Norway's self-sufficiency in food production

Sandra López Chillarón, Dina Sofie Aeschilmann Isene, Sigurd Riise Nilsen, Soline Margaux Charlotte Richard and Marte Rødøy Syvderud

Introduction

Food security is a challenging issue, more than 16% of the global population suffers from chronic hunger. As the world's population grows, the challenge of food security is increasing, a challenge that has to be handled with increased production and reduction of waste (Mc Carthy et al 2018, 11-20). The global north countries like Norway cannot sustain themselves due to the cold climate and short growing seasons and they rely highly on imports of food from other parts of the world. As only 3% of Norway's land is cultivated it makes it one of the top importers in the world (Flaten and Hisano 2001, 1-6). Thus, this country only produces approximately 45% of all the calories that are consumed, making it the country with the highest import in the OECD (Organization for Economic Co-operation and Development) (Olsson et al 2011, 251-284; Kildahl 2020). So how is Norway making itself dependent on others regarding food production and what are the problems with this? In this study, we will describe the Norway-dependent situation, the impact of this system on food security and on the environment.

Main development

As already mentioned, Norway is one of the countries with the smallest amount of agricultural land, only 3% corresponding to ~4M acres. Due to the complex topography with mountains, fjords, lakes, and forests dividing it. Thus, Norway mostly has small-scale farms, for example, a dairy farm has 20,7 hectares for growing forage and around 27 cows (Hansen 2020) which is very small compared to other European countries such as Denmark or the Netherlands with 207 and 101 cows per farm (Bianca Fuchs. n.d.; The Cattle Site, 2020). Moreover, the difference in climate and landscapes between the south and the north of Norway induce a disconnection between the different agricultural lands. In the lowlands such as the south-eastern and mid-Norway, we find the most important part of arable lands and in northern Norway, we can find mostly the livestock farms (Flaten and Hisano 2001, 1-6). This disconnection between the different agricultural lands increases the CO2 emissions such as for the transport of the forage to the livestock farms.

Norway continues to become less and less self-sufficient. Forage production continues to increase, going from 55% of farmland in 2001 to 67% in 2015 (Norges bondelag 2016, 1-6; Flaten and Hisano 2001, 1-6), which reduces the lands used for vegetables and fruits by 5% and for grains by 28%. Thus, only dairy products, meat, and eggs are totally self-sufficient but for the plant production, self-sufficiency continues to decrease going from 55% in 2005 to 46% in 2013 (Governement.no 2015). Therefore, Norway relies too much on pasturage and not enough on the other food production which is currently threatening the food security and self-sufficiency of the country.

Another factor limiting food production in Norway is the cost. Due to the complex conditions, Norwegian agriculture relies mostly on government subsidies (Olsson et al 2011, 251-284). Moreover, even if the government knew the importance of these subsidies, they kept decreasing them, going from less than 3% in 2000 to ~1% in 2015 (Norges bondelag 2016, 1-6). Thus, due to the high cost of

Norwegian agriculture, a lot of farmers abandoned their jobs as 17,4% of farms shut down since 2010 (Sandbu 2021).

While Norway is somewhat self-sufficient in the production of some sorts of food, it imports a significant portion of other products. Looking at the development in import data from 2010 until 2021, the imported amount increased from 3.0 to 3.8 Megatons (20%). In monetary value, this translates into a leap from 27.7 Bn to 57.9 Bn NOK (+109%) (SSB 2021 "Utenrikshandel med varer").

A general trend is that we import a combination of products that are not easy to grow in Norway and handle transport relatively well, but also products that take up large areas to produce - and products that are sold cheaply in supermarkets. Available numbers from 2019 show that Norway produced 95% of its own meat and 100% of its milk and cream consumption. On the other end of the spectrum, the country only produces 6% of fruits and berries, 21% of our grains/flour, and 46% of vegetable consumption (Kildahl 2020). Not included in these numbers is that Norway imports a lot of the food for meat production. Based on statistics from SSB it is estimated that the imported amount is about 58% - and largely consists of feed concentrates (SSB 2021 "Fakta om jordbruk")

In 2021, Norway imported the most food value from the EU but the contributions from Russia and Brazil are also consequential. Over the last decade, Norwegian imports increases the most from less developed countries such as Russia (+525%), India (+900%), and Hungary (+1200%), while they have diminishing food imports from i.e., France and Germany. (SSB 2021, "Utenrikshandel med varer")

Outbreaks of food deceased are a huge factor when it comes to food security, with a lot of the food production limited to a certain area it will be at higher risk of spreading if a decrease breaks out (Clapp 2017, 88-96). War is another big reason for food insecurity, a small- or large-scale war can cause local or global food shortages in four different ways. Destruction of agriculture, hunger as a weapon of war, food control and conflict-induced displacement (Kemmerling et al 2022). Today we see examples of this in the Ukraine and Russian war, a lot of the agricultural land in Ukraine is destroyed and Russia is withholding export to certain parts of the world. Climate change is also a factor to consider when talking about risk and food security, the long transport chains will have a large CO2 emission.

Moreover, the majority of the Norwegian population, specifically 58% do not want imported food to increase in the future with an increase in demand for food products, while 35% say they would not care and only 7% of the population would be happy with more imported food (Uday et al. 2022).

Producing and consuming meat is a highly inefficient way to use land and resources. A solution towards gaining self-sufficiency is by changing how land areas are allocated. As discussed, there are multiple issues related to meat production. In order to supply feed, Norway imports e.g., grains and soya, which increases emissions and deforestation. By changing our diet towards plant-based consumption, we will not only reduce imports and emissions and improve the environment, but we will have more land available for crop production.

There are many different estimates for how area-intensive meat production is relative to plant-based diets. Different meats and crops have different efficiency as well. We have made a simplified assumption that crops are 20x more area efficient than meats, which is a conservative estimate (Ritchie 2021). Based on agriculture and land use statistics (SSB 2021 "Fakta om jordbruk") we have estimated that if we shift from using 33% to 78% of our agricultural land for plant-based food production, we would be entirely self-sufficient with food. This is a simplified analysis but an interesting result.

Conclusion

As we have already seen above, currently more food is imported than necessary. Due to globalization, importing products has been perceived as a good way of providing enough food for everyone and a wide variety of products. However, Norway has a well-developed agricultural land and produces high quality products.

We initially started analysing how much of the Norwegian farmland is lost to urban areas per year, and how much farmland we would need to reclaim in order to be self-sufficient with food. What we quickly learned was that the bigger issue is how we use the remaining farmland for. In our paper we have shown that Norway has a theoretical capacity for being entirely self-sufficient. While this might lead to us having a monotonous diet and possibly not be practically achievable. Starting to take steps in this direction is likely the way to go, as it is better from a health-, climate- and food security perspective.

In order to reach a state where we are more self-sufficient, we need to start changing food habits and reducing imports. A good place to start this process is through political regulations, attitude campaigns and adding economic incentives that increase demand further for locally produced plant products, and make it economically sustainable for the farmers.

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