



**GECAFS Working Paper 7**

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**How does a food systems approach elucidate  
the food insecurity of Inuit in Canada?**

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\*Inuktitut word meaning 'No longer hungry'. Source: Inuktitut Living Dictionary  
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In 1996, the global community came together at the World Food Summit and produced a universal definition of food security:

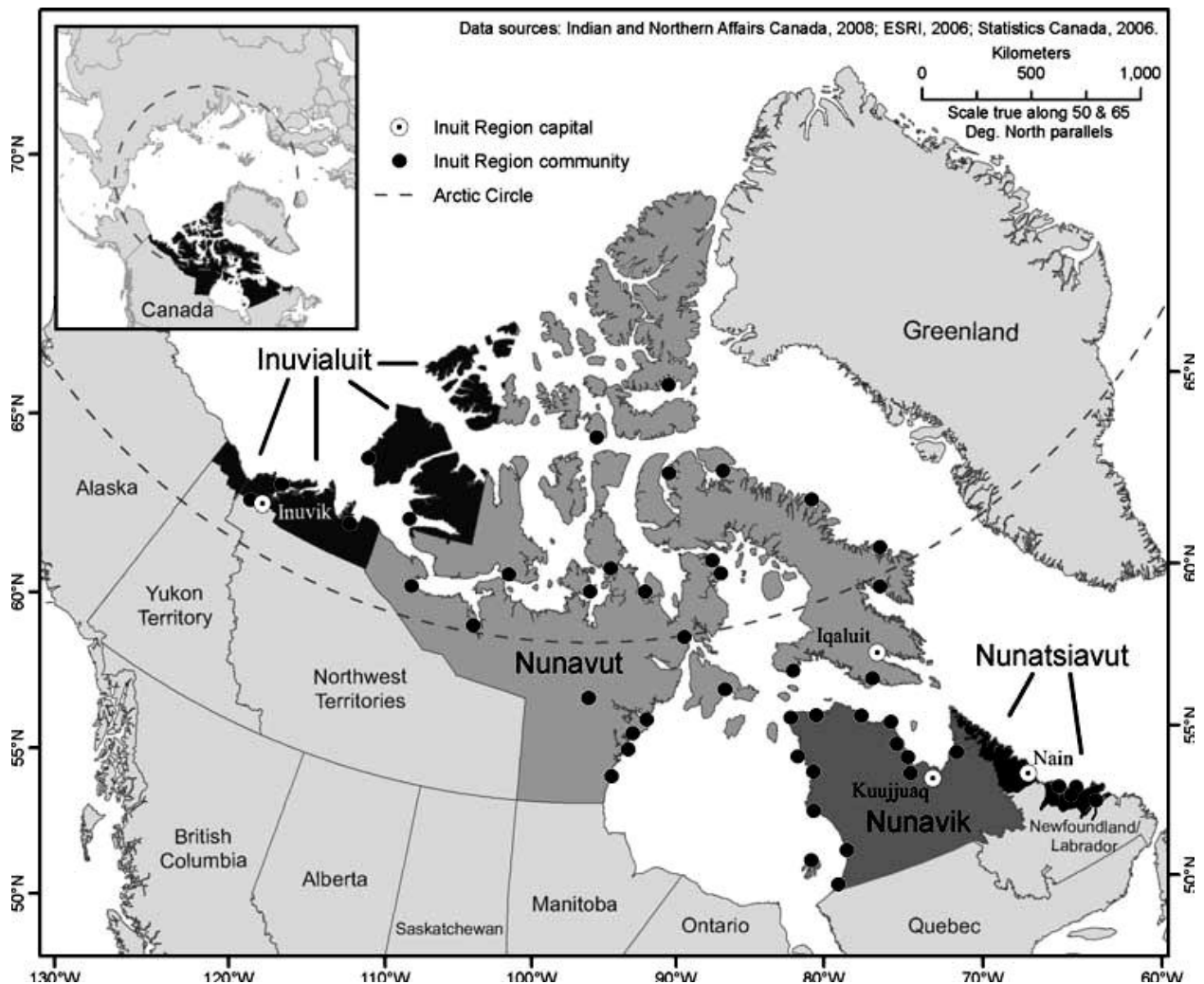
‘Food security exists when all people, at all times, have physical and economic access to sufficient, safe, and nutritious food to meet their dietary needs and food preferences for an active and healthy life’.

