STØTTET AF
mælkeafgiftsfonden

Status på internationale aktiviteter vedr. fastlæggelse af kulstofbinding og indregning i klimaopgørelser

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Arla Foods

CARE IN EVERY STEP - FROM COW TO YOU
FARMER OWNED

OWNERS IN 7 COUNTRIES

Products sold in **100+** countries

10+ bn EUR revenue

14+ bn kg milk intake

19 000+ colleagues

11 200+ owners

Arla

Various dairy related carbon footprint activities the last ten years

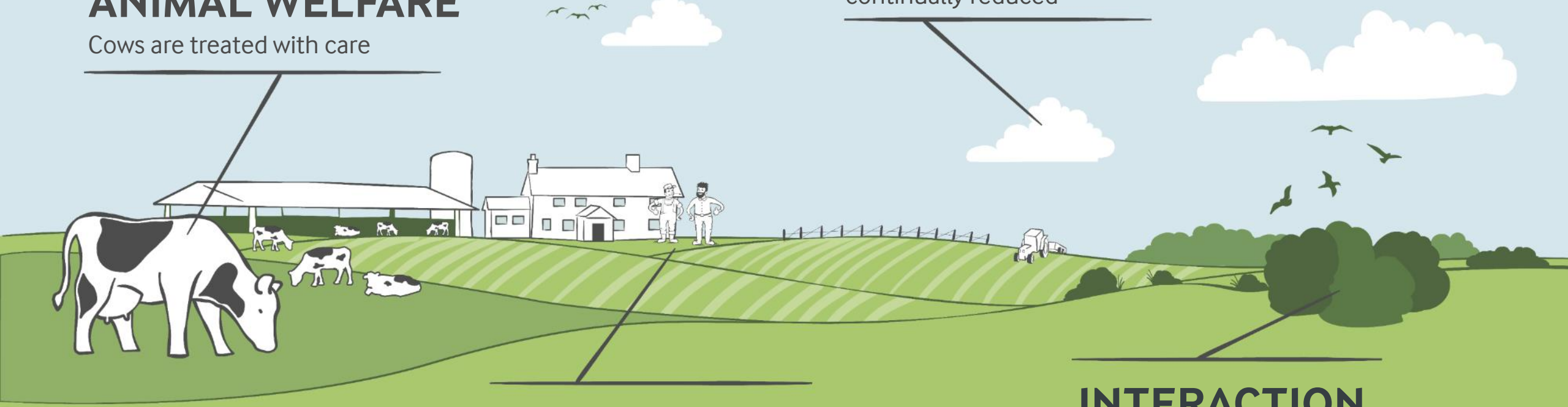
Sustainable Dairy Farming Strategy 2020

ANIMAL WELFARE

Cows are treated with care

CLIMATE IMPACT

Emissions from farming are continually reduced



GOOD RELATIONS

Farms are attractive places to work and natural partners for their communities

INTERACTION WITH NATURE

Farms are working as one with their environment

CLIMATE IMPACT

Emissions from farming are continually reduced

REDUCE CARBON FOOTPRINT

Carbon footprint is reduced by 30% per kg milk from 1990 to 2020.

PROMOTE CARBON CAPTURE

We develop reliable methods for monitoring and promoting carbon capture at farm level.

GREEN ENERGY

Arla farms are overall net producers of green electricity.

Reduce carbon footprint by 30%

4,533

4 533 on farm **carbon assessments** performed.

23%

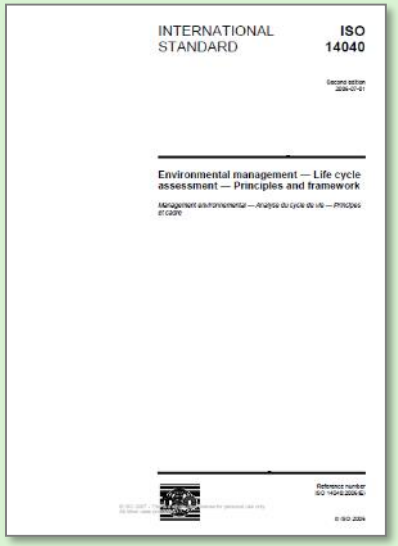
The carbon footprint from Arla milk is reduced by 23% since 1990.

