

THE METHANE SCAM

How agribusiness lobby groups hope to swindle global climate efforts with novel methane metrics

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CONTENT

BACKGROUND	3
RESULTS OF THE ANALYSIS	9
CONCLUSION	13
APPENDIX: METHODOLOGY	14

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BACKGROUND

The world is racing towards a global heating scenario far beyond 1.5°C,[1] caused by a global failure to rapidly and significantly reduce emissions of greenhouse gasses (GHGs). Carbon dioxide emissions (CO_2) are responsible for the largest share of current levels of global warming - as much as 0.8°C to date, while methane (CH_4) - the second largest contributor - is responsible for approximately 0.5°C.[2]

However, as the climate crisis is accelerating, it is becoming increasingly clear that mitigating methane emissions could give us a fighting chance of bringing global temperatures back below 1.5°C in our lifetimes: methane's Global Warming Potential (GWP)[3] is 80 times more potent than CO_2 over the span of 20 years.[4] It is superheating. Looking at this near timeframe is crucial: Methane has an enormous warming potential, but a short lifespan, in that it is removed from the atmosphere in roughly 12 years.[5] That is very di erent from carbon dioxide, which stays for centuries or even millennia in the atmosphere.[6] Its combination of powerful near-term warming and limited residence time in the atmosphere means that cutting methane emissions gives us a chance to limit temperature increases now in order to slow down warming by 2050 and limit climate chaos in our lifetime.

REDUCING METHANE EMISSIONS IS OUR CLIMATE EMERGENCY BRAKE.

[1] UNEP(2025). ***Emissions Gap Report: Off target***, United Nations Environment Programme, November 2025
[2] IPCC (2023). ***Summary for Policymakers. In: Climate Change 2023: Synthesis Report***. Contribution of Working Groups I, II and III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, H. Lee and J. Romero (eds.)]. IPCC, Geneva, Switzerland, pp. 1-34, doi: 10.59327/IPCC/AR6-9789291691647.001
[3] The GWP is a measure of how much energy the emission of 1 ton of a gas will absorb over a given period of time, relative to the emission of 1 ton of carbon dioxide (CO2). Source: US Environmental Protection Agency, ***Understanding Global Warming Potentials***. Accessed 1 October 2026
[4] IPCC (2021). ***Climate Change 2021: The Physical Science Basis***. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [Masson-Delmotte et al (18 others) (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 2391 pp., see Table 7.15
[5] Collins, W. J., Webber, C. P., Cox, P. M., Huntingford, C., Lowe, J., Sitch, S., Chadburn, S. E., Comyn-Platt, E., Harper, A. B., Hayman, G. and Powell, T. (2018). ***Increased importance of methane reduction for a 1.5 degree target***. Environmental Research Letters, 13(5): 054003., doi: 10.1088/1748-9326/aab89c
[6] IPCC (2021). ***Climate Change 2021: The Physical Science Basis***. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [Masson-Delmotte et al (18 others) (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 2391 pp.

There are three sectors responsible for the bulk of anthropogenic methane emissions: agriculture, oil & gas, and waste.[7] Within the former, livestock (and in particular cattle) is the single biggest source of methane emissions related to human activity: livestock alone is responsible for 31%[8] of global methane emissions, and 12[9]-19.2%[10] of all GHG emissions (in CO_2e). Out of the estimated 0.5°C of warming due to methane emissions, about 60% (0.3°C) were due to biogenic methane (agriculture & waste) and about 40% (0.2°C) were due to fossil methane.[11]

Multilateral institutions tasked with coming up with solutions against global climate change are becoming increasingly aware of the importance of reducing methane emissions. According to the fi st ever global assessment of methane by the United Nations Environment Programme and the Climate and Clean Air Coalition in 2021, a 45% reduction of methane emissions by 2030 (from all sectors) could avoid nearly 0.3°C of warming by 2040.[12] In the very same year, more than 100 countries came together to pledge to reduce methane emissions by 30% by 2030, as part of the Global Methane Pledge (GMP).

When the United Nations Framework Convention on Climate Change (UNFCCC) and other multilateral fora are discussing climate goals, they commonly use the GWP to allow comparisons of the global warming impacts of different gases. The harm from methane and other climate pollutants is commonly compared to carbon dioxide - the largest contributor to climate change- and GWP allows the conversion of an amount of methane emissions to a carbon dioxide equivalent (CO_2e) by multiplying the mass of methane emitted by its GWP over a defined time period (usually 20 years, GWP20, or 100 years, GWP100). GWPs provide a common unit of measurement, so that emission estimates of di erent gases can be added up.