Canada endorsed this definition of food security, committing itself to reducing hunger and malnutrition worldwide. However, not all people within Canada have access to appropriate food to meet their needs. Indeed, Canadian Inuit experience remarkably high rates of food insecurity compared to the rest of the country. This food insecurity can be elucidated using Ericksen’s (2008) food systems approach to understanding food security. By examining the availability, access, and utilisation of food, as well as the environmental security and social welfare of a people, the food systems approach provides insight into the many factors that contribute to food security. This approach also provides many points of entry through which policies can be implemented to improve the food security of Canadian Inuit.

The Inuit are indigenous peoples that inhabit the circumpolar north (Healey and Meadows 2007). Around 50,000 Inuit inhabit traditional territories in the Canadian Arctic, living in small communities that are isolated from the mainstream Canadian population (Fig. 1) (Healey and Meadows 2007, Ford *et al.* 2010).

The Inuit are traditionally nomadic hunters and gatherers (Sharma 2010). Their main sources of traditional foods, known as country foods, are caribou, polar bear, muskox, seal, muktuk (the skin and fat of various species of whale), fish, birds, and berries (Healey and Meadows 2007, Hopping *et al.* 2010a, Hopping *et al.* 2010b). Country foods are high in unsaturated fat and protein and are nutrient-dense, providing all the essential vitamins and minerals required for a healthy diet (Damman *et al.* 2008). Inuit have historically experienced lower incidences of chronic diseases than the rest of the Canadian population, likely as a result of their traditional diet and physical activity associated with traditional subsistence practices (Damman *et al.* 2008). These practices are central to Inuit identity and are passed down to younger generations through oral retelling and participation in harvests (Sharma 2010).

Canadian Inuit are experiencing a cultural transition as a result of relatively recent contact with Western society (Healey and Meadows 2007). In the 1950s, the Canadian government launched a program of Inuit resettlement: Inuit families from Nunavik were



**Figure 1.** Canadian Inuit live in four traditional territories of the Canadian Arctic: Inuvialuit in Northwest Territories, Nunavut Territories, Nunavik in Northern Quebec, and Nunatsiavut in Labrador. Around 50,000 Inuit live in 51 permanent communities. Source: Ford *et al.* 2010.

relocated to the High Arctic of Nunavut to strengthen Canadian sovereignty of its northern lands and Inuit families from across the Arctic were resettled into centralised communities to facilitate the administration of public services (Healey and Meadows 2007). These sedentary communities were often located far from traditional hunting and fishing grounds (Healey and Meadows 2007). Resettlement introduced goods from mainstream Canadian markets including mainstream foods,

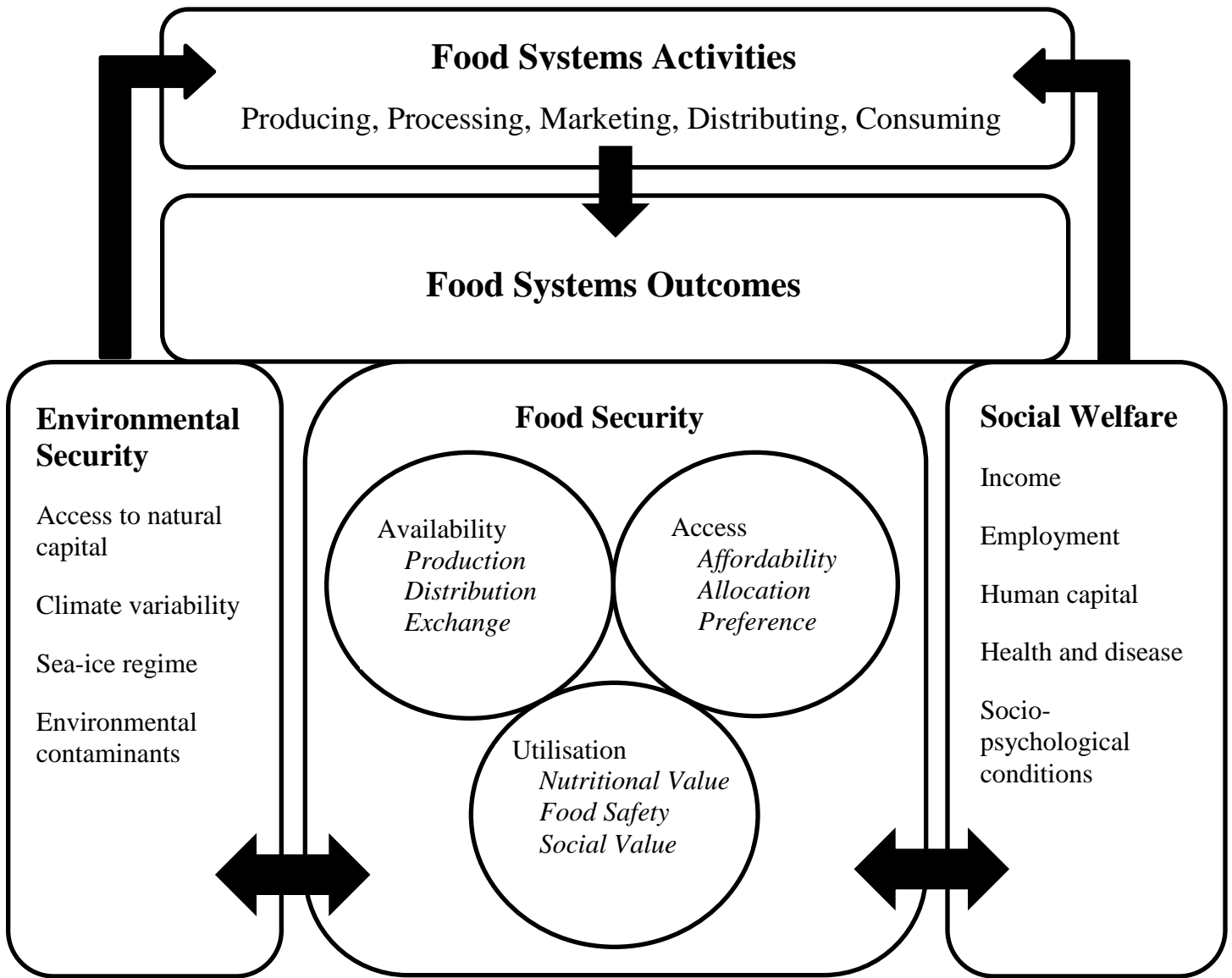
known as market foods, which were not previously available to such remote communities (Ford *et al.* 2010).

