Document 11

From: Phil Wiles
Sent: Tuesday, 1 February 2022 11:26 am
To: [redacted]
Cc: Barry Anderson
Subject: RE: DairyNZ HWEN meetings

Hi [redacted],

[redacted]

We are assuming that your query below relates to **international** reporting via the national GHG inventory and that the interest in alternative metrics is primarily related to GWP*. First, we note that international rules require use of GWP100 values to report emissions and for tracking NDCs in inventories. These rules also permit use of other metrics – but this reporting can only be in addition to the GWP100-based emissions reporting (not instead of), and if these other metrics are used, then the national inventory must provide information on the values of the metrics used and the IPCC assessment report that they were sourced from. We also note that it is central government (led by MfE), rather than the Commission, which is responsible for compiling and publishing national inventory reports, in line with IPCC guidance.

The Commission's view is that there is merit in exploring the idea of additional reporting of emissions using GWP* in the national inventory. But there's not currently enough information about how to apply GWP* in practice to form clear conclusions that it is the most appropriate metric over other options or to implement it into the national inventory. The Inventory's role in providing official national statistics, and the potential for confusion over multiple sets of emissions statistics (which we already have in respect of LULUCF emissions), means that decisions to include new items in the Inventory need to be very carefully considered.

For example, applying GWP* to calculate a time series of emissions requires policy choices about what preceding time period it presents the change in emissions against and this would need to be worked through before such a GWP*-based times series could be included in the inventory. A consideration is that the Paris Agreement temperature goal is framed around limiting warming to 1.5 – 2.0 degrees above pre-industrial levels, raising questions about how this should be reflected in any reporting using GWP*. "Pre industrial levels" has not been defined but at face value implies comparing warming to levels in the 19th century, if not earlier. IPCC reports don't provide guidance on this (at least, not yet). And of course, GWP* is not the only new metric - others such as GWP-we have also been proposed. This highlights that science in this area is still developing, and further iterations of GWP*/GWP-we and related concepts are possible. The latest IPCC WGI report also notes: "*This Report does not recommend the use of any specific emission metric as the most appropriate metric depends on the policy goal and context (see Chapter 7, Section 7.6). A detailed assessment of GHG metrics to support climate change mitigation and associated policy contexts is provided in the WGIII contribution to the AR6*." The WGIII report mentioned is due to be released in March, and hopefully this will advance the state of knowledge about possible use of GWP* for reporting and other purposes. The relevant national inventory data is freely available, and the academic community in NZ is well placed to explore how reporting using GWP* might work.

We recognise the issues raised in the WGI report about the drawbacks of GWP100 for the assessing warming impacts of methane emissions. This is important for when emission reduction targets are being developed and set, to understand

how they contribute to the Paris Agreement goal to limit warming to 1.5 – 2.0 degrees. For this reason we made sure that when considering emission budget levels, the Commission avoided using GWP100 in its analysis, and the 2050 target also addresses the different warming impacts of methane through its split gas approach. However, once these emission reduction targets are set, the task of tracking against them does not involve assessing warming impacts. So while there is still work to do to understand the potential uses of GWP* including for reporting purposes, the current practice of using emissions calculated using GWP100 to track emissions reductions (not warming impacts) to the targeted levels is not inaccurate or in conflict with the findings of the IPCC WGI report.

Hope this helps,
Phil.

From: [redacted]
Sent: Wednesday, 26 January 2022 9:24 am
To: Phil Wiles [redacted]
Subject: RE: DairyNZ HWEN meetings

[redacted]

[redacted].

[redacted] I'm interested in the CCC perspectives too. Warming impacts will no doubt be a theme through farmer engagement so it's useful to know what the Government and the independent Commission thinks. Can you get me something in writing that responds to the questions below?

From: [redacted]
Sent: Wednesday, 26 January 2022 9:12 am
To: [redacted]
Cc: [redacted]
Subject: Request: Government position on metrics reporting

[redacted]

[redacted]

I have a request of you regarding the Government's position on warming. DairyNZ and other sector bodies have asked for some time (and to the CC Commission) that the Government **report** using different metrics (there is precedence with a number of countries doing so already). We continue to receive feedback from farmers on why the Government doesn't do this already?

The latest IPCC report is clear on this matter, showing the merits of different metrics and the problem with reporting methane using GWP100 for temperature goals (Paris Agreement, Zero Carbon legislation). The science regarding metrics has moved markedly in the last few years, and nothing precludes New Zealand from reporting this internationally.

No doubt this will be a theme for our farmer engagement. It would be helpful to get a paragraph or two form you on the Government's position, including on the above science and our ability to report this – is there any future prospect of 'reporting' using different metrics? Or what's the rationale for not doing it?

I will make a similar request of the CC Commission.

[redacted]

Regards [redacted]

[redacted]
Responsible Dairy

Te Whanganui-a-tara
Level 10, Prime Property Tower, 86 – 90 Lambton Quay • PO Box 10002 • Wellington 6143, NEW ZEALAND
Mob [redacted]

From: Phil Wiles [redacted]
Sent: Tuesday, 25 January 2022 2:51 pm
To: [redacted]
Subject: DairyNZ HWEN meetings

[redacted]

[redacted]

[redacted]

[redacted]

Phil Wiles | **Principal Analyst**
[redacted]
W climatecommission.govt.nz

Cover Note for Board Paper/Presentation

Board Meeting Date:	19 October 2022	No. pages: 3	
Author/s:	Matthew Smith Felicia Kolonjari	Sector: Science	
Peer Reviewer:	Barry Anderson	Second Tier sign off:	Grant Blackwell
Consulted: *(where applicable, including name and organisation)*	Communications and Engagement, Markets team		
Title of Paper:	Summary of key points from the Businessdesk series by Adrian Macey and David Frame (Sept-Oct 2022)		
Title of any referenced previous Board Paper/s:			
Referenced Papers Link/s if required to be added to Diligent:	-		

Purpose

1. This paper provides a high-level summary of the late-September, early-October **Businessdesk** series by Adrian Macey and David Frame about New Zealand's NDC.

Recommendation:

note the key points presented by Macey and Frame
note the staff observations and considerations on the series, and the proposed next steps.

Key points raised

2. The articles were critical of the government decision to strengthen the NDC, and raised several concerns:

- [redacted]
- That GWP100 misrepresents the warming effect of reaching our emissions targets

3. While there are several minor inaccuracies in Macey and Frame's articles, the broad thrust of their argument is a values-based challenge to the Government's decision-making process.

4. The articles both rely on and criticise our advice. However, fundamentally they are taking issue with Government decisions and their criticisms are generally not aimed at the Commission.

[redacted]

5. [redacted]

6. [redacted]

[redacted]

[redacted]

[redacted]

7. [redacted]

[redacted]

8. [redacted]

[redacted]

9. [redacted]

Frame and Macey's discussion about metrics

10. One area where Macey and Frame directly challenge the Commission is about the use of metrics. They have consistently advocated for a wider role for GWP*.

11. Macey and Frame say that GWP_{100} is inaccurate, that GWP* is better, and that the Commission was wrong in our advice about it. They refer to their submission to the Ināia Tonu Nei consultation.

12. They focus largely on domestic targets being critical of the use of GWP_{100} in emissions budgets, as they say it overstates the contribution of methane. (Note, the use of GWP_{100} in emissions budgets is prescribed in the Climate Change Response Act). They push for measures more closely tied to warming impact to be used in policy and international comparisons.

13. Macey and Frame are also critical of the form of our NDC, arguing that the NDC itself should follow a split-gas approach. GWP_{100} is the metric that has been agreed internationally to be used by developed countries for NDCs. They consider that Aotearoa should depart from this approach, and they are critical of the argument that this would not meet international expectations.

The Commission's advice on metrics

14. The Commission included a section on metrics, including GWP* in the Supporting Evidence to Māia Tonu Nei. It is this advice that Macey and Frame criticised. We considered their submission at the time and amended our supporting evidence where we considered it was appropriate to do so. This resulted in us amending some (but not all) of the passages they objected to.

15. On emission budgets, we did not use a metric to set the balance of biogenic methane and other gas reductions, as these were aligned with achieving the split-gas targets. The metric was only used to aggregate the total emissions (of different gases) into budgets as required by law.

16. We agree that GWP* more accurately and precisely models the warming effect of a stream of methane emissions over time. However, Macey and Frame conflate the IPCC statement on this matter with international support of the use of GWP* for policy matters.

17. We assert that different metrics are useful for different purposes and that all metrics involve value judgements – there is no "correct" metric. In our advice we said:

    Although understanding of GWP is still developing, it appears to be more suitable than GWP100 for analysing global emissions reduction pathways to limit temperature increases.*

    However, GWP is less useful in other accounting, reporting and domestic policy applications because it relies on more complex interactions over time. It cannot be applied consistently to a pulse of emissions in a given year as the warming effect depends on the level of warming over previous decades. As a warming metric it is also more uncertain than a forcing metric such as GWP100 as it incorporates uncertainty in the global temperature response to a given level of forcing.*

Next steps

18. We will consider any new information on metrics as part of the 2050 target review. For example, the recent PCE report illustrates how GWP* could be used to calculate how much planting would be needed to offset warming from methane from livestock.

Document 13

From: Jo Hendy
Sent: Wednesday, 26 October 2022 10:23 am
To: Stephen Walter; Grant Blackwell; Barry Anderson; Matthew Smith; Paul Young
Cc: Felicia Kolonjari
Subject: RE: Written on emissions metrics

Thanks steve – very helpful

From: Stephen Walter [redacted]
Sent: Wednesday, October 26, 2022 9:14 AM
To: Jo Hendy [redacted] Grant Blackwell [redacted]
Barry Anderson [redacted] Matthew Smith
[redacted] Paul Young [redacted]
Cc: Felicia Kolonjari [redacted]
Subject: RE: Written on emissions metrics

Hi Jo,

I've taken a look at this and also asked Grant and Felicia for any further thoughts.

[redacted].

As [redacted] points out, the use of a separate target for biogenic methane obviates the policy relevance of any aggregation metric.

The budgets do need to use GWP100 (as per the Act), but this is an ex-post calculation (we figure out what we need to do in the long-lived gases and then in biogenic methane, and then tally up) and so is not determinative.

The Paris Agreement requires the use of GWP100, including in respect of reporting on progress towards achievement of NDCs.

[redacted] – our advice is consistent with the domestic legislation and the international framework, as well as with the IPCC.

Let me know if you want to chat more about it.

Thanks,

Steve

He Pou a Rangi Climate Change Commission

Stephen Walter | General Manager, Emissions Budgets, Adaptation, and Markets
M [redacted]
E [redacted]
W climatecommission.govt.nz

From: Jo Hendy [redacted]
Sent: Wednesday, 26 October 2022 8:20 AM
To: Grant Blackwell [redacted] Barry Anderson [redacted]; Stephen Walter [redacted] Matthew Smith [redacted] Paul Young [redacted]
Subject: Fwd: Written on emissions metrics

Get Outlook for iOS

From: Rod Carr [redacted]
Sent: Tuesday, October 25, 2022 10:38 PM
To: Jo Hendy; Fran Lovell; Marcus Stickley; Rod Carr
Subject: Fwd: Written on emissions metrics

[redacted] Is he assuming / implying we provided advice to the Minister to inform his response?

Rod

From: [redacted]
Sent: Tuesday, October 25, 2022 4:05 PM
To: james.shaw@parliament.govt.nz <james.shaw@parliament.govt.nz>; damien.oconnor@parliament.govt.nz <damien.oconnor@parliament.govt.nz>; scott.simpson@parliament.govt.nz <scott.simpson@parliament.govt.nz>; david.seymour@parliament.govt.nz <david.seymour@parliament.govt.nz>
Cc: Rod Carr [redacted]
Subject: Written on emissions metrics

Dear Minister Shaw,

I gather the following reports an exchange in the House today:

36891 (2022). Stuart Smith to the Minister of Climate Change (04 Oct 2022): Does the Minister agree with the statement that "GWP100 overstates the effect of constant methane emissions on global temperature by a factor of 3 to 4, while understating the effect of any new methane emission source by a factor of 4 to 5 over the 20 years following the introduction of the new source". and if not why not?

Hon James Shaw (Minister of Climate Change) replied: I am not a climate scientist. I trust the advice of the Intergovernmental Panel on Climate Change (IPCC). The IPCC also report that "cumulative emissions using GWP-100 perform well when emissions are increasing but not when they are stable or decreasing", which can be found in Section 7.6.1.4. of their AR6 WGI report: https://www.ipcc.ch/report/ar6/wg1/downloads/report/IPCC_AR6_WGI_FullReport.pdf.

I am advised that global methane emissions are not stable or decreasing, they are increasing.

This is a disingenuous** answer. I don't know whether it originates with your or with your officials. First, you already know that GWP100 does indeed overestimate the centennial effects of methane emissions by a factor

of 3-4, while underestimating the 20 year effects by a factor of 4-5. Myles Allen and I both explained this to you in 2019, if not before. Furthermore, your quote from the Intergovernmental Panel on Climate Change is misleading, as the following text shows. Here is what the Chapter you quoted in your answer above said just last year on the topic of GWP's accuracy (I have pulled out the most relevant points against GWP100 in red):

Executive Summary of Chapter 7
New emission metric approaches such as GWP* and the combined-GTP (CGTP) are designed to relate emission rates of short-lived gases to cumulative emissions of CO2. These metric approaches are well suited to estimate the GSAT (global mean near-surface air temperature) response from aggregated emissions of a range of gases over time, which can be done by scaling the cumulative CO2 equivalent emissions calculated with these metrics by the transient climate response to cumulative emissions of carbon dioxide. For a given multi-gas emission pathway, the estimated contribution of emissions to surface warming is improved by either using these new metric approaches or by treating short- and long-lived GHG emission pathways separately, as compared to approaches that aggregate emissions of GHGs using standard GWP or GTP emission metrics. By contrast, if emissions are weighted by their 100-year GWP or GTP values, different multi-gas emission pathways with the same aggregated CO2 equivalent emissions rarely lead to the same estimated temperature outcome. (high confidence) {7.6.1, Box 7.3}

This was supported by the following two points (**7.6.1.4**):
GSAT changes estimated with cumulative CO2 equivalent emissions computed with GWP-20 matches the warming trend for a few decades but quickly overestimates the response. Cumulative emissions using GWP-100 perform well when emissions are increasing but not when they are stable or decreasing. Cumulative emissions using GTP-100 consistently underestimate the warming. Cumulative emissions using either CGTP or GWP* approaches can more closely match the GSAT evolution (Allen et al., 2018b; Cain et al., 2019; Collins et al., 2020; Lynch et al., 2020).

In summary, new emission metric approaches such as GWP* and CGTP are designed to relate emission changes in short-lived greenhouse gases to emissions of CO2 as they better account for the different physical behaviours of short and long-lived gases. Through scaling the corresponding cumulative CO2 equivalent emissions by the TCRE, the GSAT response from emissions over time of an aggregated set of gases can be estimated. Using either these new approaches, or treating short and long-lived GHG emission pathways separately, can improve the quantification of the contribution of emissions to global warming within a cumulative emission framework, compared to approaches that aggregate emissions of GHGs using standard CO2 equivalent emission metrics. As discussed in Box 7.3, there is high confidence that multi-gas emission pathways with the same time dependence of aggregated CO2 equivalent emissions estimated from standard approaches, such as weighting emissions by their GWP-100 values, rarely lead to the same estimated temperature outcomes.

To pull out the one sentence that suggests that GWP100 might do a good job is a clear misreading of the Chapter in question. If that is the conclusion your functionaries come to after reading that material in Chapter 7.6 - the main point of which is in the Exec Summary point above - then I suggest you get functionaries with better comprehension skills.

Secondly - you appear wedded to an emissions metric that only works at all (and then not very well since it depends on the rate of increase) when emissions are increasing. I thought the point of your policies was to decrease emissions? That being so, why are you committed to an emissions metric that clearly doesn't work for that purpose (i.e. when emissions are falling)?

For those of us who work in this area, this is incredibly annoying because it's so unnecessary. You already have a perfectly sensible split between the gases in policy. You have plans to price emissions and reduce them. There's simply nothing to be gained by performing the spurious gymnastics of aggregating gases through a metric you know won't work well when you're actually reducing emissions.

**I have chosen this word carefully, since its meaning is "not candid or sincere, typically by pretending that one knows less about something than one really does." You are well aware of the shortcomings of GWP100. Your officials should be aware of these (though I have been struck before by how poorly informed some of them are). You could have given a clear exposition of these, and pointed out that policy doesn't turn on GWP100. That would have been a far better answer, and would have been a constructive contribution to public debate. (Picking out one sentence that is clearly misleading given the context around it is not.)

From: Grant Blackwell
Sent: Thursday, 27 October 2022 12:54 pm
To: Barry Anderson
Subject: Paper: GWP* is a model, not a metric
Attachments: Meinshausen_2022_Environ._Res._Lett._17_041002.pdf

Dr Grant Blackwell | **Kaipūtaiao Matua**
Chief Science Adviser
M [redacted]
E [redacted]
W climatecommission.govt.nz

From: Grant Blackwell
Sent: Thursday, 25 May 2023 1:53 pm
To: Felicia Kolonjari
Subject: FW: presentation to Fonterra Council
Attachments: FonterraCouncil_Reisinger.pdf

FYI – Andy's slides from the Fonterra Shareholders Board meeting.