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[7] Jackson, R. B., Saunois, M., Bousquet, P., Canadell, J. G., Poulter, B., Stavert, A. R., Bergamaschi, P., Niwa, Y., Segers, A. and Tsuruta, A. (2020), ***Increasing anthropogenic methane emissions arise equally from agricultural and fossil fuel sources***. Environmental Research Letters, 15(7): 071002., doi: 10.1088/1748-9326/ab9ed2

[8] UNEP(2022). ***An Eye on Methane: International Methane Emissions Observatory***, United Nations Environment Programme, 2022. Citing Saunois et al (2020).

[9] FAO (2023). ***Pathways towards lower emissions – A global assessment of the greenhouse gas emissions and mitigation options from livestock agrifood systems***. United Nations Food and Agriculture Organisation, Dec 2023, p7

[10] Blaustein-Rejto & Gambino (2023), citing emissions data from Xu et al. (2021) estimate that 19.6% of total global greenhouse gas emissions stem from animal based foods based on "Figures calculated as the sum of all emissions for animal-based foods and emissions from land-use change for grazing land, grazing land carbon dioxide and nitrous oxide, enteric fermentation, and manure management for 'other utilizations' such as wool, leather, and other products. Excluding 'other utilizations' reduces estimates to 19.2% and 15.8% when including and excluding carbon dioxide from grazing land, respectively." We have excluded emissions from 'other utilizations' to present the estimates for food-related livestock emissions to be 19.2%. Blaustein-Rejto & Gambino (2023). Livestock Don't Contribute 14.5% of Global Greenhouse Gas Emissions, The Breakthrough Institute, Mar 2020; Xu et al. (2021) Global greenhouse gas emissions from animal-based foods are twice those of plant-based foods, Nature Food, 2, pages 724–732 (2021)

[11] Reisinger A., (2024), ***The contribution of historical methane emissions to present-day warming***, Prepared for the Parliamentary Commissioner for the Environment, June 2024

[12] UNEP & CCAC (2021). ***Global Methane Assessment: Benefits and Costs of Mitigating Methane Emissions***. United Nations Environment Programme & Climate and Clean Air Coalition, May 2021

This allows policymakers to compare emissions reduction opportunities across sectors and gases and track progress towards the achievement of climate goals.[13] GWP100 is the most common approach: it attempts to equate the impact of different gases over 100 years and is used to calculate emissions under the Paris Agreement.[14] Methane is estimated to have a GWP of approximately 27 over 100 years, meaning that over the course of 100 years, emitting 1 kg of methane today has the equivalent warming e ect as emitting 27 kg of CO_2. Over 20 years (GWP20), the equivalent is 80 kg of CO_2.[15]

In response to increased global acceptance of the need to reduce methane emissions,[16] there has been a backlash from the industries affected: in recent years, agribusiness lobby groups have been running a coordinated global campaign in high methane emitting countries to call for a redefinition f GHG accounting and climate targets. Livestock lobbyists and associations are pushing alternative approaches, such as Global Warming Potential* (GWP*) which, while originally rooted in legitimate scientific m thodologies, is now (mis)used to justify weakening ambition on biogenic methane reduction.[17]

Agribusiness lobbyists argue that biogenic methane (i.e. methane of biological origin, like from animals - here mainly cows) should be accounted for differently from other GHGs because it is short-lived in the atmosphere and originates from CO_2 previously taken out of the atmosphere by plants.[18] Indeed, methane breaks down in around 12 years on average and does not have the same cumulative e ect as carbon dioxide. In theory, it means that if methane emissions stay the same, the amount of methane in the atmosphere would stay constant and that would prevent additional warming from methane.[19]

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[13] US EPA (2025), ***Understanding Global Warming Potentials***. Accessed 1 October 2026
[14] UNFCCC, ***Common Metrics***. Accessed on 1 October 2026
[15] IPCC (2021). ***Climate Change 2021: The Physical Science Basis***. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [Masson-Delmotte et al(18 others) (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 2391 pp., see Table 7.15
[16] McKenna, P., Lavelle, M., (2021). ***Over 100 nations at COP26 pledge to cut global methane emissions by 30% in less than a decade***. Inside Climate News, 2 November 2021. Accessed 16 October 2026
[17] Changing Markets Foundation (2023), ***Seeing Stars: The New Metric That Could Allow The Meat And Dairy Industry To Avoid Climate Action***, Changing Markets Foundation, Nov 2023
[18] Joint Statement by Agricultural Organisations (2025), ***Agricultural Organisations Across the World Call For 'Split Gas' Reporting of Greenhouse Gas Emissions***, October 2025
[19] Johnston, K. 2025. ***The great methane debate explained***. RNZ, 4 September 2025. Accessed 1 October 2026

