

The Feed Factor: Why meat companies are looking at feed to reduce emissions

Animal feed production is a major source of emissions, so meat companies, farmers and feed producers are all facing the pressure to reduce emissions in their vast supply chains. Meat producers are likely to set more ambitious targets which can only be met if they can develop a market for meat with a lower Co2 footprint



Like other sectors, it is becoming increasingly clear that the meat sector needs to take major steps to move towards the goals on greenhouse gas emissions set out in the European Green Deal and the Fit for 55 strategies. Since 2005, emissions in the agricultural sector have dropped by only 3% - a figure that is still very far from the 40% reduction in 2030, which the EU Commission aspires for sectors like agriculture that fall under the 'Effort Sharing Regulation'.

Within agriculture, [livestock has a substantial share \(80+%\) in total greenhouse gas emissions.](#)

Emissions in beef, pork and poultry production vary considerably

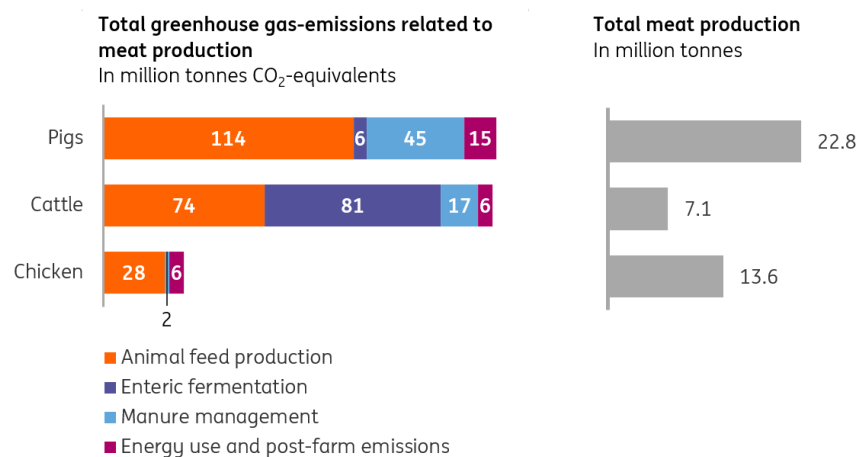
Emissions for different types of meat vary considerably.

Emissions to produce a kilogram of beef protein in Europe are 2.5 times higher than a kilogram of pork protein and 4.5 times higher than poultry.

A breakdown of the carbon footprint of European meat production shows that for every animal type, a large share of all emissions is linked to animal feed. Besides direct emissions from feed production, the type of feed also influences manure and enteric fermentation emissions. Although most emissions in the meat supply chain happen in the field and on the farm, the meat industry needs to help make a difference. Major meat companies can leverage their scale and dominant position in the value chain and industry knowledge to stimulate, reward and market the additional efforts that the millions of livestock farmers in Europe have to take to combat global warming.

Feed production is a major source of greenhouse gas emissions

In livestock sectors in Europe



Source: FAO, European Commission, takes into account all emissions along the production chain

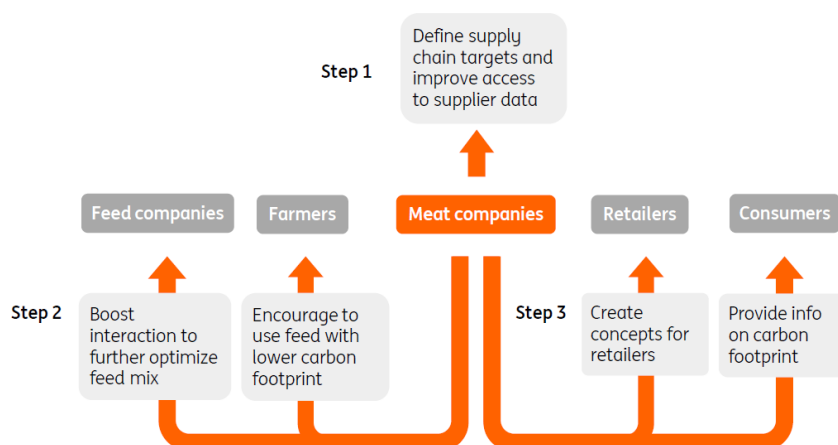
Meat companies can do several things to reduce scope 3 emissions

Lowering the footprint of meat products is increasingly considered a strategic priority by a number of major European meat companies. But because most emissions take place outside of their direct sphere of influence meat producers will have to cooperate with other players in the value chain.

Having said that, an increasing number of major European meat companies also acknowledge they are, to a certain extent, accountable for the emissions that happen outside their operations in the field and on the farm (so-called 'scope 3 emissions').

In this process, several steps can be distinguished.

