Cookbook for systems change

– Nordic innovation strategies for sustainable food systems

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Contents

The cookbook in two minutes

We can and must work with the strategic innovation of food systems to solve some of our greatest societal challenges. This is the fundamental proposal of our book, Cookbook for systems change – Nordic innovation strategies for sustainable food systems. In essence, this cookbook of strategies is about the role that a strong public innovation system can play alongside the pathways towards sustainable food systems. We demonstrate this by laying out a method for deliberate food system transformation – a mission-based approach – that can support people, planet and society. While missions have received increasing attention in policy circles at national and EU levels, they are still rather loosely defined and there are very few examples of the implementation of mission-based approaches. Moving from intent to action has been slow as there is no existing playbook (or cookbook) to go by. This in turn means that mission-thinking is still often overlooked in new policy proposals.

This strategy cookbook will provide the ingredients – templates for developing interventions, guides for how to get started and examples of cross-cutting projects – that you can use to create your own recipes for change. To accomplish this, we offer a new, emergent way to work with complex and dynamic systems. The cookbook is intended primarily for national and regional innovation agencies, as the government has both a mandate and more authority than any other entity to lead the change needed to achieve sustainable food systems. However, because innovation ecosystems include a variety of different actors, this strategy cookbook also provides valuable insights into the roles that entrepreneurs and civil society and research organisations can play to cultivate change from the bottom-up. Drawing inspiration from a Nordic innovation alliance, this cookbook suggests that the Nordic countries' most important global contribution to achieving the Paris Agreement and the United Nations Sustainable Development Goals may not be a specific technology, business model or policy innovation. Rather, this contribution can come in the form of demonstrating how a strong public innovation ecosystem is the missing link to overcome the complex societal challenges defining our times.

Tasting Menu: A bite-sized overview of your journey through the cookbook

ACT I – Food: an essential ingredient for sustainable development

This chapter gives you the chance to explore some of the grand challenges that societies around the world, including the Nordics, are now facing. We will introduce you to entry points, the places where we can intervene to make strategic changes that can address grand challenges.

► Read more

ACT II – We are on a mission

In this chapter we show how to move from grand challenges to more concrete actions and interventions. With a long list of potential entry points and limited resources – how can you choose which entry points to pursue? We dig deeper into the "mission-based approach" to societal innovation, understanding how missions can help us zoom in on a challenge and set goals for food system transformation in particular contexts. This will provide you with a foundation to start designing your own mission.

► Read more

ACT III – Demonstrating transformation

This chapter gives you a taste of how missions are implemented on the ground. It describes how to orchestrate demonstrator experiments and the steps involved in designing and implementing them. The power of demonstrators stems from their ability to identify interdependencies and unlock synergies in the system. We walk you through the concept of a demonstrator using meals in schools in Oslo as an example, bringing you closer to what implementing a mission might look like in practice.

► Read more

ACT IV – Bringing the cookbook to life

This chapter describes how Acts I, II and III fit together, helping you pave the road to the future. After reading through this cookbook you are now ready to define grand challenges and entry points, develop a bold mission, plan demonstrators and start strategically orchestrating actions across networks of people and organisations. We can't wait to see what you come up with!

► Read more

Entering a radical change mindset

It is seven in the morning on 18 May 2030 in a Nordic capital city. Line Mwangi is lying awake in bed, excited about the day ahead. The aroma of her fresh mushroom coffee lingers in the air as her husband helps get their son Erik ready for school. They take some groceries that are about to go off and put them in his backpack so he can take them to school.

Line showers, dries her hair and slips on her blue seaweed-fibre dress and her favourite fish-leather shoes. On Erik's bike ride to school, he stops off at the garden plot so he can water the plants and check on their cricket farm. When he reaches the school entrance, he checks the hologram display to see what they will be making in food education class – locally raised snails with garlic, and red beet salad with Nordic hazelnuts, his favourite! He takes the groceries from his backpack and drops them off in the school kitchen.

Line walks to her office at the Ministry of Food Systems. Today, a delegation from the USA is visiting via photorealistic conference call to learn about how her government has brought an end to childhood obesity. Just as she and her colleagues have sat down in the conference room, a video message pops up on their screens. It's the prime minister, congratulating everyone once again for meeting all of the targets for the UN Sustainable Development Goals.

At lunchtime, Line scans her fingerprint in the canteen and finds her personalised meal ready for pick-up. Mushroom and barley risotto, North Atlantic seaweed salad and a side of sautéed arctic lupin – cooked just the ways she likes it! The canteen message board lights up and announces that her meal scores high in animal welfare, biodiversity protection and nutritional quality and low in greenhouse gas emissions and natural resource use. As she walks towards the lunchroom tables, she runs into her colleagues from the Choice Architecture taskforce. They have just finished reviewing the insights they have acquired from a decade of action on sustainable food delivery.

On her way home from work, Line receives two notifications. Her neighbourhood maritime co-operative has just finished harvesting mussels so she can collect her order, and at school her son has turned their surplus groceries into a side dish of roasted cauliflower that will go well with the mussels and horseradish cream. What a perfect treat for celebrating Nordic Sustainable Gastronomy Day!

Over dinner, Line's family makes plans for a weekend outing. They decide to take the high-speed electric train and visit the Nordic Flora and Fauna Agrobiodiversity Park.

As Line reads her youngest son a book before bed, he tells her that he wants to be a regenerative agriculture technologist when he grows up. She smiles, smooths his hair and kisses him goodnight.

Does this really have to be fiction? 2030 is just around the corner. Many of these solutions are already here. By integrating them and adopting them on a wide scale, we can achieve numerous global, regional and national targets to improve human and environmental health.

The thing is, we really do need an all-hands-on-deck approach if we want to thrive in the future. The history of human innovation shows us that we can turn things around dramatically when we put our minds to it. That doesn't mean it will be easy.

It's tempting to think of innovation as something radical and futuristic that has never been seen before. You can always find innovations that fit this description – like lab-grown meat and driverless delivery vehicles. But innovation doesn't have to be flashy and "out there". The term "innovation" means doing something differently and deliberately in order to achieve certain objectives.[1] When we combine the knowledge, capabilities and resources we already have in a new way to achieve something specific – that's innovation![2] And because innovation is contextual, what's already established in one place can be an innovation when it's introduced somewhere else. Implementing innovation and an innovative mindset can lead to anything from a single technical fix to a widespread change in behaviour.

To have a more desirable future, we have to actively choose to do some things differently. This is where the research and innovation agencies come in. In the Nordics, we're lucky to have multiple national agencies and two regional agencies that support research and innovation. While these agencies differ slightly in scope, they do have one mission in common – improving society by making it easier to do things differently. This increasingly means starting with a desirable societal outcome, and then working our way backwards in order to support the solutions with the greatest chance of achieving that outcome. Sometimes the most powerful innovations come from recombining already existing solutions into a new system that is more efficient and has a greater impact than the sum of its parts.

Throughout the pages of this cookbook of strategies, we will make the case for why one of the most important societal missions of our time is the transition to more sustainable food systems – and why a strong public innovation ecosystem is key to the timely occurrence of that transition.

Who is this cookbook for and what can it do for you?

This cookbook is intended primarily for national and regional innovation agencies, as the government has both a mandate and more authority than any other entity to lead the change needed to achieve sustainable food systems. However, because innovation ecosystems include a variety of different actors, this cookbook also provides valuable insights into the roles that entrepreneurs and civil society and research organisations can play to cultivate change from the bottom-up.

Throughout the pages of this cookbook, we will be setting out a method for deliberate food system transformation that can support people, planet and society. But we aren't just going to talk you through the reasons why food systems are such a powerful lever of change. The cookbook will provide you with ingredients – templates for developing interventions, guides for how to get started and examples of cross-cutting projects – that you can use to create your own recipe for change. And although we would love you to read this cookbook of strategies for change from cover to cover, time is not always on our side. With your precious time in mind, we've designed the cookbook so that you can choose the sections that best suit your needs.

This cookbook is also a call to action. While the method that we propose in this strategy cookbook has been used in a variety of smaller, more localised contexts in the Nordics, this is the first time it has been proposed at the pan-Nordic level. There is nothing stopping us from trying. And we will really need to try, because the challenges that we face – like the impact of climate change, inequality and poor health – affect us all. There is no way around it: we will need to work together.

We also need to add a few more garnishes before you dig in……

When talking about the Nordic region we're referring to Denmark, Finland, Iceland, Norway and Sweden, as well as the three autonomous territories connected to these states: the Faroe Islands, Greenland and Åland.

Because there are a few terms that we use a lot in this cookbook, we want to make sure that we are on the same page.

First, this cookbook is all about food *systems*. Perhaps you are not quite sure what a food system is, but we assure you that you know more than you think. A food system is an all-encompassing term for the people, policies, activities and inputs involved in growing food on the land and in our oceans; processing, marketing and distributing food to local and global markets; and preparing, eating and even wasting the food that is on our plates.[3] In other words, a food system represents the complex relationship between humans and nature that revolves around all things food. It's also worth noting that there are many overlapping food systems – a Helsinki food system is nested within a Finnish food system, which in turn is connected to global food systems! In this strategy cookbook, we focus mainly on Nordic food systems – the food systems of each Nordic country and the shared food system across the region.

Second, we will be focusing a lot on sustainability. We want to emphasise that sustainability goes way beyond a healthy planet. In fact, environmental sustainability is only one dimension of sustainability. There is also social sustainability, which includes human health, thriving communities and cities, and wellbeing; and economic sustainability, which extends from a strong economy at the level of the individual all the way to the economies that run

1. Koch, P. and Hauknes, J., 2005. *On innovation in the public sector – today and beyond.* Publin Report No. D20, Second revised edition.
2. Edler, J. and Fagerberg, J., 2017. Innovation policy: what, why, and how. *Oxford Review of Economic Policy*, *33*(1), pp. 2-23.

our countries. When we talk about "sustainable food", for example, we mean food that nourishes healthy people, a stable and healthy planet, and prosperous societies.

Third, you will read about the need to *transform* our food systems. But what does that really mean? Transformation involves fundamental changes to the way a system – such as a society, an ecosystem, or a food system – functions. When it comes to food, we are concerned with sustainable transformations, or putting food systems on a new trajectory towards sustainability. This means rewiring food systems so that they provide food security and nutrition for all populations, present and future, while supporting economic, social and environmental bases.[4] Then, to maintain that sustainable state, food systems also need to be resilient[5] – or able to withstand various shocks and disturbances, such as a pandemic or natural disaster, and still continue to develop in a sustainable way. Working with transformation also means that we will need to test new approaches, adapt to unexpected changes and act in a more emergent way.

It's easy to get carried away when thinking about transformation and imagine that every part of a food system needs to change. **While it's true that a system emerging from a transformation is fundamentally different from what it started out as, this doesn't mean we have to throw out everything.** There are good things that we want to keep about our current food systems – the social aspect of sharing a meal, for example, and a safe food supply. The point is that change will need to be widespread if we are to support our sustainability goals.

Now you're ready! Bon appetit!

3. HLPE, 2017. *Nutrition and food systems. A report by the High Level Panel of Experts on Food Security and Nutrition of the Committee on World Food Security*. Rome: High Level Panel of Experts
4. FAO, 2018. *Sustainable food systems: concept and framework*. Rome: Food and Agriculture Organization of the United Nations.
5. Tendall, D.M., et al., 2015. Food system resilience: defining the concept. *Global Food Security*, *6*, pp. 17-23. DOI: 10.1016/j.gfs.2015.08.001

Glossary

Get to know your ABCs:

Demonstrator: A method for planning and co-ordinating ("orchestrating") a portfolio of experiments, described at length in Act 3

Entry point: Indicates where to intervene in a food system, identifying places where strategic changes can help tackle grand challenges

Experiment: A low-cost, low-risk way of learning how a mission can be solved

Grand challenge: A complex, societal problem that is currently impeding sustainable development

Insight: A clear, deep, and sometimes sudden understanding of a complicated problem or situation.[6] Insights allow you to understand the system in a different way to what you may initially have thought

Innovation: Doing something differently and deliberately in order to achieve certain objectives

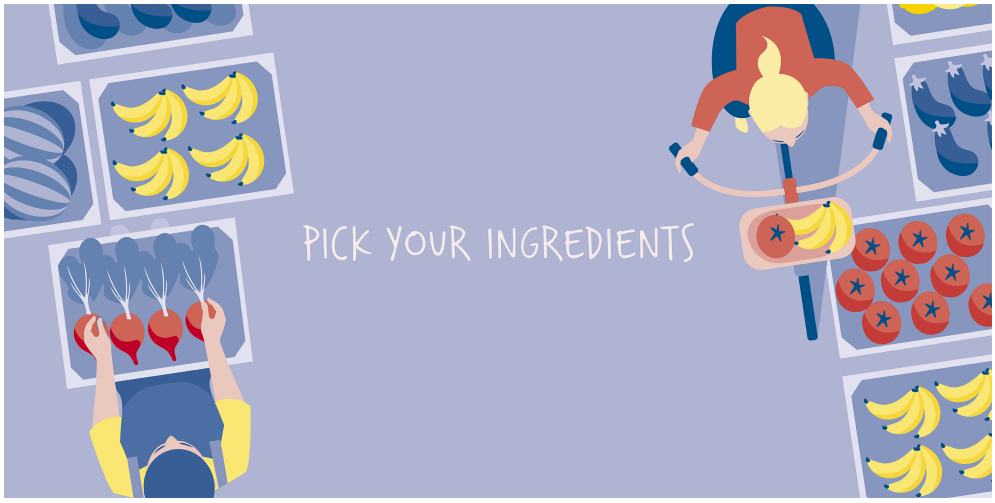
Mission approach: A way to direct multi-stakeholder innovation towards a common understanding of how best to solve our urgent grand challenges

Mission: Missions identify opportunities to address grand challenges, propose innovations that can help overcome these challenges, and outline an approach to testing and co-ordinating these innovations

Portfolio approach: Selecting individual experiments according to both individual merit and their complementarity with other experiments (synergies and knowledge gaps)

6. https://dictionary.cambridge.org/dictionary/english/insight

ACT I – Food: an essential ingredient for sustainable development



The world is facing some pretty big challenges. Open a newspaper and you'll see stories about melting arctic ice, global pandemics and the extinction of plants and animals. We have a lot of work to do if we are going to leave our societies and our world in a state that is fit for future generations. We may not have easy answers or silver-bullet solutions for tackling these challenges, but we're hardly unaware of what to do. How is that? Because it is increasingly clear that we have an essential ingredient right before our eyes: food systems.

Food systems have been driving societal progress for millennia. The creation of agriculture led to a whole new way of life – a way of life that no longer relied on migration to secure food. This opened the door to permanent settlements – even cities! More recently, the 20th century's dominant priorities of increasing yields and food safety have allowed our food systems to perform incredible feats. Advances in farming have allowed producers to increase agricultural crop yields at jaw-dropping rates – to grow enough to feed billions of people. The explosion of the retail sector has made food more readily available and convenient for many here in the Nordics and around the world. And global supply chains that run like well-oiled machines allow exotic fruits, coffee and a wide range of foods to fill supermarket shelves all year round.

Some societal progress has come at a high cost. While 20th-century changes to food systems have brought gains in nutrition and new opportunities in agriculture, they have also posed new challenges to realising sustainable food futures. Supermarket shelves are increasingly occupied by highly processed, nutrient-poor foods that are intensively marketed as the cheap, convenient option – often at a cost to our health. The move from integrated crop and livestock farming systems to specialised, high-input meat and monocrop production in certain regions creates a disconnect in the nutrient cycle. A focus on just a few plant and animal species leads to the loss of

significant regional agrobiodiversity. Not to mention the impact on diets – over 40% of the calories consumed each day come from only three crops: rice, wheat and maize.[7] It's clear that food systems are not fully aligned with 21st-century priorities of environmental sustainability, human health and wellbeing, and equity.

- Stay in Act I if you want to explore some of the great challenges that societies around the world, including the Nordics, are now facing and learn how food systems can provide entry points for tackling these grand challenges.
- Skip to Act II if you want to hear more about how to link high-level challenges with more concrete formulations of what to do.
- And if you just want to dig into specific demonstrators, a way of showing how to tackle some of the major challenges in the food system, flip to Act III.

1.1 Grand challenges faced by world societies

Grand challenges are the complex societal problems currently in the way of sustainable development. If we do not address these challenges, we risk exacerbating inequality, damaging our ecosystems to the point of no return and reducing the number of years that we live in good health. Because these challenges are so highly interconnected, it can be difficult to break them down neatly into distinct challenge areas. Nevertheless, in Box 1, we outline five grand challenges that illustrate some of the main obstacles we need to overcome to achieve sustainable development.[8, 9]

Box 1. Examples of Grand Challenges

7. FAO. Once neglected, these traditional crops are our new rising stars. http://www.fao.org/fao-stories/article/en/c/1154584/
8. 8. United Nations. The Sustainable Development Goals. https://sdgs.un.org/
9. European Commission. Societal Challenges. https://ec.europa.eu/programmes/horizon2020/en/h2020-section/societal-challenges

The grand challenges of today seem to be mounting. These challenges are now so pervasive that it is hard to dismiss them as "someone else's problem". From the Nordic farmer who lost their crop to the extreme heat of 2018 to the families caring for loved ones suffering from cancer, diabetes or cardiovascular disease, and from the refugee seeking greater opportunity in the Nordics to the communities in Iceland and Norway mourning the loss of their mighty glaciers, these challenges resonate on a very personal level with many of us.

Urgent action is needed if we are to tackle these grand challenges and move towards a future where every individual can thrive. Fortunately, the global community has responded to these challenges by rallying behind an ambitious agenda in the form of 17 internationally agreed United Nations Sustainable Development Goals (SDGs)[10] (Figure 1). Ranging from the elimination of poverty to the forging of powerful partnerships, these interconnected goals spell out *what* we need to achieve so that we can have a better future for all.

That doesn't mean it will be easy. If we are to reach these ambitious goals, we need to understand the multiple drivers behind the grand challenges and work towards systemic change. And no one person can change an entire system. Reaching these goals will require us working together and doing their part to create better futures. Achieving these goals will require changes across all scales – from the local to the global, from government to citizen, and in structures and systems.