GWP, which tracks changes in emissions over decades rather than the absolute level of emissions in a given year, is therefore presented as a more fitting metric to measure the warming impact of changes in methane emissions over time.*[20]

The implication when using it for setting climate targets is that instead of driving methane towards maximum emissions reduction, like with carbon dioxide, the metric implies that the goal is to cut just enough methane (about 3% each decade) to maintain its heating e ect steady at an arbitrary fi ed point and cause "no additional warming" beyond that point. Crucially, this is rooted in the assumption that current levels of warming are acceptable and can therefore be maintained.[21]

BIOGENIC METHANE VS FOSSIL METHANE

One of the key foundational assumptions behind the claims that biogenic methane should be accounted for differently is that - unlike methane emissions from fossil sources - biogenic methane is part of a natural carbon cycle,[22] whereby a ruminant emits methane, it then breaks down into CO_2 in the atmosphere after 12 years on average, only to be absorbed again by plants through photosynthesis. It will eventually get eaten again by the cow, that will turn the carbon into methane in its stomachs - back to the start of the cycle. This cycle is foundational to the claim that biogenic methane emissions are constantly being recycled, and therefore could be left untouched, at current levels. No more, but no less either.

This idea completely ignores that before methane turns into carbon after 12 years, it has a super warming effect on the climate. The emissions' origin is irrelevant to the total warming impacts.[23] Both biogenic and fossil methane have roughly the same effects:[24] All methane - whichever the source - needs to be reduced to slow the rate of warming down. The concentration of methane in the atmosphere has more than doubled since pre-industrial times.[25] Global methane emissions from the livestock sector increased from 31.8 Tg CH_4 yr-1 in 1890 to 131.7 Tg CH_4 yr-1 in 2019, a fourfold increase in the past 130 years.[26] The growth mostly occurred after 1950 and is mainly attributed to the growth of the cattle sector (which grew by 62% between 1961 and 2020).[27]

[20] Changing Markets Foundation (2023), ***Seeing Stars: The New Metric That Could Allow The Meat And Dairy Industry To Avoid Climate Action***, Changing Markets Foundation, Nov 2023
[21] Johnston, K. (2025), ***The great methane debate explained***. RNZ, 4 September 2025. Accessed 1 October 2026
[22] Brzeziński, B. (2026), ***The EU's paradigm shift on cows***. POLITICO, 7 July 2026. Accessed 1 October 2026
[23] Changing Markets Foundation (2023), ***Seeing Stars: The New Metric That Could Allow The Meat And Dairy Industry To Avoid Climate Action***, Changing Markets Foundation, Nov 2023
[24] According to IPCC Ar6, non-fossil fuel sources of methane are 27 times as potent as CO_2, averaged out over a 100-year timeframe; while fossil methane is 29.8 times as potent as CO_2 over 100 years see: Greenhouse Gas Protocol, ***IPCC Global Warming Potential Values***, Updated 7 August 2024. Accessed 5 October 2026.
[25] Bowler,J. (2023), ***NOAA says methane is now over 2.5 times pre-industrial levels***. CSIRO Publishing, 11 April 2023. Accessed 5 October 2026
[26] Zhang et al (2022), ***A 130-year global inventory of methane emissions from livestock: Trends, patterns, and drivers***, Global Change Biology, Volume 28, Issue 17, pp. 5142-5158, 17 pp., doi: 10.1111/gcb.16280
[27] Kozicka. K., et al (2023), ***Explaining Global Trends in Cattle Population Changes between 1961 and 2020 Directly Affecting Methane Emissions***, Sustainability, Volume 15, Issue 13, id.10533, doi: 10.3390/su151310533

Climate scientists around the world have rebutted this application of GWP* as misguiding the public and policy makers, by using an otherwise valid scientific concept in an inappropriate context.[28] Methane does not linger in the atmosphere as long as carbon dioxide does, but while it is there, it has a roughly 80 times higher warming e ect than carbon dioxide over a timespan of 20 years and drives a huge share of warming.[29] We cannot a ord to 'freeze' current warming levels as they are too high already. Methane, exactly because of its short lifespan, o ers a huge opportunity to slow down global heating, which is already on track to blow past the 1.5°C limit after which countries have acknowledged the impacts are unacceptable. Therefore, methane emissions need to be reduced from current levels so as to minimize temperature overshoot and to stretch the world's remaining carbon budget over a longer period of time.[30]

