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Land and agriculture dimensions to carbon budgeting in New Zealand

Andy Reisinger, Deputy Director, NZAGRC

Irish Climate Change Advisory Council, 21 October 2019

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1) Zero Carbon Bill framework
2) 2050 emission targets and justification
3) Points of contention; actual climate outcomes
4) Summary and next steps

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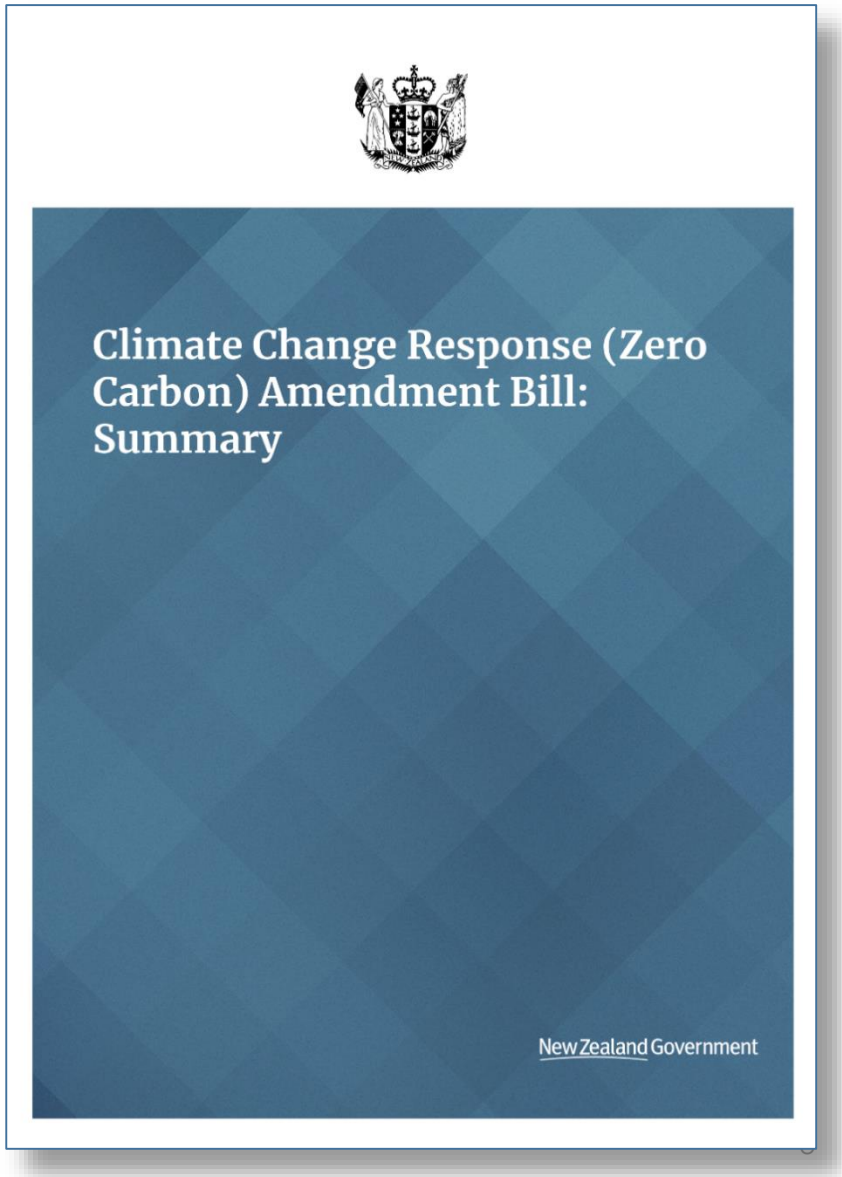
The Zero Carbon Bill

- framework for New Zealand's transition to a low emissions and climate resilient economy
  - long-term emissions reduction targets for 2050
  - emissions budgets as milestones towards targets
  - requirement for government to develop and implement policies for adaptation and mitigation
  - independent Climate Change Commission to give expert advice and keep the Government accountable
- Expected to be enacted by the end of the year
- Select Committee reported back TODAY



