

Food self-sufficiency in five Nordic island societies

POLICY BRIEF 2022:4



Project findings

Increasing food self-sufficiency means rethinking global supply chains, (re-)adapting to local contexts, and ensuring optimal conditions for selling and buying locally produced food. Increased self-sufficiency and improved local food systems can have positive environmental, social, and economic consequences. However, whether increased self-sufficiency adds to more sustainable food systems depends on myriad factors, including production methods, the type of food in question, and the availability of local food on the local market. Previous research shows that *local* food production does not automatically equate to *sustainable* food production.

This project sought to increase knowledge of how greater food self-sufficiency can contribute to increased sustainability and resilience in the food systems of five Nordic island societies: Bornholm, the Faroe Islands, Greenland, Iceland, and Åland.

What did we do?

- Calculated food self-sufficiency in each of the five Nordic islands based on available data.
- Assessed the local food self-sufficiency work undertaken by exploring local strategies, reports, and other documents and conducting interviews with local experts.
- Identified and described the challenges and opportunities perceived by local actors with regards to increasing self-sufficiency.
- Compiled a list of good examples from the islands for inspiration.

Preconditions for food production

The five island societies have very different preconditions for food production. There are differences in climate, access to adequate arable land and marine resources, as well as vast geographical differences. Varying food traditions and the local food culture also affect consumption, production, and processing of food.

Bornholm and Åland are both endowed with plenty of arable land, meaning there are great opportunities for agricultural activities, while increasing environmental problems in the Baltic Sea have negatively affected the opportunities for the fishing industry. In the Faroe Islands, Iceland, and Greenland, the cooler Arctic climate results in shorter growing seasons, and there are fewer areas with suitable soil conditions for agricultural production. On the other hand, the North Atlantic Ocean provides an abundance of marine resources.

The share of private food production, which includes breeding, hunting, fishing, and crop cultivation, also differs between the five islands. Private food production is not considered in official records but is particularly large in the Faroe Islands and in Greenland, where local traditions surrounding food production, breeding, and catching are strong.

Innovative production methods that utilise natural resources can also be used to support and develop local food production. In Iceland, for example, renewable geothermal heating is used for vegetable production. A lot of innovation and development of the local food systems that focus on available natural resources, testing new types of crops and creating local networks for access to local products are ongoing in the societies. These actions can support more sustainable and resilient local food systems.

Calculating food-self-sufficiency

In this project, we have worked with two ways of calculating food self-sufficiency. The central difference between the two calculations is whether exported food is considered. The first calculation, degree of self-sufficiency, is defined as the proportion of food that is both produced and consumed in a country or region, and excludes exported food. The second calculation, food self-sufficiency ratio, considers the total food production, including food that may eventually be exported.

Accessing relevant data to calculate food self-sufficiency was a challenge, as not all data has been systematically compiled by statistical agencies or is available on a sufficiently granular level. As a result, some calculations are based on presumptions and others are made by experts' discretion. The issue of missing import and export data on the amounts of food is particularly evident in Bornholm, the Faroe Islands, Greenland, and Åland. While the Faroe Islands and Åland have statistical data on foreign trade available primarily in terms of monetary value, Greenland's statistical data on foreign trade is generally less granular. Åland's foreign trade statistics do not cover trade with Finland, however.

This may account for large discrepancies in the baseline numbers used for calculating both the degree of self-sufficiency and the self-sufficiency ratio. Therefore, the results in this report should be considered a starting point for the compilation of improved data to help understand food self-sufficiency levels in these islands.

All calculations include the number of tourists in addition to the country populations. In the calculations, the number of tourists per year has been included, however, tourism was found to have a limited effect on the level of food self-sufficiency. Input factors, such as imported animal feed, have not been accounted for in our calculations.

Food self-sufficiency in the five islands

According to the calculations, the food self-sufficiency ratio in all five islands exceeds 100%, both regarding the amount of food (kgs) and the caloric value (see Table 1). For Greenland, the Faroe Islands, and Iceland, this is due to their substantial fish and seafood production. In Bornholm, it is due to pork production, and in Åland, it is explained by the surplus production of, among other things, potatoes, vegetables, corn, and fish. Once food exports are taken into account however, none of the islands reach a food self-sufficiency score of 100% (see box for an explanation of the different methods of calculating food self-sufficiency).

Åland has the highest degree of self-sufficiency measured in energy (kJ), at 59%. This is due to the variety of food produced on the island. Bornholm has the lowest degree of self-sufficiency at 6%, when measured in energy, as a large share of the food production is exported.