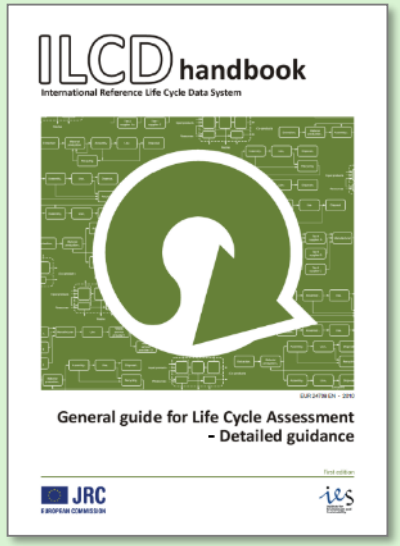
Guidelines to calculate environmental/climate impact of products

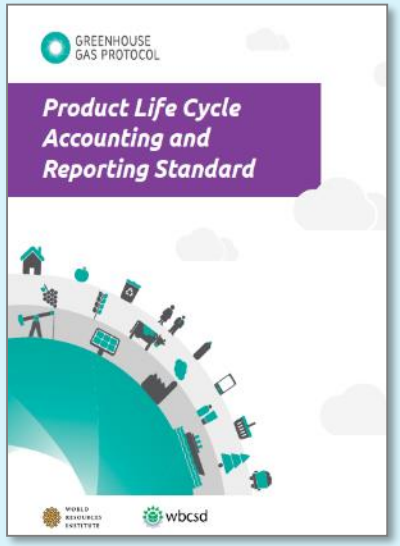
None includes guidelines on carbon sequestration

