2nd NKJ WEBINAR: WHAT DO SUSTAINABLE AGRO-MARINE FOOD SYSTEMS MEAN IN DIFFERENT NORDIC CONTEXTS?

12:00	WELCOMING WORDS 14.6.2023 12 - 14 CET
12.00	SILVIA GAIANI, SENIOR RESEARCHER AT HELSINKI UNIVERSITY RURALIA INSTITUTE AND COORDINATOR OF THE NKJ FUNDED NORDIC RESEARCH NETWORK
12:05	INTRODUCTION BY THE MODERATOR
12.00	MAJA KRUUSE, ICE INNOVATION FESTIVAL IN KIRKENES, NORWAY
12:15	THE NORWEGIAN FOOD SYSTEM WITH A SPECIAL VIEW TO FOOD CONSUMPTION AND SUSTAINABILITY
	GUNNAR VITTERSØ, SENIOR RESEARCHER, SIFO - NATIONAL INSTITUTE FOR CONSUMER RESEARCH, OSLOMET, NORWAY
12:30	THE FINNISH FOOD SYSTEM: A SELECTION OF SPECIFICITIES AND ISSUES
	XAVIER IRZ, PROFESSOR, DEPARTMENT OF ECONOMICS AND MANAGEMENT, AGRICULTURAL ECONOMICS, UNIVERSITY OF HELSINKI, FINLAND
12:45	SUSTAINABLE FOOD PROVISION FROM AN INDIGENOUS PERSPECTIVE. SAMI PERSPECTIVES FROM SWEDEN (VIDEO)
	ILDIKO ASZTALOS MORELL, ASSOCIATE PROFESSOR IN RURAL DEVELOPMENT, SWEDISH UNIVERSITY OF AGRICULTURAL SCIENCES, SWEDEN
13:00	LOCAL KNOWLEDGE AND SKILL SHARING - A KEY PILLAR OF SUSTAINABILITY AND RESILIENCE TO THE FAROESE FOOD SYSTEM
	SUNNIVA GUDMUNDSDÓTTIR MORTENSEN, ANTHROPOLOGIST, FOOD ACTIVIST AND SOCIAL ENTREPRENEUR, FAROE ISLANDS
13:15	BARRIERS TO A CIRCULAR BLUE BIOECONOMY IN ICELAND
	NÍNA M. SAVIOLIDIS, POST-DOC RESEARCHER, UNIVERSITY OF ICELAND, ICELAND
13:30	IMPORTANCE OF INNOVATION AND COLLABORATION IN THE FOOD SYSTEM IN DENMARK
	LARS VISBECH SØRENSEN, CEO, FOOD BIO CLUSTER DENMARK, DENMARK
13:45	Q&A











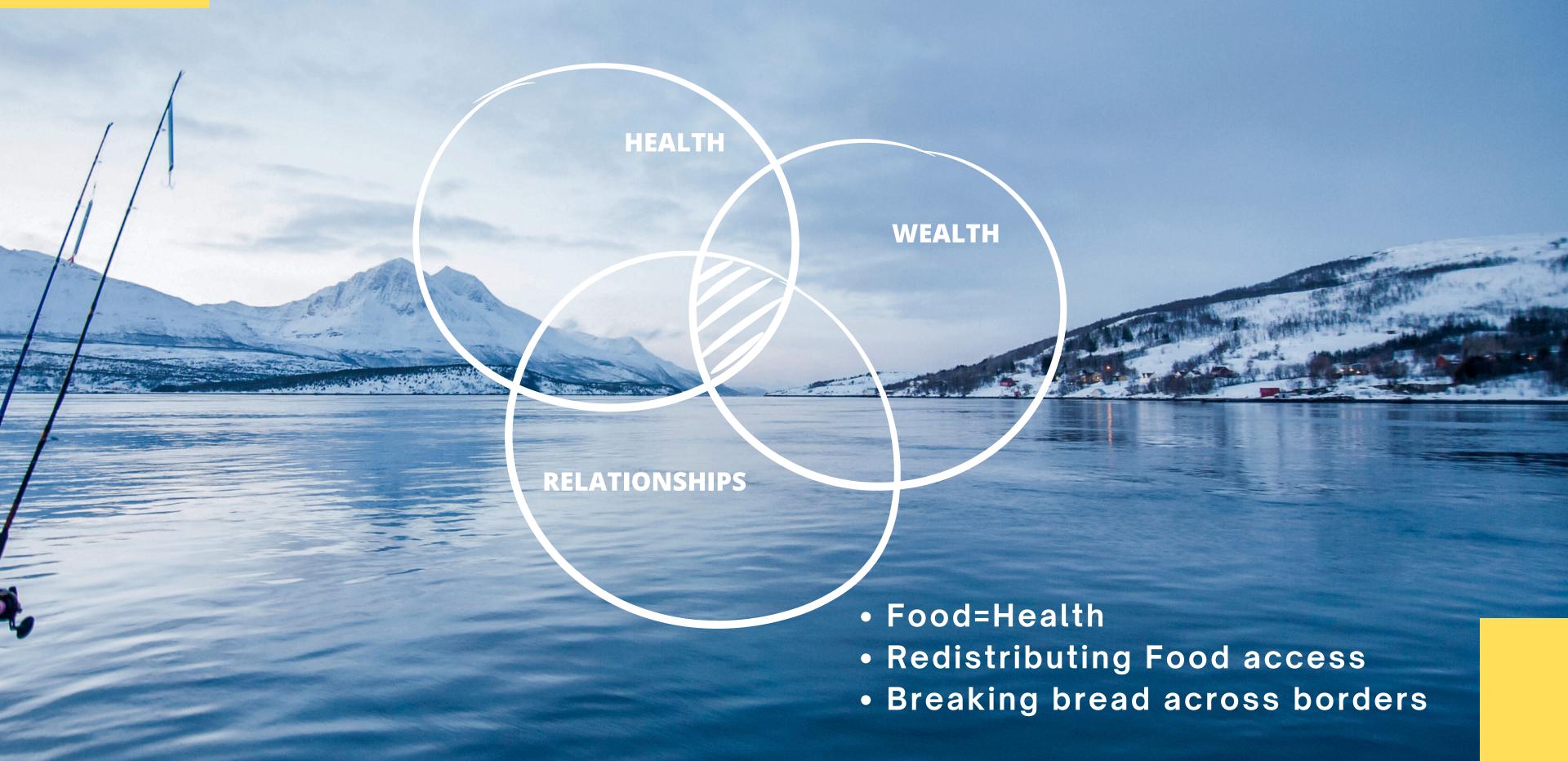








FOODTECH//IMPACT



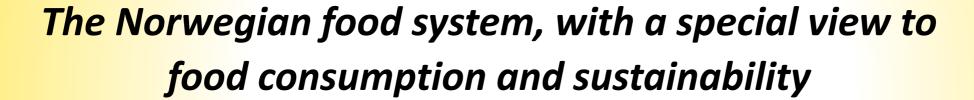




Online webinar

What do sustainable agro-marine food systems mean in different Nordic contexts?

14th of June 2023



Gunnar Vittersø and Sabina Kuraj, Consumption Research Norway – SIFO





https://www.oslomet.no/en/about/sifo/work-towards-un-sustainable-development-goals

Introduction and outline

Sustainability in the food system

Political goals in Norwegian food policies

Self-sufficiency

Prices and consumption

Food consumption patterns and dietary recommendations

Consumers – practices and perceptions of sustainable food

Vipa

Vipe (Vanellus vanellus):

