



Health and nutrition in a sustainable future

**Merete Myrup
Director of Dairy Nutrition
Danish Agriculture & Food Council**

Mejeriteknisk Selskab 2021

Houston, we have a problem!



The problem

Carbon footprints

Methan from the cows

Green house gasses



Global warming

Melting ice at the Artics

Changes in weather

Increasing global population

Deserts expanding

Droughts and thunderstorms

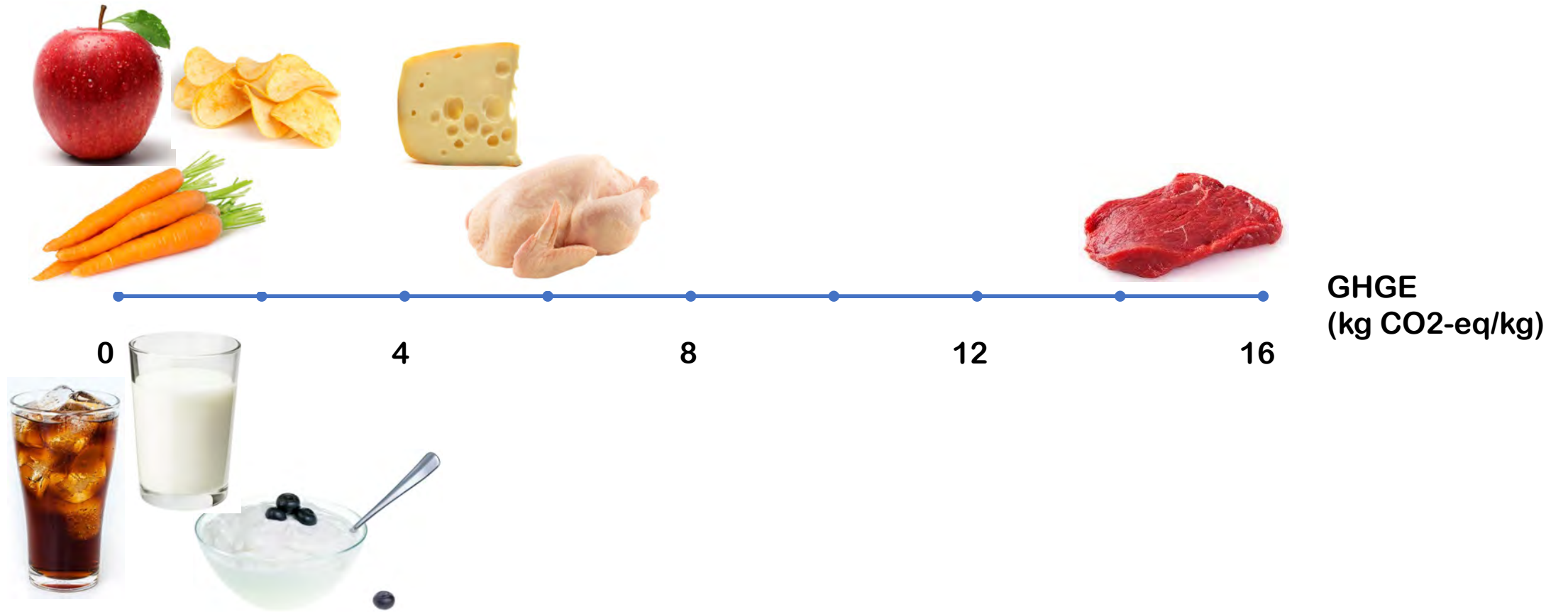
Animal welfare

Plant based beverages and products

Consumer protests



All food products have a CO₂-footprint



Dairy is part of the solution!

Important vitamins and minerals

High quality protein

Taste

Change of non-digestible plant material into high quality protein food

Conservation of landscape and soil fertility

Jobs in rural areas

Importance of animals in developing countries

Women empowerment

.....



Agenda

- **SDG's and dairy**
- **The Rotterdam Declaration**
- **Global initiatives**
- **Local initiatives**
- **What is a sustainable diet?**
- **Carbon footprint and nutrients**
- **New food based dietary guidelines in Denmark**
- **Protein transition**
- **Take home messages**



SUSTAINABLE DEVELOPMENT GOALS

1 NO POVERTY

2 ZERO HUNGER

3 GOOD HEALTH AND WELL-BEING

4 QUALITY EDUCATION

5 GENDER EQUALITY

6 CLEAN WATER AND SANITATION

7 AFFORDABLE AND CLEAN ENERGY

8 DECENT WORK AND ECONOMIC GROWTH

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE

10 REDUCED INEQUALITIES

11 SUSTAINABLE CITIES AND COMMUNITIES

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

13 CLIMATE ACTION

14 LIFE BELOW WATER

15 LIFE ON LAND

16 PEACE, JUSTICE AND STRONG INSTITUTIONS

17 PARTNERSHIPS FOR THE GOALS


SUSTAINABLE DEVELOPMENT GOALS

SDGs and dairy



- 1: Many rural areas rely on dairy production and processing for their income
- 2: Cows can be a way out of poverty, by providing resilience, higher yield, insurance