Despite the introduction of a greater variety of foods to communities, Inuit experience higher food insecurity than the rest of Canada. Thirty percent to 92% of adults and 28-70% of children are food insecure compared to the Canadian average of 7% (Lawn and Harvey 2003). Incidence of food insecurity is measured by anxiety about having enough money to buy food and/or to buy healthy food, cutting the size of meals, skipping meals, and not eating for entire days (Lawn and Harvey 2003).

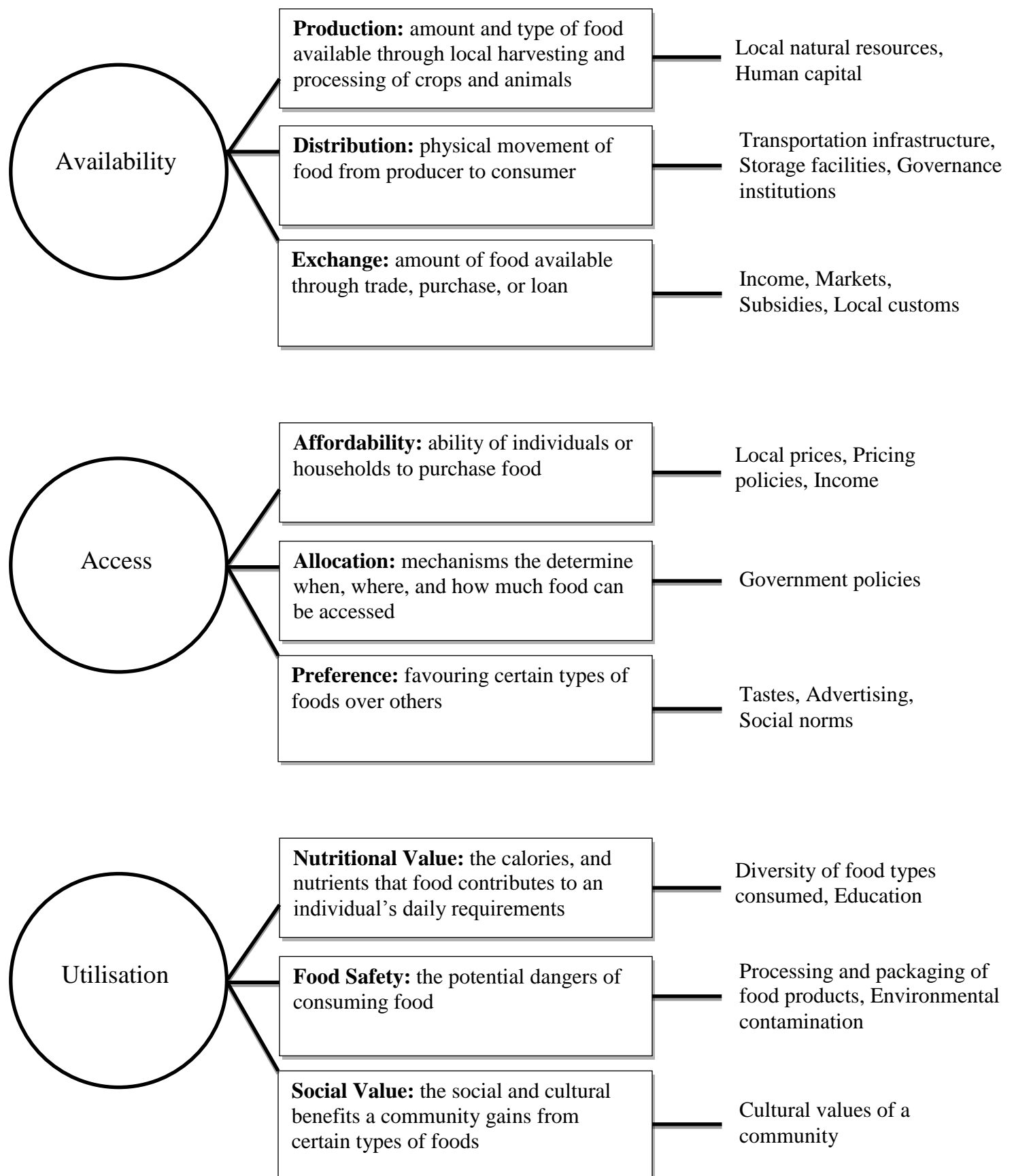
Many Inuit also suffer from insufficient nutrient intake. More than 60% of Inuit have inadequate consumption levels of calcium, iron, dietary fibre, folate, and vitamins A, D, and E (Hopping *et al.* 2010a). Additionally, the prevalence of chronic diseases related to food insecurity such as obesity, heart disease, and type II diabetes is increasing in Inuit communities (Sharma 2010). Increasing prevalence of these diseases may be attributed to the dramatic nutritional transition Inuit communities have experienced in the span of a few decades (Damman *et al.* 2008).