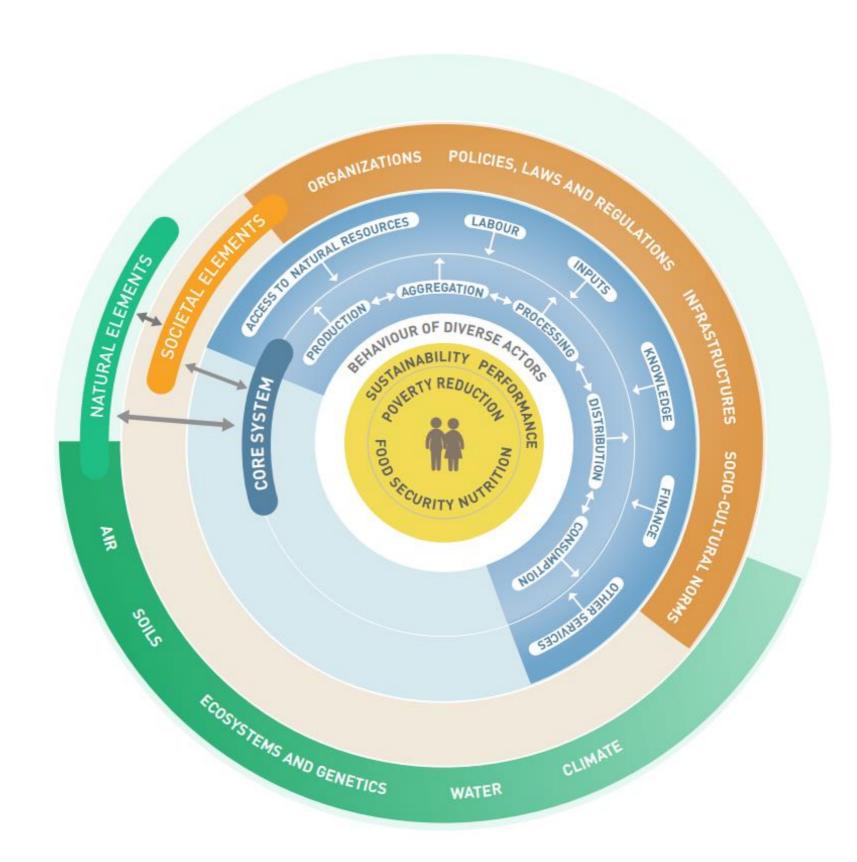
- > 90 percent reduction since the 1970-ies
- Less than 10.000 pare left in Norway (Store norske leksikon, Jan Eivind Østnes)



The food system wheel (FAO)

The relations between production and consumption in the food system

- Core system: layer of activities through which food products flow (production, aggregation, processing, distribution and consumption, including waste disposal)
- Supporting systems: a layer of services supporting the flow (water, soils, air, climate, and ecosystems and genetics)



Goals in the Norwegian food policy

«The mission and overall objectives of the Norwegian agriculture is to ensure enough, safe and varied food of good quality and to a reasonable price.»

Mat - regjeringen.no



Enough food - Increase domestic production:

- Secure high self-sufficiency rates
- Strengthen food security
- Maintain agriculture across the country (settlement and employment)

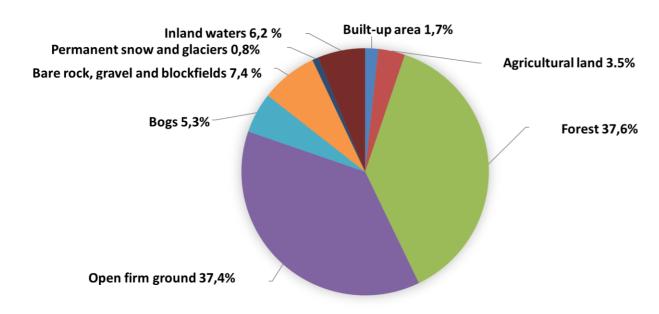
Safe food and varied food of good quality

- «Value added program»
- «Savour Norway» («NytNorge strategy»)

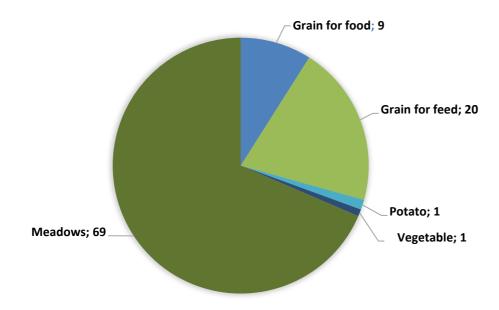
Reasonable prices – A difficult balance between securing farmers' income and consumers access to food (to a reasonable price).

Land cover, land use, sea and ocean

Land use and land cover

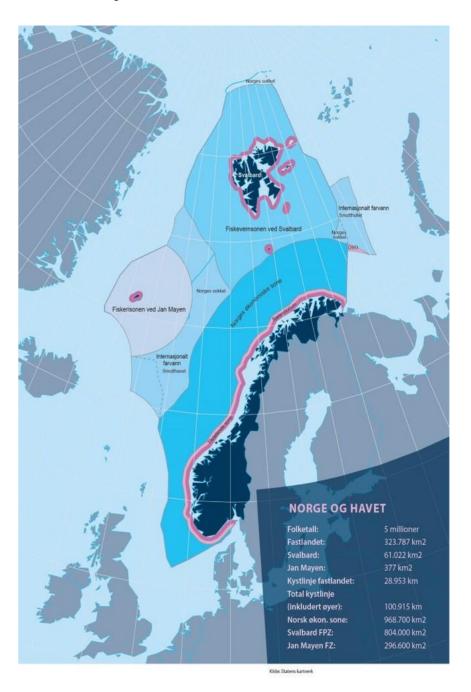


Agricultural area by crop, percent



Source: Statistics Norway (2022)

Norway, sea and ocean



Source: FRAM - Nordområdesenter for klima- og miljøforskning - Framsenteret

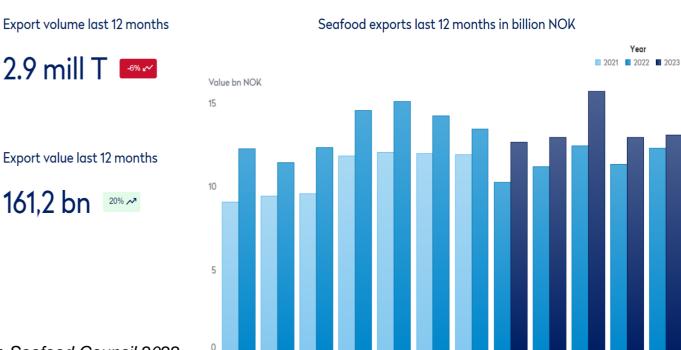
Seafood policy and trends

New aquaculture strategy: 'A Sea of Opportunities' lunched on 6 July 2021. Growth strategy: increase the production of some fishery species (rainbow trout, trout and Atlantic salmon) from 1.5 million tonnes to 5 million in 2050.

- Norway is a net exporter of fish and fish products.
- Between 2008 and 2018, exports increased by a total of 72%, while imports increased by 6% (OECD 2021)
- In 2022, seafood was exported to a total of 115 countries.
- The largest markets for Norwegian seafood exports in May were Denmark, Poland and the USA. (Norwegian Seafood Council)

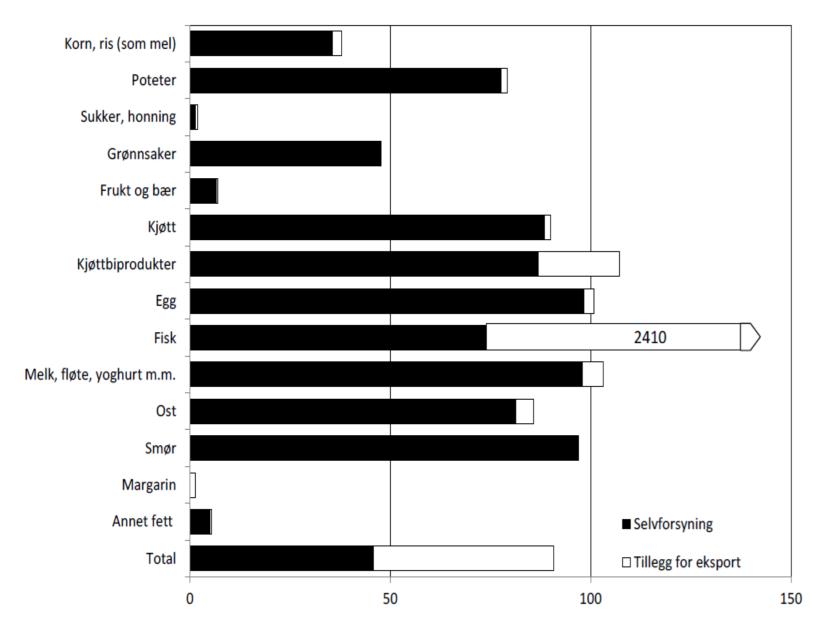
To meet the goals of the UN SDGs, the Norwegian industry must develop new and more local sources of protein for fish feed, that in turn can reduce the impact on the environment." (Norwegian Seafood Council 2022)

- Most of the ingredients that make up the feed used in the salmon industry are imported.
- The raw materials used in fish feed represent 80% of the greenhouse gas emissions produced by the industry



Source: Norwegian Seafood Council 2022

Self-sufficieny in foods- and feeds



Policy goal: increase the use of Norwegianbased feed ingredients to strengthen food security

