

BÆREDYGTIGHED OG ØKOLOGI

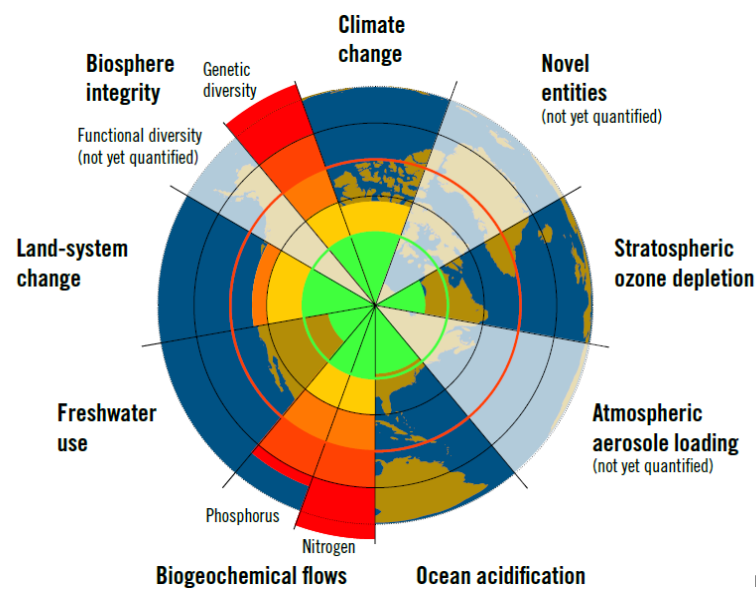
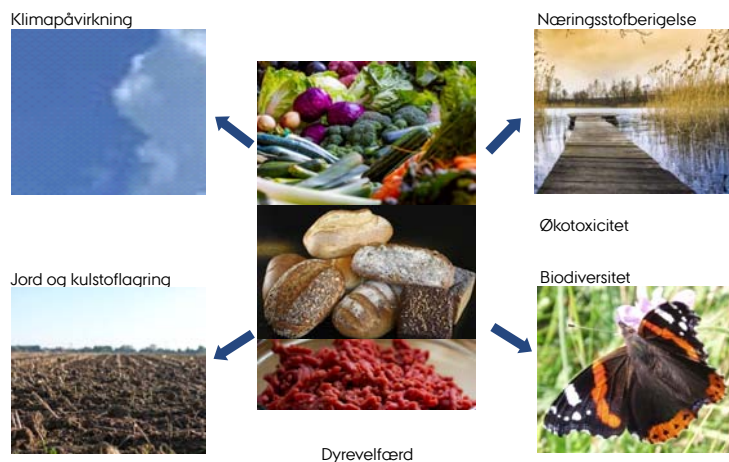


MARIE TRYDEMAN KNUDSEN

- Forsker ved Institut for Agrøkologi ved Århus Universitet og medlem af Klimarådet
- Agronom og ph.d. i livscyklusvurderinger af fødevarer
- Klima- og miljømæssig bæredygtighed af landbrugs- og fødevarer systemer, hvor jeg bruger livscyklusvurderinger - og underviser i jordbrug i globalt perspektiv.

