EMISSIONS IMPOSSIBLE EUROPE

How Europe's Big Meat and Dairy are heating up the planet

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Emissions Impossible Europe:
How Europe's Big Meat and Dairy are heating up the planet

By: Shefali Sharma

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Dairy Factory Farm in Caparroso, Spain.
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Executive Summary

At a time when governments must dramatically reduce greenhouse gas emissions, global meat and dairy giants in Europe are increasing emissions by ramping up production and exports.

IATP has calculated the emissions of 35 of the largest meat and dairy corporations with headquarters in the European Union (EU) and Switzerland. Most are still not reporting their greenhouse gas (GHG) emissions. Of the 20 companies we examined in detail, only three have committed to reducing their overall emissions from livestock. None of the companies we examined have expressed an intention to reduce the number of livestock in their supply chains, where 90% of meat and dairy emissions originate.

In our *Emissions Impossible* series, we have examined the agricultural emissions of multinational livestock and dairy companies. In 2018, in a joint report with GRAIN, we showed the scale of those emissions, which rival those of Big Oil. In 2020, our *Milking the Planet* report exposed the continued rise of emissions from global dairy companies. In this latest iteration of the series, we focus on companies based in Europe. We show how — rather than reducing livestock emissions — Big Meat and Dairy are employing narratives and strategies that result in a green smokescreen over the industry's contribution to climate change. This report explains why, instead, they must be held to account and contribute to urgently needed action to reduce emissions this decade.

Only 10 of the top 20 meat and dairy corporations have announced climate targets with a few declaring net-zero plans. However, these voluntary plans rely on a range of strategies to dress up their climate action. These include:

- co-opting the narrative on regenerative and agro-ecological agriculture;
- focus on reductions of emissions per kilo of meat or litre of milk (emissions intensity reductions), which are drowned out by the companies' continued expansion of overall production;
- development of and plans to use impermanent soil and grassland carbon offsets sold on carbon markets;
- utilisation of unproven feed additives that claim to reduce methane; and last but not least,
- government-led incentives that perversely valorise large-scale animal agriculture through the capture of methane for "biogas" from livestock manure (see Box 3, p.15).

Offsets and improvements in efficiency will mainly fall on farmer suppliers to pay for and implement, even though these corporations set the terms for production. Offsets rely on uncertain pledges to reduce emissions elsewhere, replacing actual cuts to emissions. The trends are clear: Big meat and dairy companies in the EU, Switzerland and the United Kingdom (U.K.) are moving in the wrong direction.

No European government holds these companies accountable for their supply chain emissions, even as agriculture emissions have risen in the last decade. As the EU prepares to launch a Carbon Farming Initiative as part of its carbon removal plans in the EU Green Deal and as it sets rules more broadly for climate and agriculture, governments must require Big Meat and Dairy to commit to a reduction in their absolute emissions.

The EU must not certify the use of impermanent and unreliable carbon offset schemes, which enable corporate polluters to delay climate action and hide their emissions.

Just 20 European meat and dairy companies combined produce the equivalent of more than half of United Kingdom, France and Italy's emissions. They produced 131% of the Netherlands', 73% of Spain's and 29% of Germany's total emissions.

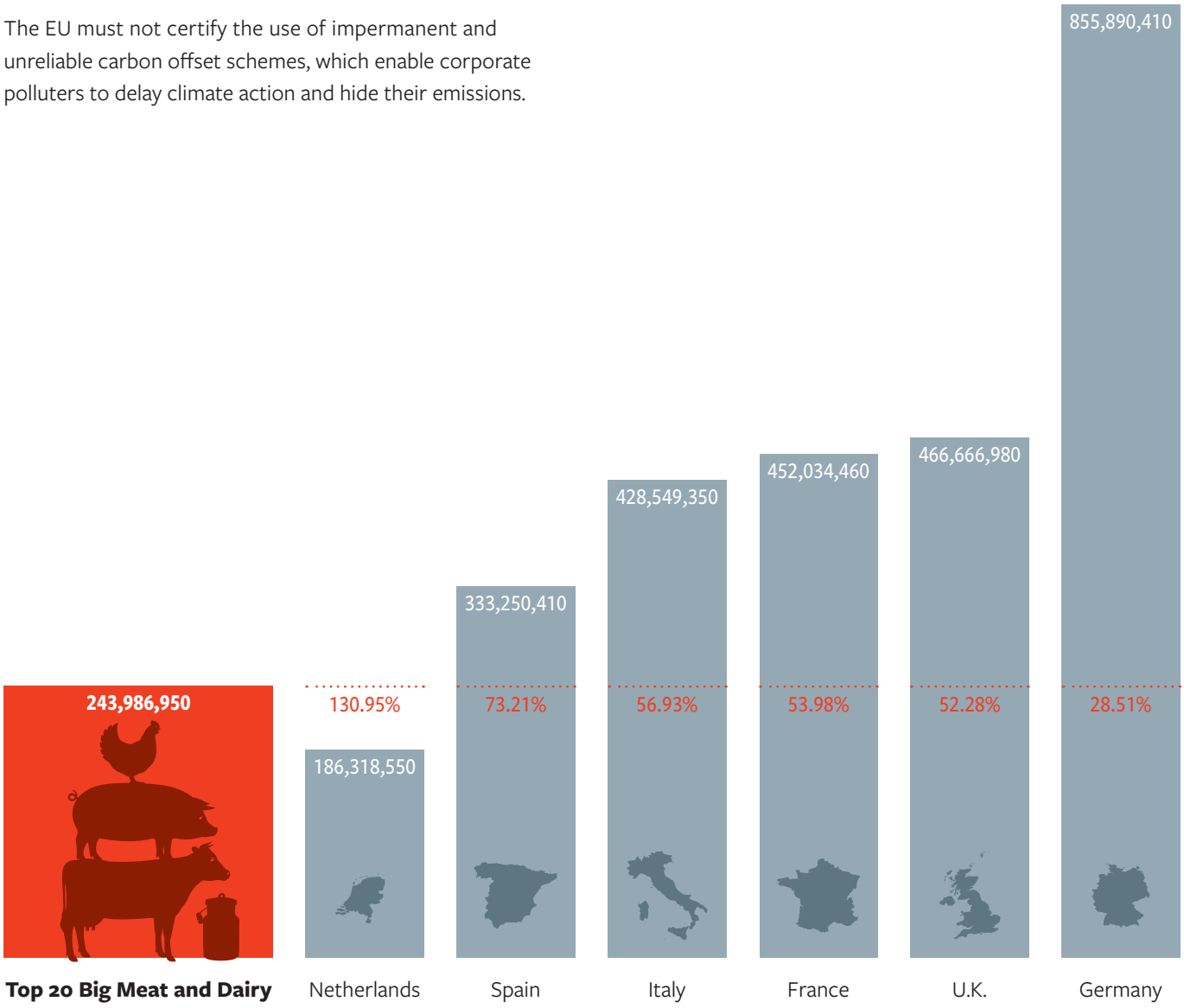


Figure 1: Comparing the combined CO_2 equivalent emissions (tonnes) of the top 20 Big Meat and Dairy companies to national emissions of EU countries. Source: IATP based on UNFCCC, National Inventory Submissions, 2020, see Methodology Note, p.42, section E.

Key findings from our new research

1. Just 20 European meat and dairy companies combined produce the equivalent of more than half of the United Kingdom, France and Italy's emissions. They produced 131% of the Netherlands', 73% of Spain's and 29% of Germany's total emissions (Figure 1).

2. The same 20 companies' total emissions rival those of fossil fuel giants, close to Eni's entire emissions, equivalent to two-thirds of Glencore and Total's emissions, over half of Chevron's (55%), 42% of ExxonMobil's, 44% of Shell's and of BP's, and more than either RWE or ConocoPhillips' emissions (Figure 2).

3. Their combined emissions are also equivalent to 48% of the coal consumed in the entire EU (2018)[2] or more than 53 million passenger cars driven for one year.[3]

4. The combined emissions of 35 of the largest beef, pork, poultry and dairy companies headquartered in Europe equal nearly 7% of total EU28's 2018 emissions (see Annexe 4, p.48).

5. Only four (Arla, Danone, FrieslandCampina and Nestlé) out of the 20 companies assessed report their total supply chain emissions. Even then, just two, Nestlé and Danone, provide their livestock supply chain emissions with any detail. Only three (Nestlé, FrieslandCampina and ABP) have announced plans to reduce their total, also known as absolute, supply chain emissions. There is no public evidence that any of these companies are considering major changes to their model of large-scale livestock production and processing.

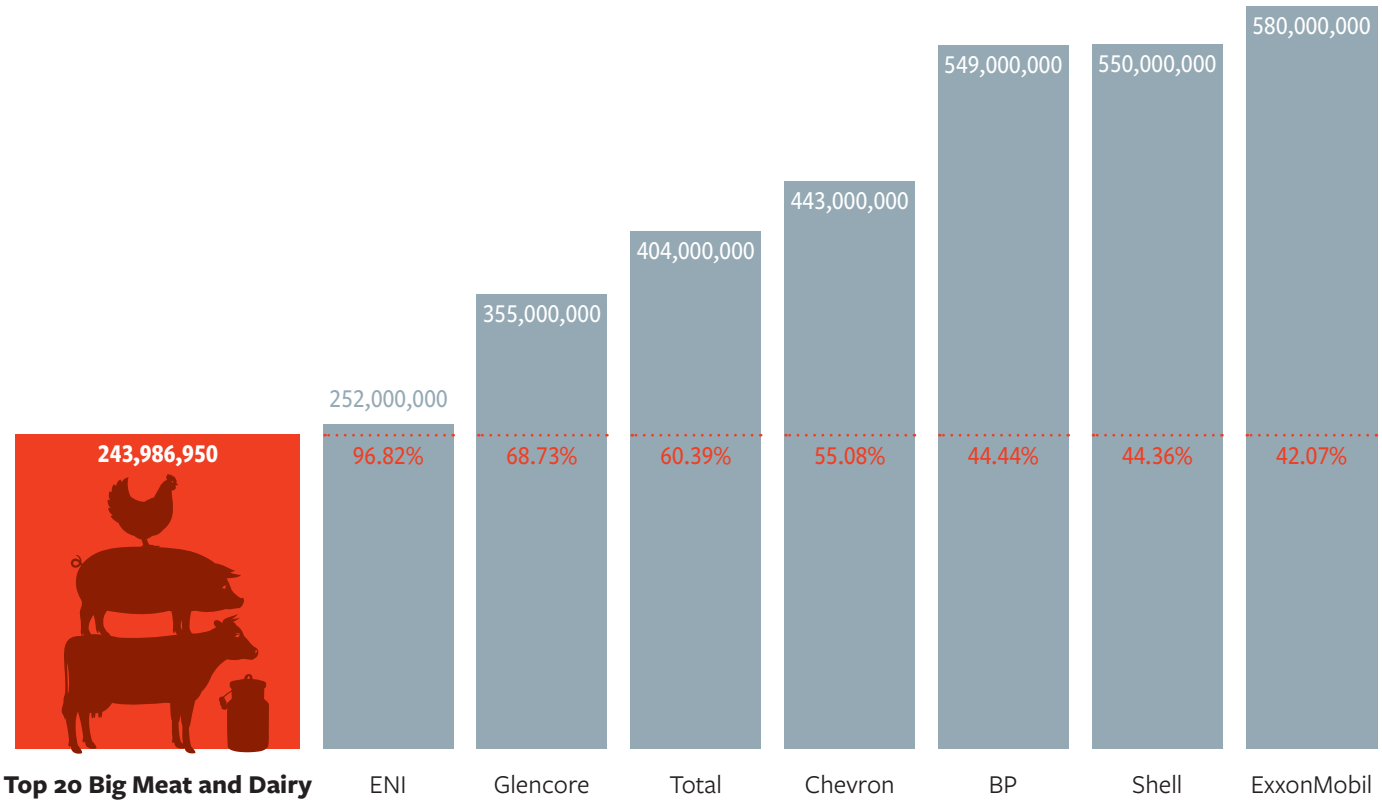


Figure 2: Comparing the combined CO_2 equivalent emissions (tonnes) of the top 20 Big Meat and Dairy companies to some major fossil fuel companies. Source: IATP based on Carbon Majors emissions estimates (Richard Heede, Climate Accountability Institute), see Methodology Note, p.42, section E.

Key findings (continued)

6 ABP, the Irish beef processor, which set a voluntary target with the Science-based Target Initiative (SBTi), increased its emissions by 45% between 2016 – 2018. German meat processing giant Tönnies increased its emissions by 30% in the same period. Danish Crown, a company headquartered in Denmark, is one of the world's largest pork processors. It increased its GHGs by 2% over this period, although it has pledged to become a net-zero emitter by 2050 (Figure 3).

7 Though Germany's agricultural emissions are some of the highest in the EU, none of the companies examined that are headquartered in Germany report their emissions let alone have a climate target.

8 Several companies like France's Groupe Bigard and Spain's Coren have failed to exhibit even minimal transparency about their operations, including the number of animals they slaughter annually, making it impossible to calculate trends in their annual emissions.

9 The five poultry companies we examined in detail emit the equivalent of 20% of total EU poultry sector emissions, yet only three partially report their emissions and none have emissions reduction targets.

10 EU exports of poultry, dairy and pork increased by 93%, 45% and 58% for poultry, dairy and pork, respectively, between the years 2005 and 2018. The rise in exports dwarfs imports of poultry, beef and pork, although imports, too, rose significantly between those years.

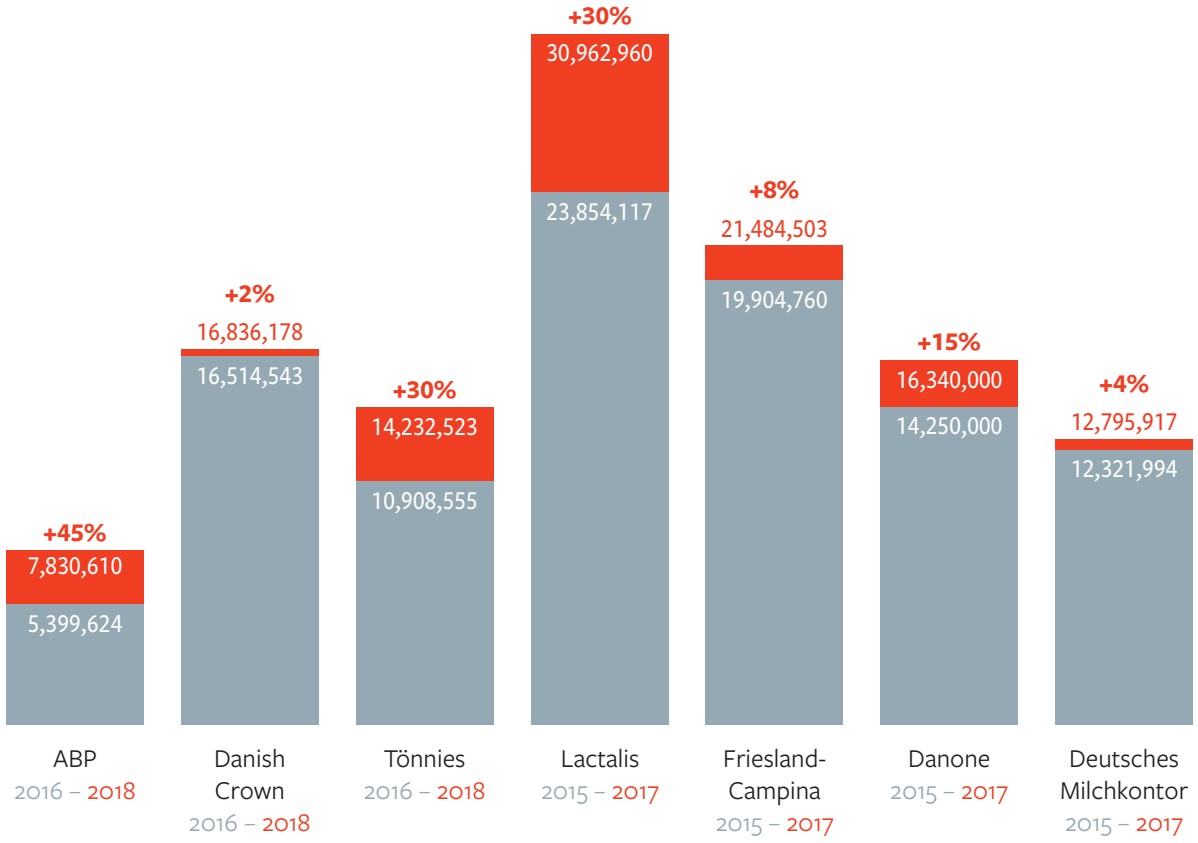


Figure 3: Change in seven of the top 20 Big Meat and Dairy companies' CO_2 equivalent emissions (tonnes) over a two-year period. Companies say they are taking voluntary measures to reduce their emissions, but the number of livestock in their supply chains is increasing and so are their absolute annual emissions. Source: IATP, see Methodology Note, p.42, section E.

EU trade and consumption trends show that a narrow focus on reducing meat and dairy consumption in Europe will have a limited effect in curbing livestock emissions as long as the region's outsized influence on global dairy and meat exports and EU trade policy is ignored.

Eighty-six percent of all meat and dairy in the EU plus U.K. comes from 10 European countries: Germany, France, Spain, Poland, Italy, Netherlands, Denmark, Ireland, Belgium and the U.K. (see Annexe 3, p.48). The companies featured in this report are either headquartered or process livestock in these 10 countries. For a transformative change in European agriculture, these 10 countries, in particular, and the EU as a whole must regulate meat and dairy companies.

setting up accountable regulatory regimes, voluntary initiatives are proliferating. The resulting targets are, at best, unaccountable, lacking clear and harmonised benchmarks and indicators and robust third-party verification. At their worst, they are platforms for corporate greenwashing.

