COW IN THE ROOM

Big Meat's Methane Failure

DECEMBER 2025

MIGHTY EARTH

Executive Summary

Methane is heating the planet at an alarmingly dangerous pace and contributes significantly to pushing us toward catastrophic tipping points. While methane remains in the atmosphere for a shorter period than carbon dioxide, it is 86 times more potent over 20 years – meaning rapid reductions can deliver near-term cooling and help keep 1.5ºC within reach. Cutting methane is therefore the single most effective strategy to slow global warming in the near-term.

Agriculture is the largest source of human-caused methane emissions. Enteric fermentation, a digestive process in ruminant animals such as cows and sheep, and manure management alone represent 32% of human-caused methane emissions. Yet the corporations most responsible – the world's largest meat companies – are largely ignoring their methane footprint.

Mighty Earth's assessment of ten of the world's largest meat companies across North America, South America, Europe, and Asia reveals a striking lack of action. Although many of the companies assessed produce more methane than major oil and gas firms such as Shell and Exxon, only one discloses global methane emissions and none report methane emissions associated with their meat production. Reporting of Scope 3 greenhouse gas emissions, which represent the vast majority of meat companies' climate footprint, was often inconsistent, incomplete, or absent. This failure to report methane emissions and Scope 3 greenhouse gas emissions masks the true scale of meat companies' climate footprint.

Only half of the meat companies assessed have net-zero commitments, and most that do have adopted weak, loophole-filled language that shields them from accountability. Not a single company assessed has committed to reducing methane by 30% by 2030, in line with the UN-backed Global Methane Pledge – let alone the 45% reduction required by 2030 to keep 1.5ºC within reach. Because no company has adopted these targets, corresponding action plans to achieve adequate methane reductions are likewise absent. Only one company has a target to reduce its absolute Scope 3 greenhouse gas emissions by at least 30% but less than 45% by 2030, from 2020 levels.

Aside from the category evaluating the meat companies' acknowledgement of the role of methane and meat production in climate change, overall performance across the categories assessed in this report was consistently weak. Most companies recognized the role of livestock methane in global heating, yet this acknowledgement is not reflected in reporting or action.

Companies frequently highlight methane-reducing technological fixes such as feed additives, however, the assessment found company initiatives are generally confined to limited pilots, lack transparency, and are not scaled. Meanwhile, companies are expanding livestock production, which will evidently increase methane emissions.

Transitioning to plant-based proteins represents one of the most effective ways to help curb methane emissions and land use pressures, while improving diet-related health outcomes. Although most of the companies assessed produce and sell plant-based alternative meat products, none have set targets to increase production or sales, and none disclose total investments. Without clear plant-based targets and capital reallocation, these product lines appear tokenistic rather than transformational.

The current trajectory of the meat sector is incompatible with the Paris Agreement. A 1.5ºC-aligned food system will require fewer livestock alongside clear methane-reduction targets and transparent reporting. Although these companies have the resources and global reach to lead, none are acting at the pace or scale required.

To change course, meat companies must report methane emissions across the entire value chain, including separate methane reporting and full slaughter data. They must also commit to cutting methane at least 30% by 2030, publish credible externally verified plans to reach net-zero by 2040 and shift investment and sales toward alternative proteins to reduce reliance on livestock. In addition, meat companies must raise their ambition and financial support for more sustainable farming practices and increase transparency across global meat supply chains.

Contents

Introduction

Our global food system is responsible for more than one third of human-caused greenhouse gas (GHG) emissions, estimated to be up to 37%.[1] Of this, animal-based food production is responsible for 57% of all food-production emissions,[2] with over 80 billion land animals slaughtered for meat annually.[3] This makes industrial livestock emissions a major – yet often overlooked – contributor to climate change.

A recent study found that the top 45 meat and dairy companies together produced an estimated 1.02 billion tons CO2 equivalent (CO2e) emissions in 2023-2024.[4] This is more than the total reported for the second largest oil producing country in the world – Saudi Arabia.[5] Even if all fossil fuel emissions ceased today, emissions from food production alone would still push global heating close to 2ºC.[6]

These figures underline the urgent responsibility of Big Meat to drastically reduce emissions. This report assesses ten of the world's largest meat producers against key climate criteria and finds they are doing next to nothing to address the most potent and neglected greenhouse gas in their operations: methane.

1. Why methane matters

Methane's climate impact

Methane (CH4) is a "superheater" greenhouse gas. It is estimated to have 86 times more warming potential than carbon dioxide (CO2) over a 20-year period,[7] yet remains in the atmosphere for only about 12 years.[8] Methane is responsible for around 50% of the 1 degree rise in global warming since the pre-industrial era,[9] yet receives far less attention than CO2. Its high, but short-term warming power makes cutting methane the fastest way to slow global heating.

Livestock's role in methane emissions

Agriculture is the largest source of human-caused methane emissions (≈40%), followed by fossil fuels (≈35%) and waste (≈20%).[10] Livestock agriculture emissions, in the form of enteric fermentation and manure management, represent roughly 32% of human-caused methane emissions.[11] In a large number of countries, livestock accounts for more than half of national methane emissions.[12] Five of the largest meat companies – namely, Danish Crown, JBS, Marfrig, Tyson, and WH Group – together with ten of the largest dairy companies emit an estimated 12.8 million tons.[13] This is equivalent to more than 80% of the European Union's entire methane footprint, and around 3.4% of all global human-made methane.[14]

Methane reductions are essential for 1.5ºC

Rapid methane reduction is regarded as the single most effective strategy for slowing global heating in the near term and keeping the goal of limiting warming to 1.5o C within reach.[15] The United Nations Environment Program (UNEP) states methane emissions need to be reduced by at least 45% by 2030 to meet the 1.5ºC goal.[16] The Global Methane Pledge (GMP), launched at COP 26, committed signatories to reducing methane by 30% by 2030 from 2020 levels.[17] The Pledge – designed to get methane emissions to a level consistent with 1.5ºC scenarios[18] – has been signed by over 160 countries so far.[19]

However, a recent Mighty Earth report shows that the five countries with the largest cattle herds – the US, European Union (EU), Brazil, India and China – are not on track to deliver the methane reductions needed.[20] Although Brazil, the U.S. and the EU signed the Pledge, none have produced comprehensive plans and targets that address industrial livestock emissions. For example, the EU's latest National Determined Contributions (NDC) – the climate action plans published ahead of COP30 – focus primarily on fossil-fuel methane reduction, even though agriculture accounts for 56% of EU methane emissions.[21] Meanwhile, non-GMP signatories China and India are taking some more concrete steps to reduce methane but lack a dedicated reduction target.[22] Without decisive action on industrial livestock emissions, the global goal of reducing methane by 30% by 2030 will not be met.

The recent UN Global Methane Status Report, published during COP30, highlights how current efforts fall drastically short – and overlooks a key driver: industrial meat production is projected to keep growing, bringing substantial additional methane emissions. The report finds that, based on existing plans, the Global Methane Pledge will not be met. Alarmingly, only 4% of all NDCs submitted ahead of COP30 include measures to reduce agricultural methane, and none are aligned with the Pledge's goal of a 30% reduction of this climate super heater by 2030.[23]

Rising livestock emissions and industry expansion

While policymakers are turning a blind eye to the livestock sector, methane emissions are on the rise[24] and livestock production is set to grow. Global meat production is projected to double between 2006 and 2050.[25] Meanwhile, Big Meat companies are actively scaling up. A 2023 JBS presentation outlined the meat giant's plans to benefit from rising global animal protein consumption.[26] In 2025, the company began trading on the New York Stock Exchange, completing a dual listing with Brazil's B3 stock exchange[27] to finance further growth. JBS' expansion plans include new meat plants in Nigeria and Vietnam, ramping up beef production in the U.S. and quadrupling production in Saudi Arabia.[28]

2. Big Meat companies: The role they play and actions they need to take

The world's largest meat companies – through their vast, industrial-scale production of animal protein – are among the biggest drivers of emissions globally. In Brazil alone, three-quarters of methane emissions have been linked to beef and dairy cattle production, accounting for 14.5 million tons of total emissions in 2023.[29] Across five global livestock giants – JBS, Marfrig, Tyson Foods, Minerva, and Cargill – emissions in 2023 reached an estimated 480 million tons of CO2e, exceeding those reported by Chevron, Shell, or BP.[30] JBS's methane emissions alone are greater than the combined livestock methane emissions of Canada, France, Germany, and New Zealand, and represent around 55% of all U.S. livestock.[31] According to estimates, JBS' methane emissions surpass those attributed to ExxonMobil and Shell combined.[32] Regardless of production method, cattle tend to cause significantly higher emissions than any other food source.[33] For instance, cattle (beef) accounts for 87% of JBS' estimated GHG emissions.[34] It is estimated that 80% of total emissions from 45 major meat and dairy companies were from cattle, with 46% from beef cattle and 34% from dairy cattle.[35] The animal-based protein sector is highly concentrated. In the U.S. meat industry alone, JBS, Cargill, Tyson Foods, and National Beef (which is owned by Marfrig) currently dominate 85% of the U.S. beef processing market.[36] This extreme market concentration means that a small number of companies account for a major portion of global methane emissions and therefore have a huge responsibility to act.