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Proposed 2050 emission targets

Split-gas target:

- **reduce all GHGs (except biogenic methane) to net zero by 2050**
- **reduce emissions of biogenic methane**
  - **10 % below 2017 levels by 2030**
  - **24–47 % below 2017 levels by 2050**
- targets are presented as consistent with 1.5°C temperature goal
- rationale for split target: CH_4 is short-lived, no need to go to zero

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IPCC global least-cost emissions pathways for 1.5°C

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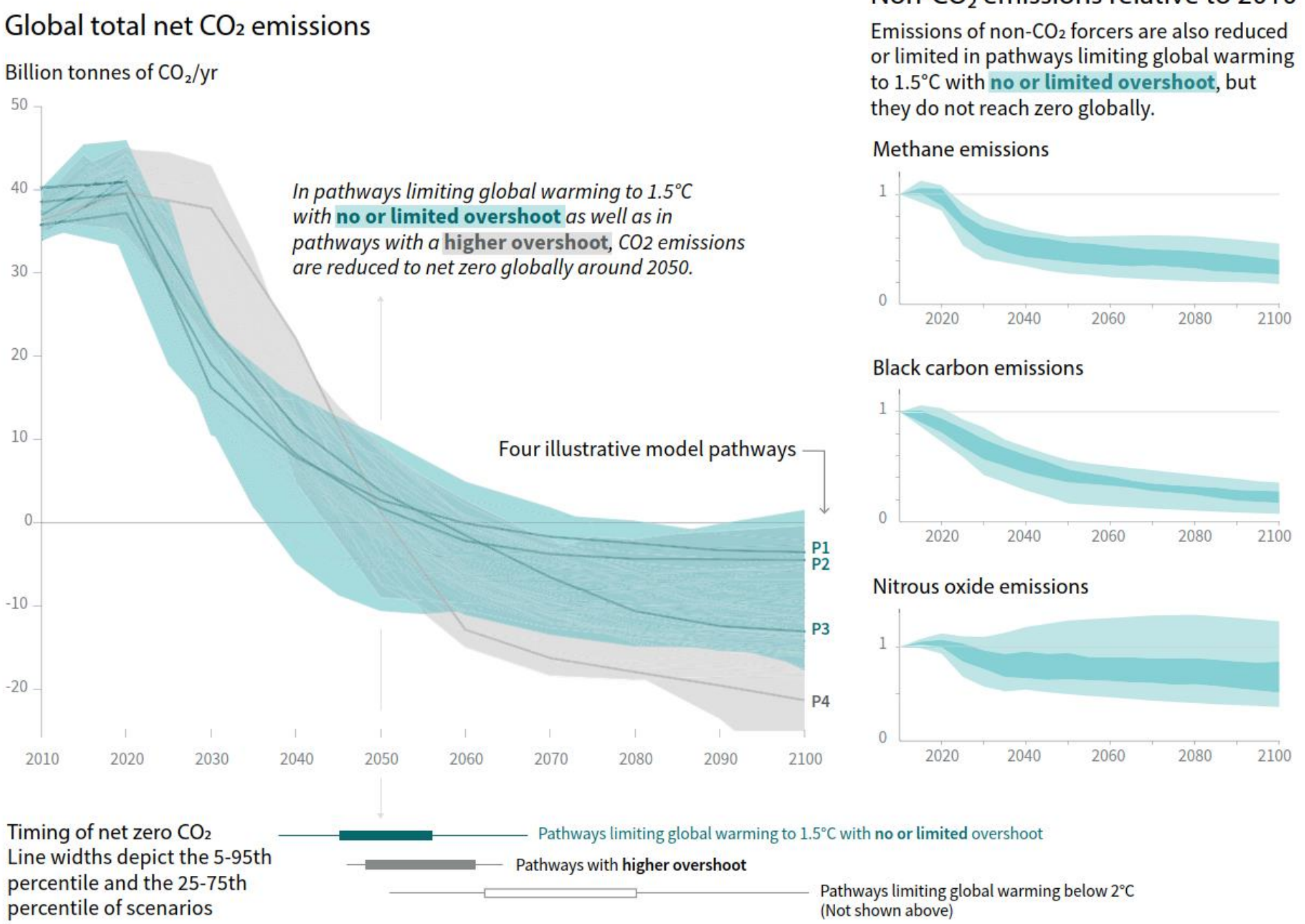