Figure 1. The 17 internationally agreed Sustainable Development Goals. sdgs.un.org/

10. United Nations. The Sustainable Development Goals. https://sdgs.un.org/

1.2 How food systems fuel societal challenges

You may be thinking, "Wait a minute! I thought this report was about food?" You weren't mistaken. While food may not be explicitly mentioned in any of the 17 SDG titles, dig a little deeper and you can see that our current food systems are undoubtedly contributing to the challenges behind the SDGs. In fact, UN Secretary-General António Guterres has declared that "transforming food systems is crucial for delivering all the Sustainable Development Goals."[11] Table 1 shows that food is a part of some of the grand challenges of today, highlighting how current food systems act as barriers to overcoming each challenge area, both globally and in the Nordic region.

Table 1. The linkages between food systems and global grand challenges

GRAND CHALLENGE	*FOOD SYSTEM CONTRIBUTION ON A GLOBAL SCALE*	*FOOD SYSTEM CONTRIBUTION ON A NORDIC SCALE*
Accelerating environmental degradation, climate change and biodiversity loss	Global food systems are the single largest driver of environmental decline.[12] On a global scale, food production disrupts nutrient flows and pollutes waterways, and its greenhouse gas emission levels are unsustainable. The sixth mass extinction is underway: human destruction of nature has caused a 68% drop in species population size since 1970. Food systems are a primary driver of biodiversity loss through unsustainable food production methods and habitat loss and fragmentation resulting from extending food production onto more land.[13]	Current Nordic food demand claims twice as much cropland around the world and results in two and a half times as much greenhouse gas emissions as what is considered sustainable when global food system targets are translated into the Nordic context.[14] Agriculture contributes a significant proportion of the greenhouse emissions in the Nordic countries, ranging from 13% of national emissions in Finland to 26% in Denmark.[15] Agricultural run-off is one of the main culprits of oxygen depletion (eutrophication) in the Baltic Sea, causing excessive algal growth and suffocating the species that live there.[16]
Unsustainable production and consumption patterns	Globally, about one third of all food produced is wasted.[17] Food waste is responsible for about 8% of all greenhouse gas emissions produced by humans.[18] Overconsumption of food puts unnecessary pressure on the environment by using additional resources and simultaneously contributes to a range of health issues.	Nordic populations waste roughly 3.5 million tonnes of food each year.[19] A Finnish study estimated that annual household food waste in Finland had as much climate impact as the annual carbon emissions from 100,000 cars.[20] Overconsumption of food, combined with low levels of physical activity, contributes to nearly half of Nordic adults and 1 in 7 children being overweight.[21]
	Malnutrition is a challenge for nearly all countries. Globally, about 1 in 9 individuals go to bed hungry or without proper nutrients, while 1 in 3 eat too much.[22]	Unhealthy diets are one of the leading risk factors for poor health across the Nordic region.[24]

11. United Nations. *Food Systems Summit 2021*. https://www.un.org/en/food-systems-summit

Persistent challenges securing good health and wellbeing for all	Poor diets claimed the lives of approximately 8 million people globally (14% of total deaths) in 2019.[23]	In 2019, poor diets were responsible for 36,000 deaths in the Nordic countries.[25] Approximately one third of deaths from cardiovascular disease in the Nordic countries were attributable to unhealthy diets in 2019.[26]
Societies where individuals and groups experience inequalities	Power imbalances in food systems are a major driver of dietary and nutrition inequities. One consequence is restricted access to nutritious, affordable food.[27]	Diet- and health-related inequalities exist across the Nordics and are related to income, level of education or region of residence, making it difficult for some to achieve a balanced, healthy diet.[28, 29]
Fragile livelihoods, poverty and insecure economies	80% of the world's poor live in rural areas and are highly dependent on agriculture.[30] Smallholders' livelihoods are increasingly threatened by climate change and natural disasters. The growing presence of food industries (e.g. retailers, privatised entities) has resulted in consolidation and the risk of marginalising small-scale producers in the market.[31, 32]	In 2017, 2.4% of the Nordic working population was employed in the agriculture, forestry and fisheries sectors.[33] These sectors find it difficult to recruit local workers – especially younger people – for agricultural jobs, due in part to the physical labour, low wages, low levels of profitability and long hours involved. In Sweden, approximately one third of the employees in the food service sector are employed on a temporary basis[34] and many food service workers earn salaries lower than the national average.[35] Migrant workers in the Nordics are a vital part of the agricultural workforce, yet these workers can face worse conditions or lower pay than local workers.[36]

Notes: 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36

12. Willett, W., et al., 2019. Food in the Anthropocene: the EAT–Lancet Commission on healthy diets from sustainable food systems. The Lancet, 393(10170), pp. 447-492.
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20. Silvennoinen, K., et al., 2015. Food waste volume and origin: Case studies in the Finnish food service sector. Waste Management, 46, pp. 140-145.
21. Wood, A. et al., 2019. Nordic food systems for improved health and sustainability.

1.2.1 Is food really the issue?

You may be asking yourself whether food is really what we should be focusing on in order to solve the grand challenges. Shouldn't we tackle the energy sector and reduce greenhouse gas emissions as much as possible? Shouldn't we seek to eliminate infectious diseases and invest in preventative care to make sure that everyone everywhere is healthy? And shouldn't we focus on creating jobs, not only to reduce the poverty rate but also to ensure that our economies thrive? The short answer is yes – action is needed on multiple fronts to tackle our grand challenges.

What makes food systems unique is that they are an entry point to many of these action fronts. Food systems require a lot of energy from the energy sector, poor nutrition can increase the risk of infectious disease, and agriculture accounts for nearly one third of global employment[37] (and that's not to mention the food and drink sector – the EU's largest manufacturing sector[38]). In other words, rewiring our food systems is a way of simultaneously progressing multiple aspects of a sustainable future. At the same time, we must remember that fixing our food systems isn't a silver bullet – it's a necessary, but in itself insufficient, area of action.

Perhaps you are convinced that global food systems need to change but believe that food systems in the Nordics are already putting us on a sustainable path. You have probably heard that Nordic food production is some of the most sustainable in the world. What may also come to mind is how the Nordics came up with some of the first national dietary guidelines to incorporate environmental sustainability. The region also has many food waste reduction initiatives as well as a number of other strengths, which are outlined in Box 2.

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https://www.stockholmresilience.org/research/research-news/2019-04-03-within-reach.html

22. 2020 Global Nutrition Report: Action on equity to end malnutrition. Bristol, UK: Development Initiatives.
23. Murray, C. J., et al., 2020. Global burden of 87 risk factors in 204 countries and territories, 1990–2019: a systematic analysis for the Global Burden of Disease Study 2019. The Lancet, 396(10258), pp. 1223-1249.
24. IHME, 2020. Country profiles. http://www.healthdata.org/results/country-profiles
25. Murray, C. J., et al., 2020. Global burden of 87 risk factors in 204 countries and territories, 1990–2019: a systematic analysis for the Global Burden of Disease Study 2019. The Lancet, 396(10258), pp. 1223-1249.
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36. Friberg, J. H., and Eldring, L., 2013. Labour migrants from Central and Eastern Europe in the Nordic countries. Copenhagen: Nordic Council of Ministers.
37. ILO, 2020. *Agriculture; plantations; other rural sectors*. https://www.ilo.org/global/industries-and-sectors/agriculture-plantations-other-rural-sectors/lang--en/index.htm
38. European Commission. *Food and drink industry*. https://ec.europa.eu/growth/sectors/food_en

Box 2. The strengths of Nordic food systems

Food production

Farmers have made progress in reducing nitrogen losses and increasing environmentally friendly production practices, with support from government subsidies and regulations and from farmers associations.[39, 40]

The Nordics have achieved a very low level of agricultural antibiotic use. In Norwegian salmon farming, antibiotic use has nearly been eliminated thanks to the development of vaccines.[41] This contributes to the strict animal health and welfare practices observed in the region.[42, 43]

There are programmes in place to promote and conserve the genetic diversity of animals and plants that are important to Nordic agriculture.[44]

The Nordic countries promote agricultural practices that use few or no chemicals. One study in Sweden found that the majority of the chemical footprint of food consumed in Sweden came from food grown outside of the country.[45]

Consumption

All national food authorities have established clear, food-based dietary guidelines based on the Nordic Nutrition Recommendations (NNR),[49] a joint effort by hundreds of scientists, officials and experts across the region to assess the evidence for healthy foods and diets. The next revision of the NNR – scheduled for release in 2022 – will embed environmental sustainability in its analysis.

The food-based dietary guidelines of Finland and Sweden already incorporate environmental sustainability considerations into their recommendations. In 2021, Denmark will be the next Nordic country to have sustainable food-based dietary guidelines.

A growing number of Nordic citizens are open to changing what they eat so as to be more sustainable. About 34% of respondents to a 2015 survey indicated that they planned to include more vegetarian food in their diet.[50, 51]

Food waste

In Denmark, food waste generated in apartments fell by 24% between 2011 and 2017.[46] In Norway, household and retail waste fell by 10% and 25% respectively between 2010 and 2016. The Swedish National Food Agency indicates that food waste is declining in Sweden as well.[47, 48]

Initiatives ranging from household interventions (like organic recycling programmes for food waste) to digital platforms (like the Too Good To Go and Karma food apps) have helped to reduce or reuse food waste.

Food security

Food insecurity – measured in terms of availability, access, utilisation and stability of the food supply – in the Nordic region is considered to be low.[52]

Total household expenditure on food is generally only 11%-13%[53, 54, 55, 56, 57] in contrast to an average of 19.4% in the neighbouring Baltic countries of Estonia, Latvia and Lithuania[58] or 56% in Nigeria.[59]

Note: [39] [40] [41] [42] [43] [44] [45] [46] [47] [48] [49] [50] [51] [52] [53] [54] [55] [56] [57] [58] [59]

Yes, the Nordics have many of the ingredients for a sustainable food system. But many challenges still remain, as shown in Table 1. And the world is changing rapidly. Achieving sustainable food systems in the Nordics will depend on the world making sustainable change, since Nordic consumption and production are linked to what happens elsewhere on the planet. Revised approaches, paradigms and mindsets are what we need to respond to our many complex and interwoven challenges. We now need to update our recipe for sustainable Nordic food systems in order to meet 21st century needs.

We are fortunate that we can change the ways in which we produce food so as to better support health, environmental wellbeing, and equitable jobs. We can grow food in a way that regenerates the Earth rather than destroys it. We could feed two billion people with the food that goes to waste today, which is more than twice the number of people who are going to bed hungry (around 690 million individuals).[60,61] A true cost approach to foods could incorporate negative environmental and social externalities

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57. Denmark – Eurostat, 2018. *How much are households spending on food?* https://ec.europa.eu/eurostat/web/products-eurostat-news/-/DDN-20181204-1?inheritRedirect=true%20
58. Eurostat, 2020. *Final consumption expenditure of households by consumption purpose*. https://appsso.eurostat.ec.europa.eu/nui/show.do?query=BOOKMARK_DS-423035_QID_7B5FFDBA_UID_-3F171EB0&layout=UNIT,L,X,0;GEO,L,Y,0;COICOP,L,Z,0;TIME,C,Z,1;INDICATORS,C,Z,2;&zSelection=DS-423035INDICATORS,OBS_FLAG;DS-423035TIME,2018;DS-423035COICOP,CP01;&rankName1=INDICATORS_1_2_-1_2&rankName2=COICOP_1_2_0_0&rankName3=TIME_1_0_1_0&rankName4=UNIT_1_2_0_0&rankName5=GEO_1_2_0_1&rStp=&cStp=&rDCh=&cDCh=&rDM=true&cDM=true&footnes=false&empty=false&wai=false&time_mode=ROLLING&time_most_recent=true&lang=EN&cfo=%23%23%23%2C%23%23%23.%23%23%23
59. World Economic Forum, 2016. *Which countries spend the most on food? This map will show you*. https://www.weforum.org/agenda/2016/12/this-map-shows-how-much-each-country-spends-on-food/
60. FAO, IFAD, UNICEF, WFP, and WHO, 2020. *The State of Food Security and Nutrition in the World (SOFI)*. http://www.fao.org/3/ca9692en/CA9692EN.pdf
61. FAO, 2013. *Monitoring food loss and waste essential to hunger fight*. http://www.fao.org/news/story/en/item/203149/icode/

into the food prices and thus support the more sustainable production and consumption of food – or at least improve the alignment between those who are polluting and those who are paying for that pollution.[62] Finally, by choosing to purchase and eat foods with a lower environmental impact, we get closer to meeting SDG12: Responsible Consumption and Production.

The choice is ours. Are we going to use food as a means of destroying the foundations of healthy lives and prosperous societies, or are we going to use it as an ingredient to support a sustainable future for all? We are lucky that we can change the way that we produce foods in order to support health, environmental wellbeing, and equitable jobs. We can start by finding entry points in the food system for tackling our grand challenges.

1.3 Food systems as entry points for tackling grand challenges

Entry points are places where we can intervene in a food system to make strategic changes that can help tackle the grand challenges. An entry point will identify where to start changing a food system. This intervention point may be a physical place, like a supply chain, a farm or a supermarket, but it may also identify a part of the food system that can change, such as a meal, a food culture or food waste streams. Yet entry points in themselves are not granular enough to constitute a plan, and they don't indicate how to go about changing the system. We'll soon get to that, or you can skip ahead to dive into the what (Act II) or the how (Act III) of food system transformation.

Food system entry points may vary from context to context, so it's important to do the work needed to identify the entry points for your specific food system. For example, in the Nordic context, do we focus on business solutions, citizen engagement, public policy, or a combination of all of these? Do we focus on changing what people consume (demand) or changing what we grow and how we grow it (supply)? Answering these questions requires that we understand a specific system – in this case a food system – in a particular context, and that we recognise the unique capacities of that context to affect systemic change.

There will be many entry points for solving our grand challenges, because the challenges are so multi-faceted. For example, ensuring sustainable meals for all may be one critical entry point for ensuring good health and wellbeing, but so is closing the income gap or providing universal health care. Remember, no single solution is going to "solve" a grand challenge.

Given the urgent need to act, we cannot afford to focus on one entry point at a time. This means it's not about choosing one entry point over another, or about finding the "perfect" entry point. It's about identifying the entry points that will have the most impact and understanding how to address them simultaneously and in a co-ordinated fashion.

1.3.1 Identifying food system entry points

Current scientific evidence can help us identify entry points in order to address the grand challenges. For example, shifting our diets, improving food production practices and reducing food waste are clear entry points for achieving better health and greater

62. FAO, 2013. *Monitoring food loss and waste essential to hunger fight.* http://www.fao.org/news/story/en/item/203149/icode/

environmental sustainability.[63] Similarly, there is strong evidence that food environments – which are all of those places where we make decisions about food, such as supermarkets – are critical to shaping our food choices.[64] But it's not just scientists who should identify entry points.

Everyone within a system has a unique perspective of how that system works, meaning they can provide different perspectives on how to tackle challenges. For example, businesses have a deep understanding of what drives demand, food producers have a keen understanding of production challenges and opportunities, and civil society groups have a deep understanding of how societal movements can lead to change. These same actors also understand the different economic forces that enable and limit the actions they can take.

Scientific evidence together with stakeholder knowledge can help us develop visual maps of the food system to help us better see common challenges and opportunities.[65] These maps may present a typical overview of a food system, or they may capture the dynamics of very specific food systems at the regional or local level.[66] These maps – particularly when they have been co-created with actors in a food system – can help us understand the connections between parts of the food system. This will allow us to better understand where our challenges lie and how we can address those challenges.[67] A good example of how mapping can be used comes from the Swedish innovation agency, Vinnova. To get a good overview of what change can happen in a national context, Vinnova brought diverse food system actors together to co-create a "systems map" of Sweden's food system.[68] These maps were created with the specific intent of identifying entry points, which Vinnova calls "angles". These entry points then served as the basis for choosing and developing a specific mission on food. Check out Picture 1 to see the co-created systems map. You can also skip to Acts II and III to read more about Vinnova's mission on food.

We would emphasise again how important it is to tailor your approach to determining entry points to the needs in your context. Vinnova is pioneering a systematic approach to selecting entry points.[69] They have applied this approach to food systems, and Box 3 outlines the diverse range of inputs they have used to identify key entry points into the Swedish food systems. In this report, our focus goes beyond Sweden to take in the entire Nordic region. The next section describes the sources analysed in this report in order to identify which entry points are most relevant in the Nordic food context.

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63. Willett, W., et al., 2019. Food in the Anthropocene: the EAT–*Lancet* Commission on healthy diets from sustainable food systems. *The Lancet*, *393*(10170), pp. 447-492.
64. Swinburn, B., et al., 2013. Monitoring and benchmarking government policies and actions to improve the healthiness of food environments: a proposed Government Healthy Food Environment Policy Index. *Obesity Reviews*, *14*, pp. 24-37.
65. https://www.nourishlife.org/pdf/Nourish_Food_System_Map_11x14.pdf
66. See an example here and at http://matdugnaden.no/
67. Vinnova, forthcoming. *Designing Missions Playbook*. https://www.vinnova.se/en/m/missions/
68. Vinnova, forthcoming. *Designing Missions Playbook*. https://www.vinnova.se/en/m/missions/
69. Vinnova, forthcoming. *Designing Missions Playbook*. https://www.vinnova.se/en/m/missions/

Box 3. How are entry points found? The Swedish innovation agency Vinnova used the following input when identifying entry points into Swedish food systems that can be used to tackle grand challenges:[70]

1. Sector analysis (roadmaps and research): existing analysis from food-related sectors may help frame or identify entry points.
2. Systems analysis: moving beyond siloed sector analysis, systems analysis looks across the various aspects or "ecosystems" within a food system, such as all things related to school meals.
3. Stakeholder meetings: meetings were held between Vinnova and several hundred food system actors, which contributed to a greater understanding of entry points.
4. Local field research: new place-based research can contribute to a greater understanding of entry points in a local context.
5. Stakeholder workshops: diverse stakeholders from the public, private and social sectors are brought together to co-create a systems map and identify key intervention points (entry points) in that system.