From: Barry Anderson [redacted]
Sent: Thursday, 25 May 2023 11:56 am
To: Sam King [redacted] Grant Blackwell [redacted]
Subject: Fw: presentation to Fonterra Council

fyi

From: Andy Reisinger [redacted]
Sent: Thursday, May 25, 2023 11:35
To: Climate Commissioners <climatecommissioners@climatecommission.govt.nz>; Jo Hendy [redacted]; Barry Anderson [redacted]
Subject: presentation to Fonterra Council

Kia ora koutou – I promised to circulate the slides that I presented to the Fonterra Council this week. The presentation was made in my private capacity (see conflicts in last Board papers) but I undertook to share the slides for transparency (and because I hope they might be useful). Best wishes, Andy

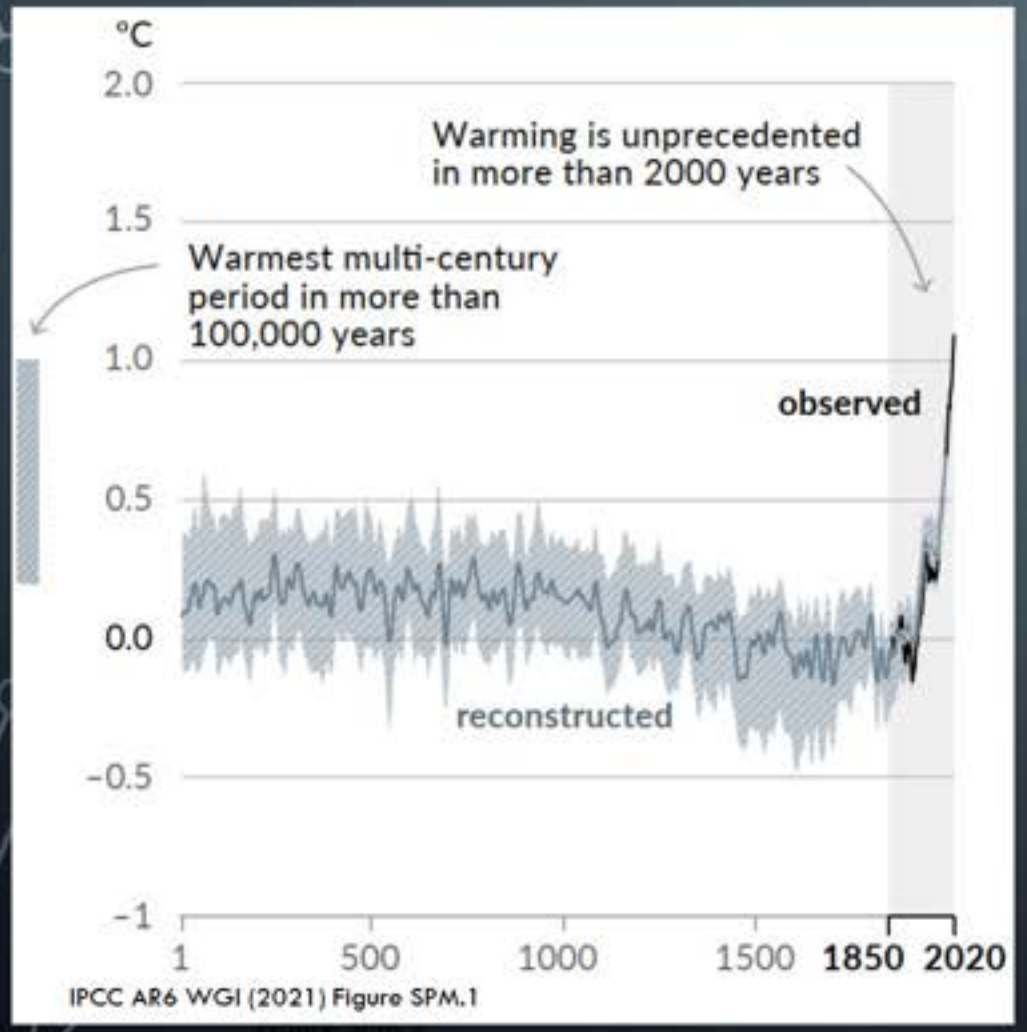
CLIMATE CHANGE AND DAIRY

SOME GLOBAL PERSPECTIVES

ANDY REISINGER

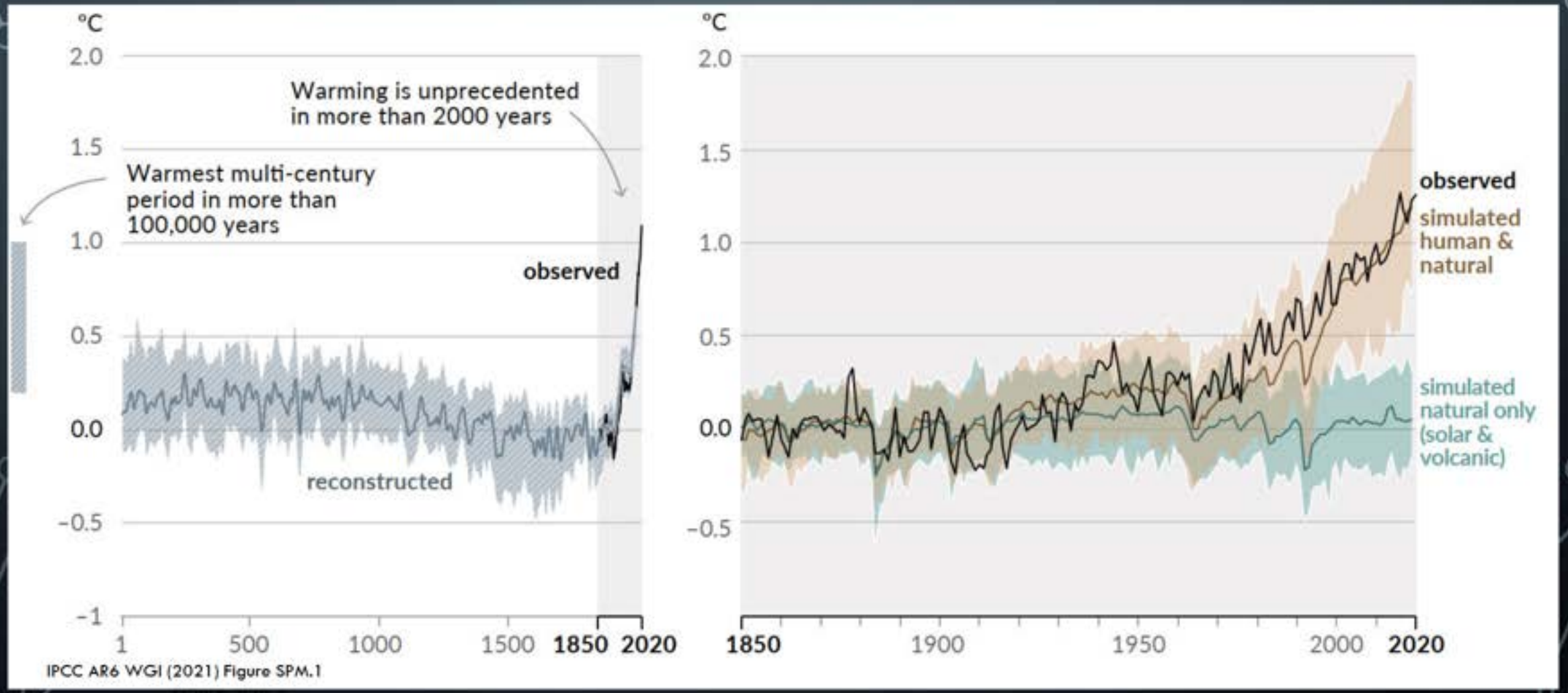
FONTERRA COUNCIL, 24 MAY 2023

CLIMATE CHANGE IS UNEQUIVOCAL

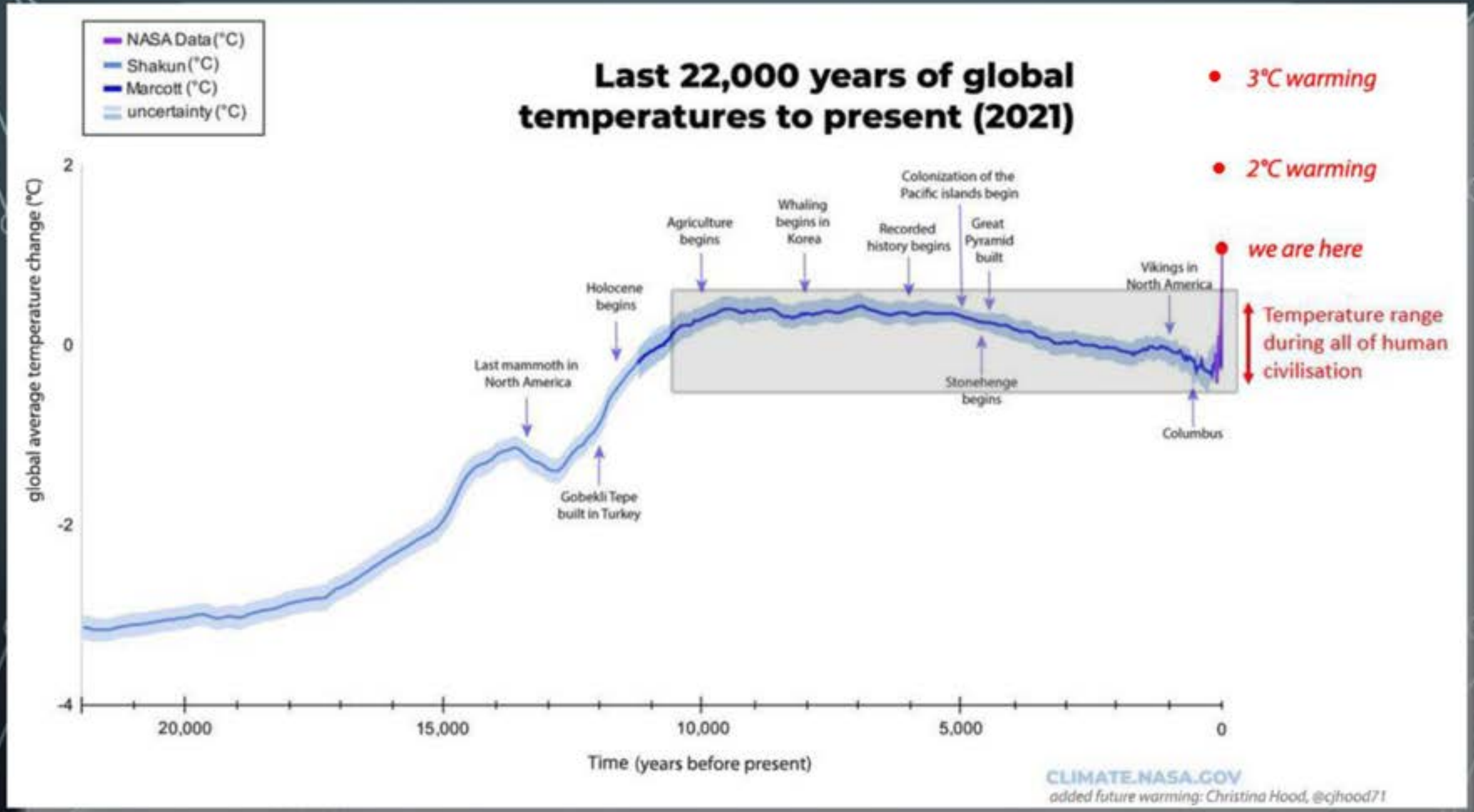


- More extreme temperature and rainfall
- Reduction in Arctic sea ice
- Shrinking glaciers world-wide
- Shrinking snow cover
- Reduction of Greenland ice sheet
- Rising sea levels
- Rising ocean temperature and heat
- Ocean acidification (more CO_2)

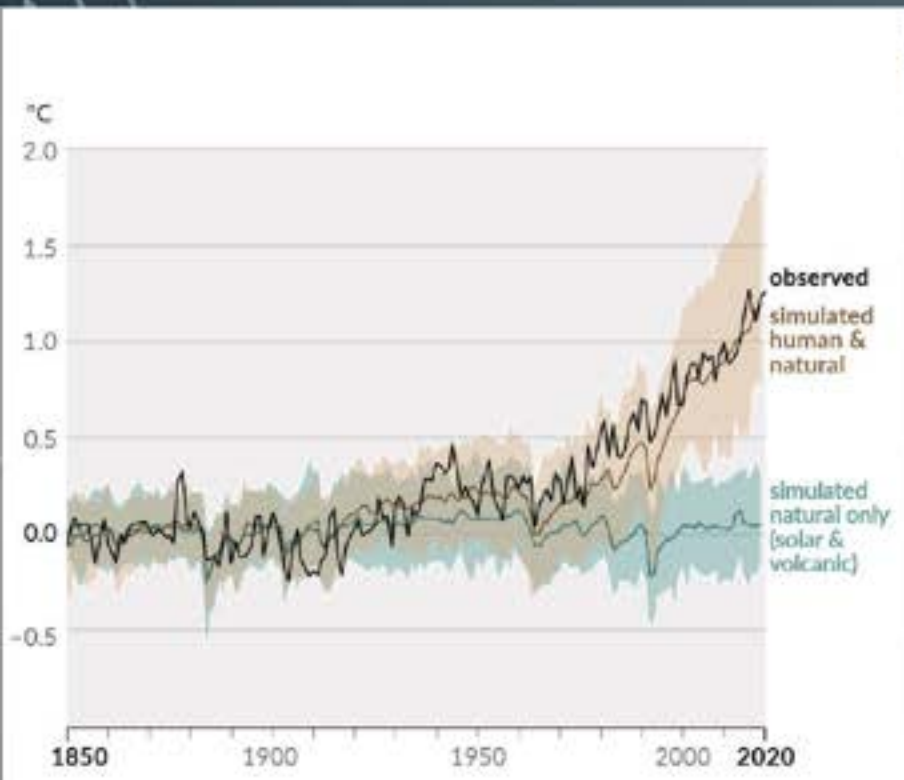
HUMANS ARE THE KEY DRIVER

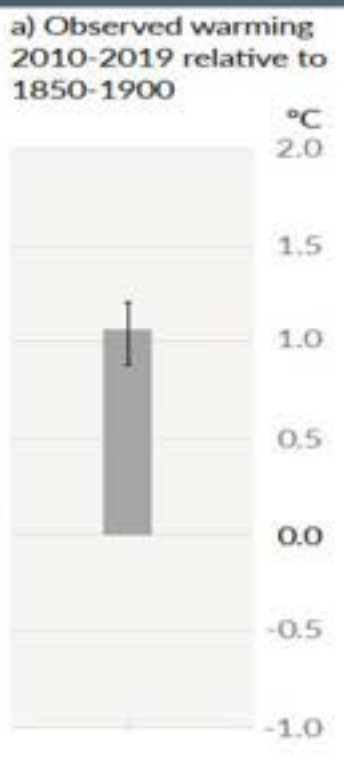


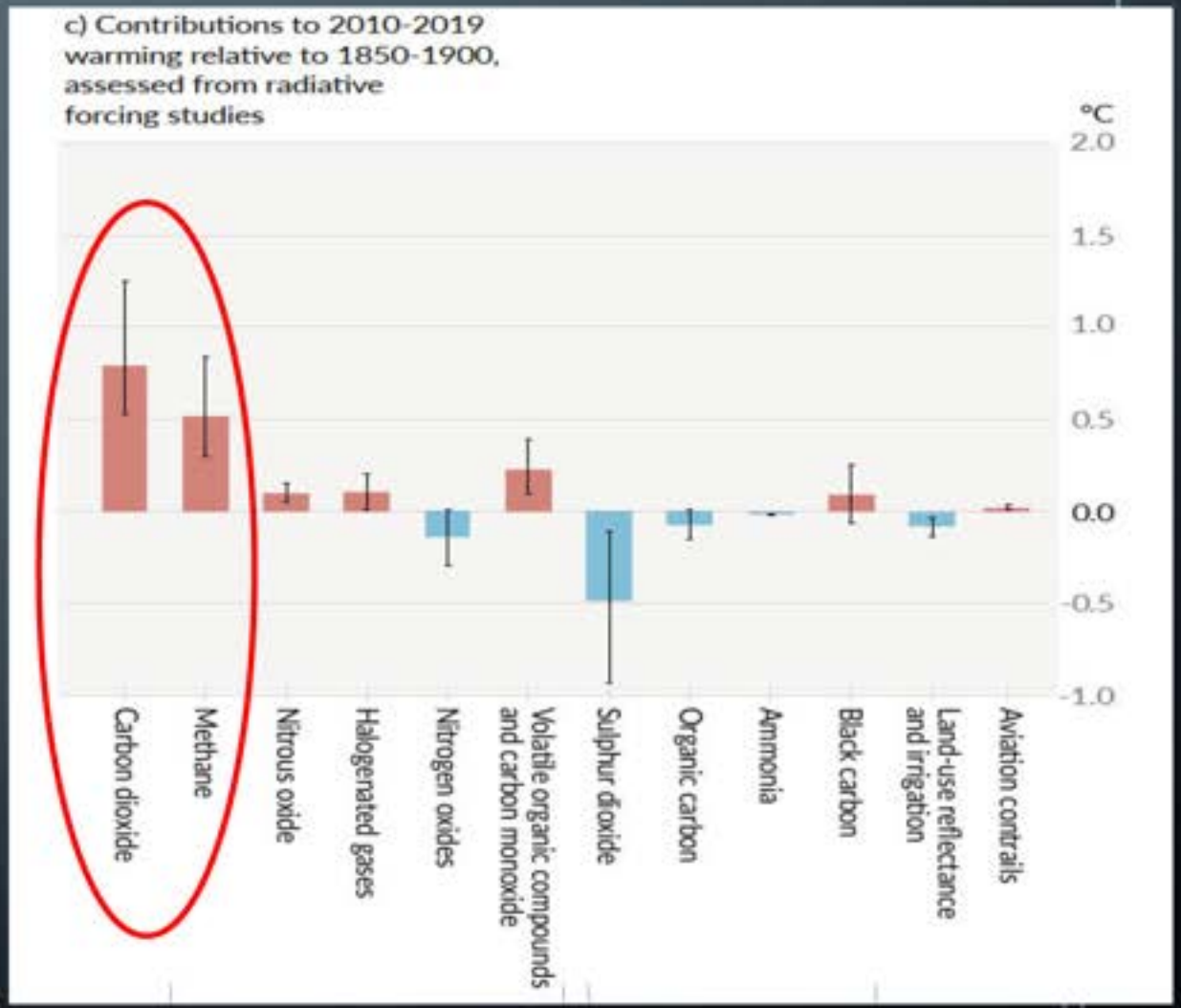
IPCC AR6 WGI (2021) Figure SPM.1


NASA Data (°C)
Shakun (°C)
Marcott (°C)
uncertainty (°C)
Last 22,000 years of global temperatures to present (2021)
3°C warming
2°C warming
we are here
Temperature range during all of human civilisation
global average temperature change (°C)
2
0
-2
-4
Agriculture begins
Whaling begins in Korea
Colonization of the Pacific islands begin
Recorded history begins
Great Pyramid built
Vikings in North America
Holocene begins
Last mammoth in North America
Gobekli Tepe built in Turkey
Stonehenge begins
Columbus
20,000
15,000
10,000
5,000
0
Time (years before present)
CLIMATE.NASA.GOV
added future warming: Christina Hood, @cjhood71