In October 2025, Aotearoa-New Zealand became the first country to formally update its 2050 biogenic methane target in line with the thinking behind the GWP* concept. The Gross National Biogenic Methane Emissions for 2017, when New Zealand wrote its climate change targets into law, were (arbitrarily) decided to be the fi ed point beyond which the country ought to cause "no additional warming".[31] A government-appointed science panel concluded[32] that to keep methane's impact at 2017 levels,emission reductions of only 14-24% by 2050 would be needed,[33] falling well short of the 35-47% range recommended by the country's own independent Climate Change Commission.[34]

New Zealand's decision has not been an isolated move to review biogenic methane accounting and targets. Also the Republic of Ireland is exploring ways to follow suit as part of the process of updating its carbon budget. There, it is coined as achieving "temperature neutrality".[35]

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[28] Scientist statement on misuse of new approaches to methane (2026), ***Global climate mitigation risks being undermined by misuse of new approaches to methane***, May 2026. Accessed 5 October 2026
[29] IPCC (2021). ***Climate Change 2021: The Physical Science Basis***. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [Masson-Delmotte et al (18 others) (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 2391 pp., see Table 7.15
[30] ***Open letter to Prime Minister Luxon regarding the government's review of New Zealand's biogenic methane target*** (2025), June 2025. Accessed on 5 October 2026
[31] Gibson, E. (2024), ***Methane debate still rages after government-initiated review***. RNZ, 5 December 2024. Accessed 1 October 2026
[32] Ibid.
[33] Beehive (2025), ***Government sets methane targets for 2050***. Press release, 12 October 2025. Accessed 5 October 2026
[34] He Pou a Rangi Climate Change Commission (2024). ***Review of the 2050 emission target including whether emissions from international shipping and aviation should be included***. He Pou a Rangi Climate Change Commission, November 2024
[35] Daly, H. (2025), ***Why "no additional warming" is a dangerous climate loophole***. The Irish Times, 4 September 2025. Accessed 1 October 2026

Problematic methane accounting is also reaching the sphere of global climate reporting. Agribusiness lobbyists around the world are calling for a "split gas approach" that would allow the use of the GWP* approach, when reporting Nationally Determined Contributions to the UNFCCC, so as to "better re ect the distinct warming behaviours of long- and short-lived GHGs" and allow "the use of warming-based metrics relevant to respective long- and short-lived gases".[36]

But applying alternative metrics such as GWP* to report progress towards global climate goals and associated emission reduction trajectories originally developed for GWP100, or separately for CO_2 and CH_4, is inappropriate[37] and potentially deceptive. As the results of the analysis presented below show, historically high methane emitting countries are rewarded for even minor reductions in methane when using GWP*. Not only would this allow these countries to ignore their historical contribution to global warming, they could even report "negative emissions" and claim "climate neutrality". This misleading accounting amounts to greenwashing from large livestock producers and has serious implications for the fair achievement of global climate targets.

[36] Joint Statement by Agricultural Organisations (2025), ***Agricultural Organisations Across the World Call For 'Split Gas' Reporting of Greenhouse Gas Emissions***, October 2025

[37] Meinshausen, M., Nicholls, Z. (2022) ***GWP* is a model, not a metric***. Environmental Research Letters, 17(4): e041002., doi: 10.1088/1748-9326/ac5930

RESULTS OF THE ANALYSIS

For this briefing, we commissioned consultancy Cerulogy to look at the 10 largest exporting countries of ruminant meat & dairy products (by volume)[38] who are also signatories to the Global Methane Pledge (GMP).[39] These were: Argentina, Australia, Belgium, Brazil, France, Germany, Ireland, Netherlands, New Zealand and the USA.

We explored the following scenarios:

SCENARIO 1:

WHAT WOULD HAPPEN IF THESE COUNTRIES WERE TO REPORT THEIR OWN LIVESTOCK-RELATED BIOGENIC METHANE EMISSION REDUCTIONS USING GWP*?

Because high methane emitting countries' climate privilege is baked into the formula, large livestock producer countries with established methane emissions might appear to be making more significant progress under GWP*; and inversely, countries with historically low emissions who need space to develop their livestock sectors by just a little would be immediately penalised. This is because, when using GWP*, a very small downward change in actual emissions produces a significa t change in reportable CO_2 equivalent-warming (CO_2ew) reductions, which is the unit used by GWP* to translate an emitted mass of methane into an equivalent mass of CO_2 warming impact.[40]

For example, if the 10 countries analysed reduced their absolute methane emissions in 2030 compared to 2020 by only 0.6%, they could report, using the GWP* metric, having achieved a "massive" 30% reduction in CO_2ew from their livestock sectors.