	Degree of self-sufficiency, Energy (KJ) (%)	Self-sufficiency ratio, energy (KJ) (%)	Degree of self-sufficiency, kilo (%)	Self-sufficiency ratio, kilo (%)
Bornholm	6	339	7	229
The Faroe Islands	22	446	28	549
Greenland	17	278	15	379
Iceland	53	100	60	109
Åland	59	135	54	188

Table 1: Degree of self-sufficiency and self-sufficiency ratio measured in energy (kilojoule) and kilo (kg) for the five islands. Numbers include tourists.

To the extent possible, private food production that is not traded on the official food market, has been taken into consideration. Mapping conducted by the Faroese Agricultural Agency for this project, shows that food traded outside the official food market is significant in the Faroe Islands. This shows that it is important to analyse these figures to understand the full degree of self-sufficiency in island communities where private production still plays an important role, traditionally and culturally.

The local focus on food self-sufficiency

A review of food and agricultural strategies, policy documents, and reports revealed different approaches to the question of food self-sufficiency in the five islands:

- **Bornholm:** increased food self-sufficiency is an official goal in the local food strategy and is connected to opportunities for job creation, the local economy, and local development.
- **Åland:** the focus on food self-sufficiency is particularly considered in relation to crisis preparedness. Self-sufficiency is not a central part of the development strategies of the local food system, instead 'resilience' and 'sustainable food systems' are more commonly used concepts.
- **Greenland:** increased food self-sufficiency is recognised as a political goal, and a new ministry, which includes self-sufficiency in its official title, has been established.
- **The Faroe Islands:** increased food self-sufficiency is not found to be a central issue in the official debate and discourse.
- **Iceland:** food security is the primary focus, where food self-sufficiency is included but not heavily emphasised.

Challenges and opportunities by increasing food self-sufficiency

Challenges to increase food self-sufficiency identified across the five islands included: local competition against cheaper, imported food products, logistics concerning the local distribution and availability of food, and consumers' dietary habits, preferences, and purchasing power. One factor that was emphasised as a vulnerability in all five islands was the great dependency on imported materials to support the food production process (e.g., fodder, fertilisers, fuel, energy, machinery, and equipment). Other shared barriers included, for example, access to sufficient knowledge, competence, as well as an available and suitably qualified labour force.

Opportunities associated with increased food self-sufficiency included job creation, local development, increased food security, and lower climate footprint. Food was emphasised as a key strength for the local economies and their development potentials by stakeholders in all islands.

Another strength is the islands' relatively small populations, which means that collaboration and creating synergies across food system actors is an achievable reality. An increased focus on sustainability among both locals and tourists, may also provide opportunities to stimulate and support increased local food production in the Nordic context.

Easy access to local products for restaurants, public institutions, and citizens is a prerequisite for the sale of local food. Innovation in food production, alongside increased local production of materials required in the food production process, may also contribute to increased self-sufficiency levels. Moreover, a change in the type of food production, from animal-based food to more plant-based foods, may be a way to increase local food self-sufficiency, particularly in Bornholm and Åland.





Policy recommendations

Eleven recommendations have been sketched to guide future work on food self-sufficiency and local food systems in the five island societies:

- Increase access to locally produced food for restaurants, public institutions, and local citizens.
- Address consumer behaviour, preferences and eating habits.
- Explore new business models geared towards the local market.
- Investigate possibilities for diversifying the food production, including the option of transitioning a share of animal-based food production to plant-based options.
- Develop a local strategy with an action plan and concrete goals.
- Explore how public procurement can support the local food system.
- Map local actors in the food system and establish or support local collaboration platforms.
- Conduct local research and analyses to ensure that increased self-sufficiency leads to more economically, socially, and environmentally sustainable food systems.
- Recognise that self-sufficiency holds different meanings in different contexts.
- Ensure a systematic approach to the collection of data for calculations of self-sufficiency degree and the self-sufficiency ratio.
- Gain greater insight into the extent of privately produced local food that is sold outside the official market to ensure accurate understanding of the degree of food self-sufficiency.

About this policy brief

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This policy brief summarises a project funded by the Nordic Council of Ministers' Working Group for Circular Economy.

The policy brief is developed based on the report: Vestergård, L.O., Meijer, M.W., Svennerud, M., Rustad, L.J., Leivsson, T.G., Cedergren, E., Bogason, Á., Refsgaard, K. & Froebrich, A. 2022. Selvforsyning af fødevarer i fem nordiske øsamfund. TemaNord 2022:528, Nordic Council of Ministers.

The project was conducted by Nordregio, the Norwegian Institute for Bioeconomy, and Búnaðarstovan, the Faroese agricultural agency. It was carried out in the period of June 2021 to February 2022.

Read the report (in Danish) here: <https://nordregio.org/publications/selvforsyning-af-fodevarer/>

Watch the webinar (in Scandinavian) here: https://www.youtube.com/watch?v=Gm_qB4vPbtA

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