

Environmental responsibility: Animal primary production and environmental impacts

Food production is dependent on natural resources such as available land, soil, water, nitrogen and phosphorous. Production also consumes other resources like fuel. There is always an environmental impact from food production.

HKScan takes environmental responsibility from "field to table" and sets environmental requirements also on its supply chain, such as animal production.

Animal primary production and environment

Most significant global environmental impacts of animal production comprise impact on climate, decreases in biodiversity, depletion of water resources and eutrophication.

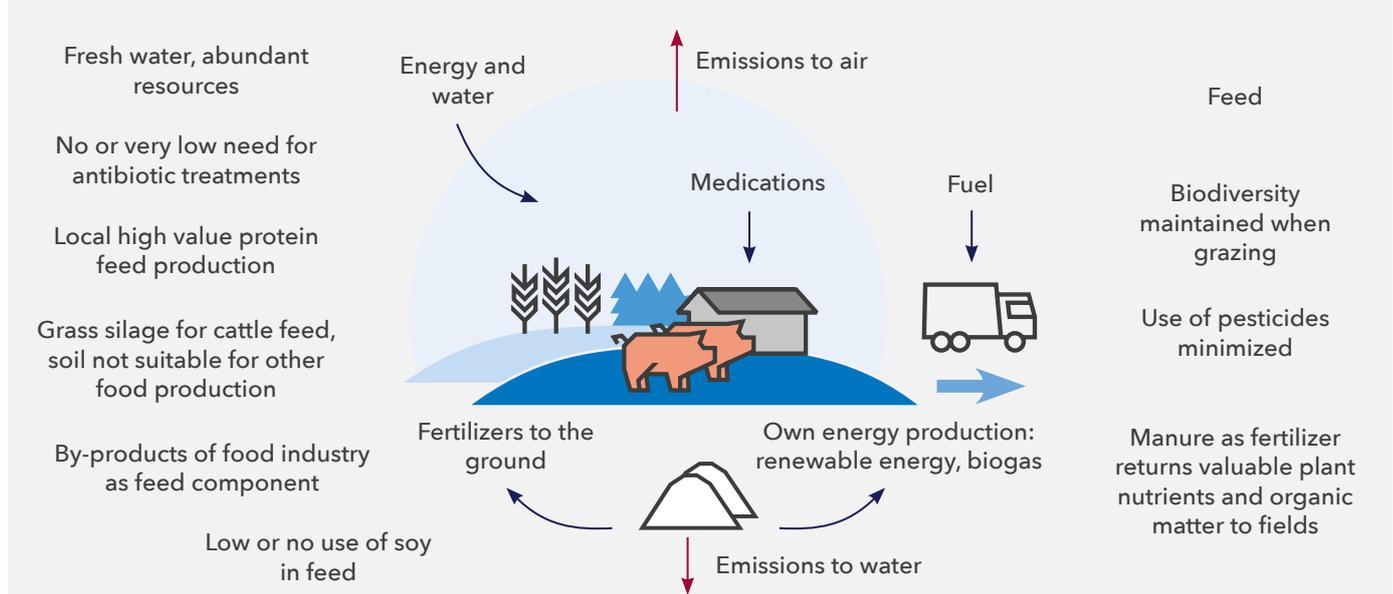
Environmental impacts of animal production differs between countries based on climate and soil conditions as well as agricultural practices. In HKScan's Nordic production countries overgrazing, lack of biodiversity, deforestation and depletion of water resources are not challenges. E.g. grass silage production for cattle feed, which is a common method in the Nordic countries, is rich in biodiversity and make it possible to use soil which is poorly suitable for other food production.

Throughout the product lifecycle - from primary production to food waste - especially carbon dioxide, methane and nitrogen oxide greenhouse gases, that accelerate climate change, are generated.

Farmed animals are part of the farm's circular economy system and prerequisites for a functional nutrient cycle.

*** ENVIRONMENTAL IMPACTS ARE DETERMINED BY THE LOCAL ECOSYSTEM**

CIRCULAR ECONOMY: ANIMAL PRODUCTION



"I think there is a lot of people who still believe that animal parts not used for human food are taken to a land fill. Today, the case is the total opposite. For example, pig by-products have over 200 different uses. You can make gelatin out of pig rind, candles out of the fat and sausage casings from its bowels."

Mika Paulamäki,
Director, Biotech-division
HKScan



Grazing as a conservator of biodiversity

Grazing cattle and sheep conserve the agricultural landscape as well as several plant species, butterflies and beetle species. In HKScan's Nordic production countries the livestock density on grazing fields is small and there is no soil degradation and erosion due to the overgrazing.

