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Published in:
Food Security in the High North

DOI:
10.4324/9781003057758

Published: 01.01.2020

Document Version
Publisher's PDF, also known as Version of record

Citation for pulished version (APA):
Hossain, K., Nilsson, L. M., & Herrmann, T. M. (2020). Introduction: conceptualising food (in)security in the High North. In K. Hossain, L. M. Nilsson, & T. M. Herrmann (Eds.), *Food Security in the High North: Contemporary Challenges Across the Circumpolar Region* (pp. 1-9). Routledge. https://doi.org/10.4324/9781003057758

Introduction

Conceptualising food (in)security in the High North

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In recent years, food insecurity has become a crucial issue in the circumpolar Arctic region. An investigation into why this issue has become so prevalent requires the exploration of a wide range of factors that affect the foods and food systems of the region. These factors include both natural phenomena as well as geopolitical, socio-economic, and cultural aspects. Global climate change and its disproportionate impacts on the region contribute to the rapid transformation of the region in terms of its environment, economy and geophysical, political and socio-cultural characteristics. At times, this transformation arguably offers new opportunities in relation to economic globalisation, but it also significantly alters the natural functioning of the region's ecosystems. The overall implications of climate change place heavy pressure on the areas of environment, land use, and natural resource management. Hence, it also brings about adverse consequences for, among other things, traditional food supply chains, and traditional food systems at large. Moreover, the combined effect of technological advancement and economic globalisation puts pressure on traditional food supplies, especially in the Nordic part of the circumpolar Arctic, given that traditional foods have become relatively less available and that the supply of imported foods is becoming increasingly available in many parts of the region, and especially in its European parts. This situation results in adverse implications on the availability of safe and nutritious foods for many communities in the Arctic.

This book is the result of a three-year research-network project aiming to address food security challenges and the promotion of food security, of which traditional and local foods are integral factors, both at the regional and local levels. Therefore, the focal points of this book are to address complex challenges concerning food sustainability, the supply chain, and food safety and sovereignty from the viewpoint of human food security. While the Arctic, in general, is the referent region, this book particularly highlights the conceptualisation of food insecurity in relation to the Nordic part of the Arctic region – referred to as the *European High North* (EHN). Figure 0.1 shows a map that highlights the EHN. Given that the circumpolar Arctic region is not homogenous, and that there are regional variations in terms of demography, political system, economy, and livelihood

DOI: 10.4324/9781003057758

practices, an exploration of food insecurity requires an understanding in of the different geophysical settings within the region itself. Food insecurity in the North American Arctic, in Greenland or in the Russian Arctic, for example, is not the same as it is in the Arctic region of the Nordic countries. Therefore, framing a concrete definition of *food security* that is applicable across the Arctic region is complex. However, the Rome Declaration on World Food Security and the Plan of Action of the World Food Summit has offered a general understanding of it: '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' (FAO, 1996, Action 1).

In the glossary of the State of Food Insecurity in the World 2001, the Food and Agricultural Organization (FAO) of the United Nations refines the definition of *food security* that we refer to in our discussions in this book, as follows: *food security* is a 'situation that exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life' (FAO, 2001, Glossary, 9 para.).

This conceptualisation analyses food security by referring to four pillars: availability, access, utilisation and stability or sustainability. *Availability* often refers to the physical presence of a food supply, measured by level of production, stock level, and net trade, among other things. *Access* relates to ensuring food security at the household level; crucial here are the affordability of food at an individual level (i.e., economic access) and the physical access ensured by stability in the market infrastructure, prices, and the political state of affairs in a given context. *Utilisation* is one of the most important aspects of food security, which co-exists with safety concerns in food practices. Food security is jeopardised in food systems where safety and nutritional and dietary needs are compromised. As such, within utilisation, it is necessary to ensure the health value of food; food products must contain sufficient energy and nutrients, food preparation must be done appropriately and diversity in diet must be available. The fourth pillar – *stability* or *sustainability* – indicates the presence of a resilient infrastructure to ensure that the other three pillars remain stable so that people's ability to access and utilise food remains sustainable over time.