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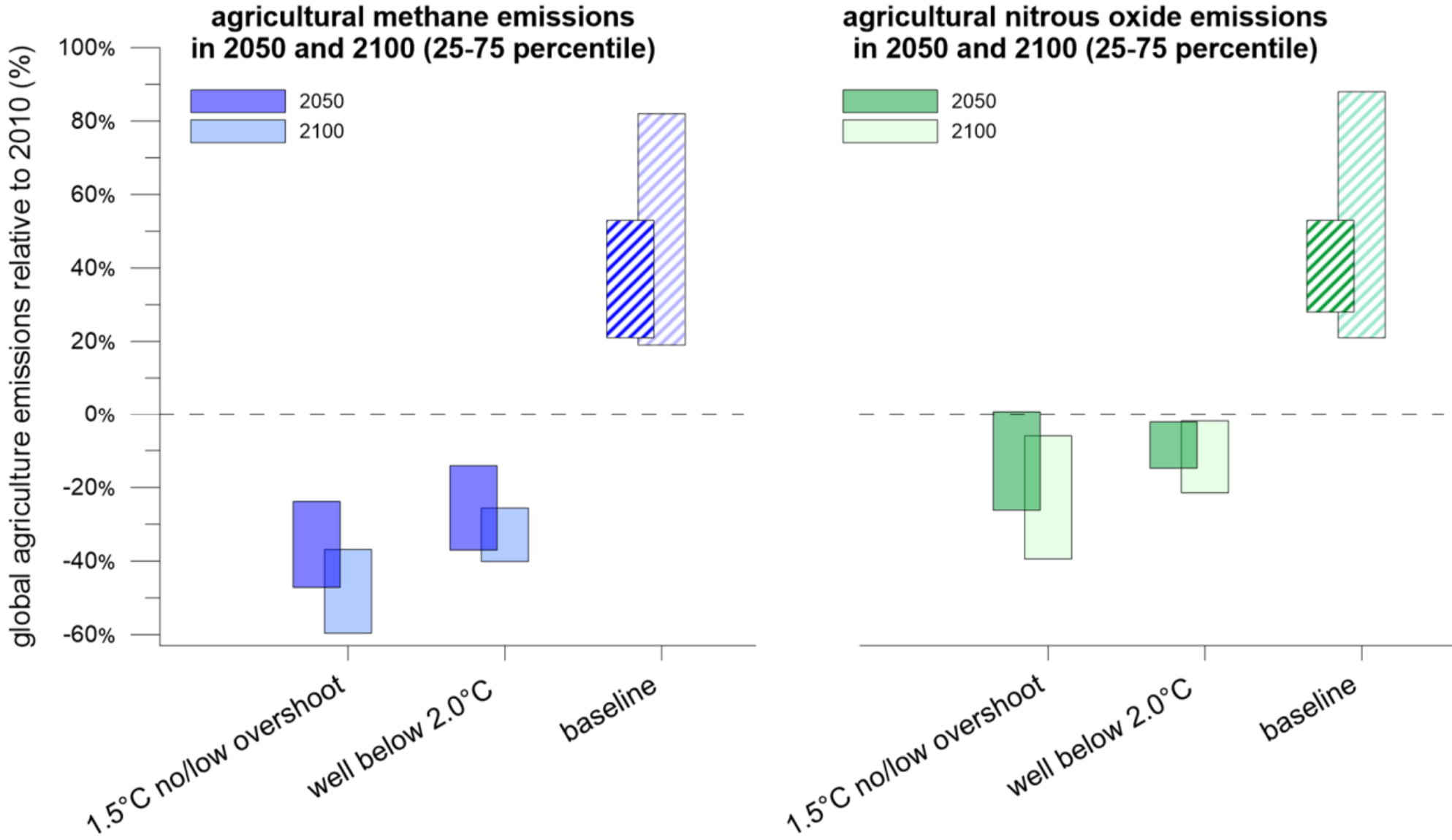

