

Environmental Pollution and Food Security in the Arctic

G rard Duhaime*, Nick Bernard and Alexandre Morin

*G TIC, Pavillon Charles-De-Koninck bureau 0450, Universit  Laval, G1K 7P4, Qu bec (QC) Canada

Phone: 418 656-2131 ext. 2997, Fax: 418 656-3023, E-mail: Gerard.Duhaime@fss.ulaval.ca

Introduction

Environmental pollution puts risks on food security of Arctic residents. It introduces pollutants in the food chain that increase the contaminants body burden. It may lead to replacing food directly produced from the land through harvesting and herding by imported food; in turn, this causes diet imbalances associated with food-related pathologies such as cardiovascular diseases.

However, the issue of sustainable food security in the Arctic is not only linked to pollution problems. A comprehensive approach allows to evaluate the importance of other factors at play in this problematic.

The objective of the international research program *Sustainable Development in the Arctic. Conditions for Food Security* was to present a comprehensive diagnosis on sustainable food security for different Arctic regions. This paper is one of the integrated results of such effort.

Conceptual Framework

Sustainable 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; but it does exist when this situation is the result of a "development without growth beyond the environment's capacity".

The processes at play are seen as the interrelations of systemic components. Various factors of the social system are the preconditions that shape supply mechanisms. For instance, demographic trends, economic situation, state of the technology, to name a few, make it possible to organize large-scale food processing industry as well as customary harvesting of wild resources. These food supply mechanisms of production and circulation, coupled with the above factors of the social system, determine all together availability, accessibility of food stuff for consumption purposes. Analytic evaluation of these interrelations allow to diagnose to what extent sustainable food security is achieved for each region of the Circumpolar Arctic.

Method

An international and multidisciplinary research team, with contribution from social scientists, health scientists and jurists have conceived and apply a comparative research program that led to data gathering and analysis. For the first half of a five years program, each disciplinary teams worked in all regions; then, regionally focused teams have been put together, analyzing the data in a transversal perspective, making it possible to come with regional integrated diagnosis. In each region, food supply networks were used as a central analytical tool.

Results

Alaska-In Northern Alaska, commercial food supply mechanisms are, by far, mainly based on the private sector, including in the field of fresh food supply transportation by airplane. In the commercial food sector, profitability is rather low, as incentives for investments are. Consequently, the material availability of foodstuffs is vulnerable to private decisions of numerous private actors.

Environmental pollution is less likely to affect customary food production, circulation and consumption, when compared to the issue of climate warming. There are environmental risks affecting wild species, related to oil and mineral exploitation and, to a lesser extent, military installations. Nonetheless, the most important risk factor seems to be linked with climate changes, that would modify migratory routes, species populations, seasonal cycles and territorial access. Nevertheless, the principal debate in Alaska does concern the legal regime regulating access to resources for Inupiat customary activities. Complexity of regulations enacted from multiple jurisdictions, and equivalent access right to resources regardless of ethnic origins, are causes of social insecurity.

Canada-In the Canadian Arctic, commercial food supply mechanisms rely on private initiatives for transportation and trade. Even though a government program subsidizes transportation for specific food items, a growing dependency can be observed regarding air cargo, making food security vulnerable to weaknesses of such a system. Economic inequities are an obstacle to household food security, which is compensated for customary networks of self-help, and, to a very small scale, by few food banks.

What is true for commercial food supply is also true for customary food supply. Customary activities are highly practiced in Arctic Canada, and pollution problems do not prevent wild food consumption. The variety of available species allows a choice and consequently a way to avoid contaminated species. The nearly absent commercialization of country food could limit the access of such resources for certain individuals, specially those without resources to afford harvesting activities, disabled persons and the like. Existing programs that subsidized harvesting for free distribution purposes are an important factor compensating the absence of wild food commercialization.

Greenland-Greenland is characterized by a relatively efficient transport system and local food industry, together with a substantial commercialization of country food. These factors create a situation where food security is fairly protected compared to other Arctic regions. Economic inequities between households, towns and settlements, and between regions are visible, and represent the main threat. Recent changes in the Home Rule economic policy aiming towards privatization are jeopardizing these secured food supply mechanisms. Questioning the role of the state in transportation and trade industries may lead to price increases and disparities which could raise barriers for economic access to foodstuff.

