Stockholm Resilience Centre

Insight Paper #3

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Nordic food system transformation series

Summary

This third Insight Paper of the Nordic food system transformation series draws on the multi-stakeholder dialogues discussed in Insight Paper #1 to identify key barriers related to food system transformation in the Nordic countries. Insight Paper #3 looks at what it will take to overcome the barriers currently slowing down transformation to sustainable food systems in the Nordic region.

Key insights

- While some barriers are unique to specific changes that might occur in our food systems, the following barriers seem to prevent a range of food system changes: individuals' resistance to change, existing food culture, current policies, costs of transition, vested interests, the geographical location of the Nordics and the perceived lack of research.
- Analysing barriers from a 'leverage point' perspective can help us identify ways to turn these barriers into opportunities for transformational change.
- Adopting a food systems approach is critical to understand the multiple drivers that create and reinforce these food system barriers.
- Collaboration between actors across all parts of the food system is needed to overcome barriers.

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Addressing the barriers to food system transformation in the Nordic countries

Why focus on barriers to change?

It can be tempting to focus conversations about food system transformation on our aspirations for future food systems, the enablers of change and the low-hanging fruits that can easily be addressed. Yet, unless the barriers to change are acknowledged, we won't be able to do the real work needed to transform food systems. *Why?*

First, food system transformation needs to reach beyond the quickest and easiest wins. Instead, systemic, wide-spread change is needed.[1] Yet there can be many factors standing in the way of this ambition. Barriers often represent the deeply embedded assumptions, values and beliefs held in place by powerful food systems actors and institutions. It might take significant time, energy or resources to rewire these assumptions, values and beliefs, but these inputs are necessary to achieve systemic transformation.

Second, barriers can also be a sign of competing interests among food system actors.[2] While competing interests are not barriers on their own, the failure to acknowledge and resolve these differences can become a crippling barrier. In fact, ignoring these competing interests risks a stalemate when it comes to working towards shared goals for food systems, such as ensuring food security or resilience. Alternatively, if unresolved conflict remains in a food system, the same challenges can resurface over and over again delaying, impeding or even erasing progress.[3]

Third, barriers can act as warning signals. They shed light on the lack of proper support mechanisms to ensure that everyone benefits from food system transformation. For example, small business associations may stand as a barrier to power consolidation in food industries, given that these small businesses fear a loss of market power in this transformation scenario. Farmer associations may block moves to change production systems in their region, motivated by the fear that farmers could lose income or their livelihoods in this transformation. Thus, barriers can signal where certain stakeholders are anticipated to become 'losers' of food system change and indicate where support systems are needed to ensure these stakeholders become 'winners' of transformation.

How were barriers to Nordic food system transformation identified?

Food system actors came together in all Nordic countries during a series of Nordic food system transformation dialogues. These dialogues are part of the project *Towards sustainable Nordic food systems*, a project contributing to the Generation 2030 program of the Nordic Council of Ministers. This project is described in more detail in Insight Paper #1. In short, these actors were asked to envision four future food system scenarios:

1. Reductions in red meat consumption
2. Increased consumption of nuts and legumes
3. Moving towards local food systems, and
4. Embracing global food systems

Dialogue participants were asked about the benefits and undesirable impacts of each scenario, as well as the barriers and uncertainties associated with each scenario. In this Insight Paper, the key barriers identified by dialogue participants are presented.

Picture 1. Dialogue participants filled out grids to indicate perceived benefits, undesirable impacts, barriers and uncertainties associated with each scenario.

Major barriers to Nordic food system transformation

This section outlines the barriers identified by dialogue participants to achieving the four food system scenarios described above. Figure 1 illustrates the barriers that were common to more than one scenario, and Table 1 (on page 8) outlines the barriers that were unique to one scenario.