Imported feeds

- The import of concentrated feed (soy) amounted to 48% in 2016
- soy contributed about 35% of the protein to cows' diets in 2015 (van Oort and Andrew, 2016)

Farmland cultivation

- Forage production continues to increase, going from 55% of farmland in 2001 to 67% in 2015
- The land used for fruit and vegetables is reduced by 5% and by 28% grains (Chillarón, 2022)

Selvforsyningsgrad/dekningsgrad i prosent

Source: Norwegian Directory of Health, 2023

Consumption kg per capita (wholesale)

Consumption (wholesale level)

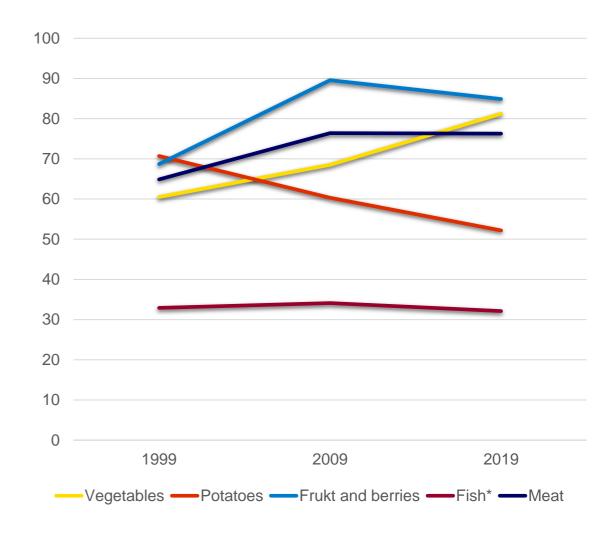
In the last 60 years meat consumption per capita has doubled in Norway, from 35 kg/person/1950's to 72 kg/person/2020 (Norwegian Directorate of Health, 2021).

The types of meat that are consumed the most are meat from pork, poultry and beef/veal.

Fish consumption has decreased: 12 percent lower than in 2015 (Norwegian Directorate of Health, 2022).

Salmon and cod dominate (the two types of fish make up 32 percent of the total turnover in 2021)

Vegetable consumption has increased, potato consumption has decreased from 70 kg in 1999 to 50 kg in 2019.



Source: Norwegian Directory of Health, 2023
*Percentages for fish in the Figure for 1999 are based on figures from 2003

Food consumption patterns and dietary recommendations

The Norwegian dietary guidelines by the Norwegian Directorate of Health

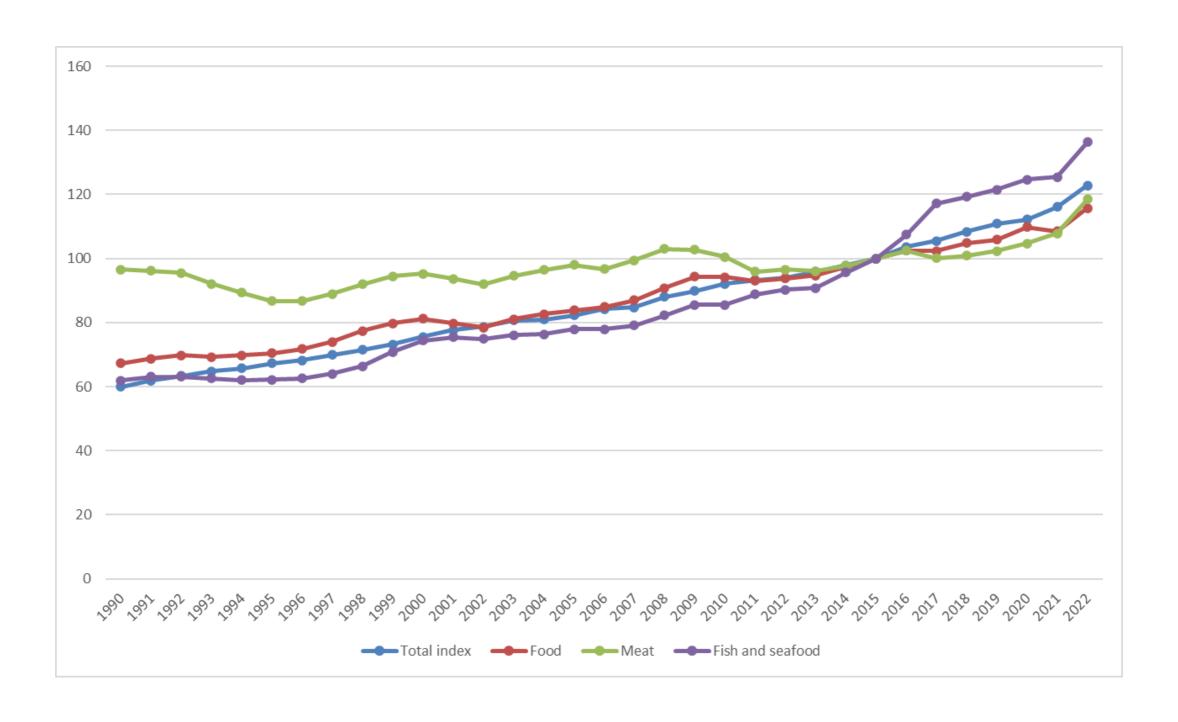
- Have a varied diet with lots of vegetables, fruits and berries, whole grain products and fish, and limited amounts of processed meat, red meat, salt and sugar.
- Eat at least five servings of vegetables, fruits and berries every day
- Increase the consumption of fish and seafood: "Eat fish two to three times a week (350-400 grams). You can also use fish as a topping or spread."
- Decrease consumption of meat choose lean meat and lean meat products. "Limit the amount of processed meat and red meat to less than 500 grams per week."





Source: Helsedirektoratets kostråd - Helsenorge

Development in prices of selected food (groups)



471

Table 2 Activities of sustainable food consumption by country (%)

Are you doing or planning to do the following things in order to reduce environmental impacts?	Denmark (N=2060)	Finland (N=2044)	Norway (N=2079)	Sweden (N=2065)	Total (N=8248)
(a) Buy regional (local) food***					
I am doing this already	38.2	37.8	34.6	45.5	39.0
I would like to do this	37.0	48.0	43.2	41.2	42.4
I am not doing this and I am not willing to	24.8	14.1	22.2	13.3	18.6
Total	100	100	100	100	100
(b) Avoid products with excessive packaging ***					
I am doing this already	24.5	44.5	27.4	37.0	33.3
I would like to do this	38.6	37.8	39.3	36.3	38.0
I am not doing this and I am not willing to	36.9	17.7	33.3	26.7	28.7
Total	100	100	100	100	100
(c) Buy organic food***					
I am doing this already	33.9	23.6	17.2	29.5	26.0
I would like to do this	25.1	37.2	30.2	36.7	32.4
I am not doing this and I am not willing to	40.9	39.1	52.5	33.9	41.6
Total	100	100	100	100	100
(d) Eat only seasonal fruit and vegetables***					
I am doing this already	26.2	26.3	17.6	21.7	22.9
I would like to do this	32.3	38.7	32.2	44.0	36.8
I am not doing this and I am not willing to	41.6	34.9	50.2	34.3	40.3
Total	100	100	100	100	100
(e) Eat meat at most twice a week or little at a tir					
I am doing this already	15.3	21.4	29.1	24.6	22.6
I would like to do this	15.6	21.0	21.1	21.6	19.8
I am not doing this and I am not willing to	69.0	57.7	49.8	53.8	57.5
Total	100	100	100	100	100
(f) Avoid food products that were imported by ai					
I am doing this already	9.2	12.0	5.3	16.1	10.7
I would like to do this	37.9	47.8	38.4	50.5	43.6
I am not doing this and I am not willing to	52.9	40.2	56.3	33.4	45.7
Total	100	100	100	100	100

^{*}p<0.05, **p<0.01, ***p<0.001

Preferences concerning meat and other food of animal origin

	Norway	UK	Poland	Germany	Italy	France	Spain	All
Regularly	74,8	67,0	58,1	48,6	42,0	60,0	69,4	59,8
Dependent on production	9,5	13,4	14,2	16,1	43,2	17,6	12,9	18,2
Occasionally	8,4	10,4	21,3	28,0	9,9	17,9	13,0	15,7
Dairy and eggs	1,1	4,2	2,9	4,0	2,1	1,7	2,0	2,6
No food of animal origin	0,8	1,3	0,9	1,3	0,4	1,0	0,3	0,9
None of the above	5,0	2,1	2,3	1,2	1,9	1,1	2,0	2,2
Don't know	0,5	1,6	0,4	0,8	0,4	0,7	0,4	0,7
Total	100	100	100	100	100	100	100	100