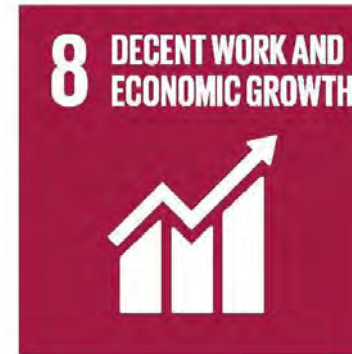
- 1: Dairy products are high in energy, provide high value protein and other essential nutrients
- 2: Animal manure can be used as fertilizer for crop production
- 3: Production provides incomes that can ensure food security



- 1: Dairy products provide essential nutrients, especially for adolescents, pregnant women and the elderly





- 1: In some developing countries women cannot own land, but can take care of dairy cows = women empowerment



- 1: Many jobs in the dairy value chain, in rural areas and processing industry

The Rotterdam Declaration

**Food and Agriculture
Organization of the
United Nations**

THE DAIRY DECLARATION OF ROTTERDAM

The dairy community accepts sustainability challenge

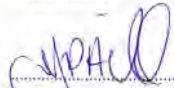
We, representatives of the one billion person global dairy community, gathered in Rotterdam at the World Dairy Summit, are committed to the sustainable development of the dairy sector to generate widespread benefits for people and the planet.

We recognize:

- the UN 2030 Agenda for Sustainable Development as the overarching framework that guides our actions towards sustainable development from a social, environmental, economic and health perspective;
- the vital role of dairy for food security and poverty reduction and the important livelihood and development opportunities for family farmers, small holders and pastoralists;
- the critical contribution the dairy sector makes to Sustainable Development, including:
 - the essential role of dairy products for balanced, nutritious and healthy diets;
 - the major contribution that dairy makes to countries' economies, income, employment and livelihood
 - the key function of the dairy sector in the management of terrestrial ecosystems and the need to address environmental degradation and climate change, and to support biodiversity;
- the diversity of dairy production systems and dairy breeds, contexts and priorities;
- the need for continuous and open dialogue and joint actions at all levels.


We agree to:

- Take an integrated approach to promote the sustainability of dairy systems, jointly taking into consideration social, economic, health and environmental dimensions;
- Give particular attention to the needs of family farmers, small holders and pastoralists;
- Build, implement and disseminate tools and guidelines to facilitate the identification and adoption of sustainable practices in the dairy sector;
- Build capacity in support of sustainable practices and provide enabling conditions;
- Measure and report on sustainability outcomes.
- Strengthen multi-stakeholder dialogue for consensus building, reviewing progress and continuous improvement.



Jeremy Hill
President, International Dairy Federation

Rotterdam, 19 October 2016

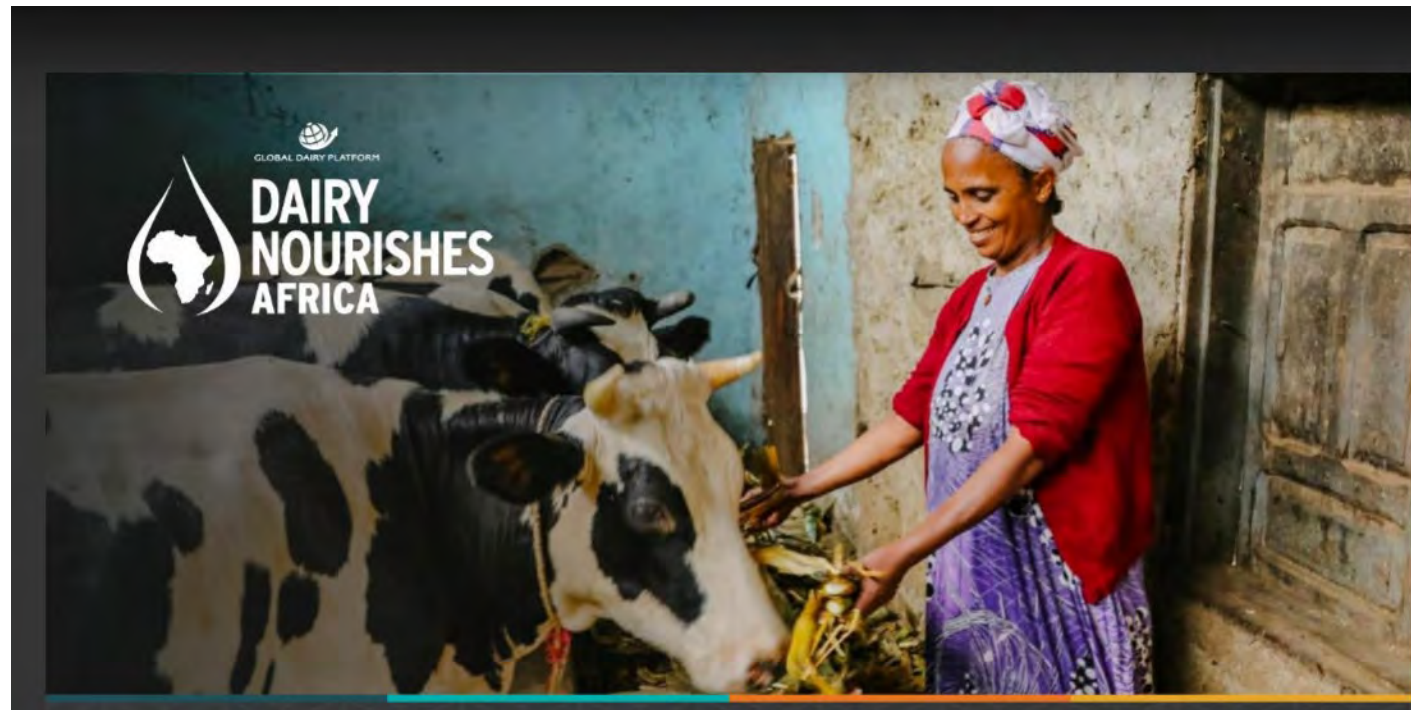
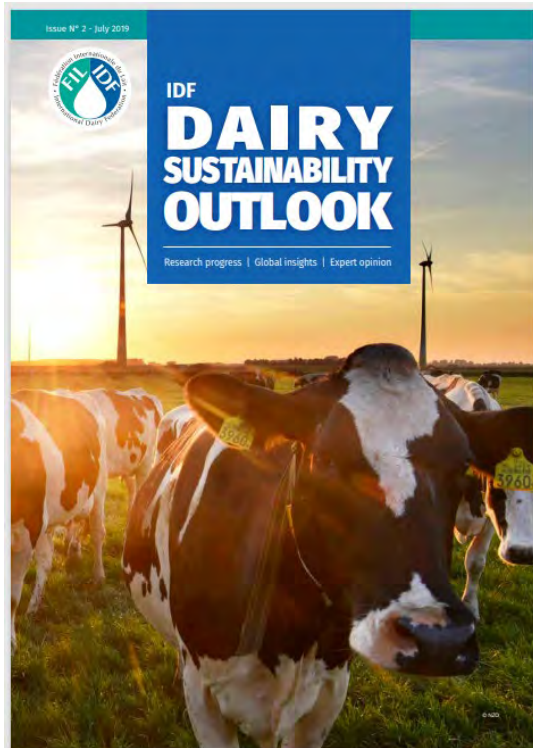