Work to prevent eutrophication

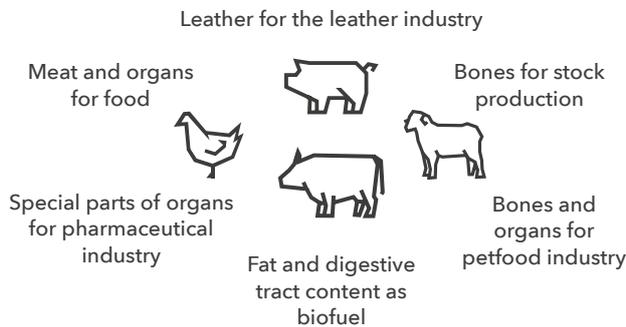
Agriculture is a nutrients source for eutrophication of waterways. To prevent eutrophication, grazing fields are placed at a distance from watercourses. Protection zones of vegetation are

placed between fields and waterways to bind releases from nutrients and fertilizers. Crops are fertilized only as much as they consume, for example with livestock manure.

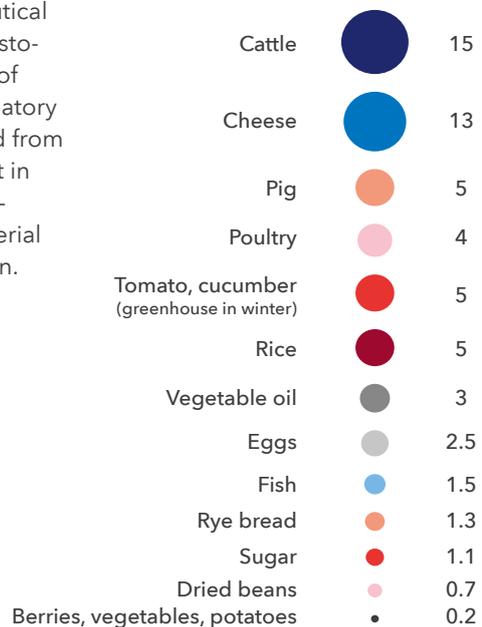
Meat is only one of the products from an animal carcass

The aim of HKScan's circular economy approach is to use of all parts of the animal. Some 40-50% of cattle is used as food and remaining 50% in other ways. The corresponding share for pigs, broilers and sheep is about 40%. Climate impact from farm animals can in addition to food industry be divided between leather, feed or

pet food industries. Pharmaceutical industry uses, for example, gallstones from cattle as constituents of medicines due to their inflammatory properties and heparin isolated from pig's gut mucosa as constituent in anti-clotting medicines. Any unprocessed animal-derived material is directed to biogas production.



Estimated contribution of different foods to climate change*



Food • Impact of climate kg CO₂ equivalent/kg

*) Nissinen, A. Salo, M. ja Grönroos, J. 2010. Ilmastodieettipuntari - mihin sen antamat ilmastopainot perustuvat? (pdf) Versio 23.4.2010. http://ilmastodieetti.fi/Ilmastodieettilaskurin-perusteet_2010-04-23.pdf

DISTRIBUTION OF CLIMATE IMPACT EXAMPLE FROM FINLAND

At present, there are no fully standardised evaluation methods used for lifecycle calculations in food production. The background variables used may differ. In addition, variations come from actual differences, for example, in animal rearing and in the climate and soil conditions in different areas. The greenhouse gas emissions from rearing domesticated animals vary in different parts of the world, depending on local production conditions and production efficiency. Often, the impact of land use and changes in land use are omitted from the calculations.

GREENHOUSE GAS EMISSIONS BY SECTOR*

- Processing industry: 24%
- Energy supply: 23%
- Traffic and storage: 16%
- Agriculture, game hunting and fisheries, of which livestock production is approximately 6%: 13%
- Households: 11%

*) Statistics Finland: air emissions (29.1.2018), five biggest sector

EMISSIONS FROM AGRICULTURE ARE DIVIDED INTO THREE PARTS

- Emissions from agriculture: 40%
 - Cultivation of organic soil: 19%
 - Use of synthetic fertilizers: 21%
 - Manure processing and its use as fertilizer: 12%
 - Digestive system of animals: 28%
 - other: 5%
- Energy production and use 10%
- Share of agriculture in the agriculture, forestry and other land use sector: 50%