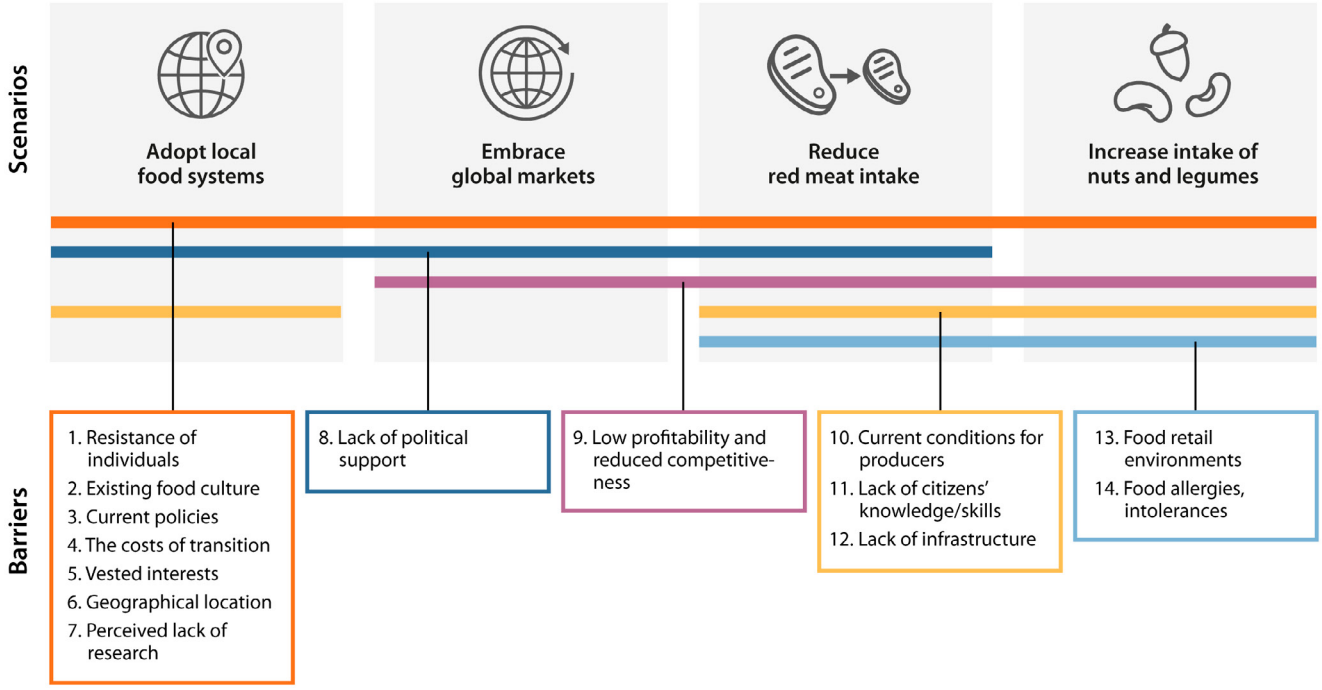

Figure 1. The four scenarios and the barriers identified by dialogue participants to achieving the scenarios. The orange bar represents barriers common to all scenarios (barriers 1–7). The dark blue, purple and yellow bars indicate barriers common to three of the four scenarios (barriers 8–12). The light blue bar illustrates barriers shared in the red meat and nuts/legumes scenarios (barriers 13–14). The numbers in the figure correspond to the barriers as numbered in the following section. Figure by Azote.

Common barriers across all four scenarios

1. Resistance of individuals

Individuals' current mindsets, preferences and reluctance to change were listed as barriers to change across all scenarios. In short, participants felt that individuals might actively resist changing their established food norms, dietary habits and taste preferences. For example, participants thought that those who enjoy the taste of red meat would be unwilling to reduce their meat consumption. Similarly, participants highlighted that eating nuts and legumes is not part of many individuals' dietary habits, nor is it an established food norm in the Nordics. Individuals might have the mindset that nuts are 'luxury foods' or snacks and that legumes are not very convenient to prepare due to long soaking or cooking times.

Participants noted that consumers would resist the shift to local food systems because their current preferences and dietary habits are shaped by the year-round availability of foods from all over the world. Participants felt that individuals would be unwilling to accept less food variety, particularly given the perception that people do not prefer local staple foods. Participants also felt that people would be unwilling to eat seasonally. **On the other hand, several participants noted that individuals would be unwilling to accept fully global food systems due to the mindset that locally produced food is better.**

2. Existing food culture

The reluctance of individuals to change their current food preferences, eating habits and mindsets, discussed above, is strongly linked with the existing food culture. In all four scenarios, the existing food culture was highlighted as a barrier, but it was a particularly prominent barrier for the red meat and nuts/legumes scenarios.

Participants emphasised that Nordic culture, traditions and identity are deeply rooted in red meat consumption. Contemporary food culture has given meat a 'high status', where meat is perceived as healthy and necessary for building muscle. This perception is reinforced by social influencers and trendy diets promoting protein and meat consumption. Participants also noted that meat-eating is associated with masculinity, and there is an attitude that men should eat meat.

Alongside these perceptions, participants noted that nuts and legumes are neither part of traditional Nordic diets or production systems[*] nor are they part of current food culture. Some noted that there is a social stigma against eating nuts and legumes, which are considered to be 'uncool'.

In the local scenario, some participants noted that a new food culture in the Nordics has developed that embraces food from other countries. Food culture would need to change if Nordic countries were to move to local food systems with less diverse food supplies due to reduced imports. **On the other hand, some participants noted that a change in food culture would be needed to accept global food systems.** These contradictory statements illustrate that food culture is multifaceted, even though some aspects of food culture might be more dominant than others. Any attempt to alter food culture will need to recognise the plurality of food cultures that exist across different segments of the population.

3. Current policies

Many participants noted that a range of current policies, outlined below, are locking us into 'business as usual' food systems, thus serving as a major barrier to achieving the four food system scenarios discussed.[6]

In the red meat and nuts/legumes scenarios, agricultural subsidies were listed as a barrier to change, including subsidies associated with the Common Agricultural Policy (CAP) of the European Union and Norwegian farming subsidies. Agricultural subsidies were seen as preventing a shift from meat production and/or towards nut and legume production (or a more diverse plant production), particularly subsidies supporting red meat production. Agricultural subsidies were also listed as a barrier to adopting local food systems. While not explicitly explained, one interpretation could be that agricultural subsidies favour some production systems over others, making it difficult to diversify local production enough to support nutritious diets.

Other policy barriers in the red meat or nuts/legumes scenarios included procurement policy; legislation preventing greater fish production; national guidelines prohibiting nuts from being served in schools; and pesticide residue and food safety regulations. Agricultural policies that support volume of production over sustainability were also mentioned as a barrier for the red meat scenario as well as the local scenario.