Picture 1
The systems maps created through a participatory process facilitated by Vinnova. The maps provide a macro view of the challenges and opportunities within Swedish food systems, while also highlighting important nuances that characterise the system. *Pictures used with permission from the Swedish innovation agency, Vinnova*

70. Vinnova, forthcoming. *Designing Missions Playbook*. https://www.vinnova.se/en/m/missions/

1.3.2 Nordic entry points

To date, there has been no large-scale effort to identify entry points of Nordic food systems. Yet even in the absence of such an effort, there is a range of existing sources that can be drawn on to start developing a picture of entry points. Table 2 describes several of these sources. While some of the sources relied on practitioner knowledge of food systems to identify entry points, others relied on assessments of scientific evidence. Some of these sources were designed explicitly to identify food system entry points (see Vinnova's process in Box 3, for example), while others were part of distinct projects designed to achieve different yet related goals. And finally, some of these sources focused on specific countries, while others focused on the Nordic region as a whole. By pooling insights from these separate processes involving a diversity of stakeholders, we can get an idea of where to start focusing our own energy in order to take action.

Table 2. The different sources that were drawn on to identify entry points for this cookbook

SOURCE OF ENTRY POINTS	*GEOGRAPHICAL REGION*	*WHO WAS INVOLVED? WHAT WAS THE FOCUS?*	*RESULTING ENTRY POINTS AND INSIGHTS*
Participatory process to prototype a mission-oriented innovation process in Sweden led by Vinnova's food team[71]	**Sweden**	Front-line actors from the public, private and civic sectors were asked to develop and refine different entry points and missions for transforming Swedish food systems.	Entry points for change in Swedish food systems: 1. School food 2. New food 3. Healthy resilient farming 4. Traceable trusted produce 5. Modern Swedish food culture 6. Circular zero-waste system 7. Peri-urban and urban farming
Nordic food system transformation dialogues led by the Stockholm Resilience Centre on behalf of the Nordic Council of Ministers[72]	**Nordic**	Across the Nordics, 115 food system actors participated in dialogue to explore different food scenarios, resulting in eight opportunities for Nordic collaboration on food system challenges. These opportunities are entry points for solving grand challenges. Actors represented the public and private sectors, civil society, research, producer organisations, consumers, youth and funders.	Eight opportunities for Nordic collaboration on food: 1. Define sustainable Nordic diet 2. Expedite a social movement for sustainable food 3. Assess the trade-offs and benefits of different production systems 4. Boost the food and agricultural workforce 5. Ensure thriving countryside and urban-rural connections 6. Build an equitable and just transformation 7. Address the outsourced impact of food systems 8. Rethink a competitive export market
Food Dugnad (Matdugnaden), co-led by the Norwegian Institute of Public Health and EAT[73]	**Norway**	Over 100 stakeholders from more than 70 different organisations across Norway were consulted in 35 interviews and 4 workshops, yielding several entry points and solutions and the first comprehensive gigamap of a national food system.	Entry points for change in Norwegian food systems: 1. Co-create sustainable food products, production and services 2. Use public institutions as drivers of radical innovation 3. Make sustainable food the default option 4. Highlight short- and long-term benefits of sustainable food 5. Focus on food for children and youth 6. Promote healthy competition in retail 7. Make it easy to do the right thing 8. Optimise the use of agricultural land 9. Influence demand through public meals
Deep Demonstration, co-led by EAT and the Nordic Food Policy Lab	**Norway, Nordic**	Dialogue with the leadership of national agricultural co-ops and unions and with national civic organisations yielded a set of common principles for defining what "sustainability" means in the context of the	Four principles of sustainable food systems in Norway: 1. National dietary guidelines define healthy food 2. Every country has a responsibility to optimise areas for food production 3. A sustainable food system takes multiple considerations into account without

		Norwegian food system. These dialogues were complemented by multiple interviews and workshops at the local (Oslo) to regional (Nordic Council of Ministers) levels.	sacrificing one at the expense of another 4. Farmers, fisherfolk and chefs must be rewarded for the full societal benefits they provide
Review of the scientific evidence on food systems and sustainability in the Nordics, led by the authors of this cookbook	**Denmark, Finland, Iceland, Norway and Sweden**	A brief overview of the research was conducted to better understand how global challenges were linked to Nordic food systems. This is a small-scale research approach for identifying entry points that could be greatly expanded upon with more resources and researchers.	See Table 1 in Act I for a taste of this analysis.

Note: [71] [72]

Looking at the scientific evidence and practitioner knowledge laid out in Table 2, **eight broad entry points central to the Nordic context start to emerge. These are outlined below.** These entry points are at times overlapping. For example, food culture (entry point #3) influences and is influenced by our food environments (entry point #1). These overlaps reflect the interconnected nature of the food system components and show that we need to take a systemic approach to transforming our food systems.

1. Food environments

Food environments are the physical, digital and social environments where we make decisions about food.[73] [74] These environments are peppered with policy, economic and sociocultural signals that influence us to choose certain foods. Examples of these signals include advertising and price promotions in a (physical or online) grocery store and the Nordic norms around foraging for food. Food environments are a powerful lever for change because they influence what we eat, and we know that current diets are a major driver behind several grand challenges.

2. Circularity

Circularity means reducing waste in the food system. Reducing food waste is a big part of circularity, but utilising "by-products" that would otherwise get thrown away when food is produced or processed and nutrient recycling (of our own human waste and animal waste, for example) are also key to circularity.[75]

3. Food culture and identity

Food culture is a rich stew of preferences, norms and practices that influence how

71. Vinnova, forthcoming. *Designing Missions Playbook.* https://www.vinnova.se/en/m/missions/
72. Wood A., et al., 2020. *Insight paper #2 of the Nordic food system transformation series: Eight opportunities for Nordic collaboration on food system challenges.* Stockholm Resilience Centre: Stockholm.
73. Swinburn, B., et al., 2013. Monitoring and benchmarking government policies and actions to improve the healthiness of food environments: a proposed Government Healthy Food Environment Policy Index. *Obesity Reviews*, *14*, pp. 24-37.
74. Downs, S.M., et al., 2020. Food environment typology: Advancing an expanded definition, framework, and methodological approach for improved characterization of wild, cultivated, and built food environments toward sustainable diets. *Foods*, *9*(4), p. 532.
75. Jurgilevich, A., et al., 2016. Transition towards circular economy in the food system. *Sustainability*, *8*(1), p. 69.

we produce, consume and waste food. Creating a food culture that celebrates sustainable, modern Nordic food can be key to unlocking changes in different parts of the supply chain that support short- and long-term benefits to people, our planet and our society.

4. Diet and meals

The science is clear that we must change our diet for many sustainability reasons. Changing the meals on our plates is a very tangible entry point – we all eat! Yet shifting to sustainable meals can seem daunting since there are so many parts of the food system between farm and fork that impact the meals we choose. We can start exploring this entry point by mapping the different places where we consume meals – at home, in school, in restaurants, even on the go! – and then identifying who has the power to influence what meals are served in those settings.

5. Food supply chains

Traceability in supply chains generally focuses on ensuring food safety rather than sustainability. There are, of course, exceptions, as illustrated by certification schemes that ensure ethically produced or fairly traded food products.[76] Improved transparency and traceability in supply chains would make it easier for us to see exactly where our outsourced impact is in terms of natural resource use and who in the supply chain has the power to reduce this impact.

6. Sustainable, resilient food production

There are particular opportunities with regard to new, or indeed old, locations for food production, and new technologies can enable more sustainable production methods. However, defining "sustainable production" isn't easy, and actions to explore this entry point need to balance the different dimensions of social, environmental, and economic sustainability and consider the trade-offs across these dimensions. For example, land use optimised for a producer might not be optimal for the environment.

7. Food producers

Food producers are the stewards of our lands and seas and thus they have great promise as an entry point for tackling several grand challenges. Yet there is a need for support to equip these producers with the tools to seize the opportunities offered by a Nordic food systems transformation. Food production livelihoods need to be attractive, sustainable and respected.

8. Cities

Cities are home to most of the world's population, including the Nordic population. This means that municipal governments and urban places are uniquely positioned to transform the fight against non-communicable diseases such as obesity and diabetes. Although cities occupy only 2% of the world's total land, they are significant entry points because they account for over 80% of the global economy (in gross domestic product), 70% of greenhouse gas emissions, and 70% of global waste.[77]

1.3.3 Prioritising food system entry points

With a long list of entry points and limited resources, how do you choose which entry points to pursue? There is no perfect recipe for prioritisation because it's not always

76. Marine Stewardship Council. *What does the blue MSC label mean?* https://www.msc.org/what-we-are-doing/our-approach/what-does-the-blue-msc-label-mean; https://rspo.org/certification
77. World Bank, 2020. *Urban Development.* https://www.worldbank.org/en/topic/urbandevelopment

clear how to weigh the different entry points.

The scientific evidence can help prioritise actions to some extent. For example, if the goal is to reduce greenhouse gas emissions globally, then the scientific evidence would point to changing what we produce and reducing land use change as actions with more leverage than, say, reducing emissions associated with food transport (which accounts for only about 6% of food system emissions[78]). However, other attempts at prioritisation aren't as straightforward. How do we weigh the importance of working with cities against the need to change food retail environments, both of which would contribute to healthier populations?

There will inevitably be value-based judgments about which entry point(s) will be most effective. Ordinarily, we rely on our democratic institutions to make judgements on which actions to pursue. When the nature of the problem is too complex and uncertain, however, democratic deliberation isn't enough. We also need to experiment, to find out what types of interventions may actually work, as part of the decision-making process. Also, a broad range of stakeholders need to agree to work towards a common goal. This involves carefully balancing facts, interests, resources and potential impact to bring about a collective judgment about what to do. Finally, we can also search for those windows of opportunity when the timing is right to make a big change. For example, these windows may open when events – such as the current pandemic – focus our attention on a particular problem. Box 4 gives insights into how Vinnova, Sweden's innovation agency, together with Livsmedelsverket, the national food agency, prioritised which entry points to pursue in Sweden.

Box 4. Vinnova's list of what to consider when prioritising your entry points[79]

- Examples of emerging activity within Nordic society that could be directed towards future strategic Nordic priorities and ambitions, locally and globally
- An issue or topic that generates momentum, attracts attention, and leads to transformative societal outcomes
- A "coalition of the willing" or, in other words, of those who are also interested in this pull
- Scalable activities that have the potential to enable systemic change and which may require a "push" in the form of infrastructural support or policy or regulatory refinement
- Activities that will connect with society, broadly speaking, as well as with private, public and civil society and with the political process, in order to build new consensus

1.4 From entry points to missions

It's important to remember that an entry point doesn't identify solutions. Entry points identify the core areas of change that are needed. So, if you are surprised to see

78. Our World in Data. *Food production is responsible for one-quarter of the world's greenhouse gas emissions.* https://ourworldindata.org/food-ghg-emissions
79. Vinnova, forthcoming. *Designing Missions Playbook.* https://www.vinnova.se/en/m/missions/

certain things missing from our list of Nordic food system entry points – such as "using public education to provide sustainable meals" or "changing procurement policy to encourage sustainable food production" – then you are simply one step ahead!

Before moving on, take a moment to reflect on the potential entry points that make sense in your own context. It's important to pause and get feedback from the actors you deal with in the food system. Keep in mind, however, that entry points don't have to be perfect. They can be refined over time as we learn more about what works and what doesn't. So, while we could spend years identifying every entry point and debating which ones are "better" than others, we simply don't have time to continuously debate the best way to approach a challenge. If we want to solve our grand challenges, we need to act.

After you have determined your entry points, it's time to move to the next step: missions. In Act II, you will find out more about what a mission can help you achieve and how to implement one. In Act III, you will take the process one step further and learn more about demonstrators: a way of building local innovation ecosystems to demonstrate exactly how missions are achievable.

ACT II – We're on a mission

If you're just joining us, you may be wondering "a mission for what"? In short, the world is facing some pretty big challenges relating to everything from environmental change to gender inequality and from health epidemics to wasteful consumption paradigms. While these may seem distant from the food we see on our plates, our current food systems contribute to many of these crises. The great news is that it is possible to redesign the way we produce, value, consume and reuse our food so that it nurtures more sustainable futures for all.

Seeing the "big picture" is necessary to understanding the scale and scope of our grand challenges. We also need to zoom in to understand how we can set goals for food system changes in particular contexts in order to tackle these challenges. Reaching these goals will take an "all hands on deck" approach, and systemic changes will be needed to tackle these complex and multi-faceted grand challenges. This means that we need to co-ordinate our action to achieve the desired change. Governments, particularly public innovation agencies, can play a key leadership role in co-ordinating this action. In this section, we explore in more detail how food system missions in the Nordics can help address our grand challenges by co-ordinating actions and articulating an agreed outcome for those actions.

2.1 Missions to tackle societal challenges

Missions are nothing new – they have a long history as a means of solving different types of challenges. You may be most familiar with the term "mission" in the context of science and technology. The Apollo space mission to put a man on the moon is a classic example of scientific and technological advancements being harnessed to develop a solution to a complex challenge.[80]

But the idea of a mission is changing, in part because the challenges we face have evolved. As emphasised in Act I, we now face a range of grand societal challenges. These

80. Mazzucato, M., 2017. *Mission-oriented innovation policy: Challenges and opportunities.* UCL Institute for Innovation and Public Purpose Working Paper.

challenges have varying degrees of complexity and uncertainty, and it can be difficult to even define or frame a challenge due to the multi-faceted and ambiguous nature of the problem at hand.[81]

Science and technology alone won't be able to "fix" the social core of these problems – we need to think more broadly about the tools at hand to solve complex problems. We also need to acknowledge the value judgements and interests that lead to different understandings of the problem, which in turn can lead to different preferred solutions. For example, some stakeholders may see economic sustainability as more important than environmental sustainability, leading them to frame a challenge through an economic lens and favour market-based solutions. Other stakeholders may view environmental sustainability as the foundation of all other dimensions of sustainability, leading them to prioritise environmentally friendly solutions.

As such, "societal missions" are emerging as mechanisms to direct multi-stakeholder innovation towards a common understanding of how best to solve our urgent grand challenges. In this context, innovation means doing something differently and deliberately in order to achieve certain objectives.[82] This makes it crucial for stakeholders to agree on the societal objectives that they want to address. In turn, societal missions can support transformative change across a system, such as a food system.[83] Think about it this way – if the entry points in Act I identified where in a system we could intervene for transformative change, then the missions we describe here are the plan of what to do. Jump to Act III to read more about the distinction between technical and societal missions.

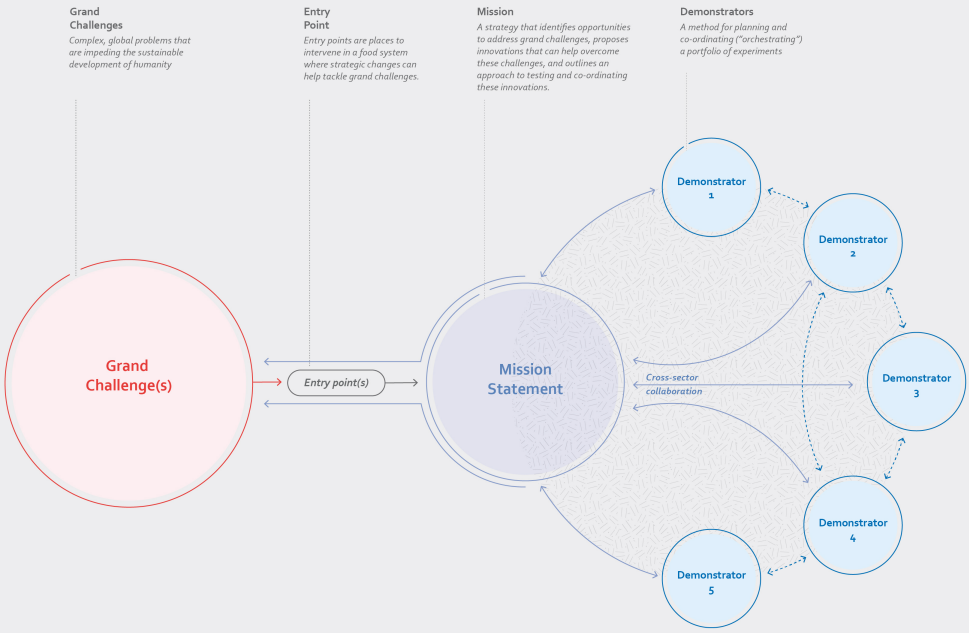
Missions aim to create transformative change by breaking down high-level grand challenges into more granular components until concrete actions can be developed, as shown in Figure 2. For example, how do we really tackle grand challenges such as inequality, environmental degradation, and malnutrition? As illustrated in Act I, we can use food as an entry point to link all three of these grand challenges. Yet still, how do we use that entry point to create change? We're getting closer, but we still don't have enough granularity to act. That's where missions come in.

Missions are innovation strategies that identify opportunities to address grand challenges, propose innovations that can help overcome these challenges and outline an approach to testing and co-ordinating these innovations.[84] A mission includes a portfolio of experiments that relies on multiple paths offering multiple solutions to get the job done. Here, we follow the guidance of Vinnova and EIT Climate-KIC to organise these experiments into a number of place-based demonstrators (read more about demonstrators in Act III).[85,86] In this way, missions show that we have the power to effect change, even if our actions are on a very local scale!

81. Wanzenböck, I., et al., 2019. *A framework for mission-oriented innovation policy: Alternative pathways through the problem-solution space.*
82. Koch, Per & Hauknes, Johan *On innovation in the public sector – today and beyond* (Second revised edition, 2005), Publin Report No. D20. Accessed here: http://www.aviana.com/step/publin/reports/d20-innovation.pdf
83. Wanzenböck, I., et al., 2019. *A framework for mission-oriented innovation policy: Alternative pathways through the problem-solution space.*
84. Mazzucato, M., 2018. *Mission-oriented research and innovation in the European Union.* https://ec.europa.eu/info/sites/info/files/mazzucato_report_2018.pdf
85. Vinnova, forthcoming. *Designing Missions Playbook.* https://www.vinnova.se/en/m/missions/
86. EIT Climate-KIC, 2019. *Deep Demonstration Design Process – Process Guide.*

Figure 2. A mission approach

An example of how missions tackle grand challenges by exploiting entry points and breaking challenges down into more concrete, actionable interventions, clustered into different demonstrators.