The Intergovernmental Panel on Climate Change (IPCC)'s latest indictment on our prospects for limiting warming to 1.5°C requires a total systemic shift of every sector, including agriculture. This is feasible if governments act quickly and decisively on the climate crisis, as they have with enacting policies to limit the COVID-19 pandemic. The IPCC singles out methane as a key gateway emission to cut to buy time for eliminating fossil fuel emissions over time.

We need all hands on deck to transform both public funds and climate and agriculture policy in supporting a transition to agroecology.

The industry must not be allowed to profit while conferring the costs of the extractive system of mass production of animal-sourced foods to the public. EU policymakers have just agreed to another industry handout in the business-as-usual Common Agriculture Policy (CAP) for the period 2023 – 2027. This was a devastating decision for climate action. National CAP strategic plans can still be turned into an opportunity to align EU and global climate goals with concrete action on agriculture that ties country-level financing to a transition towards agroecology. The 2027 CAP must be rewritten to be truly transformative for the climate and biodiversity, redirecting predictable and stable public finance to support frontline rural communities for a just transition.

Speculative carbon markets for agriculture as envisioned by the European Commission (EC) in its forthcoming Communication on Sustainable Carbon Cycles are the wrong solution. Public funds, such as the CAP eco-schemes and state aid, should not be diverted to carbon consultants to support costly monitoring, reporting and verification of carbon credits for impermanent land-based carbon sequestration. These public funds should instead be used directly to support farmers already practicing agroecology and to transition European farming to a holistic agroecological approach.

Six years after the Paris Agreement and 18 years after the Kyoto Agreement that mandated governments to reduce GHG emissions, decision-makers still lack basic foundational data such as emission volumes from the largest meat and dairy emitters in the EU. In the absence of governments

The U.S. and EU have responded with a proposal for a Global Methane Pledge that sets an aggregate 30% cut in methane emissions by 2030 between all countries willing to do so.

We need all hands on deck to transform both public funds and climate and agriculture policy in supporting a transition to agroecology. It won't happen if Big Meat and Dairy continues to co-opt governments and civil society's narratives on regenerative agriculture and agroecology. It will only happen when governments wake up to our existential crisis and begin regulating agribusiness.

Pig farm with biogas plant. Photo: iStock.com / abadonian

1 Big Meat and Dairy's climate footprint

1.1 Introduction

The world's largest meat and dairy companies (Big Meat and Dairy) have known about their climate impact since at least 2006, when the United Nations Food and Agriculture Organization (FAO) report, *Livestock's Long Shadow,* presented a damning assessment of the livestock sector as a significant contributor to global warming. The climate impact of concentrated animal agriculture has become ever clearer in successive Intergovernmental Panel on Climate Change (IPCC) and U.N. reports. The science shows unambiguously that cutting methane and food system emissions this decade would help humanity limit global warming to 1.5°C, a necessary action in tandem with the phaseout of fossil fuels.[4] In spite of this knowledge, Big Meat and Dairy companies have continued to increase their emissions through the expansion of the number of animals in their supply chain.

More than one thousand climate lawsuits have been filed against governments and fossil fuel companies since 2015[5] based on the fact that these companies knew their operations were leading to climate change. In May 2021, a court in the Hague set a global precedent by ordering oil company Royal Dutch Shell to reduce its net emissions by 45% by 2030 compared to 2019 levels. It was the "'the first legal decision in the world [that held] fossil fuel companies accountable for their contribution to climate change.'"[6] This June, Danish Crown, headquartered in Denmark, became the first global meat company to face climate litigation.[7]

Data on emissions from the largest beef, pork, poultry and dairy processing corporations is incomplete, mostly incomparable among companies or across years and in the majority of cases, simply absent.

Emissions from the livestock supply chain (the animals raised and the feed they are given), also known as scope 3 emissions, account for over 90% of corporate meat and dairy emissions.[8] The first step in holding these companies accountable for their emissions is to expand public knowledge about the extent of their emissions. Yet, data on emissions from the largest beef, pork, poultry and dairy processing corporations is incomplete, mostly incomparable among companies or across years and in the majority of cases, simply absent.[9]

In our first report in the *Emissions Impossible* series, published jointly with GRAIN, we provided the first ever calculation of the emissions of the world's 35 largest meat and dairy corporations. We looked at their emissions for the years 2015/2016. Most of these companies were not reporting their supply chain emissions, let alone talking about transitioning out of polluting systems. A year ago, IATP published *Milking the Planet*. In that report, we demonstrated that global dairy companies continue to increase their total greenhouse gas emissions. This third report calculates the emissions of 35 of the largest meat and dairy corporations headquartered in Europe and examines the climate plans of 25 of them: the largest 20 emitters and five poultry companies. We reference year 2017 for dairy; 2018 for beef and pork; 2019 for poultry given the latest available companies' data at the time of calculation. In all three reports, we have used an emissions calculation methodology and regional data on emissions from livestock production developed by the FAO called the Global Livestock Environmental Assessment Model (GLEAM), combined with publicly available corporate data on production volumes (see Methodology Note, p.42).

Together, the 35 companies featured in this report make up the top 10 beef, pork, poultry and dairy producers and emitters in Europe. The emissions of these 35 companies combined equal nearly 7% of all EU28 emissions for 2018 (see Annexe 4, p.48).

It is a matter of deep concern that little has changed since the publication of our first report three years ago. Few companies report their emissions, and none has a viable plan for making the kind of cuts to their emissions that the climate crisis warrants. However, some things have changed. More big meat and dairy corporations are announcing net-zero targets, many of them with elaborate narratives on climate action. Several companies are asking farmers in some of their European supply chains to take a variety of actions, including submitting reports on and making technological changes in their practices to reduce the emissions intensity of livestock production. Companies are also creating or gearing up to create carbon offsets both within and outside their supply chains. The offset plans include credits for carbon sequestration on land and ramping up the use of methane digesters to produce biogas. This report takes a closer look at these companies, their narratives and strategies to address their climate impact and what these really mean for transformative climate action.

Box 1: Definitions

Offset versus Inset

Offset: An "offset" is the idea that emitting carbon in one location can be compensated for by reducing it elsewhere (e.g., Microsoft buys carbon credits for a project that plants trees in Romania to offset its own carbon emissions). Offset schemes turn this so-called reduction of emissions into a carbon credit or certificate that can be bought and sold on financial markets (a carbon market). In essence, such credits allow companies to continue polluting in exchange for buying these credits.

Inset: The idea of an "inset" follows the same principle as an offset. The difference is that the compensation project and actions take place within a company and its value chain (e.g., a company accounts for its emissions reductions through compensation projects in the form of biogas digesters or soil carbon sequestration activities on its supplier farms), whereas an "offset" can be a project completely independent from a company's business operations.

Target Terms

Livestock Supply Chain: The supply chain for agricultural commodities, such as milk or meat, can be described as the production process from "farm to fork." A company's "upstream" part of the supply chain consists of producing milk or raising a food animal on farm including all the inputs that go into producing the milk/meat, such as procurement of feed for the animals, water use, etc. Once the milk or animal/carcass is delivered to the company's processing plant, it is manufactured as the company's product. The "downstream" part of the supply chain consists of delivering the final product to customers: Distribution, warehousing, transport and after-sale services are all part of the downstream supply chain.

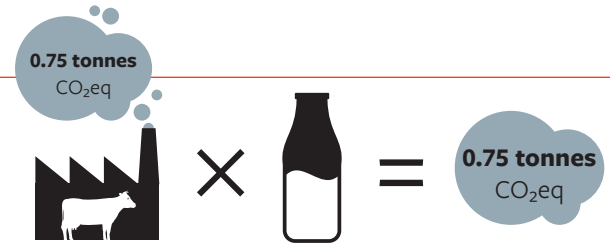
Climate Target: An emissions reduction goal used towards the aim of avoiding dangerous levels of global warming.

Target Boundary: The activities and/or parts of the supply chain that are included in the climate target. This can also be referred to as the emissions that are "in scope" of the target.

Emissions Reduction

Absolute Emissions Reduction: A reduction in total emissions. For tackling climate change, total emissions must be reduced rapidly within this decade to give humanity a chance to limit global warming to 1.5°C.

Emissions Intensity Reduction: In the case of livestock companies, emissions intensity reduction means a reduction of greenhouse gas emissions per kilo of meat or litre of milk. It enables companies to claim that per kilo/litre, GHGs are going down, even if the companies expand production and total emissions. Emissions intensity reduction targets can also be based on GHG per unit of GDP — fewer GHGs per unit of economic revenue.



A: Baseline Emissions Intensity

B: Reduced emissions intensity, but increased production

The Emissions Intensity Trap

A reduction in emission intensity looks good on paper, but the savings would soon be negated by increases in production and the number of animals, thus absolute emissions still increase.

1.2 Real climate action or industry smokescreens?

No transparency in emissions reporting

Just 20 European meat and dairy companies combined produce the equivalent of over half of the U.K., France or Italy's emissions. They produced the equivalent of 131% of the Netherlands', 73% of Spain's and 29% of Germany's total emissions (Figure 1, p.2). The same 20 companies' total emissions rival those of fossil fuel giants, close to Eni's entire emissions, equivalent to two-thirds of Glencore and Total's emissions, over half of Chevron's (55%), 42% of ExxonMobil's, 44% of Shell's and of BP's, and more than either RWE or ConocoPhillips' emissions (Figure 2, p.3). Ten are dairy companies, and 10 are meat processing companies. Fully half of the 20 companies examined failed to publicly report any emissions, either in annual reports or through a voluntary initiative. None of the companies with headquarters in Germany report their emissions.

Of the 10 companies reporting emissions, there is no comparable standard of reporting. Some report only scope 1 and 2 emissions (see Box 2) and only in their annual reports. Others, like Sodiaal, provide a combined "net" emissions estimate for scope 1 and 2. Only three (Danone, Glanbia and Nestlé) provide detailed emissions reporting that is publicly available for viewing through the Carbon Disclosure Project (CDP) (see Annexe 1, p.44). The CDP is a voluntary initiative that has set up an emissions reporting database for companies, but it relies on industry self-reporting. This complete lack of coherence and accountability makes it difficult to know and compare emissions across companies.

Only four (Arla, Danone, FrieslandCampina and Nestlé) out of the 20 companies we assessed report their total supply chain emissions. These are known as their scope 3 emissions, which include emissions stemming from their livestock supply chain. Even then, just two, Nestlé and Danone, provide scope 3 emissions with any detail in the CDP database. Arla and FrieslandCampina report them in their annual reports. None of Europe's top 10 meat companies publicly report their total supply chain emissions.

Climate targets or accounting tricks?

Despite the absence of clear information on their current emissions, half of the 20 firms examined have announced some sort of company-wide climate target: seven dairy companies (Arla, Nestlé, Danone, FrieslandCampina, Glanbia, Sodiaal and Bongrain/Savencia) and three meat processors (ABP, Danish Crown and Dawn Meats). However, instead of prioritising the reduction of the number of animals in their supply chains, all intend to offset livestock-related emissions, either by including gas generated from the methane produced on their supplier farms in their calculations and/or through applying carbon credits towards their emissions reduction targets.

Carbon credits can be purchased from outside of their supply chains from projects claiming to sequester carbon through forestry and agricultural practices. Projects that claim to reduce emissions within livestock supply chains are also increasingly offering carbon credits, for instance, by

Box 2: The full scope of meat and dairy emissions

Emissions calculations are highly dependent on where one sets system boundaries. To properly capture and quantify all emissions from a given food product or corporation, it is important to count all emissions, including those categorised as:

Scope 1: Direct emissions from company-owned and controlled resources such as offices, processing plants and machinery. This could include use of natural gas or coal combustion and energy used in company transport; some companies may include emissions generated by animals' digestive systems (enteric fermentation) at company-owned farms.

Scope 2: Indirect emissions generated from purchased electricity, heating and cooling consumed by the company.

Scope 3: Upstream and downstream supply chain emissions consisting of on-farm emissions from livestock, manure, farm machinery fuel, livestock feed production, production of inputs needed to produce that feed (e.g., nitrogen fertiliser), land-use changes triggered by the expansion of livestock grazing and feed production, and other sources.

converting methane derived from animal manure into biogas or through reduction from feed additives. The EU has just proposed an increase in its renewable energy target for gas produced from agricultural methane as part of its revision of the Renewable Energy Directive. If successful, this revision, in combination with what the EU proposes for its Carbon Removal Certification Legislation, could aid these companies in setting up carbon offsets through methane that may not result in overall reduction of global livestock emissions. If animals in companies' supply chains continue to increase either in Europe or globally, the sector will continue to increase its total emissions, worsening climate change.

Pledges of absolute emissions reduction from supply chains

Only three of the 10 companies with climate targets (Nestlé, FrieslandCampina and ABP) have announced plans to reduce their total, also known as absolute, supply chain emissions. Nestlé's 50% reduction of all three scopes by 2030 in its new *Net-Zero Roadmap* specifies that some of these reductions will come from its livestock supply chain. And yet, despite the buzz around Nestlé's announcement, the ambition of the proposed reduction is miniscule compared to the company's anticipated growth: The proposal is equivalent to a 4% reduction by 2030 of Nestlé's 2018 carbon footprint (see Switzerland's Nestlé, p.22).[10]

FrieslandCampina commits to a 33% reduction of emissions from its supplier farms by 2030. However, the company expects an unspecified amount of these reductions to come from the use of biogas and other offsets rather than a reduction in the size of animal herds. ABP, the only meat company in the group, commits to reduce absolute scope 3 emissions that are specified as "purchased goods and services (raw materials and packaging)" (see Annexe 1, p.44). This includes livestock emissions according to an ABP representative.[11] Our research shows that ABP's emissions rose by 45% between 2016 – 2018, and no public accounting of the company's year-to-year emissions were found (see Figure 3, p.4).

There is no public evidence that any of these companies are considering major changes to their industrial model of large-scale livestock production and processing.

Emissions intensity reduction targets hide real climate impact

The ultimate metric for averting catastrophic climate change is reducing total emissions at a scale that matters. Yet out of 10 European meat and dairy companies with climate targets, six have committed to only reducing emissions intensity of their supply chain emissions (scope 3). Emissions intensity is the favoured industry metric as it measures emissions reductions per litre of milk or kilo of meat, ignoring the climate effect of continuing to allow corporations to ramp up overall production. Companies can thus increase production while claiming that their per unit GHG emissions are coming down. An FAO study in conjunction with the dairy industry shows how emissions intensity reduction has done little to stop overall emissions rising in the sector: While emissions intensity decreased by 11% between 2005 – 2015, overall dairy emissions increased by 18% in the same period.[12] This is because the overall quantity of milk produced and processed increased (Figure 4).

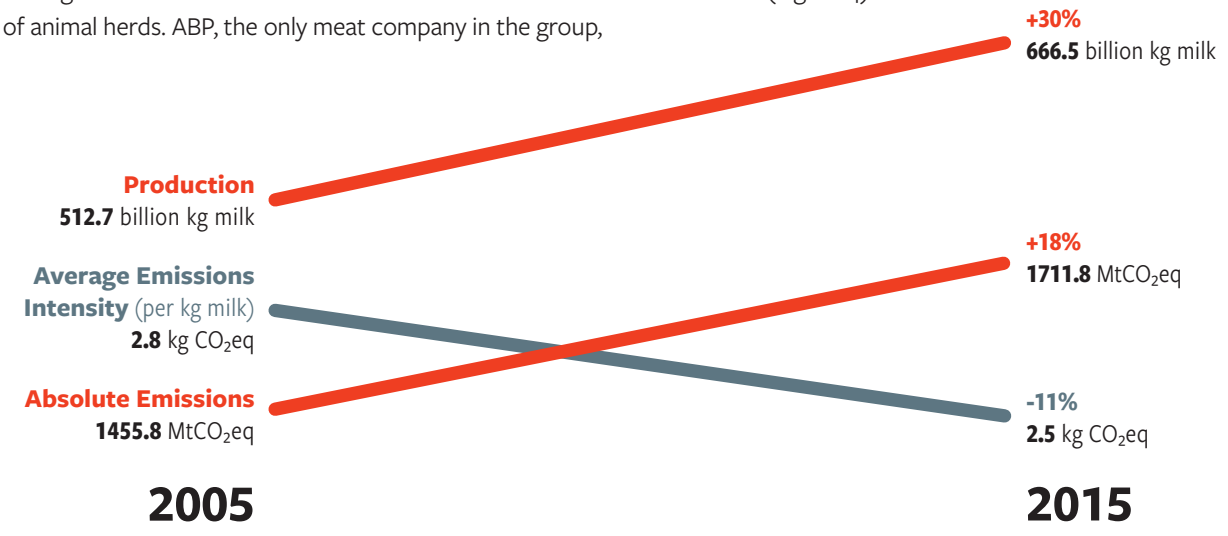


Figure 4: Over a 10-year period, even as the global dairy industry reduced its emissions intensity, absolute emissions continued to grow because of increased production. FAO and Global Dairy Platform, "Climate Change and the Global Dairy Cattle Sector - The Role of the Dairy Sector in a Low-Carbon Future," 2019, 16-24.

Net-zero, science-based targets: climate greenwash or climate ambition?