The *lack* of policies, such as the lack of land use policy or the lack of carbon quota systems, were also seen as keeping food production on a business-as-usual path. The lack of policies was particularly highlighted as a barrier to change in the global scenario. This includes a lack of policies to ensure sustainable food production, good nutrition, fair trade or ethical production. However, it should be noted that the lack of such policies is less of a barrier and more of a driver of unsustainable impacts.

Trade policies and current trade agreements were highlighted as a policy barrier for the local scenario. With current trade policies supporting free trade and single market rules (in the EU), participants expressed that it would be difficult to stop imports into the Nordic countries.

Finally, participants viewed current policy processes in general as slow and lacking in holistic thinking. Some participants wondered if regulations could transform fast enough.

4. The costs of transition

Across all four scenarios, participants noted the huge cost to change current food systems.[**] Participants noted that new investments in, for example, infrastructure, processing facilities, plant breeding, research and development, and credit schemes would be needed to build up legume and

[*] The perception that legumes are not part of traditional Nordic agricultural systems and diets is not reflected in historical records. For example, peas have long been cultivated in Sweden and represent an ingredient in traditional foods (e.g. pea flour in bread, porridge and pancakes) and meals (e.g. ärtsoppa).[4] Similarly, peas, faba beans and clovers have a long history in Finnish agriculture.[5]

[**] While transformation of food systems will likely have a large price tag, the cost of inaction will be enormous. In Norway, poor diets were estimated to come at a social cost of 154 billion NOK each year (16 billion EUR),[6] and a Danish analysis found that unhealthy diets come at a cost of 12 billion DKK (1.6 billion EUR).[7] The wide range of these estimates is likely due to differences in what was included as a cost. Note that these costs do not include the full scope of costs related to social, economic and environmental sustainability.

plant-based value chains. Similarly, investments would be needed for the expansion of Nordic production systems in the case of the local scenario.

Participants also noted the high costs of Nordic food production. These costs made it difficult to compete in a global market. However, high costs were also listed as a challenge for the local scenario, presumably because food prices would need to increase to cover high labour costs. Since Nordic shoppers are used to spending a very small percentage of their income to purchase food (11–14% of income),[8–12] any increase in food prices could lead to resistance.

5. Vested interests

Participants identified vested interests as another lock-in to business-as-usual food systems in the Nordics. While generally referred to by participants as those 'lobbying' for the preservation of current systems, a few specific groups were mentioned. Powerful meat and dairy industries were identified as groups with a vested interest in maintaining the current level of animal production and consumption. Similarly, participants noted that farmers who will face huge losses in personal investments if they change their production systems have vested interests in maintaining the status quo.

For the local scenario, large transnational food actors were listed as the main vested interest. Although participants did not name any specific companies or actors, these were described as those 'dominating the market', such as those with strong global brands and products. Participants noted that through consolidation of power, too few global actors dominate global food markets. It would be in these actors' interests to keep food systems as globalised as possible.

In the global scenario, farmers' associations were listed as a barrier. While this comment was not explicitly explained, it could illustrate a perception that Nordic farmers fare better in local markets.

6. Geographical location of the Nordics

The Northern location and cold climate of the Nordic countries were listed as barriers to achieving all of the scenarios. While discussing the red meat and nuts/legumes scenarios, participants highlighted that much of the land in the Nordics is best suited to animal production, feed production or biofuel production. Many noted that it would be difficult to grow nuts and legumes, or indeed a variety of plant-based proteins, in the Nordic climate.*** Participants also highlighted that for many types of production, particularly legume crops, yields can be low and uncertainty of a good harvest is high. This risk poses a barrier for both production of legumes and local food systems.

Participants mentioned short growing seasons and the lack of cultivatable area (particularly in Norway and Finland, but also in Sweden and Iceland), which would limit the ability to support local food systems. They also noted that many popular beverages and foods, such as coffee or some fruits, can't be produced in the Nordics,*** with the presumption that individuals would not accept food systems where these products are not available.

For the global scenario, the Nordic location and climate are harder to understand as barriers. However, given that participants mentioned the tough growing conditions and remote location of the Nordics, one interpretation of these comments could be that it is harder for the Nordics to be competitive on the global market, especially in terms of the unit price.

7. Perceived lack of research and know-how

Across all scenarios, participants highlighted knowledge and research gaps that increase uncertainty and make it harder to shift towards different food systems.**** To be clear, this barrier is not focused on the knowledge of individuals, but rather, the scientific evidence base and knowledge in various sectors.

Several participants noted the lack of honest, objective and neutral experts, particularly environmental experts. Some participants felt that there was not enough information about different production types to be able to compare the impacts on the environment or workers' rights, for example. Others mentioned that more research is needed to evaluate how nutritious local diets could be. Several participants noted that there was a lack of knowledge, research and development and technologies related to production of legumes and nuts. From a behavioural point of view, some participants noted that evidence on how to change social norms was lacking.