I eat meat on a regular basis

I eat meat depending on how it is produced

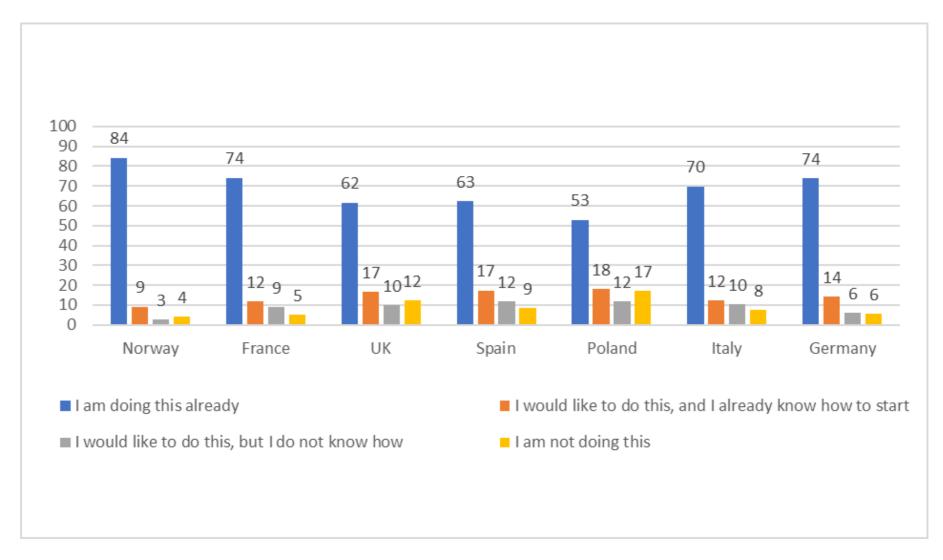
I do not eat meat regularly but can eat fish or meat occasionally

I eat dairy products and eggs, but no fish or meat at all

I do not eat eggs or dairy products or any foods of animal origin

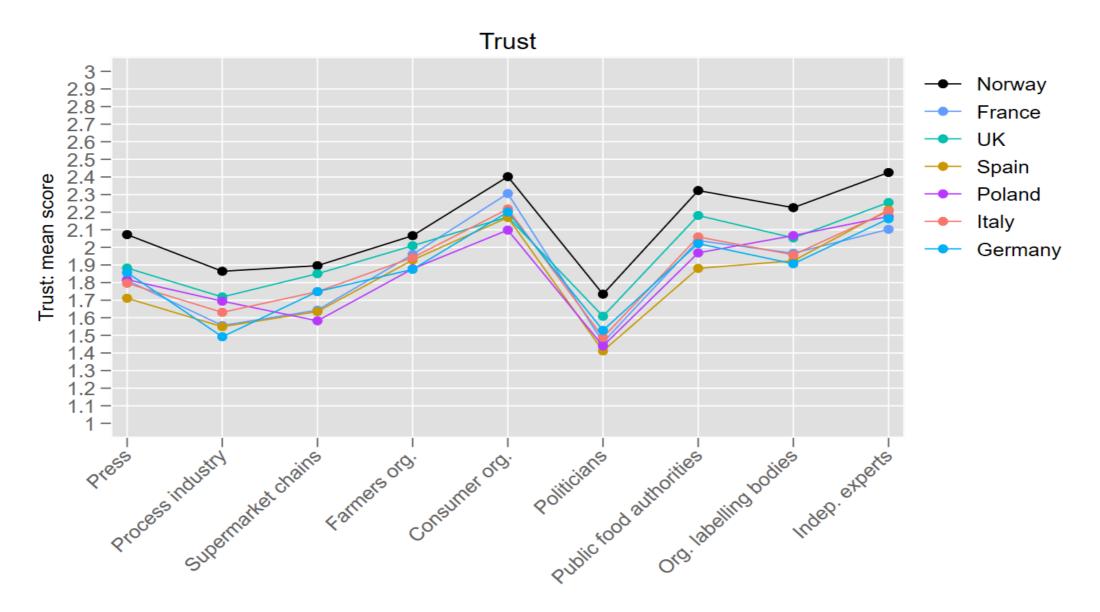
Source: Vittersø et al, 2019, 2022

Use leftovers for later meals



Source: Vittersø et al, 2019, 2022

Trust in food system actors

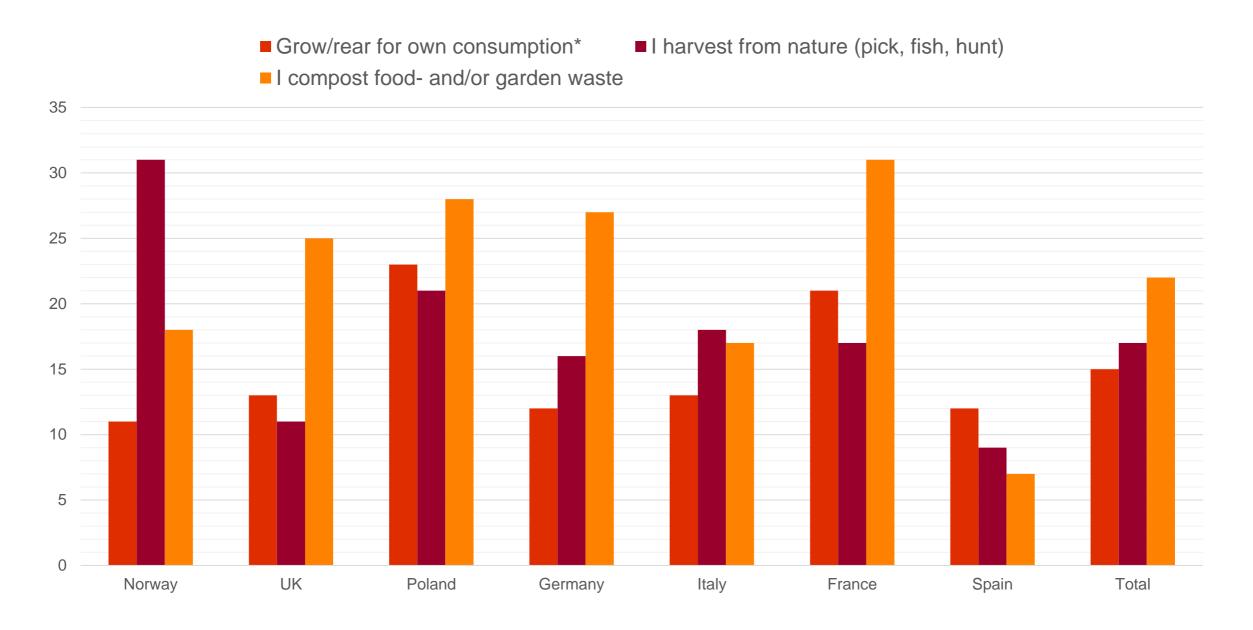


Input values to mean score: Whole truth = 3, parts of truth = 2, misleading info = 1

Source: Vittersø et al, 2019

Imagining that there is a food scandal concerning salmonella in organic chicken in ... (your country). Do you think that the following would tell you the whole truth, only tell part of the truth or would give misleading information?

Food provisioning and growing practices



Some concluding remarks

- Policy and production: Independent food policy protecting agriculture – exporting fish and seafood
- > Market: Concentrated retail sector focused on price and convenience
- > Consumption: Little differentiation in food purchases and preferences

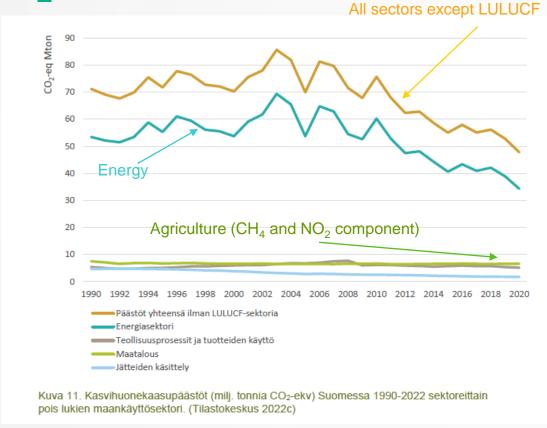
Thank you for your attention!