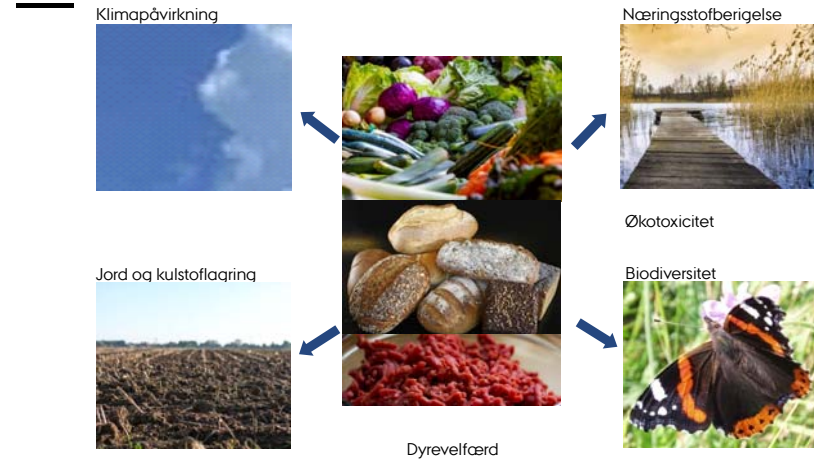


MILJØPÅVIRKNING FRA FØDEVAREPRODUKTION

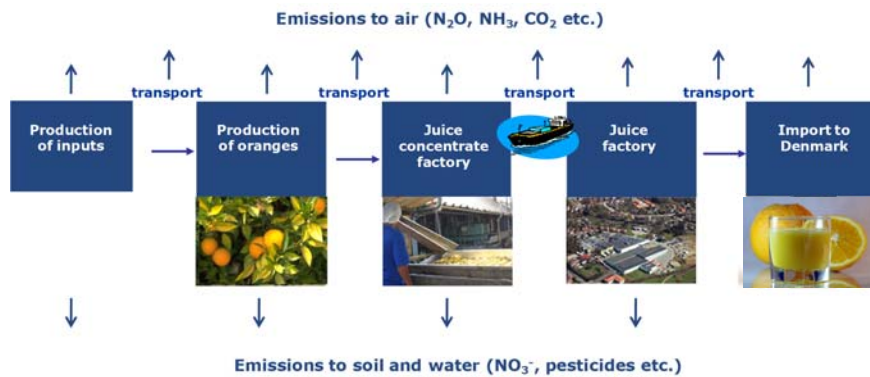




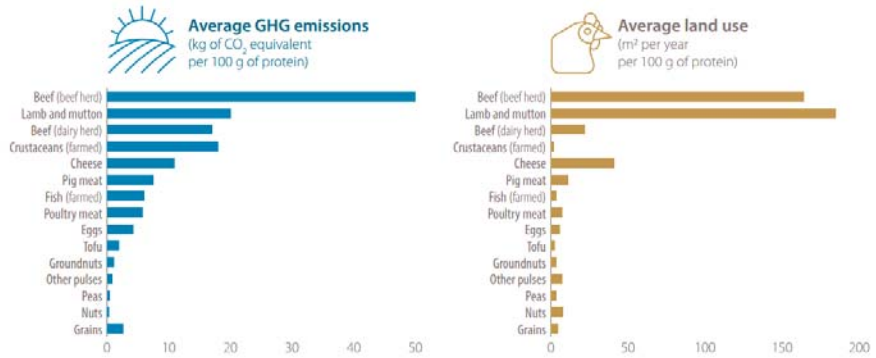
MILJØPÅVIRKNING FRA FØDEVAREPRODUKTION



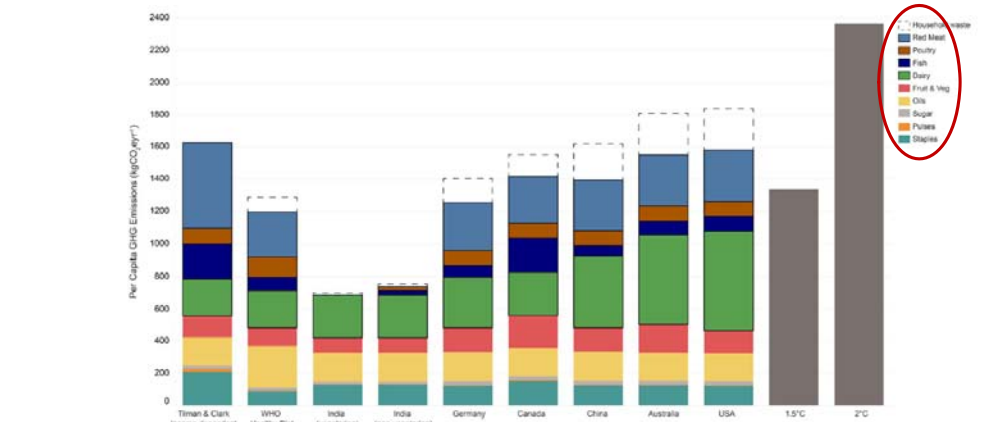
BEREGNET VIA LIVSCYKLUSVURDERINGER



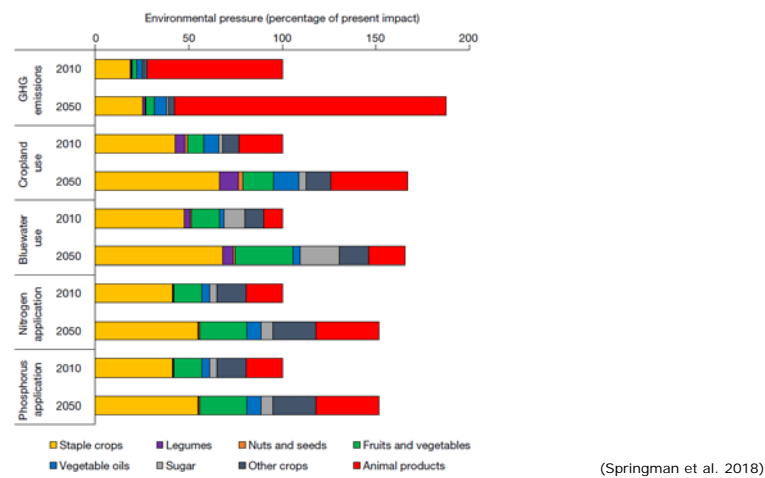
KLIMAAFTRYK OG AREALFORBRUG AF PROTEINER



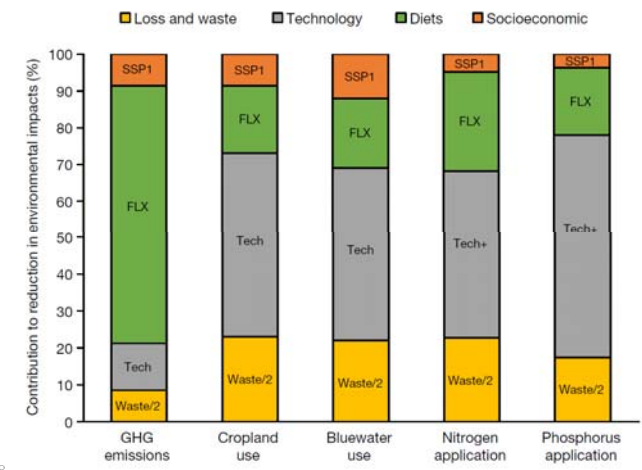
FØDEVAREVALGET BETYDER NOGET!



PROBLEMET ØGES MED EN STIGENDE MIDDELKLASSE



POTENTIALE FOR REDUKTION (SPRINGMAN ET AL. 2018, NATURE)



EAT-LANCET REPORT



- ” The food we eat, the ways we produce it, and the amounts wasted or lost have major impacts on human health and environmental sustainability.
- ” A diet that includes more plant-based foods and fewer animal source foods is healthy, sustainable, and good for both people and planet.

EAT-Lancet report, 2019

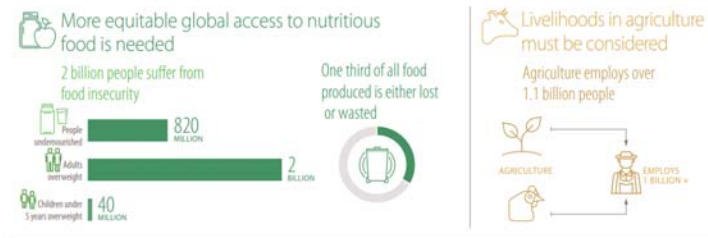


” Without a transformation of the global food system, the world risks failing to meet the UN Sustainable Development Goals (SDGs) and the Paris Agreement and the data are both sufficient and strong enough to warrant immediate action