The nutritional transition of Canadian Inuit can be understood using a food systems approach to food security. Developed by Ericksen (2008), a food systems approach broadens traditional conceptualizations of food security beyond the activities of the system to encompass the environmental and socio-economic determinants of food security. A food systems approach therefore incorporates the activities of a food system as well as the outcomes of these activities, including food security, environmental security, and social welfare, and explores how these outcomes interact and feed back into the food system (Fig. 2) (Ericksen 2008).

Food security, measured at the individual, household, community, or national level, is one outcome of the food system. Food security is comprised of three aspects: availability, accessibility, and utilization of food. The availability of food is determined by the production, distribution, and exchange of food. Food accessibility is determined by the affordability of, allocation of, and preference for food. Lastly, the utilization of food is determined by its nutritional value, food safety, and social value (Fig. 3) (Ericksen 2008).



**Figure 2.** Components of the food systems approach. Arrows indicate interactions between and feedbacks into food systems components. Adapted from Ericksen (2008)



**Figure 3.** Components of the food security outcome, their determinants, and the factors that affect them (Ericksen 2008).

Environmental security and social welfare are two other outcomes of the food system. Environmental security is conventionally understood as how the natural resource capital of an area is affected by the activities of the food system. When analysing the Inuit food system, environmental security mainly serves as a feedback into the system. Social welfare also serves as a feedback in the Inuit food system. Both environmental security and social welfare interact with the food security outcome to affect the availability, accessibility, and utilization of food. (Ericksen 2008).

The outcomes of Ericksen's (2008) food systems approach will be used as a lens to examine the nutritional transition of Canadian Inuit. When examining an Inuit food system, a unique cultural aspect must be incorporated in the analysis (Power 2008). This analysis will incorporate that unique aspect by examining how traditional methods of satisfying food security as well as Westernized methods contribute to the food security of the Inuit.

### *Availability*

Inuit production of food involves harvesting and processing traditional crops and animals (Ford *et al.* 2010). This production has decreased over the last several decades and Canadian Inuit no longer eat country foods exclusively (Ford *et al.* 2010, Mead *et al.* 2010). With the resettlement of families into centralised communities, many Inuit no longer have access to traditional hunting and fishing grounds, limiting the take of country foods (Power 2008). Furthermore, a small take that would have been enough for nomadic groups may no longer satisfy the needs of larger communities (Chan *et al.* 2006).