When we discuss the whole circumpolar region, we generally refer to the broader conceptualisation of *food security* stated above; however, we also make specific reference to the EHN region, where all four of these components are not equally significant in food security discourse. There are certain specific issues that result in food security challenges in the EHN region, both from the viewpoint of the above conceptualisation and from other issues that affect regional food security systems, such as challenges pertaining to the exercise of food sovereignty.

The EHN is an undefined geographic area that is generally understood to refer to the northern parts of Finland, Sweden, and Norway, as well as some

north-western parts of Russia. However, we make specific reference to the Sápmi region while addressing various issues in connection to food security. Sápmi is the traditional area of the Sami people, the Indigenous People of the EHN. There are no clear borders defined for Sápmi, so what is shown in the map in Figure 0.1 is an approximation based on cultural presence and recognition acknowledged in modern times.

Within the Sápmi region, except for Russia's Kola Peninsula, despite the presence of wide areas used for traditional livelihood activities and sparse human settlements – sometimes perceived as wilderness to outsiders – the physical infrastructures across the region are well networked. The road and transport facilities provide easy access to almost all areas in the region and connect various remote human settlements. Basic services, including access to all essential food products from local supermarkets, are largely available. Therefore, the components of food security, such as availability, access and stability or sustainability, are not of major concern in the region. Foods are generally available in local supermarkets, as they are imported and easily transported even to remote locations in the region. On the one hand, the presence of well-connected infrastructure provides easy physical access, while on the other hand, in terms of affordability, the prevailing welfare model in these countries (i.e., Finland, Norway, and Sweden) offers basic support through social security schemes, allowing individuals to have the economic means to access food. In the aspect of stability, as it relates to the supply of and access to adequate food, the region is relatively well equipped with a food supply, providing even greater sustainability in terms of food security. Do these conditions, however, make the region food secure? To some extent, the answer is 'yes', if *food security* only refers to the availability of and access to food for the purpose of basic consumption. However, as we highlighted above and expand on in many chapters in this book, the

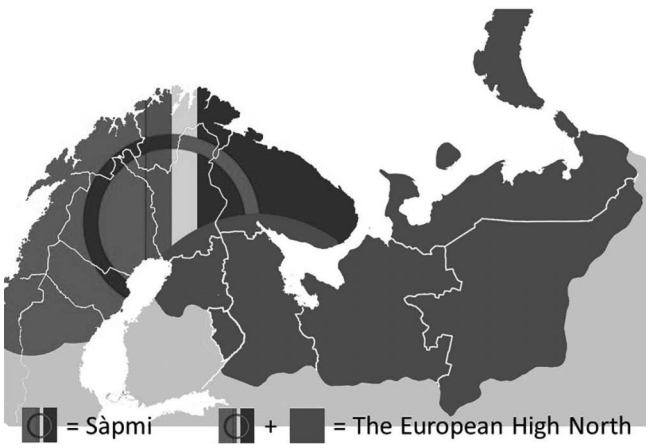

Figure 0.1 The Sápmi region of the EHN.
Author of the map: Lena Maria Nilsson

conceptual understanding of *food security* as defined by the FAO and in relation to other aspects relevant to food practices – for example, spirituality, sociocultural, and psychological wellbeing, political participation, and control over food practices (by relevant actors) – we clearly see significant missing points that make the region food insecure.