CO_2 AND CH_4 DOMINATE WARMING

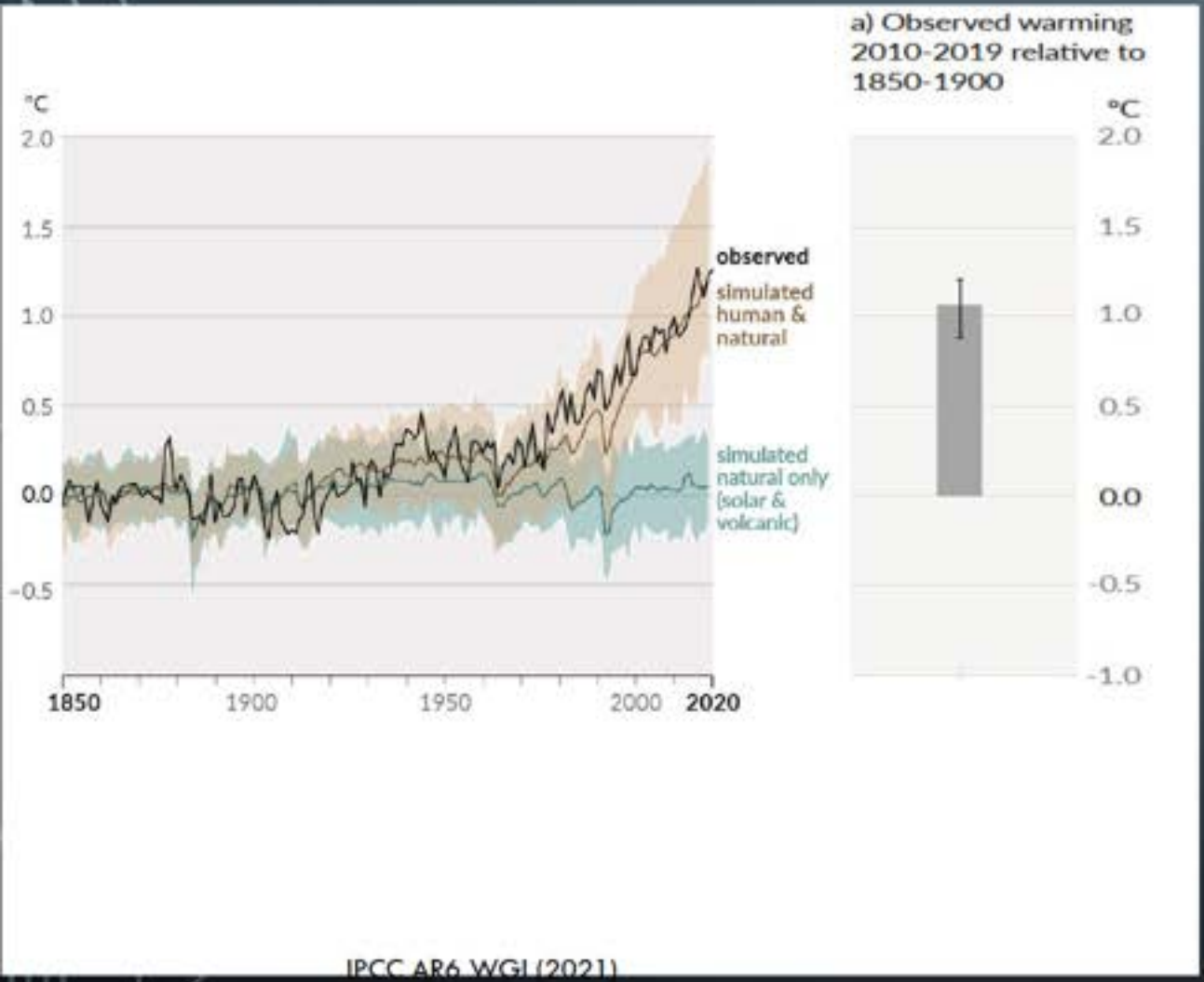


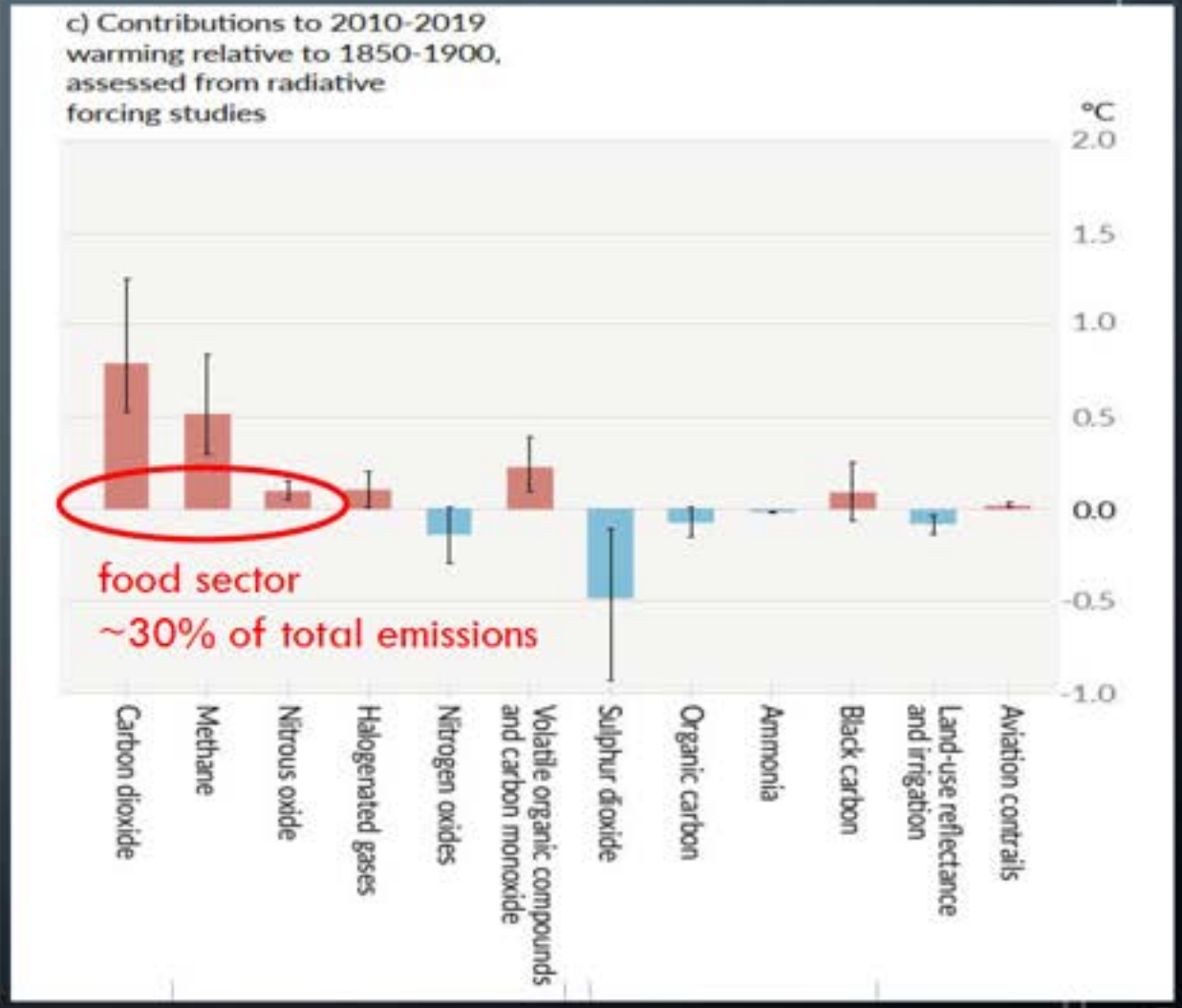




IPCC AR6 WGI (2021)
Figures SPM.1, SPM.2

THE FOOD SECTOR PLAYS A SIGNIFICANT ROLE





IPCC AR6 WGI (2021)
Figure SPM.2

[Credit: Peter John Maridable | Unsplash]

"Unless there are immediate, rapid, and large-scale reductions in greenhouse gas emissions, limiting warming to 1.5°C will be beyond reach.

ipcc
INTERGOVERNMENTAL PANEL ON climate change

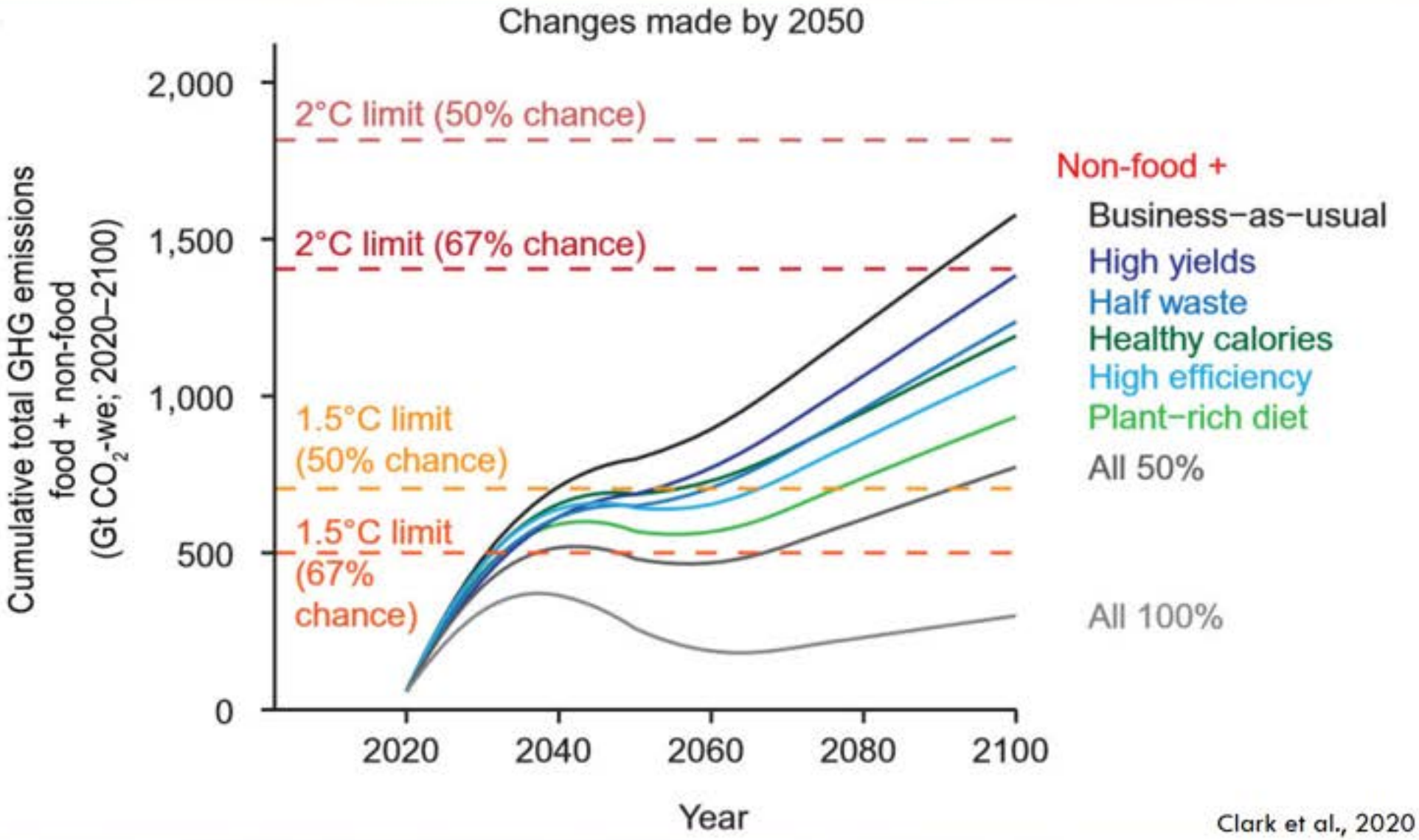
WMO UNEP

ipcc

> **Limiting warming to 1.5°C or *likely* below 2°C involves reaching global net zero CO_2 emissions by the 2050s or 2070s, along with deep reductions of other GHGs.**

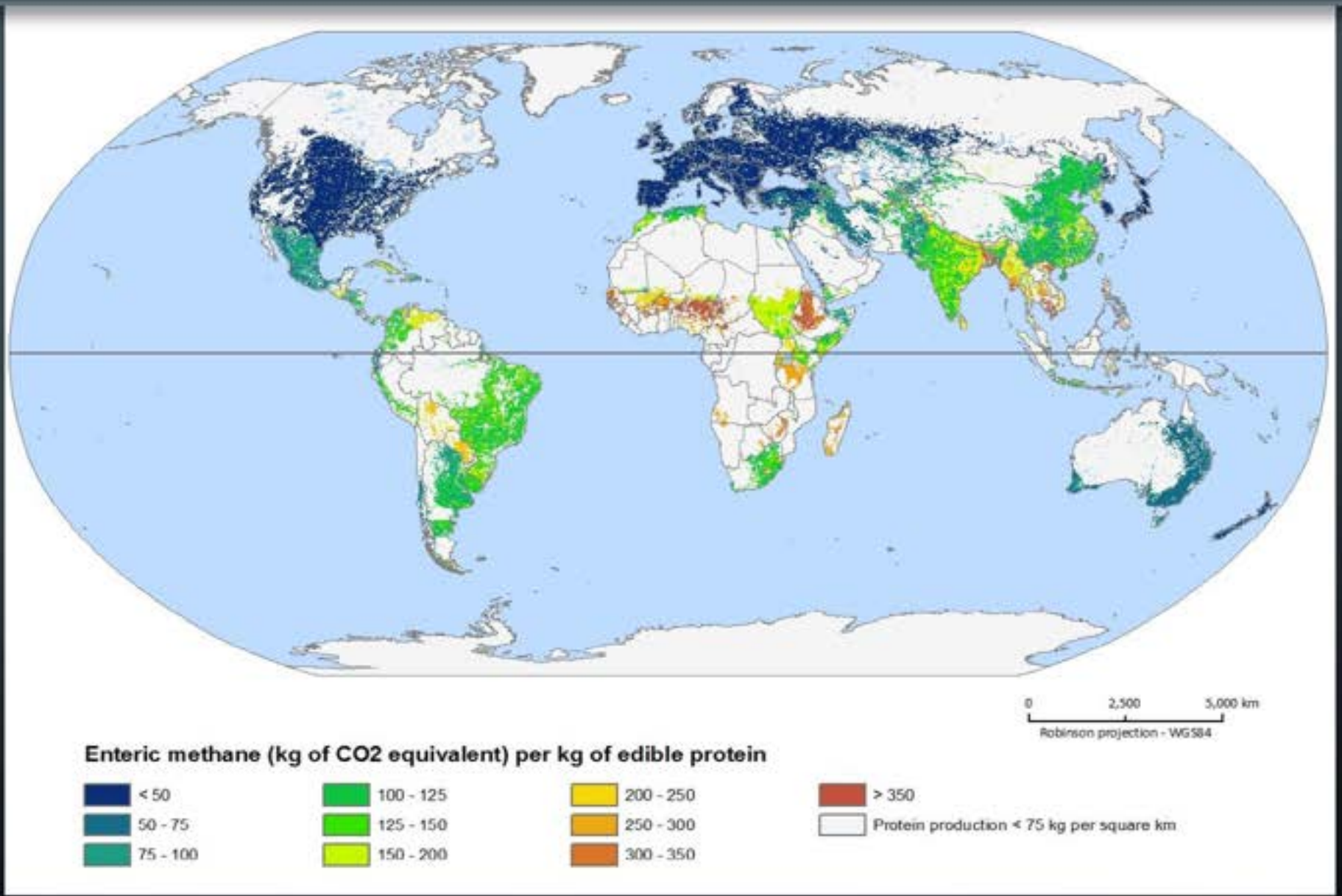
THE FOOD SECTOR PLAYS A SIGNIFICANT ROLE

If emissions from all non-food sectors, as well as fossil CO_2 emissions from food production reach net zero by 2050

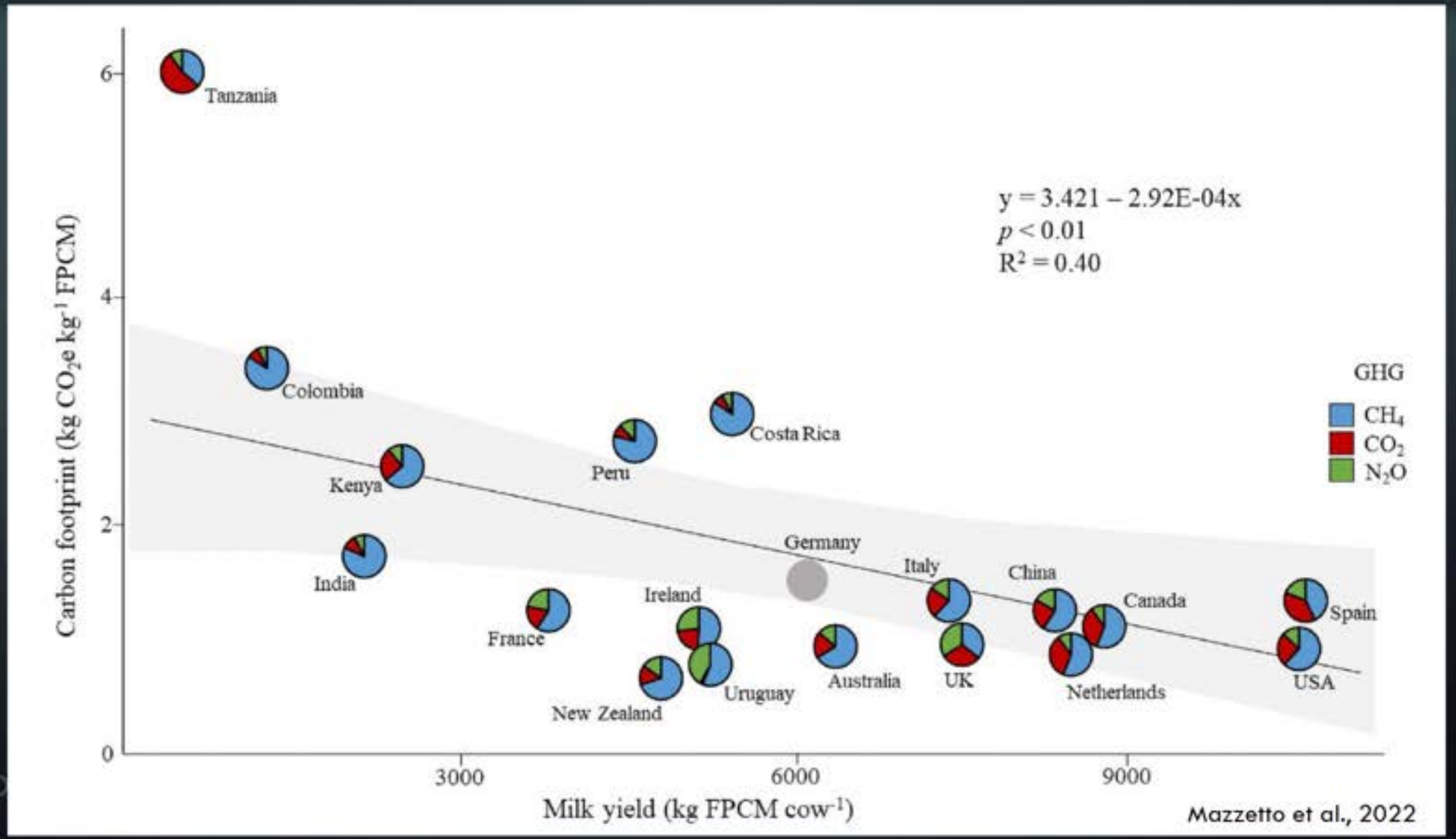


Clark et al., 2020

METHANE EMISSIONS INTENSITIES VARY WIDELY



METHANE EMISSIONS INTENSITIES VARY WIDELY



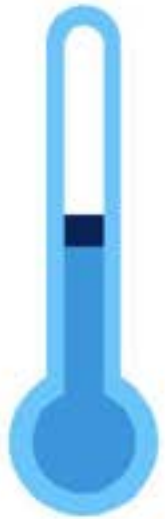
Mazzetto et al., 2022

Steep and near-term reduction in methane identified as one of the key levers to fight warming

150 countries signed Global Methane Pledge

GLOBAL METHANE PLEDGE

COP26: World leaders pledge to cut methane emission levels by 30%
By 2030 in "game-changing commitment"



0.2°C warming

Avoided by 2050

Reducing methane emissions by 30% also means preventing...