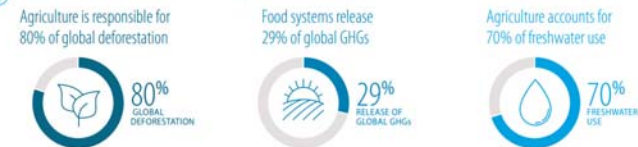
- EAT-LANCET REPORT, 2019



ET ÆNDRET FØDEVARESISTEM ER ESSENTIELT FOR BÆREDYGTIG UDVIKLING



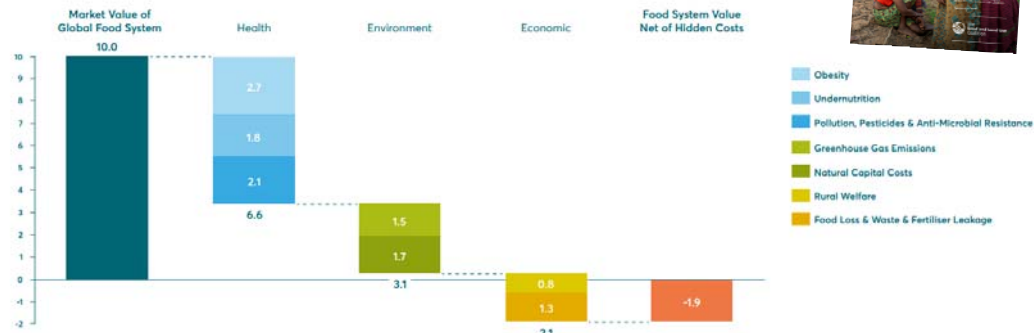
Climate and environmental impacts of food production must be minimized



UN (2019)

DE SKJULTE OMKOSTNINGER I DET GLOBALE FØDEVARESISTEM

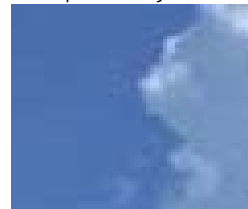
Trillions USD, 2018 prices



FOLU (2019)



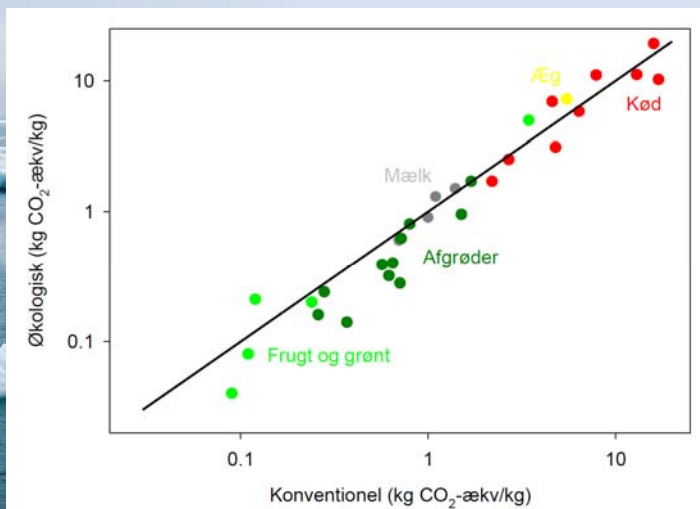
Klimapåvirkning



ØKOLOGISKE FØDEVARER



KLIMAAFTRYK FRA FØDEVARER



Olesen og Hermansen (2016)

INDIREKTE EFFEKTER

- Indirekte arealændringer (iLUC) pga. lavere udbytter?

Men samtidig:

- Mindre kødforbrug hos økologiske forbrugere (Baudry et al. 2017)
- Rebound effekt: højere priser giver færre penge på budgettet til rejser mv.





ENVIRONMENT

European Commission > Environment > Sustainable Development > Single Market for Green Products

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The development of the PEF and OEF methods

Environmental Footprint pilot phase

News

The EF pilots

Results and deliverables

Policy background

Development of PEF&OEF

Environmental Footprint transition phase

Events

Communicating to consumers

Questions and Answers

DG Environment has worked together with the European Commission's Joint Research Centre (JRC IES) and other European Commission services towards the development of a **harmonised methodology for the calculation of the environmental footprint of products and organisations** (Including carbon).