You may have seen other figures representing a 'mission approach'. For example, the European Commission has adopted a figure designed by Mariana Mazzucato[87], and the Swedish innovation agency Vinnova has also developed a figure to represent their mission-based approach.[88] While all of these figures may look visually different, they are all based on the same underlying principle: a mission is a way to build alignment around grand challenges and connect these challenges to concrete experiments. The differences in the figures reflect the flexibility of the approach. In other words, there is no one-size-fits-all mission process.

2.1.1 Five criteria for selecting missions

What makes a good mission? Below are five criteria that can be used to guide the development and selection of missions. We follow the criteria adopted by the European Commission[89] while acknowledging that missions have been described with additional nuance in other mission frameworks:

1. Missions are bold and inspirational and they're used to tackle urgent grand challenges. Missions are not about addressing low-hanging fruit, which requires technical solutions and single solutions. Missions aim to bring about change across a system in a way that benefits society by addressing the complex, systemic and urgent

87. Mazzucato, M., 2018. *Mission-oriented research and innovation in the European Union.* https://ec.europa.eu/info/sites/info/files/mazzucato_report_2018.pdf
88. Vinnova, forthcoming. *Designing Missions Playbook.* https://www.vinnova.se/en/m/missions/
89. Mazzucato, M., 2018. *Mission-oriented research and innovation in the European Union.* https://ec.europa.eu/info/sites/info/files/mazzucato_report_2018.pdf

problems that affect our lives. Missions thus have a clear transformative agenda designed to enhance the public good.[90] Despite the urgency of these grand challenges, we often hear of timelines that end in 2030 (the year by which the UN Sustainable Development Goals should be achieved) or 2050 (the year by which the world needs to achieve carbon neutrality in order to limit catastrophic climate impacts). This can give the impression that the "real" action can wait a few years – or decades. Missions aiming to tackle systemic, complex challenges can't be expected to yield quick results.[91] That said, the time to start working towards our goals for 2030 or 2050 is now.

2. Missions provide clear direction for action by setting measurable and time-bound goals. Missions should have clear criteria that make it easy to see if the mission is a success. For example, we know that a mission to end child overweight and obesity in a particular area is a success when no child is classified as being above a healthy weight. A mission also needs to have a clear timeframe for action. Missions take time, so make sure that the time limit for the mission allows sufficient time to develop networks, experiment and innovate. That said, the end date should be tangible – working towards a 2100 mission, for example, is hard for many people to grasp. Given the emphasis of missions on learning from experimentation, targets and goals can (and should!) be revised in light of new knowledge or a better understanding of what it will 'take' to achieve the mission.

3. Missions use innovation and innovation policy to achieve ambitious but realistic change. Missions provide clear direction for a solution, but they don't assume that we know what those solutions are yet. This means that innovation and an innovative mindset are key to the success of missions. Importantly, missions ensure that resources, agendas and policies are aligned to foster innovation directed at a determined goal. This alignment is critical, since innovation policy has traditionally been neutral with regard to the social output of innovation.[92] In other words, innovation policy was used to address generic innovation objectives, such as economic growth or the development of enabling technologies, rather than to encourage a specific, transformational direction, such as a shift towards healthier consumption patterns. Nowadays, however, innovation policy is expected to provide clear direction for innovation activities and create a demand for the types of innovations that meet societal needs.[93] Again, this does not need to mean designing completely new systems from scratch. It can mean taking existing budgets, resources, infrastructures and more and combining them in a new way.[94] It's taking the everyday ingredients and making a delicious new dish.

4. Missions bring people together to work in new ways. Government has the authority to take the lead in defining innovation outcomes, which gives them a central role in mission approaches. However, because missions set a direction that is then targeted for public funding and resources, public participation is also crucial in the development of a mission-oriented approach to make sure that everyone has their say. In some applications of the mission approach – such as Vinnova's process

90. Klerkx, L. and Begemann, S., 2020. Supporting food systems transformation: The what, why, who, where and how of mission-oriented agricultural innovation systems. *Agricultural Systems*, *184*, p. 102901.
91. Janssen, M., et al., 2020. *Position paper: 'Mission-oriented innovation policy observatory'*. https://www.uu.nl/en/research/copernicus-institute-of-sustainable-development/mission-oriented-innovation-policy-observatory
92. Wanzenböck, I., et al., 2019. *A framework for mission-oriented innovation policy: Alternative pathways through the problem-solution space.*
93. Wanzenböck, et al., 2020. *A framework for mission-oriented innovation policy: Alternative pathways through the problem–solution space.*
94. Vinnova, forthcoming. *Designing Missions Playbook*. https://www.vinnova.se/en/m/missions/

introduced in Act I as well as examples that we show in the cookbook – the bottom-up participatory process is important. This means that citizen and stakeholder inputs initially shape the direction of the mission, which are then articulated and tested via prototypes that start building insights and networks. The evidence from these activities can then be used to inform formal political decision-making. This is potentially a reversal of the traditional policy-making process.[95] Regardless of the starting point, governments – particularly government innovation agencies – need to expand their role to enable this civic engagement.[96] And this engagement doesn't stop with the public.

Mission approaches involve multiple sectors, actors and disciplines because large-scale, multifaceted challenges can't be solved by any one individual or group. Innovation networks are formed as a result of new combinations of researchers, private sector companies, entrepreneurs, investors, governments and others working together to tackle a shared goal. Innovation networks need to be co-ordinated and fostered.[97] To manage a new type of decentralised governance, governments may now become initiators, facilitators, moderators, and promoters as well as users of innovation.[98] Thus, government will have a very active role in innovation networks, "ensuring co-ordinated action and legitimacy of both problems and innovative solutions across multiple actors".[99] This is a role governments can play on their own, or in partnership with civic and private organizations.

5. Missions rely on multiple paths offering multiple solutions to get the job done. A mission is not a single project. Missions seek multiple solutions to a challenge, as well as a portfolio of supportive measures, such as policy interventions, measures to deploy and diffuse innovation, and close collaboration with the end-users of innovation.[100] The portfolio approach can help to buffer the inherent risk, failure and uncertainty of the innovation process.[101,102] It also lessens the chance of overlooking blind spots in our understanding of the problem. But this approach consists of more than supporting a wide range of disconnected projects.

Successful mission processes will have the infrastructure and capacity in place to stimulate lesson-learning and interaction across projects, seeing to it that these projects do not develop in isolation (Box 5).[103,104] Successful mission processes will also have a diverse set of funding sources that direct funding to relatively untested innovations rather than continuing to funnel funding to innovation areas that are already receiving a lot of support. By investing in multiple paths with multiple solutions, successful missions can afford to make mistakes and learn from them. Iteration is key to the innovation process, turning mistakes into valuable lessons.

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95. Vinnova, forthcoming. *Designing Missions Playbook*. https://www.vinnova.se/en/m/missions/
96. Borrás, S., and Edler, J., 2020. The roles of the state in the governance of socio-technical systems' transformation. *Research Policy*, *49*(5), p. 103971.
97. Musiolik, J., et al., 2012. Networks and network resources in technological innovation systems: Towards a conceptual framework for system building. *Technological Forecasting and Social Change*, *79*(6), pp. 1032-1048.
98. Borrás, S., and Edler, J., 2020. The roles of the state in the governance of socio-technical systems' transformation. *Research Policy*, *49*(5), p.103971.
99. Wanzenböck, et al., 2020. *A framework for mission-oriented innovation policy: Alternative pathways through the problem–solution space*.
100. Mazzucato, M., 2018. *Mission-oriented research and innovation in the European Union*. https://ec.europa.eu/info/sites/info/files/mazzucato_report_2018.pdf
101. Klerkx, L., and Begemann, S., 2020. Supporting food systems transformation: The what, why, who, where and how of mission-oriented agricultural innovation systems. *Agricultural Systems*, *184*, p. 102901.
102. Mazzucato, M., 2016. From market fixing to market-creating: a new framework for innovation policy. *Industry and Innovation*, *23*(2), pp. 140-156.
103. Mazzucato, M., 2018. *Mission-oriented research and innovation in the European Union*. https://ec.europa.eu/info/sites/info/files/mazzucato_report_2018.pdf
104. Wanzenböck, I., et al., 2019. *A framework for mission-oriented innovation policy: Alternative pathways through the problem-solution space*.

Box 5. New capacities and skill sets are needed!

Individuals will need to be equipped with a range of new capacities and skills to face our grand challenges. Systems thinking is just one important muscle that we need to exercise when working with grand challenges.[105] In practice, systems thinking encourages us to explore inter-relationships, perspectives and boundaries. To do this, we need an understanding of the context of the challenge. That makes it important to observe the connections between different parts of the system. And because actors in the system have different views of the system they are a part of, understanding a system requires listening to and making sense of multiple perspectives at once.

2.1.2 Sounds great! Give me the recipe for a Nordic mission!

Unfortunately, there is no recipe for how to work with the mission approach. Challenges come in all shapes and sizes, and every approach needs to be tailored to the problem at hand.[106] However, we can use the approach illustrated in Figure 2 to get us started.

- To have a clear goal, you need to know which grand challenge(s) you want to address. Still deciding which challenge you want to focus on? Flip to Section 1.1 to see a few grand challenges that affect our societies and our planet.
- To find our starting points for tackling a challenge, entry points need to be identified. Go to section 1.3.2 to see which entry points are key in the Nordic context.
- To provide clear direction for action, a mission needs to be defined. Below, we outline two potential Nordic food system missions that exploit two different entry points for action.
- To learn more about developing a demonstrator and the different experiments that aim to accomplish a mission, skip ahead to Act III.

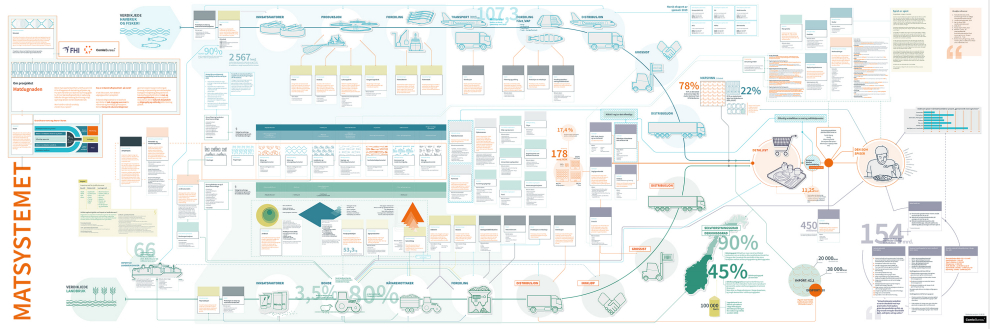
We also need to keep in mind that societal missions are relatively new. There are few examples of societal missions completed from start to finish.[107] In the Nordics, for example, the Swedish innovation agency Vinnova and the Swedish food agency Livsmedelsverket have built the foundation for a Swedish mission on sustainable school food, but its mission still has more simmering to do before it's ready to be presented as a completed dish. As we embark on our journey, we should take care to document whether the claims, promises and design of a mission achieve what the mission has set out to achieve. This will allow us to learn what works well and what can be changed.

105. Hawkes, C., 2020. Five steps towards a global reset: lessons from COVID-19. Global Sustainability, 3.
106. Mazzucato, M., 2018. *Mission-oriented research and innovation in the European Union*. https://ec.europa.eu/info/sites/info/files/mazzucato_report_2018.pdf
107. Janssen, M., et al., 2020. *Position paper: 'Mission-oriented innovation policy observatory'*. https://www.uu.nl/en/research/copernicus-institute-of-sustainable-development/mission-oriented-innovation-policy-observatory

2.2 How do we design food system missions to help tackle our grand challenges?

To understand how food system missions can help us tackle societal grand challenges, we need to understand how these systems work. In section 1.3.1, we talked about mapping food systems. This was a way of understanding the connections between parts of a system. It was also a starting point for identifying challenges and opportunities within a food system. Figure 3 shows a gigamap[108] of the Norwegian food system, developed as part of the Food Dugnad[109] project. To our knowledge, this is the first comprehensive map of a national food system.

Figure 3. Gigamap of the Norwegian Food system (in Norwegian; click to enlarge)



These system maps may present a picture of how food systems look now, but we also need to understand what has shaped food systems. In other words, we need to understand the drivers that have shaped everything from the way we produce food to who the powerful actors are. Why? Because changes to our food system need to address the core drivers and influences in food systems if we want to make real, rather than marginal, change. Food systems are the result of complex dynamics – many, many things have come together and combined to shape current food systems. Many of these drivers are deeply rooted in history and economics.[110,111]

Understanding the drivers of global, Nordic and local food systems is beyond the scope of this report. A thorough assessment would take resources, time and diverse expertise. Yet, to give you a taste of what we mean by "drivers of a food system", we have outlined a few global drivers in Panel 1.

108. Gigamapping is super extensive mapping across many sections, layers and scales with the goal of investigating relations between seemingly separate things, categories, and silos. Gigamapping is part of the Systems Oriented Design (SOD) framework.
109. The map was developed by Comte Bureau, in a Stimulab-funded project co-led by the Norwegian Institute of Public Health and EAT.
110. FAO, 2017. *The future of food and agriculture: Trends and challenges.* Rome: FAO. http://www.fao.org/3/a-i6583e.pdf
111. Clapp, J. 2020. *Food, 3rd edition.* Wiley

Panel 1. Drivers of unsustainable food systems

Here, we provide an overview of a few global drivers that have moulded food systems around the world.[112] This is just a taste – a comprehensive list would be far too long to discuss here!

Changing demographics

Populations are changing! Generally speaking, they're growing bigger, getting older (in the Nordics, across Europe and in several other regions), and increasingly living in urban areas. [113, 114] What does this matter in the context of food? In short, it means that, first, there are more mouths to feed than ever before. The past provides successful examples of dramatic production increases being secured. The Green Revolution in the 1950s and 1960s succeeded in producing more food at lower prices. Yet, the productionist paradigm of the time – which valued quantity over quality – came at a high cost to the environment as soils were degraded, synthetic fertilisers were over-applied and water resources were depleted. At the same time, more people got enough calories in their diet, but many lacked the nutritional quality to live healthy lives.[115]

As cities grew, more people could earn higher urban incomes and adopt fast-paced lives. This in turn fed demand for ready-made and fast food.[116] The food retail boom was partly a response to calls for cheap and convenient food. For some, modern retail made a diverse diet more available and accessible. For other, marginalised, populations, a high-quality diet became more difficult to come by. Modern food retail also encourages consumers to eat more food, food that is oftentimes more energy-dense, nutrient-poor and highly processed.[117] Coupled with many other factors such as marketing and advertising and the low prices of many unhealthy foods, this has left us with a legacy of diet-related chronic disease.

Climate change

Climate change is a two-way street. Food production drives and is driven by climate change. We have already seen severe weather events destroy food crops, such as the fires in Sweden 2018. Rising temperatures can make it more difficult to grow certain foods and thus reduce crop yields.[118] For example, hotter weather can dry out soils, climate change can change rainfall patterns and new pests and insects can proliferate at warmer temperatures. According to one prediction, for every degree Celsius rise in temperature there may be a 5%-15% drop in crop yields.[119] While climate change is also predicted to have positive effects on production in some regions,[120] the net impact will be negative.

Ocean acidification is expected to change the composition of species in many waterways, including the Baltic Sea. Under such altered conditions in the Baltic, economically significant fish species such as herring and cod will suffer, while jellyfish and certain species of algae will thrive.[121] Unfortunately, we don't think that we have felt the full impact of the changing climate, since the earth has been able to "buffer" much of the impact of climate change.

Technological innovation, intensification and homogenisation of food production

The application of innovation is neither neutral nor equal. Innovation in the agricultural sector and intensification of food production were key factors in the productionist era that led to huge increases in food production, freeing many from hunger. Yet there were several unforeseen consequences of intensification, one of which was its negative environmental impact. For example, as technologies increased crop yields, farmers in some world regions started using even more land resources for production.[122] In addition, producers invested in machinery and other production systems to compete in a specific market. This investment locked these farmers into that specific equipment, leaving them poorly placed to shift production.[123, 124] In other words, it's not as simple as a producer having the will to change production and then making the shift. They need help to overcome the economic and structural barriers of shifting their production.

The concentration of power in supply chains

Power dynamics play out at all levels of the food system. In our current food systems, companies have merged and consolidated to the point that just a few companies have control over huge portions of the market share. When these companies fail to put sustainability at the top of their agenda – and that includes the sustainability of the planet, of its suppliers and of healthy populations – it can cause damage. As the International Panel of Experts on Sustainable Food Systems concluded, "Dominant agri-food firms have become too big to feed humanity sustainably, too big to operate on equitable terms with other food system actors, and too big to drive the types of innovation we need."[128]

112. Béné, C., et al., 2020. Global drivers of food system (un) sustainability: A multi-country correlation analysis. *PloS one*, *15*(4), p.e0231071.

Historically, research and development and public policies (including subsidies) were used to support the production of only a handful of staple crops. Wheat, maize and rice have received by far the most attention.[125] This meant, first, that these staple crops became plentiful and relatively inexpensive, while crops that did not benefit from such support, such as fruit, vegetables and beans, faced relative price increases.[126] Some highly nutritious traditional crops were abandoned in favour of the more economically valuable staple crops.[127]

Notes: 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127 128 129

2.3 Defining Nordic food system missions

At this point in the process, you have identified several food system entry points for tackling grand challenges, and thanks to research and stakeholder knowledge, you have a good idea of how your food system works. Now it's time to start cooking up specific missions. To do this, let's revisit the criteria for selecting a mission, summarised below in Box 6. In this section, we'll illustrate what a food system mission in the Nordics that satisfies these criteria might look like. While we are using only two examples here to illustrate the mission approach, keep in mind that many complementary missions will be needed to overcome a grand challenge.