Meat companies can take a coordinating role to enable emission reduction



Source: ING Research

Step 1: Before setting scope 3 targets, many meat companies will need to have more data

Some meat companies have formulated specific targets for their total supply chain (including scope 3 emissions), but we expect more companies to follow.

However, access to data in the supply chain is essential, especially for meat producers with a low level of integration, as it can pose a challenge to create willingness among farmers and feed companies to share data. That's why more integrated meat companies are likely to have an advantage thanks to their long term relationship with many suppliers. Both the tools to measure emissions and the methodologies to determine the carbon footprint of individual products are rapidly evolving. Companies like Danish Crown and Vion are rolling out tools to monitor emissions on the farm level to (some of) their suppliers.

However, for the bulk of livestock farmers, carbon emissions are currently not a key performance indicator.

Step 2: Several routes can lead to a lower footprint of animal feed

Feed is responsible for a large share of the emissions because of the land use and the inputs needed to grow animal feed. To reduce the carbon footprint of animal feed, there are three options.

1. Increase the share of more sustainable sources of animal feed;
2. Make use of additives to reduce methane and manure related emissions;
3. Improve the feed conversion rate, so less feed is needed to produce a kilogram of meat.

The potential of each of these options is different for each animal. Better feed conversion rates are relevant for beef, pork and poultry alike and also provide a direct economic benefit. In the beef and dairy-sector there is much focus on what can be achieved with additives that help to reduce

methane. In pork and poultry, lower emissions will mainly have to come from changes in the composition of the feed mix.

Changes in EU policy provide opportunities for alternative feed sources...







Several regulatory changes are helping to open up potential alternative sources for animal feed.

The ban on processed animal protein (PAP) in pig and poultry feed will be lifted later in 2021. It is generally expected that at some point (processed), insects will also be approved as feed material for livestock. Furthermore, an update on the EU regulation on feed additives is expected before the end of 2021. At the same time, there is a push towards the use of certified soy, which is grown on land that is not associated with deforestation and land-use change.

Eventually, this could reduce the carbon footprint of part of the soy used in feed.

Typical compound feed mix can be adapted in several ways to lower carbon footprint

Composition of typical compound feed mix for land animals, based on volume of ingredients

| | % of total | Anticipated changes in feed mix |
|--|--|--|
| Cereals (wheat, barley, maize) |  48% | <ul style="list-style-type: none"> In some specific (circular) meat concepts, cereals cultivated for feed purposes will be replaced by residual flows from food industry |
| Protein meals (soy, rapeseed, sunflower) |  28% | <ul style="list-style-type: none"> Introduction of soy from land that has been free from deforestation and land use change for 20+ years* Local protein sources are anticipated to replace some imported protein meals |
| Food industry co- and by-products (inc. former foodstuffs) |  15% | <ul style="list-style-type: none"> Increased use of food industry co- and by-products could replace some cereals or protein meals |
| Minerals, additives, vitamins |  4% | <ul style="list-style-type: none"> More use of additives in bovine feed to reduce methane emissions |
| Products of animal origin |  0,5% | <ul style="list-style-type: none"> Processed animal protein (PAP) expected to replace some protein meals. Primarily in poultry feed. |
| Other |  5% | |

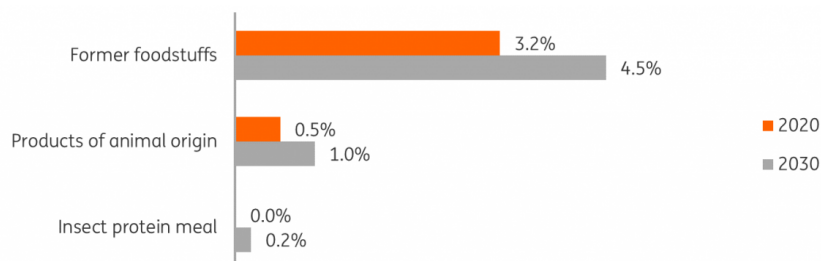
Source: PEFCR, ING Research, *leading to lower carbon footprint in Lifecycle Analysis tools

...but production of alternative feed sources has to grow from a low base...

While innovation and changes in public policy create opportunities for alternative feed sources the scale on which they are produced is still small and the impact on the total feed mix shouldn't be overestimated. Nonetheless, in relative terms, strong growth is expected towards 2030 and optimal use of these feed sources is one of the solutions for the meat industry to reduce emissions per kg of meat.

Insect meal, animal products and former foodstuffs will remain a small part in total feed mix

Share of alternative feed ingredients



Source: FEFAC, EFFOA, EFPRA, IPIFF, ING Research

...and the price of a more sustainable feed mix is a hurdle

Although changes in the feed mix can help reduce the environmental footprint, they can also have a major impact on the cost of feed and thus on farm profitability.

For pig farmers, feed generally makes up around 50% of total production costs; for poultry farmers, this is around 75%, and for cattle farmers, it can range from 15% to 50%. So changes in the feed mix will only be made if there is either a substantial upside in terms of feed conversion or if markets and/or governments compensate farmers for doing so.