Existing methods and initiatives were taken into account

- For the product angle, the International Reference Life Cycle Data System (ILCD) Handbook as well as other existing methodological standards and guidance documents (ISO 14040-44, PAS 2050, BP X30, WRI/WBCSD GHG protocol, Sustainability Consortium, ISO 14025, Ecological Footprint, etc).

requirements for calculating these emissions are not fully developed. Therefore, the assessment of emissions arising from indirect land use change is not included.

The final methods, called Product Environmental Footprint (PEF) and Organisation Environmental Footprint (OEF), were published as an Annex to the Commission Recommendation on the use of common methods to measure and communicate the life cycle environmental performance of products and organisations. The two methods are tightly interlinked and will have many elements in common.

This version was developed taking into account the results of 2011 road test, the results of the invited expert consultation and of a consultation between Commission services.



Journal of Cleaner Production 52 (2013) 217–224

Contents lists available at ScienceDirect

ELSEVIER

Journal of Cleaner Production

journal homepage: www.elsevier.com/locate/jclepro

An approach to include soil carbon changes in life cycle assessments

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Carbon sequestration

Soil carbon

LCA

Bioreg

ABSTRACT

Globally, soil carbon sequestration is expected to hold a major potential to mitigate agricultural greenhouse gas emissions. However, the majority of life cycle assessments (LCA) of agricultural products have not included possible changes in soil carbon sequestration. In the present study, a method to estimate carbon sequestration is especially relevant: 1) Bioregistry; removal of straw from a Danish soil for energy purposes and 2) Organic versus conventional farming; comparative study of soybean production in China. The suggested approach considers the time of the soil CO₂ emissions for the LCA by including the Bioreg Carbon Cycle Model. Three perspectives of 20, 100 and 200 years are used and a soil depth of 0–100 cm is considered. The application of the suggested method showed that the results were comparable to the IPCC constant soil carbon change toward a new steady state. The suggested method estimated a carbon sequestration for the first example when steady state in the 100 year period of 0.04 t CO₂ eq ha⁻¹ for a bioenergy of 54.92

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Contents lists available at ScienceDirect

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Science of the Total Environment

journal homepage: www.elsevier.com/locate/scitotenv

Characterization factors for land use impacts on biodiversity in life cycle assessment based on direct measures of plant species richness in European farmland in the 'Temperate Broadleaf and Mixed Forest' biome

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HIGHLIGHTS

- New characterization factors (CF) for land use impacts on biodiversity in LCA
- Provides CFs for different land use types and management (organic or conventional)
- Shows significant differences in CFs between organic and conventional fields

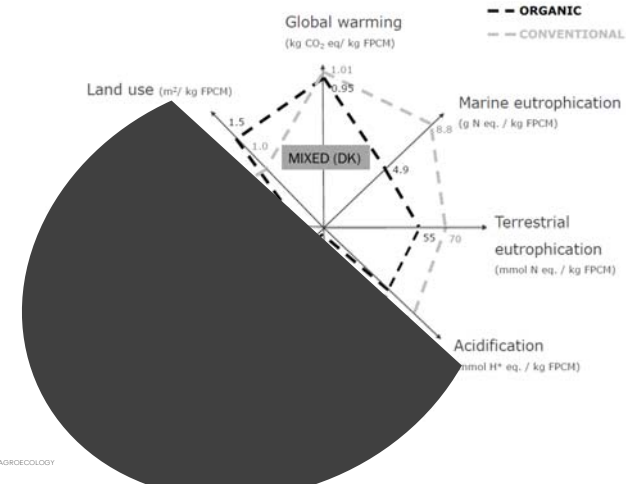
GRAPHICAL ABSTRACT

Energy Equivalent CO₂e

ALL COUNTRIES

Spain

Mælks miljøpåvirkning



Knudsen et al. (2019)



Journal of Cleaner Production
Journal homepage: www.elsevier.com/locate/jclepro

The importance of including soil carbon changes, ecotoxicity and biodiversity impacts in environmental life cycle assessments of organic and conventional milk in Western Europe