205,000 deaths
From respiratory and cardiovascular diseases

21 million tons
Of staple crop losses

624,000
Asthma-related hospital visits

60 billion
Lost work hours to heat exposure by 2040

.... every year

Source: Globalmethanepledge.org

INTERNATIONAL RESPONSES

SCIENCE BASED TARGETS

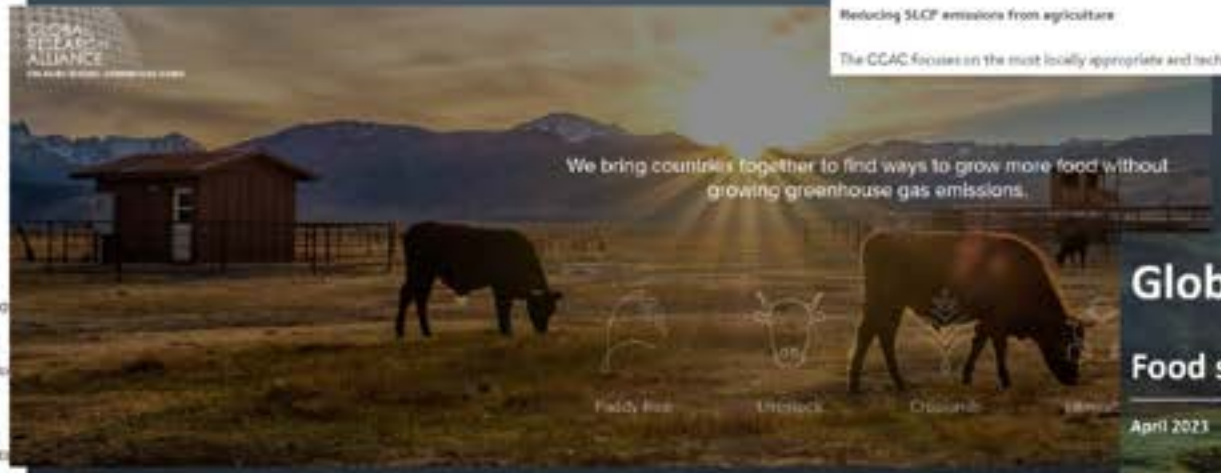
DRIVING AMBITIOUS CORPORATE CLIMATE ACTION

Forest, Land and Agriculture (FLAG)

The SBTi's FLAG Guidance provides the world's first standard method for companies in land-intensive sectors to set science-based targets that include land-based emission reductions and removals. The guidance enables companies to reduce the 22% of global greenhouse gas emissions from agriculture, forestry and other land use.

Key requirements of the SBTi FLAG Guidance

1. **Set near-term FLAG science-based targets:** 5-10 year emission reduction targets in line with limiting warming to 1.5°C.
2. **Account for removals in near-term FLAG science-based targets:** GHG removals include things like improving forest management practices, and enhancing soil carbon sequestration on working lands. Read more on how the FLAG pathways address carbon removals here.
3. **Set long-term FLAG science-based targets:** Companies in the forest, land and agriculture sector will reduce at least 72% of emissions by no later than 2050. They should use the SBTi Net-Zero Standard to set long-term FLAG science-based targets.
4. **Zero deforestation targets must be set for no later than 2025:** In line with the Accountability Framework initiative (AFi). Read more on how this guidance accounts for land use change emissions here.
5. **Set science-based targets for fossil emissions:** Businesses with land-based emissions are required to set FLAG science-based targets AND science-based targets, since all companies produce fossil emissions.



CLIMATE & CLEAN AIR COALITION

Agriculture

Increasing Agricultural Climate Action & Ambition

ABOUT | RELATED PROJECTS | ACHIEVEMENTS | WHO'S INVOLVED | RESOURCES

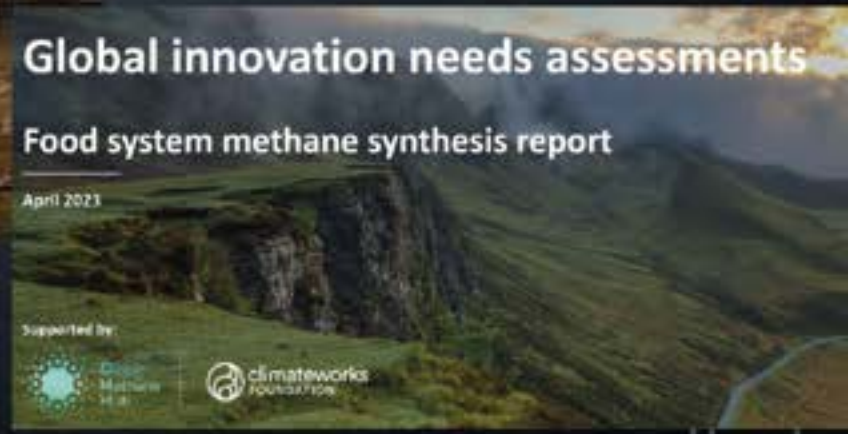
ABOUT THE AGRICULTURE HUB

The Agriculture Hub brings together governments, intergovernmental and nongovernmental organizations along with private sector leaders in the agriculture sector to share expertise and support countries in mitigating SLCPs from paddy rice cultivation, livestock and open burning of agriculture. The Agriculture Hub works closely with the National Planning Hub and the Waste Hub along with the Methane Roadmap Action Programme (M-RAP) to identify synergies and further opportunities for collaboration.

Reducing SLCP emissions from agriculture

The CCAC focuses on the most locally appropriate and technically feasible measures to reduce SLCP emissions in

RELATED NEWS



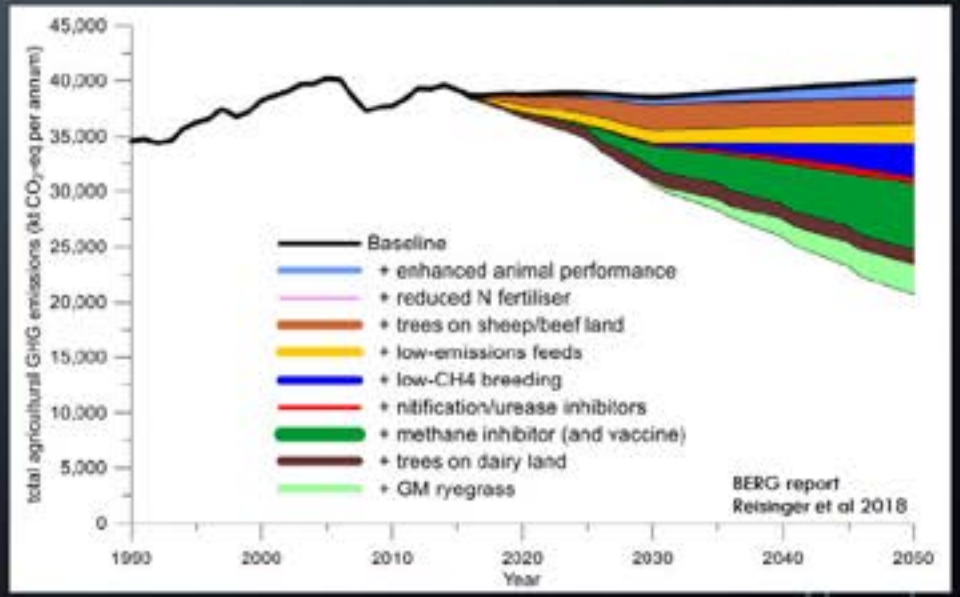
SCIENCE IS ADVANCING

- Farm system management

Potential for mitigating emissions now

3. Modelling suggests that if there was widespread adoption of currently available mitigation options (mainly farm management practices) an up to about 10% reduction in absolute biological emissions from pasture-based livestock is possible. **However, the ability of farmers to implement such practices varies widely, and while some farmers might achieve such reductions without significant negative impacts on profitability, for others the impact could be large.**[3] A greater than 10% reduction in absolute biological emissions will likely require a combination of on-farm mitigation and land-use change.

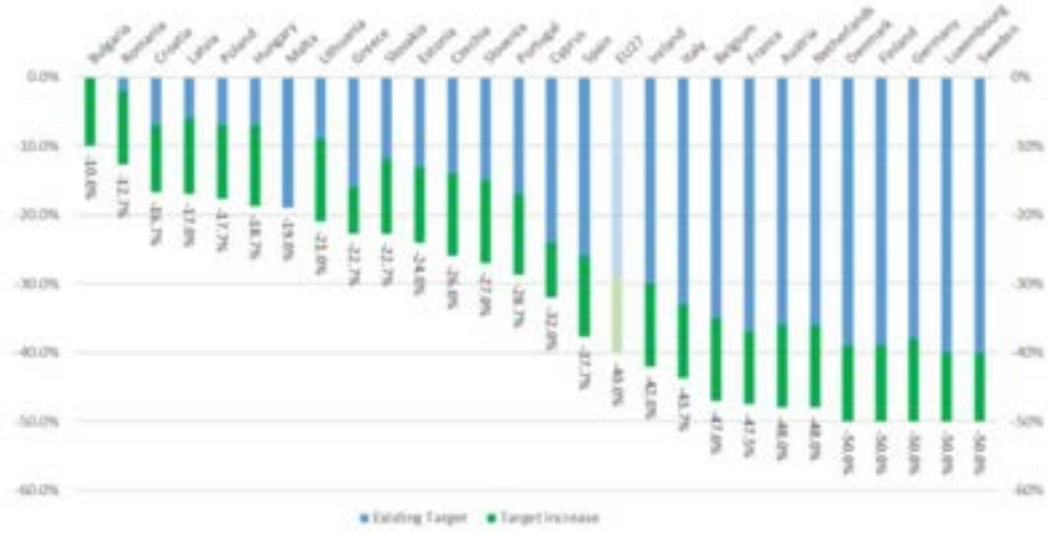
- Methane inhibitors – TMR/barn systems
- Breeding – sheep more advanced
- Seaweed (asparagopsis): industry and market acceptance of bromoform?
- Manure management (effective esp. for large-scale, housed animals)
- Vaccine …
- Alternative proteins



Countries are responding

EU

- Net-zero all gases by 2050; at least 55% reduction by 2030
- Reduce non-ETS emissions by 40% by 2030 (rel. 2005)
- Reduce agriculture emissions by 50% by 2030 (farm to fork)



Australia

- Net-zero all gases by 2050
- Modelled 29-36% decrease in ag emissions by 2050
- Red meat industry targeting net zero emissions by 2030

California

- US-wide target: net-zero all gases by 2050
- US Dairy initiative: net-zero by 2050
- California: reduce methane from livestock by 40% by 2030

Ireland

- Net-zero all gases by 2050
- Reduce agricultural emissions by 25% by 2030

Netherlands

- Reduce all gases by 95% by 2050 (relative to 1990), 49% by 2030
- Reduce agricultural emissions by 20% by 2030

UK

- Net-zero all gases by 2050
- Agriculture targets and mechanisms as part of net-zero strategy
- National Farmers Union target: net-zero from agriculture by 2040

Canada

- Net-zero all gases by 2050
- Methane from agriculture reduced by 30% by 2030
- Dairy Farmers of Canada have set net-zero by 2050 target

Sources: Guenther et al 2022 for Climate Change Commission; Canada

Consumers are/say they are responding

.... Leading to the rise of the Conscious Consumer.

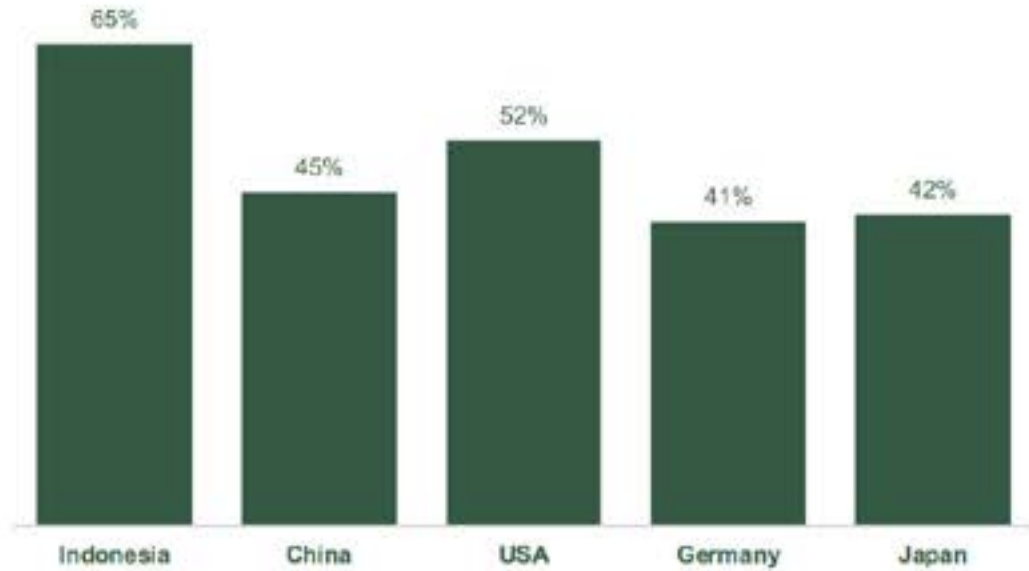
Sustainability is top of mind for consumers around the world.

Providing consumers with ethical and sustainable experiences when engaging with brands can create a competitive advantage by building brand equity through greater loyalty and trust.

Environmental protection

Consumers are **changing their diets** to more environmentally friendly choices and **expect food & beverage brands** to do more to protect the planet.

I have changed my diet in the last two years in order to lead a more environmentally friendly lifestyle:



Source: FMCG Gurus Sustainability Study - Jan 2022 (n=1,000 per survey)

Credit: Andrew Kempson

Companies are responding

Danone

- Net zero by 2050
- Reduce absolute scope 3 emissions from Forest, Land and Agriculture 30.3% by 2030 from a 2020 base year; cut dairy methane by 30% by 2030

Tesco

- Reduce absolute scope 3 emissions 17% by 2030, using a 2015 base year
- Net zero across total emissions footprint by 2050, including supply chain and products

Nestle

- 20% emissions reductions by 2025
- 50% emissions reductions by 2030
- Net zero emissions by 2050 at the latest

Rabobank

- Net zero financed emissions by 2050

Mars

- Net zero emissions by 2050, with 27% reduction by 2025

Kellogg Company

- Reduce absolute scope 3 emissions 20% by 2030 from a 2015 base year, and by 50% by 2050

Unilever

- Halve carbon footprint of its products by 2030

Friesland-Campina

- Net climate neutral dairy by 2050; reduce scope 3 emissions by 33% by 2030

Kraft-Heinz

- Net-zero product footprint by 2050, halve by 2030

PepsiCo

- Net-zero by 2040, cut scope 3 by 40% by 2030

Sources: Sinead Leahy, NZAGRC; Richard Eckard, Uni Melbourne; https://www.just-food.com/features/the-road-to-net-zero-big-foods-emission-pledges/. Targets may be changed and updated …

Consumers are/say they are responding

Pressure against offsets increasing

Need to lower in own value chain

Does the SBTi accept all approaches to reducing emissions?

The SBTi requires that companies set targets based on emission reductions through direct action within their own boundaries or their value chains.

Offsets are only considered to be an option for companies wanting to finance additional emission reductions beyond their science-based target (SBT) or net-zero target.

SCIENCE BASED TARGETS

DRIVING AMBITIOUS CORPORATE CLIMATE ACTION

Milk brand in hot water

Using offsets to claim carbon neutrality or 'climate positivity' (the term preferred by Unilever) has already landed some brands in hot water. The consumer ombudsman in Sweden is taking dairy giant Arla Foods (total emissions 19MtCO2e) to court over claims its milk is carbon neutral, arguing the assertions give "consumers the wrong picture of a product's impact."