113. Béné, C., et al., 2020. Global drivers of food system (un) sustainability: A multi-country correlation analysis. *PloS one*, *15*(4), p.e0231071.
114. FAO, 2017. *The future of food and agriculture: Trends and challenges.* Rome: FAO. http://www.fao.org/3/a-i6583e.pdf
115. Béné, C., et al., 2020. Global drivers of food system (un) sustainability: A multi-country correlation analysis. *PloS one*, *15*(4), p.e0231071.
116. Pingali, P. L., 2012. Green revolution: impacts, limits, and the path ahead. *Proceedings of the National Academy of Sciences*, *109*(31), pp. 12302-12308.
117. FAO, 2017. *The future of food and agriculture: Trends and challenges.* Rome: FAO. http://www.fao.org/3/a-i6583e.pdf.
118. Hawkes, C., 2008. Dietary implications of supermarket development: a global perspective. *Development Policy Review*, *26*(6), pp. 657-692.
119. Zhao, C., et al., 2017. Temperature increase reduces global yields of major crops in four independent estimates. *Proceedings of the National Academy of Sciences*, *114*(35), pp. 9326-9331.
120. National Research Council, et al. 2011. *Climate Stabilization Targets: Emissions, Concentrations, and Impacts over Decades to Millennia.* National Academies Press: Washington, DC.
121. Wiréhn, L., 2018. Nordic agriculture under climate change: A systematic review of challenges, opportunities and adaptation strategies for crop production. *Land Use Policy*, *77*, pp. 63-74.
122. Baltic Sea Centre, 2020. *Emerging ocean acidification threatens Baltic sea ecosystems.* https://balticeye.org/en/policy-briefs/emerging-ocean-acidification-threatens-baltic-sea-ecosystems/
123. Pellegrini, P., and Fernández, R. J., 2018. Crop intensification, land use, and on-farm energy-use efficiency during the worldwide spread of the green revolution. *Proceedings of the National Academy of Sciences*, *115*(10), pp. 2335-2340.
124. Frison, E. *Path Dependence and Carbon Lock-In in the Agriculture Sector.* https://files.wri.org/expert-perspective-frison.pdf
125. Chhetri, N. B., Easterling, W. E., Terando, A., and Mearns, L., 2010. Modeling path dependence in agricultural adaptation to climate variability and change. *Annals of the Association of American Geographers*, *100*(4), pp. 894-907.
126. Pingali, P., 2015. Agricultural policy and nutrition outcomes – getting beyond the preoccupation with staple grains. *Food Security*, *7*(3), pp. 583-591.
127. Gómez, M. I., et al., 2013. Post-green revolution food systems and the triple burden of malnutrition. *Food Policy*, *42*, pp. 129-138.
128. Pingali, P., 2015. Agricultural policy and nutrition outcomes – getting beyond the preoccupation with staple grains. *Food Security*, *7*(3), pp. 583-591.
129. Mooney, P., 2017. *Too big to feed: exploring the impacts of mega-mergers, consolidation and concentration of power in the agri-food sector.* http://www.ipes-food.org/_img/upload/files/Concentration_FullReport.pdf

Box 6. Recap of the defining characteristics of a mission

1. The mission is bold, inspirational and tackles a challenge of great societal relevance.
2. The mission is ambitious yet can be broken down into concrete actions with targets that are clear, measurable and time-bound.
3. The mission uses innovation and innovation policy to set ambitious but realistic goals.
4. The approach draws on cross-disciplinary, cross-sectoral and multi-actor innovation, investments and engagement.
5. A portfolio of projects is needed to complete the mission, with each project reinforcing the other.

The first mission we consider looks at public meals, while the second focuses on food environments. We have chosen to highlight two missions for several reasons:

1. They represent different entry points, illustrating that there are many angles that we can (and must!) take to tackle a grand challenge.
2. They demonstrate the level of ambition needed. As you'll see below, neither mission is going to be a walk in the park!
3. They match trends seen across the Nordics in terms of which entry points might be significant levers of change. For example, public meals have been seen as a strong lever for change both in research analysis[130] and in practice in the Nordics. In Sweden, Vinnova and Livsmedelsverket started to build a mission aiming for sustainable school meals after consultation with stakeholders and in-depth research identified this as an important mission.[131]

The power of the mission approach is its use of complementary missions to tackle shared challenges. When we put these two missions next to each other, we can see that they reinforce one another. For example, supermarkets have the potential for large-scale change, but retailers may lack motivation to fundamentally alter their stores. Key changes are not currently rewarded by the market, which means there is a disadvantage to being the "first mover". This makes the sector dependent on complex co-ordination. This in turn could make it more difficult to get a coalition of the willing in place. Public institutions, on the other hand, may have the motivation and authority to improve diets. While providing a small proportion of total meals, the quantity of public meals served in the Nordics is sufficient to encourage the development of more sustainable supply chains and new patterns of consumption. If retail can't be expected to invest in new supply chains alone, an initial nudge by the public sector may be what's needed to, for example, mainstream sustainable agricultural production.

Missions also work together to make sure that changes are systemic. In other words, parallel missions ensure that all parts of a system align towards shared goals. For example, students may enjoy sustainable meals at school, but prefer to go to nearby

130. Röös, E., et al., 2020. *Styrmedel för hållbar matkonsumtion – en kunskapsöversikt och vägar framåt*. Sveriges lantbruksuniversitet, forskningsplattformen SLU Future Food. https://www.slu.se/globalassets/ew/org/centrb/fu-food/nyheter/2020/slu-futurefood_rapport13_styrmedelforhallbarmatkonsumtion.pdf
131. Vinnova, forthcoming. *Designing Missions Playbook*. https://www.vinnova.se/en/m/missions/

retailers who provide a wider range of options. If only the public meals mission (Mission 2) was supported, students would be able to "cheat" the system by choosing another way of getting their food. By creating missions that tackle all parts of a system, all the options become sustainable options.

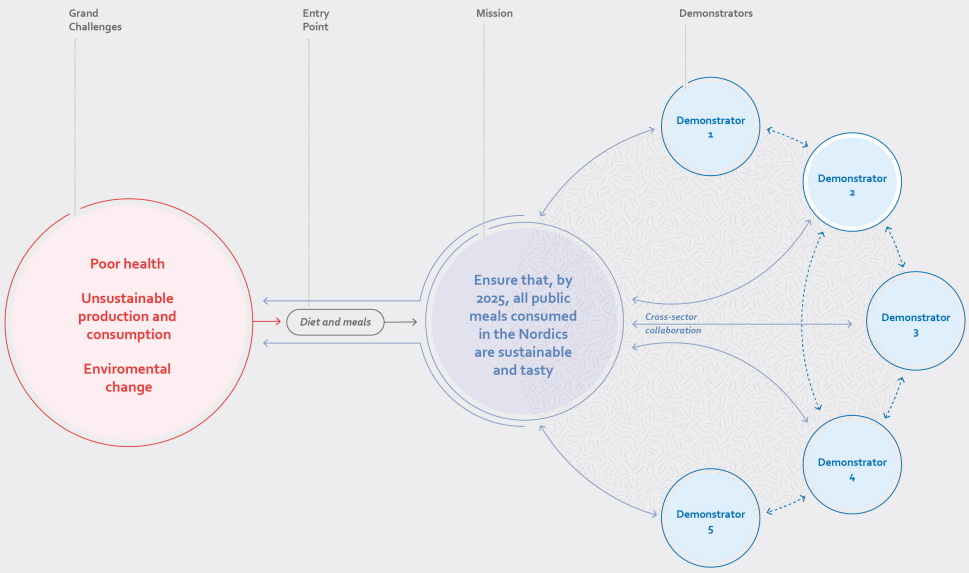
2.3.1 Mission 1 – Ensure that, by 2025, all public meals consumed in the Nordics are sustainable and tasty

This mission explores how we can use the "Diets and meals" entry point identified in section 1.3.2 for tackling challenges related to, among other things, poor diets and environmental damage (Figure 4). Remember, our conception of sustainability includes human and planetary health, meaning that sustainable meals are healthy meals. Here, we focus specifically on public meals, or those meals provided in public sector venues such as care homes, prisons, hospitals, schools, recreational centres, and local and national government offices.[132]

132. Halloran, A., et al., 2018. *Solutions Menu – A Nordic guide to sustainable food policy*. Denmark: Nordic Council of Ministers. https://norden.diva-portal.org/smash/get/diva2:1214792/FULLTEXT01.pdf

Figure 4. A mission approach to achieve sustainable and tasty public meals in the Nordics

A mission on public meals uses "Diets and meals" as an entry point for tackling several grand challenges. A number of co-ordinated demonstrators can be used to achieve this mission.



Every day, 5.5 million meals are served in the public sector across the Nordics.[133] Although this represents roughly 7% of the meals in the region, what public meals lack in terms of reach, they make up for in other ways. For example, committing to sustainable public meals demonstrates government leadership in sustainable food systems. Leading by example, the public sector can help set norms around food choices, behaviour and food culture.[134] And through public procurement and innovative business models, this mission can demonstrate to private sector companies that shifts in value chains are possible and profitable.

This mission has gained momentum across the Nordics. Three Nordic capital cities have signed up to the Good Food Cities Declaration, setting ambitious targets for public meals and citizens' diets. And as mentioned above, Vinnova is making strides to define a national mission on sustainable school food. To read more about how demonstrators can be designed to help achieve this mission, jump ahead to Act III.

Below we illustrate how the five defining criteria of missions were used to develop a mission on sustainable and tasty public meals.

1. **Bold, inspirational action to tackle grand challenges** – A mission on sustainable and tasty public meals will demonstrate a bold commitment to food system transformation. Although it will represent only a small proportion of total meals in the Nordic region, this mission can inspire others by showing them that it is possible to redesign the value chain and our policies in order to make

133. Nordic Cooperation, 2018. *Children and young people in the Nordic Region must have better food.* https://www.norden.org/en/news/children-and-young-people-nordic-region-must-have-better-food#:~:text=5.5%20million%20public%2Dsector%20meals,more%20than%20just%20an%20expense
134. Röös, E., et al., 2020. *Styrmedel för hållbar matkonsumtion – en kunskapsöversikt och vägar framåt.* Sveriges lantbruksuniversitet, forskningsplattformen SLU Future Food. https://www.slu.se/globalassets/ew/org/centrb/fu-food/nyheter/2020/slu-futurefood_rapport13_styrmedelforhallbarmatkonsumtion.pdf

sustainable, tasty meals a reality. And if this mission is successful, it can signal progress on several grand challenges: the environmental impact of what we eat would be reduced and meals would be made healthier. And the benefits won't stop there – this mission can promote sustainable food production, support producer livelihoods and ensure that every child has access to a sustainable, tasty school meal, thus improving equality.

2. **Targets that are clear, measurable and time-bound** - The target "all public meals should be sustainable and tasty by 2025" is clear and time-bound. But to be measurable, we need to set some criteria for what makes a meal "sustainable" and "tasty". This will require the engagement of multiple actors. To define "sustainable diet", for instance, national food authorities, national agricultural boards, researchers and others will need to jointly develop indicators. To ensure that meals are tasty, it will be important to engage with those who consume the meals.

3. **Using innovation to reach ambitious goals** – Innovation can play a role in creating tasty new meals or in differentiating the presentation of sustainable and unsustainable meals. Innovation can also be used to write contract procurements so that they favour sustainability. And producers and suppliers will need to innovate to meet new procurement demands.

4. **Cross-sectoral and multi-actor in nature** – The public sector cannot achieve this mission on its own. Changes are needed across the value chain to enable the production, processing and supply of sustainable foods. Open data will be crucial for giving everyone access to the data they need to sustainably change their operations and services. Structural changes and programmes for upskilling food service workers will also be needed in public kitchens so that tasty meals can be attractively prepared and presented. Suppliers, producers, food service workers and those in charge of public kitchens are just a few of the stakeholders who will be key to the success of this mission.

5. **Supports a portfolio of more targeted projects** – Changing more than 5 million meals a day is no easy feat! No one project could tackle this mission on its own. That's where demonstrators come in. Again, demonstrators are a method for planning and co-ordinating ("orchestrating") a portfolio of experiments. Don't worry – we'll dig into demonstrators more in Act III. For the purposes of this mission, demonstrators will need to cover a range of public sector institutions such as schools, kindergartens, hospitals, elderly care and government offices. Demonstrators should be tested in a variety of locations, given that not all public meals are centrally controlled. Read on to Act III to see what a portfolio of different demonstrators might look like that collectively helps to achieve the mission.

2.3.2 Mission 2 – By 2030, the sustainable food in all major food retail outlets – including both physical and online stores – should be the easiest and most attractive options for consumers to choose.

Mission 2 focuses on exploring the "food environment" entry point identified in Act 1. Remember, food environments are anywhere we make decisions about food. Food environments are very diverse and include wild food environments such as forests where we forage for mushrooms and berries and lakes and waterways where we fish. Food environments also include places like kiosks, supermarkets, farmers' markets and restaurants.[135]

It's not possible for a single mission to include all of these food environments at the same time. For this reason, multiple missions need to be developed. In Mission 2, we focus on the supermarket food environment for several reasons. First, Nordic populations get most of their food from supermarkets (jump back to Panel 1 to read more about the food retail boom). Second, the majority of the market share is captured by just a handful of retail outlets.[136] Here, we're using the concentration of power outlined in Panel 1 to our advantage – if we get these powerful actors to take action, they can change a significant number of food retail environments. Finally, retailers play a key role in shaping both food supply (through purchasing and the development of their own brands) and demand (through advertising, price promotions and product placement in stores).

Below we illustrate how the five defining characteristics of missions were used to develop a mission on sustainable food choices in food retail outlets:

1. **Bold, inspirational action to tackle urgent grand challenges** – It's clear that a mission to overhaul one of the most frequented food environments of all is a bold move! As previously mentioned, getting one or more of the biggest retailers to change their in-store and online environments can quickly provide inspiration and pull the rest of the sector along in the same direction. If successful, this mission can reduce the environmental impact of what we eat and support better health and wellbeing. This mission can also promote equality by providing accessible, affordable and sustainable food for all.

2. **Targets that are clear, measurable and time-bound** – The focus of the mission is clear and time-bound. But several aspects of the mission need to be defined if it is to succeed. For example, what is considered to be a sustainable food choice? How do we judge whether a food environment has achieved the goal of making the most sustainable choice the easiest and most attractive one? Does every item need to be sustainable, or should a threshold be set – such as requiring that 90% of all food items are sustainable – to determine a proportion of sustainable food choices? Should sustainable choices be evaluated within the context of diet as a whole or within a narrow product category? For example, when looking at the whole diet, a piece of meat is likely to be less sustainable than legumes. Within the "meat" product category, however, chicken is typically

135. Downs, S. M., et al., 2020. Food environment typology: Advancing an expanded definition, framework, and methodological approach for improved characterization of wild, cultivated, and built food environments toward sustainable diets. *Foods*, *9*(4), p. 532.
136. DLF, Delfi, HUI Research, 2018. *Dagligvarukartan 2018*.

a more sustainable option than beef – a small proportion of meat can fit into a sustainable diet. The process of defining clear and measurable targets is challenging, but it is crucial to the success of the mission.

3. **Using innovation to reach ambitious goals** – Innovation in food retail environments may include selling reformulated products that have reduced salt, sugar or saturated fat content or a reduced environmental impact. It may also mean developing new kinds of packaging to reduce food waste or to find new ways of regulating the price of unhealthy and unsustainable foods. And it will probably involve changing the choice architecture of supermarkets to make tasty and sustainable food the default option.

4. **Cross-sectoral and multi-actor in nature** – Retailers cannot change by themselves. Engagement is needed from both supply-side and demand-side actors. For example, producers, processors, distributors and suppliers need to work together to innovate across the value chain. Policy-makers, advertisers within food companies, NGOs, certification bodies and consumer councils can collaborate on innovations to shift demand. Retailers can also collaborate with researchers and policy-makers to share sales data, which is crucial to understanding whether interventions are having an impact on individuals' food choices. And the general public, which may see some big changes in its local supermarkets, needs to be involved in this journey.

5. **Supports a portfolio of more targeted projects** – What works in one food retail environment in southern Finland may not work in another store in Iceland. Retailers in rural and urban settings may take different approaches. And different retailers may try different experiments. Again, multiple demonstrators in different contexts and with different innovation networks are needed to achieve this mission.

2.4 Where next?

The mission is starting to take shape, but it's still not specific enough for action. To help you understand the next steps in the mission approach, Act III will explore Mission 2 – Sustainable and tasty public meals – in more detail. If you're ready to tackle the questions in Box 7 and jump in at the deep end, then you can move right on to Act III and learn more about demonstrators – orchestrated, on-the-ground experiments that try to tackle bold ambitions!

Box 7. Reflecting on your mission

Let's take a second to reflect on what we still need to define about this mission in order to start cooking up change.

WHAT?

Is the focus on all public meals? Or public meals in a certain venue, such as school meals?

What does a sustainable meal really mean? What are the criteria for sustainable meals?

WHO?

Who is 'ensuring' that this is achieved?

Who are the individuals, sectors and groups that need to be involved to change school meals?

Who will fund this mission?

Who will initiate, lead and guide the innovation network working on this mission?

WHEN?

How soon can action start?

What milestones need to be reached in order to achieve this mission by 2030?

WHERE?

What specific locations - i.e. towns, stores, schools - will the mission demonstrators take in?