Human capital also affects the production of country foods. The resettlement program introduced Westernized waged employment and school systems to Inuit communities, both of which limit the time available for employed adults and children to hunt or fish on the land (Ford *et al.* 2010). Because children spend less time on the land, there has also been a decrease in the transfer of traditional harvesting knowledge, survival skills, and food preparation skills to younger generations which will affect communities' ability to produce country foods in the

future (Power 2008). Processing of country foods often involves cutting and drying game meat; however, commercial processing facilities often do not exist or have fallen into disrepair in many communities, making processing on a large scale difficult (Chan *et al.* 2006).

The distribution of country foods from harvesting grounds to communities was traditionally accomplished using dog sleds and manpowered boats (Damman *et al.* 2008). Harvesters have gradually switched to snowmobiles and motor boats to produce country foods. This switch has facilitated faster and more distant harvesting of country foods; however, it has also increased the capital requirements of harvesting and many Inuit find they cannot afford the costs of gas or vehicle maintenance. Country foods may be distributed to families via community freezers (Damman *et al.* 2008). These freezers were introduced by government programs to facilitate the storage and sharing of country foods within communities (Chan *et al.* 2006). Some communities still use these freezers; however, many have fallen into disrepair without proper maintenance (Damman *et al.* 2008, Chan *et al.* 2006).

The distribution of market foods to Inuit communities is difficult and expensive because these communities are so isolated from mainstream Canadian markets (Ford 2009). Non-perishable items such as canned goods are shipped to communities in bulk once or twice per year during summer sea-ice thaw. Although deliveries are intended to last all winter, many communities run out of non-perishable items before restocking occurs the following year. Boat deliveries are also often delayed due to unfavourable sea conditions. Perishable items such as fresh fruit and vegetables are delivered to communities by airfreight. Although airfreight deliveries occur more frequently than boat deliveries, they are highly susceptible to weather conditions and delivery of perishable foods close to or beyond their expiry date is common (Ford 2009).

Most Inuit communities have two stores with a variety of market foods including fruit and vegetables, dairy products, meat and poultry, bread, pasta and rice, processed meals, and 'junk food' such as carbonated drinks (Ford 2009, Lawn and Harvey 2003). The variety of foods available in market stores is facilitated by federal government subsidy programs such as the Food Mail program. This program allows store owners to purchase market foods in bulk at a subsidized shipping rate (Lawn and Harvey 2003). Individuals may also purchase market foods

at a reduced shipping rate through the Food Mail program; however, this program requires individuals to place orders with a credit card which many Inuit do not have (Chan *et al.* 2006). The Food Mail program has also facilitated the shipment of country foods to remote communities. For example, stores in Kugaarak, Nunavut, were able to order country foods from Cambridge Bay, Nunavut, at a subsidized shipping rate beginning in 2003 (Lawn and Harvey 2003).

The exchange of country foods within communities is often governed by cultural values. The sharing of food is integral to Inuit identity and is still observed in Inuit communities today, with as high as 96% of households sharing their harvest (Damman *et al.* 2008). The selling of country foods is also gaining prominence. For example, a market store owner in Iqaluit, Nunavut buys country foods directly from hunters and processes it for sale to the community (Damman *et al.* 2008).

### *Access*

Although many market foods are available to Inuit communities at subsidized rates, the price of market foods is often two to three times more expensive than in southern Canada because of the high cost of transportation (Lawn and Harvey 2003, Damman *et al.* 2008). For example, the price of bananas per kilogram is \$3.95(CAD) in Kugaarak, Nunavut compared to approximately \$2(CAD) in southern grocery stores (Lawn and Harvey 2003). Many Inuit do not have sufficient income to purchase market foods exclusively (Chain *et al.* 2006). Up to 80% of individuals in some communities are on social assistance or are considered 'working poor' due to unemployment, underemployment, low income and the high cost of living in the Arctic (Chan *et al.* 2006, Lambden *et al.* 2007b). The commercial sale of country foods is also often too expensive for many households (Chan *et al.* 2006).

Cost also limits traditional access to country foods. Firearms, ammunition, hunting licenses, vehicles, and gas may be too expensive to purchase and maintain (Chan *et al.* 2006). Some programs aid individuals with the high cost of harvesting. For example, the Harvester's

Support Program is administered by an Inuit organization in Nunavut and Nunavik and provides equipment and supplies to harvesters. While this program has been shown to increase production of country foods for beneficiaries, many individuals feel that borrowing equipment alone is not enough to cover the costs of hunting (Chan *et al.* 2006).