Ren Wang,
Assistant Director General, Food and Agricultural
Organisation of the United Nations



Global initiatives

- Following up on the Rotterdam Declaration
- Learn from each other / best practise
- Exporting knowledge to developing countries



Local initiatives

- High yielding cows
- Focus on feed (grass, locally grown protein-sources)
- Cow genetics
- Feed additives
- Energy use
- Biogas
- Transport of milk and products
- Packaging
- Food waste in the chain
- etc

+ communication to get the message through to authorities and politicians

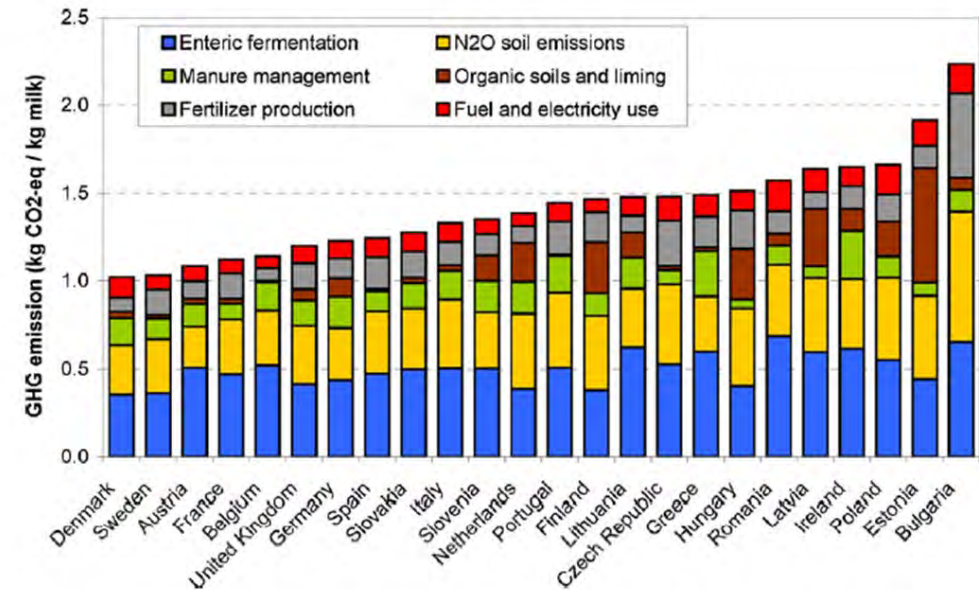
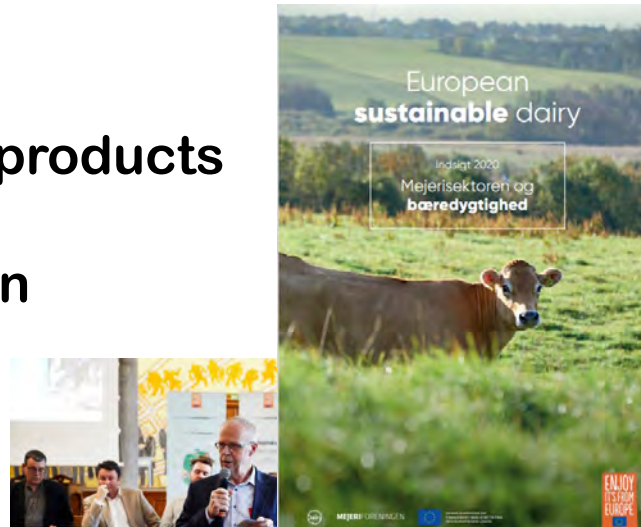



Fig. 8. GHG emission per kg milk within EU countries as it relates to emission sources.