4 Source: Just-Food, Science Based Targets.org, Bloomberg

Bloomberg

Asia Edition

Live Now | Markets | Industries | Technology | Politics | Wealth | Pursuits | Opinion | Businessweek | Equality | Green

Green

Dutch Watchdog Rules KLM's 'Carbon Zero' Ad Is Misleading

By Diederik Baazil
April 9, 2022 at 3:11 AM GMT+10

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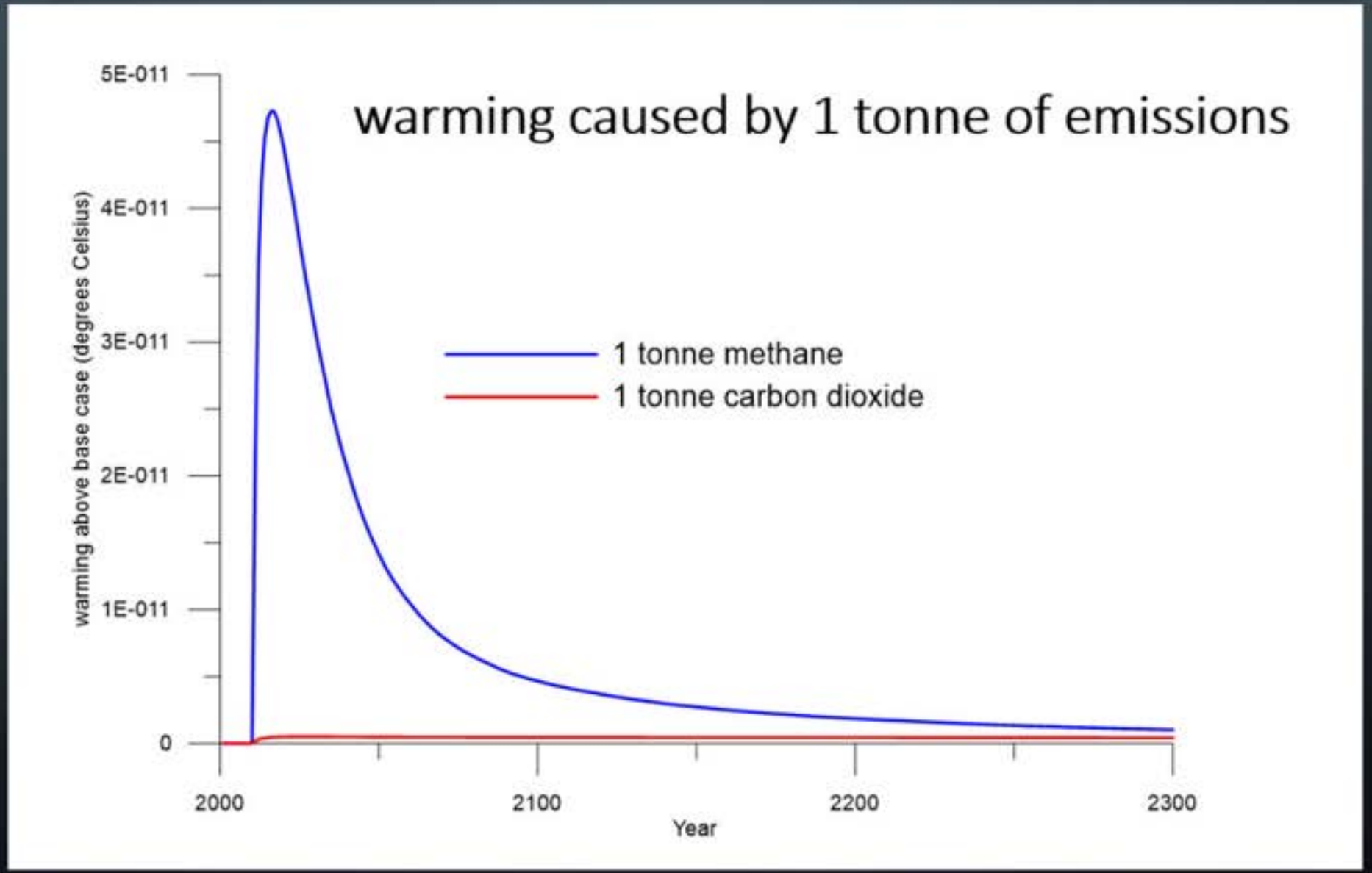
The Dutch advertising watchdog ruled that a KLM promotion telling customers they could fly carbon-emission free is misleading.

The ad's tag line, "Be a hero, fly CO2 zero," is an absolute claim, the Dutch Advertising Code Committee said in a verdict seen Friday by Bloomberg. As such, the company has the burden of proving the statement and didn't meet that test, the committee said.

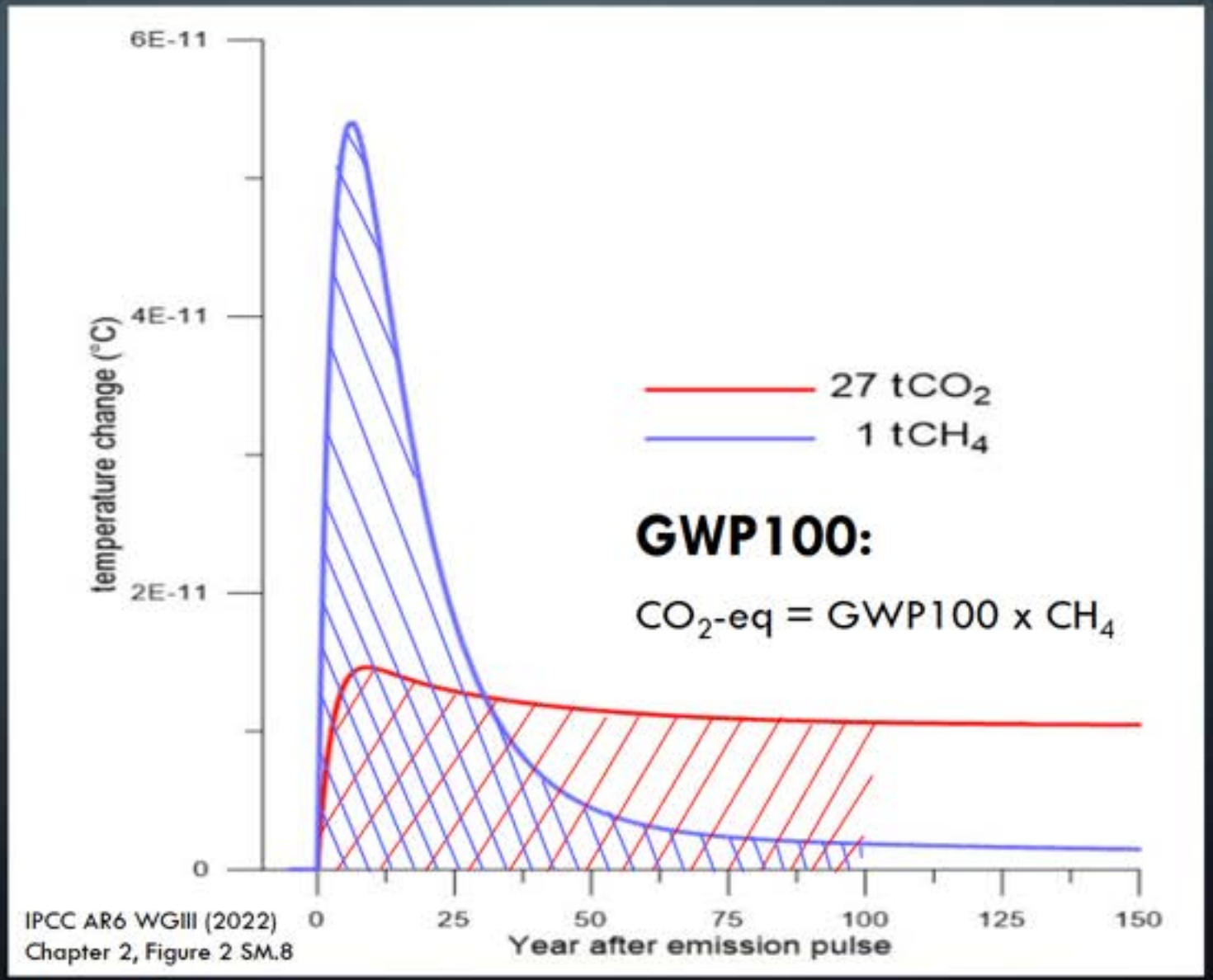
Airlines are now buying carbon offsets, or offering customers the option pay extra for them, to convince travelers that, on a net basis, their trips won't contribute to global warming. These programs, which include tree planting and forest protection, have been criticized as insufficient, misleading or impossible to validate. A similar debate swirls around so-called sustainable aviation fuel, an element in airlines' CO2-reduction plans.