Government policies such as imposing hunting seasons and harvest quotas on species affect the allocation of country foods (Tyrell 2007). Such quotas have thus far been placed on whales and polar bears in some Inuit territories to conserve populations of these species. Policy makers often disregard Inuit traditional knowledge when creating these restrictions; as a result, policies often limit sustainable subsistence practices (Tyrell 2007).

Many Inuit elders prefer country foods over market foods as they are considered healthier, fresher, and tastier (Damman *et al.* 2008, Lambden *et al.* 2007a). Younger Inuit consume greater amounts of market foods than their elders and in some cases refuse to eat country foods (Damman *et al.* 2008). This may be because youth are not as exposed to the taste of country foods in comparison with increasing varieties of market foods. Western advertising also shifts the preference of Inuit youth toward market foods as it often portrays these foods as integral to the success of individuals in mainstream youth society (Damman *et al.* 2008).

### *Utilisation*

Market foods contribute an increasing proportion of the total energy intake of Inuit overall and, because non-nutrient dense market foods such as processed meals and carbonated drinks are less expensive than healthier options, they are most frequently consumed (Hopping *et al.* 2010b). For example, the mean daily frequency of country foods intake in several communities in Nunavut is around two times per day, of fruit and vegetables is 1.5 times per day, and of non-nutrient dense foods is around six times per day (Hopping *et al.* 2010b). Non-nutrient dense market foods are high in saturated fats, sugars, and salt, with inadequate levels of vitamins and nutrients, making them poor substitutes for a traditional diet (Chan *et al.* 2006, Hopping *et*

*al.* 2010a). An increased proportion of country foods in Inuit diet is likely contributing to the increasing prevalence of chronic diseases in these populations (Damman *et al.* 2008).

In the Inuit food system, food safety is affected by transboundary environmental contaminants released by industries at lower latitudes (Healey and Meadows 2007). These contaminants are taken up from the environment by plants and animals, exposing Inuit who eat country foods to harmful toxins (Healey and Meadows 2007). Studies have found that Inuit who eat marine and land mammals have higher levels of mercury, lead, persistent organic pollutants (POPs) and polychlorinated biphenyls than non-Inuit in the south (Healey and Meadows 2007, Donaldson *et al.* 2010). Some contaminant levels exceed World Health Organization guidelines; for example, 25% of Inuit children have greater mercury levels than recommended guidelines (Tian *et al.* 2011).

The Canadian government has advised Inuit to exercise caution when consuming country foods with ‘suspicious’ levels of contaminants (Healey and Meadows 2007, Damman *et al.* 2008). However, the government also stated that the health benefits of consuming country foods exceeds the risks posed by contaminants, and that Inuit should continue to consume these foods (Damman *et al.* 2008). Despite this addendum, some Inuit avoid consuming country foods that they prefer due to concerns of contamination (Lambden *et al.* 2007a).

The harvesting and consumption of country foods are essential to Inuit identity and culture (Chan *et al.* 2006). The harvesting of country foods contributes to physical activity of harvesters, allows for the transfer of hunting and survival skills between elders and youth, maintains strong ties between Inuit and nature, and contributes to a sense of self-worth of Inuit (Damman *et al.* 2008, Lambden *et al.* 2007a). Sharing of country foods reinforces community cohesion and Inuit values while the consumption of country foods is perceived to improve the general well-being of Inuit (Lambden *et al.* 2007a). Additionally, the harvesting of animals provides valuable by-products for Inuit, including arts and crafts and products such as furs that individuals can sell for increased income (Damman *et al.* 2008).

## *Environmental Security*

In industrialised, agrarian food systems, the food systems approach accepts that human manipulation of the environment to improve local food security in turn affects the environmental security of the system (Ericksen 2008). In the Inuit food system, human actors affect their environment to improve their food security both directly and indirectly (Lambden *et al.* 2007). For example, Inuit affect animal and plant populations directly via hunting and gathering. Locally produced fossil fuel pollution and wastes affect these populations indirectly and many Inuit avoid harvesting traditional food sources from areas located near contaminated environments (Lambden *et al.* 2007). However, Inuit do not affect their local environment on the same scale as in Western food systems. Global environmental conditions feed back into the food systems of the Inuit to a much greater degree than local influences. The effects of anthropogenic climate change are more pronounced in the Arctic than other areas of the globe and this change is affecting populations of traditional Inuit food sources (Lambden *et al.* 2007a). For example, Inuit have observed decreases in population densities and changes in migration patterns of animals as well as smaller, diseased, or deformed animals and plants (Sharma 2010, Nancarrow and Chan 2010, Lambden *et al.* 2007a).