Ref: Lesschen et al. 2011. Greenhouse gas emission profiles of European livestock sectors


Sustainable diets



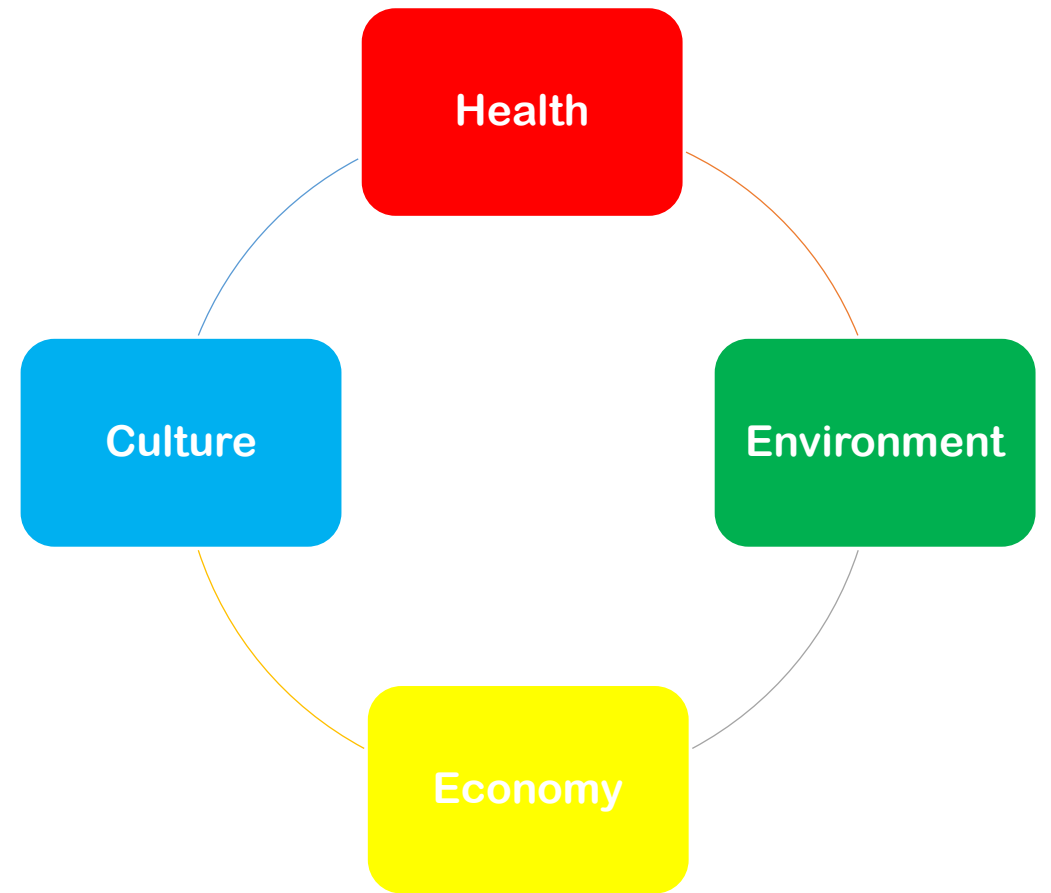
Food and Agriculture Organization of the United Nations