***While it is true that crops like oranges, quinoa and peanuts are not staples of Nordic production, Nordic countries have found innovative ways to introduce a wider variety of crops to their production systems. Iceland, for example, grows strawberries, tomatoes, cucumbers and bananas in greenhouses heated by geothermal energy.[13] The desirability of this type of production is a normative consideration and may come with other political challenges,[14] but the technological barriers may not be as high as perceived by dialogue participants.

****There will never be perfect knowledge about current and future food systems with which to make decisions. ***However, there is unequivocally enough evidence to start acting to transform our food systems.*** Thus, rather than the lack of research being the barrier, we (the research team) see the core barrier to be the ***perception*** that there is not enough evidence to act.

Shared barriers across three of the four scenarios

8. Lack of political support

Political support (or lack thereof) was a common theme across the local, global and red meat scenarios. This was expressed through the use of terms like political will, political consensus, and political courage.

For the local scenario, participants noted that it would be difficult to gain political consensus to move towards local systems. Further, there is currently a lack of political structures and incentives to encourage the transition to sustainable local food systems. One participant noted that there is a lack of political will to implement such a change.

The lack of political support and political will was named as a barrier to the global scenario. Participants noted that domestic political aspirations might act as a barrier to free trade. Also, participants perceived a lack of political will to showcase high-quality Nordic products on the global market.

For the red meat scenario, participants mentioned that it would be difficult to find a political consensus to support policies that reduce red meat consumption. Some participants noted that policymakers lack the political will to embrace change. Policymakers might also lack the courage to take drastic steps within the public sector.

9. Low profitability and reduced competitiveness

Participants suggested that Nordic producers and businesses would face reduced competitiveness under the global, red meat and nuts/legumes scenarios. Particularly in Finland, participants noted that their products would need to be branded so that they competed with other Nordic and non-Nordic products on something other than price. The higher price of products reflects, for example, better pay for labourers and greater environmental care.

Similarly, some participants noted that sustainable production of red meat in the Nordics would get 'outcompeted' by less sustainable production of these products elsewhere. Given that more sustainable production often comes with a higher price, the sustainable production of the Nordics could act as a barrier to global competitiveness.

Participants also noted that nut and legume production systems, for example, have poor profitability. The value chains are not there, and it would be difficult to make these 'new' production systems competitive and profitable.

10. Current conditions for producers

The conditions of the food production livelihoods were listed as a barrier to the local, red meat and nuts/legumes scenarios but not the global scenario. This perhaps reflects the assumption that producers have already adapted to global food systems.

There was a sense among many participants that food producers would resist change.[*****] This could be because of large 'personal investments' in their current production systems or deeply entrenched agricultural traditions. Further, because Nordic production has historically been rooted in certain production systems, such as livestock, participants felt that farmers lacked the knowledge, skill and 'know-how' to support other production types needed for local food systems or increased nut and legume consumption.

Many aspects of how the agricultural system is structured were also identified as barriers to change. For example, many participants underscored that farmers have very little support to shift their production to more sustainable practices or more sustainable foods. Participants often did not explain what they meant by 'support', but it likely implies everything from economic support to new training programs.

Participants felt that there were many economic barriers preventing farmers from changing their production systems. For the red meat scenario, participants noted that some producers would lose money if they shifted production away from livestock, giving them no economic incentive to change. Other participants felt that producers had too much existing debt, and changing production systems would be too expensive without external assistance.

The lack of risk management in farming was also highlighted. Participants perceived that growing certain crops was risky, as was small-scale production. Without a way to relieve producers of the risk associated with trying out new things, production systems would largely stay locked-in.

[*****] Given that food producers were under-represented at the dialogues, this perceived barrier needs to be critically examined through dialogue with Nordic food producers. In addition, there are many examples of Nordic farmers who have embraced change and geared their business towards sustainable production.

11. Lack of citizens' knowledge and skills

Participants felt that the average citizen in the Nordics was not equipped with the knowledge or skills that she/he needed to support sustainable food systems. This was listed as a barrier for the local, red meat and nuts/legumes scenarios but not the global scenario. This could be, again, because participants feel that individuals have already adjusted to the highly-globalised food system that exists.

A particularly significant barrier for the red meat and nuts/legumes scenarios was the lack of public education focusing on sustainable diets, contributing to low levels of nutrition literacy. Individuals would need to learn how to handle, prepare and cook with 'new' ingredients such as nuts and legumes. They would also need recipes for tasty and nutritious alternatives to meat-based meals. In the local scenario, participants also suggested that individuals lacked the education and cooking skills they needed to prepare local foods or to substitute globally-sourced foods for local foods.

Participants noted that health care professionals could be a critical means of increasing public knowledge of sustainable diets. Yet, because these professionals do not receive training in sustainable diets as part of their medical education, they are unable to provide advice to their patients.

12. Lack of infrastructure

A lack of infrastructure was the third barrier that applied to the local, red meat and nuts/legumes scenarios but not the global scenario. Again, this could be interpreted as recognition by dialogue participants of how globalised current food systems are.

The lack of local production and local processing infrastructure was identified as a main barrier for the local scenario. While there is significant existing infrastructure in the Nordics, these comments presumably referred to the infrastructure needed to increase – and potentially diversify – production needed to support local food systems.