The main missing point from the viewpoint of the FAO definition here is so-called *utilisation*, which refers to the availability of sufficient nutritious foods containing the required health value. The dietary needs vary in different locations on earth and are defined by the particular characteristics that a region possesses. Locally or traditionally available foods harvested in and collected from the natural environment provide natural substances for maintaining healthy living conditions. In the EHN, naturally available foods, such as various kinds of berries, provide ingredients that help meet the dietary needs of those in the area, but these resources have largely been abandoned. This is caused by many factors, including the lack of human capital to collect these resources and the non-commercialised processes involved in their collection having a high cost attached to them when compared with store-bought foods. Traditionally, among the Sami Indigenous People, reindeer meat is part of their regular diet, both for its health value and for its cultural significance. Today, a reluctance has been observed among the Sami – and especially among the young generation of gathering, fishing, hunting, and/or reindeer herding Sami – to continue participating in their ancestral livelihood (Lawrence & Larsen, 2019). With respect to reindeer herding, this is often due to the laborious nature of the work, although the practice is less laborious nowadays as new technologies, such as snowmobiles, helicopters, and GPS tracking methods, are used more and more. Moreover, traditionally performed activities are also constrained by state-based natural resources management regimes, limiting the ability of people to be flexible in their food practices. For example, infrastructure development projects, such as the 'Arctic Corridor' project (House of Lapland, 2019), and extractive industrial activities, such as mining and oil and gas developments, place strain on the continuation of traditional food practices and threaten the safety of traditionally available foods (Sheehy et al., 2014; Nilsson & Evengård, 2015; Hossain, Raheem, & Cormier, 2018). The safety of foods has increasingly become an issue; once a food source is contaminated – due to, for example, the use of toxic materials in mining activities – it may result in various health-related risks, including contributing to obesity and diabetes (Ford, 2009). As a result, despite the high nutritional value of many traditional and local foods, they been found to be relatively less available and have, at times, been contaminated, jeopardising the overall food security of the region.

Food security is also a serious challenge in other parts of the Arctic, including remote Canadian and Greenlandic Arctic regions. A significant body of literature is available illustrating various aspects of food insecurity in the Canadian North and in Greenland, and especially amongst the

Indigenous communities (e.g., Fergurson, 2011; Council of Canadian Academies, 2014; StGermain, Galloway, & Tarasuk, 2019). Most of the literature suggests that these remote Arctic regions suffer from a lack of all four components of food security. On the one hand, the supply chains of traditionally available foods have been affected the consequences of climate change and other stressors related to environmental changes; on the other hand, imported foods in these regions are either relatively less available or their costs are overwhelmingly high, affecting affordability. Moreover, the melting of the Arctic's coastal and marine areas has been exacerbated by increased human activities, contaminating marine food resources and resulting in serious consequences to human health. Across this region, Indigenous food systems are heavily affected. Some research has suggested that Indigenous Peoples in the North American North will remain food insecure unless a collective will towards dismantling inequities is taken up, creating room for Indigenous Peoples to solve the problem on their own terms (Loring, 2017).

Against this background, this book explores traditional food production challenges, risks pertaining to food contamination from ongoing and increasing human activities (e.g., mining), gender roles in the maintenance of traditional food systems within local and Indigenous communities, and changing livelihoods affecting food patterns. It also explores the processing methods that combine Indigenous and traditional knowledge, through which an exercise in food sovereignty in the regional context can be manifested. While addressing these issues, we adopted a multi-disciplinary and inter-disciplinary framework, wherein various disciplines, such as food sciences, agriculture, policy studies, human rights, health sciences, biology, and political sciences, interact.

We particularly address contemporary challenges facing the region in relation to food security as it relates to the notion of human security. The concept of *human security* was popularised during the early 1990s as an alternative to what traditional security stands for (e.g., military-oriented aspects of security). Within this framework, our understanding of security has been broadened and deepened, incorporating various concerns that affect individuals and communities both in sub-state and sub-regional contexts. The Human Development Report (HDR) of 1994, endorsed by the United Nations Development Programme (UNDP), popularised the concept, in which food security represents one of the seven components identified (UNDP, 1994). The other six components are health, environmental, economic, personal, community, and political security. The concept of human security, as demonstrated in the HDR, suggests a rather broad formulation highlighting a number of freedoms, the absence of which causes obstacles for individuals and communities to flourish at a sustainable level. Freedoms from fear, want, and indignity are the three substantial and interconnected aspirations that individuals and human communities require to maintain a dignified life. Although food has been placed as only one of the seven components of human security, it also reinforces – or is interconnected

with – other components. For example, a lack of safe and nutritious foods that contain proper dietary value causes health risks, affecting health security. Similarly, cultural aspects, such as participation in or connection to practices related to traditional and local foods pertain to the maintenance of community identity, especially for Indigenous groups; a lack of availability to traditional or local foods thus enhances the threat to community security. Further, food security and environmental security are interconnected, given that any harm to or contamination of the natural environment may very well cause food contamination too, especially for foods that are locally harvested and produced. As such, food security – as it relates to human dignity and ensuring freedoms from fear and want – provides a powerful framework to promote human wellbeing not only in terms of physical and psychological contexts but also in strengthening a community identity. In this way, political aspirations are strongly linked to food security, as they relate to establishing control over the maintenance and continuation of a food system. We therefore also refer to food sovereignty, as it is linked to community security, with particular reference to local and Indigenous Peoples of the circumpolar Arctic.