World Health Organization

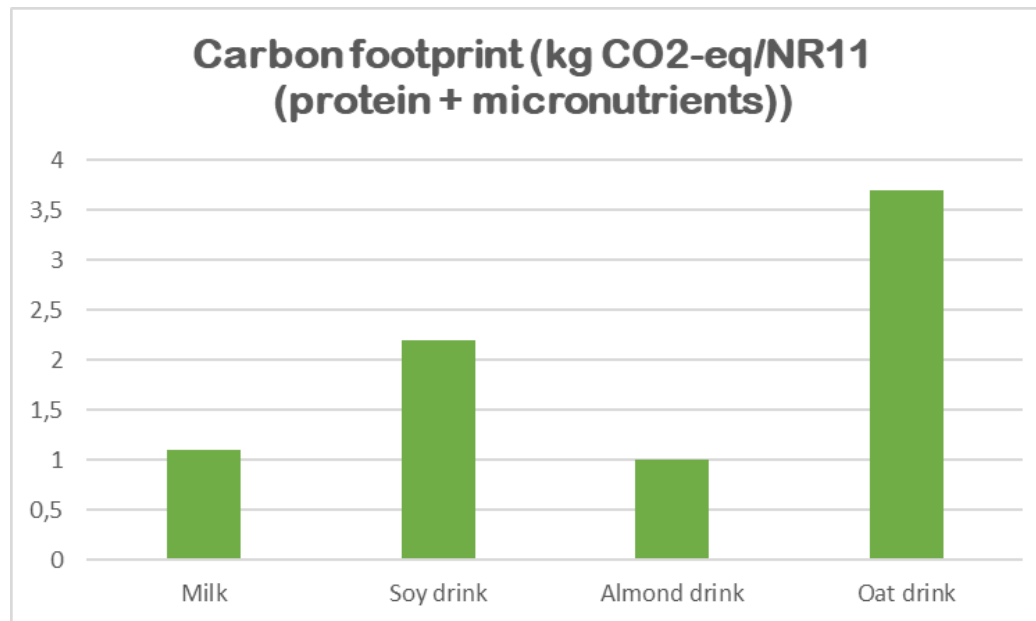
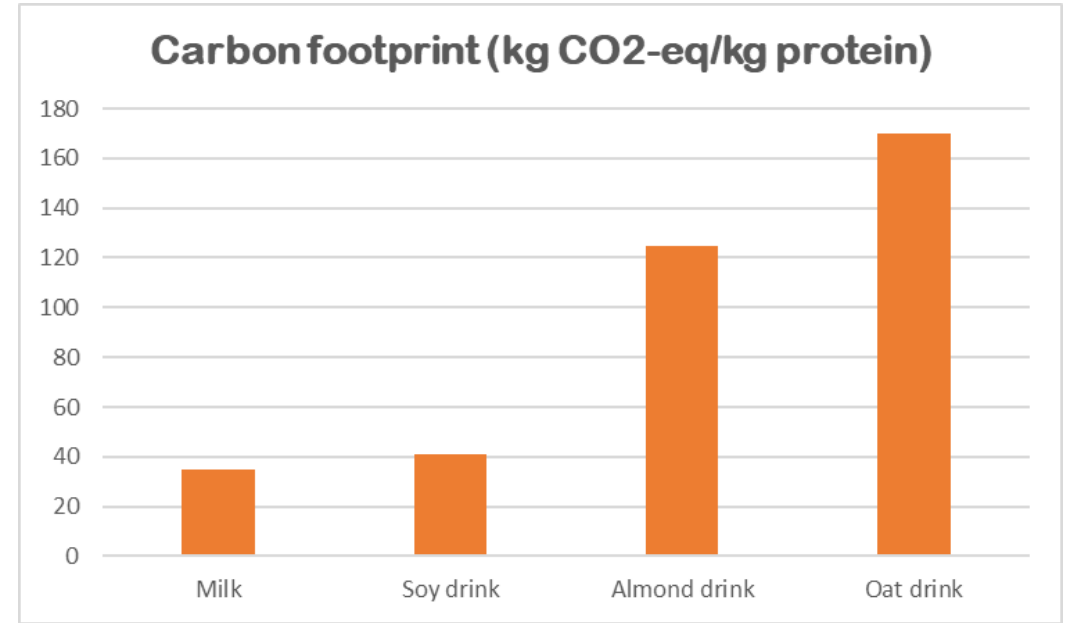
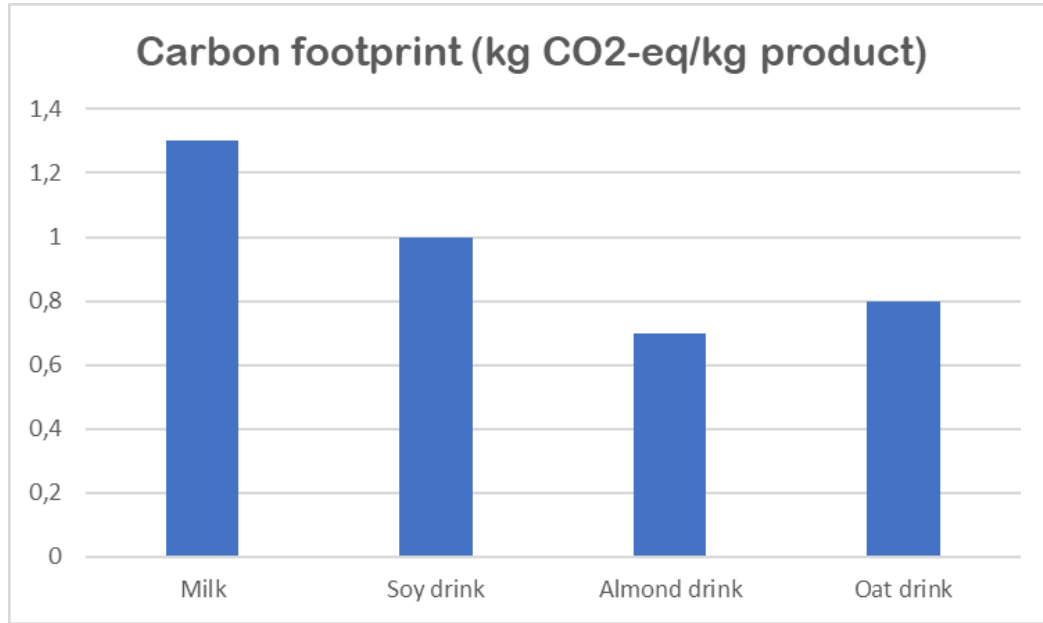
Sustainable Healthy Diets are dietary patterns that promote all dimensions of individuals' health and wellbeing; have low environmental pressure and impact; are accessible, affordable, safe and equitable; and are culturally acceptable.