Euro-Arctic Barents-In the Euro-Arctic Barents, competition between customary activities, specially reindeer herding, and massive industrial developments, such as oil and gas, forestry, mining and smelters operations, threaten sustainable food security. In the Russian part of the region particularly, these operations produce massive air and soil pollution, and soil disturbances that destroy grazing areas. Thus, competition for land uses fragilizes customary food production activities; moreover, these difficulties may threaten monetary incomes resulting from customary activities, and consequently, access to commercial foodstuff.

The Russian part of the Euro-Arctic Barents is experiencing a long lasting economic turmoil that created a major food crisis. Remote regions are hardly supplied with manufactured food. In urban centers, access to food production is largely restricted by inequities in income distribution. Decreases of wages for the majority, and increases of prices, have created a situation where the average income is on the edge of poverty line, if not below. In such a context, gardening for vegetables and harvesting of wild berries and mushrooms are customary practices that are still vivid.

Conclusion

All over the Arctic, environmental pollution is restricting the achievement of a sustainable food security. The nature of pollution, and the degree by which it affects the situation, differ from one region to the other. In regions where wealth distribution secures the economic access to food production for the average household, and where supply mechanisms are well established, even based on free market, there are means to avoid contaminated food intakes from customary uses of wild resources. But in regions witnessing economic inequities and instability, and supply problems, pollution is an aggravating factor that makes it impossible to achieve food security.

In North American Arctic, food security is relatively well guaranteed. Phenomenon that prevent to conclude that there is no risk at all are related with material availability and economic accessibility to resources and food consumption balance. The exception can be found in the Russian part of the Euro-Arctic Barents region, where the economic and environmental situation produce a relative food insecurity.

A circumpolar examination lead to the conclusion that everywhere, sustainable food security is a fairly distant objective. The large part of food supply is produced by industrial unsustainable practices in southern regions, which in turn contribute to the pollution legacy that reaches the Arctic. Importation itself generates few benefits for local communities, and to some extent, may contribute to prevent production, distribution and consumption of local food stuff harvested from the land. Unresolved land use competition, and uses of land for massive exogenous industrial exploitation are additional factors impediment to sustainable food security. Health problems resulting from food intake imbalances, and from increased consumption of industrial food, are trends that clearly lead to unsustainability.

Acknowledgments

This research program, *Sustainable Development in the Arctic. Conditions for Food Security*, has been funded by the Social Sciences and Humanities Research Council of Canada, through its Major Collaborative Research Initiative Program.

References

- Asenso-Okyere, W.-K., G. Benneh and T. Wouter (1997). Sustainable food security in West Africa, Dordrecht, Boston and London, Kluwer Academic, 307 pages.
- Duhaime, Gérard (dir.), [in press]. Sustainable Food Security in the Arctic, Edmonton, Canadian Circumpolar Institute Press. University of Alberta.
- Food and Agriculture Organization of the United Nations (FAO) (1998). Report on progress in the implementation of the world food summit plan of action, twenty fourth session, URL address: <http://193.43.36.7/UNFAO/Bodies/cfs/cfs24/W8456e.htm>.
- Gürkan, Ali Aslan (1995). "Determining the Structure of Food insecurity at the Global Level: A Cross Country Framework for Analysing Policy Issues for the Agro-Food Sector" in *Économies et Sociétés*, "La sécurité alimentaire à court et à long terme", Paris, Collection "Développement agro-alimentaire", vol. 29, no. 22, 3-4, pp. 51-65.
- Maxwell, Daniel-G. (1996). "Measuring Food insecurity : The Frequency and Severity of Coping Strategies" in *Food-Policy*, vol. 21, no. 3, pp. 291-303.
- Maxwell, Simon (1996). "Food Security a Post-Modern perspective" in *Food-Policy*, vol. 21, no. 2, pp. 155-170.
- World Food Summit (WFS) (1996a). Rome Declaration and Plan of Action, World Food Summit, Rome, November 13-17 1996, URL address: <http://www.fao.org/wfs/final/rd-e.html>.
- World Food Summit (WFS) (1996b). Food Security for the World, Food and Agriculture Organization of the United Nations, Rome, November 13-17 1996, URL address: <http://www.worldbank.org/html/extdr/specials/foodsec.html>.