Changes to the physical environment also affect harvesters' ability to access country foods. Sea-ice often serves as transportation routes from communities to hunting grounds and as platforms from which hunters access marine animals (Goldhar *et al.* 2010). Decreased sea-ice extent and thickness has made travelling and hunting more difficult and more dangerous while shorter seasonal sea-ice freeze has decreased the time hunters are able to hunt (Goldhar *et al.* 2010, Ford *et al.* 2010). Erratic climate events such as blizzards are increasing in frequency, making travelling on land more dangerous (Pearce *et al.* 2009).

A changing climate may confer some positive benefits to Inuit (Goldhar *et al.* 2010). Decreased sea-ice extent and duration may allow for more frequent shipping of market foods to communities (Ford 2009). However, climate change is generally viewed as a threat to Inuit communities, particularly if the availability of and access to traditional food sources decreases while market foods remain unaffordable (Ford 2009).

## *Social Welfare*

Social welfare is both an outcome and driver of the Inuit food system. For example, the production of country foods contributes to individuals' incomes as they can sell these foods and associated by-products. Increased income in turn improves access to country foods and healthy market foods in Inuit communities (Damman *et al.* 2008, Mead *et al.* 2010).

The current social conditions of many Inuit communities are negatively affecting their food security, while the food insecurity of these peoples is in turn negatively affecting their social welfare. Due to high rates of poverty, unemployment, and underemployment, many Inuit do not have the income necessary to access adequate amounts of country foods or healthy market foods (Chan *et al.* 2006). Decreased consumption of country foods and increased consumption of non-nutrient dense market foods is contributing to increased prevalence of obesity and chronic disease (Healey and Meadows 2007). Higher incidence of underlying diseases increases the risk of other health problems; chronic and acute disease in turn affects individuals' ability to collect country foods on the land and to hold waged employment. Furthermore, inadequate access to healthy food has shown to affect the early development and learning ability of Inuit children. These long-term effects carry implications for the ability of children to secure higher education and employment as adults (Healey and Meadows 2007).

Many Inuit experience anxiety over their food security (Healey and Meadows 2007). For example, many individuals worry about accessing enough income and food for their families, experience feelings of lack of control and inadequacy, and experience depression (Healey and Meadows 2007, Donaldson *et al.* 2010). These psychological symptoms impair individuals' ability to thrive in waged employment or indeed in everyday activities (Healey and Meadows 2007).

Inuit communities experience various other symptoms of food insecurity, including decreased community harmony, substance and gambling addictions, and suicide (Lambden *et al.* 2007b, Chan *et al.* 2006, Donaldson *et al.* 2010). Suicide rates in many Inuit communities are up to ten times higher than in the rest of the country (Donaldson *et al.* 2010). Furthermore, the infant mortality rate of many Inuit communities is three times the Canadian average, while the life

expectancy is ten years lower than the rest of the country (Donaldson *et al.* 2010). These various symptoms of food insecurity negatively feed back into the food system, limiting individuals', households', and communities' ability to improve their social situation and ultimately to improve their food security.

### *Improving Inuit Food Systems*

The food systems approach provides many points of entry to ameliorate the food systems of Canadian Inuit. Federal and regional governmental policies could improve the production of country foods. Governments could provide salaries to professional harvesters to produce the majority of country foods for their communities (Chan *et al.* 2006). Governments could also encourage and subsidize the sale of these foods in community stores to improve the availability and accessibility of country foods to communities. Governments should fund land skills camps, a program where elders take youth onto the land for weeks at a time to teach them survival skills and harvesting techniques that are vital for producing and processing country foods (Chan *et al.* 2006). Such programs exist in Igloodik, Nunavut, and have shown to improve the production of country foods (Ford *et al.* 2010). Governments should also fund the building and maintenance of processing plants and community freezers to facilitate the processing and storage of larger quantities of country foods (Damman *et al.* 2008).

The sale of country foods to the Food Mail program should be encouraged and subsidized to facilitate access by many communities to these foods at a lower cost (Chan *et al.* 2006). Administrators of the Food Mail program should explore alternative methods of payment such as paying in cash upon delivery as a feasible option for individual orders.