Since 2018, several global meat and dairy companies have declared net-zero targets by mid-century that include their supply chains. JBS, based in Brazil and by far the behemoth of global meat production, has gone as far as to declare a net-zero target by 2040, 10 years earlier than other companies. IATP has done a separate analysis on JBS's climate credibility; In brief, the JBS claims do not hold up to scrutiny.[13] In Europe, four companies have set net-zero targets that include their supply chains: Nestlé, Danish Crown, Danone and Glanbia. Arla has limited its "carbon net-zero" by 2050 to its company operations and transport (scope 1 and 2) "sites to trucks."[14]

Five companies (Nestlé, Danone, ABP, Arla and Dawn Meats) have set their climate targets with the Science-based Target Initiative (SBTi) (see Annexe 1, p.44). Two more appear to be in the process of joining the initiative (FrieslandCampina and Glanbia Ireland), while Danish Crown has announced its plans to join.[15] Irrespective of what happens afterwards, the mere announcement of setting a target, especially a target associated with several high-profile environmental organisations, provides companies with favourable public relations. The "what happens afterwards" question, however, is key.

The SBTi is a voluntary partnership between companies and the Carbon Disclosure Project, the United Nations Global Compact, World Resources Institute (WRI) and the World Wide Fund for Nature (WWF). The group assists corporations in setting climate targets. The SBTi is based on self-reporting by companies. The companies can apparently set company-wide targets to contribute to limiting warming to 2°C or 1.5°C (note that the IPCC's state of climate science report reconfirms that 2°C would be a world of immense suffering for life on Earth). Danone, ABP, Arla and Dawn Meats have set targets for a 2°C world, while Nestlé has set a 1.5°C target.

The SBTi is currently working on a standard for setting net-zero target. The latest SBTi guidelines (released in October) state that companies must set "one or more emission reduction targets and/or supplier or customer engagement targets that collectively cover(s) at least two-thirds (67%) of total scope 3 emissions"; the use of offsets must not be counted towards a company's "near term" SBTi emissions reduction target.[16] Companies are, however, free to use offsets to "neutralise" remaining (residual) emissions towards reaching their net zero goal.[17] They are also allowed to use offsets outside of their SBTi target boundary "to finance additional climate mitigation."[18] At the same time, the guidelines allow for companies to claim climate neutrality in the use of biofuels or biomass for feedstock. There is also no requirement under SBTi to generally account for direct or indirect land use change; companies are only obligated to include "CO_2 emissions from direct land use change (LUC) and non-LUC emissions, inclusive N_2O and CH_4 emission from land use management" with regards to bioenergy and feedstocks. The inclusion of emissions related to indirect land use change is optional.[19]

Industrial large-scale animal agriculture is by far the largest component of overall land sector emissions. But net-zero accounting, and its endorsement of the use of land-based offsets to meet climate commitments, is slowing down a much-needed transition in meat and dairy production systems.[20]

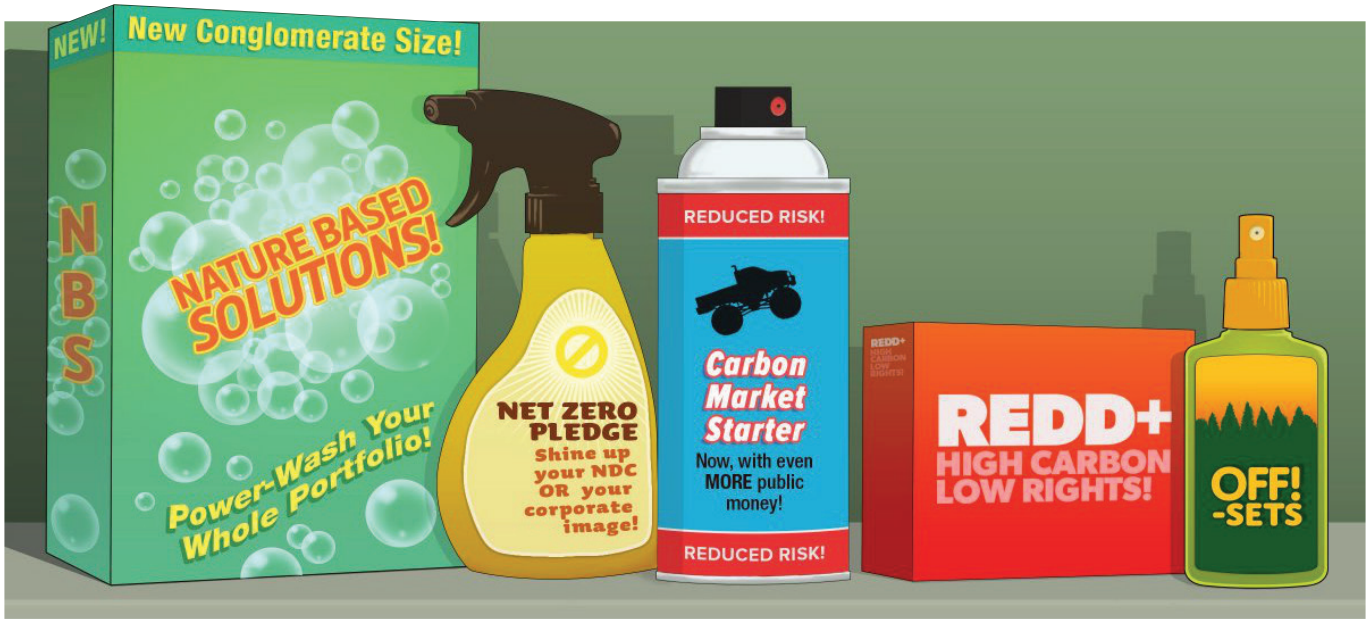


Illustration © Ethan Cornell / Climate Land Ambition Rights Alliance (CLARA)

Net-zero emissions was a central topic of the COP 26 U.N. Climate Change Conference, Glasgow, 2021.
Photo: Andrew Parsons / No 10 Downing Street (CC BY-NC-ND 2.0)

2 Digging into climate claims—The key strategies

Box 3: Six key ways Big Meat and Dairy are addressing their climate impact

1. Co-opting the narrative on regenerative and agroecological agriculture to window dress industrial agricultural practices and proposing ways to make these practices less climate damaging, while failing to change the core aspects of their production model that make it so damaging for the climate, biodiversity and other planetary boundaries.
2. Focusing on reducing emissions per unit of production rather than total emissions reduction.
3. Development of carbon credits for impermanent land-based carbon offsets.
4. Development of life-cycle analyses with industry-supporting academics and institutions for generating soil or grassland carbon offsets.
5. Use and development of carbon credits for methane reducing additives that have yet to be scientifically proven.
6. Use of manure and feedstock from large-scale agriculture to convert methane into so-called biogas, perversely creating a revenue stream for large-scale industrial agriculture.

2.1 Murky waters: Big Dairy's narrative on regenerative agriculture

Big meat and dairy corporations have begun to use the term regenerative agriculture, without defining it, to describe how they are investing in their farmer supply chains to meet their climate goals. Companies like Nestlé, Danone, Arla or Danish Crown make billions in profits each year. Yet, the multinationals provide minimal investment to implement these programs: Danone's contribution is equivalent to just one day of its annual sales turnover[21]; for Nestlé, it's 1.1 billion euros[22] over four years to 2025, which is equivalent to just 1.8% of its 2018 sales revenue. There are no details or firm commitments on how that money will actually be spent.

As pressure builds on these companies to account for their supply chain emissions, European farmers, largely in France, Denmark, Sweden and the Netherlands, are being tasked to provide the emissions intensity reductions the companies can claim towards climate targets. These demands are not being made of their farmer suppliers in other European countries, let alone in other parts of the world, which opens a big avenue for carbon leakage. Carbon leakage is the idea that companies can simply expand operations in other countries where there are weaker climate laws or oversight, thereby shifting their

emissions rather than reducing them. The same scenarios unfold with other laws in the public interest, such as labour laws. Because Denmark has had stricter labour laws than Germany, Danish Crown has economically benefited for years from establishing slaughterhouses in Germany where workers have lower wages than they would in Denmark.

Some agricultural practices cited by these companies, such as no till, are far from "regenerative" when used in isolation. This is because the practice often relies on chemicals like glyphosate that environmental, health, food and farm groups want to ban from the EU.[23] Other practices mentioned by the companies include the reduction of chemical fertiliser use or converting to organic fertiliser. These practices can simply mean converting the huge excess of manure produced on large-scale farms into fertiliser, which does little to reduce the nitrate burden in waterways that has affected several EU member states with large herds in intensive production systems.[24]

Farmers that volunteer to join a company initiative may be required to digitally record several aspects of their production, providing these companies with a trove of proprietary data from farms that can be used for multiple purposes, including marketing. The use of personal farm data is problematic for many reasons. One, it gives greater control of land to transnational corporations rather than farmers. Second, it opens up the possibility for countless technofixes, available for purchase through agribusiness, that narrowly focus on emissions per kilo of product rather than holistically addressing the myriad ecological problems created by mass livestock production. Arla states, "We now have one of the largest dairy farm benchmarking datasets in Europe."[25] Danone and Cargill, along with agrochemical companies such as Bayer, Fertilizers Europe, EuroChem Agro and others, are part of the Cool Farm Alliance that has set up the "Cool Farm Tool," which requires the farmer to fill in details about their yields, fertiliser and pesticide application and/or data on herd size, manure management and feed use.[26] Danish Crown has launched a certification scheme called "Climate Track" for its farmer suppliers. These data points can then be used by the companies in claiming reductions in emissions intensity of their supply chains.

The terms and conditions of payments to farmers are also murky. Arla, FrieslandCampina, Groupe Sodiaal, Dawn Meats, Danone and Nestlé all state they have set up a reward program of some kind for the farmers in their supply chain. Most descriptions of these programs are vague on the terms for participants. Some corporations claim that the CO_2 reductions themselves lead to cost savings for the farmers. [27] This is misleading if the requirements actually lead to more time and upfront costs for farmers to meet all the monitoring, reporting and verification requirements for emissions reduction. Some companies also offer a payment; for example, Arla pays farmers a minimal 1 euro cent "premium" per kilo of milk for participating in its Climate Check tool[28]; FrieslandCampina's volunteer farmers receive an unspecified "bonus based on the results of their efforts in the areas of climate, biodiversity and animal health and animal welfare" as part of the company's Foqus planet program "funded in part by a cooperative scheme and in part by the company."[29]

The schemes are also undermined by the lack of sustained commitment from these companies to the farmers in their supply chain. In August 2021, Danone terminated contracts with nearly 90 organic dairies in Northeast United States (states of Vermont, Maine, New Hampshire and New York) citing "growing transportation and operational challenges in the dairy industry."[30] Only 24% of Danone's farmer partners had long-term contracts with the company in 2018.[31]

Photo: NRCS/SWCS, Lynn Betts (CC BY 2.0)

2.2 Soil-carbon offsets

Schemes that generate credits for carbon sequestered in soils are controversial, not least because the sequestration is highly impermanent, easily reversible due to human activities and natural events such as floods, droughts and fires.[32] They also require a much longer time horizon (100 years rather than the 10 or 20 year norm of voluntary carbon markets), and even then, the sequestration is impermanent and increasingly vulnerable to rising temperatures, as confirmed by the latest IPCC report. Therefore, the 10 – 20-year period offsets such as those created by the Livelihoods Carbon Funds (see France's Danone, p.23) are problematic.

Almost all the companies we looked at have a plan in the works for setting up soil carbon sequestration accounting so that in the not-so-distant future, the companies could either claim soil and grassland carbon sequestration to offset their own rising emissions or sell them as credits to other corporations or both. Carbon accounting is dependent on a life-cycle analysis (LCA) methodology that creates a technical method to measure loss and gain in carbon within a "system boundary." This involves several elements such as the time horizon, geographical boundary, such as a farm or a larger region, and the interaction between the intervention and nature.

"C-Sequ" Industry guidelines

With support from the International Dairy Federation (the biggest dairy industry platform worldwide) and the Global Roundtable for Sustainable Beef (a beef industry-led group), Arla, Danone, FrieslandCampina, Nestlé, Fonterra and McDonald's, among others, are preparing guidelines to create their own LCA methodology "for calculating carbon sequestration in cattle production systems." The aim appears to be on-farm accounting of carbon sequestration measured from year to year over a "responsibility period" of up to 20 years on the basis of which a carbon credit could potentially be generated.[33]

Potentially, the guidance could be applied by companies to "inset" their emissions — the same principle as an offset, but through actions within a company and within its supply chain. Arla already has plans to include this accounting in its Climate Checks in 2022.[34] In this case, the company could claim negating the emissions from its livestock supply chain by accounting for on-farm carbon sequestration through this LCA guideline.

The industry-led guidelines called C-Sequ (version 2 due in 2022) are likely intended to promote a system of carbon credits for the livestock industry, bringing farmers into private voluntary carbon markets where credits could be claimed or sold to other corporations. It is unclear whether such schemes would give credits to farmers or the companies or how double counting would be avoided. Double counting occurs when two parties (a company and a farmer) claim the same credit or carbon removal, essentially counting it twice. Such offsetting possibilities are critical for companies to meet their so-called carbon net-zero targets. In fact, Arla presents a schematic in its Green Ambition 2050 document that shows the company reaching carbon net-zero emissions with the use of carbon sequestration and offsetting by 2050.[35]

France's Label Bas Carbone

European governments with large livestock production are supportive of such an approach. France's third largest dairy company Groupe Sodiaal is taking advantage of a French government initiative titled Label Bas Carbone — a carbon standard issued by the French Ministry for Ecological Transformation. The company calls it an opportunity for farmers to "monetise efforts thanks to carbon credits."[36] Private investors, as well as companies, can invest in the officially listed projects. The initiative has been heavily criticised for several reasons, including equating emissions reduction with carbon sequestration, not having a minimum requirement for actual emission reduction to acquire the label and the use of emissions intensity reduction as a metric for performance. The farmers carry the entire risk of project failure even if the circumstances are outside the farmers' control.[37] The initiative also allows emissions intensity reduction, a metric of performance that favours larger more intensive farms over small-scale production.[38]

The European Commission's "Sustainable Carbon Cycles" Communication

There is a danger that policymakers within the European Commission's climate ministry (DG Clima) appear to be moving towards a system of carbon offsets in agriculture that include impermanent soil carbon offsets. The latest European Commission proposal for agriculture envisions the sector to be net-carbon neutral by 2035 with the possible inclusion of agriculture in the Emissions Trading Scheme post-2030. This cannot happen unless there are offsets. There is also interest from some within the European Commission in combining agriculture emissions and removal of CO_2 under one framework in a post-2030 scenario, making it much easier to account for such offsets.

The authors of the industry draft guidelines are at pains to explain that their accounting methodology does not deal with the issue of permanence of carbon sequestration: "This accounting approach removes the need to consider the future and allows for a continuous accounting of the benefit of keeping CO_2 stored through continuing practice."[39] The very real and sticky questions around accounting for the impermanence of carbon in soils and grasslands are left to European Commission proposals for Carbon Farming and the Communication on Sustainable Carbon Cycles.[40] Judging from a leaked draft of the upcoming European Commission Communication on Sustainable Carbon Cycles, the Commission appears to be setting up a substantial system for corporations to be able to use such impermanent offsets against their emissions, even suggesting an eventual link to global carbon markets in the future.[41]

Manure digesters at a dairy farm. Photo: iStock.com / CreativeNature_nl

2.3 Mootral and methane gas offsets

Carbon credits are in high demand by corporations, including agribusiness, airlines and fossil fuel companies, to help them meet their self-declared net-zero and other climate targets. This is presumably a move to stall government efforts at regulation: If companies are seen to be creating and meeting self-declared emissions reduction targets, they hope governments will not resort to regulatory enforcement. As such, carbon offset schemes using the methane from industrial livestock systems are emerging at an alarming pace, essentially to profit off pollution.

Feed additives — One industry solution for cutting emissions from mass animal production systems is proposed new feed additives to reduce methane. As many as 90 different feed additives are being explored.[42] Mootral describes itself as a Swiss-U.K. based AgriTech company "that develops innovative solutions for companies and governments to reduce greenhouse gas (GHG) emissions from the agricultural sector."[43] The company has patented a "100% natural feed supplement" that aims to cut methane emissions from enteric fermentation, reducing bacteria in the gut of ruminants such as cattle and sheep so that they burp and fart less methane. Thirty-nine percent of emissions from livestock come from enteric fermentation. Mootral is offering projects that generate carbon credits for a voluntary carbon market, selling "Cowcredits," each credit equal to 1 tCO_2eq. The company states: "These carbon credits create value for everyone: farmers, the beef and dairy industry, consumers, governments as well as offering high-quality carbon offset solutions for other industries." And indeed, Mootral's Cowcredits are now eligible for the airline industry to offset its emissions under the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA).[44] Starting this year, airlines can purchase these credits to claim reductions in their emissions, rather than actually cutting them. Though already marketed as "high quality," academic studies suggest that more research and investigation need to be done on the merits of Mootral.[45] For instance, an August 2021 peer review of methane reducing feed additives states, "Feed additives such as Mootral, macroalgae and Agolin have also shown promise but there is limited in vivo [in the body of the animal] work to allow full consideration."[46]

Biogas — The livestock industry is also partnering with the fossil fuel industry to convert methane from large-scale animal agriculture into carbon offset credits. The development of anaerobic digesters requires large public subsidies to convert methane into so-called "biogas." The large-scale use of digesters meshes the interests of these two polluting industries by capturing some of the manure from animals and converting it into gas for heat or electricity. This captured gas can then be claimed as an emissions offset by both the livestock industry and fossil fuel companies. Digesters, however, further entrench us in dirty energy and a toxic industrial animal system. They distract policymakers from the massive ecological harm caused by concentrated animal operations, which produce very large quantities of nitrous oxide and methane, polluting land, air and rivers with nitrates and ammonia. The pollution is also a threat to public health. The digesters have had little impact on reducing pollution and, worse, create an incentive for the mass production of manure rather than pushing a transition towards agroecological approaches.

