications not only for physical survival, but for a variety of other aspects of contemporary society. It has important consequences on at least five levels:

6.2.1 Health consequences

A change in demand toward country food is generally considered as a qualitative improvement in the status of nutrition. Bjerregaard and Young (1998) emphasize the content of fat, especially unsaturated fat, as being major nutritive components of the diet available from country

food. They discuss how traditional diets contain the same amounts of fat, but mainly unsaturated fats, taken with huge amounts of meat. Bertelsen (1935) identifies high levels of protein and much higher levels of vitamins as compared to imported food. On the negative side is the content of industrial pollutants, especially organic substances that are absorbed by fatty tissues such as sea mammal blubber, i.e., in seals and whales. In general, however, the overall evaluation is that country food consumption is healthy for Arctic people.

6.2.2 Market consequences

Consumer response regarding food quality has been greatly influenced by market structure. The 'green' consumer who is conscious about nutrition as well as ethical principles for animal welfare, and the Arctic 'cultural' consumer, conscious about the origin of products are, through their choices, causing shifts in demand that, in turn, are greatly influencing supply. As illustrated in the case from Greenland above, continuous pressure on the formal market system enables the introduction of traditional food items as commercial items. In addition, it provides for the creation of new links between distribution of food supply and local production—as illustrated, for instance, by the Greenland trade company *Pilersuisoq* in creating a link between the company's obligation to distribute consumer goods, and the potential of local communities to participate as both consumers and suppliers to the company (Anonymous 1996).

6.2.3 Lifestyle consequences

The growing focus on the consumption of country food is the result of several parallel processes. First, a tendency toward new and open integration of formal economic activities and informal and subsistence activities. Many activities which were formerly characterized as the 'black' market, i.e., outside the formal economy, are instead recognized as 'the other' economy (Robinson and Ghostkeeper 1987). Another process, which seems to be characteristic of the entire western world, has to do with the growing importance of leisure time activities in creating identities and in enabling people to live life more fully.

6.2.4 Cultural consequences

Apart from its nutritional value, country food is seen as a cultural identifier. Identity linked to the traditional Inuit diet is very well described by Bjerregaard and Young (1998), in the citation included in the introduction to Chapter 2. One major problem with

such constructs, however, is to provide for the inclusion of youth in the profiles, which is also addressed by Bjerregaard and Young (1998:203). A major finding from their work shows that, there is an almost equal preference for traditional food and imported food bought in stores. Major fast-food chains such as MacDonalds and Burger King are expanding northward, having already crept north of the Polar Circle in several of the larger settlements such as Rovaniemi in Finland, Tromsø in Norway, and Fairbanks in Alaska. Within the next couple of years, they will probably be present in most larger and medium sized settlements in the Arctic. There is no reason to doubt that young people living in the North would choose fast food and other convenient food instead of traditional meals that require much more time to prepare, especially if the option is available during busy weekdays. There is also, however, no doubt that the same young people would go hunting and fishing over the weekend, enjoying the leisure time experience as well as the traditional meals that would follow. This openness toward 'living in both worlds,' is, in many ways confirmed by Seyfrit *et al.* (1997) and Hamilton (1997) in their analysis of attitudes among rural Alaskan youth.

6.2.5 Settlement consequences

There is no doubt that present settlement structures represent marked differences in goals, measures, and means for people living in the Arctic. But at the same time, there are more resemblances than differences in the structures (Rasmussen 1997), especially as regards resource use and management. Among the most important general characteristic is the resilience of settlements, due in part, to local food production as a means of surviving the pressures from the outside world. And as regards sustainable development, the continued existence of small settlements represents several important development elements.

First, a strategy for diversifying renewable resource use by maintaining the small settlements is needed. Contrary to common belief, it is possible to take advantage of small and large scale fisheries, and local as well as global resources. Large vessels will serve large-scale production and secure access to globally distributed resources, while small vessels and local production will harvest locally accessible resources. The large scale, vertically integrated producers provide the economic base—the staples, so to speak—of communities, while a large number of relatively small companies, not necessarily vertically integrated, but based on flexible specialization, will—to continue the proverb—provide the butter on the bread (or the icing

on the cake). The experiences in arctic development seem to confirm that local production, aiming at local market supply and local resource use, can be an enduring element, co-existing with production aimed at external markets.