This report assesses methane-related commitments and actions of ten of the world's largest meat producers. As some of the most powerful climate polluters on the planet, these companies have a critical responsibility to take urgent action to reduce their methane emissions. Yet the assessment finds that, beyond adopting climate-friendly narratives – including some net-zero pledges – the companies assessed are doing almost nothing meaningful to acknowledge, transparently measure, or adequately reduce their methane footprint. Given methane's outsized contribution to the overall GHG footprint of major meat producers, this lack of concrete action exposes a fundamental misalignment between the companies' public climate narratives and their actual practices.

To move beyond greenwash, Mighty Earth urges Big Meat companies to:

- Commit to at least a 30% methane reduction by 2030 from 2020 levels and put in place action plans to reach this target.
- Publish independently verified plans to reach net-zero by no later than 2040, aligned with 1.5°C.
- Publicly disclose Scopes 1-3 emissions, including separate methane reporting and full annual slaughter data.
- Shift sales and investment toward alternative proteins to reduce dependence on methane-emitting livestock.
- Provide increased financial support farmers to enable the scale-up of agroecological practices to reduce methane emissions.

3. The protein transition

The protein transition – a global dietary shift from animal-based proteins to alternative protein sources, such as plant-based – represents a solution to livestock methane emissions due to its lower environmental impact.[37] Alternative proteins cause significantly lower methane emissions as they do not require raising methane-emitting livestock or growing feed crops. It is estimated that if 50% of the main animal products (pork, chicken, beef and milk) globally were substituted with alternative proteins, agriculture and land-use GHG emissions would decline by 31% by 2050 compared to 2020 levels.[38] The shift from animal-based proteins to alternative protein sources would also have positive impacts on land use and deforestation. This is because despite using 83% of global agricultural land, animal farming produces only 18% of calories and 37% of protein.[39] Feed crop for livestock uses 33% of arable land and livestock contributes to 70% of deforestation in the Amazon.[40]

The Planetary Health Diet (PHD) – a global reference diet by the EAT-Lancet Commission first published in 2019 – sets a dietary pattern that supports optimal health outcomes and is rich in plants, with only moderate or small amounts of animal protein recommended.[41] The PHD, as updated in 2025, recommends limiting red meat intake to less than 98 grams per week while increasing consumption of plant-based foods, legumes, whole grains, fruits, and vegetables.[42] For comparison, Cargill's TNT ™ Original Beef Patties for burgers range from 56 g to 340 g[43] and a quarter pound patty (113 g) is often used for a homemade all-American cheeseburger.[44] The EAT-Lancet Commission estimates that a global shift to the PHD diet could prevent up to 15 million premature deaths each year, including by lowering the risks of cardiovascular disease, type 2 diabetes, and certain cancers associated with red meat, while also reducing food system greenhouse gas emissions by approximately half by 2050.[45]

4. Regulatory emission disclosure

Growing recognition of the financial risks posed by climate change has prompted the development of numerous climate-reporting frameworks across the world, with the landscape quickly developing. In recent years, financial regulators and governments have advanced voluntary reporting guidance – and, in some jurisdictions, mandatory requirements – intended to improve the transparency of corporate climate disclosures.[46] More than a dozen laws around the world require companies to disclose greenhouse gas emissions, including the EU, Brazil and China, with similar proposed laws in various other countries.[47]

For instance, in the European Union, the Corporate Sustainability Reporting Directive (CSRD) – which is currently being phased in and only applies to companies meeting certain size thresholds – requires those companies to report Scopes 1, 2 and 3 emissions, but not broken down by types of greenhouse gas.[48] Brazil's CVM Resolution 193, which will require companies listed on the B3 stock exchange to disclose sustainability-related financial information, does not explicitly include Scopes 1, 2 and 3 reporting.[49] However, the reporting is based on the International Sustainability Standards Board (ISSB) framework, which does include Scopes 1, 2, and 3 reporting.[50] In China, companies listed on the SSE and SZSE will have to report on Scopes 1 and 2 emissions, while in Hong Kong, companies listed on HKEX will be required to report on their Scopes, 1, 2 and 3 emissions, though not broken down by greenhouse gas.[51] The US Securities and Exchange Commission (SEC) introduced climate disclosure rules requiring Scopes 1 and 2 GHG emissions disclosure from companies where emissions represent climate-related risks to their business strategy and outlook.[52] However, the SEC has voluntarily paused the application of the rules and is no longer defending legal challenges against them.[53] State laws passed in California will require many large public and private U.S. companies to disclose Scopes 1, 2 and 3 emissions.[54] Other U.S. states, like New York, are considering similar laws.[55]

Although no policy currently obliges companies to report methane emissions separately, there is increasing pressure to disclose Scope 3 emissions, which is highly relevant for meat companies, as these emissions make up the overwhelming share of their climate footprint - in the case of JBS, 97% and in the case of Marfrig 98%. Support for mandatory regulatory methane disclosure is picking up pace given the potency of methane and its significant potential role in driving down global temperatures in the short-term.[56] [57] Initiatives like the Greenhouse Gas Protocol (GHGP) provide standards and guidance on reporting emissions to remedy the lack of accurate reporting.[58]

Methodology

This assessment evaluates how – if at all – ten of the world's largest meat companies are addressing their methane emissions. The companies were selected based on a combination of factors, including annual revenue, estimated methane emissions, and market dominance in the global meat sector, ensuring a representative sample of major industry players in four key producing regions: North America, South America, Europe, and Asia.

Each company was evaluated solely on publicly available information published on its own website (including sustainability and climate reports, annual reports, corporate disclosures, and press releases). Companies were assessed at the group level, and subsidiary websites were reviewed where relevant – for example, when evaluating plant-based alternative meat offerings. For each company, the most recent annual or sustainability reports (2023–2024) were used. The research was conducted between 14 and 27 October 2025. The companies were also contacted with their results and given the opportunity to submit additional information available on their website for our review. Four companies – Danish Crown, Marfrig, Minerva Foods and Vion Food Group – replied to the outreach.

Companies were assessed against 14 key indicators, grouped into five categories reflecting core areas of methane-related climate performance:

1. **Acknowledgement of the role of methane and meat products in climate change**
   - Indicator 1.1: Acknowledgment of the role of livestock methane emissions in climate change
2. **Emissions reporting**
   - Indicator 2.1: Emissions reporting across Scopes 1, 2 & 3
   - Indicator 2.2: Methane emissions reporting across Scopes 1, 2 and 3
   - Indicator 2.3: Methane emissions from meat products reporting
   - Indicator 2.4: Publication of annual slaughter numbers
3. **Reduction commitments and action plans**
   - Indicator 3.1: Net-zero commitment
   - Indicator 3.2: Commitment to reducing Scope 3 emissions
   - Indicator 3.3: Methane reduction commitment
   - Indicator 3.4: Methane reduction action plan
   - Indicator 3.5: Traceability policy & systems
4. **Alternative proteins production and investment**
   - Indicator 4.1: Plant-based alternative meat production target
   - Indicator 4.2: Plant-based alternative meat investment reporting
   - Indicator 4.3: Own plant-based alternative meat production & products
5. **Technological Solutions**
   - Indicator 5.1: Feed additives to reduce methane

Each indicator was assigned one of three possible scores based on the evidence found:

Good: The company meets high-performance criteria.
Intermediate: The company meets intermediate-performance criteria.
Bad: No evidence was found that the company sufficiently meets the indicator.

Beyond the key indicators, additional research was conducted for each company to collect information on further indicators, and examples of supporting or emerging practices, such as pilot projects, or supplier programs. These findings were not included as part of the key performance indicators but helped to enrich the qualitative analysis.

Limitations

The assessment relied exclusively on publicly disclosed information from company websites and reports, as well as the Science Based Targets initiative (SBTi) commitment database for an assessment of SBTi-endorsed climate targets and commitments. No confidential or other third-party data was used. As a result, the findings reflect transparency and disclosure rather than full implementation. However, applying uniform criteria and a consistent framework ensured that all companies were assessed against the same standards of accountability.

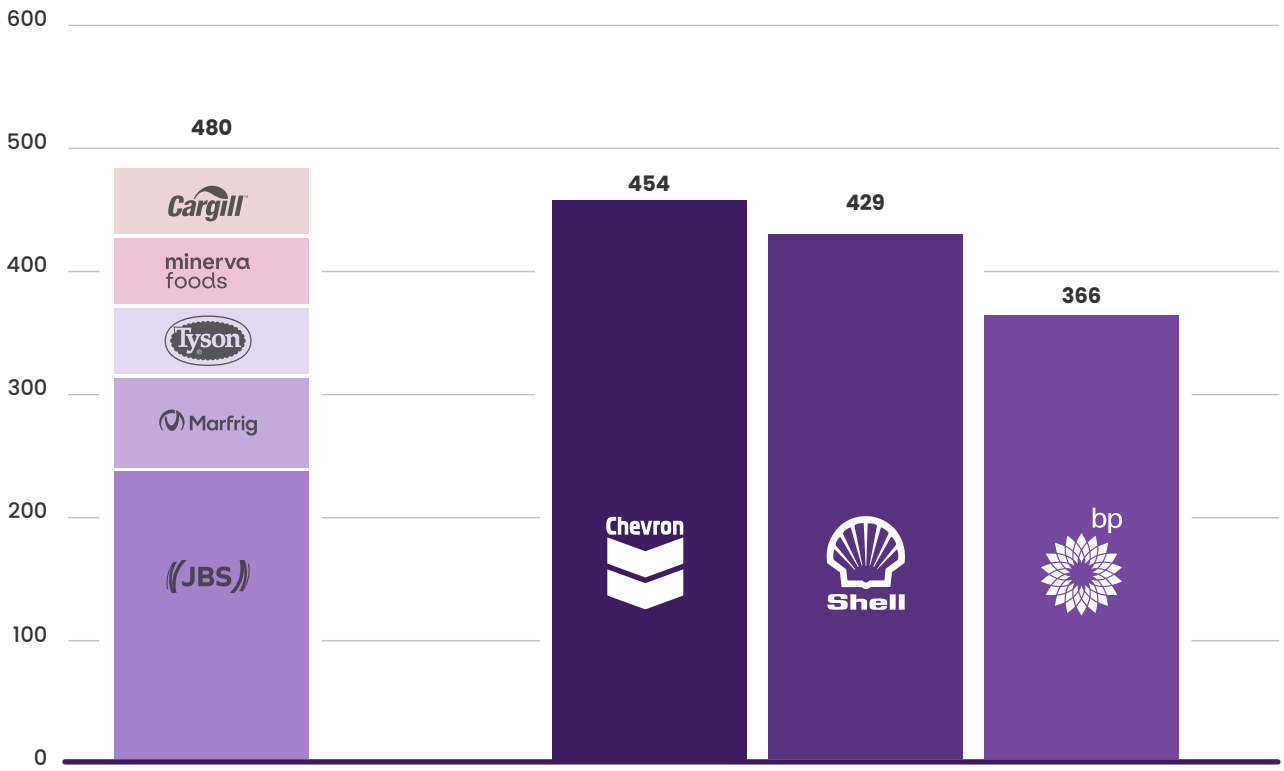
OVERVIEW OF KEY INDICATORS AND COMPANY PERFORMANCE