In the EU, methane digesters are additionally controversial because they often rely on crops such as maize for feedstock in combination with manure. This doubles the negative impact of the technology because selling this gas creates not only an incentive for mass livestock production, but also for crops that put pressure on land use change and rely on heavy applications of fertiliser and pesticides.

Big oil is using, buying and selling Big Dairy's methane as part of its carbon offset schemes. Chevron, which has been ordered to cut its emissions by a court in the Hague, is building 38 biomethane plants with its joint venture partner Brightmark, including from mega-dairy plants, to use as fuel for all its long-haul transport.[47] BP plans to buy methane gas from Iowa's factory farms and sell it in California.[48]

Companies such as FrieslandCampina, Danish Crown, Vion and Nestlé all count methane capture from the animals in their supply chains towards their emissions reduction targets. Nestlé states that 0.5% of its emissions reductions by 2030 will come from managing manure and methane digesters. FrieslandCampina describes the use of 26 mono-manure digesters (digesters that process only manure as opposed to feedstock and manure) that are operational with another nine under construction[49] as part of the Jumpstart project subsidised by the Dutch government and Rabobank.[50] Arla notes that its emissions are "counteracted by tree planting, tree conservation, and biogas production."[51]

The European Commission appears set to further incentivise biogas digesters, which will benefit big meat and dairy companies. It has proposed an increased target for biogas in the Renewable Energy Directive. Further, biogas is highlighted as one of the "sustainable carbon fuels" after the phaseout of fossil energy sources in a supporting document[52] to the recently leaked Communication.[53]

Nestlé Headquarters in Switzerland. Photo: Nestlé (CC BY-NC-ND 2.0)

3 The Companies

A closer look at Europe's biggest meat and dairy producers and heaviest emitters.

3.1 The "A-listers": Nestlé and Danone

Switzerland's Nestlé and France's Danone are seen as leaders in the livestock industry for voluntary global action on climate change. They have both received "A"s for their transparency and management of their climate footprint by the Carbon Disclosure Project (CDP). The CDP is a global non-profit organisation that has created a voluntary "global environmental disclosure system," which solicits and houses companies and investors' disclosures of their climate, forest and water footprints.

Thirty percent of the CDP's funding comes from "service-based membership" that includes companies that are disclosing to the CDP, including Danone.[54] This creates a potential conflict of interest in how the CDP then scores these companies' performance when it comes to reporting emissions. CDP disclosures are also based on self-reporting with minimal verification. Annexe 1 (p. 44) shows the few companies among the 25 we studied that report to the CDP. Only two companies have completed verification of their emissions, but even these are "limited assurance audits."

The level of assurance indicates the extent and depth of the work the assurance provider undertakes in relation to sustainability disclosures. Most assurance providers offer two levels: "reasonable" assurance (high, but still involving some risk of inappropriate conclusion) or "limited" assurance (moderate). Limited assurance cannot provide a reasonable level of assurance due to limiting factors such as the size of a sample or sampling methods. Arguably, to use the term "limited assurance" is misleading, considering the label points to inadequate data or a limited methodology. Danone rates only "limited assurance" for all three scopes of its emissions, while Nestlé rates "limited assurance" for scopes 1 and 2. Both Nestlé and Glanbia PLC are in the process of getting their scope 3 emissions verified (see Annexe 1, p.44).

Nestlé and Danone report in more detail than perhaps any other meat and dairy company. They actively lead in many environmental and sustainability platforms and have obtained certificates and awards for good corporate environmental stewardship. Yet, upon scrutiny, Nestlé and Danone's actual climate commitments are underwhelming. Nestlé's 2030 emissions reduction target for its dairy and livestock supply chain emissions can be misleading because it is based on its projected growth in emissions under a business-as-usual scenario by 2030 rather than a reduction from current levels,

which is the standard way reduction commitments are expressed (see Switzerland's Nestlé, p.22). Danone's 2030 climate target does not commit to reducing total (absolute) supply chain emissions.

For both companies, their climate narratives refer to supporting farmers in improving practices and making a shift to regenerative agriculture (see 2.1 Murky waters, p.15). They also rely on controversial carbon offset schemes to meet their emissions targets. These companies are both heavily involved in the sale of bottled water and the trade and use of commodities that lead to deforestation and other land use changes that are linked to significant environmental damage beyond climate change, such as nitrate pollution of water bodies and biodiversity loss, as well as rely upon commodities where there are concerns about human rights abuses in their supply chains. Danone has received "A"s from the CDP on its efforts to halt deforestation and ensure water security. Both Nestlé and Danone have committed to zero-deforestation pledges. Given the holes in their climate mitigation targets, however, these companies demonstrate the urgent need for governments to take a regulatory approach to climate action that looks at climate effects from a holistic perspective, looking at the scale effects of these enormous transnational firms and at the impact of their production and processing methods on biodiversity and human rights together with climate change.

Switzerland's Nestlé

Headquartered in Switzerland, Nestlé is the largest food and beverage company in the world. Active in 189 countries,[55] Nestlé is the fifth largest dairy processor by milk volume (tonnes per year).[56] It earned over 91 billion Swiss Francs (79 billion euros)[57] in sales in 2018, dwarfing Luxembourg's entire 2018 GDP of 60 billion euros.[58] Nestlé reports to have emitted 113 $MtCO_2eq$ (million tonnes carbon dioxide equivalent) in 2018. This translates to nearly all of Belgium's emissions, which were 118 $MtCO_2eq$ the same year.[59]

The company says 92 $MtCO_2eq$ of its emissions are "in scope of our U.N. 1.5°C pledge."[60] This means that Nestlé has excluded the remaining 21 $MtCO_2eq$ of its 2018 emissions from its climate target right from the start. In its *Net Zero Roadmap*, Nestlé says at the outset, "we are specifying our plan to halve Nestlé's greenhouse gas (GHG) emissions by 2030 and to achieve net zero by 2050." Actually, the company is pledging to cut around 40% of its total 2018 emissions. It plans on doing so by a mix of methods including planting 20 million trees per year to total 200 million trees by 2030, sourcing 20% of its ingredients from farms that use "regenerative agriculture" methods by 2025 and 50% by 2030 (see 2.1 Murky waters, p.15).[61] It also plans to use technical fixes such as including feed additives that reduce methane from cow burps and methane digesters that convert manure into gas (see 2.3 Mootral and methane gas offsets, p.19).

Nestlé states that its pledge, approved by SBTi, focuses 80% of its efforts on the company's supply chain, the source of 95% of its emissions.[62] Given how diversified the company is in what it sells, the company includes not just its livestock supply chain in its scope 3 emissions, but also packaging, manufacturing and logistics from other supply chains. According to the company's calculations, around 37% (34.2 $MtCO_2eq$) of its targeted or "in scope" emissions are from the dairy and livestock supply chain. Nestlé projects that under a business-as-usual (BAU) scenario, dairy and livestock-related emissions would rise by 16.4 $MtCO_2eq$ from a baseline of 34.2 $MtCO_2eq$ in 2018 to 50.6 $MtCO_2eq$ by 2030. This would be a 148% increase in these emissions in 12 years based on the company's own forecasted growth. Nestlé pledges that from 2018 – 2030, it will bring its dairy and livestock supply chain emissions down to 29.6 $MtCO_2eq$.[63] The company does some clever accounting. Nestlé claims: "Our actions will reduce the emissions from sourcing our dairy and livestock ingredients by 21 $MtCO_2eq$ by 2030. This represents 23% of our in-scope 2018 carbon footprint." The image on page 12 of the company's *Net Zero Roadmap* shows this dramatic reduction is based on forecasted growth. However, Nestlé's target is not ambitious compared to its 2018 baseline: going from 34.2 $MtCO_2eq$ of emissions in 2018 to 29.6 $MtCO_2eq$ by 2030. This is a reduction of only 4.6 $MtCO_2eq$ in 12 years compared to existing levels. It is just 4% of its total 2018 emissions of 113 $MtCO_2eq$ or just 5% of the emissions that are subjected to its climate target (Figure 5, p.23).

While the EU has pledged to cut emissions by 55% below 1990 levels by 2030, corporations like Nestlé are inflating their climate actions by committing to reduce GHGs from a much larger pie of *future* emissions. By using a baseline based on projected growth rather than the standard practice of using a past year, companies are setting a dangerous precedent of obfuscation and greenwashing.

France's Danone

In 2020, Danone earned 23.6 billion euros in net sales;[64] 57% of its sales came from Europe, U.S. and Canada while 43% came from the rest of the world.[65] Danone reports its total 2017 emissions as 21.7 $MtCO_2eq$, which covers all of its emissions. Our estimates of its emissions are lower at 13.6 $MtCO_2eq$ because they only cover dairy products. Danone has pledged to reduce its emissions intensity by 50% in scope 1, 2 and 3 by 2030 based on a 2015 baseline and a 30% absolute reduction of emissions by 2030 only in scope 1 and 2, with no mention of scope 3, which includes the livestock supply chain (see Annexe 2, p.47).[66]

According to Danone, 57% of its total emissions come from agriculture. Its stated strategy to achieve net neutrality by 2050 includes emissions reductions, carbon sequestration, elimination of deforestation from its supply chains and carbon offsets.[67] Danone has joined the French government's initiative called "4 per 1000," which aims for project partners to achieve 0.4% annual growth of carbon in soils. Danone has also declared an ambition to source 100% of its ingredients produced in France from regenerative agriculture by 2025 (see 2.1 Murky waters, p.15). This includes a donation equivalent to one day of its annual sales turnover (around 5 million euros) to support farmers in transitioning to regenerative agriculture. Danone France is also committed to reduce its carbon footprint by 15% by 2025. The company claims it is already sourcing 12% "of volumes" (as distinct from value) from regenerative agriculture.[68]

Yet, a key pillar to Danone's climate strategy is its investment in carbon credit schemes called the Livelihoods Carbon Funds that it spearheaded in partnership with nine other corporations, including Mars. Danone and the Funds claim that their first effort, Livelihoods Carbon Fund #1, has led to 10 $MtCO_2eq$ of carbon sequestered. The projects run for a period of 10 – 20 years.[69] See 2.2 Soil-carbon offsets, p.17, for a critique of these schemes. Livelihoods Carbon Fund #2 and Livelihoods Carbon Fund (LCF_3)) also run for 20 years and aim to sequester 12 $MtCO_2eq$[70] and 30 $MtCO_2eq$ of carbon, respectively.[71] The LCF_3 scales up the carbon credit model and involves other corporate and financial investors. Partner companies that invest in the fund "receive carbon credits as a return for their investment and use them to offset part of their CO_2 emissions."[72] Danone portrays this as long-term support for ecosystem restoration and support to local communities, but the system Danone is setting up allows corporate polluters to avoid reducing their own emissions and thus does little to avert the climate crisis. Setting up non-permanent carbon credit schemes based on land in local communities and Indigenous territories of the Global South can also lead to land grabs, exacerbating struggles over land rights and creating more corporate control over land. Over 250 organisations delivered a statement at COP 26 saying no to such "nature based" schemes centred on these concerns.[73]

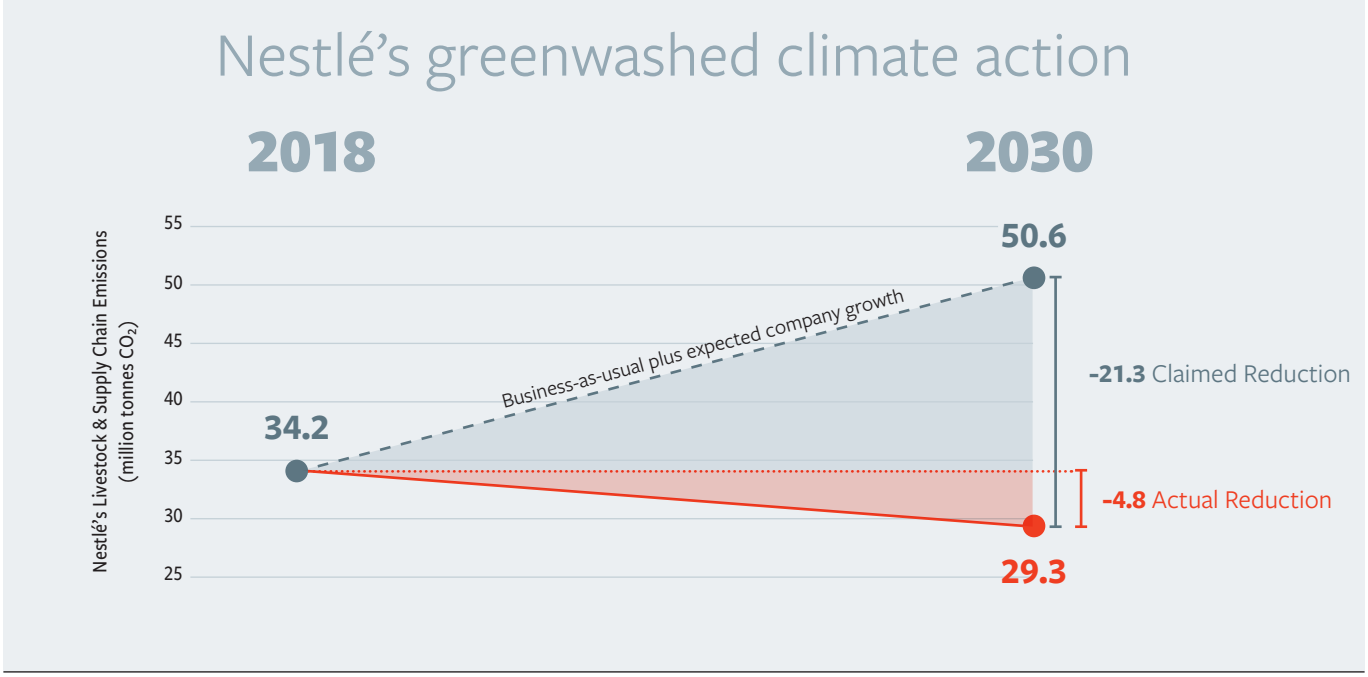


Figure 5: Nestlé's carbon reduction targets using their projected 2030 business-as-usual emissions as the baseline rather than their actual emission numbers from 2018. Source: Nestlé, "Accelerate, Transform, Regenerate: Nestlé's Net Zero Roadmap," 2021, 12.

3.2 Denmark's global meat and dairy giants: Danish Crown and Arla

Denmark is the headquarters of two of the biggest global meat and dairy corporations: Danish Crown and Arla. In 2020, Denmark passed an ambitious climate law, far exceeding that of the EU: a target of 70% emissions reductions by 2030 compared to 1990 levels and a net-zero target by 2050. Agriculture is responsible for nearly one-quarter of Denmark's emissions.[74] Arla and Danish Crown's combined total emissions were 78% of Denmark's total 2018 emissions from all sectors (excluding land use change).[75] As in other EU countries, industry plays a dominant role in shaping agriculture-related climate policy. Danish Crown's CEO, Jais Valeur, was appointed chair of one of the 13 Partnerships the Danish Government established to meet its climate goals: the Climate Partnership for the Food and Agriculture Sector. The partnership was tasked to make recommendations on how the sector could reduce its emissions and was criticised for its lack of ambition. However, just this October, the Danish Parliament passed a law that requires the sector to reduce emissions by 55% by 2030 from a 1990 baseline, the first EU member state to put a target on agricultural emissions reduction. The target includes reduction of nitrogen emissions.[76] The government will funnel 593 million euros to support the transition, which the Minister for Food, Agriculture and Fisheries says will include a focus on plant protein and organics.[77] Note that Denmark also imports a lot of soy from Latin America, principally soymeal for pig feed.[78] The land use emissions resulting from these imports from countries such as Argentina, Brazil and Paraguay are not included in this emission target.

Danish Crown

Danish Crown is the largest meat processing company in Europe. It is a global giant with 92 production sites in 17 countries.[79] Danish Crown has declared a net-zero target for 2050 but "this does not mean Danish Crown will produce less meat," states its webpage on sustainability.[80] Instead, the company intends to reduce emissions intensity in its supply chain by half by 2030, compared to 2005 levels. As discussed, focusing on emissions intensity allows companies to ignore their total emissions, which is what drives climate change. Our data show the company's overall emissions increased by 2% in two years from 2016 – 2018.

This June, Danish Crown also became the first meat company to be challenged with a climate lawsuit. The suit was brought by three Danish non-profit organisations who state that the company's marketing of its pork products with such claims as "climate controlled" and "more climate friendly than you think" is misleading. In October, the company decided to "put on hold" its use of these terms after Danish grocery stores began challenging the company's advertising.[81] The company still faces a complaint on this issue, filed by Greenpeace Nordic with Denmark's Consumer Protection Agency.

Acknowledging that over 90% of its emissions come from the farms that supply the animals it processes, Danish Crown has now launched a program called "Climate Track." By 2023, Danish Crown hopes that over 18 million pigs sourced from Denmark, Germany, Poland and Sweden will be part of this certification scheme.[82] The goal of the program is to reduce on-farm emissions by lowering emissions *per pig*, using a 2016 baseline.

As noted above, voluntary self-reporting is problematic. Companies can choose what kind of life cycle analysis they use, and there is no truly independent and robust verification of their claimed emissions levels, nor their success in reducing them. Academic institutions that are funded by and work closely with the industry provide legitimacy to these estimates and create a conflict of interest in the independence of academic research. This has played out in Danish Crown's emissions estimates. In its 2018/2019 sustainability report, the company used emissions estimates for cattle based on a life-cycle analysis study conducted by a department at Aarhus University. By Danish Crown's own admission, the University was forced to withdraw one such publication because it "did not live up to the principles of independent research."[83] Among other critiques, the academics did not disclose industry involvement in funding the research, nor did they include indirect land use change as part of their life-cycle analysis, thereby not counting an important source of emissions in the animal agriculture supply chain.[84] The controversy surrounding this study and Aarhus University's handling of it has resulted in a strong critique by the Danish Agency for Higher Education and Science and resignations of several faculty and the University's chief legal counsel.[85] Danish Crown acknowledged in a small footnote in its sustainability report that the integrity of its emissions estimates was compromised and hired a law firm to investigate:

"Subsequently, other reports published by Aarhus University were also found to be questionable. In this context, Danish Crown has asked the Danish law firm Poul Schmith/Kammer-advokaten to assess our collaboration with research institutes, especially regarding the beef report from 2019 but also in relation to reports from previous years."