Second, various economic activities at work in remote settlements are more closely connected to primary producers, and local involvements in related economic activities are closely linked to fisheries and fishing industry. Activities include the development of equipment, tools, systems, methodologies and management schemes. An entire world of fisheries-related industries and organizations that traditionally have been based in the larger European industrial and management centres. But due to the increasing focus on local experiences and distributed information access in the innovation process, there seems to be increasing potential for fisheries-dependent communities in this area.

Third, beyond the productive and reproductive activities that have their own logics and rationalities, local market activities feature important recreational elements of high value. There have been attempts to categorize such activities as 'custodian,' their existence nonetheless will be imperative for the future of resource-based dependent communities. Discussions concerning the issue of sustainable development have created a growing awareness and acceptance of resources not as singular elements, but as elements in multiple usage patterns, for instance, the fisheries industry not only presents a value for productive but also for reproductive activities.

This leads to the fourth element, which is the concept of diversity, often used in relation to the environment and biology, stressing the genetic pool and diversity as an important treasure for the future. This analogy applies to cultures and settlements, where the mere existence of a diversity of cultures in itself represents an important asset for the future.

7. METHODOLOGIES

7.1 Sources

A general problem encountered regarding research sources has been the monopolistic situation characteristic of development in the Arctic. At times, access to information is limited to materials or data defined as publicly accessible by the organizations and companies that hold the source. In the case of food, the limitations have primarily been to details about specific types of food. General information on SITC-categories has been

available, thanks to international agreements on trade statistics, provided that general statistics have been published in the 'red'-series of statistics on Greenland, first published by the Ministry of Greenland, later by the Prime Ministers Office, and still later taken over by Bureau of Statistics, Greenland Home Rule. The major information sources, however, are the registers of *Danmarks Statistik* (Statistics Denmark), until 1954 known as *Statistisk Departement* (Statistical Department). From 1898 until 1954 a brief summary of statistics related to trade were published in *Statistisk Årbog* (Statistical Yearbook). In 1954, data by SITC division were made available in *Danmarks Vareindførsel og—udførsel* (Trade Statistics). In 1959 the classification was re-arranged according to the Brussels Nomenclature. Since 1978, more detailed statistics on Greenland's imports by Working Tariffs have been available, also in *Danmarks Vareindførsel og—udførsel* (Trade Statistics). The 7 digit Working Tariff numbers were re-arranged into eight digit Commodity Numbers in 1994. The EU trade statistics are from "EEC External trade (*Nimexx*)" published by EUROSTAT.

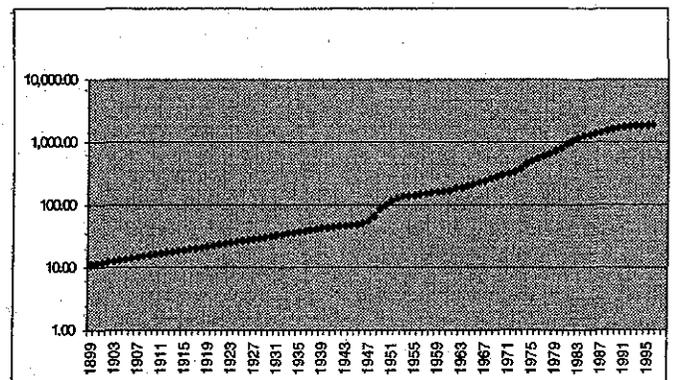


Figure 14: Consumer price index Greenland 1888-1996

7.2 Price index

An analysis of food consumption and food import statistics in the last century requires an approach that provides for differences in price level and devaluation through the whole time period in question. Various sources have been used in creating an index covering the century. Present data—from 1971 to 1999—are from Grønlands Statistik, Detailpristal juli (jan 1971=100), while data from 1960 to 1971 are from Grønland 1971-72. Data from 1946 to 1960 are from Boserup 1946=100, and from 1919 to 1946 are from Detailpris I stat.opl. VI 1946-1919=100. Some changes have occurred over the century, but the approach has, in general, been the same.

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