HELSINGIN YLIOPISTO HELSINGFORS UNIVERSITET UNIVERSITY OF HELSINKI



THE FOOD SYSTEM IN THE CLIMATE TRANSITION



Source: Kaljonen et al. (2022)

- 1. The food system accounts for 18 Mt CO₂ eq., or **29% of total** emissions, a growing share.
- Finland is committed to carbon neutrality by 2035
- 3. 88% of those emissions arise **from primary production**, including 11.7 Mt from soils



A VARIETY OF TRANSITION PATHWAYS

Trade offs

Trade offs Consumption and diets Land use **Agricultural** practices **Processing and** logistics

Achieving 33% reduction in GHGE while ensuring nutritional adequacy of the Finnish diet and biodiversity of agr.lands

2035

Achieving 70% reduction in GHGE while ensuring nutritional adequacy of the Finnish diet and improving biodiversity of agr.lands.

2050

TRANSITION PATHWAYS



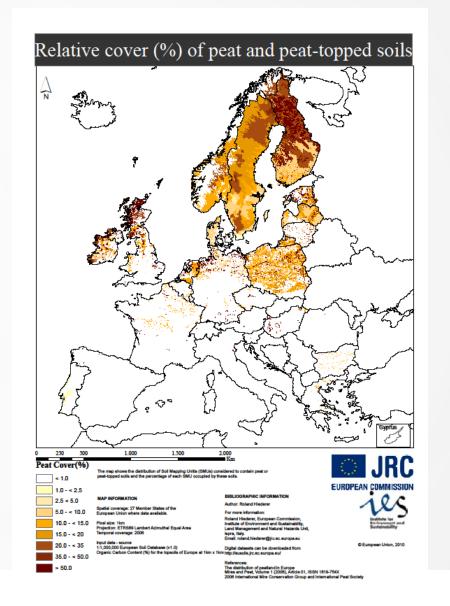
 \circledcirc JUST-FOOD, SYKE, 2019.

Food waste



LAND USE AND LAND USE CHANGE

- Peat soils account for 10% of agricultural land, but than half of agricultural emissions (UEF, 2021)
- Emissions linked to the level of the water table, worst in case of crop production
- Mitigation options:
 - Stop deforestation and conversion of peat soil to agricultural land
 - Devise new climate-friendly management methods of peats soils
 - Full restoration and/or afforestation





LAND USE AND LAND USE CHANGE - SOME

ISSUES

- Soil heterogeneity, down to parcel level
- Economics issues of incentives for and opportunity cost of change:
 - Large investments required to raise/adjust the water table
 - Profitability of alternatives has not been demonstrated
 - Compensation would probably be required
 - Some perverse policy incentives



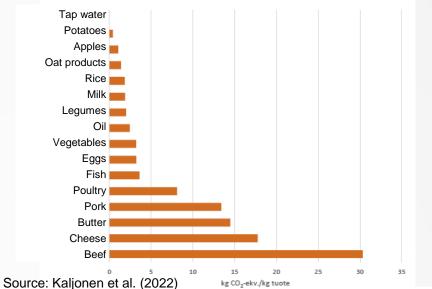
Installation of an adjustable drain well. © Image: Sanna Saarnio.

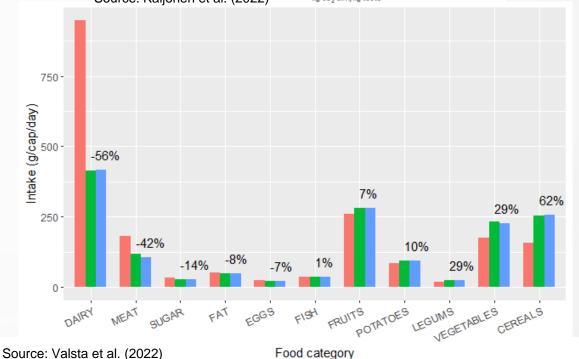




CLIMATE-FRIENDLY DIETS

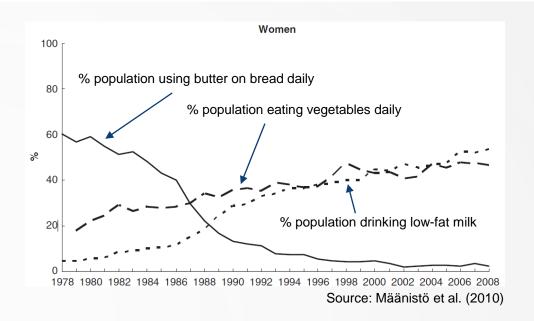
- Large differences in environmental impacts of diets
- For the majority of Finns, dietary recommendations are not met
- Win-wins health-climate are possible:
 - Less animal products, in particular red meat
 - More plant-based products, in particular cereals & potatoes
 - Proteins not an issue
 - Importance of intra-category substitutions

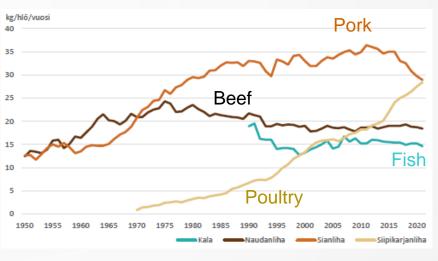






- A long tradition of public intervention to change diets:
 - Public catering, e.g. free school lunches since 1943
 - North-Karelia project in the 1970s (Vartiainen, 2019)
 - Taxes (candies 2011; sodas 2014) (Jysmä et al., 2019)
- Resulting in a transformed, healthier diet (Määnistö et al., 2010)
- However:
 - The current pace of change remains slow
 - Political difficulties of measures reducing demand in a context of inflation and low farm profitability





Source: Kaljonen et al. (2022)



INNOVATION IN THE AGRI-FOOD AREA

- Intense product innovation in relation to sustainability from a variety of actors:
 - SMEs (e.g., Finnförel)
 - Large food processors/cooperatives (e.g., Valio's C neutral milk)
 - Start-ups (e.g., SolarFood, Nordic FoodTech)
- Finns relatively willing to try new food products (e.g., cultured meat, Klöckner et al., 2022), but long-term adoption does not necessarily follow



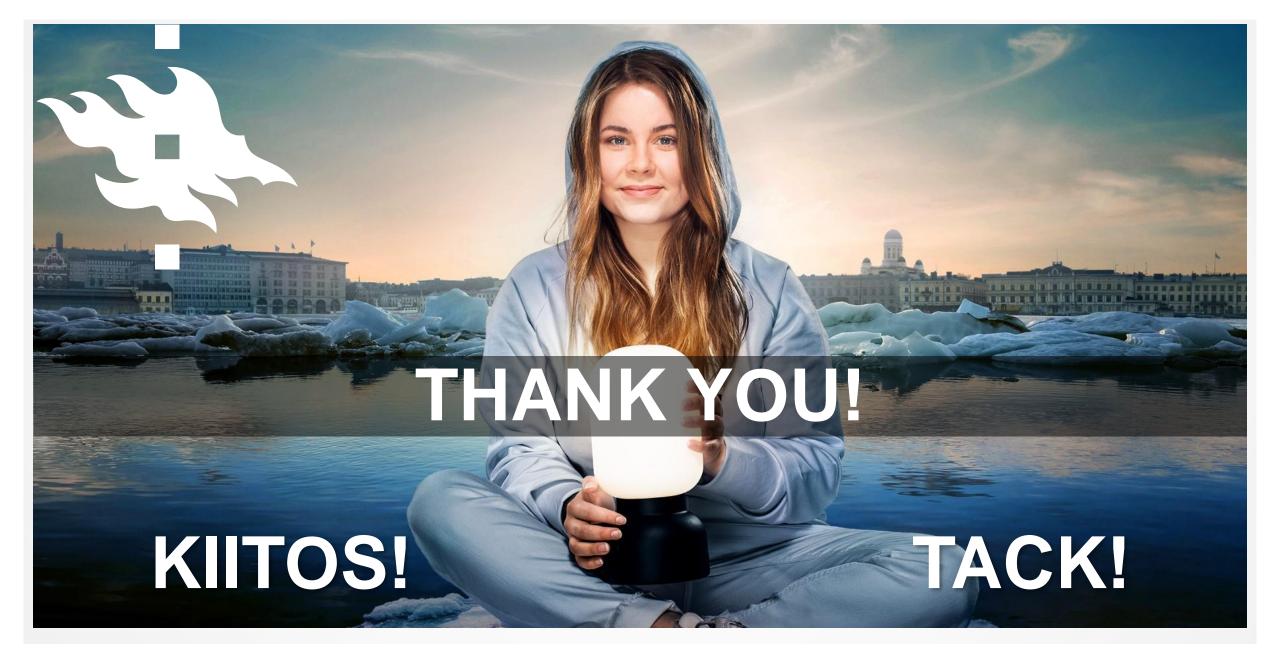




CONCLUSIONS

- The food system is central to the climate and sustainability transition in Finland
- Largest mitigation potential linked to changes on farms (land use, production mix) and or radical innovations
- Some strengths: high level of food security; R&D system; willingness to change diets