This is part of a broader trend where academics closely tied to and financed by agribusiness are producing climate studies, creating life cycle analyses with and for agribusiness, which are then used as the basis for the agribusinesses' emissions calculations. For example, the dairy industry and academics from U.S. and EU universities are jointly developing the C-Sequ life cycle analysis and guidelines mentioned above. At the same time, some of these academics partner with governments as experts, offering the governments climate action strategies that may then be adopted as public policy.

The list of climate actions Danish Crown has said it will pursue include: quicker disposal of manure into slurry tanks, use of slurry to make gas through methane digesters, no-till agriculture, feed efficiency and procuring more domestic feed. The company also intends to buy carbon credits from the Roundtable on Sustainable Soy, with the argument: "Until the supply lines for responsible soy have been established, Danish Crown will buy credits to compensate for the soy consumption of our food processing companies and our Danish suppliers of slaughter animals." The Roundtable of Sustainable Soy's agribusiness members include the market dominant agrochemical companies such as Bayer and BASF; grain traders ADM and Cargill; and discount retailers such as ALDI. The aim of the roundtable is to promote sustainable soy.[86] Yet, the failure of the Brazilian Soy moratorium and rising rates of deforestation in the Amazon and Cerrado have occurred on the Roundtable's watch.

Arla

Arla is the world's fourth-largest dairy company by milk volume with more than 13 million tonnes of milk processed in 2019.[87] A global dairy power with a revenue over 10.5 billion euros, nearly one-quarter of its revenue (24%) in 2020 was generated from international sales.[88] Though it has over 9,000 members as part of its "cooperative" across Europe, the company itself functions as a global corporation, having merged in 2012 with German and British dairy companies and signing on to deals with China's agribusiness giants Mengniu and COFCO. [89] It acquired operations from Mondelēz International for its Kraft cheese plants in the Middle East and West Africa in 2018, increasing its sales volumes in Ghana by 3,000 t in three years.[90] Its aim was "to 'triple its revenue in Sub-Saharan Africa by 2020.'"[91] Arla, along with other multinationals present in West Africa, has been importing palm oil to reconstitute milk, which is then sold as milk powder in West Africa, selling 30% cheaper than local milk in these markets.[92] Arla offers training to dairy farmers in the region,[93] yet, at the same time, its cheap milk powder undermines the market for local production.

Arla makes large claims for its emissions reductions: "Data from approximately 8,000 Climate Checks across Arla farms in 2020 have now been validated and analysed, documenting that Arla farmers are among the most climate-efficient dairy farmers in the world."[94] Arla is offering these checks to Danish farmers who own a share of Arla's revenues. The Climate Check tool for measuring emissions requires that its supplier farmers answer more than 200 questions about "their herd, feed, production, energy usage etc."[95] These survey answers are then validated by an external auditor who visits farms. Fifty-nine percent of the farmers who did this extensive survey were validated in 2020.[96] It appears that these requirements concern only its Danish farmer owners and not those in Germany or Poland. Nor is the tool applied in the corporation's partnership with Mengniu or with other corporations around the world. The onus of the emissions reduction in the supply chain rests on the farmers, who must reduce emissions by 3% annually to reach Arla's target. There is no sense of the feasibility of this target. In return, the company offers a miniscule 1 euro cent premium to adopt recommended practices rather than paying farmers higher prices for raising fewer animals on their farms.

In contrast to the requirements from farmers, the company has never filed a single report to the Carbon Disclosure Project. The CDP reports the following as the company's response to its performance on climate change, water security and forests: Forests 2021 (no response); Water Security 2021 (no response); Forests 2020 (no response, CDP gave it an F score); Climate Change 2019 (no response); Forests 2019 (declined to participate); and Forests 2018 (declined to participate).[97] According to our estimates, Arla's emissions decreased by 2% between 2015 and 2017, due to a lower milk processing volume (milk intake) in that period (Figure 3, p.4).

The company claims to have reduced its scope 1 and 2 emissions (its operations and transport) by 24% since 2015 and the per kilo of milk or whey emissions (emissions intensity) by 7% since that year.[98] Arla has committed to a SBTi target to reduce its absolute scope 1 and 2 emissions by 30% compared to a 2015 baseline by 2030, so according to its own reporting, it has nearly met its target. For its supply chain emissions, it has only committed to an emissions intensity target of reducing emissions by 30% per kilo of milk by 2030 from a 2015 baseline (see Annexe 1, p.44). Even this target, which aims for a 2°C warmed world, includes biogas: "The target boundary includes biogenic emissions and removals from bioenergy feedstocks."[99]

3.3 Netherlands' FrieslandCampina and Vion

The Netherlands, a small country with more than 100 million cattle, chickens and pigs, was the EU's biggest meat exporter in 2020. Sixty percent of the Netherlands' earnings from meat sales were from exports, mainly to Germany, the U.K. and China.[100] It should be no surprise then that the Netherlands is home to two major global livestock companies: Vion (meat) and FrieslandCampina (dairy). Because of its small geographical size and the sheer number of animals in the livestock sector, the Netherlands has consistently violated the EU's environmental laws on ammonia and nitrate pollution. The government is now considering cutting livestock numbers by 30% to reduce ammonia pollution.[101] Ammonia is a nitrogen compound that is released when cattle manure mixes with urine. The livestock induced "nitrogen crisis" in the Netherlands forced the highest Dutch administrative court to order the government to comply with EU law for nitrogen limits.[102] Two proposed scenarios by the government entail farmers selling their pollution rights and land to the state.[103] The government proposal makes no demands on the companies buying and processing the animals (or their milk) even though it is the companies that have market power in the sector, and it is the companies that perpetuate the model of concentrated meat and dairy production on a scale that creates the pollution problem. No demands are made of the companies to provide a transition strategy — or financing for a transition plan — for farmers in their supply chains.

The Dutch government's agreement with the dairy sector entails reducing overall emissions by 1.6 $MtCO_2eq$ by 2030, a 7.2% reduction compared to 2018.[104] These cuts are planned through adjustments to cattle nutrition, feed production, reducing soy imports, manure storage and manure fermentation, soil management and extending the life of the cow.[105] Extending the life of each dairy cow reduces the emissions associated with rearing replacements, but unless the overall volume of production is reduced, it is unclear how this reduces overall emissions if the total number of cows in production remains the same or increases over time.

FrieslandCampina

FrieslandCampina had a revenue of over 11 billion euros in 2020, operating in 38 countries worldwide with more than 100 export destinations.[106] In its 2018 annual report, FrieslandCampina's climate target for 2020 was to keep emissions (excluding subsidiaries) at the same level as its 2010 emissions, which it listed as 12,799 $ktCO_2eq$ (12.8 $MtCO_2eq$).[107] It missed this target according to its self-reporting by 240 $ktCO_2eq$ (0.24 $MtCO_2eq$).[108] These emissions include the company's estimations of only its European member dairy farms and not milk sourced outside the EU. It has no published reporting with the CDP, submitting its first climate report (but not yet published) in 2021. The company declined to offer any reporting to the CDP on its impacts on forests from 2018 – 2020. The NGO Chain Reaction Research found last year that the company listed Ciliandry Anky Abadi among its palm oil suppliers — the second largest deforester for palm oil cultivation in Southeast Asia.[109] Though FrieslandCampina declared an SBTi target, the site simply says "committed (without targets)" (see Annexe 1, p.44).

According to our calculations, FrieslandCampina's emissions increased by 8% between 2015 and 2017 (Figure 3, p.4). We examined FrieslandCampina's stated emissions since 2010 and found that the company changed its emissions estimations and reporting methods repeatedly over that time, making it impossible to compare progress year to year.ⓘ The company says this is due to updates in the calculation methodologies, but it means we must take the company's word for what its emissions were and how much it reduced. For 2030, the company has declared that it will reduce its direct and indirect transport and operational emissions (scopes 1 and 2) by 40% and member dairy farms' emissions (scope 3) by 33% compared to 2015 levels.[110] Its emissions by 2030 would be 9 $MtCO_2eq$, according to the company[111] with plans to be (net) carbon neutral by 2050. No concrete details are given of the proposed indicators nor the feasibility of these ambitions.

ⓘ Before 2013, FrieslandCampina indicated their emissions in non-specified graphs and did not clarify which emissions they included in their calculations. In 2013, they reported almost a tenfold increase of GHGs compared to 2012. Over the years the company has continuously adapted its calculations, which it states is based on the indications of historical data. However, this data rarely matches with the data reported in the previous year. For example, in its 2013 CSR report the company announced that it would reduce its emissions to 2010 levels. They first specified the 2010 equivalent in the 2015 updated CSR report, but adapted this value over time from 12,194 $ktCO_2eq$ to 13,108 $ktCO_2eq$, which includes GHG emissions from member dairy farms, transport and processing. See: FrieslandCampina, "CSR Report 2013", 2013, https://www.frieslandcampina.com/uploads/2020/03/FrieslandCampina-CSR-Report-2013.pdf (accessed November 12, 2021); FrieslandCampina, "CSR Update 2015", 2015, https://www.frieslandcampina.com/uploads/2020/03/FrieslandCampina-CSR-Update-2015.pdf (accessed November 12, 2021); FrieslandCampina, "2020 Annual Report", 2020, https://www.frieslandcampina.com/uploads/2021/03/FrieslandCampina-Annual-Report-2020.pdf (accessed November 12, 2021).

Vion Food Group

Vion ranks as one of the top 10 largest meat companies (by volume) and amongst the top 100 food and beverage producers (by revenue) in the world.[112] It earned 4.9 billion euros in revenue in 2020. In 2018, it slaughtered 5.5 million pigs and nearly 1 million cattle,[113] produced in 26 locations in the Netherlands and Germany with sales offices all over Europe, and in Singapore and China. Up until 2020, Vion referred to its corporate social responsibility goals in terms of the U.N. Sustainable Development Goals with little else concrete on its climate plans. However, in 2020 it partnered with Wageningen University to adopt a carbon methodology, which it will use to measure the climate footprint of its supply chain. It is doing so in a pilot program with 20 of its supplier farms.[114] It has never filed with the CDP, yet Vion is busy working on a consumer label for the carbon footprint of its meat and meat alternative products, scheduled to launch in 2022. The company has no declared emissions reduction targets. The closest it has come is a commitment to reduce the use of non-renewable energy consumption per tonne of meat sold to zero by 2050. According to our estimates, Vion's emissions declined by 8.6% between 2016 and 2018. The decline is because it slaughtered fewer animals in 2018 compared to 2016.

Because of its small geographical size and the sheer number of animals in the livestock sector, the Netherlands has consistently violated the EU's environmental laws.

A Vion truck transporting poultry in the U.K. Photo: Ray Forster (CC BY-ND 2.0)

3.4 Poor performers headquartered in France, Germany and Spain

Six companies: France's Lactalis and Groupe Bigard, Germany's Tönnies, Deutsches Milchkontor and Westfleisch, and Spain's Coren are some of the largest meat and dairy processors in the EU. They tend to be opaque about their operations and finances, let alone their emissions. Companies like Groupe Bigard and Coren do not even publish the number of animals they process each year. Privately owned corporations like Groupe Lactalis, Groupe Bigard and Tönnies do not have to answer to shareholders.

Lactalis has over 70 production plants in France and close to 270 around the world,[115] acquiring dairy companies in Sweden, Slovenia, India, Australia, Turkey, France and Romania with more acquisitions planned.[116] It ranked 22nd in global food sales in 2019.[117] Owned by the Besnier family, Lactalis is by far the largest European dairy emitter, equivalent to more than 13% of the EU's total dairy sector emissions (see Annexe 2, p.47). Lactalis increased its GHG footprint by 30% from 2015 – 2017. It neither reports its emissions nor has targets for GHG reduction. A year-long investigation by the French investigative media outlet and NGO Disclose[118] uncovered a history of violating French environmental protection laws, appalling food safety practices and tax evasion between 2013 – 2018.[119] The company defended itself in a letter to its producers, denying non-compliance with regulations at their production sites. They also denied watering down milk or violating food safety norms.[120] Lactalis submitted a report to the CDP on its impacts on deforestation in 2021, however, its poor track record on legal compliance with French laws raises questions about its credibility. The CDP has yet to score Lactalis (see Annexe 1, p.44).

Similarly, **Groupe Bigard**, owned privately by the Bigard family, contains scant, if any, information on its website about its financial operations and none about either its current emissions or its targets for their reduction. In 2016, Groupe Bigard was the largest meat producer in France and the seventh largest beef producer in the world. The last publicly available slaughter numbers for its meat processing date back to 2014. Like Lactalis, Groupe Bigard has come under fire for failure to publish its annual financial reports, violating French law. In 2019, L214, an animal welfare association, and *Lanceurs d'Alerte* association sued the company. Forced by the court, the company still only published partial information about its financials.[121]

Germany's dominant meat and dairy companies don't report emissions and lack genuine climate targets.

Germany revised upwards its climate target this year to reach net zero by 2045. It did so after the highest German court declared its previous target unconstitutional on the grounds that it jeopardised the future of younger generations. Germany is the largest meat and dairy producer in the EU. It is also the country where several major meat and dairy companies are headquartered, as are subsidiaries of companies such as Danish Crown, Arla and other global processors. The meat industry was drawn to Germany by relatively weak labour laws, although COVID-19 infections have prompted a reform (see Tönnies). Even as the German government strengthens its climate legislation, little is being done to regulate meat and dairy corporations' climate impact. The European Court of Justice ordered Germany to get its nitrate levels and fertiliser law in line with EU law in 2018 because of widespread fertiliser-related contamination in groundwater. The onus is on the farmers to make the changes, while the industry that drives intensive production and holds market power in the livestock supply chain remains unregulated.

Tönnies, also a privately held company owned by the Tönnies family, slaughtered close to 21 million pigs and 440,000 cattle in 2018, earning nearly 6.7 billion euros.[122] While it operates out of Germany, U.K., Poland, Denmark, Spain and France, 50% of its production is exported to other parts of the world. In 2018, Tönnies controlled 30% of the German market, more than double the share of Vion and Westfleisch, the other major European pork processors.[123] Our data show that Tönnies' total pork production was equivalent to 7.5% of EU28 pork production in 2018.[124] The company lacks any climate accounting. It has a weak climate target which cannot be verified due to a lack of public reporting. It is limited to emissions reductions "per tour" of its vehicles and only related to three of its sites in Germany (See Annex 1, p. 44).[125]

In 2020, Tönnies was again condemned for widespread COVID-19 cases in its slaughterhouses, forcing the lockdown of the town of Gütersloh with over 370,000 inhabitants.[126] Thousands of workers were infected with COVID-19. Tönnies co-owner Clemens Tönnies apologised and took responsibility in response to the coronavirus outbreak, announcing a change in the whole sector.[127]

Widespread use of contract labour in German slaughterhouses means that German meat processing companies have largely not borne responsibility for workers' health. Wages are low in the industry, and working conditions are appalling. The Gütersloh and other COVID-19 outbreaks in German slaughterhouses led to a national law in 2021 banning the use of contract labour in slaughterhouses, aimed to improve working and living conditions for slaughterhouse workers.[128] Despite these problems, Tönnies maintained its German market share in 2020.[129] JBS, the world's biggest meat company, was close to buying Tönnies earlier this year, but the Tönnies family decided against the sale.

German dairy and pork giants **Deutsches Milchkontor (DMK), Westfleisch** and **Müller Gruppe** seemingly feel no compunction to report emissions or set climate targets. Westfleisch had begun to report on some of its emissions from 2012 – 2014 but appears to have abandoned the effort ever since.

Spain's Coren Like Groupe Bigard, Coren does not provide even basic transparency about its operations, including the total number of animals it slaughters per year, let alone emissions reporting or targets. This is not uncommon in the meat and dairy industry where governments require little public transparency about the industry's operations. Two other Spanish meat producers made our list of 35 top emitting European companies: Grupo Vall and Grupo Jorge. In its 2020 annual report, Grupo Jorge has an illustration of its emissions total and the quantity of emissions the company has offset.[130] By 2020, the company claims to have offset more emissions than it has generated due to its participation in various offset projects in countries of the Global South. The company's lack of transparency about its operations makes these claims hard to verify; the company does not publicly disclose the number of animals it slaughters each year. In 2020, Grupo Jorge invested in methane digesters in Mexico and hydroelectric power plants in India, Vietnam, Brazil and China and claims these as Certified Emissions Reductions (CER) accredited under the Clean Development Mechanism (CDM) under the UNFCCC.[131] Grupo Jorge is a prime example of livestock industry greenwashing: The company claims to avoid or sequester more carbon than it emits, but there is no known independent verification of emissions reductions. The claim relies entirely on offsets using carbon credits in third countries rather than direct action to reduce the company's emissions. In addition, without published data on the number of animals in its supply chain, these claims cannot be verified.