Category 1: Acknowledgement of the role of methane

Most meat companies acknowledge the impact of livestock methane emissions on climate change, though the quality of statements varies.

Methane is estimated to make up 51% of the total estimated GHG emissions of the biggest meat and dairy companies.[59] Nearly half of these combined emissions came just from five Big Meat companies; JBS, Marfrig, Tyson, Minerva and Cargill. Together, those five firms emitted 480 million tons of CO2e in 2022-2023, more than Chevron (454 million tons), Shell (429 million tons), and BP (366 million tons).[60] Given this scale, robust targets and detailed plans to reduce methane emissions should form the core of any credible net-zero strategy in the meat sector. Public acknowledgment of the impact of methane from livestock and cattle on climate change is a necessary first step: it signals that a company takes the issue seriously and helps consumers make informed decisions about their food consumption.

ESTIMATED GHG EMISSIONS OF CARGILL, JBS, MARFRIG, MINERVA FOODS AND TYSON FOODS COMPARED TO THOSE REPORTED FOR CHEVRON, SHELL AND BP (MILLION TONS CO2E)



Source: Foodrise et al (2025); Carbon Majors Dataset (2025)

Indicator 1.1: Acknowledging the role of livestock methane emissions in climate change

Six of the ten companies assessed made some form of a public acknowledgment of the role that methane from livestock and cattle plays in driving climate change. These include companies headquartered in Brazil, the United States, Europe, and Asia. Cargill, Danish Crown, Marfrig, NH Foods, Vion Food Group, and WH Group included their acknowledgements on webpages, their annual reports or sustainability reports.

In most cases, however, the acknowledgment is paired with farming solutions to reduce GHG emissions, which risk downplaying the scale of the challenge. For example, Marfrig acknowledges in its 2024 Integrated Report that methane stands out as a key GHG in its Scope 3 emissions, but this acknowledgment is immediately followed by a description of one feed additive project as the company's primary methane-reduction measure. The report provides no further data on the project's scale or emissions impact. By focusing on a limited technological fixes rather than tackling livestock numbers, Marfrig shifts attention away from the structural causes of its methane footprint.

> ***"We are committed to reducing our greenhouse gas emissions related to the "Purchased Goods and Services" category of Scope 3, which includes the acquisition of animals and represents 97% of the company's annual emissions. Among the gases emitted, methane stands out, released during the digestion of cattle (enteric fermentation) and in the management of waste produced in the rearing of these animals. One example of a project is the use of Silvafeed ® BX, a natural feed additive made from tannin extract (oils) produced by SilvaTeam, which is being mixed into the feed given to animals during the finishing phase in confinement on our supplier farms. According to studies conducted by the company that distributes the product, there is an average reduction of 17% in methane emissions resulting from enteric fermentation."*** Marfrig, 2024 Integrated Report, p. 65

While Cargill acknowledges the role of livestock methane in climate change, its "Methane in Agriculture" webpage reframes the issue to position the company as a climate leader rather than a major methane emitter. The page highlights as a "*Key Takeaway*" that "*Cargill is helping lead the reduction of methane gases from agricultural production, working with animal farmers to provide solutions tailored to their farm's needs.*"[61] This framing shifts attention away from Cargill's own substantial methane footprint and toward selective initiatives, presenting action without acknowledging responsibility.

Danish Crown provides an example of an acknowledgment that is fragmented across multiple sources. In its 2024 Annual Report, the company refers broadly to "*food production*" – rather than meat production specifically – as contributing to climate change.[62] On its website, Danish Crown notes that "*[o]n the farm, three key greenhouse gases – CO2, methane, and nitrous oxide – play a central role in the climate equation*", and adds, in relationship to its pilot projects and farm initiates, that: "*[w]e are aware that meat production represents part of the climate challenge, and we want to be part of the solution*".[63]

Minerva Foods acknowledges the role of methane from enteric fermentation in ruminants as a key contributor to GHG in Brazil in a joint study, in which the company, together with Embrapa, FGV and Unicamp, finds that cattle production can be compatible with carbon mitigation if sustainable practices are applied.[64]

COFCO, JBS, NH Foods and Tyson Foods fail to make sufficient or explicit acknowledgments regarding the role of livestock methane emissions in climate change or the impact of agriculture (including livestock or cattle production) on climate change. Tyson's website even portrays cattle as a beneficial component of a sustainable food system, emphasizing their ability to consume by-products from plant-based food production that would otherwise go to waste.[65] This portrayal completely ignores the grave impact large-scale cattle production has on deforestation, land-use change, and the impacts on climate and biodiversity.[66] While JBS acknowledges that "*[r]educing enteric methane emissions is crucial for sustainable livestock production*", the statement is included under an "*Animal Health and Performance*" header and does not directly link livestock production and methane emissions to climate change.[67] Given that JBS is the largest meat processing company in the world, with methane emissions exceeding those attributed to ExxonMobil and Shell combined,[68] this absence of even a basic acknowledgment signals a profound unwillingness to confront its substantial contribution to methane-driven climate heating. While a COFCO subsidiary references the agricultural sector's GHG impact on climate change, the company does not specifically link this to livestock or methane and does not include a similar statement on the group-level website.[69] NH Foods acknowledges that GHG "*emissions in livestock farming are largely caused by methane from cattle and pigs*" but does not link these emissions to climate change.[70]

CLOSE TO NO ACKNOWLEDGMENT OF NEEDED REDUCTION IN MEAT PRODUCTION AND CONSUMPTION

The core business model of the world's largest meat companies – the mass production and aggressive promotion of animal protein – makes them some of the biggest greenhouse gas emitters on the planet.[71] Emissions from livestock are the single largest source of agricultural GHG emissions.[72]

To meet the Paris Agreement's goal of limiting global temperature rise to 1.5°C, global methane emissions must fall by 40-45% by 2030, according to the UN Environment Programme.[73] The Intergovernmental Panel on Climate Change (IPCC) has recognised the importance of the consumption of healthy and sustainable diets for reducing GHG emissions from food systems.[74] A significant decline in livestock numbers and a shift away from animal-based mass production are key components of tackling the climate crisis.[75]

Yet, nine of the ten companies assessed fail to sufficiently acknowledge this fundamental reality, with Minerva Foods being the only exception. None publicly promote, and almost all avoid, the idea that reducing meat production and consumption is necessary to address global warming.

Instead, some companies continue to view the growing demand for plant-based foods not as an opportunity for transition, but as a threat to their business model. WH Group, for instance, treats plant-based proteins as a financial risk rather than a climate solution. The company explicitly warns that, "*[a]ffected by climate change risks, the market may change its preference. For instance, plant-based meat, and vegetarian foods may become more popular. These trends may affect the meat market, which in turn affects the revenue of the Group.*"[76] This framing illustrates a defensive, short-term mindset that prioritizes protecting profits over supporting the systemic dietary change needed to meet global climate goals. Other companies only indirectly mentioned alternative protein products as having a positive impact on climate, and most did not address it at all.

Minerva Foods stands as the only company in the assessment that acknowledges that shifting consumption from animal to alternative proteins could help lower GHG emissions,[77] yet even this acknowledgment is undermined by a further contradiction. The company frames its diversification into alternative proteins as a strategy to reduce reputational risk rather than a way of tackling its climate impact. At the same time, Minerva's website actively misinforms consumers, claiming that plant-based proteins are inferior in quality to animal-based proteins.[78] [79] This incongrous messaging – acknowledging the potential of alternatives in one context while undermining them in another – reveals a broader pattern across the industry: token recognition paired with active resistance to change.

Category 2:
Emissions reporting

Only one company reports global methane emissions separately across Scopes 1, 2 and 3.

The lack of separately reporting global methane emissions represents a huge challenge in holding Big Meat companies accountable for their impact on climate change.