[38] Based on data from ***FAOStat***
[39] Global Methane Pledge, ***List of participants***. Accessed 17 July 2026
[40] GWP* depends on how emissions have changed over a time-span (rather than absolute reduction towards 0)- with 20 years set as the default value. Thus calculating CO_2ew in 2030 relies on the level of emissions in 2010, and CO_2ew in 2020 relies on the level of emissions in 2000 Trends is what matters the most: a decrease in annual methane emissions over time gets treated as negative emissions when translated into CO_2 equivalent-warming; So even if physical methane emissions have risen, high emitting countries can still achieve a reduction in CO_2ew as long as emissions in 2010 were suffici tly higher than emissions in 2000.

SCENARIO 2:

WHAT WOULD HAPPEN IF THESE COUNTRIES WERE TO REPORT THEIR LIVESTOCK RELATED BIOGENIC METHANE EMISSION REDUCTIONS USING GWP* WHEN REPORTING REAL PROGRESS TOWARDS EXISTING GLOBAL METHANE REDUCTION GOALS?

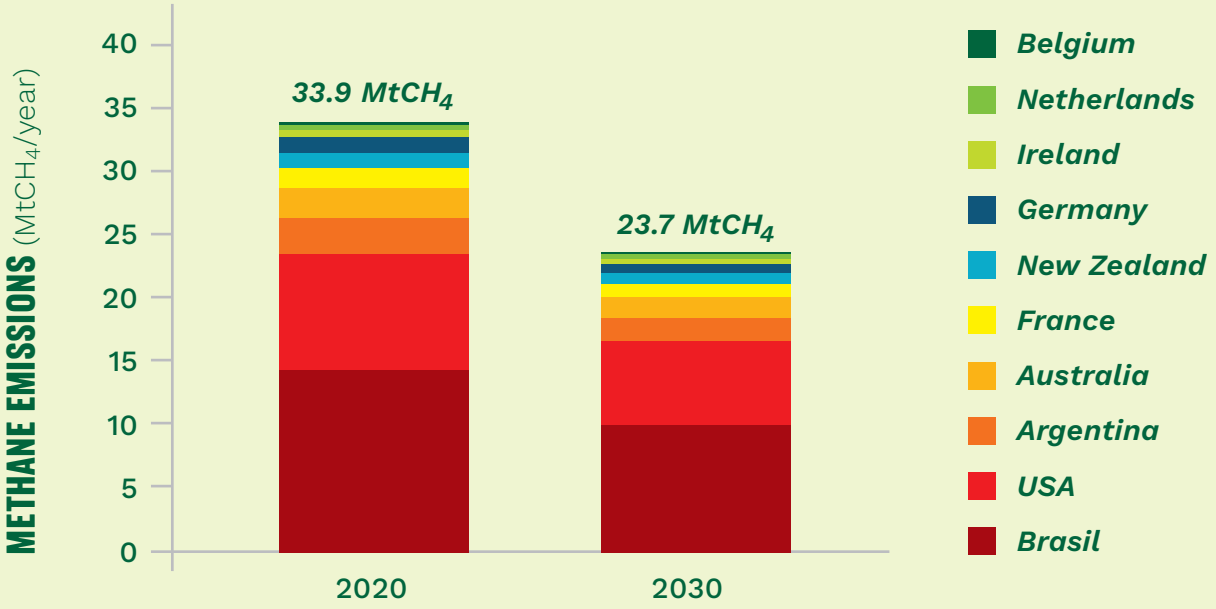
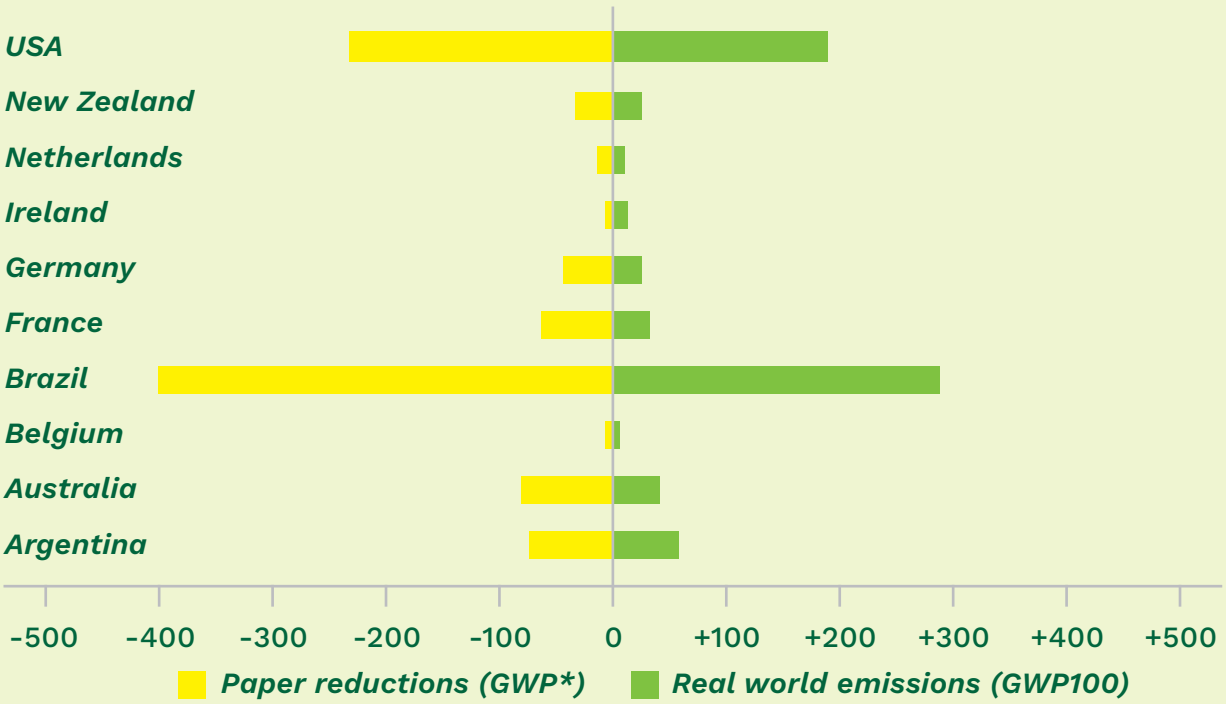