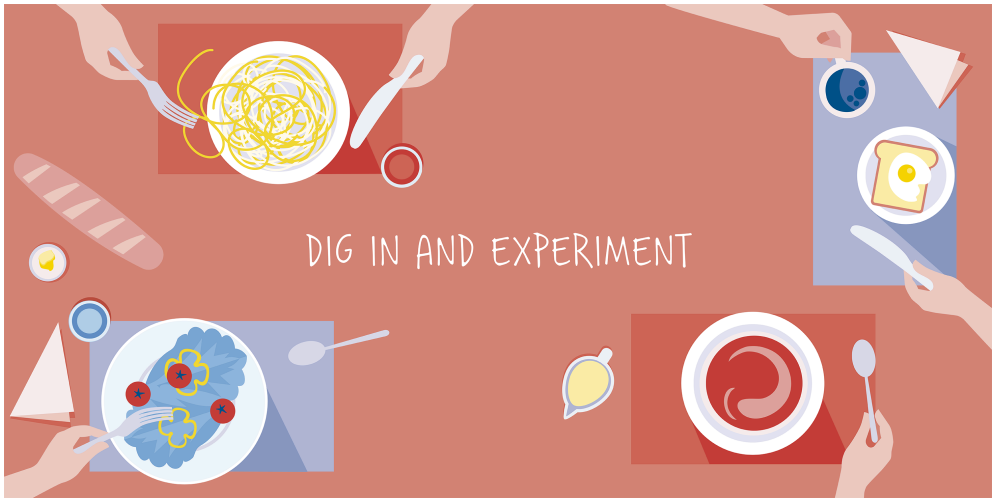
Where are the greatest barriers to achieving this mission, and how can they be turned into leverage points?

HOW?

What are the specific parts of the food system that need to change to ensure success of this mission?

How can innovation mindsets help solve this challenge?

ACT III – Demonstrating transformation



By changing how we serve our food, we can better serve humanity and the planet we share with so many other lifeforms. Trying to change the whole food system all at once is simply too complex. But if you're going to fix only a few pieces at a time, how do you know you're fixing the right pieces and in the right order?

Since the best way of achieving a mission cannot be known in advance, we must be smarter about how we learn. Full-fledged research and development projects require a lot of money and other resources to carry out, and they are best deployed when you already know what you're fixing and why. Experiments, on the other hand, are a low-cost, low-risk way of learning how a mission can be achieved. They act as probes into different parts of the system that explore multiple pathways towards our end goal. If the experiments work, they can be scaled up. It's also possible that they will fail, but they will do so by using a limited amount of resources. And as you may have found, failure is often the best teacher.

3.1 Experimentation is key to achieving a mission

All missions are achieved through a portfolio of projects – or experiments. Taking a portfolio approach to experimentation means selecting a varied set of experiments based on their potential impact and mission alignment as well as their ability to generate new knowledge. This last selection criterion is important, and it means foregoing some relatively safe solutions in the portfolio so as to leave room for unconventional ideas from unusual suspects. Having a diverse team and strong leadership helps a lot when performing this balancing act in practice.

Breakthrough solutions are more likely to arise out of innovation portfolios that cast their nets widely. Without active management, innovation portfolios show a strong tendency to privilege low-risk, typically technical solutions, crowding out more

unconventional solutions. Considering how many scientific breakthroughs have happened as a result of serendipity, such as Alexander Fleming's discovery of penicillin, it seems reasonable to assume that the more diverse the portfolio of experiments, the more likely we will learn something new and useful.

You may have noticed that innovation proceeds unevenly in society. How is it that the country that accomplished the truly remarkable feat of sending a man to the moon for some reason seems unable to provide an effective education for children in marginalized communities, reverse the rising cost of medical care, keep its air and water clean, and reduce the occurence of drug addiction and drug-related crime?[137] The principal reason is that it has proved very difficult to discover or develop a body of practice in areas like education and addiction that can be controlled tightly, and replicated easily, that at the same time is effective in the variety of contexts where such practices take place.[138] When you throw human nature into the mix, the uncertainty is far greater than when you are dealing with technical problems with relatively known parameters and outcomes.

When a mission is primarily technical in nature, experiments can be conducted separately from one another. Technical solutions can be developed in isolation because the practices involved in developing them have a certain 'routine' about them. People who work on technical challenges typically know, and are able to establish and control relatively tightly, the essential operating aspects of what they are doing.[139] For instance, if your mission is to put a man on the moon, you can reason that this will require a spacecraft with a certain thrust that can be calculated in advance. The spacecraft will need to have certain functionalities, which will require specific modules such as an engine, a fuselage, a heat shield, a navigation system, and so on.

In societal missions, developing standardized solutions is much harder. Solutions are context-specific, and changes to one part of the system will typically cause unexpected changes elsewhere in the same system. In situations where a solution cannot be fully understood outside of its context, experiments cannot be run independently as if in a lab. If one cannot closely identify, control, manipulate, and reproduce what one is trying to analyze, it is very difficult for research and innovation to provide a deep understanding of what is going on in practice – much less illuminate how to improve it.[140] Instead, experiments must be run in a specific, local and live context to see how different solutions interact with one another and with the system at large. This requires more active portfolio management, which we will describe in more detail in the next section, where we introduce the idea of demonstrators.

Technical missions and societal missions differ in scope. In a technical mission, individual experiments can be run as part of one large portfolio. In a societal mission, technical innovation is just one part of the recipe. Because social experiments cannot be controlled and replicated in the same way as technical ones, societal missions bundle experiments into distinct demonstrators and test them in context. Demonstrators help reduce the complexity that you need to manage.

137. https://academic.oup.com/spp/article-abstract/38/9/681/1629269?redirectedFrom=PDF
138. https://academic.oup.com/spp/article-abstract/38/9/681/1629269?redirectedFrom=PDF
139. https://academic.oup.com/spp/article-abstract/38/9/681/1629269?redirectedFrom=PDF
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3.2. What are demonstrators?

Demonstrators are a specific approach to planning and co-ordinating ("orchestrating") a portfolio of experiments. The concept has been introduced by both EIT Climate-KIC (deep demonstrations)[141] and Vinnova (systems demonstrators)[142]. We use the simpler term 'demonstrator' to capture what both approaches have in common.

The complexity and dynamism of social systems mean that their transformation requires interventions at multiple levels at the same time. For example, changing behaviour with regard to what someone prefers to eat means changing the things that influence their preferences. What you enjoy eating (and when) is shaped not only by biology or what you know, but also by social factors such as cultural appropriateness, who the meal is shared with, what is considered fashionable and so on. In addition to taste, what you actively choose to eat is shaped by price, availability, placement, marketing, etc., which are in turn shaped by policies on, for example, trade and agriculture, shaped in turn by business models, economic paradigms, political ideology and so on. By design, single-point solutions treat this dynamic variety as an obstacle to behavioural change. Yet taste and culture can also be used as powerful sources of systems transformation.

By orchestrating a portfolio of experiments that act on multiple levels of the system at once, demonstrators allow you to work with, rather than against, this dynamism. A good way of thinking about demonstrators is as an intentional creation of a local innovation ecosystem which, on the one hand, helps connect multiple projects in a given location, and, on the other, helps communicate the importance of those projects in connection with a grand societal challenge. Figure 5 shows the six essential criteria for successful demonstrators.

141. EIT Climate-KIC, 2019. *Deep Demonstration Design Process – Process Guide.*
142. Vinnova, forthcoming. *Designing Missions Playbook.* https://www.vinnova.se/en/m/missions/

Figure 5. The six essential qualities of a successful demonstrator

CRITERIA	DESCRIPTION
Mission-oriented	Human beings need inspiration. Demonstrators translate the bold ambition and direction set by a societal mission into concrete, on-the-ground actions to provide proof that inclusive, fast and large-scale change is possible across a system. Demonstrators are connected to national policy labs to better address possible legislative barriers that impede achievement of the mission.
Demand-led	Demonstrators start with a demand-led approach, working with organisations willing to take on responsibility for problems and become "problem owners" – city authorities, regional bodies, community organisations, government and industry leaders that are committed to the overall mission.[142] In practice, this means taking care to connect the demonstrator to existing relevant policy processes and strategies so as to ensure relevance and momentum for the problem owner.
Place-based	Taking places as a starting point allows us to view the system through a local lens and understand what makes it unique, such as its culture, policy, law and economy. Starting with a place does not mean that all parts of the system are bound to a specific geographical location, but place does indicate what types of actors, structures and interactions we should be paying attention to within the wider system. A clearly defined place establishes boundaries within the system, allowing us to work with the local level in the foreground while also acknowledging all the other levels in the background. In other words, it is more feasible to work with a demonstrator within clear boundaries than to zoom all the way out and try to understand a complex challenge within a national context.
Iterative	Demonstrators progress in tightly designed, iterative processes. Demonstrators should mix innovation from the top down and the bottom up and combine mature projects with more experimental interventions. While that may sound obvious, it means taking a greater risk by running experiments that are more likely to fail. A good portfolio balances those risks, understanding that "radical failure" can bring new insight that can improve on less risky solutions. When it comes to demonstrators, it's okay to fail – as long as something is learnt along the way.
Holistic	Demonstrators understand the parts of the system as being intimately interconnected and explicable only by reference to the whole. Experiments are not conducted in isolation from one

	another; multiple experiments are run in parallel to identify the types of interdependencies and synergies needed for transformation. Each one contributes to the success of the demonstrator. Thus, if one experiment fails (or succeeds), it can easily impact the success or failure of the other experiments within the demonstrator. Understanding why and how that is can provide critical insight into how the mission can be achieved.
Grounded in citizen perspective	To successfully address social complexity, demonstrators are wise to acknowledge the perspectives and desired outcomes of citizens when designing experiments. Citizens should be framed as agents of change, not mere subjects of change, meaning they should be actively engaged in the design and implementation of some of the experiments, as both producers and consumers of certain solutions.

Notes: [143]

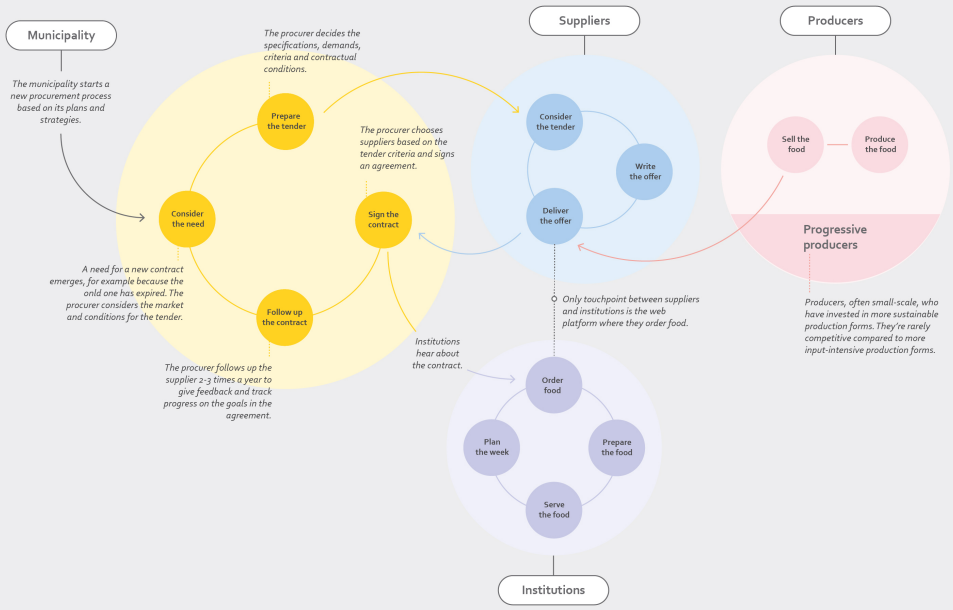
Now that we've told you what a demonstrator is, we'd like to show you a concrete example of what a demonstrator can look like. We will use meals in school in Oslo as an example[144], based on our own preliminary research, to bring you as the reader closer to what implementing a mission can actually mean in practice. Hopefully, our example will show you just how powerful and useful demonstrators can be. We also hope the example will inspire you to read on to the final section, where we will walk you through the process of setting up a demonstrator.

3.3 Rewriting the recipe for meals in school

Our mission statement on public meals – ensure that, by 2025, all public meals consumed in the Nordics are sustainable and tasty – draws upon research from multiple projects (see section 1.3.2 on Nordic entry points). One such project, Matdugnaden,[145] analysed how a meal is produced in multiple municipalities in order to visualise how public meals are produced in Norwegian municipalities (Figure 6).

143. EIT Climate-KIC, 2019. *Deep Demonstration Design Process -- Process Guide.*
144. The research was conducted independently by EAT, and does not necessarily reflect the views of the Municipality of Oslo.
145. *Matdugnaden* ["the Food Dugnad"] was co-led by the Norwegian Institute of Public Health and EAT, with support from Comte Bureau and Deloitte, and funded by Stimulab, a Norwegian public sector innovation mechanism. See http://matdugnaden.no/ for more information (only in Norwegian). The original map has been adapted to fit the visual layout of this cookbook

Figure 6. How are public meals produced in Norway?



3.3.1 Reframing meals in public institutions

If you look closely, you will see that the system focuses heavily on the procurement process and that food appears no different from any other commodity for consumption. Food is not specifically linked to sustainability or health outcomes. When purchasing decisions are made, there is typically little to no involvement from the people who serve the food or from people who have expertise in nutrition or sustainability.

When people within this system talk to each other, two additional issues appear. First of all, decision-making processes are dominated by misconceptions about what you can and cannot do according to procurement law (e.g. rigid dialogue with the market and the preference for a single wholesaler). Second, public organisations lack the tools to define what a sustainable meal means for them.

The sum of these findings helps explain why so little healthy and sustainable food is served in Norwegian public institutions today.

3.3.2 Why Oslo?

Oslo is already on a mission to transform its food system. As one of 14 signatories to the Good Food Cities Declaration, the municipality of Oslo has begun to reframe food from being merely a commodity to being a strategy to achieve other societal outcomes: in this case, reducing consumption-based greenhouse gas emissions per capita. The Declaration commits its signatories to work with citizens to achieve a Planetary Health Diet[146] for all by 2030 – a diet which offers balanced and nutritious

146. For more information about the Planetary Health Diet, please see: https://eatforum.org/learn-and-discover/the-planetary-health-

food and which is reflective of those citizens' culture, geography and demography. Cities will achieve this by implementing the following measures by 2030:

- Aligning their food procurement to the Planetary Health Diet, ideally sourced from organic agriculture[147]
- Supporting an overall increase in healthy plant-based food consumption in their cities by shifting away from unsustainable, unhealthy diets
- Reducing food loss and waste by 50% compared against a 2015 baseline
- Within two years of endorsing this declaration, working with citizens, businesses, public institutions and other organisations to develop a joint strategy for implementing these measures and achieving these goals inclusively and equitably, and incorporating this strategy into [the signatories] Climate Action Plan[148]

3.3.3 Why meals in school?

Public meals for the elderly are a low-hanging fruit. Most of the meals served by the municipality of Oslo are for the elderly who are either in nursing homes or receiving nursing services in their own homes. The food is prepared in a centralised kitchen in substantial volumes, and a shift to the procurement practice would have an impact on the production side of things. As a more closed, centralised system, it means interventions are easier to design and control. But changing meals in such relatively closed institutions has a limited impact on dietary behaviour in society at large. It would not contribute to a systemic shift in food consumption.

Demonstrators aim to inspire large-scale change. We chose to focus on meals in school instead of meals for the elderly for several interconnected reasons:

- **School food is an underutilized lever for systems change.** In most Nordic countries, the current school food system is well-established and well-functioning, but optimized for outcomes such as low cost and food safety. In setting a different strategic direction, the existing system and budget can begin to deliver on wider outcomes such as sustainability, health promotion and local economic resilience. Thus, the new way of working with school food becomes a way to change connected systems such as agriculture, logistics, education and community.
- **There's a portfolio synergy.** Sweden's innovation agency, Vinnova, and the Swedish food agency, Livsmedelsverket, have jointly identified school meals as a key mission area for that country, based on a similar analysis as our own. Focusing on a similar part of the public meal system but taking very different approaches facilitates a better learning exchange among demonstrators.
- **It's an unconventional system poised for change.** Unlike Sweden, which has a long-standing tradition of serving meals in school, Norway's packed lunch culture means that most children bring their own food to school and eat it cold. These are not school meals but meals in school.
- **There's political interest.** Oslo has proposed introducing free hot school meals across the city. The costs associated with the Covid-19 pandemic response has put that proposal on hold for now, and one can expect the city to be more

diet/#targetText=The%20planetary%20health%20diet%20is,of%20fruits%2C%20vegetables%20and%20nuts.

147. Here organic is used as a proxy for sustainable production in the absence of more precise indicators.
148. C40 Cities. *Good Food Cities Declaration*. https://www.c40.org/other/good-food-cities

focused on finding cost-effective solutions. Reimagining today's cold meals (packed lunches) could provide a more affordable alternative, with potential spill-over effects to the other Nordic countries, including Sweden.

- **There's greater impact potential.** Changing what is served to the elderly in institutions will have an impact on Oslo's supply chain, but the spill-over effects are likely to be limited. There is evidence that dietary habits are established in the early years of life, and that adolescence is a key time period when significant changes in dietary patterns occur.[149, 150] Children are also taught about food and cooking in school, and there is untapped potential in connecting what is taught with what is eaten.
- **There's potential to shift diets more broadly.** There is a link between what children enjoy eating and what parents choose to cook. In general, parents' eating preferences tend to impact what their children eat. There is limited evidence that the influence also goes the other way and that children's eating patterns influence what parents eat. What remains largely untested (and is therefore suitable for a demonstrator) are the different ways that meals in school can engage parents, increasing the chance that interventions influence more people. As children's food preferences evolve, their preferences may have an impact on the dietary pattern of the whole family.[151] A demonstrator for meals in school could provide an inspiring example of how municipalities can support an overall increase in healthy food consumption among its citizens.

3.3.4 Mapping our system

Mapping is a tool used throughout the mission process – the maps just get more granular as you go. Having narrowed our focus to meals in school, our next step was to map the system in that particular place. From the public meal map (Figure 6) we had a general idea of how municipalities worked with meals, but we didn't yet know exactly how it worked for schools and what dynamics and tensions existed in Oslo. We used the map in Figure 6 to identify the "insiders" who could help us make sense of how Oslo's system of meals in school worked. This included teachers, city officials, parents, procurement officers and students.