Credit: Mark van Niuewland, DSM

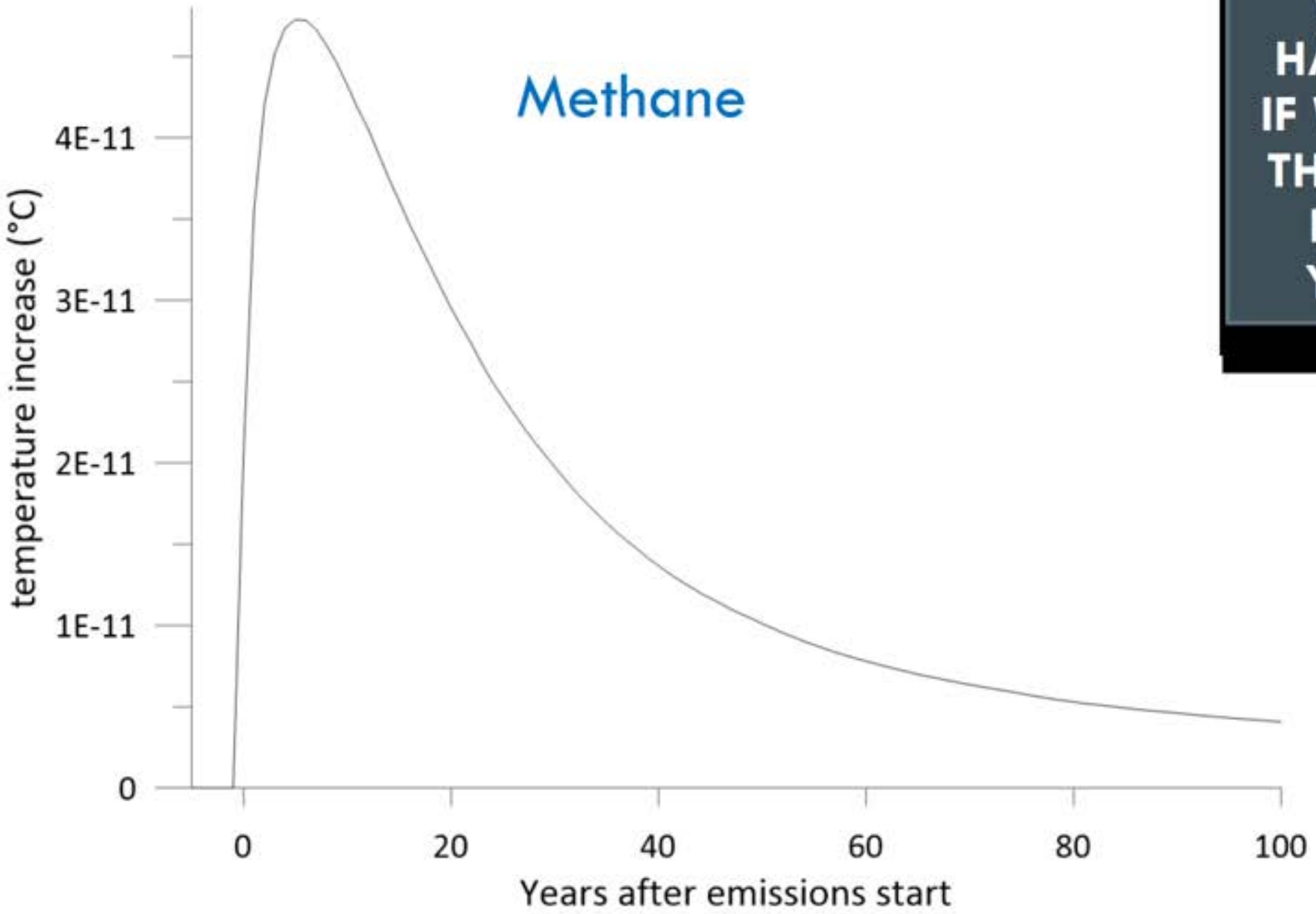
WARMING FROM CO_2 AND CH_4

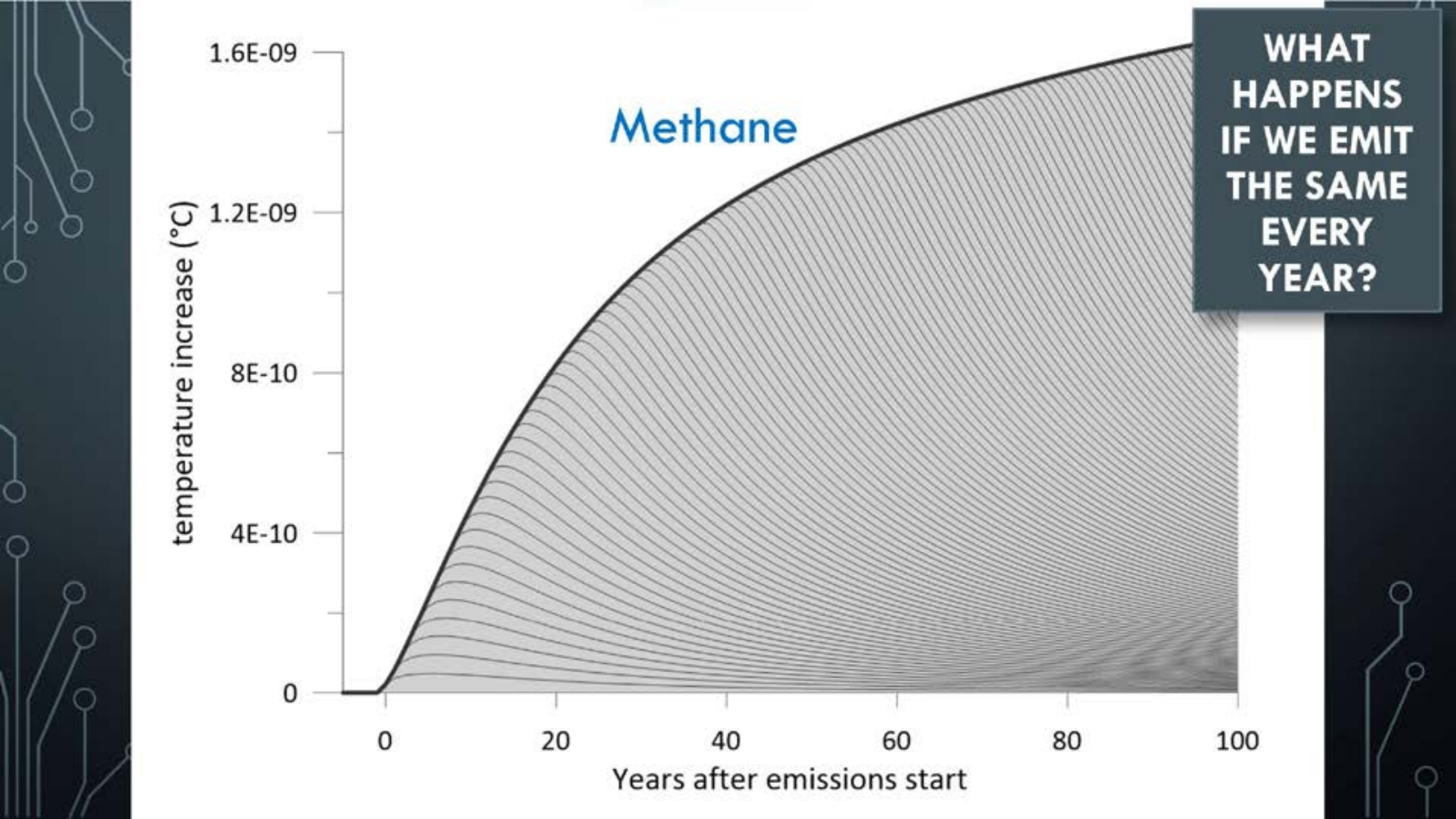


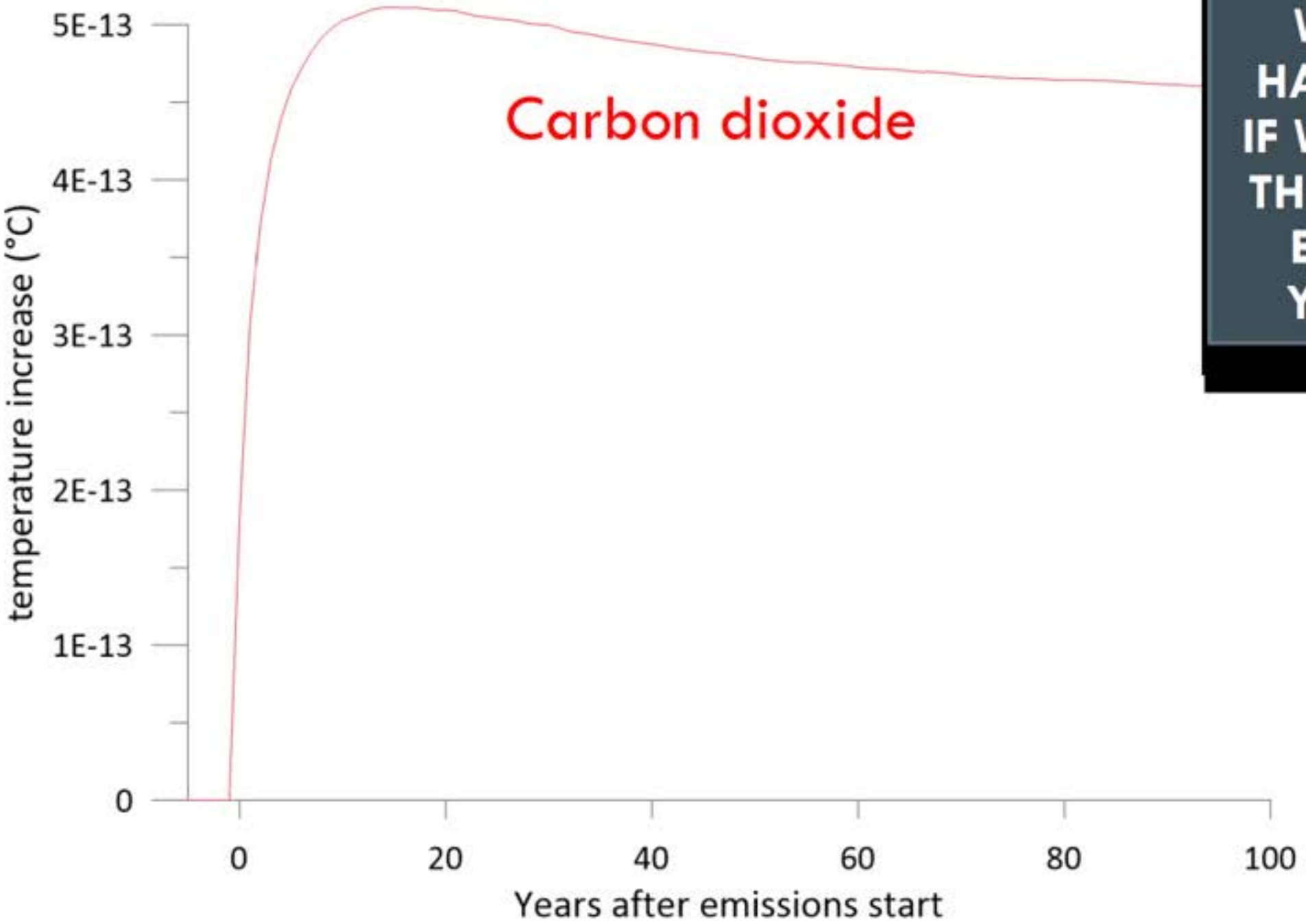
WARMING FROM CO_2 AND CH_4



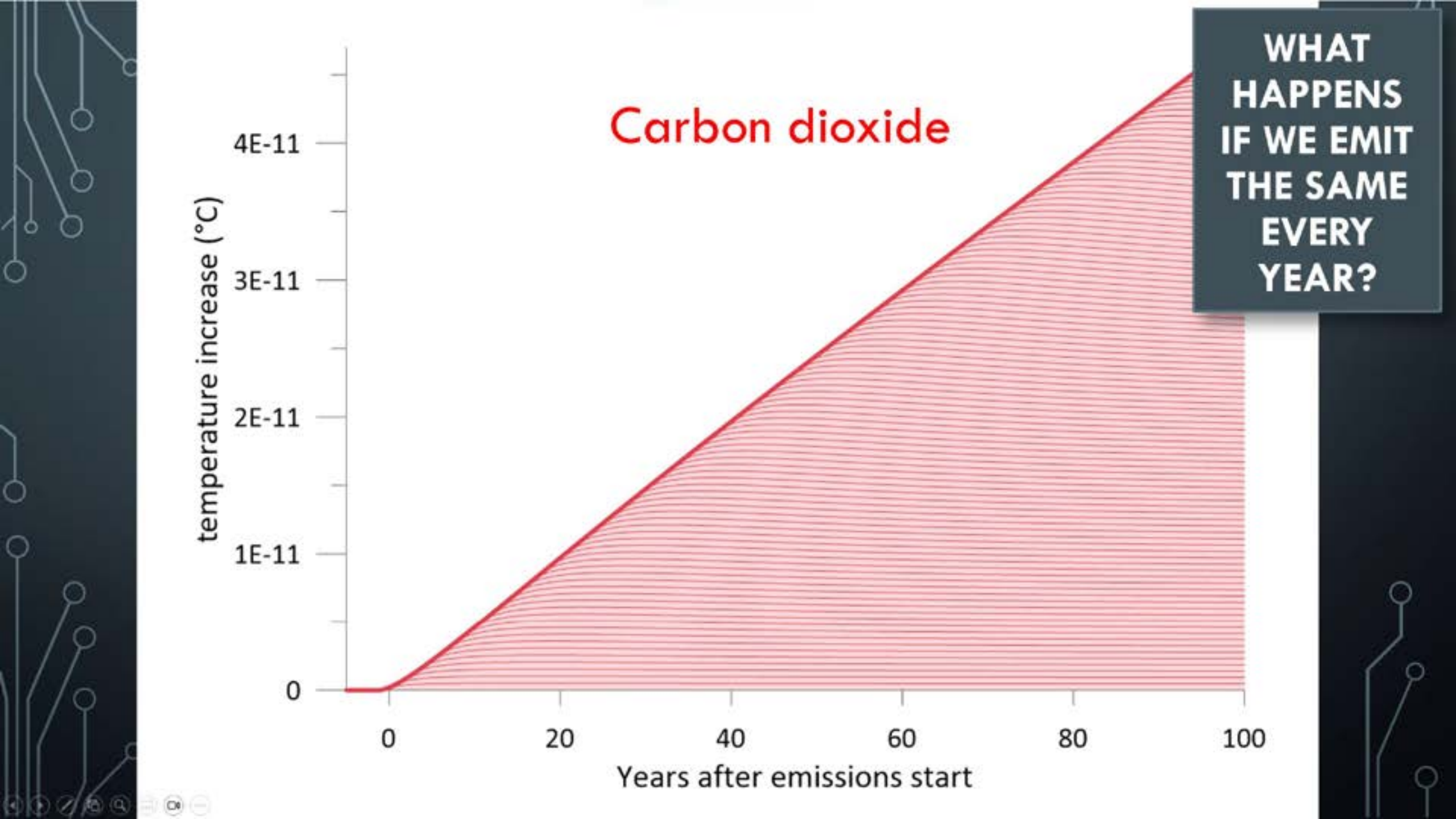
WHAT HAPPENS IF WE EMIT THE SAME EVERY YEAR?



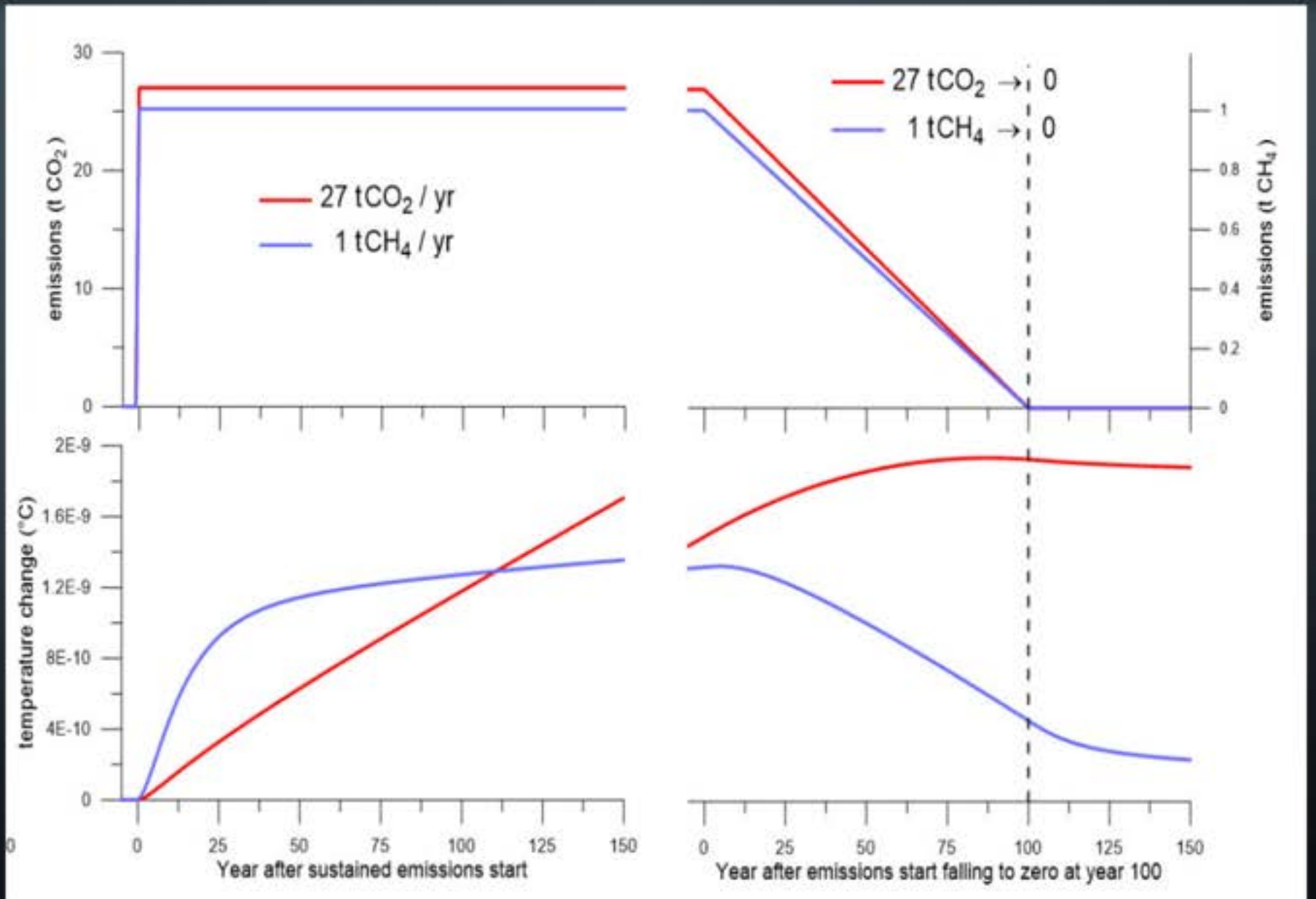

WHAT HAPPENS IF WE EMIT THE SAME EVERY YEAR?
Methane
temperature increase (°C)
1.6E-09
1.2E-09
8E-10
4E-10
0
0
20
40
60
80
100
Years after emissions start



WHAT HAPPENS IF WE EMIT THE SAME EVERY YEAR?


Carbon dioxide
WHAT HAPPENS IF WE EMIT THE SAME EVERY YEAR?
temperature increase (°C)
4E-11
3E-11
2E-11
1E-11
0
0
20
40
60
80
100
Years after emissions start

WARMING FROM CO_2 AND CH_4



IPCC AR6 WGIII (2022)
Chapter 2, Figure 2 SM.8

CO_2 AND CH_4 AND THEIR CONTRIBUTION TO WARMING

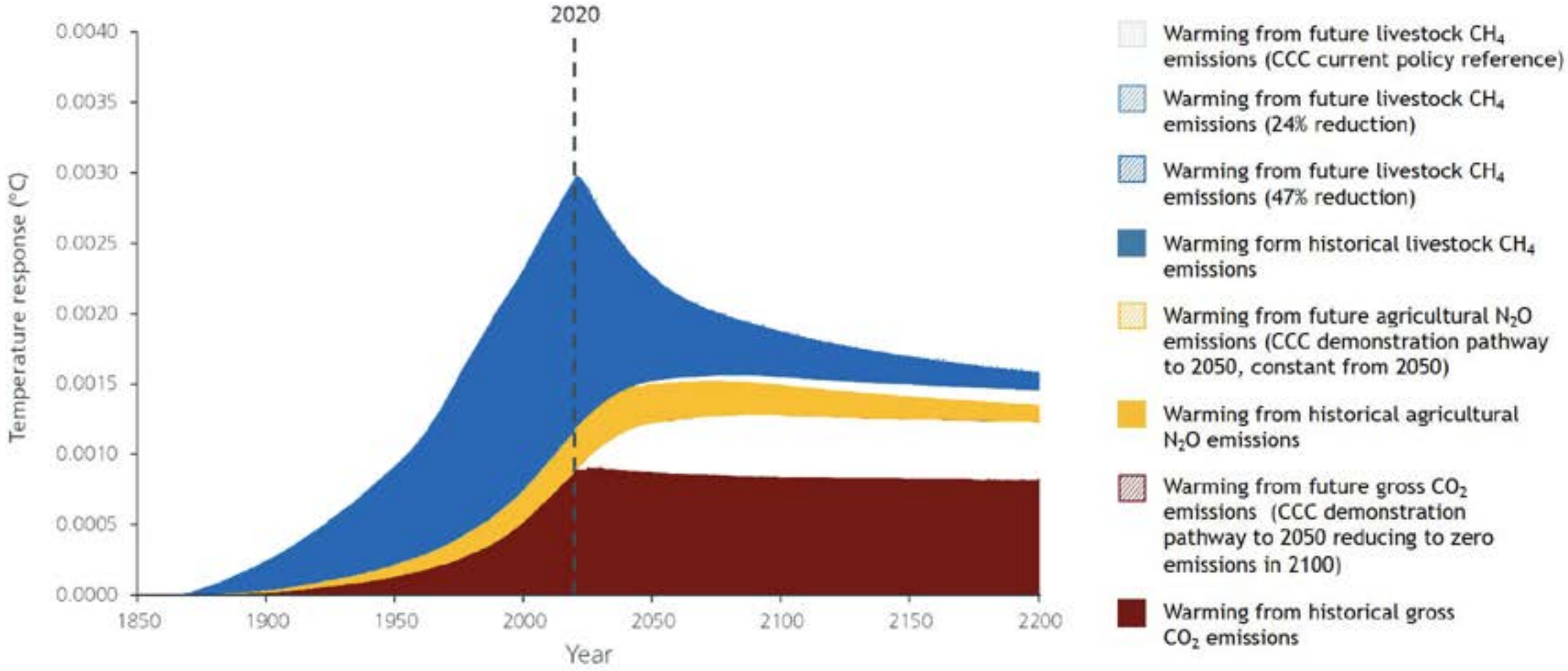
They are similar:

- Every tonne we emit makes the Earth warmer than it would have been otherwise, for centuries (CH_4) to millennia (CO_2)
- Every emission we avoid reduces the warming Earth will experience
- Continuing to emit CH_4 or CO_2 will make the Earth warmer than it would have been than if we had stopped our emissions

They are different:

- Warming due to past CO_2 emissions will remain for many centuries (unless we actively take CO_2 out of the atmosphere)
- Warming due to past CH_4 emissions disappears all by itself
- If we continue emitting CO_2, warming continues to increase;
  If we continue emitting CH_4, warming will eventually stop increasing

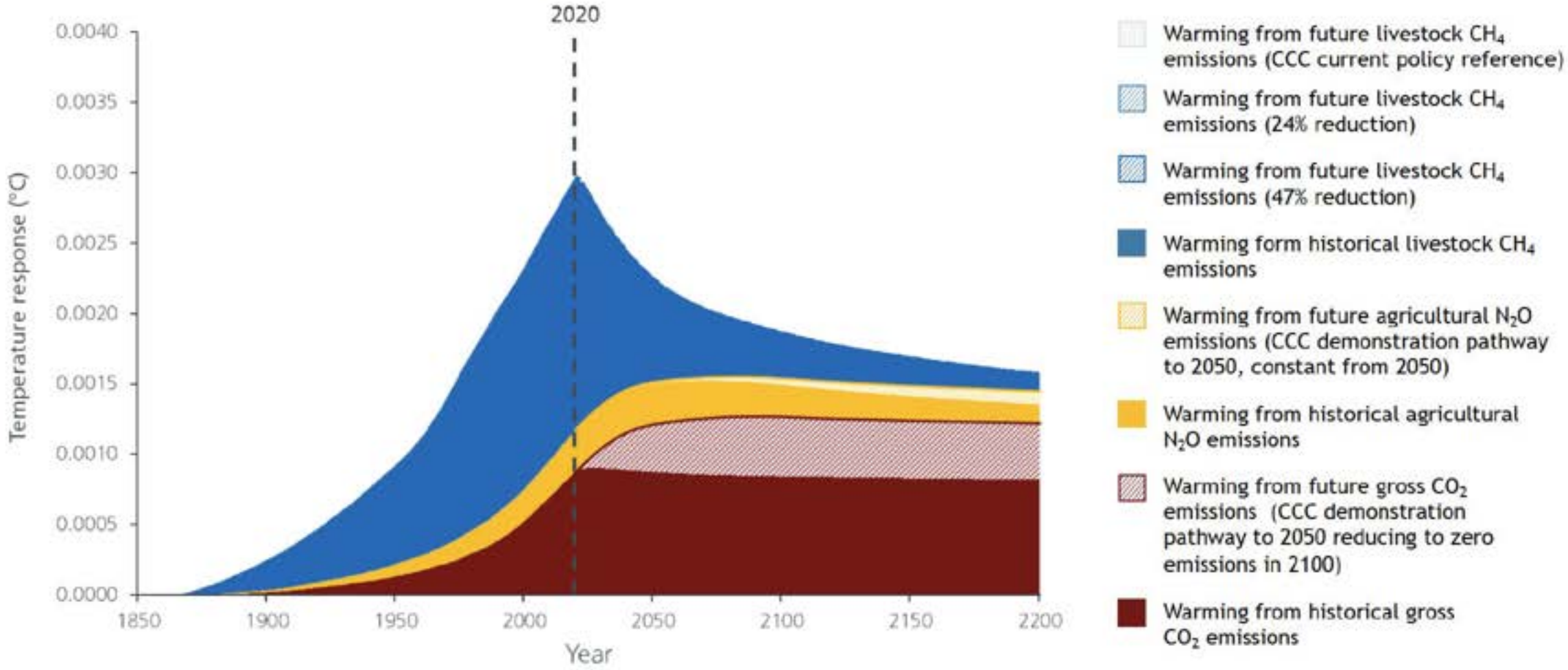
Warming from past and future emissions



Excludes fossil CH_4, biogenic CH_4 from waste, non-agricultural N_2O and fluorinated gases.

Source: PCE, 2022. How much forestry would be needed to offset warming from agricultural methane?