Figure 1: **LIVESTOCK METHANE EMISSIONS IN 2020 AND 2030 FOR THE 10 COUNTRIES ($MtCH_4$/YEAR) ACHIEVING THE GLOBAL METHANE PLEDGE**

The GMP has set a collective target of a 30% reduction in physical methane emissions by 2030 (using 2020 emission levels as a baseline). In 2020, the 10 countries emitted a total of 33.9 $MtCH_4$ in their livestock sector. If the 2030 GMP target is to be met - assuming that each signatory individually reduces absolute methane emissions in its livestock sector by 30% - the 10 countries will have to cut those emissions to 23.7 MtCH4 in 2030. This translates to 640 $MtCO_2e$ of emissions in 2030 (using GWP100).

However, using GWP*, the 10 countries - having cut absolute methane emissions by 30% - would collectively be able to report 898 $MtCO_2ew$ of "negative emissions".

The warming effect of their remaining 70% methane emissions - would equal 640 $MtCO_2e$ (GWP100). Added to the claimed "negative emissions" results in a di erence of 1,538 $MtCO_2e$ between using the GWP100 concept and the lobbied for GWP* approach. That is 1,538 $MtCO_2e$ of fictitious paper savings" that have not actually occurred.



CO_2-EQUIVALENT EMISSIONS

($ktCO_2ew$ for GWP* and $ktCO_2e$ for GWP100)

Figure 2: **30% REDUCTION IN LIVESTOCK METHANE EMISSIONS IN 2030 TRANSLATED INTO CO_2E USING GWP100 (GREEN) AND GWP* (YELLOW)**

The US alone, where GWP* lobbyists are very active,[41] would be able to report that they are actively "cooling" the planet, with 218 $MtCO_2ew$ of "negative emissions" in 2030. In reality the 2030 USA livestock sector would still be warming the planet. Methane emissions equivalent to 178 $MtCO_2e$ would still be occurring, resulting in a GWP* vs GWP100 di erence of 396 $MtCO_2e$ that is essentially unaccounted. This is equivalent to the CO_2 emissions of about 86 million passenger cars in the US.[42]

The five European countries included in this hypothetical scenario (Ireland, France, Germany, Netherlands and Belgium) could report "paper savings" of 201 $MtCO_2e$ - emissions that could theoretically disappear off the global balance sheet even though they represent more than the total greenhouse gas emissions of all Nordic countries combined in 2024.[43]

[41] Boren, Z., (2022), ***Revealed: How the livestock industry funds the "greenhouse gas guru"***. Unearthed, 31 October 2022. Accessed 5 October 2026

[42] US EPA (2023), ***Tailpipe Greenhouse Gas Emissions from a Typical Passenger Vehicle***, United States' Environmental Protection Agency, June 2023. Accessed 21 September 2026

[43] Total greenhouse gas emission estimates for 2024 are 4.28 $MtCO_2e$, 38.26 $MtCO_2e$, 52.57 $MtCO_2e$, 53.76 $MtCO_2e$ and 48.68 $MtCO_2e$ for Iceland, Denmark, Sweden, Norway and Finland respectively. See EDGAR (2025), ***GHG emissions of all world countries***. Publications Office f the European Union, Luxembourg, 2025. Accessed 17 July 2026.