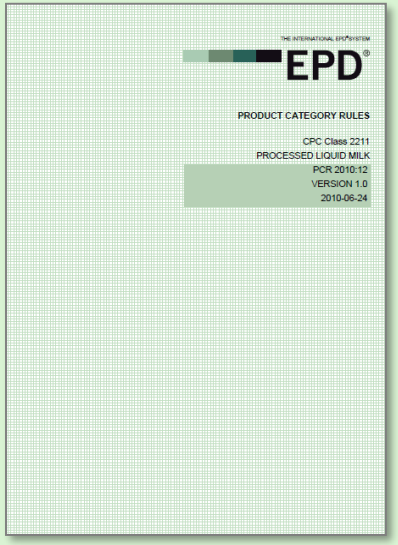
GENERAL

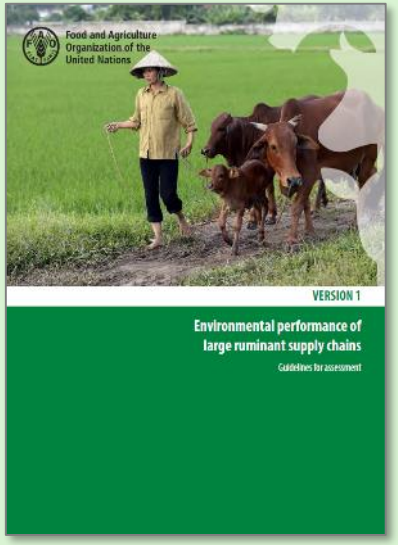
DAIRY

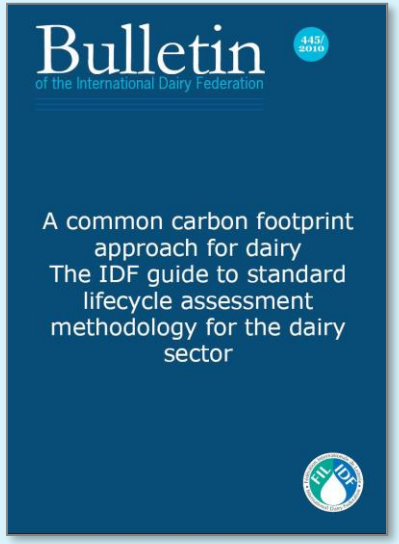




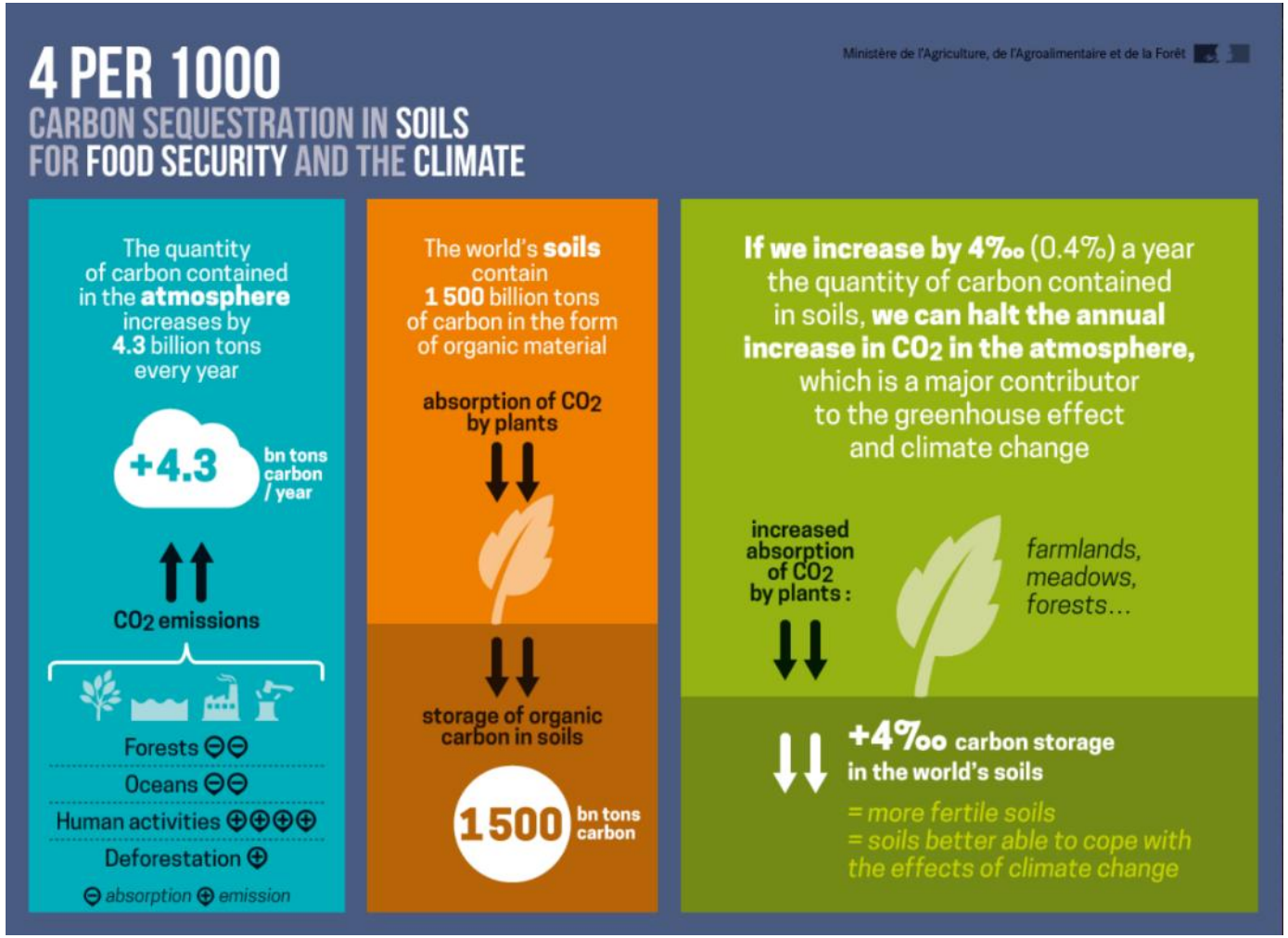








Soil carbon sequestration is seen as a mitigation measure



"SOC sequestration by the world's permanent pastures could potentially **offset up to 4% of the global GHG emissions**" (Soussana et al., 2010)

"Thus, based upon the inventory estimates, cropland and grazed land soils stored enough CO2 to **offset about 15% of the total emissions** produced by cropland and grazing land agriculture in the United States." (Lal et al., 2007)

"Carbon sequestration in soil has a finite potential and is **non-permanent**. Soil carbon sequestration is a riskier long-term strategy for climate mitigation than direct emission reduction and can play only a **minor role in closing carbon emission gaps by 2100.**" (Smith 2004)

Soussana, J. F., Tallec, T., & Blanfort, V. (2010). Mitigating the greenhouse gas balance of ruminant production systems through carbon sequestration in grasslands. *Animal*, 4(3), 334-350.
Lal, R., Follett, R. F., Stewart, B. A., & Kimble, J. M. (2007). Soil carbon sequestration to mitigate climate change and advance food security. *Soil Science*, 172(12), 943-956.
Smith, P. (2004). Carbon sequestration in croplands: the potential in Europe and the global context. *European Journal of Agronomy*, 20, 229-236.

What’s the potential for carbon sequestration to mitigate climate change?

However, getting more carbon into the soils are good for many reasons.

How should it be accounted for?