The distribution of market foods to Inuit communities can be improved by increasing the frequency of deliveries to these communities. The federal government could fund suppliers of market foods to accomplish this. However, the prices of many of these foods would still be prohibitive to households. Federal subsidies must be increased to make market foods, particularly healthier market foods, more affordable to individuals (Chan *et al.* 2006). The

federal government could also encourage competition between shipping and airfreight suppliers to decrease the cost of transporting these goods to remote communities (Chan *et al.* 2006).

Federal and regional governments should improve access to harvesting equipment and supplies by Inuit. This can be achieved by implementing and increasing funding to programs such as the Harvester's Support Program in all Inuit communities (Chan *et al.* 2006). Governments can also take steps to increase the income of all community members to allow the purchase of both country and market foods. This may be accomplished by establishing new employment opportunities within public administration in Inuit communities. For example, governments could create paid positions for elders who run youth skills camps.

The government must also collaborate with Inuit communities when placing seasonal restrictions and quotas on populations of traditional food sources. Known as co-management, collaboration incorporates the traditional knowledge and cultural precedent of Inuit communities into such policies (Tyrell 2007).

Communities can promote the consumption of country foods by serving these foods at community meals and public events, ensuring youth are more frequently exposed to its taste (Chan *et al.* 2006). Furthermore, governmental policies should be put in place to restrict Western advertising for market foods in Inuit communities. Culturally appropriate advertisements promoting country foods could be used instead to increase youth's preference for these foods (Damman *et al.* 2008).

Policies must be put in place to promote the consumption of healthier market foods (Chan *et al.* 2006). These policies might include creating educational programs on nutrition and healthy lifestyles, placing labels in market foods stores to indicate healthier options, and implementing lunch programs at schools that ensure children eat a healthy meal each day (Chan *et al.* 2006, Mead *et al.* (2) 2010).

The federal government must take steps to reduce environmental pollution in the Arctic such as creating and strengthening existing international frameworks for pollution emissions (Damman *et al.* 2008). Inuit leaders advocated the reduction and monitoring of emissions of environmental contaminants at the 2001 Stockholm Convention on POPs; the government must support similar delegations in the future. The government must also improve communication on

environmental contamination to Inuit communities to reduce fear and confusion about consuming country foods. This can be accomplished by sending limited numbers of clear messages about contamination and building the capacity of local leaders to make their own decisions on contamination issues (Donaldson *et al.* 2010).

Federal and regional governments as well as community leaders must continue to reaffirm the importance of harvesting country foods for its nutritional value and integral part of Inuit culture to communities. They can also fund commercial ventures that promote Inuit culture such as country food stores, arts and crafts stores, tourist camps, and commercial hunting (Damman *et al.* 2008).

Both the federal government and communities must take action to ensure the environmental security of the Inuit food system. The federal government must continue to cooperate with the international community to reduce greenhouse gas emissions and mitigate climate change (Ford *et al.* 2010). Communities must also adapt to the reality of climate change (Ford *et al.* 2010). For example, harvesters should bring satellite phones and GPS to increase their safety of harvesting on the land in the event of extreme weather events (Pearce *et al.* 2009). Adaptations will be costly and provisions for providing this equipment must be put in place in programs such as the Harvester's Support Program (Pearce *et al.* 2009). Communities must also promote the transfer of survival skills to younger generations when harvesting on the land – the transmission of knowledge such as hazard recognition, snow formations, and navigation is essential to a community's ability to adapt to climate change (Ford *et al.* 2010).

The current socio-economic situation of Canadian Inuit is in part a result of their food insecurity. By addressing issues of food insecurity, the social welfare of these peoples will likewise improve. For example, by promoting the consumption of country foods and healthier market foods, the incidences of chronic diseases in Inuit populations may decrease; by providing greater employment opportunities to Inuit, feelings of inadequacy and depression may decrease; by providing school children with a healthy meal each day, attention disorders and reduced ability to learn may decrease; and so on.

The food security, environmental security, and social welfare of Canadian Inuit require urgent attention. The Canadian government, in collaboration with regional and community

leaders, must implement policies and programs addressing the food systems of Inuit to fulfil its goals of the World Food Summit within its own borders. These policies must be informed by the unique needs of Inuit to maintain the cultural integrity of these peoples and improve the food systems outcomes of Canadian Inuit into the future.

The food systems approach was instrumental in examining the nutritional transition of the Inuit. This approach provided a well-defined structure within which to systematically analyse the various factors that contribute to and interact with the food security, environmental security, and social welfare of these peoples. The food systems approach has also shown to be a robust framework for analysing the outcomes of an alternative food system – that is, a subsistence food system for which the approach was not necessarily first developed. This approach can therefore be used to analyse other societies who do not utilise Western food systems to achieve food security.

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