Once companies acknowledge the role of methane in meat production, they must take the next essential step of publicly reporting their GHG emissions across Scopes 1, 2 and 3. Assessing the companies based on their recognition and non-contradiction of the Greenhouse Gas Protocol – a standardized framework for corporate emissions accounting – indicates whether these companies are quantifying their different GHG emissions, including methane, as part of their climate reporting.[80]

However, our analysis shows that only one company – Marfrig – publicly discloses its methane emissions across Scopes 1, 2 and 3. None of the other nine companies, even those that report on their total GHG emissions as carbon dioxide equivalents (C02e), publicly report methane emissions from their supply chains separately, or disclose absolute global methane emissions specific to meat and dairy products. Instead, they seem to pick and choose what parts of their GHG emissions they disclose, and to whom. The lack of reporting represents a huge challenge in holding Big Meat companies accountable for their impact on climate change.

THE MASKING EFFECT OF CARBON EQUIVALENCY

The Science-Based Target initiative (SBTi), a program for setting emissions reduction targets used by more than 6,000 companies[81,] recommends using the GHG Protocol accounting practices.[82] To comply with the GHG Protocol, companies calculate emissions from the seven most harmful greenhouse gases separately, which includes methane. These different gases can be combined into a single standardized unit: 'CO2e', or carbon dioxide equivalent. CO2e is an important measure for policy makers and scientists because it is comparable across countries, industries, companies, and more. However, in addition to reporting CO2e, companies should disclose absolute emissions of all greenhouse gases separately[83] because, alone, CO2e can mask the potency of other greenhouse gases – particularly methane – in the near future.

Indicator 2.1: Emissions reporting across Scopes 1, 2 and 3

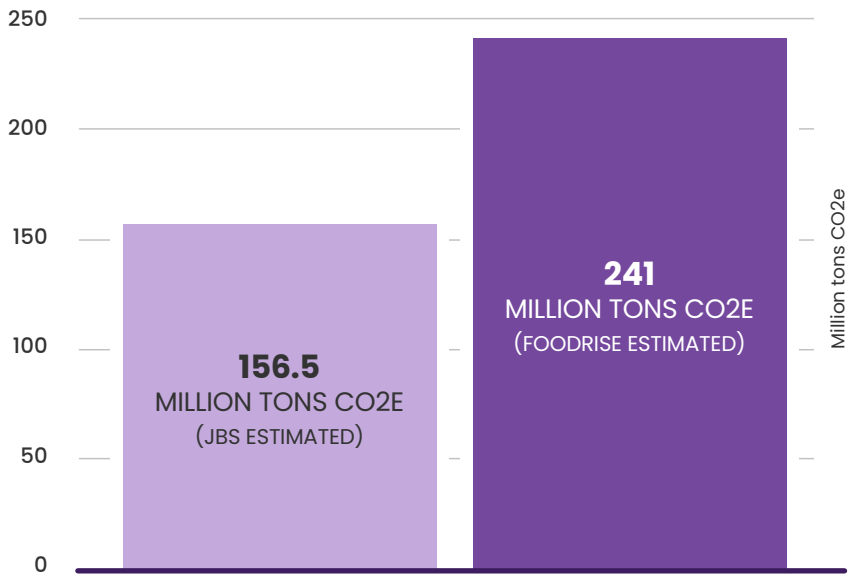
Reporting emissions across Scopes 1, 2 and 3, as set out in the GHG Protocol,[84] is critical to ensure that companies are accountable for *all* emissions associated with their operations, even if they are indirect (Scope 3). Scope 3 captures the lion's share of emissions (+90%) from meat companies (see Scopes 1, 2 and 3 explained on page 14 of this report). Some meat companies may report additional emissions from livestock farming under Scope 1 where they run company-owned farms. The GHG methodology requires companies to separate different gases (e.g. methane from carbon dioxide) when calculating their Scopes, but it is not mandatory to publicly report these separately. Instead, they are generally aggregated into CO2e (carbon dioxide equivalent), which masks the potency of methane, detailed above.

Only four of the companies (Danish Crown, Marfrig, Minerva and Vion Food Group) reported on their absolute emissions for the previous year and referenced – without contradictory evidence – that their calculations were line with the GHG Protocol. While Cargill referenced using the GHG Protocol for their GHG emissions, the company also stated that it excluded emissions from land-use change from the Scope 3 category "Purchased Goods",[85] indicating that it did not fully and accurately report its Scope 3 emissions. JBS did not disclose its Scope 3 emissions for 2024,[86] and, like Cargill, its reported 2023 Scope 3 emissions excluded land-use changes in the "Purchased Goods and Services" category.[87] Reporting on land-use changes is essential as it can constitute a major part of a meat company's Scope 3 GHG emissions. This is highlighted by comparing JBS' own reported total GHG emissions for 2023 documented as 156.5 million tons CO2e.[88] However, calculations for JBS' emissions for the same year estimated by Profundo and others put the company's emissions at 241 million tons CO2e.[89] The difference is almost 85 million tons CO2e, or a 54% additional share of JBS' reported GHG emissions for 2023. By omitting land-use change emissions as part of their Scope 3 calculations, Big Meat companies like JBS and Cargill therefore hugely understate their total emissions.

Mighty Earth's Soy & Cattle Deforestation Monitor shows that Cargill and JBS are the worst offenders of Brazilian deforestation via the company's cattle and soy supply chains, scoring only 11% and 10% respectively across the four categories of responsiveness, transparency, action and deforestation and conversion-free policy.[90] This underscores the significance of the understating of accurate Scope 3 emissions by excluding land-use changes from their overall calculations.

Tyson Foods has not reported its Scope 3 emissions since 2019,[91] while NH Food[92] and WH Group[93] did not report their emissions for all global operations. COFCO did not disclose its Scopes 1, 2 and 3 emissions at group level.

JBS 2023 CHG EMISSIONS: REPORTED VS INDEPENDENT ESTIMATE



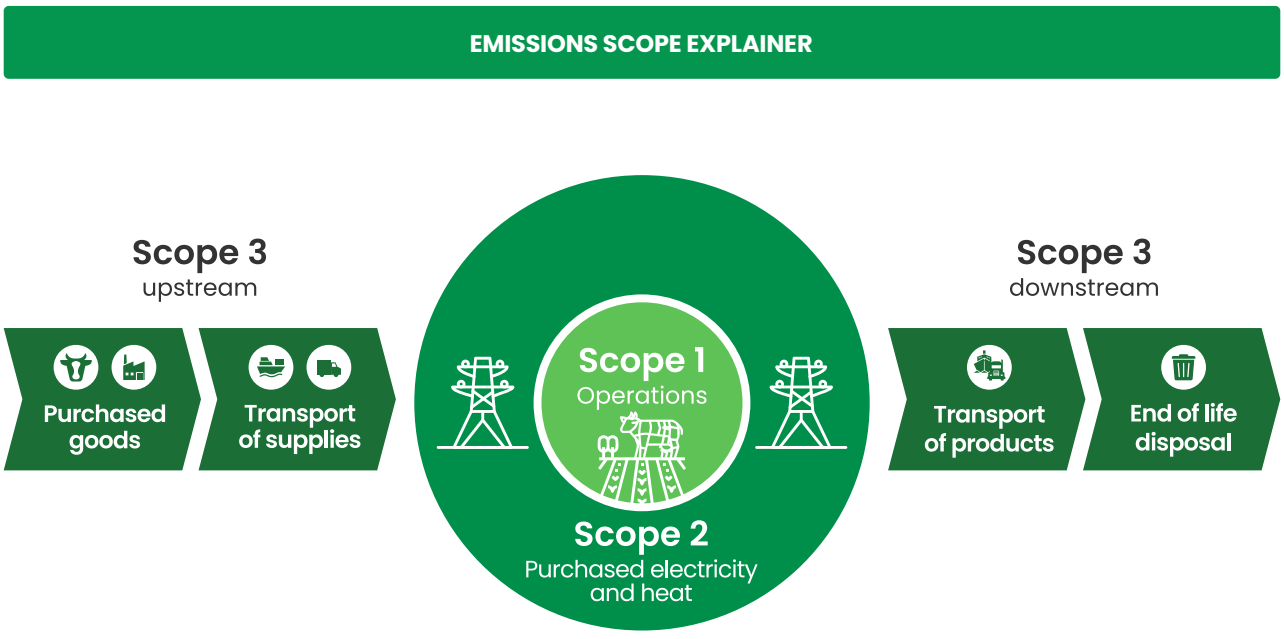
Source: JBS Sustainability Report and Independent Estimate from Foodrise (2027)

SCOPES 1, 2 AND 3 EXPLAINED

Scope 1: Direct emissions from company-owned and controlled resources, including offices, and company-owned transportation and equipment. Some companies may include the emissions generated by farm emissions from livestock at company-owned farms.

Scope 2: Indirect off-site emissions from purchased electricity, heating and cooling consumed by the company, which – for meat companies – would include the emissions associated with the energy used to keep refrigerated meat products cold.

Scope 3: Emissions from upstream and downstream value chains, including those associated with meat production, such as emissions from livestock, manure, fuel for agricultural equipment, production of animal feed, inputs required for its production (e.g., nitrogen fertilizer), land-use changes caused by the expansion of livestock grazing and feed production, and other sources. Meat companies would also account for emissions related to the transportation of goods, waste disposal, and the use of products in this scope.



Indicator 2.2: Methane emissions reporting across Scopes 1, 2 and 3

It is estimated that approximately 50% of GHG emissions from Big Meat and Dairy companies are methane.[94] Publicly disclosing separate methane emissions across all Scopes is a crucial step so that meat companies can be held accountable for their role in global methane emissions, and any climate progress can be tracked.