And even worse, with the "paper savings" made in the livestock sector, countries could use that to justify continued fossil fuel emissions of up to 1,538 $MtCO_2e$. They could, for example, relax emission reduction in other sectors - such as by delaying the decarbonisation of power. This would result in accelerated global heating unless other countries double down on their climate e orts to make up for the delusionary savings and subsequent additional emissions.

Australia, a country where livestock lobbyists are actively pushing for GWP*,[44] would be able to report being actively cooling the planet, with 76 $MtCO_2ew$ of negative emissions in 2030 using GWP*. That could be used to justify lower cuts in other sectors such as coal. Comparing the GWP* calculated negative 76 MtCO2ew to the GWP100 calculated value leads to a difference of 113 $MtCO_2e$. 113 $MtCO_2e$ is equivalent to the emissions of 20 coal power stations operating for a year.[45]

This has consequences for the rest of the world and our common understanding of progress towards global climate targets: it would mean that in the year 2030 only, as much as 1,538 $MtCO_2e$ would potentially be wiped o the global greenhouse gas balance sheet. The supposed 1,538 $MtCO_2e$ savings achieved in 2030 represent a significa t proportion of the remaining global carbon budget that must be met for a 50% likelihood to limit warming below 1.5°C: 1,538 $MtCO_2e$ is 1% of the remaining budget we had in 2025 (170 $GtCO_2$).[46] And that's over just one year. If GWP* were to be applied systemically in reporting over the course of 11 years (2020-2030), it would lead to a cumulative emission reduction "gap" of 9.95 $GtCO_2e$[47]- equivalent to the world's current total annual global greenhouse gas emissions.[48] This means that real emissions obscured by this accounting method will increasingly eat up our remaining carbon budget - although there would be no way to account for them.

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[44] Beef Central (2026), ***We're counting cattle emissions wrong (and why it matters to every Australian)***. Beef Central, 10 July 2026. Accessed 6 October 2026.

[45] Median 2018 IPCC value for coal power station emissions are 820 gCO_2e/kWh on a lifecycle basis, and 760 gCO_2e/kWh for combustion only. A 1 GW power station with 80% capacity utilisation would emit 5,750 $ktCO_2e$/year on a lifecycle basis.

[46] Friedlingstein et al (2026), ***Global Carbon Budget 2025***. Earth System Science Data, Volume 18, issue 5, pp. 3211-3288, doi: 10.5194/essd-18-3211-2026

[47] This was calculated using contributions for the years 2020-22 based on actual reported data, and then a linear extrapolation to 2030.

[48] EDGAR (2025), ***GHG emissions of all world countries***. Publications Office f the European Union, Luxembourg, 2025. Accessed 17 July 2026.

CONCLUSION

International climate commitments and targets were built with GWP100 in mind. Introducing alternative methane metrics like GWP* fundamentally transforms the meaning of these commitments and quietly dismantles global climate ambition.[49]

The IPCC uses the metric GWP100, as the metric against which the commitments were made, and as the scientifical y accepted way of accounting for emissions because the baseline is set to zero. A baseline of zero emissions is important in order to accurately re ect historical emission amounts and to inform policymakers about the kinds of targets they need to set to uphold legally binding and science-based climate goals. If only a handful of high-methane emitters adopt the GWP* approach, this risks shifting the burden of climate action massively onto other countries, jeopardizing global climate action for all.

Advocating for an alternative metric - in the midst of a climate emergency - is a distraction.[50] Reducing methane emissions o ers the world a real opportunity to slow the rate of warming which needs to be seized. Governments should:

> ***REJECT*** the inappropriate application of GWP*, including using "temperature neutrality" or "no additional warming" as a basis for national targets or reporting;

> ***ADOPT*** methane targets aligned with the Paris Agreement's 1.5°C target, setting binding agriculture emissions targets through just transition policies to ecological farming (or agroecology).

> ***OPPOSE*** and call out other Governments' unilateral adoption of GWP* based targets and accounting methods.

[49] Dwyer, O. (2025), ***Q&A: What the "controversial" GWP* methane metric means for farming emissions***. CarbonBrief, 3 October 2025. Accessed 5 October 2026
[50] Ferreira, F., McCabe, D., (2024), ***Focus on reducing methane pollution from all sources, not distractions over metrics***. Clean Air Task Force, 20 May 2024. Accessed 5 October 2026

APPENDIX: METHODOLOGY

This section establishes the main methods and approaches used by Cerulogy in the calculations of GWP* and the scenario construction. In this briefing, "li estock methane" refers only to methane from enteric fermentation and manure. Historical datasets of methane emissions are constructed accordingly.