For the red meat and nuts/legumes scenarios, the focus was on the lack of infrastructure for certain food products. For example, participants mentioned that fish and 'plant-based value chains are not ready.' Specifically, there was a lack of infrastructure for upscaling production and processing these foods. Participants highlighted that there are large existing investments in animal production, which would make it difficult to shift to more plant-based production systems.

Barriers shared across the red meat and nuts/legumes scenarios

13. Food retail environments

Participants felt that the widespread availability and accessibility of meat and the limited availability and accessibility of nuts and legumes would make it difficult for consumers to shift their diets. A geographical dimension to access and availability was also noted, with one participant describing that plant-based products and meals are more available in big cities than in countrysides.

The pricing, marketing and positioning of foods in retail were also listed as barriers to shifting diets. Many felt that nuts in particular were very expensive. Also, the marketing strategies and positioning of foods in stores do not encourage increased consumption of nuts and legumes. At the same time, participants felt that less marketing of red meat would be needed to reduce red meat consumption.

14. Food allergies and intolerances

Participants noted that allergies to 'new proteins' (unspecified) might prevent people from limiting their red meat consumption. Others noted that people with allergies to soy, peanuts and nuts would have a difficult time following a recommendation to increase nut and legume consumption.

Participants also noted that some people will have intolerances to nuts or legumes. Additionally, legumes are hard for some people to digest, and gastrointestinal issues would serve as a barrier to increase legume consumption.

Barriers specific to each scenario

There were several additional barriers that participants identified as unique to only one of the scenarios, summarised in Table 1. There is some overlap between the barriers listed above and the barriers in Table 1. This indicates how interconnected these barriers are, and the end of this Insight Paper presents ways to address linked barriers.

Table 1. Barriers identified by stakeholders that are unique to one of the scenarios.

Scenario	Barriers identified	Description of barrier
 *Reduce red meat consumption*	*Lack of systems thinking*	Listed as an environmental barrier. No elaboration provided but could signal that certain stakeholders are focused on specific goals, such as increasing profits from red meat sales and export, without seeing other impacts, such as negative impacts on the environment.
	Risk of nutritional deficiencies	Certain groups – particularly young children, young women and the elderly – could become deficient in iron if meat consumption was limited.
 *Increase nuts and legumes intake*	*Insufficient demand*	It would not be economically profitable for producers to establish a new production system for legumes given the lack of demand.
 *Local food systems*	*Dominant economic ideology*	How do we 'jump off the moving train' of the current economic system that relies so heavily on global trade? Global markets are more attractive than local markets for many producers.
	Lack of workforce	There are not enough farmers and agricultural workers - particularly young farmers and labourers – to support local food systems.
	Low availability of locally produced foods	Presumably, this refers to the lack of locally produced foods on the market. However, the Nordics import about 40% of their overall food supply, meaning that the majority of foods on the market are locally produced.
	Lack of variety in diets	Limited varieties of crops can be produced in the Nordics, leading to low variability in diets. Consumers might not accept a more limited range of foods to choose from than they already have today.
	Lack of land and other resources	This was highlighted in Norway where there is relatively limited cultivatable land area. This was also an issue highlighted in Iceland and Finland, where agriculture relies on imported inputs such as fertilisers, feeds, energy and other agricultural inputs.
 *Global food system*	*Complexity of cross-country collaboration*	Participants noted that 'it is more complex to make change when so many people and cultures are involved.' Not all countries have the same regulations (e.g. food regulations, trade, food standards).
	Growing wariness of globalisation	Awareness of global challenges and climate change can limit interest in globalised food systems.
	Nationalism	The rise of nationalistic measures could clash with the goal of global food systems.
	Lack of consumer trust	There was a perceived lack of trust in global food systems and food produced globally.
	Shortage/decline of natural resources	Many of the world's natural resources are currently in decline and becoming increasingly scarce on the global scale.
	Environmental limits, climate change	Participants noted that 'the planet cannot sustain the current system' and 'the climate will collapse' with global food systems. To note, these barriers are more like general challenges for our food system, regardless of its local to global scale.

Researchers' reflection

It is important to keep in mind that the barriers listed above reflect stakeholder views and assumptions, some of which do not align with the evidence base or with what is observed in practice. This misalignment is to be expected, given that dialogue participants were often experienced with one part of the food system yet were asked to comment on barriers to change across the entire food system. Several footnotes were included to illustrate clear examples of such incorrect perceptions. For example, participants had the incorrect perception that legumes do not grow in the Nordics, or that there is not enough evidence to act.

Given this, it is important to critically analyse these barriers identified by stakeholders to see if they truly do present a roadblock to change, or whether they represent incorrect assumptions. Such an analysis could reveal that fewer barriers exist than are currently perceived.

Where to start?

It can be overwhelming to see this long list of barriers and think: *There is too much in our way – we'll never achieve transformation!* After the dialogues were completed, the research team identified two initial steps can make the task of dismantling barriers more manageable.

First, the barriers can be narrowed by only focusing on those found to block progress toward several food system changes. In other words, the 14 barriers presented in Figure 1 now become the focus of analysis. This can be a useful step since a combination of changes will likely be needed to transform to sustainable food systems, and these 14 barriers represented roadblocks to a range of changes.