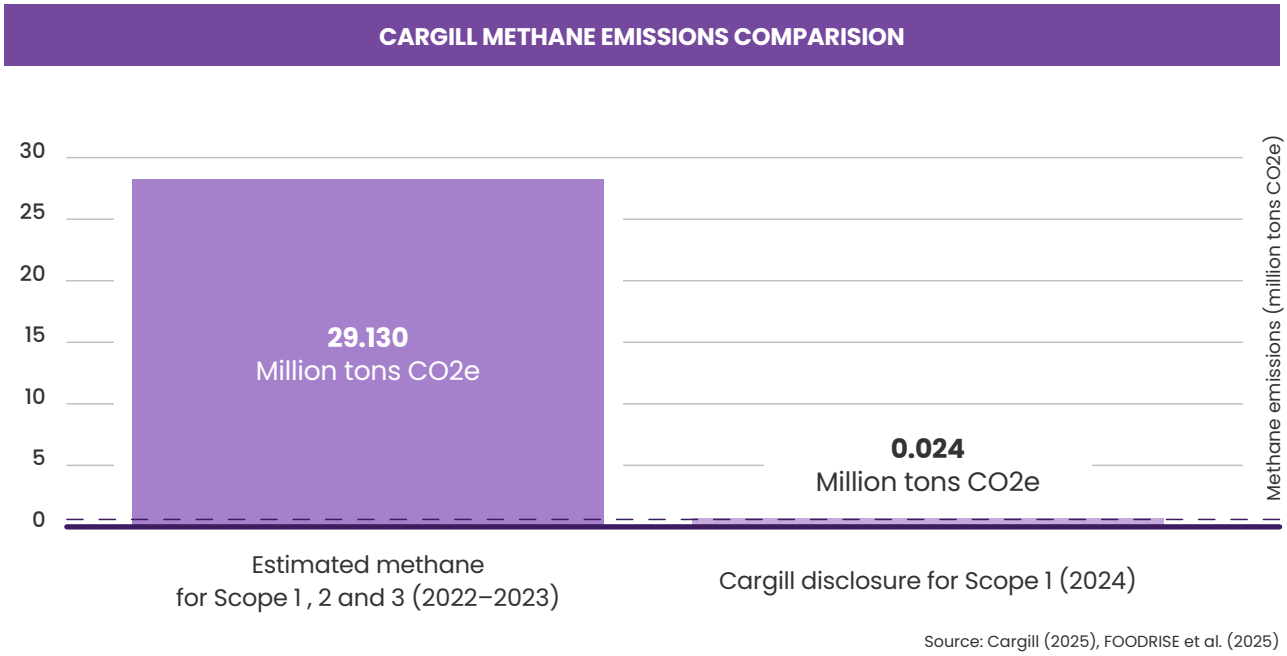
Despite the key role Big Meat companies play in global methane emissions, there is a blatant lack of reporting on this potent greenhouse gas across the sector. Marfrig is the only company assessed that published this information for the year 2024. The company did so in response to Mighty Earth's outreach regarding the present report. Marfrig reported 596.727,93 ton of methane (CH4) for Scope 1, and 600.267,57 ton CH4 for Scope 3.[95] Marfrig's Scope 3 methane emissions – those emissions directly from enteric fermentation – represent 99.4% of its total methane emissions.

MARFRIG'S 2024 GHG EMISSIONS INVENTORY

Global CHG Inventory	CO2 (ton)	CH4 (ton)	N2O (ton)	HFC (ton)	CO2 Biogenic (ton)	CO2e Total (ton)
Scope 1	***184.240,30***	***3.539,64***	***26,66***	***5,28***	***173.195,84***	***300.754,81***
Agricultural Activities	-	492,64	-	-	-	12.316,05
Stationary Combustion	169.399,01	450,21	6,41	-	173.148,16	182.563,54
Mobile Combustion	135,91	0,04	0,01	-	47,68	140,24
Fugitive Emissions	14.705,38	.-	.-	5,28	-	34.782,86
Solid Wate	-	1,11	20,25	-	-	6.061,02
Effluent Treatment	-	2.595,64	-	-	-	64.891,09
Scope 2	***180.342,77***	***-***	***-***	***-***	***-***	***180.342,77***
Market-Based	180.342,77	-	-	-	-	180.342,77
Scope 3	***84.536,90***	***596.727,93***	***25.131,77***	***-***	***6.835,98***	***22.492.002,67***
Purchased Goods and Services	4.420,23	594.901,61	25.104,23	-	-	22.358.021,59
Fuel and energy related activities (not included in Scope 1 or Scorpe 2)	32.831,82	-	-	-	-	32.831,82
Upstream transportation and distribution	43.499,35	0,46	2,02	-	6.497,32	44.111,64
Waste generated in operations	137,02	1.825,69	25,36	-	27,87	53.336,31
Business travel	1.557,39	0,01	0,05	-	-	1.572,46
Employee commuting	2.091,08	0,15	0,11	-	310,80	2.128,84
TOTAL	***449.119,97***	***600.267,57***	***25.158,43***	***5,28***	***180.031,83***	***22.973.100,24***

Source: Mafrig (2025)

COFCO, Danish Crown, JBS, Tyson Foods, Vion Food Group and WH Group fail to report any methane emissions separately at a global group level – neither as CH4 nor as CO2e. Cargill, Minerva and NH Foods report CH4 emissions only for their Scope 1, with Cargill reporting 24,100 tons CO2e of gross global Scope 1 CH4 emissions for 2024,[96] Minerva reporting 265,297 tons CO2e for total gross global Scope 1 methane emissions,[97] and NH Foods reporting 144,000 tons CO2e group wide for Scope 1.[98] NH Foods also reported its absolute methane emissions in Japan for 2022-2023, though it is unclear whether they cover Scopes, 1, 2 and 3.[99] However, because the overwhelming majority of methane emissions, upwards of 90%, from meat companies sit in Scope 3, reporting only on Scope 1 methane is deeply inadequate. It provides a misleadingly small picture of a company's real methane footprint and allows firms to avoid transparency about the true scale of emissions generated across their supply chains. For instance, a recently published report estimated Cargill's 2022-2023 methane emissions to be 29.13 million tons of CO2e across all Scopes,[100] whereas Cargill's own disclosure for 2024 reports just 24,100 metric tons CO2e of Scope 1 methane – with no reporting across other Scopes. The discrepancy underscores how limiting reporting to operational emissions obscures the far larger methane impact embedded in livestock production.



Source: Cargill (2025), FOODRISE et al. (2025)

Indicator 2.3: Methane emissions reporting from beef products

None of the ten Big Meat companies assessed separately disclose the absolute methane emissions associated with the meat products they sell globally or for specific regions. This provides a significant lack of disclosure and prevents an assessment of the climate impact of meat and dairy products.

NH Foods reported its methane emissions for meat, dairy and processed food products in Japan for 2022-2023, though it is unclear whether they cover Scopes, 1, 2 and 3.[101] Vion Food Group provides a graphic illustrating the breakdown of emissions shares – including separate methane emissions – per cattle and pig on the farm and including the contribution of the slaughtering process. For instance, the graphic shows that enteric fermentation of cows on the farm make up 45% (min. 33% - max. 72%) of cattle emissions.[102] However, the company does not disclose absolute methane emission figures.

Indicator 2.4: Annual slaughter numbers reporting

A recent study estimated that 45 of the biggest industrial livestock companies slaughtered 17 billion chickens, 242 million pigs and 53 million cattle in 2023.[103] For Big Meat companies, total animal slaughter figures are an indispensable component of an accurate and transparent Scope 3 emission figure. Disclosing actual total slaughter numbers – covering a company's own slaughter operations as well as purchased meat – helps third parties verify Big Meat companies' emissions and progress towards reductions of those emissions. Not reporting those figures, or only reporting slaughter capacity or processing numbers, enables companies to make evidence-free claims concerning their climate efforts while the true measure of their emissions remains unaccountable.

Not reporting annual slaughter numbers enables companies to make evidence-free claims concerning their climate efforts while remaining unaccountable for the true measure of their emissions.

None of the assessed meat companies publish third-party verified slaughter numbers annually broken down by region. Only Danish Crown meets the Intermediate performance criteria by reporting its total annual slaughter number (15.1 million pigs and 0.8 million cattle in 2024), but it does not break this number down explicitly by region.[104]

Category 3: Emissions reduction commitments and action plans

Big Meat companies assessed have no plans in place to sufficiently reduce their methane emissions.

Big Meat companies need clear targets and action plans to ensure that their decarbonization efforts reduce emissions at the scale and speed necessary to stay aligned with the Paris Agreement. Realistic but ambitious targets are seen as an important first step for meat companies to address these issues. Transparent and accessible targets and plans allow consumers, civil society and regulators to track progress.

However, our analysis shows that while half of the companies have set net-zero targets for 2040 or 2050, none have committed to meaningfully reducing methane emissions – let alone developed a concrete methane reduction plan. Without significant methane reductions, and no credible plans in place, is it currently inconceivable that those companies with net-zero commitments could meet these targets.