- Some key obstacles:
 - Political feasibility of solutions, and gap between strategic targets and policy implementation
 - Sectorial policies and thinking rather than a genuine food policy (Niemi, 2021)
 - Fairness of the transition
 - Incentives and economics

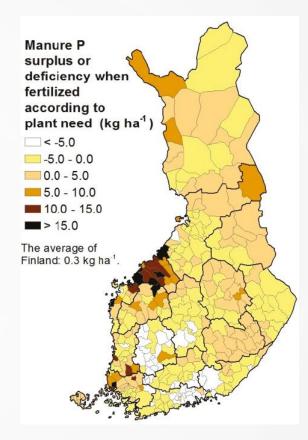


HELSINGIN YLIOPISTO HELSINGFORS UNIVERSITET UNIVERSITY OF HELSINKI

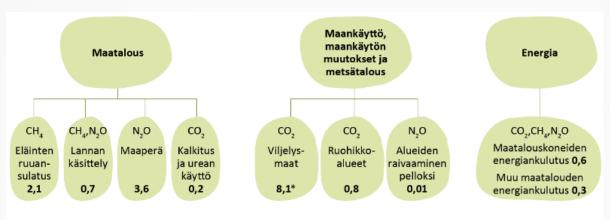


OTHER SPECIFICITIES - MISCELLANEOUS

- From sectoral policies to food policy (Niemi, 2021)
- Data issue
- Regional nutrient imbalances (Marttinen et al., 2018)







Kuva 12. Maataloudesta lähtöisin olevien päästöjen raportointi YK:n ilmastosopimuksen mukaisessa raportoinnissa, luvut vuoden 2020 päästöjä. (Tilastokeskus 2021)

Source: Kaljonen et al. (2022)

Faculty of agriculture and forestry



Fair and regenerative food ways in the Faroe Islands



MATKOVIN

Small scale fishing

Small scale sheep farming





Intergenerational knowledge and skill sharing



Sheep farming and slaughter

Kongsjørð: Royal land / Public

ownership

Ognarjørð: Allodium / Freehold land

One or more owners per.

All across the archipelago

From one or two sheeps to some hundreds



Sheep farming and slaughter: The sustainability aspect

Family-run farms

Many generations together

Farms locally rooted (in many small places)

Work gatherings throughout the year / where the observation and learning happends

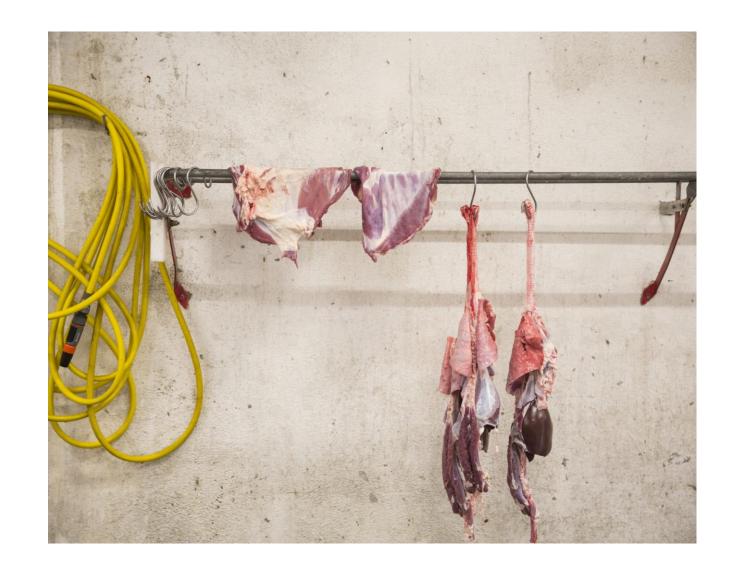


Challenges

Difficulties to make it profitable

Changed consumption patterns
People/Consumers have less time

The skills/handicraft of farming and slaughter are well preserved among the people – but the consumers are loosing or have lost their knowledge and skills about handling the meat and especially the offal.



Small scale fishing in the Faroe Islands

The sea - our livelihood A fishing nation

From fishing boat to fish farming cages

The transfer of knowledge and skills takes place in the baiting sheds (egningarskúrar) and onboard the open fishing boats.



Small scale fishing: A sustainable fishing method

• Fishing method: Long line

Fishing method: Jigging reel

Passive gears: Gears are left in place for a period before retrieval. They passively wait for attracting fish using bait (contrary to active gears such as trawling where large nets are pulled through the sea to catch fish



Challenges

Work hours dont fit with today's youth preferences.

Fishermen average age aprox. 60 years

Few baiting sheds are left and in use (egningarskúrar) - Few fishing boats and the number is not increasing.

Loss of knowledge and skills: Reading the sea and the weather, fishing and handling the fish (consumers)



How do we secure and strengthen the survival of these small and sustainable foodways?

Familiarization (as the opposite to the current process of alienation)

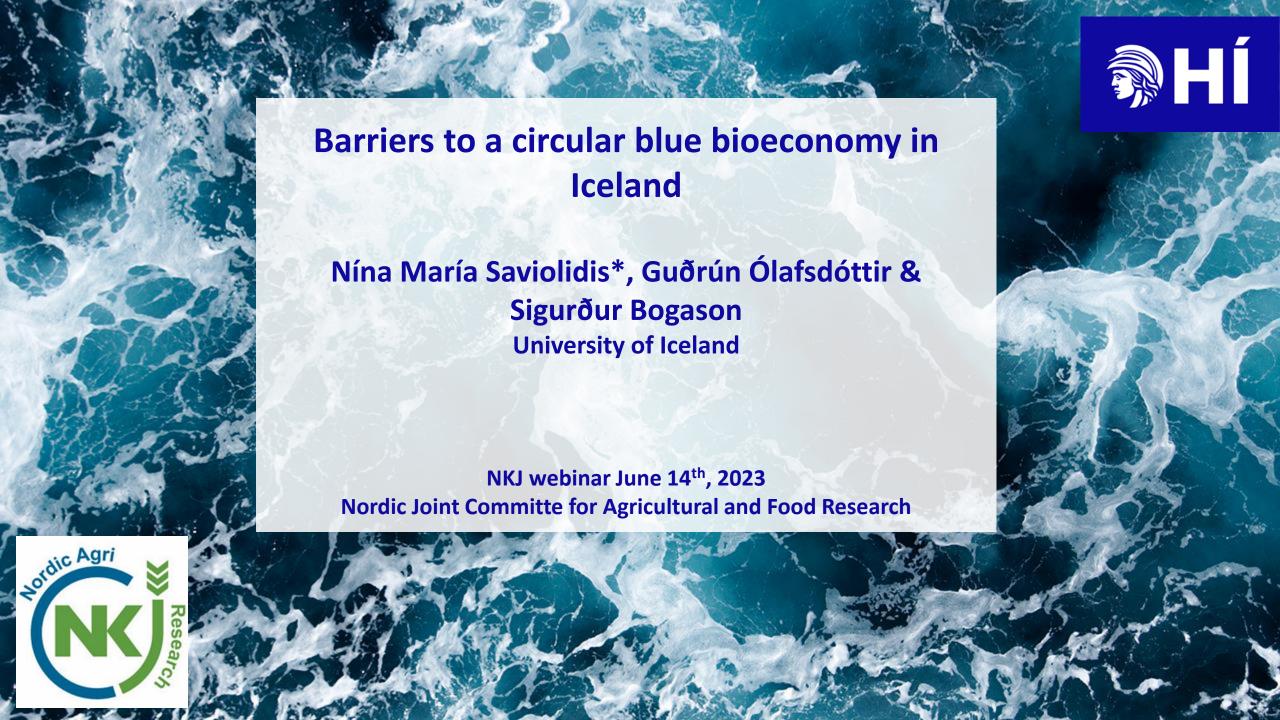
Visualization (Art and communication)

Access to food (The food market and other public "sites")

Education (Workshops)

Storytelling (The importance of "talking up" the small and sustainable foodways — inspiring respect and interest)