Warming from past and future emissions



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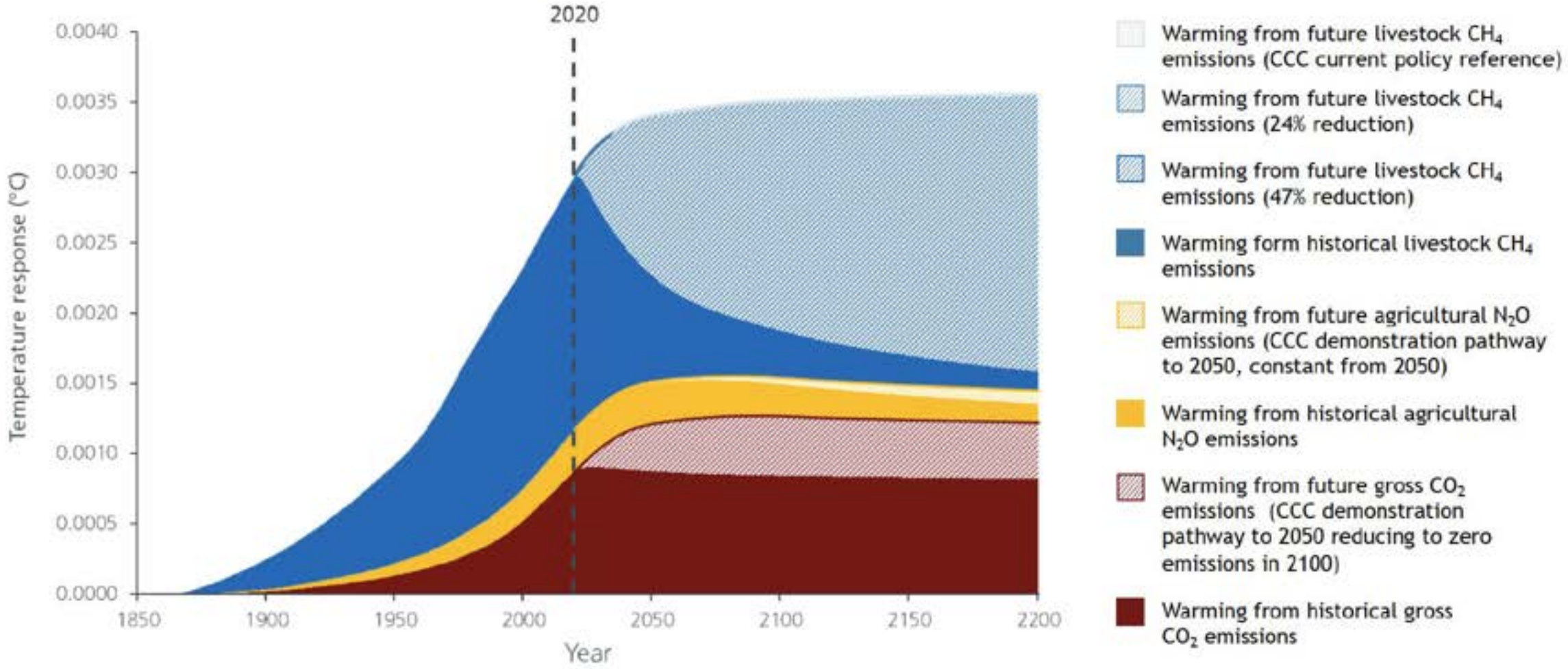

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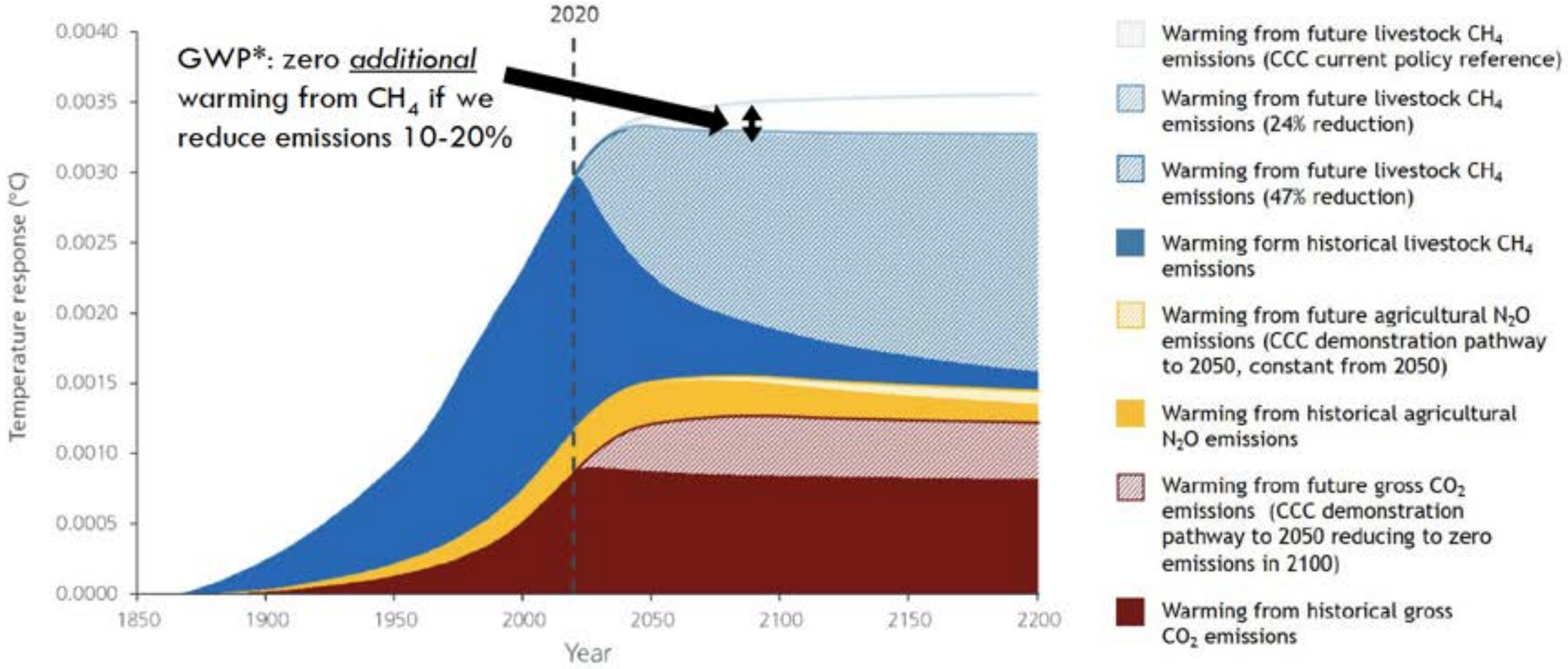

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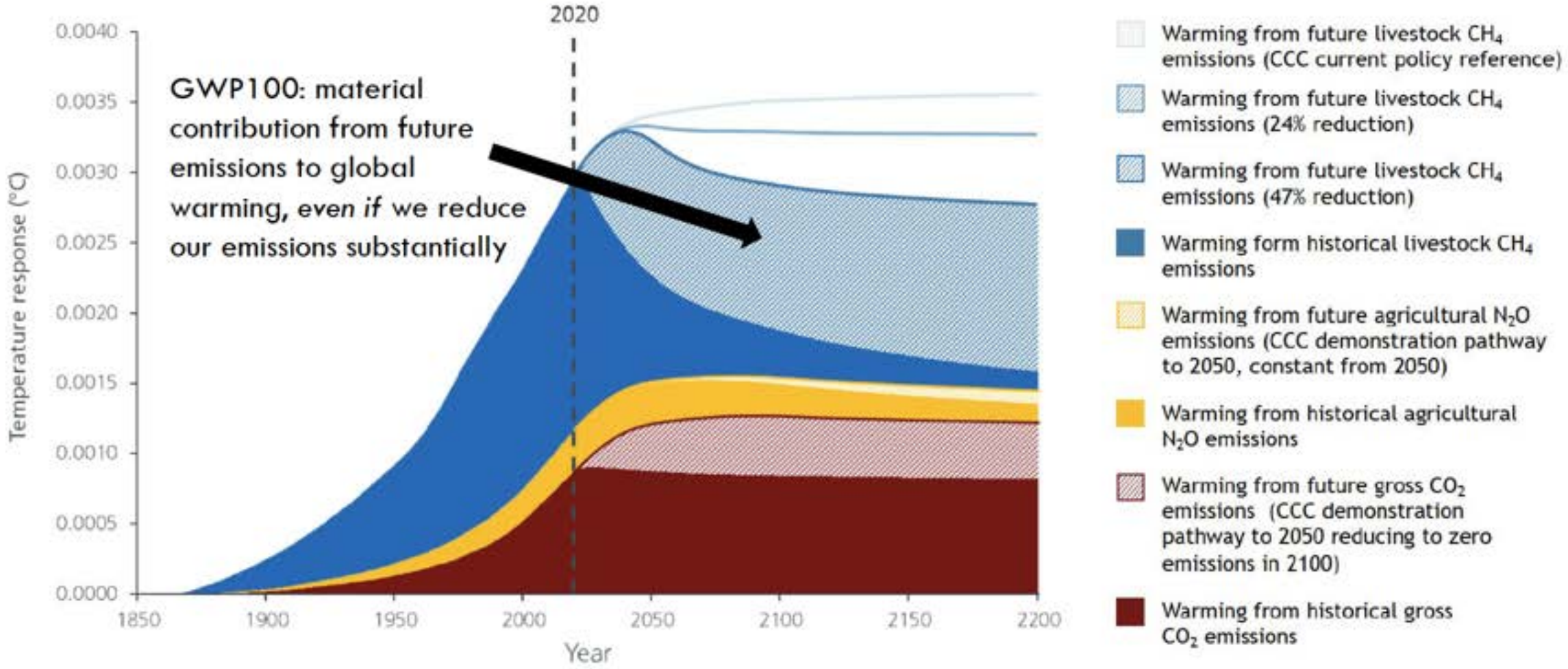
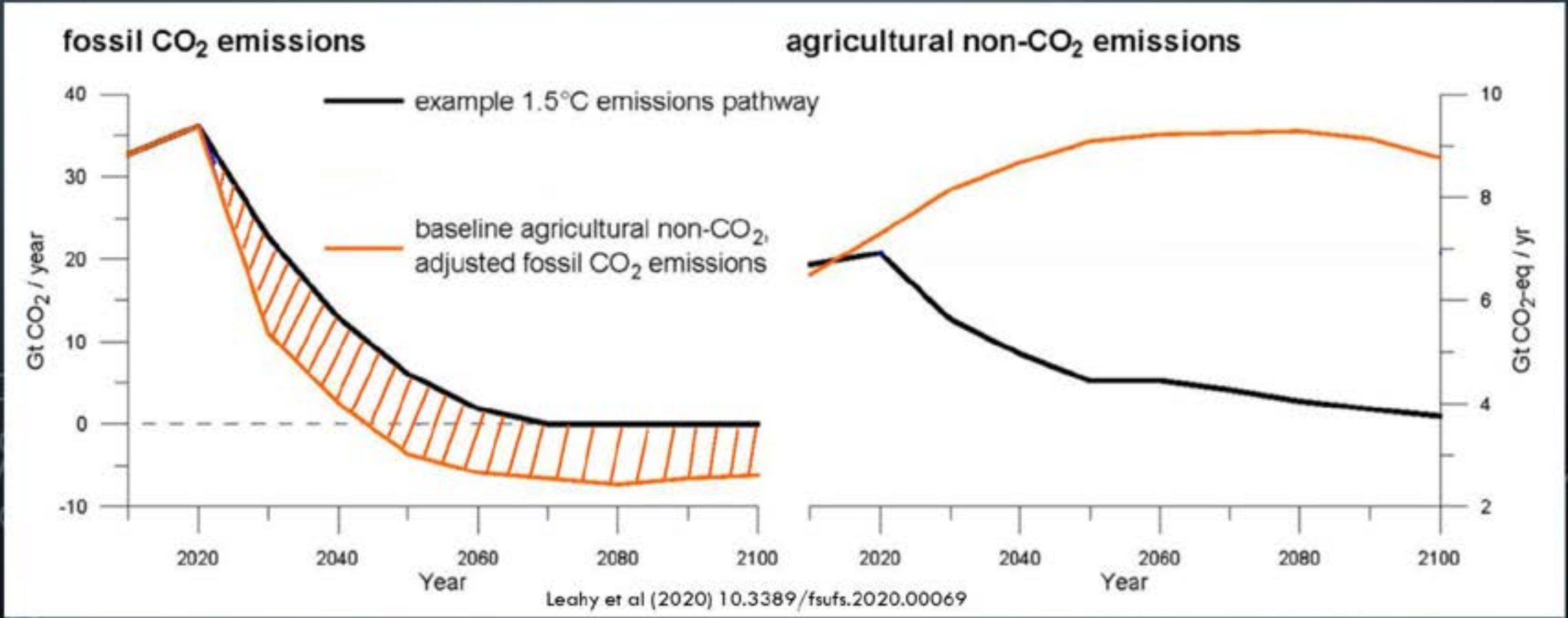


Excludes fossil CH_4, biogenic CH_4 from waste, non-agricultural N_2O and fluorinated gases.

Source: PCE, 2022. How much forestry would be needed to offset warming from agricultural methane?

WHAT WE DO ABOUT AGRICULTURE MATTERS

Mitigating or not mitigating direct agricultural emissions has as big an effect on the 21st century climate as **~250 Gt CO_2**



Hortan et al. 2020 doi.org/10.1038/s41467-020-01...

Thank you

IPCC (Intergovernmental Panel on Climate Change) is the leading international body for the assessment of our knowledge of climate change

Established in 1988 by the United Nations Environment Programme (UNEP) and World Meteorological Organisation (WMO)

Endorsed by the UN General Assembly

Intergovernmental body: open to all member countries of the United Nations

ipcc
INTERGOVERNMENTAL PANEL ON climate change

The role of the IPCC

"The role of the IPCC is to assess on a comprehensive, objective, open and transparent basis the scientific, technical and socio-economic information relevant to understanding the scientific basis of risk of human-induced climate change, its potential impacts and options for adaptation and mitigation."

Policy-relevant, but not policy-prescriptive

Not a research body – it assesses science, it doesn't *do* science

Principles Governing IPCC Work, paragraph 2
Source: http://www.ipcc.ch/pdf/ipcc-principles/ipcc-principles.pdf

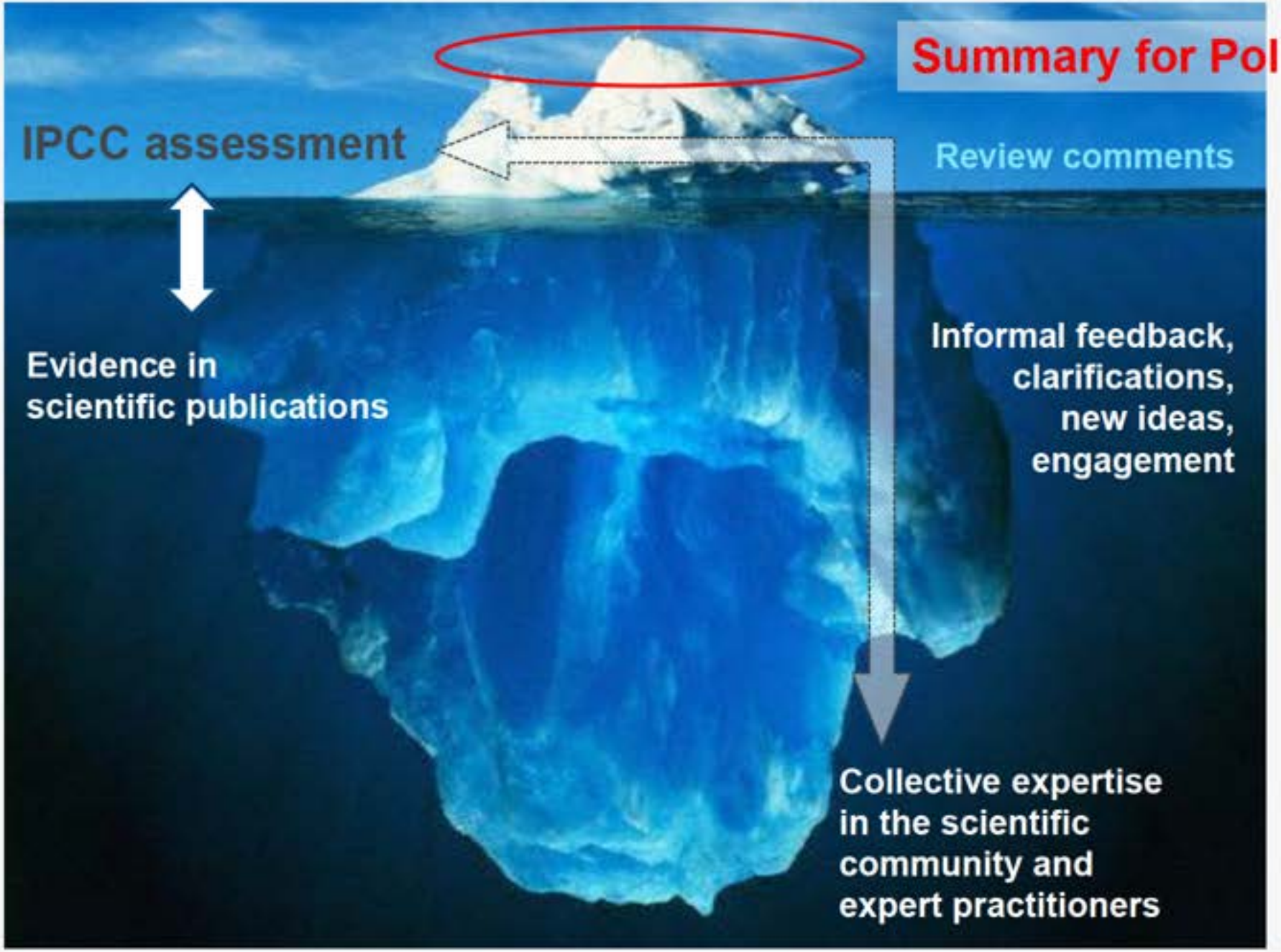
Working Group I: Science
Working Group II: Impacts, Adaptation, Vulnerability
Working Group III: Mitigation

WGI: 234 authors
WGII: 270 authors
WGIII: 278 authors

WGI: 67 countries
WGII: 66 countries
WGIII: 65 countries

WGI: > 14,000 scientific papers
WGII: > 34,000 scientific papers
WGIII: > 18,000 scientific papers

WGI: 78,008 review comments
WGII: 62,418 review comments
WGIII: 59,212 review comments