SUSTAINABLE HEALTHY DIETS GUIDING PRINCIPLES

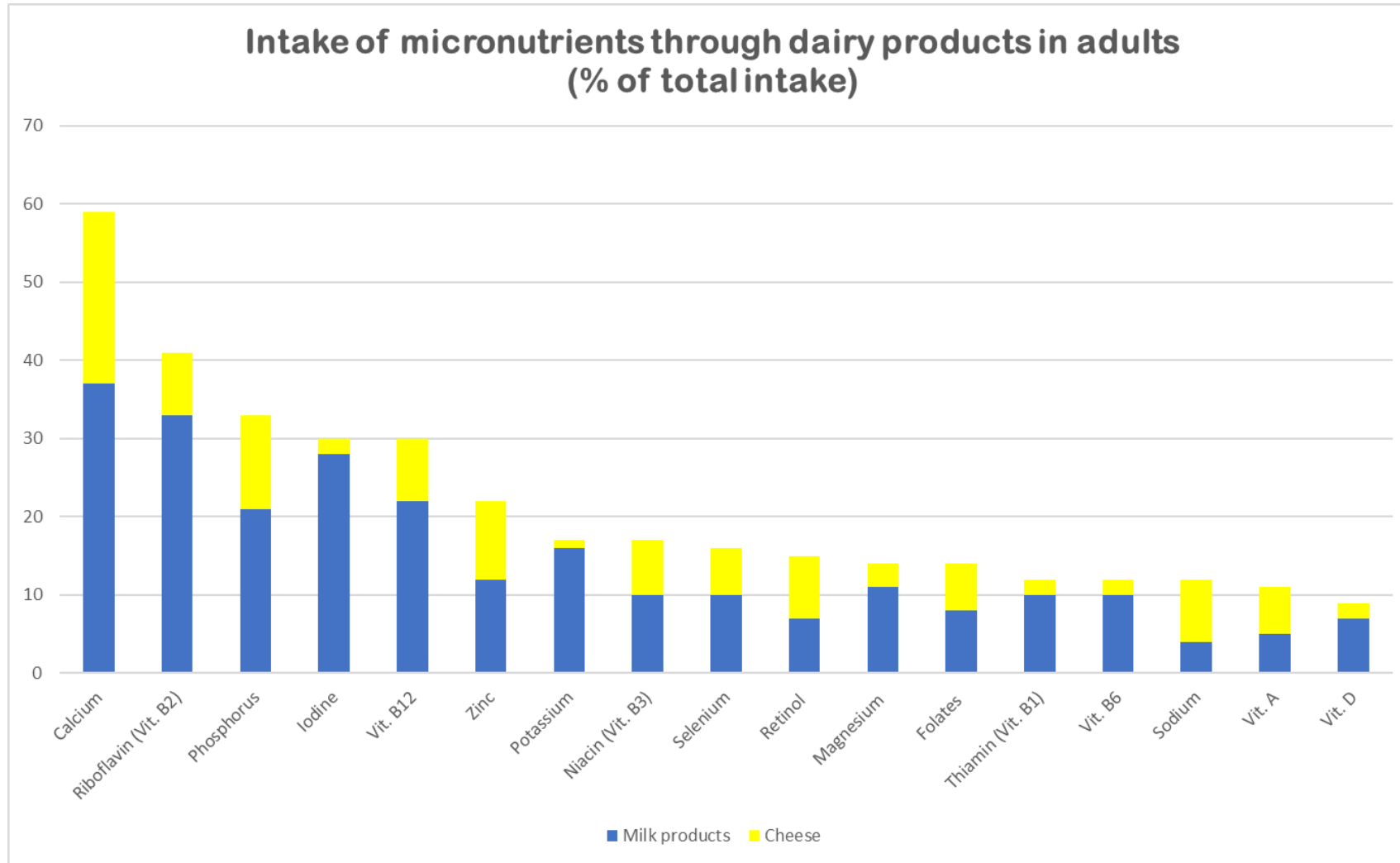


Carbon footprint and nutrients



Jonga, P., Vriesba, M (2021). Melk van haver of van koeien: wat is duurzamer?. Van Hall Larenstein University of Applied Sciences, NIZO food research og Nestle Research Konolfingen.

The importance of dairy



Spis flere grøntsager
og frugter



Spis mad med fuldkorn



Spis mindre kød –
vælg bælgrugter og fisk



Vælg planteolier
og magre
mejeriprodukter



Spis mindre af det
søde, salte og fede



Sluk tørsten
i vand



**Spis planterigt,
varieret og ikke
for meget**

De officielle Kostråd
– godt for sundhed og klima

The new Danish Dietary guidelines

- now with a focus on both health and climate
- for healthy Danes 2-65 years old

- 1) Eat plant-rich, varied and not too much
- 2) Eat more vegetables and fruit
- 3) Eat less meat – choose legumes and fish
- 4) Eat wholegrain foods
- 5) Choose vegetable oils and low-fat dairy products
- 6) Eat less sweet, salty and fatty food
- 7) Thirsty? Drink water

Additional advice:

- Reducing food waste
- Choose products with the ‘keyhole-symbol’ (Scandinavian label that points at healthy choices in each food category)



Choose vegetable

Vegetable oils, such as rapeseed and olive oil, are good sources of fats when you want to eat a healthy and climate-friendly diet. Choosing vegetable oils instead of solid fats, such as butter and coconut oil, is good for your health and you will get more of the fats you need. However, all types of fats contain many calories. It is therefore important that you limit your intake. Vegetable oils have a smaller climate footprint than butter and spreadable products.