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IPCC 1.5°C emissions database; Huppmann et al 2018

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Targets in int'l context

NZ targets are based on but not identical to global targets:

- net zero long-lived GHG target more ambitious than global range (world goes net-zero all gases by about 2060-2070)
- biogenic methane target of 24-47% slightly less ambitious than global range (because NZ includes landfill methane)

Surprisingly little debate about appropriateness of adopting <u>global</u> emissions targets as <u>national</u> target – no reference or quantification of CBDR

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Contention around 2050 targets in the land sector

- Main debate on 2050 target range for methane
  - implies stock reduction without new technology
  - efficient producer, leakage, loss of competitiveness
  - GWP metric claimed to 'overstate' warming from CH_4
  - alternative target: reduce CH_4 emissions so they cause "no additional warming"
- … but also concerns about over-reliance on forestry offsets in the "net" zero target for long-lived gases and restrictive accounting rules for CO_2 removals

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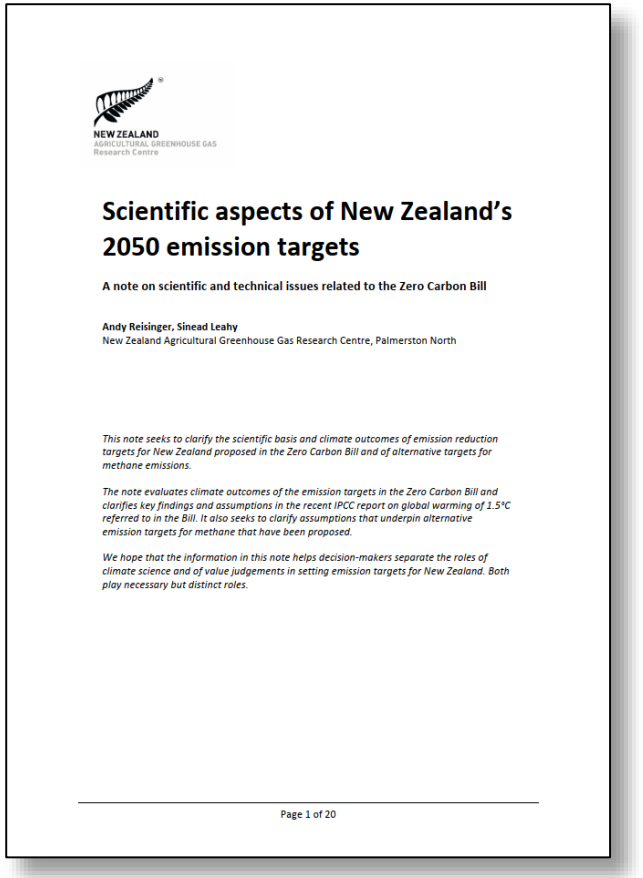
Actual climate outcomes



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Scientific aspects of New Zealand's 2050 emission targets