Second, the barriers can be reframed into leverage points – or places in a system where intervention can result in changes to that system[15] – and prioritise those with the most leverage for systemic, transformative change. The potential of leverage points to effect systems change can be scored on a continuum. On one end are those interventions – termed 'shallow' leverage points – that are relatively easy to implement yet have limited potential for transformative change.[15] This could be an intervention such as creating an infrastructure for centralised, harmonised database for food system information. For example, digital infrastructure like the Food Systems Dashboard[16] could be expanded and adapted for detailed data collected at the Nordic level. At the other end of the continuum are those interventions – termed 'deep' leverage points – that require more time, resources and effort, but have the potential to unlock transformative change (Figure 2 next page).[15] An example would be adopting a mindset where sustainable diets are a public right. In between on the continuum, there are what are referred to here as 'promising' leverage points. These make important steps in changing the fundamental functioning of food systems by changing the design of a system or information flows. One example could be designing food systems in a more circular way.

Since the Nordics have already begun tackling many of the 'low-hanging fruits' – the shallow leverage points – this Insight Paper focuses on deep and promising leverage points that can lead to transformational change. From here, the list of 14 barriers identified in Step 1 can be narrowed even further to identify seven critical leverage points.

Deep leverage points: Goals, mindsets and paradigms

Deep leverage points are powerful because they target changes to the goals of the system, the mindsets of individuals who shape the system, and the paradigms that guide decision-making about the system.[15] Several barriers discussed in the dialogues identified different goals, mindsets, values and paradigms as blockages to systems change. Below, these barriers have been reframed as deep leverage points for changing Nordic food systems.

Securing political support will require that the mindsets and goals of policy-makers change. Demonstrating political will and leadership are key aspects of political support. Strong thought leadership is also key to empower others to associate change with opportunity rather than risk.

Changing food culture will mean creating a new 'cultural paradigm' that steers our eating habits in a more sustainable direction. This also includes involving a diverse set of actors to co-create guiding principles (not dogmas) that lay the foundation of this new paradigm.

Managing vested interests will start from the recognition that all actors have interests and goals as well as differing levels of power and influence over food system change. Conflicting interests need to be brought to light and resolved.

Changing individuals' mindsets will require us to find new ways to change individuals' preferences, beliefs, values and lifestyle choices related to food.

Promising leverage points: System design and information flows

While unlocking deep leverage points would be powerful in affecting change, there are other leverage points – which are referred to here as promising leverage points – that hold slightly less, but still significant transformative potential. **Promising leverage points target the design of a system and the information flows within that system.** In the Nordics, the following examples illustrate promising leverage points:

Increasing individual knowledge and cooking skills about sustainable diets can be achieved by improving credible information flows through many channels, including formal education, higher education of health care professionals, advertising and public campaigns.

Improving food environments – the physical, social, economic and cultural spaces that shape our food-related behaviour – can be a way to significantly change the design of the food system and the influence the food system has on our individual choices. This includes food labelling, marketing and the affordability and accessibility of food.

Creating ambitious policies that support sustainable food futures is another way to significantly shape the design and purpose of a food system. This includes creating safe spaces where new approaches can be tried and tested.

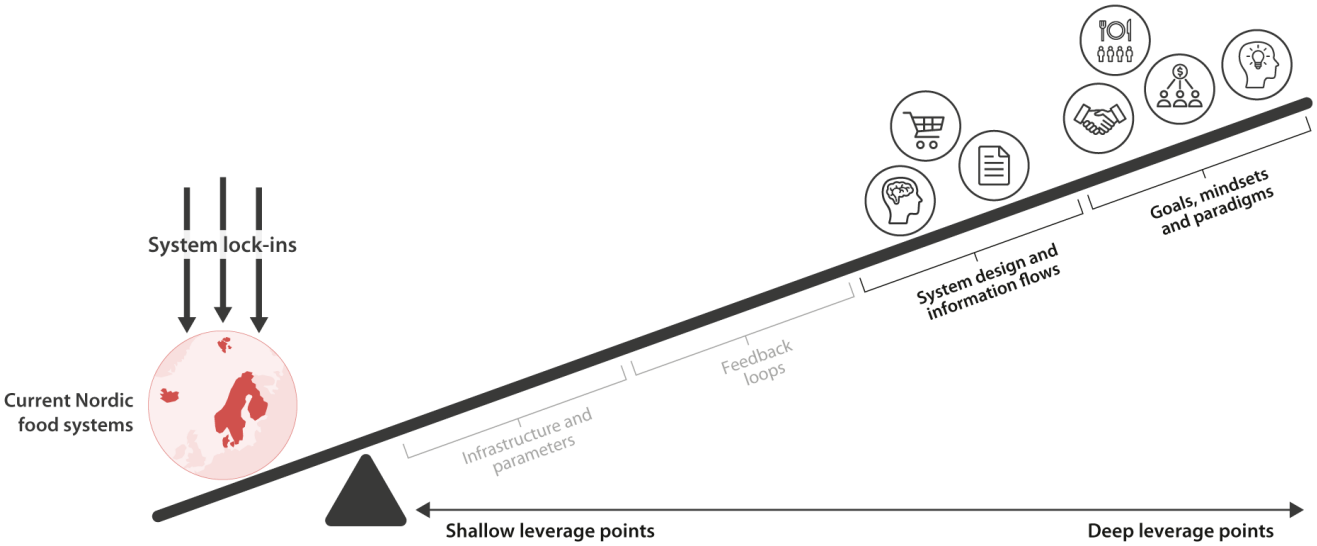

Figure 2. Activating deep leverage points (changing goals, mindsets, and paradigms) can help overcome system lock-ins and transform current food systems into desired food systems. Yet there are also promising leverage points (changing system design and information flows) that can move us closer to sustainable transformations. Other shallow leverage points (changing the infrastructure, parameters or feedback loops of a system) are not discussed here. Figure adapted from the leverage point approach literature.[15] Figure by Azote.