- Exploring the perceptions of companies, experts and policy makers on barriers to circular blue bioeconomies in Iceland and Norway
- The emphasis is on fisheries and aquaculture due to the economic significance of these sectors for both countries
- The main goal was to elucidate the opportunities and challenges for further advancement of circular blue bioeconomy activities and strategies in Iceland and Norway
- This presentation focuses on the findings from Iceland and the perceived challenges and barriers to a more circular blue bioeconomy



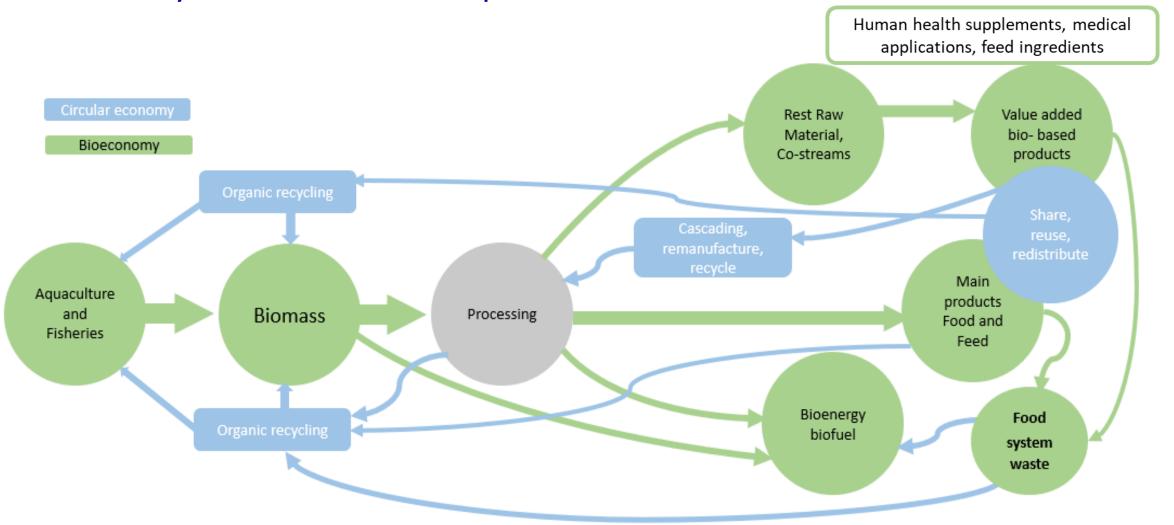
Stakeholder interviews and focus groups



- 17 in-depth, semi-structured interviews with key informants in the blue bioeconomy in Iceland and Norway e.g.:
- Primary industries: fisheries and aquaculture
- Secondary/supporting industries including biotech and tech solutions' companies
- Experts and research institutes
- Policy makers/public institutions
- 2 focus groups in Iceland with aquaculture companies and experts
- 1 interview with an EU policy maker



Circularity of biomass from aquaculture and fisheries



Thematic categorization of barriers and challenges



Regulatory

Policies
Domestic regulations
International regulations
Stretegies
Roadmaps

Resource

Tangible resources e.g.: financial, physical and material sources
Intangible resources: knowledge & skills

Market

Consumers & customers
Industry Associations
Competitors
Service providers
Partners

Social

NGOs Local Communities Media Image and reputation Organizational values

Summary findings of challenges and barriers



- Need for holistic mapping of waste streams (quantities and content)
- Raw material issues: volume, price, competition for resources
- **Infrastructure**: waste management and wasterwater management

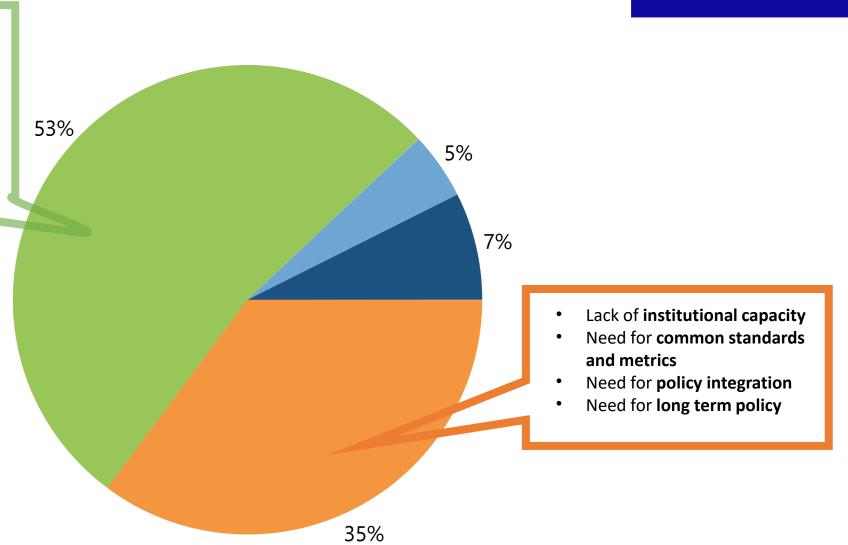
Social

Market

Resource

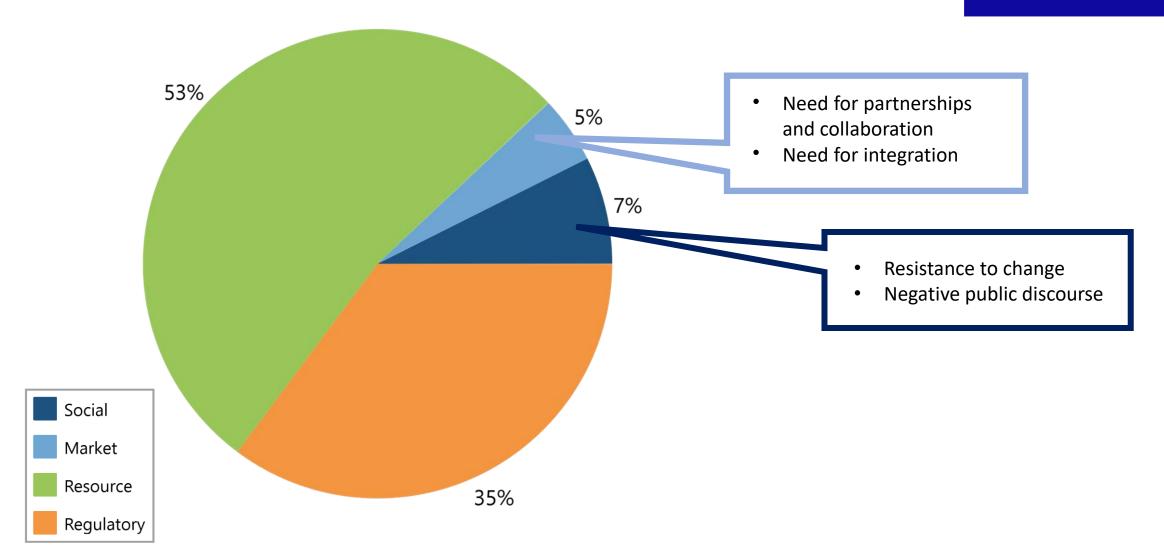
Regulatory

• Energy supply issues

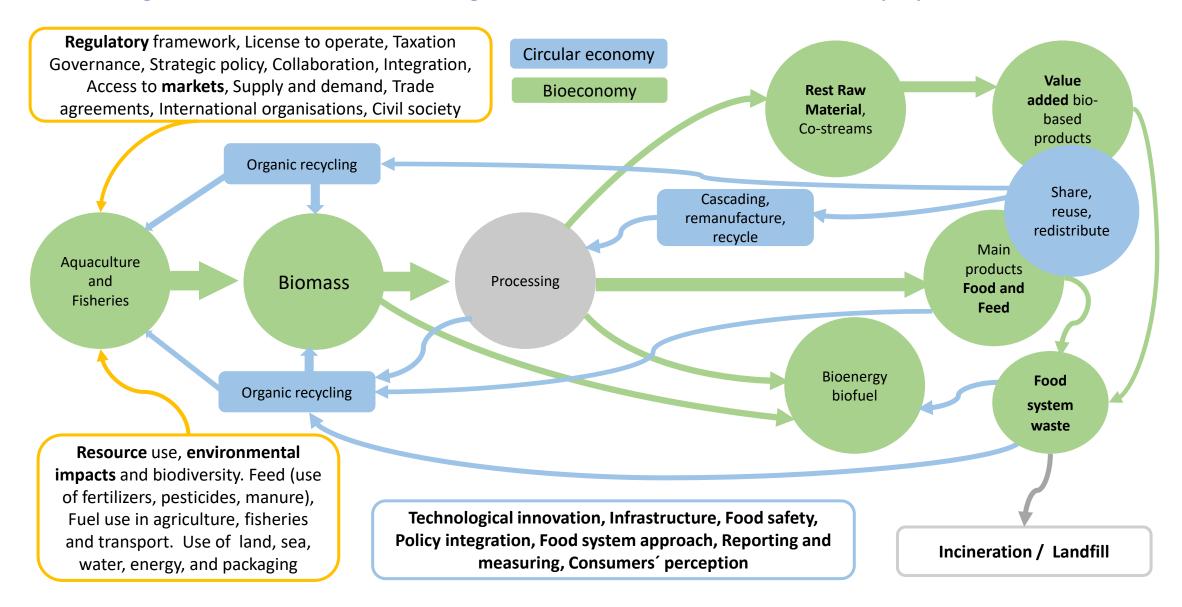








Enabling conditions and challenges in circular blue bioeconomy systems





THANK YOU!