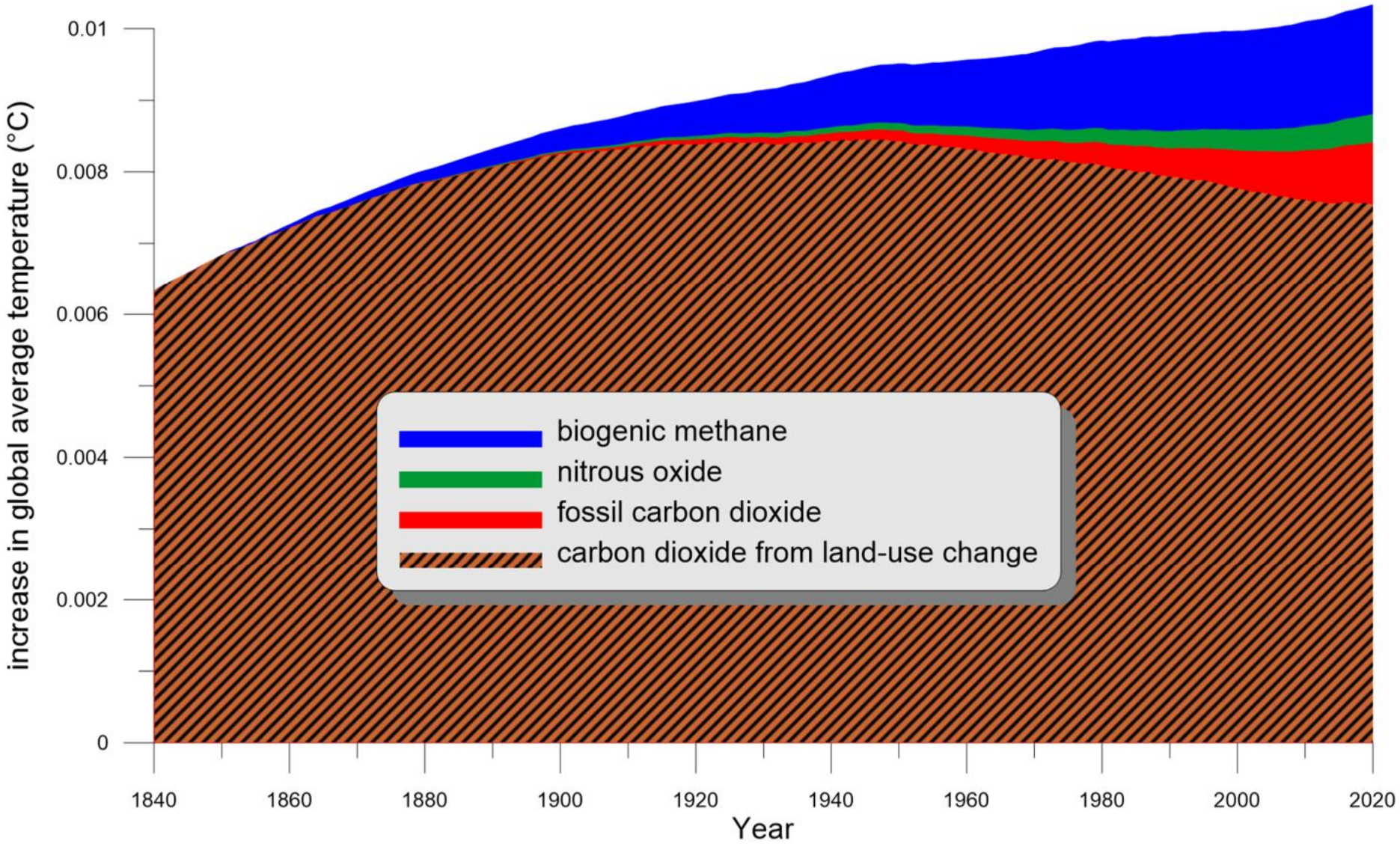
A note on scientific and technical issues related to the Zero Carbon Bill

Andy Reisinger, Sinead Leahy
New Zealand Agricultural Greenhouse Gas Research Centre, Palmerston North

This note seeks to clarify the scientific basis and climate outcomes of emission reduction targets for New Zealand proposed in the Zero Carbon Bill and of alternative targets for methane emissions.

The note evaluates climate outcomes of the emission targets in the Zero Carbon Bill and clarifies key findings and assumptions in the recent IPCC report on global warming of 1.5°C referred to in the Bill. It also seeks to clarify assumptions that underpin alternative emission targets for methane that have been proposed.

We hope that the information in this note helps decision-makers separate the roles of climate science and of value judgements in setting emission targets for New Zealand. Both play necessary but distinct roles.