Sows in short, narrow gestation cages in a factory farm, Thuringia, Germany. Photo: © Greenpeace

3.5 Ireland and U.K.: ABP, Dawn Meats and Glanbia

Ireland's export-driven meat and livestock industry is worth 4 billion euros per year.[132] Brexit notwithstanding, food supply chains between Ireland and the U.K. remain closely intertwined. Half of Ireland's beef and 70% of its poultry is exported to the U.K. Companies headquartered in Ireland have subsidiaries in the U.K.[133] Over 35% of Ireland's emissions stem from agriculture — animal agriculture contributes 95% of these emissions.[134]

ABP

Headquartered in Ireland, ABP is a privately-owned global company. Its core business is beef. With 51 locations across Ireland, U.K. and Europe and operating in nine countries worldwide,[135] ABP is similar to private players Lactalis, Bigard and Tönnies, with minimal public information on its website. There is no publicly accessible annual report or provision of the company's annual slaughter numbers. According to Unigrains, ABP processed 1.2 million cattle in 2018 (the number excludes what it processed in Poland) in 2018.[136] The company came under scrutiny by the EU competition authority in 2016 when it acquired U.K.'s Slaney Foods together with another beef company, Fane Valley. The EU was concerned about the combined market power of the three companies but deemed that farmers would be able to secure "better prices elsewhere" and gave the merger a green light.[137] The same year, the company acquired its third meat company in Poland.[138] ABP claims to have reduced a cumulative 0.350 $MtCO_2eq$ since 2008.[139] ABP does not publicly report the number of animals it slaughters per year, and thus once again, it is hard to verify these claims. ABP has also partnered with SBTi and set climate targets, committing to absolute emissions reductions of 17% from its supply chain that relate to "purchased goods and services (raw materials and packaging)" by 2030 from a 2016 base year.[140] According to ABP's Environmental and Sustainability Manager roughly 80% of ABP's scope 3 emissions come from livestock and the target includes these emissions.[141] But there is no evidence of ABP emissions reporting or independent verification of emission reductions on either its own website or that of the CDP or SBTi.

Dawn Meats

Dawn Meats, another global company based in Ireland, processes beef and lamb from 1 million cattle per year and 3 million sheep. With 10 sites in Ireland and 12 in the U.K., it also sources from 50 countries and sells to 150 countries worldwide.[142] It claims to be the first European beef and lamb processor in Europe to have its climate targets approved by the SBTi. Dawn Meats has set an emissions intensity target for its supply chain emissions: "28% reduction of *per tonne of finished product* (emphasis added)" of purchased goods and services by 2030 with a 2016 baseline. It states that 99% percent of its 2020 emissions came from its supply chain (scope 3) with 70% from agriculture itself.[143] Only scope 1 and 2 have an absolute reduction target of 30% below 2016 levels (by 2030). It claims to report annually to the CDP and to have already reduced overall emissions by 0.248 $MtCO_2eq$, of that amount 0.189 $MtCO_2eq$ coming from scope 3. However, it is hard to examine these claims given that no reports were found on the CDP website.[144] Apart from its Corporate Social Responsibility/Sustainability Report 2019 – 2021, annual reports were also not found on its website.

Despite its stated commitment to sustainability, Dawn Meats has been growing. It acquired a 49% stake in Elivia, France's second largest beef processor in 2015, and in 2017, it acquired a major U.K.-based livestock company, Dunbia, expanding its stock of livestock. The company claims to slaughter the same number of animals year on year from 2019 – 2021, counting animals slaughtered in Ireland and the U.K. only.

Responding to calls to transition away from large-scale industrial livestock production, the company states that the assertion that the world must significantly reduce the size of national herds and the total number of animals in global supply chains is "overly simplistic and ignores the changes underway in how the livestock sector can and does contribute to reducing emissions and sequestering carbon on farm, for which no allowance is currently made in emissions accounting."[145] Instead, the company advocates for such measures as reducing animal age at slaughter (for beef cattle, the less time they live, the less they emit), optimising feed, use of feed additives, lower emissions slurry spreading and avoiding deforestation.

The company is also interested in offsetting its emissions by quantifying carbon sequestered on its supplier farms. The company is taking part in a program led by the Irish government with dairy and cattle farms to measure soil carbon

as part of the Signpost Programme (see Box 4). As stated above, measuring and counting soil carbon as a permanent emissions reduction strategy is deeply problematic. The meat industry's use of these impermanent assets to offset its growth plans and emissions is a distraction from urgently needed actions to cut emissions. Instead, farmers should be supported and rewarded for changing practices with measurable metrics for biodiversity and ecosystem restoration and agroecology, all of which can contribute positively to both emissions mitigation and climate adaptation.

Glanbia PLC Group

The Glanbia PLC Group, an Ireland based but internationally operating company with focus on dairy and cheese products and sports nutrition, states their commitment to "a net zero or negative carbon footprint" for their business and supply chain and signed up to the SBTi in 2021.[146] Their major dairy joint venture Glanbia Ireland is not part of these commitments but is to set its own SBTi targets (see Annexe 1, p.44). While both are still setting targets for a 30% absolute reduction of scope 1 and 2 emissions, scope 3 emissions are again only to be reduced in terms of intensity.

Box 4: Irish government's Signpost Programme

The Irish government's Signpost Programme[151] enrols dairy and cattle farms to set up demonstration farms and sites for carbon sequestration measurements. It sets emissions intensity targets for both the dairy and beef sector. Other targets include fertiliser use reduction, storage of manure slurry and minimum replacement rates of dairy and beef cattle herds. A key element of the program is to set up a National Agricultural Soil Carbon Observatory, which appears geared toward gathering data on long term trends in soil carbon sequestration from demonstration farms: "Deep soil samples will be taken on the Signpost farms to establish baseline soil carbon levels, with the sampling process repeated in a number of years' time to monitor any changes. In addition, flux data from long-term eddy covariance towers will provide detailed information on carbon exchange at an ecosystem level; these towers will be located on a subset of the Signpost farms."[152] As a research program, this is a useful exercise to understand long-term trends for grassland carbon sequestration. The risk is that the Irish government and the companies that are part of this program also begin to count the carbon sequestered here towards carbon credits or offsetting their own emissions, ignoring the impermanence of land-based carbon and the need to directly cut their emissions.

Overgrazing and peat farming pose a real threat to Ireland's carbon reduction goals. Photo: Bob Munroe (CC BY-NC 2.0)

3.6 Poland, global livestock corporations' backyard

Poland serves as the production pipeline of virtually every major European meat and dairy company examined in this report. Poland was the fourth largest producer of meat in the EU28 in 2018 and the sixth largest producer of dairy in 2017.[147] Poland also has weak climate and environmental governance and oversight.[148] The big pork, beef, poultry and dairy companies in Europe all have operations in Poland, including Danish Crown, Dawn Meats, Inalca, Arla and Danone. Global corporations based outside of the EU such as Smithfield also have a big presence in Poland. Smithfield belongs to the biggest pork producer in the world, WH Group, which also owns Animex in Poland. Animex, in turn, is the biggest meat producer and exporter of pork, poultry and processed meat in Poland.[149] Its "sister company" Agri Plus, also owned by WH Group, supplies the pigs through contract farming.[150] The company continues to expand, buying out Spain's Pini Polonia company in 2019.

Companies such as Smithfield and Danish Crown do not include emissions stemming from production in Poland in their supply chain emissions, sidestepping the country's poor record of environmental regulation and weak labour laws.

3.7 Poultry companies feel no pressure on climate

Forty-five percent of the emissions attributed to livestock emissions come from feed, while 39% emanate from the guts of ruminants like cattle. Yet the pork and poultry companies are rarely in the spotlight, despite their importance in feed use. Even as EU cattle herds have declined, industrial feed has remained constant at 30%, in part due to the tremendous increase of poultry production in recent years — a 22% increase between 2006 – 2017. The focus on cattle in climate debates has let poultry companies off the greenhouse gas emissions hook. They apparently feel little obligation to address climate change publicly. We looked at the climate plans of the top five poultry companies in our list of the largest 35 meat and dairy firms. Combined, these five produce the equivalent of 20% of the total emissions from the poultry sector in the EU28. Three out of the five only partially report their emissions. None of them have set targets for emissions reduction. One company, Germany's PHW, devotes two pages of its sustainability report to its offset projects in Saxony, the Peruvian Amazon and Ghana (see Annexe 1, p.44).

Photo: Andrew Skowron (CC BY 2.0)

Photo: iStock.com / pidjoe

Photo: Håkan Dahlström (CC BY 2.0)

4 Government policy: a major driver of corporate power and emissions

Ten European countries are responsible for the lion's share of meat and dairy production, hence the bulk of European and a significant part of global livestock-related emissions. In 2018/2019, 86% of the meat produced in the EU28 came from just 10 European countries: Germany, France, Spain, U.K., Poland, Italy, Netherlands, Denmark, Ireland and Belgium (see Annexe 3, p.48). The same countries contributed to nearly 86% dairy production of the EU28 in 2017. It is no accident that most of the companies featured in this report reside in one of these 10 countries, enabling their rise in power, corporate concentration and emissions (Figure 6).

These EU member states determine the fate of the sector's capability to transition out of a destructive model of mass livestock production within the EU. Whether the concentrated agribusiness sector is allowed to capture EU's climate policy as it has agriculture and trade policies will determine not only the effectiveness of the EU's climate targets for 2030 and beyond, but also the world's ability to limit global warming to 1.5°C.

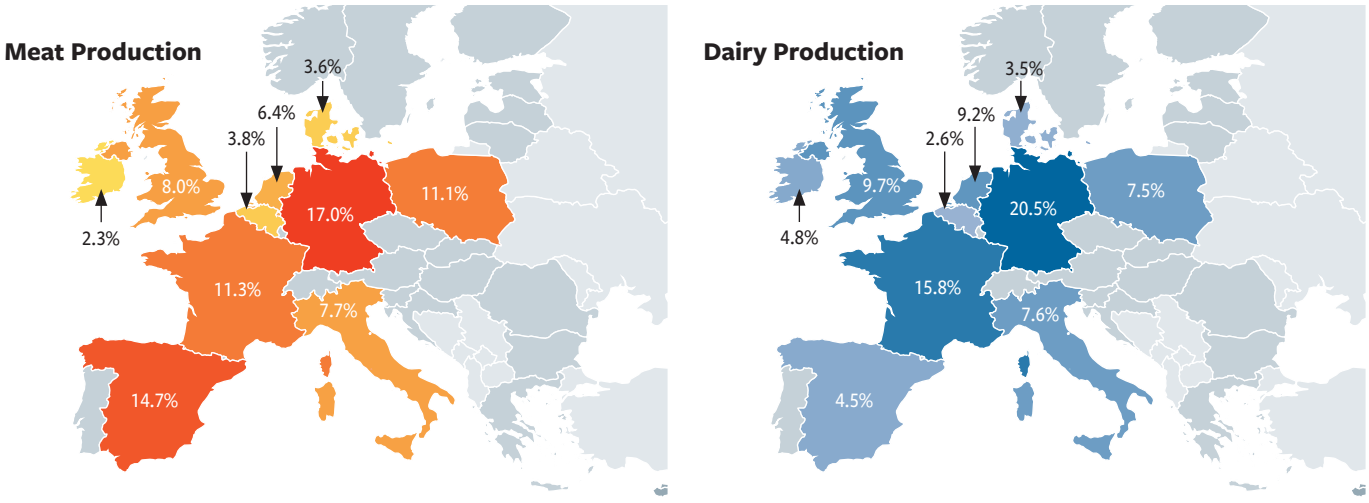


Figure 6: Just 10 of the 28 countries in the European Union produce 86% of both its meat and its dairy.
Source: Eurostat - online data code: APRO_MT_PWGTM and APRO_MK_POBTA (November 2020).

4.1 Real cost of production: why companies and not producers are responsible for these emissions

The discourse on environmental responsibility in the food system often pits producers and consumers against each other. "If only the farmers cleaned up their act" or "If only consumers would purchase differently," goes the story, "then we could solve our climate/nitrate/biodiversity crises." This narrative ignores where the real power lies: with a small number of dominant agribusiness firms, which control how food is grown and distributed around the world. National competition policies in the EU and the U.S. have allowed agribusinesses to get bigger, empowering them to dictate the prices paid to producers, which are often less than the cost of production.

Farmers are trapped in their supply chains because there are few buyers. They produce at the scale demanded of them to stay in business. Both our *Milking the Planet* report and data from the Thünen Institute's 2020 Agribenchmark *Pig Network* and *Beef and Sheep Network* reports show how often dairy and meat producers are paid below their cost of production. Beef farms in Austria, Czech Republic, France, Italy, Poland and the U.K. incurred losses in 2018 and 2019; while pork farms in Czech Republic, Denmark, Finland, France, Germany, Hungary, Italy, Netherlands, Poland and Spain incurred the same fate.[153]

Public money provided through the agriculture subsidies in the Common Agriculture Program (CAP) is keeping this failed system afloat, essentially subsidising agribusiness by keeping large farmers in business. Many farmers who don't fit the scale demanded by the large companies and do not benefit from CAP payments simply have to stop farming. Four out of five EU dairy farms disappeared in a 30-year period (1981 – 2013).[154]

Global dairy companies that claim a cooperative farmer-owned structure function more like global agribusinesses. They are focused on global export markets with management structures removed from the realities of most members within their cooperatives. For farmers to shift agricultural practices, corporations must change their production and remuneration models. Farmers do not have the economic autonomy to make this transition on their own.

Part 3 of this report (p. 21) on the companies' climate plans shows that farmers in European member states are increasingly asked by companies to voluntarily enrol in programs that digitally capture their farm data. Those enrolled are required to make certain changes in their practices, which increases their burden of reporting and monitoring.

Where financial support is provided by the companies enrolling them, it is limited to a few years. The economic risk of these changes stays with the producers, the supply chain remains fundamentally the same, and milk and meat prices do not capture the cost of the new practices. The European meat industry also continues to profit from the lack of labour rights for migrant workers. An investigative report by The Guardian found that Europe's meat industry (worth 220 billion euro) employs around 1 million workers.[155] Thousands of workers have precarious contracts, dependent on third-party agencies operating in a grey legal zone that provide migrant workers work with low pay. Trade unions in the EU are calling for a ban on such contracts.

Companies must be regulated to reduce their climate footprint without shifting these transition and investment costs onto producers and workers. Clear policies are needed on producer prices and environmental, public health and labour costs that corporations should be required to internalise in their business model. CAP direct payments could then go towards environmental and biodiversity improvements on farms to support a just agroecological transition instead of subsidising below cost farm prices for agribusiness.

Companies must be regulated to tackle climate change without shifting these transition and investment costs onto producers and workers.

4.2 Exports driving EU's livestock growth and emissions

Trade is a strong driver of the EU's agriculture policy, a fact reflected in the importance of agriculture in numerous existing EU free trade agreements (FTAs) and those in negotiation. European livestock industry's growth depends on exports (Figure 7). Using FAOSTAT data, we compared production, consumption and exports of beef, dairy, pork and poultry in the EU28 between 2005 and 2018. There was a 38% increase in poultry production in 2018 compared to 2005 and over a 10% increase in dairy and pork production between those two years. Demand within the EU in no way warrants this growth. Exports, on the other hand, increased by 93%, 45% and 58% for poultry, dairy and pork, respectively (Figure 7). Even beef, the only sector that incurred a slight decline in production (of less than 2%), saw exports increase by a staggering 46%.

Domestic per capita consumption of dairy products in the EU fell by 19%, while pork consumption increased a fraction, by 0.1%.

European beef consumption went down by 12%, but European poultry consumption increased by 13% between 2005 and 2018. The rise in exports dwarfs imports of poultry, beef and pork, although imports, too, rose significantly between 2005 and 2018. The dairy sector had a trade balance in exports and imports.

There is no doubt that Europeans consume far too much meat and dairy compared to the rest of the world. Yet while Europe's per capita meat consumption remains nearly double that of the world average (64.8 kg per capita compared to 34.7 kg in 2016 – 2018),[156] the EU's agroeconomic ambitions are centred on continuing to increase exports of dairy and meat to the world.[157] The trends show that a narrow focus on reducing meat and dairy consumption in Europe will have a limited effect as long as the region's outsized influence on global dairy and meat exports is ignored.