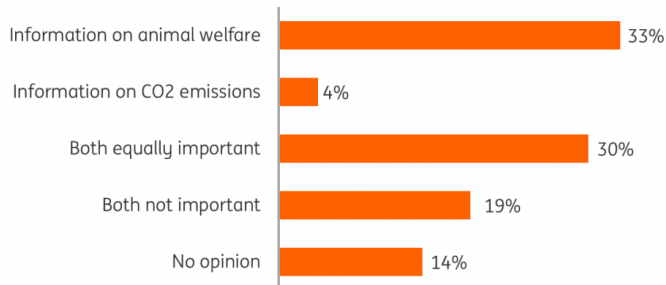
Step 3: Meat sector needs consumer awareness to get a premium from the market...

Are consumers willing to pay for the additional efforts to lower the carbon footprint of meat?

That depends, and it will be tough to fetch a premium for those meat products that are exported outside of the EU. However, the growth of animal welfare concepts, like Red Tractor, Tierwohl or Beter Leven, has shown a certain willingness in the market to pay a premium for meat with added value. While consumers don't consider carbon footprint as important as animal welfare, Dutch consumer surveys also show that four out of ten consumers would be willing to pay more for meat with a lower carbon footprint. Retailers pick up these signals and act on them by introducing products with 'eco-scores' and by asking suppliers to include more information on carbon emissions.

Animal welfare is considered more important than info on CO2 emissions

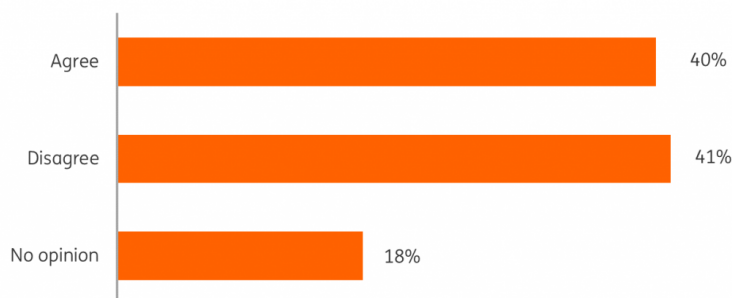
Question: Which information would you find more important when buying meat? % respondents



Source: ING Question of the Day, 30-07-2021, 8.153 respondents

Consumer data indicate there is demand for meat with a lower carbon footprint

Question: I would be willing to pay 10% extra for meat that has a significantly lower carbon footprint % respondents



Source: ING Question of the Day, 02-08-2021, 9.962 respondents

...and new Common Agricultural Policy could cover some costs for farmers

Within the EU's Common Agricultural Policy budget for 2023 to 2027, between 7.5 to 9.5 billion euro a year is reserved for 'eco-schemes' intended to reward more sustainable farming practices. Feed additives, optimised feed strategies, and breeding of lower emission animals have all been named as examples of such practices, but they still have to find their way into national strategic plans that are currently being written.

It is in the interest of the meat industry to stress the importance of such measures to ensure they eventually end up in these national strategies.

What's next for beef, pork and poultry producers?

Because of the increasing pressure to reduce greenhouse gas emissions and estimated reduction potential of 12-30% in livestock production, the urgency for European beef, pork

and poultry producers to formulate encompassing plans on the emissions in their supply chain is high. Although meat supply chains can differ from country to country and notable differences exist between beef, pork and poultry, we believe the main focus areas in these plans will be quite alike and contain the following elements:

- Step 1: Build better insights into emissions in the supply chain
- Companies will have to create a database to enable carbon footprint calculations and use a science-based/standardized methodology to assign emissions to specific products.
- Step 2: Encouraging farmers to participate and feed mix optimization
- The meat industry will search for ways to involve (a selection of) supplying farmers and stimulate them to reduce emissions via financial incentives and by setting minimum criteria and providing guidance. Furthermore, cooperation between meat processors, farmers and feed providers are key to optimize feed composition and creating animal diets that combine a high feed efficiency and a low carbon footprint.
- Step 3: Create (more) sustainable meat concepts
- This will demand marketing effort and co-creation with major retailers.

Higher level of integration can prove to be beneficial

Generally speaking, we expect a higher level of integration to put meat companies in a better position to reduce supply chain emissions.

Throughout Europe, poultry production is more integrated than pork, and pork is more integrated than beef. This means poultry producers are generally more involved in what happens on the farm, such as having a say in which feed a farmer uses. At the other end are beef producers, who have less influence on the farm as they mainly process cows from the dairy industry.

However, less integrated companies are also employing initiatives like creating strategic partnerships with a selection of their suppliers and customers (often retailers) in what can be seen as a kind of 'soft' integration.

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