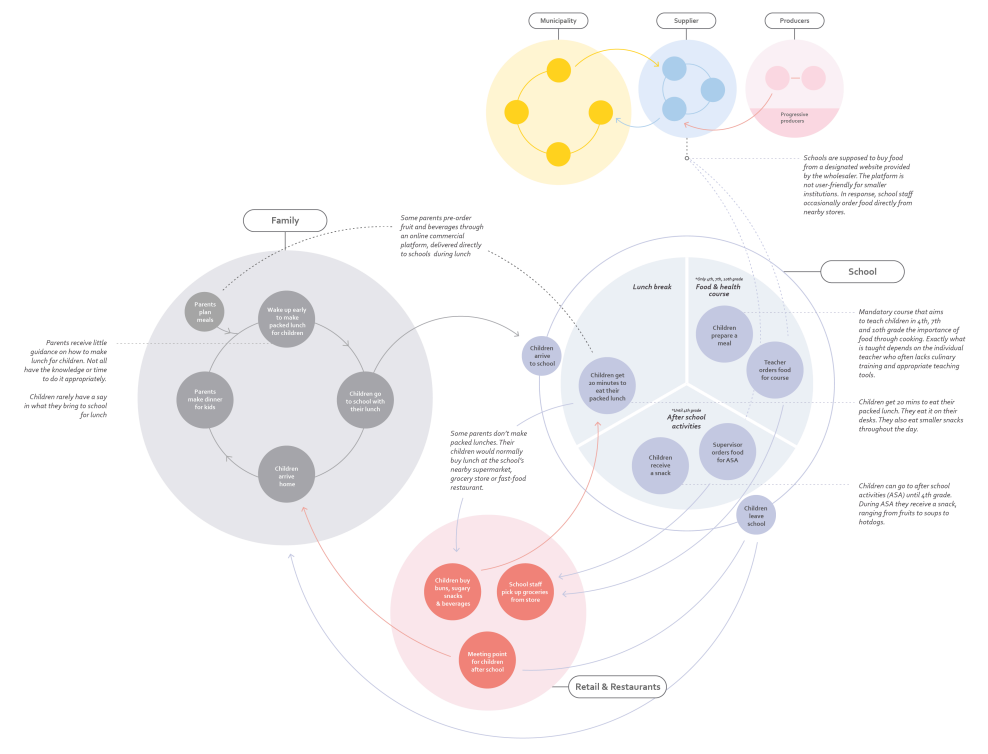
After identifying insiders connected to meals in schools in Oslo, we engaged them by way of interviews and workshops. Using this new information, combined with the insights from the generic public meals map, we were able to visualise the local system that we were trying to change. By grounding our analysis in citizens' perspectives, our focus broadened from what the municipality has control over to what influences what children eat in school (Figure 7). Comparing the two maps (Figures 6 and 7) revealed several new opportunities for shifting diets. For instance, there is an untapped potential to strengthen the connection between what is taught about food in the Food and Health course, what is served during after-school activities, and what students bring to eat during lunch.

We then zoomed out to ask which "outsiders" might have valuable perspectives that would

149. Mikkilä, V., et al., 2005. Consistent dietary patterns identified from childhood to adulthood: The Cardiovascular Risk in Young Finns Study. *British Journal of Nutrition*, *93*(6), pp. 923-931.
150. Micha, R., et al., 2018. Effectiveness of school food environment policies on children's dietary behaviors: A systematic review and meta-analysis. *PloS one*, *13*(3), p.e0194555.
151. Birch, L. L., and Davison, K. K., 2001. Family environmental factors influencing the developing behavioral controls of food intake and childhood overweight. *Pediatric Clinics*, *48*(4), pp. 893-907.

help us make better sense of our system. We mobilised some unusual players (at least in the context of school meals), such as top chefs, local farmers, start-ups and product designers, to co-develop potential experiments and help us identify a broader range of collaborators.

Figure 7. Map of the school meals journey and what influences what children eat at school



3.3.5 Grounding experiments in citizen perspectives

A mission will not inspire people unless they are a part of it.[152] One of the six criteria for a demonstrator is that experiments be grounded in citizen perspectives. Below is a summary of some perspectives that we think stood out (Table 3).

152. Mazzucato, M., 2018. *Mission-oriented research and innovation in the European Union*. https://ec.europa.eu/info/sites/info/files/mazzucato_report_2018.pdf

Table 3. Selected perspectives on school meals in Oslo

STAKEHOLDERS	*INSIGHTS*	*QUOTE*
School children	Food is a way to fit in. Children don't want to stand out because of the food they bring for lunch.	*"If I do something too sophisticated, my son will just bring it back home. I think he is embarrassed by eating something different than his classmates."* - Parent of a 10-year-old boy
	The "packed lunch" does not suit everyone. Children from different cultures have very diverse culinary customs, which cannot always fit into a cold box.	*"In Singapore I used to eat warm noodles for lunch every day. I really miss that."* - 11-year-old girl, who, when asked later to draw her matpakke, drew a bowl of hot noodle soup. That was her favourite.
	Children use their pocket money to buy sugary snacks and treats from nearby grocery stores.	*"For us, school children are important customers. Sales to students comprise up to 10% of our total turnover."* - Manager at Prix
Parents	The school doesn't understand the value of a good lunch. It's just another chore.	*"The only time the school has talked to me about children's food has been to ask me to make simpler lunches. Children get 15-20 minutes to eat, and if it's too complicated, they just won't eat it."* - Parent of two boys
	Parents feel extremely responsible for feeding their kids appropriately and think not everyone has the right tools to do it.	*"Sometimes my son does not have the energy to go to football practice, and I know it's because the lunch I made him was not enough. It's extremely frustrating and I feel a big responsibility."* - Parent of two boys
	Parents from a poorer socio-economic background have a bigger challenge making lunch for their children. Not everyone has the resources or the time to make something healthy.	*"I try to understand why they bring a cinnamon roll for their lunch... I think it is because some of them are home alone before they come to school, because mom and dad have gone to work, and they pack their own lunch without any control from their parents."* *"A lot of children, sadly, are overweight and have a poor diet... I think it's very sad, and it's not their fault, because this is the way it is in Norway. The healthy stuff costs more. You can buy soda cheaply, but you have to pay a lot more for the vegetables."* - Food and health teacher from the east side of Oslo
	Norway does not seem to be ready for a transition to healthy and sustainable eating. All the efforts by parents are undone by popular food choices.	*"I really make an effort to make healthy lunches for my girls, but at school they just fill themselves up with knekkebrød, and during after-school activities they give them hot dogs and ice cream. It's extremely frustrating for me."* - Mother of two girls.
	Co-creation is a great way to engage children in food preparation.	*"Involving the children in cooking and talking about food is the best way to motivate them to eat better and different things."* - Parent of a child in school

Teachers	Being in the kitchen is exciting for children. We need to take advantage of that.	*"I take advantage of it when I have time with the kids in the kitchen. They are so excited to learn that I try to mix my cooking classes with other subjects as well."* - Food and health teacher
	Cooking can be used to teach children about much more than food.	*"I asked for permission to get a full day of cooking, with the argument that I would also teach other subjects. I taught them Norwegian with the recipe, maths to calculate quantities, and culture and environment with the origin of the ingredients."* - Food and health teacher
	Teachers lack the tools to teach the food and health course; they don't necessarily know how to make something that is healthy, sustainable and tasty at the same time.	*"Around 60%-70% of food and health teachers in Norway don't have the background for this course, so they just teach what they can with the tools that they have."* - Food and health teacher
Public authorities	The municipality has the power to decide what schools can order from the supplier.	*"We restricted the supplier's platform so that schools can order only organic and sugar-free dairy products. Even if the supplier can offer something else, we are the ones who decide if schools should buy it or not."* - Employee of Oslo Municipality
	...But the municipality does not have the power to compel schools to use poorly designed solutions.	*"The food supplier platform that schools' use to order food is not user-friendly. They end up ordering from stores that are more convenient or closer to them."* - Employee of Oslo Municipality
	Procurement can only do so much. There needs to be a multi-faceted approach to food.	*"There are very high expectations of what procurement can do, but it's difficult. A lot of the changes also need to be made in co-ordination with other measures."* - Employee of Oslo Municipality
	Procurement contracts are made for four years, making them inflexible if there's a need to change suppliers.	*"It frustrates me that the public sector, especially the municipality of Oslo, has such long time horizons for agreements (4 years)."* - Founder of a food start-up
Small scale farmers	Farmers want to meet their customers. They feel pride in their work and want to communicate that. There is an emotional value for them in selling directly to customers.	*"When you sell directly to customers, you get a face, you get a connection, and also the customers usually come back and buy more things the next week."* - Farmer selling at Oslo's REKO Ring
	They see their work as a way of offering different produce and options to customers.	*"The benefit for the customers is that they can get anything they want, I have 15 types of potatoes, and in the shops you have stuff from Israel and France. So this is a market to get rid of the monopolism, in a shop where the consumer can get what they want. So hopefully in shops you can get what you want."* - Farmer selling at Oslo's REKO Ring
	It's hard for them to work directly with institutions because either it's a very small market or the scale is too large.	*"We have a few kindergartens, but they consume so little that it's actually more work than profit."* - Farmer selling at Oslo's REKO Ring

Local chefs	Canteens can be seen as an opportunity for extending a chef's career lifespan. They offer a stable income and steady working hours.	*"It's also a question of how can you stay in the business longer, and here I think things like that and canteens could be a good option... I think chefs have dreaded working in canteens because there's so much pre-made stuff. I think if you can work in a canteen and still be proud of what you do and go home between 4 and 5 in the afternoon, you have the best of both worlds."* - Chef from Oslo
	Canteen chefs need to be empowered and have ownership in menu engineering. No more reheated food.	*"They've introduced pride in their work... There are so many canteens where they just open tins and reheat stuff."* - Chef from Oslo
	There is an urgent need to rethink the chef's role in society in order to ensure job security in the future.	*"Right now, the chef's biggest frustration is job security. If we were having this conversation last year, I would have had a different answer."* - Food expert and former chef
	Bring kitchens closer to where the food is served, to the people.	*"They could bring the kitchens closer to the people, so that the people cooking can see who they're making the food for and more easily make changes for people, and also be more inspired to make something different."* - Chef from Oslo
	Food menus need to be adapted to specific schools. Different socio-economic backgrounds have different food needs.	*"If you are in the state school sector, you will have a very different set of students than in low-income areas. The menus will go over very differently in those two settings."* - Food expert and former chef

To turn insights into ideas for experiments, we first synthesised these perspectives into a few overarching themes to help unite different parts of the system conceptually. The themes allowed us to quickly verify whether potential experiments address citizens' real concerns or not. In no particular order, the themes that emerged were:

Food as culture, community and inclusion: Food is part of, and a way to express, one's identity. As societies become more multicultural, meals are more inclusive when they embrace diversity.

Engagement through co-creation: Being in the kitchen is exciting for children, and it's important to take advantage of that.

Food as a market: Public procurement of food, if streamlined, constitutes a large and attractive market that can influence how and where food is produced.

The value of a face behind food: There is an independent value in interacting with the people who produce and prepare the food that you eat.

Food illiteracy: In general, parents, teachers and procurement officers lack the tools to compensate for their limited knowledge of what healthy and sustainable food is and how to cook it for maximum taste.

Empowering all actors in the value chain: It matters where the food is produced and by whom. Public procurement can reward sustainable producers.

Food as education: Students can learn about health, sustainability, culture, science, math, and other subjects through food.

We are about to show you how we turned these insights into a menu of experiments. We will then show you where these experiments would go on the map and discuss potential interdependencies and synergies. A key point here is that some experiments that wouldn't work that well on their own (e.g. because they would be too expensive) can become powerful solutions when combined with others in a system.

3.3.6 A menu of experiments

This is the fun part. We have said that demonstrators are an excellent way of orchestrating experiments within the context of missions. One way of gauging the quality of this statement is against the quality of the experiments themselves and how they are made to interact with one another. Figure 8 shows a selection from a much larger set of potential experiments, organised according to four places in our system:

- The Marketplace (where food transactions are made)
- The Kitchen (where the food is prepared)

- The Table (where the eating experience takes place)
- The Contract (where agreements are made between parties)

Our choice of places, or what Vinnova calls "concepts" in their cookbook, overlap with Vinnova's design model for school food. This shows, again, that we're working with similar thinking and practice. It also means that we can connect across the Nordics, using those same places or concepts as translation points. For example, how does the Oslo Kitchen shape up when compared to the Helsinki one? Or how does the Oslo Contract differ from the Gothenburg one?

Figure 8. A menu of experiments

A MENU OF EXPERIMENTS

THE KITCHEN - THE MARKET - THE TABLE - THE CONTRACT

THE KITCHEN

The Kitchen is the place for experiments connected to how food is made and those who make it. It also includes how we think and teach about food in the first place.

Sustainability chefs

The creation of a new full-time position for chefs in schools allows for the integration of how food is taught, made and eaten. With guidance from nutritionists and sustainability scientists, sustainability chefs know that to truly serve up knowledge through food, the dishes must be engaging and tasty. Critical cooking skills must be shared through co-creation of both recipes and meals with children. Becoming a sustainability chef with stable working hours offers an attractive alternative to hectic restaurant life, helping to preserve chefs' culinary knowledge in the system.

Co-creating circular meals

Busy parents don't always have time to cook wholesome meals or experiment with new cuisines. By reframing children as agents of change (not just subjects to change), children collaborate with sustainability chefs to co-create recipes and prepare the main ingredients at school. Everything is prepared at the school for small subscription fee. The food can be cooked when the children return home. This helps families save time on food preparation, while also empowering students to influence their family's (often settled) dietary patterns. To reduce food waste, students can also bring food that is about to go off to school to be used in meal preparation (yielding a small discount to the subscription fee).

THE MARKET

The Market is the place in the system where specific food purchases can be made and where sustainable food becomes the default option.

Integrated digital platform

Existing private and public online marketplaces can be connected in the same digital platform, creating a seamless purchasing experience for school staff and parents. The platform only provides sustainable food options, which has an educational effect on parents wondering what a sustainable packed lunch should contain. The platform also takes the responsibility from the parents and puts it in the hands of the real experts, making it easier to make the tasty, healthy and sustainable choice. A certain percentage of food offerings can (and should!) be reserved for local small-scale producers, encouraging public institutions to support progressive farmers, while also nudging families to test out locally prepared packed lunches, delivered fresh to the classroom.

REKO@school

The REKO retail and distribution model has taken the Nordics by storm, and offers city dwellers a way of ordering products directly from the primary producers. Once a month, farmers selling food through the integrated digital platform come to school to sell their products. This creates a direct link between the school grounds and the surrounding community. Besides selling local produce, farmers engage with chefs, health experts, school personnel, parents and children to co-create the meal options that the platform can offer. This allows farmers to meet their customers and for children to meet the face behind their food. It also creates menu options that take into consideration kids' taste preferences while also leveraging what is healthy and sustainable. Older children can pick up produce for the home on their way home.

THE TABLE

The Table describes how the act of eating is much more than just the food. The experiments here describe how food can be a strategy to achieve other goals, such as inclusion, community and different learning outcomes.

Food as community builder

Food has a unique power to bring people together. Instead of eating a meal at their desk in 15 minutes, children are given a carefully designed environment that promotes good conversations around a shared meal. Eating a meal becomes an integral part of children's intellectual and social development. Parents are involved by sharing their signature family dishes and presenting them together with their children to the other students in the class. Appreciating food diversity is especially important as schools become increasingly multicultural arenas. Learning about culture through food can be extended through the Food and Health classes, digitally connecting Nordic classrooms with those in the Global South to exchange recipes, cook one another's meals and share a digital meal.

THE CONTRACT

Experiments in the Contract operate behind the scenes, in the municipality. They regulate procurement so that it can be flexible, inclusive, and built on the needs of institutions, suppliers and citizens.

Opt-out sustainability contracts

Public procurement of food can be made easier -- and consistent across municipalities -- through the provision of contract templates with pre-set values for health and sustainability. With an opt-out system, public institutions (not just schools) are automatically signed up to the scheme, but can freely choose to opt out. The template's default setting helps the procurer to choose sustainable suppliers (including how to split contracts between wholesalers and some local producers), without that person needing to be an expert in nutrition, sustainability or contract law.

Smart food subsidies

Unlike free public meals, smart food subsidies only target those in need. The subsidy scheme, which assumes an integrated digital platform, can be linked to specific food items, ensuring that the most sustainable option is the most affordable one for those most in need. The scheme can also work in reverse to limit overconsumption of unhealthy food, by including a progressive pricing system wherein overconsumption of certain unhealthy foods makes their cost progressively more expensive for that person. In the absence of state subsidies, smart food subsidies allows municipalities to implement sustainable meals in partnership with the private sector, ensuring that everyone has equal access to sustainable public meals while lowering the overall financial burden on the municipality.