Indicator 3.1: Net-zero commitment

Half of the companies assessed do not have a net-zero commitment by 2050 or earlier. This includes the largest privately held company in the U.S. – Cargill – as well as companies from South America (Marfrig), Europe (Danish Crown) and Asia (COFCO and NH Foods). While a Danish Crown webpage claims that the company has a "*vision*" to "*to achieve net-zero meat production by 2050*",[105] the 2023/2024 Annual Report states: "*We currently do not have a net zero target*".[106]

Two companies (JBS and Minerva) meet the high-performance criteria of having set a commitment to net-zero across the entire value chain by 2040, and three companies (Tyson Foods, Vion Food Group and WH Group) meet the Intermediate-performance criteria of having such a commitment set for no later than 2050. However, most of these companies' net-zero commitments are riddled with weak or qualifying language. JBS,[107] Tyson Foods[108] and Vion Food Group[109] frame their net-zero commitments as 'ambitions' and 'aims' rather than commitments, and WH Group[110] "*intends to (…) achieve net-zero operations*". In addition, JBS provides a disclaimer about its ability to meet its net-zero commitment.

> ***"Whether the company is successful in achieving this very ambitious goal will depend on numerous factors outside of the company's control, including but not limited to: legal and regulatory changes by local governments, technological innovations and infrastructures, energy advancements, economic and environmental conditions, climate change impacts, force majeures, social and cultural factors, international agreements and global trends, financial markets, collaborations and partnerships, and the resources and efforts of those in our value chains. Because of these variables, among others, the company may not be able to achieve net zero by 2040."*** JBS, 2024 Sustainability Report, p. 22

JBS' spending further questions the seriousness of the company's net zero targets: JBS spends $20 million per year on research and development towards its net-zero efforts, which was estimated to be approximately 6.2% of its annual advertising and marketing budget ($320 million) or 0.03% of its 2022 annual revenue ($69 billion).[111]

Consequently, even where companies have announced net-zero commitments, the language they use to describe or qualify these pledges, as well as capital allocation patterns, cast doubt on how committed they truly are to achieving them.

This concern has been reinforced by a series of recent lawsuits. In September 2025, Mighty Earth filed a lawsuit against JBS in the Superior Court of the District of Columbia (D.C.) alleging that JBS USA is deceiving the Washington public with "*feel-good promises of 'net zero' emissions*" that the company has neither the intention nor the capability of fulfilling.[112] This followed an earlier lawsuit by the New York Attorney General, Letitia James, who last year sued JBS USA Food Company for misleading the New York public about its environmental impact and alleged fraudulent Net Zero claims. The case concluded in November 2025 with JBS agreeing to a USD 1.1 million settlement to support "climate-smart programs".[113] In September 2024, the Environmental Working Group brought an action against Tyson Food, Inc in the Superior Court of the District of Columbia (D.C.), for trying to deceive consumers about its climate impact.[114] The lawsuit asserts that the company has not provided an adequate plan to significantly reduce its emissions, let alone achieve net-zero emissions by 2050.

Indicator 3.2: Commitment to reduce Scope 3 emissions

Scope 3 emissions account for between 90% and 97% of the total emissions footprint in the industrial livestock industry, with the animals themselves being the primary source of greenhouse gas emissions.[115] As the biggest share of meat producers' Scope 3 emissions is methane, Big Meat companies are expected to set targets to reduce Scope 3 emissions by at least 30-45% by 2030, relative to a 2020 baseline. The 30% reduction target for the Intermediate criteria is based on the Global Methane Pledge, while the 45% reduction target for the Good criteria is based on the United Nations Environment Programme's (UNEEP) Global Methane Assessment, a scientific assessment which shows that human-caused methane emissions should be reduced by up to 45% this decade to avoid the worst impacts of global heating.

However, only Danish Crown meets the Intermediate criteria by having committed to reduce 42% Scope 3 emissions by 2029/2030 based on a 2019/2020 baseline year.[116] No other company assessed has made a commitment to reduce absolute Scope 3 emissions by at least 30-45% by 2030, relative to a 2020 baseline.

Vion Food Group has a reduction target of 42% across Scopes 1, 2 and 3 by 2030 relative to a 2021 baseline.[117] In its direct response to this assessment, the company explained that the 42% reduction applies separately to Scope 3, and claimed that the 2020 baseline year "*makes it even harder to reach the targets as before 2021 production levels were higher and we already started with reduction programs*". Instead of setting absolute Scope 3 emissions targets, Cargill[118] and Marfrig[119] have various "*intensity reduction*" targets in place for their Scope 3 emissions. GHG intensity measures a company's emissions per kilo of meat (or another unit chosen by the company), as opposed to the total greenhouse gas emissions and are therefore insufficient to serve as Scope 3 emission reduction targets.

JBS is estimated to be the world's largest GHG-emitting meat company in the world.[120] Given this position, the firm's omission in setting *any* Scope 3 reduction target – let alone 30-45% by 2030 – represents a critical failure to address the emissions source that dominates its climate footprint.

MOST COMPANIES ASSESSED LACK SBTi-VALIDATED TARGETS IN LINE WITH 1.5°C

The SBTi – a partnership between CDP, the United Nations Global Compact, World Resources Institute (WRI) and the World Wide Fund for Nature (WWF) – provides detailed standards and guidance to support companies defining pathways to GHG reduction and net-zero targets. These are subsequently validated against a set methodology, and can be sector specific.[121] The Forest, Land Use and Agriculture (FLAG) guidance applies to companies for which FLAG-related emissions account for at least 20% of total emissions.[122]

SBTi's FLAG methodology has faced criticism because it requires companies to report on and set targets for only 67% – rather than 100% – of their FLAG emissions and does not obligate companies with targets set before 1 January 2024 to separately disclose methane emissions. It is argued that without targets covering 100% of FLAG emissions, a company's overall net-zero target cannot be sufficiently justified.[123] Despite these concerns, SBTi is a widely recognized standard for climate targets, used by over 6,000 companies to set and verify climate targets.[124]

Not a single meat company assessed has SBTi validated near and long-term net zero targets aligned with limiting the global temperature rise to 1.5°C for absolute Scopes 1, 2 and 3 reductions, in addition to having SBTi-validated near- and long-term FLAG targets aligned with 1.5°C scenarios, including a plan to reduce absolute FLAG emissions. This gap highlights a critical failure by major meat producers to align with even the most widely accepted voluntary climate-target frameworks, further calling into question their self-declared climate ambitions.

The two European companies – Danish Crown and Vion Food Group – meet the Intermediate performance criteria. Danish Crown has a Scope 3 emission target to reduce 42% absolute Scope 3 emission by 2030 from a 2020 baseline year, in addition to having a near-term 1.5°C-aligned Scopes 1 and 2 target. However, its Scope 3 FLAG target is an intensity target only.[125] Vion Food Group has a Scope 3 emissions commitment to reduce absolute scope 3 GHG emissions from purchased goods and services, upstream transport and distribution, waste generated in operations, and end of life treatment of sold products by 42% by 2030 from a 2021 baseline year. The company also has a near-term 1.5°C-aligned Scopes 1 and 2 target.[126]

Despite these partial commitments, it is notable that none of the companies assessed has an SBTi-validated net-zero target. Given that Scope 3 emissions make up the overwhelming share of Big Meat's climate footprint, their failure to demonstrate credible, science-based reductions in these emissions eliminates the possibility of obtaining SBTi validation for long-term targets. This underscores a broader problem: "net-zero" claims in the meat sector remain neither genuine nor achievable without robust, absolute Scope 3 and FLAG reduction targets.

Indicator 3.3: Methane reduction commitment

Methane is estimated to be the source of more than half (51%) of the CO2e emissions from the biggest global meat and dairy companies.[127] Specific methane reduction commitments are therefore an essential step for meat companies to reduce their climate impact and ensure their contribution to staying within a 1.5°C temperature increase above pre-industrial levels.[128]

However, none of the Big Meat companies assessed have made a specific commitment to reduce absolute methane emissions across their value chains by at least 30% or the recommended 45% by 2030, relative to a 2020 baseline (or earlier). In November 2025, Marfrig announced its new target to reduce 33% of methane by 2035, relative to 2019 levels.[129] If Marfrig achieves its goal, it would mean an eventual annual emissions reduction of 196,920 tons of methane, equivalent to taking 1,166,744 gasoline powered cars off the road for a year.[130] While this target is an important step, it falls short of aligning with the reductions required by the Global Methane Pledge or those outlined in UNEP's Global Methane Assessment. Marfrig however, should be commended for disclosing the company's methane emissions and setting a target to reduce methane emissions – a world first for a meat company.

Given the scale of methane within Big Meat companies' total emissions, the glaring lack of specific, meaningful and measurable commitments to reducing methane is fundamentally inconsistent with achieving net-zero emissions by 2040 or 2050.

Indicator 3.4: Methane reduction action plan

Having missed the crucial step of setting methane reduction targets, none of the ten meat companies assessed have a third-party verified action plan. This further underscores the lack of transparency and sincerity of the Big Meat companies assessed in achieving net-zero commitments, regardless of the stated deadline.

Marfrig is the only company with a dedicated methane-reduction target and has developed an action plan to achieve a 33% reduction by 2035, relative to 2019 levels.[131] However, because the target itself falls short of the reductions required, the company did not meet the Intermediate or Good performance criteria. In addition, Marfrig's plan relies exclusively on measures such as feed additives, age at slaughter, and integrated crop-livestock-forestry systems.[132] While these interventions can contribute to methane reductions, the analysis in Category 5 (technological methane reduction fixes) demonstrates why they cannot serve as a standalone solution and currently cannot be adequately measured.

Indicator 3.5: Traceability policy and systems for cattle

Global traceability policies and systems covering all forest-risk commodity supply chains of meat companies are essential measures to detect and eliminate deforestation and land conversion from their value chains. Traceability is key for meat companies to detect deforestation in their supply chains and work towards meeting deforestation- and conversion-free commitments.[133] In addition, global traceability policies and systems allow meat companies to calculate their methane and GHG emissions more accurately.