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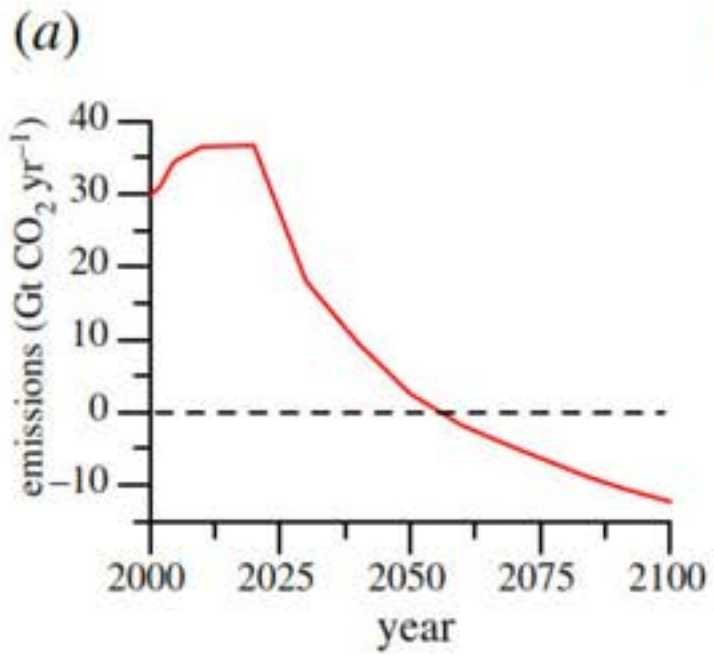
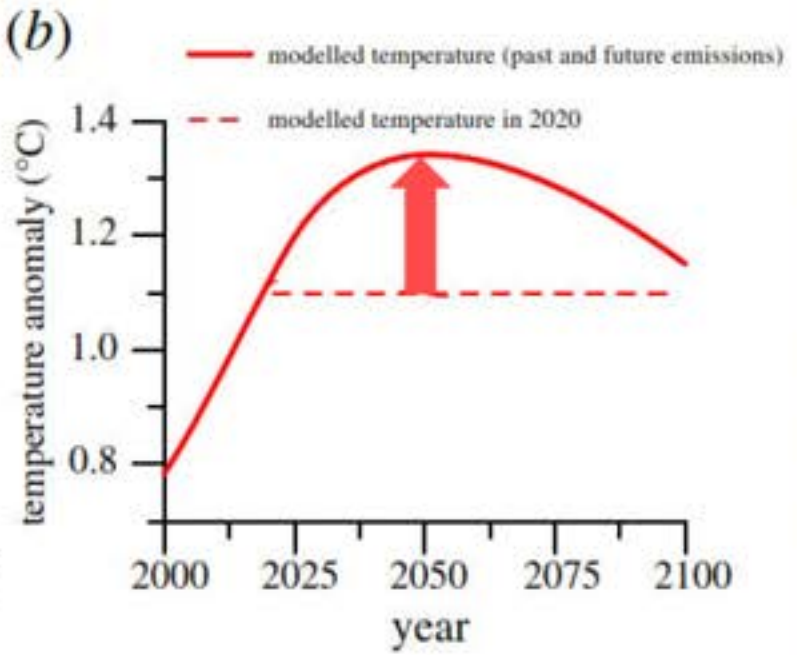
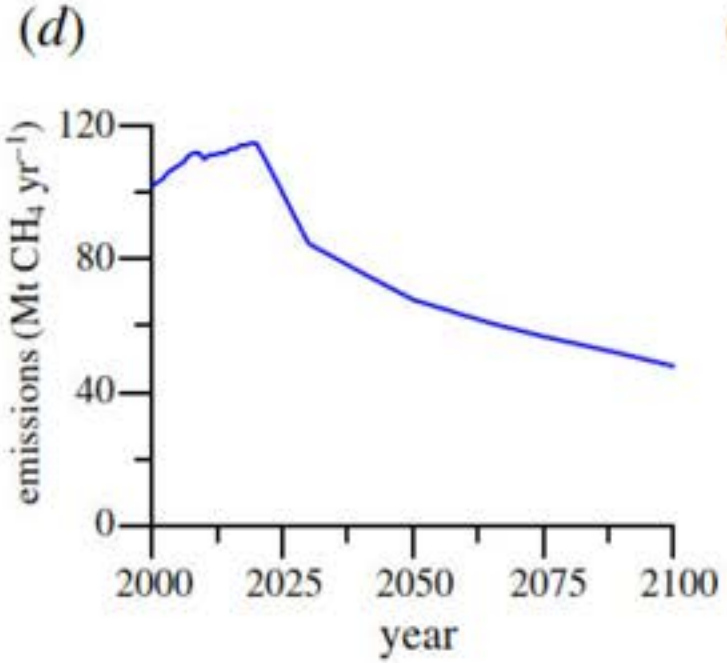
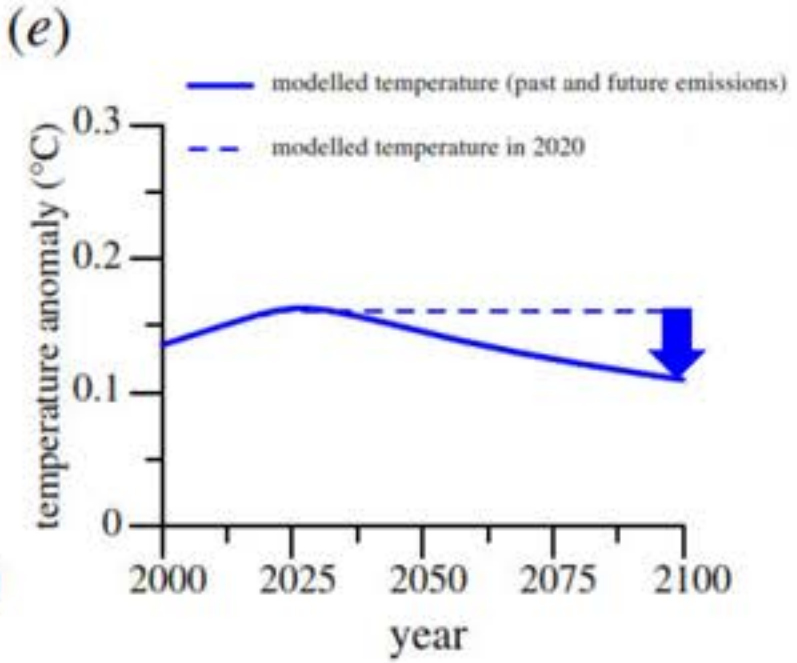
INTERGOVERNMENTAL PANEL ON climate change







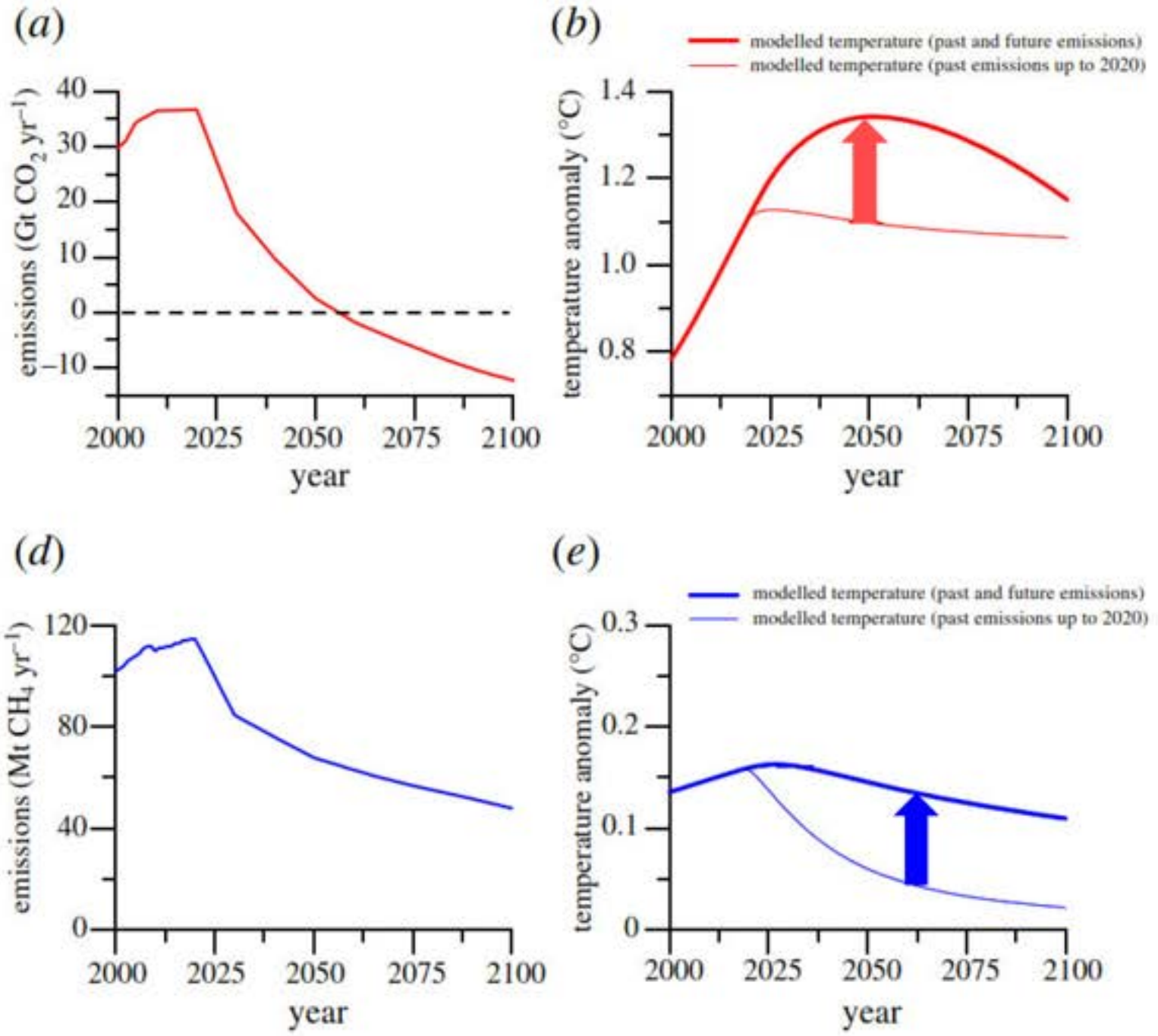


GWP*

For strongly declining CH_4 emissions

CO_2-we < 0

Reisinger et al (2021) doi: 10.1098/rsta.2020.0452

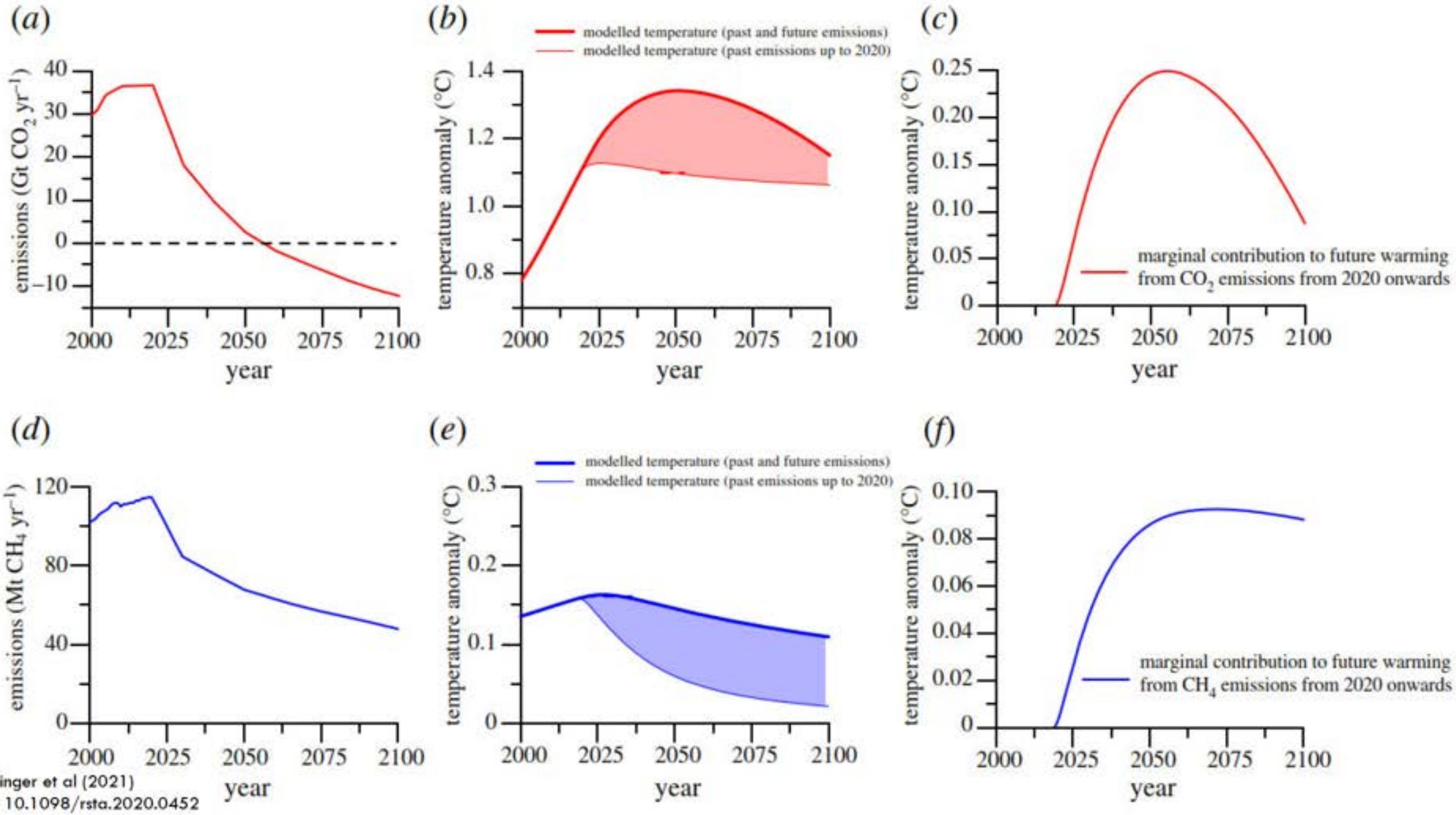


GWP100

For all CH_4 emissions greater than zero

CO_2-eq > 0

Reisinger et al (2021) doi: 10.1098/rsta.2020.0452



Reisinger et al (2021)
doi: 10.1098/rsta.2020.0452

Response ID ANON-PW1K-ERVZ-A

Submitted to Consultation: Draft advice on the second emissions reduction plan (2026-2030)
Submitted on 2023-06-20 07:59:53

Your details

1 What is your name?

Name:
[redacted]

2 What is your email address?

Email:
[redacted]

Share 'one big thing' or upload a file

8 Are you here to tell us your one big thing?

Your one big thing::

The latest IPCC synthesis report, which summarizes thousands of papers, came out last March 2022, stating that methane emissions COT equivalent of 28, overstates the effect on global surface temperature by a factor of 3-4.
Author of the paper that the IPCC has now endorsed, Professor Myles Allen, University of Oxford, explains in the link, how we have been wrongly calculating Methane emissions as a CO2 equivalent, when in fact if no further Methane source (if herd sizes are stable) is added then there is no further warming effect from Methane but even a possible cooling effect.

https://duckduckgo.com/?q=professor+myles+allen&atb=v314-1&iax=videos&ia=videos&iai=https%3A%2F%2Fwww.youtube.com%2Fwatch%3Fv%3DKWchjFsyPYw

NZ herd sizes are stable and if farmers are encouraged to diversify grazing vegetation to include plants such as Plantain, which has been proven to lower Methane production in ruminants, we can reduce our Methane even more without destroying our farmers, the NZ economy, our ability to purchase good, affordable, wholesome food, and supply it to overseas markets.

Therefore taking this into account, agricultural methane is not 40% of NZ emissions but 10% and this needs to be reflected in any policy or targets.
In fact all targets pledged for the whole country is 30% too high and this must be addressed and not stick with old targets and old science.

[redacted]

From: Andy Reisinger [redacted]
Sent: Monday, 6 June 2022 9:23 pm
To: Rod Carr; Jo Hendy; Grant Blackwell
Subject: Fwd: PCE roundtable on offsetting livestock methane with trees
Attachments: PCE questions.pdf

WARNING!!!
[Suspected fraudulent email detected]

Kia ora Rod, Jo, Grant

I mentioned that I sent some thoughts to Simon Upton, following a roundtable discussion he hosted regarding the potential to offset the warming from CH4 emissions from livestock through planting of trees, and using the GWP* metric to quantify the amount of offsetting needed.

I'm forwarding this to you just FYI, as I sent my thoughts to Simon in a purely personal capacity.

The blue questions are the specific questions that Simon posed to the roundtable.

Best wishes, Andy

-------- Forwarded Message --------
Subject: Re: PCE roundtable on offsetting livestock methane with trees
Date: Tue, 17 May 2022 18:52:36 +1200
From: Andy Reisinger [redacted]
To:simon.upton@pce.parliament.nz
CC:[redacted] [redacted] @pce.parliament.nz>

Dear Simon (cc [redacted])

Thank you for the interesting roundtable a couple of weeks ago on offsetting livestock methane with trees.

Attached is what I hope to be a more considered and structured set of answers to the questions you posed during the roundtable.

The document is both later and longer than I wanted it to be, but I hope that you may find the time, and may find it worthwhile, to read it.

I found that my answers depend almost entirely on underlying judgements and assumptions about overarching principles and objectives to guide climate policy for agriculture and forestry. So the attached document is an attempt to bring some of the relevant policy principles and objectives to the fore.

I very much hope that your forthcoming report will help lift the debate in New Zealand by clarifying how different assumptions (rather than different bits of science) lead to the very different conclusions by different stakeholders about the importance (or not) of reducing CH4 emissions, when and where offsetting may be appropriate, and what it is that we might want to offset in the first place.

Please note that I'm sending this purely in a personal capacity, obviously not speaking in my role as climate change commissioner, nor even attempting to reflect views that others in the commission might hold.

Best wishes, Andy

On 5/05/2022 3:23 pm, [redacted] wrote:

[redacted]

1. [redacted]
2. [redacted]
3. [redacted]
4. Would the GWP* metric be suitable for use in the context of domestic targets for national biogenic methane emissions?
5. What other changes to the accounting rules for New Zealand's domestic targets would be needed?

4. Is there a potential role for offsetting methane with trees in the context of emissions pricing at the processor or farm level? If so, would the GWP* metric be suitable for use in the context of emissions pricing?

We look forward to continuing to engage with you on this important topic.

Ngā mihi,

[redacted] – Research and Analysis | Kaitohu Tuakana Rangahau me te Tātari
Parliamentary Commissioner for the Environment | Te Kaitiaki Taiao a Te Whare Pāremata
Office [redacted] | Mobile [redacted]
Level 8, QUAL IT Building, 22 The Terrace