GWP* CALCULATION:

The most recent formulation of GWP* is presented in a 2021 paper from Smith et al.[51] This paper further develops a concept that was fi st introduced in 2018[52] (with a refineme t in 2019).[53]

In this briefing, erulogy has used Equation (8) of the 2021 paper:[54]

$$E^*(t) = g\frac{(1-s)H\Delta E(t)}{\Delta t} + gsE(t)$$

Where: E*(t) = The CO_2-equivalent-warming emissions (CO_2ew) in year t; this is calculated using the GWP* metric. E(t) = The CO_2-equivalent emissions (CO_2e) in year t; this is calculated in the conventional way by multiplying physical methane emissions by the GWP100 factor.

ΔE(t) = The change in the CO_2e emission level in year t as compared with the level in the 'baseline' year t-Δt.

Δt = The time increment over which emission changes are measured; set to 20 years.

s = A unitless parameter which weights the two terms on the right hand side of the equation (i.e. the emission change over Δt years and emissions in year t); set to 0.25.

H = The time horizon of the GWP100 factor – i.e. 100 years.

g = A unitless parameter which optimises fi to the temperature response; set to 1.13.

Note that the three parameters Δt, s, and g all have the standard values given in the cited 2021 paper, where they are determined in one way or another through fi ting to actual climate data. In other words, they are not free parameters, and there is no option to change their values.

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[51] Smith, M.A., Cain, M. & Allen, M.R.(2021), ***Further improvement of warming-equivalent emissions calculation***. npj Clim Atmos Sci 4, 19, doi: 10.1038/s41612-021-00169-8

[52] Allen, M.R., Shine, K.P., Fuglestvedt, J.S. et al. (2018), ***A solution to the misrepresentations of CO2-equivalent emissions of short-lived climate pollutants under ambitious mitigation***. npj Clim Atmos Sci 1, 16, doi: 10.1038/s41612-018-0026-8

[53] Cain, M., Lynch, J., Allen, M.R. et al., (2019) ***Improved calculation of warming-equivalent emissions for short-lived climate pollutants***. npj Clim Atmos Sci 2, 29, doi: 10.1038/s41612-019-0086-4

[54] Smith, M.A., Cain, M. & Allen, M.R.(2021), ***Further improvement of warming-equivalent emissions calculation***. npj Clim Atmos Sci 4, 19, doi: 10.1038/s41612-021-00169-8

One corollary is that in order to calculate GWP* emissions in year t (e.g. in 2026), one needs to know the methane emissions in year t and in year t-Δt (so in 2026 and 2006).

The change in emissions between 2006 and 2026 determines the majority of the CO_2ew result, as the weighting parameter s is rather small.

ASSUMPTIONS BEHIND THE FIRST SCENARIO:

What would happen if these countries were to report their own livestock related biogenic methane emission reductions using GWP*?

In this scenario, we assume that each country's CO_2ew emissions in 2030 represent a 30% reduction compared to what they were in 2020. This could mean two things:

1. If the country's CO_2ew emissions in 2020 are POSITIVE:
> Then the magnitude of emissions in 2030 are 30% LOWER – i.e. still positive but smaller.

2. If the country's CO_2ew emissions in 2020 are NEGATIVE:
> Then the magnitude of emissions in 2030 are 30% HIGHER – i.e. still negative but more negative.

The historical dataset covers up to and including 2022, and so in the period 2023-2029, the research linearly interpolates the decreasing methane emissions so that it hits the required 2030 target.

Rearranging the GWP* formula above, we can calculate the methane emissions (i.e. the value of E(t)) that would yield the required CO_2ew value in each year.

ASSUMPTIONS BEHIND THE SECOND SCENARIO:

What would happen if these countries were to report their livestock related biogenic methane emission reductions using GWP* when reporting progress towards global methane reduction goals?

In this scenario, we assume that the GMP is achieved in the livestock sector: physical methane emissions in 2030 are 30% lower than in 2020. This means that the CO_2e emissions (GWP100, GWP20) are also 30% lower.

As in the previous scenario, the years 2023-2029 are linearly interpolated to hit the 2030 target.

It is then possible to calculate the CO2ew emissions in each year by consulting the methane emissions in that year and 20 years previously, according to the formula above.


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BIG MILK & MEAT
GREENPEACE
LESS METHANE
LESS CLIMATE
CHAOS