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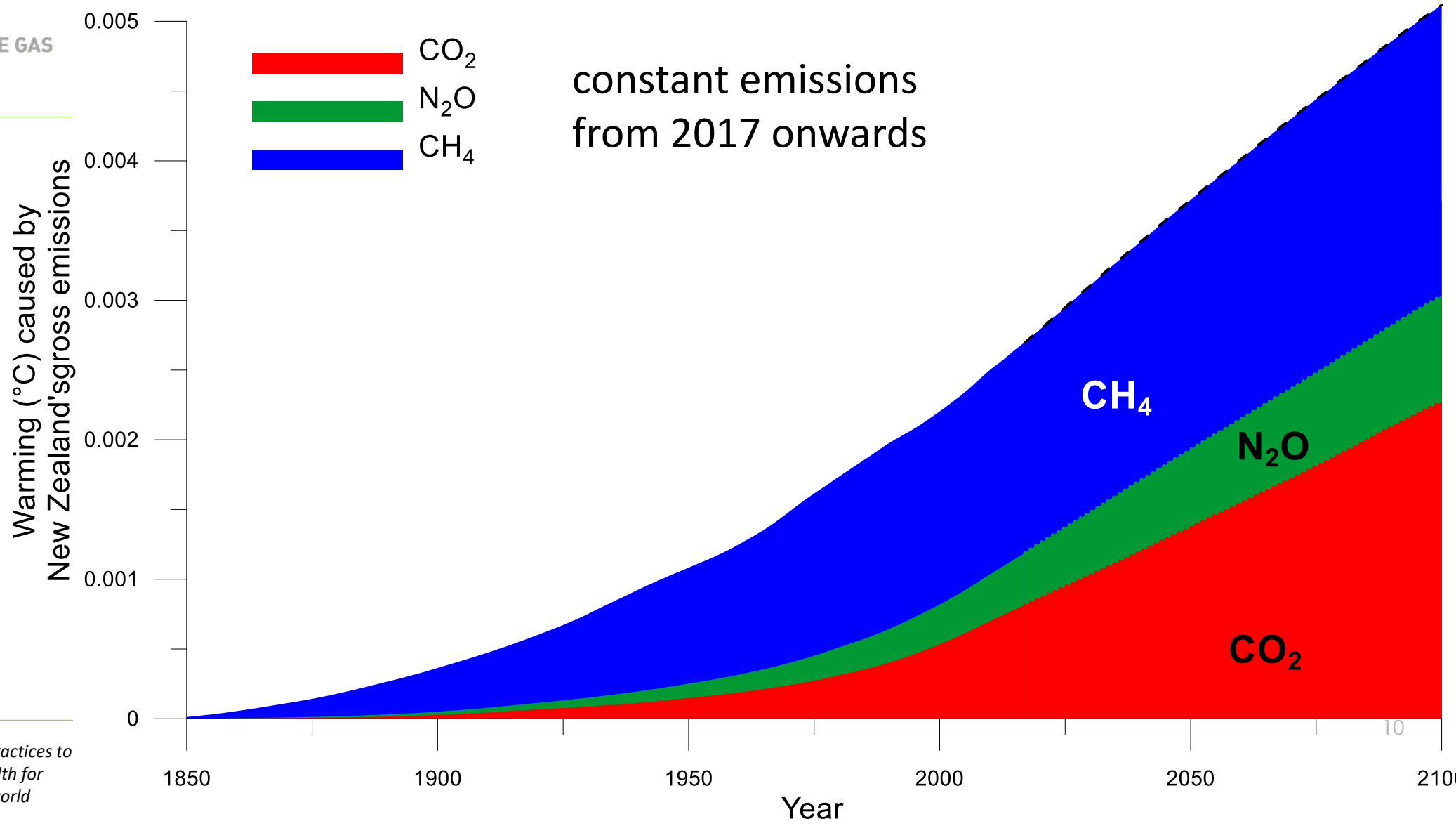
Actual climate outcomes