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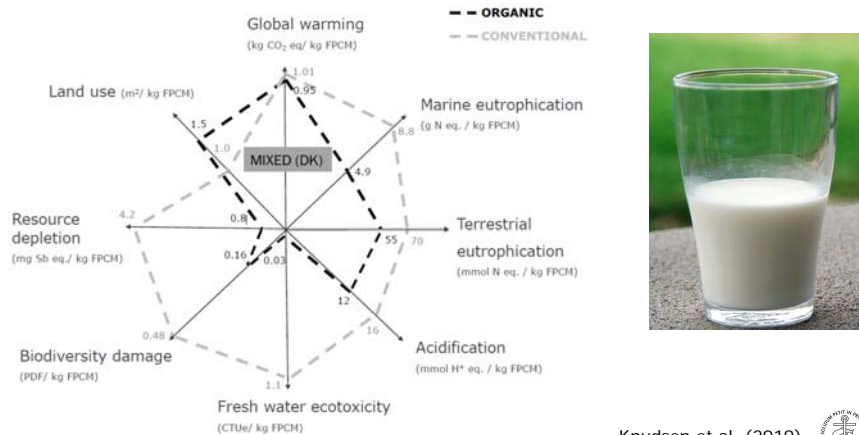
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Keywords:
 Organic
 Biodiversity
 Dairy

ABSTRACT
 Estimates of soil carbon changes, biodiversity and ecotoxicity have often been *omitted* from life cycle assessment based studies of organic dairy products, despite evidence that the impacts of organic and conventional management may differ greatly within these areas. The aim of the present work therefore is to investigate the magnitude of including these impact categories within a comprehensive environmental impact assessment of organic and conventional dairy systems differing in basic production conditions. Three basic systems representative of a range of European approaches to dairy production were selected for the analysis, i.e. (i) low-load mixed crop-livestock systems, (ii) broadland grassland-based systems, (iii) and mountainous systems. As in previous publications, this study showed slightly lower impact than conventional, although low...

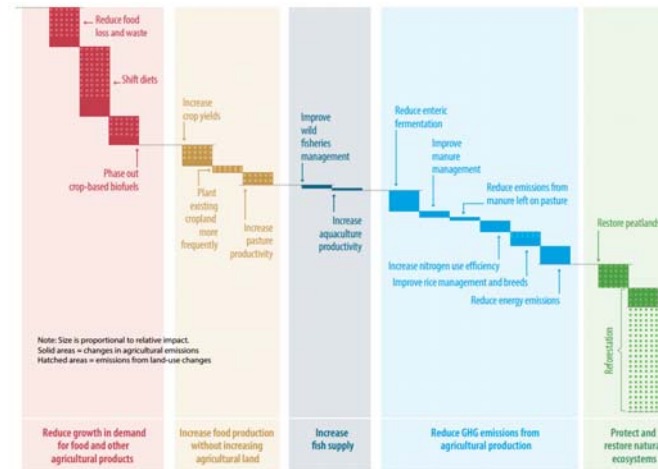
Mælks miljøpåvirkning



Knudsen et al. (2019)



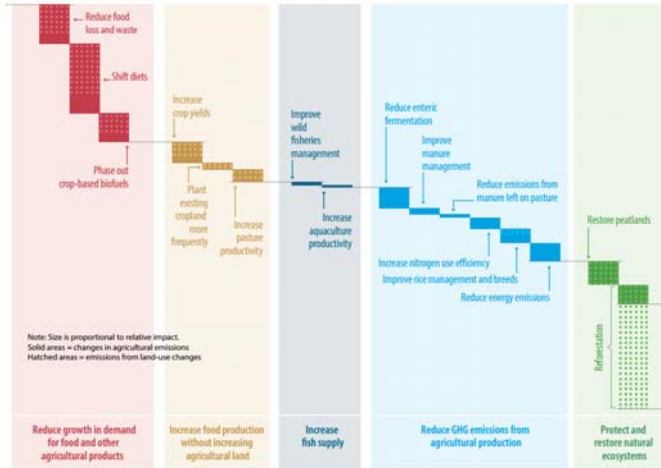
MULIGHEDER FOR AT REDUCERE EMISSIONER FRA FØDEVARESYSTEMET



UN (2019)