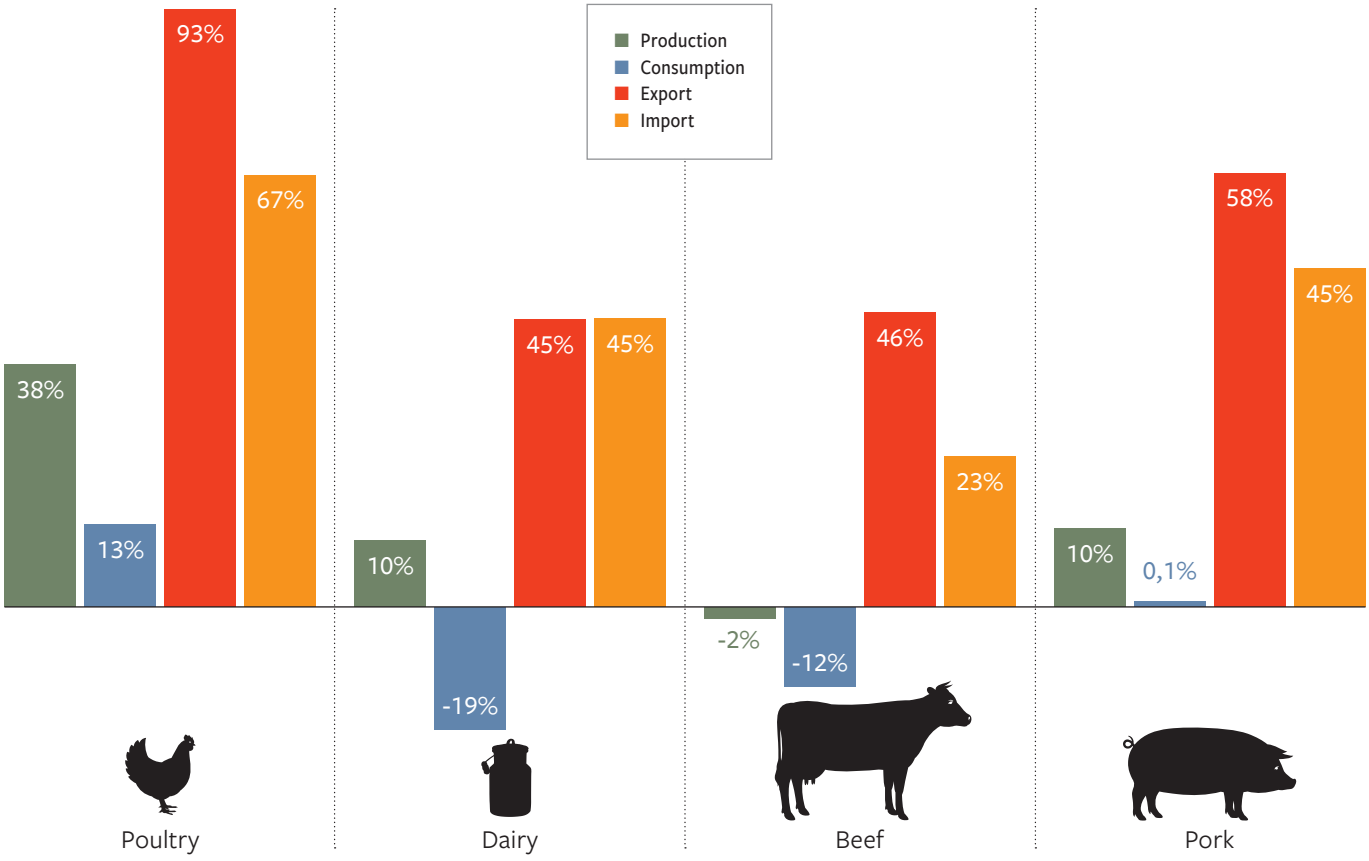


Figure 7: Export driven production. Percent change between 2005 and 2018 in export, import, production and consumption.
Source: IATP based on FAOSTAT data, see Methodology Note, p.42, section E.

4.3 More production = more feed and land use change

The export-driven growth in European livestock production has also led to more feed being grown and imported into the region. The feed is sourced in crop systems that spur further deforestation and land degradation. Feed bought from industry (as opposed to grown on farm) grew by 13% from 2006 to 2017 for poultry, pig and cattle.[158] Even as cattle herds have declined, the amount of feed needed for cattle grew over this period. This indicates a trend of fewer cattle on pasture and more cattle raised within the industrial model of production. Given the massive growth in EU poultry production, related feed use increased by a whopping 22% from 2006 – 2017 for poultry.[159]

The latest EU Agricultural Outlook projects that the use of land for pasture, fodder and protein crops is expected to grow in this decade.[160] An increase of 500 thousand hectares within Europe is estimated to be devoted to temporary grassland, silage maize used for fodder for livestock and feedstock for biogas, going from 19.7 million hectares in 2018 to 20.2 million hectares by the end of the decade.[161] The Commission also predicts that by 2030, one-third of the reduction in suckler cows for dairy in Western Europe is expected to be replaced by their expansion in Eastern Europe. The cattle herd in Eastern Europe is projected to rise by 30% over the next decade, notably in the Czech Republic, Poland, Hungary and Bulgaria.[162]

4.4 Way Forward

First, the Common Agriculture Policy (CAP) remains one of the central EU policy interventions to transform European agriculture. Yet, EU policymakers have just agreed to a business-as-usual CAP for the period 2023 – 2027, benefiting Big Agribusiness once again. In the most consequential decade for the climate, this was a devastating decision. Agricultural emissions reductions have not only stagnated in the past 15 years, but methane and nitrous oxide emissions related to agriculture actually increased from 2012 to 2017.[163]

Second, EU climate policy on agriculture this decade will have a pivotal impact on the limits to CAP and agricultural reform, as well as on the extent to which agribusiness can game climate policy to continue polluting. The implementation of the Farm to Fork strategy and elements of the EU's "Fit for 55" climate package will have major implications for transforming agriculture in the coming years. In the Commission's climate package, agriculture and forestry sectors are expected to become carbon neutral by 2035, with some within DG Clima (the EU ministry in charge of climate policy) and corporations advocating for the sector to be included in the Emissions Trading Scheme by the end of this decade.[164] The European Commission is embarking on the Carbon Farming Initiative as part of its Communication on Sustainable Carbon Cycles. The Commission will also propose an eventual legislation on the certification of carbon removals in the last quarter of 2022. The forthcoming Communication will lay the foundations for the carbon certification legislation and the type of incentives policymakers create for European agriculture reform to meet climate goals.

The Communication and its outcomes can and should support a transition towards agroecology rather than incentivise more emissions intensity reductions and offsets by Big Meat and Dairy and other corporations. However, an initial analysis of the leaked draft Communication shows a bias in favour of carbon offset schemes for agriculture. The leaked draft lays out several caveats to implementing an approach reliant on carbon markets and a narrow "results-based" focus on carbon sequestration in supporting documents to the Communication.[165] The authors of the leaked draft Communication acknowledge barriers to such an approach, such as 1) the risk to "land managers" given the financial burden and "uncertainty about revenue possibilities" and 2) "the complexity and high costs of robust monitoring, reporting and verification systems" associated with carbon credits.[166] Yet, it appears biased towards diverting critical public funds to validating carbon credits and bolstering voluntary carbon markets.

The Communication further lays out the case to use public funds to support these carbon markets, for instance, through the CAP's eco-schemes and state aid.[167] These public funds could more optimally be used to support farmers directly in expanding and transitioning to a holistic agroecological approach to farming. This approach would also ensure that more funds are directed to frontline communities rather than diverted to carbon consultants to support costly monitoring, reporting and verification of impermanent land-based carbon sequestration. Finally, the leaked draft opens the door to both agribusinesses and other corporations (including fossil fuel companies) to use carbon farming offsets against their own emissions.[168]

Photo: ©GFGF/Philip Reynaers

These are troubling proposals. Carbon markets are the wrong path for a transformative climate and agriculture agenda. Farmers need stable predictable finance to support concrete actions for holistic ecosystem restoration. This can only come from a mix of regulations and public finance that aligns climate and agriculture policy towards an agroecological transition. To do this, the EU must regulate corporations, redirect public finance (the CAP primarily and climate finance) and set rules in place that help regenerate rural economies and provide decent work in the food sector.

The European Court of Auditors highlights that the CAP's failure to incentivise a reduction in livestock numbers has contributed to rising agricultural emissions despite more than 100 billion euros of the CAP budget earmarked for "climate spending" from 2014 – 2020.[169] It is not too late. National CAP strategic plans offer an opportunity to align EU and global climate goals with concrete action on agriculture that ties country-level financing to a concrete transition towards agroecology.

European food, farm, development, environment and climate organisations and activists came together to push for a different CAP outcome in the past two years. As this movement grows bigger and louder, we must ensure that the 2027 CAP is rewritten. It must be truly transformative for the climate, biodiversity and for a just transition for producers. The EU Food Policy Coalition, a platform of over 57 organisations from the food, farm, environment, development and economic justice movement, has clearly articulated the direction Farm to Fork (F2F) implementation must take, prioritising 10 elements. These include:[170]

- bold and urgent action to transform the food system, turning F2F targets on fertiliser and pesticide reduction and expansion of organic farming into binding legislation,
- a transition to agroecology and "less and better animal farming" along with meat, dairy and eggs consumption,
- strengthening "measures focusing on the rights, working and employment conditions and social protection of farm labourers and food sector workers,"
- strengthening animal welfare legislation,
- revisioning of trade rules. The EU-Mercosur agreement will have far-reaching political and environmental consequences for the growing might of the global livestock industry and on the message the EU sends to the world about its commitment to stop deforestation and reverse climate change. The agreement must not be ratified.

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Conclusion

Six years after the Paris Agreement and 18 years after the Kyoto Agreement that mandated governments to reduce GHG emissions, decision-makers still lack basic foundational data such as emission volumes from the largest meat and dairy emitters in the European Union.

In the absence of governments setting up accountable regulatory regimes, voluntary initiatives are proliferating. The resulting targets are, at best, unaccountable, lacking clear benchmarks, indicators and robust third-party verification. At their worst, they are platforms for corporate greenwashing.

The IPCC's latest indictment on our prospects for limiting warming to 1.5°C in 19 years requires a total systemic shift of every sector, including agriculture. This is feasible if governments act quickly and decisively on the climate crisis as they have with enacting policies to limit the COVID-19 pandemic. The IPCC singles out methane as a key gateway emission to cut to buy time for eliminating fossil fuel emissions over time. The U.S. and EU have responded with a proposal for a Global Methane Pledge that sets an aggregate 30% cut in methane emissions by 2030 between all countries willing to do so.

The largest source of methane is large-scale industrial agriculture. Solutions politicised and proposed by United Nations Environment Programme (UNEP), the EU and the U.S. on livestock have a heavy industry footprint in that they limit solutions to technological innovations that tinker around the edges while the planet burns: feed additives and carbon markets for methane digesters linking Big Livestock to Big Oil and Gas. They do not call for a reduction in livestock numbers, shorter supply chains or investment in decentralised food systems that are diverse and agroecological. We need this type of shift by the end of this decade. We need all hands on deck to transform both public funds and climate and agriculture policy in supporting a transition to agroecology. It won't happen if Big Meat and Dairy continues to co-opt governments and civil society's narratives on regenerative agriculture and agroecology. **It will only happen when governments wake up to our existential crisis and begin regulating agribusiness.**

Methodology Note

A. Calculating corporate GHG emissions

The methodology for calculating corporate emissions involved a three-step process:

1 Determining the quantity of meat and milk processed per year by each company, where possible. We utilised public company reports wherever possible, as well as data generated by *WATT* (Poultry Trends) and *IFCN Dairy Research Network* (formerly known as the International Farm Comparison Network). We used the year 2019 for poultry and 2018 for both pork and beef. Dairy volumes are based on the IFCN ratings from 2018 which utilise mostly 2017 volumes. Our calculations are based on different reference years as we used the most recent data available for companies' emissions in each sector at the time of calculation. For beef and poultry, we also determined the quantity of production per geographic region for each company, based on company reports.

2 Using the U.N. FAO's most recent and public GLEAM 2.0 data (with a data reference year of 2010) to determine the GHG emissions per kilo of beef, pork, poultry and milk (emissions factors) for each company. The GLEAM data includes regionalised slaughter weights, carcass dressing percentages and GHG emission intensity values on a per-tonne-of-product basis. For beef, poultry and milk, our calculation of emissions factors included a regional breakdown of production per company, given the available company data on geographic production and the GLEAM model's significant differences in emissions factors between regions. For pork, we used global averages to generate emissions factors for each company, given the lack of available company data on geographic production and the small variations in emission factors for industrial production provided by the GLEAM model for the relevant regions.

3 Multiplying the production quantity by the emissions factors to get the totals for each company, the emissions estimates obtained with GLEAM are intended to be approximate indicators of corporate emissions in the absence of standard and transparent emissions calculations and reporting across the industry. Our calculations are likely conservative estimates given that GLEAM limits land use change to "the transformation of forest to arable land for feed crops and that of forest to pasture" and uses the basic IPCC Tier 1 guidelines, rather than more detailed calculations. In reality, more pastureland expansion has taken place on natural grasslands and cropland expansion replaced mainly forests (IPCC Special Report on Land, chapter 1). Large conversions have also taken place in dry woodlands and savannas, for instance the Cerrado in Brazil. GLEAM also limits feed crop expansion to soybean and palm oil, thus excluding corn, barley, sorghum and other oilseeds used in animal feed.

We calculated the emissions of the top 10 corporate emitters/producers of beef, pork, poultry and dairy, respectively. Danish Crown, Vion Foods, Tönnies, Westfleisch and Group Bigard appear in two top 10 lists: pork and beef. Therefore, there are 35 companies in total whose emissions we have estimated.

Our emissions estimations based on this methodology can be found in our primary dataset: https://bit.ly/309bVxP. For a more detailed breakdown, see also the GLEAM emissions calculations: https://bit.ly/3xMb2yn — this file includes individual datasets for emissions of the top 10 beef, pork, poultry and dairy companies respectively. It also provides the most recent publicly available GLEAM data and emissions factors that we used to calculate company emissions.

B. Identifying corporate GHG emissions reporting and emissions reduction targets (as discussed in the report and cited in figures) for 20 of the largest corporate emitters plus five of the largest poultry emitters, a total of 25 companies.

For Annexe 1 and related information on company emissions reporting, their scopes and their climate targets, we investigated the emissions reporting and emissions reduction targets of 25 of the largest European beef, pork, poultry and dairy processors by volume. Even though poultry companies are not among the top 20 biggest emitters, they produce significant quantities of emissions, nonetheless. Thus, we also evaluated climate targets and reporting of five of them.

For each of the 25 companies, we attempted to obtain several types of information from sources such as companies' sustainability reports, corporate social responsibility reports,

public press releases, online descriptions on company websites or similar documents or filings containing details on GHG emissions and/or emission-reduction targets and plans. The types of information sought included the following:

- The latest greenhouse gas inventory/information filings with organisations such as the Climate Disclosure Project (CDP) and any climate targets set, including with the Science-based Target Initiative (SBTi).
- Information about how emission values were calculated, including system boundaries or scope, geographical area(s), corporate divisions included, time period, etc.
- Details of emission-reduction targets, including base year, target year, scope of emissions covered, and whether the target is intensity-based or for absolute emission reductions.
- Where adequate emissions data and reduction plans existed, we examined how companies plan to reduce emissions and meet targets.

It is important to note that there exists no central public repository for the meat and dairy industries' corporate emissions data or targets, nor on the number of animals they slaughter for beef and pork. Some companies publish this information in annual reports, others in sustainability reports, others on webpages and still others in filings with third parties such as CDP. Thus, it is sometimes difficult to determine whether a given company does or does not have an emission-reduction target, or if the company is reporting its emissions.

This situation is made more difficult by the fact that most companies we contacted by email with questions regarding emissions and targets did not reply. At times, publicly listed emails bounced back, and at other times, there was no response to their standard contact form or even after attempts to contact through multiple company-listed addresses.

We based our characteristics of corporations' emissions data and targets on extensive research of public websites and analysis of publicly available documents. Nonetheless, there remains the possibility that we may have listed a company as, for example, having no targets when in fact that company has published a target somewhere. As much as anything, this risk reflects the disorganised and dysfunctional emissions reporting and the need for a central public repository for such data.

A full compilation of our data on the 25 companies' reporting and targets are detailed in Annexe 1 (p. 44).

C. Change in company emissions over two years

For Figure 3, we compared change in emissions between 2015–2017 for dairy companies and 2016–2018 for pork and beef companies that featured in our first report with GRAIN, *Emissions Impossible: How Big Meat and Dairy are heating up the planet*. See Table 2.1 in primary dataset: https://bit.ly/309bVxP

D. Additional information on figures

The primary dataset contains the data for Figure 1, the comparison between top 20 corporations (Table 1.9.1, see also Annexe 2, p. 47) and EU countries (Table 3.1); for Figure 2, comparison between the companies and the Carbon Majors (Table 3.2); for Figure 6, the major meat and dairy producing countries in the EU based on EUROSTAT data (Table 1.1); and for Figure 7, IATP calculation of FAOSTAT data on production, consumption, exports and imports in years 2005 and 2018 (Tables 4.1–4.4). The primary dataset can be accessed at: https://bit.ly/309bVxP

Annexe 1:

Reporting, Targets and Voluntary Accountability

Reading the Climate Targets

- Target declared with the Science Based Targets Initiative (SBTi)
- Individually set targets by the company