INSIGHT THEMES:

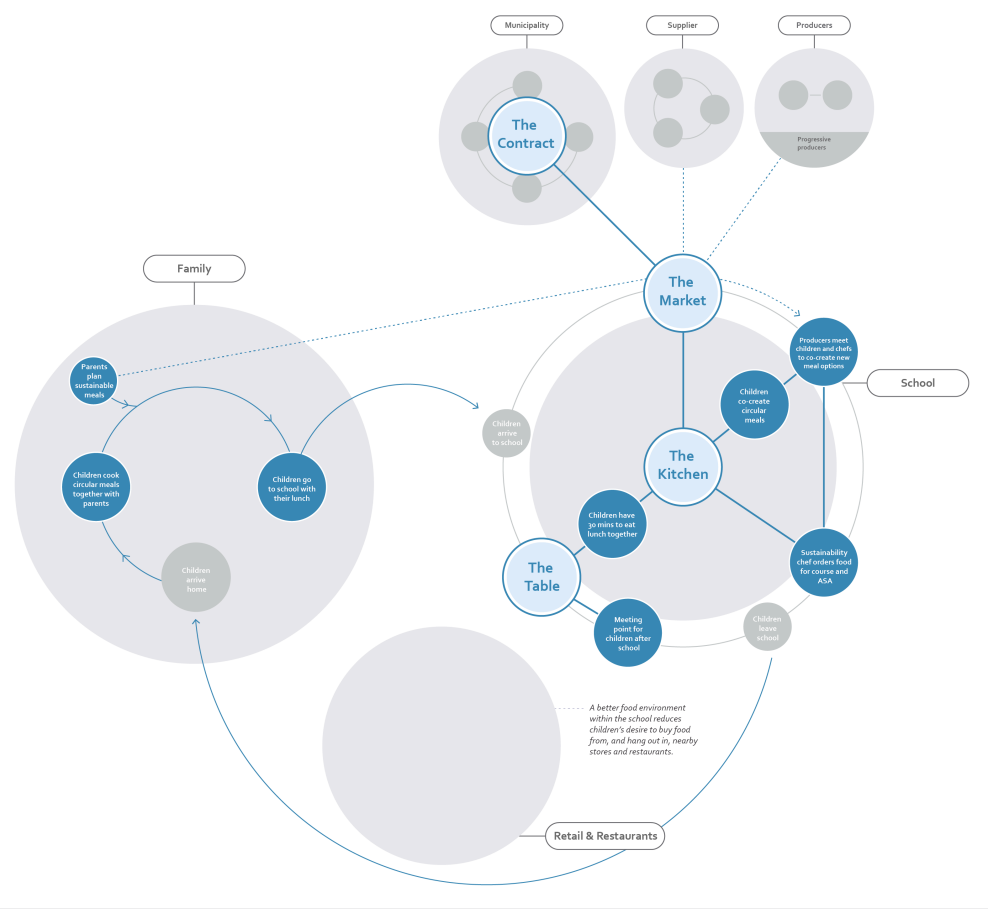
- Food as culture, community and inclusion
- Engagement through co-creation
- Food as a market
- The value of a face behind food
- Food Illiteracy
- Empowering all actors in the value chain
- Food as education

3.3.7 Bringing it all together

The real power of demonstrators stems from their ability to identify interdependencies and unlock synergies in the system. Sometimes, it's the synergies themselves rather than the specific solutions that can contribute most to systems change.

Demonstrators are testbeds for new ways of thinking and acting. The Oslo model proposed below reframes food from being a commodity to being a strategy (i.e. for achieving broader societal outcomes such as health, sustainability, inclusion and local economic growth). Instead of asking how we can make the food that is served less harmful to people and the planet, the Oslo model asks how we can make children live healthier and more sustainable lives overall through food. The result is shown in Figure 9. Having a visual representation of the system you are trying to influence helps you to make new connections between the existing nodes in the system as well as to propose entirely new nodes.

Figure 9. Demonstrating change



Systems change is not only about changing the nodes of a system; it's also more about changing the relationship between them. In our example, the Kitchen, with its resident Sustainability Chef, provides a 'core' for the demonstrator. It integrates food education and the school's meal preparation into a unified whole. The idea of circular packed lunches blurs the line between (private) packed lunches and (public) school meals, turning schools into mechanisms of reducing food waste, even providing solutions to parents' 'time squeeze'. These in turn synergize with the Table, which creates a carefully designed environment for children to eat communally, and also serves as an alternative meeting point for students after school.

Demonstrators connect 'soft' interventions with 'hard' hi-tech ones. In our example, a digital platform integrates multiple parallel platforms into a whole, which is extended to also supply packed lunches as a service to parents with little time or knowledge about how to make sustainable food. Because parents still need to make an active choice about what their children should eat, browsing through the platform can be a learning experience in itself. Going digital also opens up for smarter subsidies, which in turn enables municipalities to ensure equal access to sustainable meals at a fraction of the cost of providing free school meals to all. With such a system in place, a school or municipality can experiment with hybrid solutions,

such as providing a default sustainable meal option every day for free, with families free to opt out of the offer to bring or buy their own lunch.

Demonstrators foster unconventional collaborations. The Oslo demonstrator would allow the municipality to share the burden of developing solutions with the private sector, for whom sustainable school meals represent an enormous market opportunity. Recent research in Oslo has shown that 9 out of 10 parents would be willing to pay for lunches provided by schools, and Norway's largest dairy, Tine, is already experimenting with how to extend its current platform for drinks in school to also encompass packed lunches. By collaborating with the private sector in their development of such a platform, municipalities can ensure that the platform addresses multiple social outcomes, like providing access to various small-scale farmers and food entrepreneurs.

Demonstrators allow experiments that would likely fail on their own to thrive in synergy with parallel experiments. Asking REKO-ring farmers to make more frequent trips to town in order to have face-to-face interactions with school children would probably be a costly endeavour. Integrating the same farmers into a digital marketplace, where they can sell food to schools, as well as to families, gives them access to a larger market. With commercial viability secured, children's face-to-face interactions with farmers is enriching for all parties. There is also an added political value for municipalities that can connect their progressive food policies with market creation for local food producers.

Changing the legal code of a system can be a powerful mechanism for coordinating change. Improving public procurement processes can only do so much. Our example hopefully shows the wealth of possible experiments a demonstrator can focus on, tailored to the specific needs and resources of a place. Yet procurement contracts, being legal in nature, are especially suitable for standardization. Embedding key nutrition and sustainability requirements in a contract template allows best practice to spread faster between municipalities. As more and more municipalities begin to communicate the same sustainability standards to the market, the faster the market will adapt to these standards. By coordinating their market demands in this way, municipalities can collectively create a strong market pull for more sustainable production.

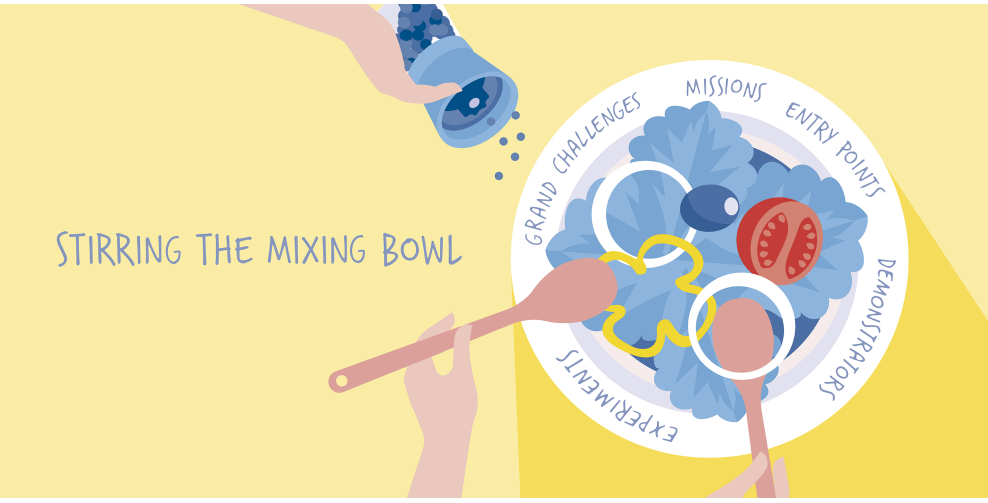
A demonstrator is other than the sum of its parts. Our example is not meant to be an exhaustive investigation into how a city like Oslo can change its food system. Any demonstrator should be co-created in partnership with challenge owners hosting a demonstrator. What we hope to have shown, however, is the power of mapping the system you are trying to change, come up with a portfolio of diverse experiments, and spend time and effort to think through how these experiments can connect into a new model. It's ultimately this new model that's being demonstrated. So while our imagined Oslo model might not turn Lise Mwangi's story from fiction to reality all on its own, you will hopefully recognize a few key elements of that story in our demonstrator example.

3.4. What next?

If our example from Oslo has you excited, you may be asking yourself how you can run a demonstrator. The answer ultimately depends on where you are and the type of support available to you from your national research and innovation agencies. In the annex, you can read about the approach we'll try out in the Nordics. In the spirit of learning through doing, we expect the process to evolve over time.

The ideas shared in this cookbook are themselves a demonstration of a new way to innovate – not only for economic growth, but for better societal outcomes. Innovation that is rooted in the real needs of both people and planet. This raises the bar higher than usual when it comes to our expectations of research and innovation agencies, expectations that we believe will be exceeded by a new generation of such agencies.

ACT IV – Bringing the cookbook to life



As we encounter unprecedented 21st-century challenges, it's easy to get lost in the complexity. Even as a person committed to bringing about change, it is easy to feel stuck and like there is no obvious place to start. This is why we need to have a set of different utensils close to hand. In this cookbook of strategies, we have given you some ingredients and recipes that you can use to focus your efforts on achieving sustainable food systems. These ingredients and recipes will help you to form a new way of thinking, not just about the people, action and orchestration needed to achieve a desirable future, but also about how to collectively imagine a new food future like the one depicted in the scenario at the very beginning of this cookbook.

There is a growing sense of urgency as we realise that our past efforts have not yielded the transformative changes that we need. Momentum is building among policy-makers for the adoption of more experimental approaches. But despite this growing interest in testing out new ideas, an uneasiness remains. How can we do this in practice and how do we ensure public support?

A large-scale Nordic mission on sustainable food systems led by government has never been carried out before... but there are signs that it can be done. For example, the innovation agency Vinnova is piloting a mission on food in Sweden. The Nordic Council of Ministers has funded a series of dialogues throughout the Nordic Region that have informed the identification of entry points. And lots of innovation related to the food system can be seen across the region in all sectors. We have what it takes.

This cookbook of strategies was written as an invitation to use food as the powerful lever of change. It is also an invitation to use the missions approach – jointly with citizens and other actors across the food system – to define grand challenges and entry points, set a bold mission, plan demonstrators and start strategically orchestrating actions across networks of people and organisations. Box 8 will help you to learn more about other people and organisations who are also thinking along these lines.

When it comes to ways of addressing grand challenges and variations in approaches, we could keep on talking until the cows come home, but we need to wrap it up and pass on the torch. You'll need to take what you have learnt here and implement it within your organisation either by fitting it into existing infrastructure or by creating new infrastructure to accommodate it.

It's time to say goodbye and leave you to proceed along your path. But before we do, let's recap the steps of the mission approach:

- Choose the challenges that you want to work with (Act I)
- Find your entry points (Act I)
- Develop your mission (Act II)
- Design your portfolio of demonstrators (Act III)
- Evaluate what you have learnt from the successes and failures of the process and continue to iterate, iterate and iterate

But don't just take our word for – it's time to put what you have learnt into practice.

Box 8. Quenching your thirst for knowledge

There are many great "chefs" out there who are constantly trying to improve the recipes for how we interact with the innovation processes that can change society. We encourage you to keep exercising your systems thinking and your innovation muscles by reading further. Here are a few other "cookbooks" from our bookshelf:

- Solutions Menu: A Nordic Guide to Sustainable Food Policy
- Mission-Oriented Research & Innovation in the European Union
- Vinnova's Mission Design Playbook
- Towards Sustainable Nordic Food Systems Project Briefs
- Identifying Viable "Need–Solution Pairs": Problem Solving Without Problem Formulation
- In Studio: Recipes for Systemic Change

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Cookbook for systems change – Nordic innovation strategies for sustainable food systems

We can and must work with the strategic innovation of food systems to solve some of our greatest societal challenges

This is the fundamental proposal of the book, Cookbook for systems change – Nordic innovation strategies for sustainable food systems. In essence, this cookbook for systems change is about the role that a strong public innovation system can play alongside the pathways towards sustainable food systems. The book lays out a method for deliberate food system transformation – a mission approach – that can support people, planet and society. This systems change cookbook will provide the ingredients – templates for developing interventions, guides for how to get started and examples of cross-cutting projects – that you can use to create your own recipes for change.

Food: an essential ingredient for systems change

Food systems lie at the heart of grand challenges in health and nutrition, prosperous, livelihoods, climate change and environment. Sustainable and well-functioning food systems are also essential for building resilient and just societies.

Food systems have been driving societal progress for millennia. Yet, some societal progress has come at a high cost to human health and the environment. Urgent action is needed if we are to address grand challenges like inequality, unsustainable consumption and production patterns, environmental degradation, fragile livelihoods and poor health. Food systems are powerful because they can be used to address multiple grand challenge action fronts.

The Nordics are ripe for food system transformations. Eight broad entry points – core areas of change – can get us started: Food environments, circularity, food culture and identity, diets and meals, food supply chains, resilient food production systems, food producers and cities.

Transformation of the food system will take an "all hands on deck" approach, and systemic changes will be needed to tackle these complex and multi-faceted grand challenges. Governments, particularly public innovation agencies, can play a key leadership role in co-ordinating this action.

We're on a mission!

Societal missions are emerging as mechanisms to direct multi-stakeholder innovation towards a common understanding of how best to solve our urgent grand challenges. A mission approach aims to create transformative change by breaking

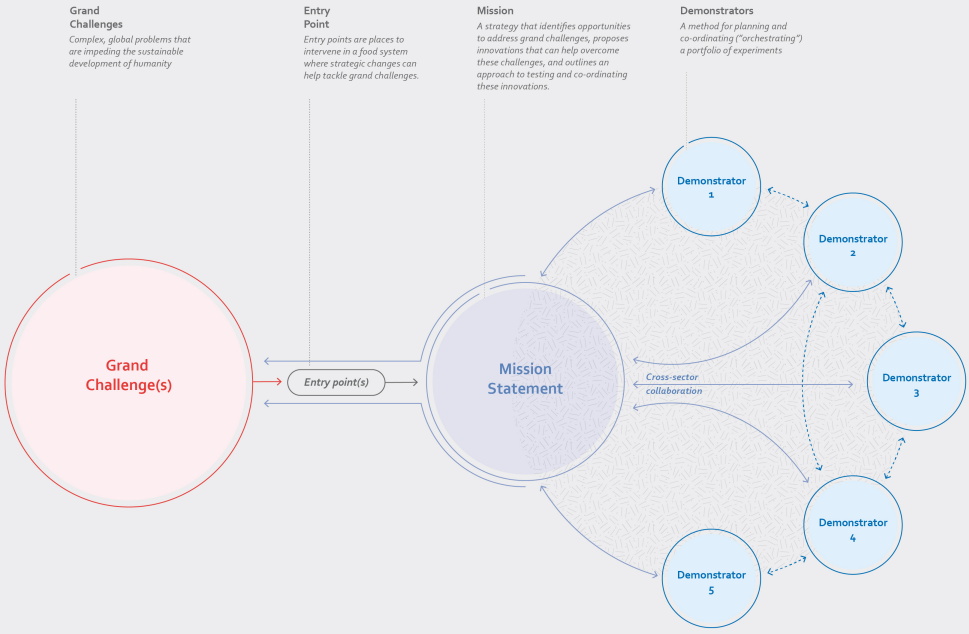
down high-level grand challenges into more granular components until concrete actions can be developed. This is done by identifying opportunities to address grand challenges, proposing innovations that can help overcome these challenges and outlining an approach to test and co-ordinate these innovations.

Societal missions should be bold, inspirational and ambitious while at the same time offering multiple solutions to get the job done. Such missions should also provide clear direction for action by setting measurable and time-bound goals and use innovation and innovation policy to achieve ambitious but realistic change. Societal missions should bring people together to work in new ways, involving multiple sectors, actors and disciplines.

There is no recipe for a Nordic mission on sustainable food systems but we can design one together. Based on the possible entry points to food systems transformation, this cookbook of strategies explores in detail the example of one specific mission: ensure that, by 2025, all public meals consumed in the Nordics are sustainable and tasty. That said, the possibilities are endless. By pooling existing knowledge and testing new approaches to mission design, the Nordics are in a very good position to collaborate on a shared mission for food system transformation in the Nordics. The Nordic region is an ideal place to demonstrate the types of collaborative systems change needed to meet the existential challenges we are currently faced with.

A mission approach

An example of how missions tackle grand challenges by exploiting entry points and breaking challenges down into more concrete, actionable interventions, clustered into different demonstrators.



Demonstrating transformation

Trying to change the whole food system all at once is simply too complex. Full-fledged research and development projects require a lot of money and other resources to carry out, and they are best deployed when you already know what you're fixing and why. Experiments, on the other hand, are a low-cost, low-risk way of learning how a mission can be achieved.

The complexity and dynamism of social systems mean that their transformation requires interventions at multiple levels at the same time. By orchestrating a portfolio of experiments that act on multiple levels of the system at once, demonstrators allow you to work with, rather than against, this dynamism.

Demonstrators aim to inspire large-scale change. The six essential qualities of a successful demonstrator are: mission-oriented, demand-led, place-based, iterative, holistic and grounded in citizen perspectives.

Systems change is not only about changing the nodes of a system; it's also about changing the relationship between them. Sometimes, it's the synergies themselves rather than the specific solutions that can contribute most to systems change. Demonstrators can help connect the dots.

Going from ideas to action

As we encounter unprecedented 21st-century challenges, it's easy to get lost in the complexity. This is why we need to have a set of different utensils close to hand. A mission approach can help form a new way of thinking, not just about the people, action and orchestration needed to achieve a desirable future, but also about how to collectively imagine a new food future.

A mission approach can be implemented within the Nordic public innovation ecosystem either by fitting it into existing infrastructure or by creating new infrastructure to accommodate it. Research- and innovation agencies in the Nordics can achieve greater impact more effectively by pooling resources, unlocking synergies across current project portfolios, avoiding duplication of efforts, and systematically sharing lessons learned and establishing best practice for how to approach and collaborate on missions

A large-scale Nordic mission on sustainable food systems led by government has never been carried out before… but there are signs that it can be done. Perhaps the Nordic countries' most important global contribution to achieving the Paris Agreement and the SDGs will not be any specific technology, business model or policy innovation, but rather to demonstrate how a strong public innovation ecosystem is the missing link to overcome the complex societal challenges defining our times.

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Nordic co-operation

Nordic co-operation is one of the world's most extensive forms of regional collaboration, involving Denmark, Finland, Iceland, Norway, Sweden, and the Faroe Islands, Greenland and Åland.

Nordic co-operation has firm traditions in politics, economics and culture and plays an important role in European and international forums. The Nordic community strives for a strong Nordic Region in a strong Europe.

Nordic co-operation promotes regional interests and values in a global world. The values shared by the Nordic countries help make the region one of the most innovative and competitive in the world.

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