Only two companies – Marfrig[134] and Vion Food Group – have traceability policies and operational system in place aimed at achieving traceability across all cattle supply chains, covering all direct and indirect suppliers across all sourcing regions. For instance, Vion Food Group's policy states: "*We are committed to being transparent about product origin, which we achieve by providing full traceability. […] Animals are individually marked using, for example, ear tags for cattle or tattooed number for pigs. The underlying databases enable us to trace all slaughtered pigs and cattle to their places of birth.*"[135] Minerva Foods meets the Intermediate criteria by tracing only its direct suppliers.[136]

Other companies – like Cargill,[137] Danish Crown,[138] JBS[139] and WH Group[140] – may have traceability policies and/or systems in place in certain geographies, covering either direct suppliers or direct and indirect suppliers, but they do not cover all of their global cattle supply chains.

NONE OF THE COMPANIES HAVE EXECUTIVE REMUNERATION LINKED TO METHANE OR PLANT-BASED ALTERNATIVE MEAT – AND ONLY THREE LINK EXECUTIVE REMUNERATION TO ESG CLIMATE TARGETS.

Linking senior executive remuneration to corporate sustainability is a growing trend driven by investor pressure,[141] however, our assessment shows that none of the companies assessed link senior executive remuneration directly to methane reduction targets or to increasing sales of plant-based alternatives. This means that companies have no internal incentive structure to deliver some of the actions most critical for reducing agricultural emissions.

This gap is especially concerning given several companies' ambitious expansion plans – most notably JBS, which recently listed on the New York Stock Exchange.[142] By pursuing major growth but excluding the core source of their climate footprint from remuneration-linked executive performance indicators, companies are effectively choosing expansion without climate accountability.

Only the two European companies – Danish Crown and Vion Food Group[143] – and one South American company – Marfrig – linked financial incentives for members of the Executive Management to ESG climate considerations. For example, Danish Crown states: "*There are monetary incentives, as individual bonuses, related to the climate targets and forest area.*"[144] Among other criteria, Marfrig includes its SBTi target as a key performance indicator linked to monetary incentives for its Director of Sustainability.[145]

WH Group[146] linked executive renumeration to ESG and CSR sustainability themes but did not specifically include climate considerations within this.

Category 4: Alternative proteins

Meat companies show minimal commitment to scaling alternative proteins, with no production targets and undisclosed total investments.

Over the past decade, alternative proteins – which include plant-based and cultivated products – have moved from niche to mainstream, driven by investment and changing consumer preferences.[147] Alternative proteins are linked to substantially lower climate impacts than animal proteins, as they do not require raising methane-emitting livestock or growing feed crops. They are forecast to reach 11% of global protein consumption by 2035, potentially saving 0.85 gigatons of CO2e by 2030 – equivalent to a 95% reduction in aviation emissions.[148] As demand for food grows, alternative proteins are recognized by scientific and policy bodies such as the Intergovernmental Panel on Climate Change (IPCC) as transformative solutions that have the potential to significantly reduce emissions alongside transitions in the energy and transportation sectors.[149] Using 2021 data from 20 leading meat producers, Profundo estimated that reducing their beef, pork, and chicken output by 30% and replacing it with alternative proteins would cut GHG emissions by an amount comparable to the annual emissions of the Netherlands.[150] Each euro invested in alternative proteins delivers 14 times more emissions savings than the same investment in clean energy, yet both private and public funding for alternative proteins still lag far behind clean power.[151]

This shows both the opportunity and the responsibility facing major meat companies. By setting clear targets and investing in the development and commercialization of plant-based and other alternative protein products, Big Meat companies can achieve substantial emissions reductions. Indeed, alternative proteins represent one of the few economically scalable near-term levers available to Big Meat companies for cutting emissions, particularly methane, without relying solely on marginal efficiency gains within livestock systems.

Indicator 4.1: Plant-based alternative meat production targets

None of the companies assessed have set a public plant-based alternative meat production target within their overall product portfolios, let alone met the 10% threshold considered a Good performance benchmark. This absence of measurable commitments suggests that Big Meat companies are not yet prioritizing a strategic shift toward alternative proteins.

THE MEAT COMPANIES ASSESSED ARE NOT TRANSPARENT ABOUT THE ROLE OF PLANT-BASED ALTERNATIVE MEAT IN THEIR OVERALL PRODUCT PORTFOLIO

In addition to the absence of the setting of plant-based alternative meat production targets, not a single meat company assessed discloses its total sales of plant-based alternative meat production across its global value chain and as a proportion of its global protein sales. Without proportionate sales data, it is difficult to measure Big Meat companies' progress in transitioning towards more sustainable food systems.

While Minerva is the only company that provides sales numbers of plant-based products, it does so in tons and it is not clear that alternative meat products are fully plant-based. Therefore, while

the Minerva states that "*[i]n 2024, the company sold 62.5 metric tons of soy patties, and 12% of its hamburger production was dedicated to medallions*", Minerva also notes that its alternative protein product portfolio includes "*burgers made with 60% plant-based ingredients*", indicating that they are not fully plant-based.[152]

Indicator 4.2: Plant-based alternative meat investment disclosure

Transparent reporting enables stakeholders to assess whether capital allocation aligns with companies' net-zero ambitions and climate commitments, rather than reinforcing dependence on high-emitting livestock systems.

It is critical that meat companies invest in – and publicly disclose – their annual spending on plant-based alternative protein production since investment signals strategic intent and provides a tangible measure of commitment to shifting toward lower-emission protein portfolios. Transparent reporting enables stakeholders to assess whether capital allocation aligns with companies' net zero ambitions and climate commitments, rather than reinforcing dependence on high-emitting livestock systems.

Not a single company discloses its total annual investment amount in plant-based alternative meat production. Four companies – Cargill, JBS, Marfrig and Minerva – disclosed some quantifiable investment in plant-based alternative meat production over the past five years, ranging from quantified investments in plant-based partnerships[153] to research and development of new products,[154] plant-based joint venture investments,[155] and committed investments into alternative-protein start-ups.[156] Without transparency on total annual investment in lower-emissions proteins, however, Big Meat's climate-friendly narratives will continue to lack credibility.

Indicator 4.3: Own plant-based alternative meat production & products

Eight of the ten meat companies assessed produce their own plant-based alternative meat products, including companies from North America, South America, Europe, and Asia. Half of these companies, namely JBS, NH Foods, Tyson and Vion Food Group, offer a wide range of products across multiple regions in their global markets. For instance, JBS sells products including plant-based hamburgers, bacon, and steak through its brands VIVERA and Incrível!.[157] NH Food sells plant-based alternative meat products including fried chicken, hamburgers and seafood substitutes through NatuMeat.[158]

Cargill, Danish Crown, Marfrig and WH Group met the Intermediate criteria, offering a more limited range of products or offering them in fewer markets. For instance, Marfrig sells a range of plant-based alternative meat products via its brand Revolution, but it exists only in Brazil.[159] Cargill sells its plant-based alternative meat products via the brand CraveHouse in the U.S.[160] as well as selling Vital Wheat Gluten which can be used to make plant-based meats.[161]

Although most of the companies assessed appear to have made some steps in producing and selling plant-based products – suggesting that meat companies recognize shifting consumer demand – their efforts remain limited in scope and ambition. Most offerings cover only a fraction of the companies' overall distribution markets, meaning consumers in many regions still have little or no access to these products. Without widespread availability across companies' global markets, and in the absence of clear targets, transparent investments and reporting, the current offerings of these companies do not indicate genuine commitment to a strategic shift to alternative proteins.

Category 5: Technological methane reduction fixes

In recent years, bold claims have been made about the potential of technological solutions termed 'technofixes' – particularly methane-reducing feed additives such as Bovaer – to curb livestock emissions.[162] Numerous pilots and tests are underway, and other alternative feeds, such as seaweed, have also demonstrated methane-reduction potential.[163] Additional approaches, including selective breeding and methane-reducing vaccines, are being researched and developed, but have yet to realize effective, scalable results.[164]

While these technologies could contribute to lowering methane emissions, their real-world impact remains uncertain. Feed additives are being adopted by some farmers and have shown some reduction effects, but other approaches remain far from practical adoption, with many still in early development.[165] [166] There are also increasing concerns that the methane-reduction potential of technofixes is frequently overstated: for example, Bovaer claims reductions of up to 45%,[167] yet these reductions only apply when cattle is fed on total mixed Bovaer rations[168]. In Denmark, there have been reports of cows collapsing and becoming so weakened that euthanasia is necessary when fed with Bovaer.[169]

Technofixes can form part of the solution to reducing enteric methane emissions, but they are not a silver bullet. Greater transparency is needed regarding their efficacy, including consistent, accurate reporting on the scale and conditions under which reductions are achieved. This should be a central expectation for beef companies pursuing these technologies.

Indicator 5.1: Feed additives

Not a single company offers funded methane reducing-feed additives at scale.