Contacts:

Nína María Saviolidis* <u>ninamaria@hi.is</u> Gudrun Ólafsdóttir <u>go@hi.is</u> Sigurdur G. Bogason <u>sigboga@hi.is</u>

ASCS Applied Supply Chain Systems Research Group







Follow us!



@Blue_SmartChain

#SmartChainBlue



@SmartChain Blue BioEconomy Solutions



Lars Visbech Sørensen, CEO

Importance of innovation and collaboration in the food system in Denmark.

Food & Bio Cluster Denmark



Appointed as national cluster 2020



VISION

The Danish food and bioresource cluster aims to be a world leader in innovation that contributes to a globally competitive and sustainable development of the entire value chain.

MISSION

The cluster organisation Food & Bio Cluster Denmark wants to strengthen the innovative power of the entire value chain for food and bio resources in Denmark.

We want to be the national driving force that brings together stakeholders, builds partnerships and commercialises new research-based knowledge for increased innovation in Danish food and bioresource companies.







Food & Bio Cluster Denmark in numbers

+9000

Contacts



+2500 organisations Partners in





Smart brains

+43

9



Locations in Danmark



Members



+8000

followers on LinkedIn

Copenhagen
Aarhus
Viborg

Incubators

+260

M € project portfolio





We cover the entire value chain from farm, sea, forrest to fork and other applications for bioressources

products

- and beyond

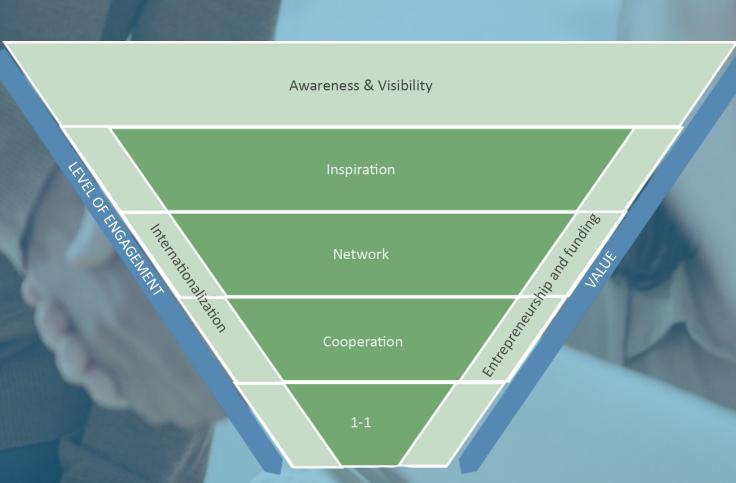


Food & Bio Clust

Food & Bio Cluster Denmark offers....

As part of the cluster, you will find knowledge and inspiration on innovation and green transition within food and bioresources.

Through dialogue and collaboration, we will create solutions tailored to your needs.



Plant2Food

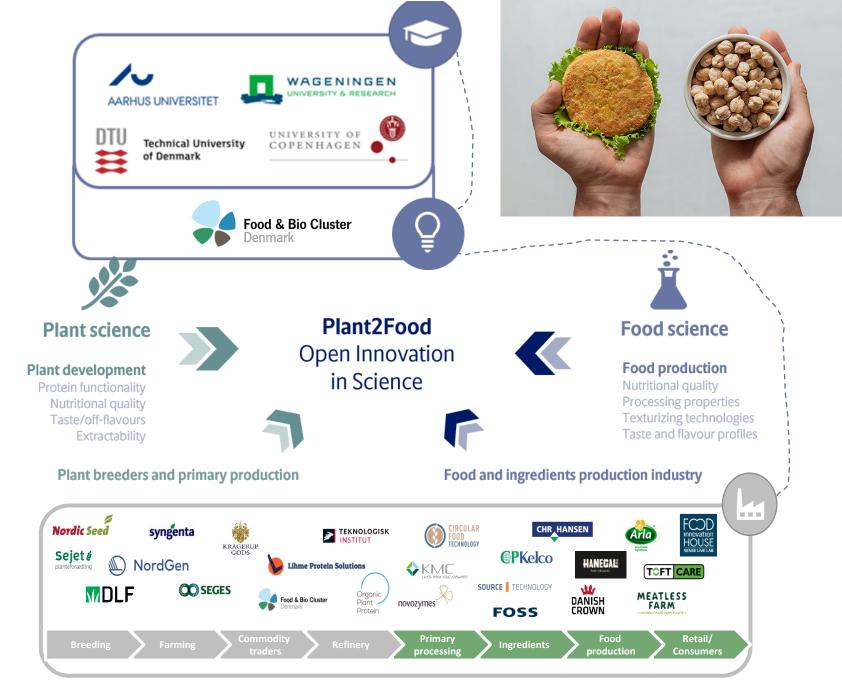
Mission: To accelerate the transition to a more sustainable food system, which is healthy for both the planet and its population, by building a leading hub for plant-based food research and innovation

Funding:

Up to DKK 200 million (EUR 27 million) over 5 years

Established: 2022/23



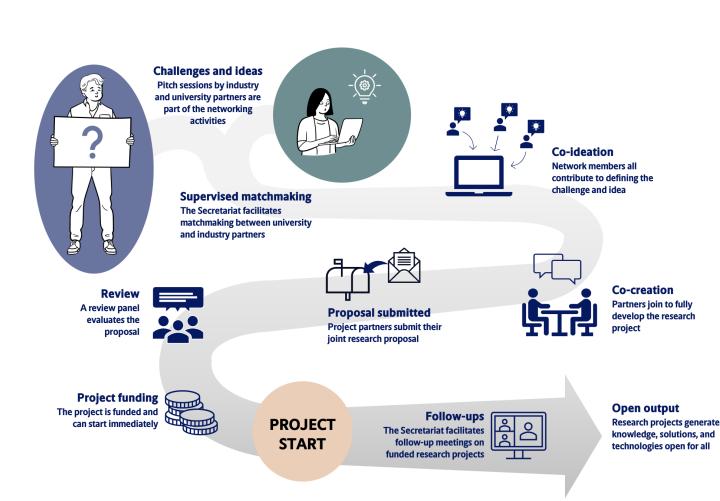




Plant2Food is an international open collaboration platform anchored at the Open Science Office at Aarhus University

- Facilitate network and matchmaking
- Drive ideation and co-creation
- Engage companies, end-users and consumers
- Fund research projects up to TRL-3
- Establish data infrastructure







Contact person: Susanne Baden Jørgen, senior innovation manager sbj@foodbiocluster.dk

Join the global movement









Food & Bio Global Summit 2023

The Food & Bio Global Summit is organised by Food & Bio Cluster Denmark, and in collaboration with Summit Partners, Promotion Partners and Sponsors, it promises to be an inspiring event. The summit will feature:

- Prominent keynote speakers
- Business and cluster success cases
- Panel discussions
- Four Summit Labs with your active participation
 - 1. Positive plant-based nutrition
 - 2. Technologies to maximising biomass production for multiuse purposes
 - 3. Circular green transition
 - 4. Radical new food production systems
- One-to-one matchmaking meetings.
- On 28 September, there will be an opportunity to participate in a site-visit to Agro Food Park



Invitation to Participation

- Get an insight into the global challenges and trends in the food and bioresource industry
- Be part of the sustainable solutions to the global challenges in the food and bioresource industry
- Learn about the power of collaboration and acceleration by boosting collaboration opportunities
- Network and meet new and existing collaboration partners
- Build sustainable relations and collaboration with partners from all over the world
- Please read more and register: www.foodbioglobal.com

Thank you for the attention!





Lars Visbech Sørensen

Telefon: 4056 7128

Email: lvs@foodbiocluster.dk