We define *food sovereignty* as a situation in which local and Indigenous Peoples are in control of the processes leading to food security in their home areas, as expressed by the Final Declaration of the World Forum on Food Sovereignty in Havana, Cuba in 2001:

> Food security is the peoples' right to define their own policies and strategies for the sustainable production, distribution and consumption of food that guarantees the right to food for the entire population, on the basis of small and medium-sized production, respecting their own cultures and the diversity of peasant, fishing and indigenous forms of agricultural production, marketing and management of rural areas, in which women play a fundamental role.
>
> (World Forum on Food Sovereignty, 2001)

An illustration of this definition would be a situation in which reindeer herders are in control of the full utilisation of traditional grazing areas and are able to adjust, in all situations, their practice according to changes in weather and foraging conditions. It could also refer to a situation in which local people maintain traditional knowledge about how to utilise the local wild plant, berry, fish, and game stock for local food production.

This book also uses various other concepts, such as food resilience and traditional and local knowledge in food practices and in traditional food systems. We define *food resilience* as 'capacity over time of a food system and its units at multiple levels, to provide sufficient, appropriate and accessible food to all, in the face of various and even unforeseen disturbances' (Tendall et al., 2015, p. 19). The notion of food resilience does not, however, include any references to traditional knowledge. The concept of food sovereignty

can therefore also be applied in terms of the global market contribution to the food system of the EHN, as well as food banks provided by authorities to Indigenous Peoples (e.g., as is done in the Canadian Arctic). *Traditional local knowledge* generally refers to knowledge conveyed narratively or through practical learning from one generation to the next for such a long period of time that no one knows if the knowledge is based on evidence or, if it is, what this evidence consists of or how it has arisen. In contrast, we refer to *traditional Sami knowledge* – in Sami, *Árbediehtu* – as ecological skills, knowledge, and values inherited from previous generations in the Sami society, such as reindeer husbandry, hunting, fishing and gathering food, and skills related to mastering the Arctic landscape, weather, climate, wildlife, and cultural needs. In several chapters in this volume, we further illustrate Sami traditional knowledge with respect to the promotion of food security by integrating traditional or local foods. By *traditional food*, we largely refer to food items that have been normalised in the EHN for such a long period of time that no one any longer remembers the time that existed before the food item was normalised. Traditional food mainly consists of food items with a direct link to natural resources and local food production, such as lingonberries (*Vaccinium vitis-idaea*), but commodities such as coffee and sugar may also be included if trade traditions extend far back in time.

This book consists of three parts. The first part analyses issues related to Indigenous Peoples, livelihood practices, and traditional knowledge in the context of food production, consumption, and diversity. This part includes five chapters. In the first chapter, Castilla explores the value of stockfish for strengthening the local food system and the role of stockfish in enhancing local food security. She highlights the importance of the transmission of the traditional ecological knowledge (TEK) involved in the production and preparation of stockfish by conducting original ethnographic research on the Lofoten Islands. Her findings suggest that, according to the local population, stockfish is a significant factor in their food security and in the resilience of the local food system. Based on her research findings, however, she suggests that interests in stockfish are decreasing among the younger generations. Therefore, she argues for a need to develop strategies aiming at strengthening the transmission of TEK related to stockfish, which eventually would lead to the promotion of food security among the local and Indigenous population. In Chapter 2, Harkoma and Forbes investigate the potential of Indigenous knowledge-based traditional pasture management and a rotational grazing system. According to them, such a process is capable of securing reindeer herding as a subsistence base for the production of healthy and culturally appropriate food as part of traditional food systems. In this context, they highlight food sovereignty for Indigenous Sami people by putting a special emphasis on its six pillars, including food and its value orientation in a localised context where food systems are to be controlled by the people who possess local and traditional knowledge for its sustainable production.