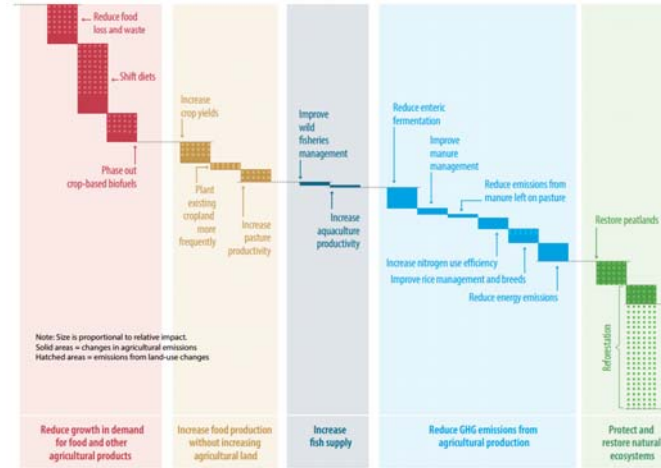
MULIGHEDER FOR REDUKTION I FØDEVAREFORBRUGET



- Reducere forbruget af animalske produkter
- Reducere madspild



MULIGHEDER FOR REDUKTION I LANDBRUGET



- Øge N-udnyttelsen og mindske tab og emissioner – højere udbytter
- Reducere energiforbruget og producere energi (biogas)
- Binde CO₂ via træer og i jord – og udgå emissioner fra tørvejorde



	Normative decisions
Food consumption oriented	Future diets should be based on the type of food currently consumed and seek to fulfil Nordic nutrient recommendations.
	Food waste should be reduced compared to current levels.
	Future diets should facilitate equitable consumption based on local resources.
Production oriented	Food should be produced locally, but food not possible* to produce locally should be imported.
	The food should be produced in an organic farming system acknowledging agroecological principles.
	More durable breeds of grazing animals should be used to be able to graze in rough terrain.
	Some land currently used for annual cropping is unsuited for this and should be left for nature conservation.
Resource use oriented	Semi-natural pastures should be grazed by livestock to promote biodiversity and preserve the cultural landscape.
	Arable land should primarily be used to grow food for humans, not livestock feed or bioenergy crops.
	By-products from food production should be used to feed livestock.
	Agriculture should be self-sufficient in renewable energy, but should not provide energy for other parts of society.

En fødevarevision fra Sverige (Karlsson et al. 2018)

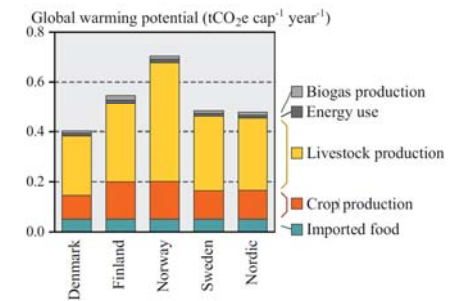
- Madspild skal reduceres
- Kosten skal baseres primært på lokale ressourcer
- Kosten skal produceres økologisk
- Mindre produktive arealer skal gå til natur
- Græs- og naturarealer skal afgræsses for naturpleje
- Dyrkningsarealet skal primært bruges til plantebaserede fødevarer, ikke foder eller bioenergi
- Biprodukter fra fødevarerproduktionen bruges som foder
- Landbruget skal være selvforsynende med fornybar energi, men ikke forsyne andre dele af samfundet med energi



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En fødevarevision fra Sverige (Karlsson et al. 2018)

- Stor reduktion i kødforbruget
- Klimaaftryk der lever op til kravene fra Parisaftalen



KONKLUSION

Handling i forhold til klima er nødvendig, men ikke på bekostning af biodiversitet, toxicitet og dyrevelfærd

Reduktion af kødforbruget og madspild er to af de vigtigste ting for at reducere klimapåvirkningen fra fødevarerne

Bliver nødt til at se på både produktion OG forbrug af fødevarer – samt optimere både efter klima, biodiversitet, eutrofiering, toxicitet og dyrevelfærd



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