Normal text = Absolute emissions reduction target/No target

Italic text = Emissions intensity target

Table 1.1: Top 20 emitters from the European meat and dairy sector

Company	Sector	Emissions Reporting (scopes)	Climate Target (Absolute Target / Emissions Intensity Target)	Base-line	Target Year	Offsets	Last CDP Filing[171] / Science-based Target Initiative[172]	Third-party Verification[173] & Assurance Level[174]
1 **Groupe Lactalis** (France)	Dairy	—	None	—	—	—	No CDP filing until 2020, Submitted Forests 2021 (not scored, submissions not available)	—
2 **Arla** (Denmark)	Dairy	1,2,3[175] In their annual reports only	*30% emissions intensity reduction per kilo milk*	1990	2020	Yes, offsetting central element of Net Zero plan[176]; tree planting initiative in Uganda & forest conservation in Indonesia, biogas production from manure in Kenya, Tanzania and Uganda[177], carbon capture in farm soils[178]	No CDP filing	—
			30% absolute reduction of scope 1 & 2 emissions[179]	2015	2030		SBTi targets: target boundary includes biogenic emissions and removals from bioenergy feedstocks; consistent with reductions required for 2°C goal	
			30% reduction of scope 3 emissions per kilo raw milk	2015	2030			
			Carbon net-zero production ("sites to trucks")[180]		2050			
3 **Nestlé** (Switzerland)	Dairy	1,2,3[181]	*10% emissions intensity reduction in distribution operations*	2014	2020	Yes, "natural climate solutions" incl. agroforestry, restorations of forests and peatland, biogas digesters, soil carbon storage[182] Nestlé distinguishes between "insetting" & "offsetting". It calls carbon removals from its supplier farms "insetting" which excludes consumer use, what it calls "farm to store." However, offsetting is allowed for "farm to fork" which includes consumer use and packaging.[183]	CDP Filing on Climate Change, Forests and Water Security	Yes Assurance: scope 1 & 2 limited, scope 3 underway
			35% reduction of scope 1 & 2 emissions intensity per tonne of produce, for emission reduction in all manufacturing operations	2010	2020			
			8% absolute reduction of scope 3 emissions[184]	2014	2020		STBi targets: target boundary includes biogenic emissions and removals from bioenergy feedstocks; consistent with reductions required for 1.5°C goal; List of companies with business ambitions for 1.5°C	
			50% absolute reduction of scope 1, 2 & 3 emissions	2018	2030			
			25% absolute reduction of scope 1,2 & 3 emissions[185]	2018	2025			
			Corporate Net Zero ("farm to store")[186]		2050			
4 **Friesland Campina** (Netherlands)	Dairy	1,2,3 in annual reports only	Absolute emissions reduction to 2010 levels (12,307kt CO_2 eq)[187]	2010	2020	Yes, carbon capture in grasslands, biogas production from manure[188]	CDP Filings for 2021: Forests, Climate Change, Water Security (no scored submissions available)	—
			40% absolute reduction for scope 1 & 2 emissions	2015	2030			
			33% absolute reduction for scope 3 emissions[189]	2015	2030		STBi: status committed", no targets (2020)	
			Maximum emission level 9 Mt CO_2 eq (for Cooperative and Company together)[190]		2030			
5 **Danish Crown** (Denmark)	Beef Pork	1,2 3 (only emission intensity)[191]	*50% emissions intensity reduction per kilo meat produced*[192]	2005	2030	Yes, biogas production from manure[193], nature conservation and reforestation projects[194]	No CDP filing	—
			Climate neutrality[195]	—	2050		"plans to join" SBTi[196]	
6 **Tönnies** (Germany)	Beef Pork	—	Commits to a 50% emissions reduction target by 2030 compared to 2015 levels for road transport "per tour" only. It excludes emissions from container transport and limits this target to three operating plants in Germany.[197]	—	—	—	No CDP filing, no SBTi targets	—
7 **Vion Food** (Netherlands)	Beef Pork	1,2 3 (pilot project in 2019[198])	None	—	—	Yes, biogas production[199]	No CDP filing, no SBTi targets	—

Table 1.1 (cont'd): Top 20 emitters from the European meat and dairy sector

Company	Sector	Emissions Reporting (scopes)	Climate Target (Absolute Target / Emissions Intensity Target)	Base-line	Target Year	Offsets	Last CDP Filing[171] / Science-based Target Initiative[172]	Third-party Verification[173] & Assurance Level[174]
8 **Danone** (France)	Dairy	1,2,3[200]	*50% reduction of scope 1,2 & 3 CO_2 emission intensity*	2015	2030	Yes, Livelihoods Carbon Fund (environmental restoration, agroforestry, rural energy projects), soil carbon sequestration,[201] biogas from manure[202]	CDP Filing on Climate Change, Forests and Water Security	Yes Limited Assurance for all 3 scopes
			30% absolute reduction of scope 1 & 2 emissions	2015	2030		SBTi targets: consistent with reductions required for 2°C goal	
			Carbon neutrality across the full value chain[203]		2050			
9 **Deutsches Milchkontor** (Germany)	Dairy	—	None	—	—	Biogas production[204]	No CDP filing, no SBTi targets	—
10 **Glanbia PLC Group** (Ireland)	Dairy	1,2[205]	PLC Group: 31% absolute reduction of scope 1 & 2 emissions	2018	2030	US Dairy Net Zero Initiative: carbon sequestration, manure biogas production, contribution to "ecosystem markets making more offsets available"[206]	CDP filing: Climate Change 2020 (D score), Water Security 2020 (B- score)	Yes Assurance underway for all 3 scopes
			PLC Group: 25% reduction of scope 3 emissions intensity from purchased goods and services per tonne of dairy produced[207]	2018	2030		SBTi targets: Glanbia Ireland – Committed Glanbia PLC: target includes biogenic emissions and removal from bioenergy feedstocks, scope 1 & 2 targets consistent with	
			Glanbia Ireland: 30% absolute reduction of scope 1 & 2 emissions	None given	2030			
			Glanbia Ireland: 30% reduction of carbon intensity from milk production[208]					
			Net Zero		2050			
11 **Groupe Bigard SA** (France)	Beef Pork	—	None	—	—	—	No CDP filing, no SBTi targets	—
12 **ABP Food Group** (Ireland)	Beef	The company references emission reductions in public statements, however lacking public annual reports, there are no known publicly reported scope 1, 2 or 3 emissions.	27% absolute reduction of scope 1 & 2 emissions	2016	2030	Biogas production from manure[209]	No CDP filing, no SBTi targets	—
			17% absolute reduction of scope 3 emissions from purchased goods and services (raw materials & packaging)[210]	2016	2030		SBTi targets: consistent with reductions required for 2°C goal	
13 **Groupe Sodiaal** (France)	Dairy	Sodiaal has its own system of reporting in its annual report with a "Sodiaal specific" emissions factor[211] for its on farm emissions and provides combined "net" number for its total emissions that include scope 1 & 2.[212]	*7% reduction of net carbon footprint per liter of milk (farm & collection emissions)*[213]	2019	2026	French Low Carbon Label: carbon credits for soil carbon sequestration, planting orchards[214]	No CDP filing, no SBTi targets	—
14 **Müller Gruppe** (Germany)	Dairy	—	None	—	—	—	No CDP filing, no SBTi targets	-

Table 1.1 (cont'd): Top 20 emitters from the European meat and dairy sector

Company	Sector	Emissions Reporting (scopes)	Climate Target (Absolute Target / Emissions Intensity Target)	Base-line	Target Year	Offsets	Last CDP Filing[171] / Science-based Target Initiative[172]	Third-party Verification[173] & Assurance Level[174]
15 **Westfleisch** (Germany)	Beef Pork	1,2 (only for 2012 – 2014)[215]	None	—	—	Yes, emissions reported in 2011 compensated by climate protection project "Wind energy in Yuntdag" in Turkey[216]	No CDP filing, no SBTi targets	—
16 **Bongrain/ Savencia** (France)	Dairy	—	Absolute reduction of "the carbon footprint of the volume of milk collected by 300,000 t CO_2 equivalent"[217] However, the company gives no reporting of its 2010 emissions or of subsequent years	2010	2025	Use of biogas of "local biogas producers"[218]	No CDP filing, no SBTi targets	—
			25% reduction of scope 1 & 2 emissions intensity of produce[219]	2015	2025			
17 **Coren Group** (Spain)	Pork	—	None	—	—	—	No CDP filing, no SBTi targets	—
18 **JV Dawn Meats** (Ireland)	Beef	—	30% reduction of scope 1 & 2 emissions[220]	2016	2030	Advocacy for inclusion of soil carbon sequestration into carbon footprint calculations of cattle production[221]	No CDP filing	—
			28% reduction of scope 3 emissions from purchased goods and services per tonne of finished product incl. Biogenic emissions from bioenergy feedstocks	2016	2030		STBi targets: target boundary includes biogenic emissions from bioenergy feedstocks; consistent with reductions required for 2°C goal	
19 **Pini Italia Group** (Italy)	Pork	—	—	—	—	—	No CDP filing, no SBTi targets	—
20 **INALCA** (Italy)	Beef	1,2[222]	None	—	—	Yes, plants of anaerobic digestion, self-produced biomass energy[223]	CDP Filing Forests, Climate Change 2021 (not scored, submission not available)	—
							No SBTi targets	

Table 1.2: Top five emitters from the European poultry sector*

Company	Sector	Emissions Reporting (scopes)	Climate Target (Absolute Target / Emissions Intensity Target)	Baseline	Target Year	Offsets	Last CDP Filing / Science-based Target Initiative	Third-party Verification & Assurance Level
1 **LDC** (France)	Poultry	1,2 (partly)[224]	None	—	—	Yes, methanisation, biomass boilers[225]	No CDP filing, no SBTi targets	—
2 **Plukon Food Group** (Netherlands)	Poultry	—	None	—	—	—	No CDP filing, no SBTi targets	—
3 **Gruppo Veronesi** (Italy)	Poultry	1,2[226]	None	—	—	Yes, anaerobic biogas digesters, biogas production[227]	No CDP filing, no SBTi targets	—
4 **PHW Group** (Germany)	Poultry	1,2,3 Emissions Intensity[228]	No specific targets. Claims to have already reached climate-neutrality at some production sites[229]	—	—	Yes, reforestation projects in Germany and the Peruvian Amazon,[230] clean cooking ovens in Ghana[231]	No CDP filing, no SBTi targets	—
5 **2 Sisters Food Group** (U.K.)	Poultry	—	No specific targets. But announced general intention to reach climate neutrality and become a net energy producer[232]	—	—	—	No CDP filing, no SBTi targets	—

* The top five emitters from the poultry sector are in addition to the top 20 emitters from the meat and dairy sector (see table 1.1)

Annexe 2:

GHG emissions of Europe's largest meat and dairy companies (by volume)

				GHG emissions – Total*	% of total EU28 beef sector emissions	% of total EU28 pork sector emissions	% of total EU28 dairy sector emissions	% of total EU28 poultry sector emissions	% of total EU28 meat & dairy sector emissions
Reference Year					2018	2018	2018	2018	2018
Unit	Company	Headquarters	Sector	CO_2-eq (t)					
1	Lactalis	France	Dairy	30,962,960	—	—	13.13%	—	4.66%
2	Arla Foods	Denmark/Sweden	Dairy	21,958,426	—	—	9.32%	—	3.31%
3	Nestlé	Switzerland	Dairy	21,642,477	—	—	9.18%	—	3.26%
4	FrieslandCampina	Netherlands	Dairy	21,484,503	—	—	9.11%	—	3.23%
5	Danish Crown	Denmark	Beef/Pork	16,836,179	2.16%	7.21%	—	—	2.53%
6	Tönnies	Germany	Beef/Pork	14,232,523	1.39%	6.52%	—	—	2.14%
7	VION Food Group	Netherlands	Beef/Pork	13,878,667	2.89%	4.86%	—	—	2.09%
8	Danone	France	Dairy	13,585,789	—	—	5.76%	—	2.05%
9	Deutsches Milchkontor DMK	Germany	Dairy	12,795,917	—	—	5.43%	—	1.93%
10	Glanbia Group	Ireland/U.S./others	Dairy	10,268,329	—	—	4.36%	—	1.55%
11	Groupe Bigard SA	France	Beef/Pork	9,942,634	4.11%	1.47%	—	—	1.50%
12	ABP Food Group	Ireland	Beef	7,830,610	4.42%	—	—	—	1.18%
13	Groupe Sodiaal	France	Dairy	7,740,740	—	—	3.28%	—	1.17%
14	Müller	Germany	Dairy	7,266,817	—	—	3.08%	—	1.09%
15	Westfleisch	Germany	Beef/Pork	6,878,520	1.36%	2.48%	—	—	1.04%
16	Bongrain/Savencia	France/others	Dairy	6,476,946	—	—	2.75%	—	0.97%
17	Coren Group	Spain	Pork	5,657,345	—	3.13%	—	—	0.85%
18	JV Dawn Meat and Dunbia	U.K., Ireland	Beef	5,602,832	3.17%	—	—	—	0.84%
19	Pini Group	Italy	Pork	5,107,388	—	2.83%	—	—	0.77%
20	INALCA	Italy	Beef	3,837,348	2.17%	—	—	—	0.58%
21	LDC	France	Poultry	3,745,058	—	—	—	5.27%	0.56%
22	Grupo Jorge	Spain	Pork	3,450,980	—	1.91%	—	—	0.52%
23	Cooperl Arc Atlantique	France	Pork	3,226,417	—	1.79%	—	—	0.49%
24	Plukon Food Group	Netherlands	Poultry	2,950,651	—	—	—	4.16%	0.44%
25	Grupo Vall Companys	Spain	Pork	2,471,128	—	1.37%	—	—	0.37%
26	Gruppo Veronesi	Italy	Poultry	2,421,970	—	—	—	3.41%	0.36%
27	PHW Group	Germany	Poultry	2,421,970	—	—	—	3.41%	0.36%
28	Elivia	France	Beef	2,416,740	1.37%	—	—	—	0.36%
29	2 Sisters Food Group	U.K.	Poultry	2,235,132	—	—	—	3.15%	0.34%
30	Moy Park Ltd - Subsidiary of JBS	U.K.	Poultry	2,159,013	—	—	—	3.04%	0.33%
31	Müller Gruppe	Germany	Beef	1,904,963	1.08%	—	—	—	0.29%
32	Amadori	Italy	Poultry	1,729,979	—	—	—	2.44%	0.26%
33	Avara	U.K.	Poultry	1,439,342	—	—	—	2.03%	0.22%
34	Cedrob	Poland	Poultry	1,321,704	—	—	—	1.86%	0.20%
35	Rothkötter Mischfutterwerk GmbH	Germany	Poultry	1,314,784	—	—	—	1.85%	0.20%
		Total (top 35)		**279,196,781**	**24.11%**	**33.56%**	**65.41%**	**30.61%**	**42.03%**
		Total (top 20)		**243,986,950**	**21.67%**	**28.49%**	**65.41%**	**0.00%**	**36.73%**

Notes

- Reference year for dairy companies' GHG emissions is **2017**; **2018** for beef and pork companies; **2019** for poultry companies.
- Aggregate EU28 meat and dairy sector emissions are calculated based on Table 1.5 in the primary dataset (https://bit.ly/309bVxP).
- See Table 1.9.1 in the primary dataset (https://bit.ly/309bVxP) for emissions estimates for the top 20.

Annexe 3:

Largest meat and dairy producing countries in the EU28

Top Nine EU Countries + United Kingdom

Bovine meat production			Pig meat production			Poultry meat production			Combined meat production (beef, pork, poultry)			Total Meat as % of total EU28 meat prod.	Dairy Production			Dairy as % of total EU28 dairy prod.
Reference Year		2018	Reference Year		2018	Reference Year		2019					Reference Year		2017	
Unit		Carcass (t)	Unit		Carcass (t)	Unit		Carcass (t)	Unit		Carcass (t)	%	Unit		FPCM (t)	%
EU28		**7,931,690**	**EU28**		**23,846,360**	**EU28**		**15,327,930**	**EU28**		**47,105,980**	**100%**	**EU28**		**155,922,380**	**100%**
1	France	1,460,000	1	Germany	5,343,000	1	Poland	2,593,460	1	Germany	8,029,000	17.0%	1	Germany	31,937,020	20.5%
2	Germany	1,102,000	2	Spain	4,530,490	2	U.K.	1,899,010	2	Spain	6,904,690	14.7%	2	France	24,596,750	15.8%
3	U.K.	922,710	3	France	2,181,550	3	Spain	1,705,190	3	France	5,339,550	11.3%	3	U.K.	15,144,670	9.7%
4	Italy	809,230	4	Poland	2,082,450	4	France	1,698,000	4	Poland	5,240,640	11.1%	4	Netherlands	14,296,000	9.2%
5	Spain	669,010	5	Denmark	1,581,300	5	Germany	1,584,000	5	U.K.	3,748,450	8.0%	5	Italy	11,902,240	7.6%
6	Ireland	622,560	6	Netherlands	1,535,930	6	Italy	1,365,870	6	Italy	3,645,770	7.7%	6	Poland	11,646,050	7.5%
7	Poland	564,730	7	Italy	1,470,670	7	Netherlands	1,036,360	7	Netherlands	3,031,500	6.4%	7	Ireland	7,480,400	4.8%
8	Netherlands	459,210	8	Belgium	1,073,110	8	Hungary	533,040	8	Belgium	1,798,240	3.8%	8	Spain	7,027,670	4.5%
9	Belgium	277,330	9	U.K.	926,730	9	Romania	482,280	9	Denmark	1,710,500	3.6%	9	Denmark	5,506,300	3.5%
10	Austria	233,460	10	Austria	509,530	10	Belgium	447,800	10	Ireland	1,092,870	2.3%	10	Belgium	4,025,420	2.6%
Total top 9+U.K.		**7,120,240**	**Total top 9+U.K.**		**21,234,760**	**Total top 9+U.K.**		**13,345,010**	**Total top 9+U.K.**		**40,541,210**	**86.1%**	**Total top 9+U.K.**		**133,562,520**	**85.7%**
Source		(a)			(a)			(a)			(a)				(a.1)	

Sources:

(a) Eurostat – online data code: APRO_MT_PWGTM (November 2020)

(a.1) Eurostat – online data code: APRO_MK_POBTA (November 2020); see also Tables 1.1 – 1.3 in the primary dataset (https://bit.ly/309bVxP)

Annexe 4:

GHG emissions from the top 10 beef, pork, poultry and dairy corporations

		GHG emissions	% of total EU28 emissions	% of Top 9 countries + U.K. emissions	% of Top 10 livestock producing countries (EU27) emissions
	Reference Year	2018	2018	2018	2018
Sector	Unit	CO_2-eq (t)			
Dairy		154,182,905	3.65%	4.85%	5.89%
Pork		60,589,566	1.43%	1.91%	2.31%
Beef		42,684,708	1.01%	1.34%	1.63%
Poultry		21,739,603	0.51%	0.68%	0.83%
Total		**279,196,781**	**6.61%**	**8.79%**	**10.66%**

Notes:

- Reference year for dairy companies' GHG emissions is **2017**; **2018** for beef and pork companies; **2019** for poultry companies.
- Calculations based on Tables 1.4 and 1.7 in the primary dataset (https://bit.ly/309bVxP).

Endnotes

1 Correction: 16 Decemer 2021
An earlier version of this report misstated on page 28 that Tönnies lacked any climate accounting or targets.

2 See calculation in the full dataset for the report, link in the methodology section.

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