In the third chapter, Minagawa highlights the food insecurity of reindeer herders after the 1986 Chernobyl nuclear accident. She focusses on how different voices and measures were sought in response to health risks associated with the aftermath of the disaster, to sustain Sami reindeer herders' livelihoods. She concludes that, in decision making, economic needs were prioritised above health risks, which has had consequences on food security. Bogdanova et al., in Chapter 4, discuss traditional nutrition as a part of the traditional culture of the nomadic Indigenous population in the Arctic zone of Western Siberia. They argue that traditional nutrition effectively prevents health problems and enables people to adapt to the harsh climate conditions of the High North. They further analyse the implementation of Russian national policies on traditional reindeer herding, which is affected by issues of food security and food sovereignty. Thereafter, Bjerregaard, in Chapter 5, explores the food preferences of the Inuit in Greenland, the role of traditional Greenlandic food (*kalaalimernit*), and the prevalence and social variation of food insecurity. He argues that *kalaalimernit* is preferred to imported food, but that imported food is also popular due to its lower cost, its ease of preparation and a wish for variation. In this regard, he argues that food insecurity is associated with socio-economic conditions and is reported much more often in remote East Greenland than it is in West Greenland, even after adjustment for the social and economic variables presented in the chapter. To conclude, he suggests is that a low level of consumption of *kalaalimernit* is generally by choice and not due to a lack of access or money.

Part II of the book presents multi-disciplinary perspectives on food (in) security, highlighting human rights, ethics, and environmental justice, regimes, and crisis management in relation to traditional food and food systems. In Chapter 6, Hossain and Punam analyse traditional food systems, specifically those in the EHA, that include activities such as berry picking, hunting, reindeer herding, fishing, and processing and consuming these local foods. They focus on the interplay between human rights and the traditional food systems in the EHA. Their conclusion suggests that local people, including Indigenous communities, play a key role in traditional food systems and that the maintenance of a stable system is vital for both Indigenous and non-Indigenous people. They further examine how a human rights framework can integrate traditional food systems, thereby showing how a stable food system promotes food security and food sovereignty as aspects of human rights. Casi, in Chapter 7, investigates the relationship between traditional food systems and the identity of Sami Indigenous communities. She creates a theoretical framework drawing from three non-Indigenous fields of study: food ethics, food security, and food sovereignty. Whereas food ethics discourse is used to outline the significance of traditional food in Sami culture, referring mainly to the accessibility and availability of adequate and sufficient food for a healthy and active life, food sovereignty is used to highlight the relationship between food and issues of inequality and injustice and the importance of strengthening local food production. According to her, in order

to promote the empowerment of local communities, it is essential to decolonise food security and indigenise food sovereignty discourse. In Chapter 8, Shishaev et al. discuss issues related to food security management in the western part of the Russian Arctic, taking information support tasks into account. They examine key actors, indicators, threats, and existing instruments for food security management in the Russian Arctic zone, paying attention to existing relevant data sources, particularly those concerning local food, and to the food security problems of the Indigenous and rooted populations. The discussion of the applied ontology in this chapter determines how to assess knowledge of food security at the individual level and the role of local food in food security in the Russian Arctic. According to the authors, the penetration of digital technologies coupled with modern intellectual information processing capabilities offers new opportunities for the effective monitoring and management of food security. The chapter, therefore, offers findings concerning the use of digital technologies to build effective information support systems for food security management in the Russian Arctic.

Pursiainen, in Chapter 9, considers three possible scenarios in relation to food crisis management: radiological fallout and contamination, animal disease epidemics and the impact of oil spills on fisheries. Focussing mostly on the EHN, and especially on Finland, he asks whether crisis management systems are currently in place that could handle these types of crises. Utilising the crisis management cycle, the chapter reviews in some detail issues such as risk assessment, prevention, preparedness, response, recovery, and post-crisis learning. He concludes that sectorial-level crisis management systems are rather well developed, while a more holistic perspective is missing. In the following chapter, Soldevila Lafon outlines the challenges of food security using the food regimes approach. The concept of a food regime allows an analysis of the role of agriculture and food in different stages of the global capitalist economy. She confines her discussion to three historical food regimes: the First Food Regime (lasting from 1870 to 1914), the Second Food Regime (lasting from the end of World War II to the end of the twentieth century) and the Third Food Regime (which, according to the author, is currently emerging). Recent agrarian and food crises have highlighted the weaknesses of the Third Food Regime in addressing problems of food insecurity, even in the Global North. Given that the Arctic is especially vulnerable, as recent adverse external factors (e.g., climate change) are threatening food security in the region, she analyses the Third Food Regime and the challenges to food security it presents. According to her, the dynamics of the Third Food Regime and external factors reinforce each other and undermine food security strategies in the Arctic, which need particular attention.