Despite the many meat companies emphasizing their efforts to reduce methane emissions through feed additives, not a single company assessed does this at scale by offering all suppliers funded opt-in feed additive programs to incentivize and support the adoption of methane-reducing feed additives. Only Cargill meets the intermediate criteria by offering more than a single program to farmers – though the company does not provide details on which farmers are being offered the feed additives and how this is financed. This includes SilvAir™, which Cargill claims "*reduces methane emissions by up to 10%*".[170]

The other meat companies assessed meet neither the Good nor Intermediate criteria, though JBS "*supports*" the research of methane reducing feed additives[171] and Danish Crown has outlined plans to develop and research methane-reducing feed additives[172]. Minerva mentions a single pilot program using Cargill's SilvAir™ through its Renove program[173], however, Minerva's overall Renove program has only 91 properties participating, and it is not clear how many of these have access to or are participating in the feed additive pilot program[174]. Marfrig lists one project using Silvafeed® BX as a methane-reducing feed additive, though it does not outline the size of the program.[175]

The extremely limited scale of existing programs highlights that claims around feed additives remain largely symbolic, with negligible real-world impact on absolute methane emissions.

MEAT COMPANIES ARE USING PILOTS AND LIMITED OR VAGUE PROGRAMS TO BUILD A FALSE GREEN NARRATIVE

Big Meat companies routinely highlight regenerative agriculture and an array of technofixes to reinforce a "green" narrative. Regenerative agriculture is frequently described as a climate- and-nature-positive approach that enhances soil health, biodiversity, and water systems. However, in the absence of a robust, science-based framework, the term is easily co-opted as a flexible marketing label rather than a defined GHG reduction measure.[176] Most of the companies assessed either invest in or offer some programs to promote regenerative agriculture among supplier farmers.[177] However, none of the companies disclose how much of their overall supply chain is covered by such initiatives, and whether they are accessible to direct and indirect suppliers.

Similarly, technofixes like feed additives, manure management, and methane capture often feature prominently in corporate sustainability materials, yet disclosure rarely extends beyond limited pilot programs or vague initiatives, often with little evidence of scale or quantifiable methane emissions impacts. For instance, Cargill's "*What is Methane*" webpage features an array of animal feed solution programs but doesn't disclose the scale of the application of them.[178] In 2021, JBS stated that it would "invest US$100 million by 2030 in research and development projects to assist producer efforts to strengthen and scale regenerative farming practices, including carbon sequestration and on-farm emission mitigation technologies."[179] While this represents only a small fraction of the company's US$77.2 billion revenues, JBS provides no detail on how the money is being invested or what it means in practical terms for farmers.[180]

By promoting small-scale initiatives as climate solutions, companies create the impression of meaningful progress while avoiding the systemic changes – particularly reducing livestock dependence – required to cut methane emissions at scale. This allows Big Meat to use pilots as greenwashing that distracts from continued expansion and weak climate action.

FEW MEAT PRODUCERS HAVE FORMAL SLAUGHTER POLICIES

Waste-management interventions are frequently presented as efficiency-oriented technical solutions that can reduce emissions from slaughter. Some estimates show that waste from beef processing, which includes blood, inedible offal, and bones, can account for approximately 45-50% of the weight of the live animal.[181] This makes it vital for meat companies to have policies to reduce waste from slaughter. The European companies Danish Crown and Vion Food Group[182] meet the Good benchmark criteria by having a global slaughter waste policy as part of their ESG Policy. However, Danish Crown's policy is vague and does not set out how much of the animal should be used.[183] WH Group meets the Intermediate criteria by outlining that its plants convert animal by-products into "*high-value resources*" and having a food loss and waste reduction target of 50% by 2030 compared to 2021 in place for its subsidiary Smithfield.[184] However, seven companies do not have such policy in place, though many described initiatives,[185] or general food waste commitments.[186]

The near-total absence of slaughter-waste policies exposes the inefficiency of an industry that consumes vast areas of land and resources to produce animals, only to discard large portions of their remains after slaughter, further underscoring the inefficiency of the industrialized beef sector.

INVESTMENT IN AGROECOLOGICAL SOLUTIONS IS LACKING

The meat industry is a multi-trillion-dollar sector[187] with major power players. For example, in 2025 Cargill posted a 44% surge in profits, paying out a record $1.5 billion in dividends.[188] Cargill is the US's largest privately owned company, and its shareholders are a small and select group, mostly made up of billionaire Macmillan-Cargill family members.[189] Despite these profits, investment into initiatives to help small-holder farmers implement agroecological practices remains hazardously low. Agroecological practices like rotational grazing, the reduction of synthetic inputs, and alternative feed crops, all support increased soil health, deliver increased carbon sequestration, and increase resilience to the impacts of climate change.[190] With financial support, small-holder ranchers and cattle producers that supply Cargill and other major beef companies could implement agroecological practices and thereby better steward their land and reduce greenhouse gas emissions. This would in turn ensure future productivity of the land, emission reductions, and greater climate resilience, which is of critical importance to the farmers bearing the brunt of agricultural climate change impacts, such as droughts and natural disasters. Considering the clear benefit to smallholder cattle producers that agroecological practices would confer, it is unclear why significant investment into these practices is absent.

Whilst Cargill,[191] COFCO,[192] Danish Crown,[193] JBS[194] and Minerva[195] make mention of small-scale or pilot agroecological initiatives, none detail scalable programmes to support their environmental sustainability claims or offer financial benefits to farmers implementing these practices. Marfrig, Tyson Foods, Vion Food Group, NH Foods, WH Group websites fail to detail any such strategies.

Corporate concentration exemplified by the U.S.-based 'Big Four' – JBS, Cargill, Tyson and National Beef (owned by Marfrig) – who dominate 85% of the U.S. beef market - has caught the attention of President Trump, who in November 2025 ordered a Department of Justice investigation into allegations of price fixing and collusion.[196] This market dominance allows controlled pricing of products through reduced competition, and allows for unfavourable contracts for suppliers. This 'squeeze' on small-scale farmers means investment in climate-friendly practices cannot be adopted – despite many farmers being on the front line of the impacts of climate change.[197]

Conclusion

This report shows an industry dangerously out of step with climate reality. Across every category assessed – acknowledgment, emissions reporting, reduction commitments and action plans, alternative protein, and technofixes – Big Meat companies are failing to take responsibility for their methane emissions, and wider climate footprint. Despite producing more methane than some of the world's largest oil and gas companies[198], nine of ten of the world's largest meat companies continue to avoid meaningful disclosure, and all resist setting sufficient methane-reduction targets. They further promote marginal technical fixes while expanding livestock production.

Nine out of ten companies fail to disclose global methane emissions and none report methane emissions from meat production. By failing to report methane emissions, these companies effectively mask their climate impact.

Methane is responsible for roughly a third of global warming since the industrial revolution[199], and emissions from livestock are the single largest source of agricultural GHG emissions[200]. While most companies assessed publicly acknowledge the role of livestock and agricultural methane emissions in climate change, they are failing to act. Cutting methane is the fastest and most impactful way to slow warming in the near-term[201], yet none of the companies assessed have a meaningful plan to reduce methane emissions, and none have committed to a 30% reduction by 2030, let alone the 45% needed. Half of the companies have made net-zero commitments, but these are often undercut by vague language or disclaimers designed to pre-empt accountability. Most of the meat companies assessed do not report GHG emissions across Scopes 1, 2 and 3 globally, and only a single company separately reports its global methane emissions. None globally disclose methane emissions from meat production. By failing to report methane emissions separately, these companies effectively mask their climate impact. Although most companies have launched plant-based product lines, these are not accompanied by production targets or transparent investment strategies.

The climate strategies of the meat companies assessed – spanning North America, South America, Europe and Asia – therefore remain fundamentally incompatible with the Paris Agreement. A reduction in livestock numbers, especially ruminants, is urgently needed, but instead Big Meat is cashing in on unsustainable food systems. With livestock production projected to grow and companies actively pursuing expansion, methane emissions will rise. To keep 1.5°C within reach, this must urgently change. The big 10 meat companies assessed have the market power, geographical footprint and financial capacity to reduce their enormous methane footprint – but none are using that power responsibly today. Achieving climate goals will depend on swift methane-reduction measures and substantial investment in alternative proteins.

The path forward is clear: acknowledge the problem, measure it, plan for reductions, shift capital and sales toward lower-emission food systems, and support sustainable farming practices at scale. Until Big Meat aligns its business with a 1.5°C pathway, the sector will remain one of the greatest threats to a safe and livable climate.

Recommendations for Big Meat

To increase transparency in climate reporting, meat companies must:

- Acknowledge the outsized climate impact of methane emissions from meat production.
- Publicly report methane and other GHG emissions across Scopes 1, 2 and 3 annually, in line with the GHG Protocol 2.0 methodology, with independent verification.
- Publish methane emissions specifically attributable to meat production.
- Disclose global slaughter numbers annually.

Meat companies must also make climate action a top priority by implementing bold, transparent, and accessible climate plans. This includes:

- Setting independently verified plans to reach net-zero emissions by no later than 2040, aligned with the 1.5°C goal of the Paris Agreement.
- Adhering to science by committing to reducing methane emissions by at least 30% below 2020 levels by 2030.
- Incorporate achievement of climate targets into executive renumeration package as part of annual bonuses or performance criteria.

Meat companies must increase responsible oversight of global supply chains by:

- Adopting a traceability policy and operational system to achieve traceability across all cattle supply chains that covers all direct and indirect suppliers across all sourcing regions.
- Establishing a global policy to reduce waste from animal slaughter.

In addition, meat companies must raise their ambition and financial support for scaling plant-based products and more sustainable farming practices. They can do this by:

- Setting targets to invest in alternative proteins and to increase the proportion of plant-based products, thereby reducing the production of meat.
- Increasing financial instruments for farmers to implement agroecological practices and methane reductions.

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