Working together to activate leverage points

Looking at the seven leverage points discussed above, it is clear that there is no simple way to activate each leverage point. For example, to change food culture, several factors within the food system might need to change, such as guidance from the public sector in setting new norms related to food; involvement of chefs and other food influencers to bring the concepts of sustainability onto a plate in a tasty, attractive way; and work from food business and retailers to produce and stock new types of ingredients, foods and meals.

Adopting a food systems approach – one that looks at the food system as a whole and appreciates the linkages between and feedbacks among parts of the system – will be critical. Only with systems thinking can we understand the multiple drivers that create and reinforce food system barriers.

One way to encourage systems thinking is through collaboration of actors across the food system. Working together will allow actors to get the most transformative potential out of each leverage point. Below (Table 2), ten collaborations are proposed that can help activate each leverage point. These collaboration ideas were developed after the dialogues by the research team. It is important to

note that while these collaboration ideas are evidence-based, the effectiveness of each collaboration will only be known if societies have the courage to test them out. Crucial to this experimentation is the willingness to learn from successes as well as from failures. This is not a one-time process. Support for an iterative, active learning process needs to be in place.

While the collaborations presented below use a single leverage point as an entry point for change, the collaborations end up activating multiple leverage points. For example, by working to change current food environments, collaborators would also likely help to create policies that support sustainable food futures, increase individuals' knowledge and change food culture. Thus, investing in one leverage point is likely to have positive ripple effects across other leverage points.

Table 2. Potential collaborations to activate deep and promising leverage points in Nordic food systems.

Leverage points and potential collaborations	Examples of core collaborators	Potential actions	Linkages to other leverage points
Secure political support			
Collaboration 1: Develop food systems goals and indicators	• All national and local government departments	Clear goals for sustainable food systems can be set by local and national governments. Formal goals will help prioritise and accelerate action on food system change, providing a clear direction of change and indicating the necessary level of ambition. Indicators should also be developed to assist in the monitoring and evaluation of action. A mechanism should be established to ensure that the best available scientific evidence is regularly used to inform food system goals and indicators.*	• Create ambitious policies • Improve food environments • Change food culture
Change food culture and **Individuals' mindsets**			
Collaboration 2: Co-develop a national and regional food identity	• Tourism authorities • Citizens • Food service professionals • Civil society organisations • City planners • National food authorities • National education authorities • Private sector (including small- and medium-scale enterprises, SMEs) • Governments	Over the past 17 years, food culture has rapidly evolved in the Nordic region, sparked by the New Nordic Food Movement. The concept of modern Nordic food continues to evolve. Domestic tourism authorities can adapt their strategies to promote sustainable food systems as destinations, experiences and as a component of a desirable lifestyle. Civil society, food service professionals, national authorities and city planners can include (where not already existent) food education and educational spaces that engage not only school-age children but also families and the community at large. The private sector and governments can provide innovation spaces to support entrepreneurs in filling gaps in the market as societal needs change. Citizens and governments can revisit and revise national and regional food-related manifestos, without becoming dogmatic.	• Increase individuals' knowledge • Improve food environments

(continued)

* Many research projects across the Nordics are aiming to develop food system goals. In Sweden, for example, the Mistra Food Futures program is developing food system targets and indicators, which could then be fed into the public sector process for setting national food system goals.

Leverage points and potential collaborations	Examples of core collaborators	Potential actions	Linkages to other leverage points
 **Manage vested interests**			
Collaboration 3: Establish inclusive, deliberative decision-making processes	• All food system actors and citizens • Leadership from governments • Particular focus on those typically marginalised in decision-making • Deliberative methods experts	The Nordics can build on their heritage of collaborative decision-making to ensure that a range of food system actors and citizens – not just those with disproportionate power in food systems – are part of inclusive, deliberative decision-making processes. Policymakers need to take a leading role in convening and managing conflicts of interest.	• Change individuals' mindsets • Secure political support
 **Increase individuals' knowledge**			
Collaboration 4: Arm health professionals with knowledge on sustainable diets	• National agencies for higher education • Higher education institutes • Ministry of education • Professional associations • National food authorities • Ministries of health and environment • Researchers	Integrating sustainable diets into the education of health care professionals can enable health care workers to serve as critical information distributors to the public. To achieve this, national food authorities, researchers and agencies for higher education can work to develop a curriculum on sustainable diets. Professional health care organisations can support continued education.	• Change food culture • Change individuals' mindsets • Create ambitious policies
Collaboration 5: Integrate sustainable diets into school curriculum	• Schools • Teachers • School kitchen staff • National food authorities • Researchers • Ministry of education and national education boards • Municipalities	Education ministries could provide the mandate for sustainable diets to be integrated into school curricula. National food authorities, teachers and sustainability researchers could collaborate to develop school curricula on sustainable diets. National education boards and municipalities can work to ensure that teachers, school kitchen staff and school principals have the training and tools they need to execute the new curricula.	• Improve food environments • Change individuals' mindsets • Change food culture • Secure political support