The last part of this book, Part III, consists of four chapters highlighting possible future strategies to build resilient food regimes in order to enhance food security and sovereignty. This part is built on works that offer innovative, inspiring, transformative, and future-forward strategies for a healthy, equitable, resilient, and culturally diverse future of food security that is

shaped by the people, communities, and their institutions in the circumpolar Arctic. Nilsson, in Chapter 11, provides reflections on Swedish food strategies from a Sami and an Arctic perspective. According to her, a food-secure area depends, to a large extent, on food imports and national and international trade. In Sweden, the level of food sovereignty is low and, after the nation's entrance into the European Union (EU) in 1995, is rapidly declining. She stresses that a future sustainable food strategy for Sápmi/Northern Sweden should be outlined and agreed on by the Swedish government and the Swedish Sami Parliament. It should be product-oriented, ecological, in balance with nature and based primarily on plants and animals adapted to an Arctic or sub-Arctic boreal climate zone. The strategy should also specify caloric values and nutritional content, include local and traditional perspectives, include strategies for waste reduction, promote knowledge sharing from different knowledge systems and strengthen relationships among all inhabitants of the area. In Chapter 12, Raheem et al. highlight the gaps that have been measured by the technological development – the Internet of Food. The authors examine how food security gaps in the EHN can be mitigated by collating data to leapfrog local foods into the digital era via the Internet. They argue that to achieve sustainability, changes are required in food supply chains and the entire food system. Consumers need information to make informed choices about what to eat; they need to know where food comes from, the conditions under which it grew and the food's nutritional profile. The food industry has been slow to take advantage of the Internet. According to the authors, with increasing interest in redistributed manufacturing, circumpolar regions such as the EHN will need to adapt to digitisation. The Internet of Food is an emerging trend that will make food traceable, transparent and trustworthy and empower consumers with more personalised food that caters precisely to their individual food, diet, and health choices.

Next, Gnutzmann and Śpiewanowski investigate the supply of fertilisers and the role of Arctic deposits in connection to the enhancement of food security, in Chapter 13. They emphasise that fertiliser supply, in which Arctic resources play a prominent role, is a key element of global food security. The chapter discusses reserves and production levels as well as the effect of fertiliser on global food prices. According to the authors, the geological characteristics and low cadmium content of the Arctic make Arctic fertiliser particularly valuable, especially as EU food safety regulations tighten. In Chapter 14, Herrmann et al. show how community-led Initiatives contribute to shaping the future of food security and sovereignty in Canada. Based on a number of case studies from Inuit and First Nations communities, the authors identify an array of community-based food initiatives that, according to them, promote better access to and knowledge of subsistence activities that encourage local food production, and help reduce inequalities in access to a healthy diet. They examine how these initiatives have improved access to affordable, nutritious food in remote communities while at the same time improving food sovereignty and wellbeing and preventing diet-related

chronic diseases. Finally, in the last chapter, Ouma sheds light on traditional food knowledge by comparing north–south perspectives, discussing the views, interests, intuitions, stories, reflections, and experiences shared by participants in a talking circle. The talking circle was held in 2011 during the People in Places Conference, which was hosted by the Coastal Community–University Research Alliance (CURA), a six-year project at Dalhousie University, Halifax. The Coastal CURA focusses on the inclusion of Indigenous communities in integrated resource management processes and explores the use of local knowledge to address food security. Ouma analyses key messages that raise important issues about the relationship of the biocultural diversity web with food security and governance. According to her, embracing Indigenous cultural practices related to food systems, food security and governance could help engage and inform mainstream official policies in the challenges of food (in)security, both in the Arctic and beyond.

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