Dairy products like milk, yoghurt and cheese contain both protein and different vitamins and minerals, such as calcium. When choosing low-fat dairy products rather than higher-fat varieties, you get the important nutrients while reducing calories. You can eat smaller amounts of the higher-fat dairy products - but only occasionally. A high intake of dairy products leads to increased climate impact.

Make a difference for health and climate

- For cooking, choose vegetable oils like rapeseed and olive oil rather than solid fats, such as butter and coconut oil.
- Limit the use of butter on bread and sandwiches. Choose for example hummus or a little pesto instead.
- Choose mainly skimmed milk or buttermilk.
- Choose mainly fermented milk products, such as plain yogurt, with a maximum of 1.5% fat and choose mainly cheese with a maximum of 17% fat (30+). Limit your intake of high-fat dairy products, such as cream.
- About 250 ml milk or dairy products a day is adequate when eating a plant-rich and varied diet. This quantity also applies to children aged 2-5 years.
- Also, use cheese in your food or in sandwiches. About 20 g of cheese (1 slice) a day is adequate when eating a plant-rich and varied diet.

250 ml of milk
or milk product
+
20 g of cheese

Major **changes** compared to the former guidelines



- ‘Plante-rich’
- Less meat (max 500 g to max 350 g per week)
- Legumes (100 g pr day)
- Vegetable oil
- Smaller amount of dairy (250-500 ml to 350 ml)

Our position:

Focus on the fact, that dairy products are recognized as an important part of a healthy and climate-friendly diet

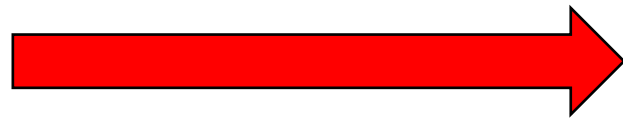
But still mention that it may be difficult for some groups (children, teenagers etc) to get the recommended daily amount of calcium

Protein transition (1 of 3)

(change +/- reduction of the protein intake)



Animal protein
meat, egg, dairy



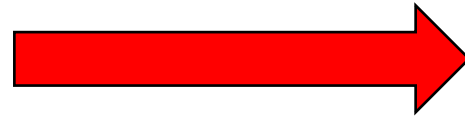
Vegetable protein
pulses, nuts, vegetables

Danish Dietary guidelines
Green Deal/Farm 2 Fork
WHO/FAO
EAT-Lancet rapport

Protein transition (2 of 3)

(change +/- reduction of the protein intake)

Animal protein



Vegetable protein

Challenges:

Low content of essential amino acids in most vegetable sources

Mix of vegetable sources are ok – but focus on timing

Lower absorption of vegetable proteins in the body



	10 gr milk protein (279 ml milk or 100 gr quark)	10 gr rice protein (313 gr cooked rice)	10 gr lentil protein (130 gr cooked lentils)	5 gr lentil protein and 5 gr rice protein
	% of FAO/WHO recommendation	% of FAO/WHO recommendation	% of FAO/WHO recommendation	% of FAO/WHO recommendation
Histidine	38.6	33.6	42.3	37.9
Isoleucine	37.8	30.9	28.3	29.6
Leucine	37.8	30.3	30.9	30.6
Lysine	41.1	<u>18.1</u>	33.5	<u>25.8</u>
Methionine + cysteine	<u>32.6</u>	41.9	<u>15.8</u>	28.8
Phenylalanine + tyrosine	57.3	49.7	47.0	48.3
Threonine	45.1	34.1	33.3	33.7
Tryptophan	48.7	41.4	30.2	35.8
Valine	33.7	33.5	25.6	29.5
Quality	32.6	18.1	15.8	25.8

Table 1. Contribution of milk, rice and lentils to the FAO/WHO-recommended essential amino acid allowance. The limiting amino acid is underlined. See text for further explanation.

Protein transition (3 of 3)

(changes -/+ reduction of protein intake)

Challenges:

On average the Danish population eat enough protein
– but some groups are at risk:

Elderly: need more protein to trigger the muscle protein synthesis

Sick people: need more protein to recover after operation

Children: need protein for growth

Vegetarians/vegans: vegetable proteins have a lower degree of absorption



Plant based products



Plante based products

Public Health Nutrition: 20(11), 2050–2062

doi:10.1017/S1368980017000763

Are more environmentally sustainable diets with less meat and dairy nutritionally adequate?

S Marije Seves, Janneke Verkaik-Kloosterman, Sander Biesbroek and Elisabeth HM Temme*

National Institute for Public Health and the Environment (RIVM), Postbus 1, 3720 BA Bilthoven, The Netherlands

Submitted 5 April 2016; Final revision received 20 January 2017; Accepted 4 April 2017; First published online 23 May 2017

Abstract

Objective: Our current food consumption patterns, and in particular our meat and dairy intakes, cause high environmental pressure. The present modelling study investigates the impact of diets with less or no meat and dairy foods on nutrient intakes and assesses nutritional adequacy by comparing these diets with dietary reference intakes.