(continued)

Leverage points and potential collaborations	Examples of core collaborators	Potential actions	Linkages to other leverage points
Improve food environments			
Collaboration 6: Make the sustainable choice the easiest choice in food retail environments*	• Food retailers • Food companies • Behavioural psychologists and economists • Advertising and marketing teams in retail • Entrepreneurs • Consumer organisations • Policymakers	Retailers, food companies, advertising and marketing teams and behavioural psychologists could work together to create and test interventions that change aspects of the food environment in retail. Retailers could share scanner data, loyalty card data and digital data (from online supermarkets) with researchers so that the effectiveness of those interventions can be assessed. Policymakers could provide incentives to retailers who make sustainable improvements.	• Change food culture • Create ambitious policies • Increase individuals' knowledge • Change individuals' mindsets • Secure political support
Create ambitious policies			
Collaboration 7: Develop regulatory policy on sustainable diets	• National food authorities • Policymakers • Procurement authorities • Municipalities • Advertising authorities	National food authorities could develop guidelines for sustainable diets, including clear boundaries for unsustainable food consumption. Instead of providing only 'guidance,' regulations could be created to ensure that all food marketing and advertising, procurement, and public meals align with these guidelines and are more integrated into local and national food environments. For more leverage, food retailers and businesses could be incentivised by the government to align a certain proportion of their offer/portfolio with the sustainable eating guidelines. Food reformulation and new product development, in turn, will adapt to regulatory policy.	• Secure political support • Improve food environments • Increase individuals' knowledge
Collaboration 8: Develop a 'food in all policies' approach	• All government departments • National authorities • Municipal decision-makers	To embed food systems thinking into the development and delivery of a range of policies,[18] this collaboration would aim to ensure that policies that are directly and indirectly related to food systems do not undermine each other, but rather work towards common goals. A cross-ministerial task force could be set up to highlight opportunities for greater coherence between policies.	• Secure political support

(continued)

* The *Cookbook for systems change – Nordic innovation strategies for sustainable food systems* identified the improvement of food retail environments as a prime candidate for a Nordic food system 'mission'. A mission is a bold and inspirational effort that draws on cross-sectoral and multi-actor actions to create tangible change.[17]

Leverage points and potential collaborations	Examples of core collaborators	Potential actions	Linkages to other leverage points
Collaboration 9: Sustainable public procurement*	• Procurement authorities • National food authorities • Suppliers • Public caterers • Producers • All venues with public meals • Behavioural psychologists and economists	Public meals represent a small proportion of all meals consumed in the Nordics (roughly 7%).[17] However, it is within the government's power to re-write public food procurement regulations so that sustainability is a key criterion. By doing so, they send a clear signal to markets and work to establish societal norms.[19] As a first step, national food authorities could establish sustainable eating guidelines that form the foundation of procurement guidelines. An increase in sustainable meals served in state canteens will require capacity building for kitchen staff and the implementation of choice architecture to encourage diners to opt for the best choice while at the same time retaining consumer sovereignty (the right to choose).	• Secure political support • Improve food environments • Change food culture
Collaboration 10: National finance strategies	• National financial institutions • Ministries • Stock exchanges • Food companies • Banks • Investors and investment funds • Ethics councils	Several financial strategies are possible.[20] Not all are undertaken by the government, but regulations can be put in place to initiate these strategies. First, financial institutions and ministries with responsibility for food system policy could create fiscal incentives to encourage more sustainable practices (e.g. in food production, sourcing, retail). Second, stock exchange listing rules can be rewritten to require disclosure of sustainability records, which allows investors and investment funds the opportunity to seek out more (or the most) sustainable companies. Finally, banks can integrate sustainability requirements into their loan covenants with food system actors. This can incentivise loan holders to improve their sustainability performance, rewarded with a lower interest rate on the loan, for example.	• Change individuals' mindsets • Manage vested interests • Secure political support

* To read more about the collaborative actions that could be taken to achieve sustainable public food procurement in the context of school food, check out the *Cookbook for systems change – Nordic innovation strategies for sustainable food systems*.[17]

Next steps

There will be some bumps on the road to achieving sustainable food systems. Yet this Insight Paper has highlighted that there are often opportunities hiding in some of our biggest challenges – but we will need to learn how to recognise them. For example, powerful leverage points can emerge by mapping out the biggest barriers to change. To exploit these leverage points, actors will need to work together in new ways to build resilience and become comfortable with complexity. Actors will also need to acknowledge that there are uncertainties regarding the best way to overcome barriers to change. Insight Paper #4 outlines some of these uncertainties and presents tools that can be used to move towards sustainable food systems in the face of uncertain futures.

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About this Series

The Stockholm Resilience Centre will release a multi-part series of Insight Papers related to Nordic food system transformation dialogues. Each Insight Paper focuses on a central theme or finding that emerged from the dialogues. All Insight Papers can be found on the Stockholm Resilience website: www.stockholmresilience.org.

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