Project initiated:

Develop guidelines to calculate carbon sequestration for the dairy cattle sector

Companies: Arla Foods, Danone, Fonterra, FrieslandCampina, McDonalds, Nestlé
Allied organisations: International Dairy Federation, Global Round Table for Sustainable Beef

Expert workshop 25-26 September 2018

Project aim to finish summer 2019

The guidelines will be a stand alone document and possibly be published by IDF

Background to the project

- All companies in the project have climate strategies/targets.
- All the companies have been doing carbon assessments at farm level for several years.
- Carbon sequestration is not included – but we are challenged on this (not least from farmers perspective)
- In December 2017 Arla arranged a seminar on carbon sequestration, and the conclusion was that there was an interest to put more focus on this and get guidelines on how to calculate.

PURPOSE OF THE PROJECT

Establish a carbon sequestration calculation method to be used in Carbon Footprint assessments at farm level.

The ultimate outcome is to have a method that will support and encourage farmers to implement activities and practices that promote carbon sequestration and thereby mitigate climate change.

This project does not aim to look at

- **National reporting**
- **Method around soil carbon measurements**
- **Invest in new science**

Project Approach

What’s the status at date

- Carbon sequestration is one important topic for climate change.
- Currently there is no consensus on how to account for carbon sequestration.
- Will not invest in new science – look at what is out there and what's not.
- We have done a high level review of existing tools and initiatives (the ‘Matrix’).
- Held a workshop 25-26 September
  - ✓ What is already out there – consensus and gaps
  - ✓ How to include soil carbon changes into carbon assessments
  - ✓ Gain insight from world experts

WHAT KIND OF METHOD IS NEEDED

A method that reflects the actions a farmer implements to promote carbon sequestration to mitigate climate change.

Relevant: recognised and science based
Robust: follow improvements over time at farm level
Rational: feasible to integrate in carbon assessments globally

C – Sequ

Two dimensions to investigate

Soil

- What practices affect c-seq
- What parameters control these practices
- What models/EF/equations are there

LCA

- What question are we asking will influence how to deal with e.g.
  - ✓ System boundaries
  - ✓ Time perspective
  - ✓ Reference

Outcomes from the workshop

- Great engagement from experts.
- Identified activities to potentially be included.
- A number of workstreams have been established.

What activities should be included

Outcomes from workshop, but to be investigated further

- Organic matter to the soil (crop residues, compost, manure, biogas residues)
- Cover crops
- Tillage/reduced tillage/no tillage
- Biochar (to be investigated further)
- Peat soils
- Grazing (?)
- Hedges/trees/forests

Important to remember!

- This is an extremely complex area.
- We don't expect to have a perfect 'method'.
- We hope this to be one step forward to get guidelines to calculate the c-seq at farm level and support farmers to implement activities that support c-seq.

C-Sequ

Project of guidelines for the calculation of Carbon Sequestration for the Dairy cattle sector

Background

It is no secret that like any food sector the beef and dairy sectors emit greenhouse gas (GHG) emissions through the production processes associated with providing good nutrition. Whilst there are many actions farmers and food processors can take to reduce these emissions, another that is known of though extremely difficult to quantify is the quantity of carbon captured by the soils that underpin the production of beef and dairy products.

Some 20% of the world's agricultural lands are managed by dairy farmers, so the potential from the dairy sector alone is not insignificant.

With all livestock production globally contributing some 7.1 gigatons of CO2-equ/pa, the FAO estimate the potential for global grassland production to offset this total emission from livestock agriculture by 0.6 gigatons CO2-equ per year.

7,1 gigatons of CO2-equ/pa

0,6 gigatons of CO2-equ/pa

There is a genuine desire within the cattle sectors to quantify carbon sequestration at farm level and to better understand what are the most impactful management actions that increase the quantity of carbon captured. At present standards for measuring soil carbon are highly variable with differing levels of science underpinning claims. Agreed standards, methods and modeling rules would harmonize process and underpin practice change by clarifying scope and scale of possible mitigation.

Though soil carbon cannot currently be used in the contributions to the Nationally Determined Contribution's (NDC) under the Paris Agreement or is excluded or reported separately in on farm LCA analysis, a robust, internationally accepted and auditable methodology will contribute to product footprints and encourage an evidence based approach to improvements in farm management practices.

Recognizing the difficulty in establishing robust assessment methods to date, there has been considerable investment into Carbon Sequestration science. Work is necessary to build on current science (including developments such as the FAO LEAP and other similar initiatives) to enable the livestock sectors to evaluate carbon sequestration and establish platforms that encourage farmers to adopt practices to improve sequestering in a quantifiable way.

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