Design: Environmental impact and nutrient intakes were assessed for the observed consumption pattern (reference) and two replacement scenarios. For the replacement scenarios, 30% or 100% of meat and dairy consumption (in grams) was replaced with plant-based alternatives and nutrient intakes, greenhouse gas emissions and land use were calculated.

Setting: The Netherlands.

Subjects: Dutch adults (n 2102) aged 19–69 years.

Results: Replacing 30% of meat and dairy with plant-based alternatives did not substantially alter percentages below the Estimated Average Requirement (EAR) for all studied nutrients. In the 100% replacement scenario, SFA intake decreased on average by ~35% and Na intake by ~8%. Median Ca intakes were below the Adequate Intake. Estimated habitual fibre, Fe and vitamin D intakes were higher, however, non-haem Fe had lower bioavailability. For Zn, thiamin and vitamin B₁₂, 25–28% of subjects were below the EAR. For all nutrients, the EAR was not reached in the 100% replacement scenario.

Scenario 1:

**30% of animal products changed
14% reduktion i CO₂ aftryk**

Scenario 2:

**100% of animal products changed
40% reduktion i CO₂ aftryk**

But

Ref: Seves et al. 2017.

Public Health Nutrition: 20(11), 2050-2062

Plant based products

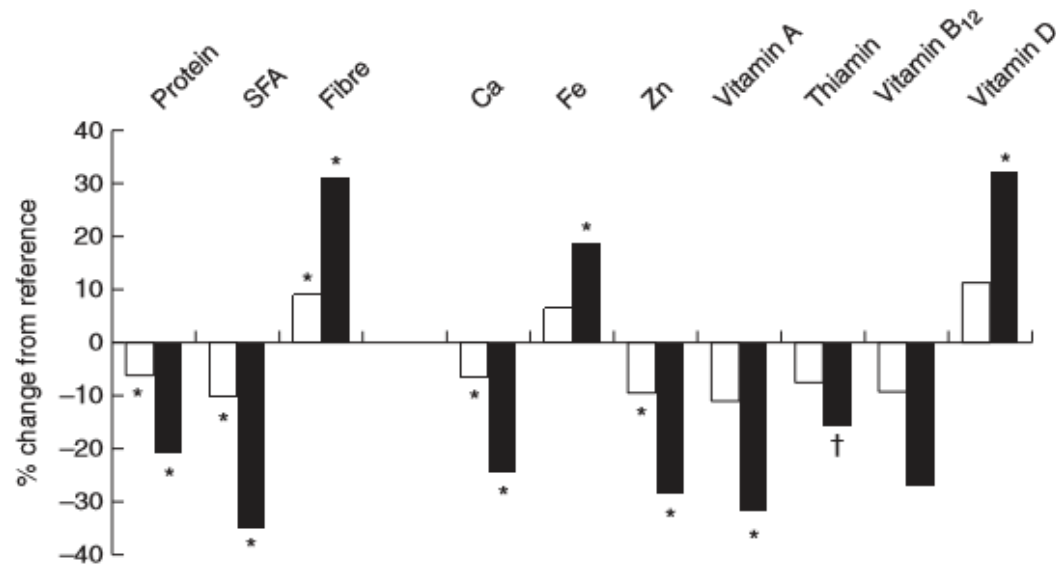


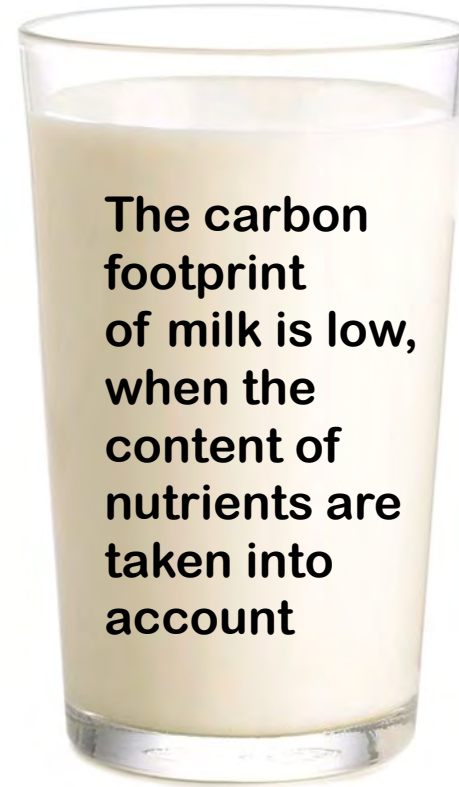
Fig. 1 Percentage change in nutrient intakes for the 'less meat and dairy' (□) and 'no meat and dairy' (■) scenarios compared with the reference scenario in Dutch women aged 19–69 years (*n* 1047). The percentage change in nutrient intakes for men is comparable. *Significantly different from the reference scenario based on the 95% CI around the habitual intake; †significant only for the age group 51–69 years

White columns: 30 % sub.
Black columns: 100 % sub.

Results:
Decrease in many important nutrients !

Nice with more fibre and less saturated fat, but a problem with Ca, Zn, vitamins A and B

Take home messages



Dairy is part of the solution!

Thank you for your attention!