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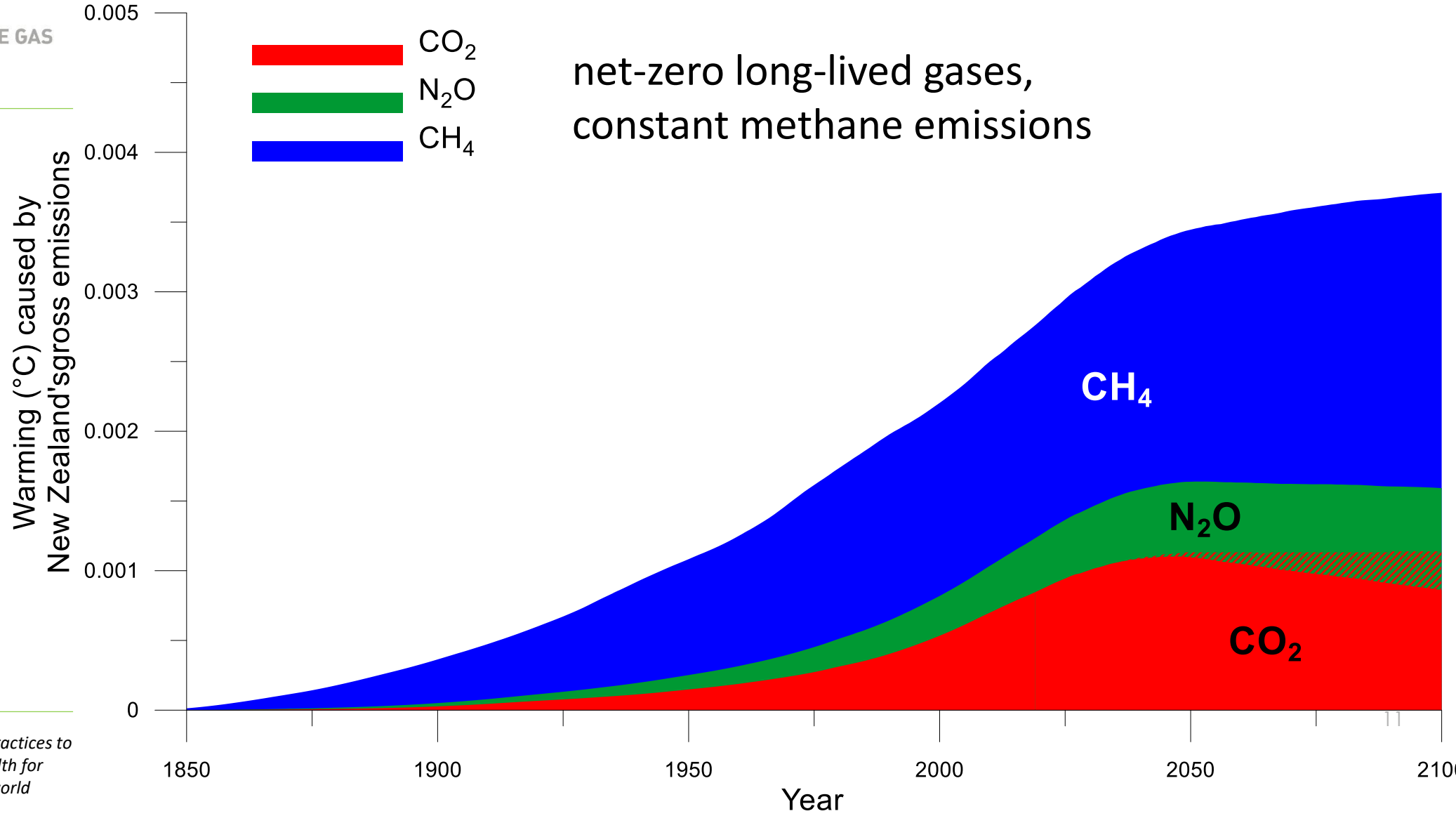

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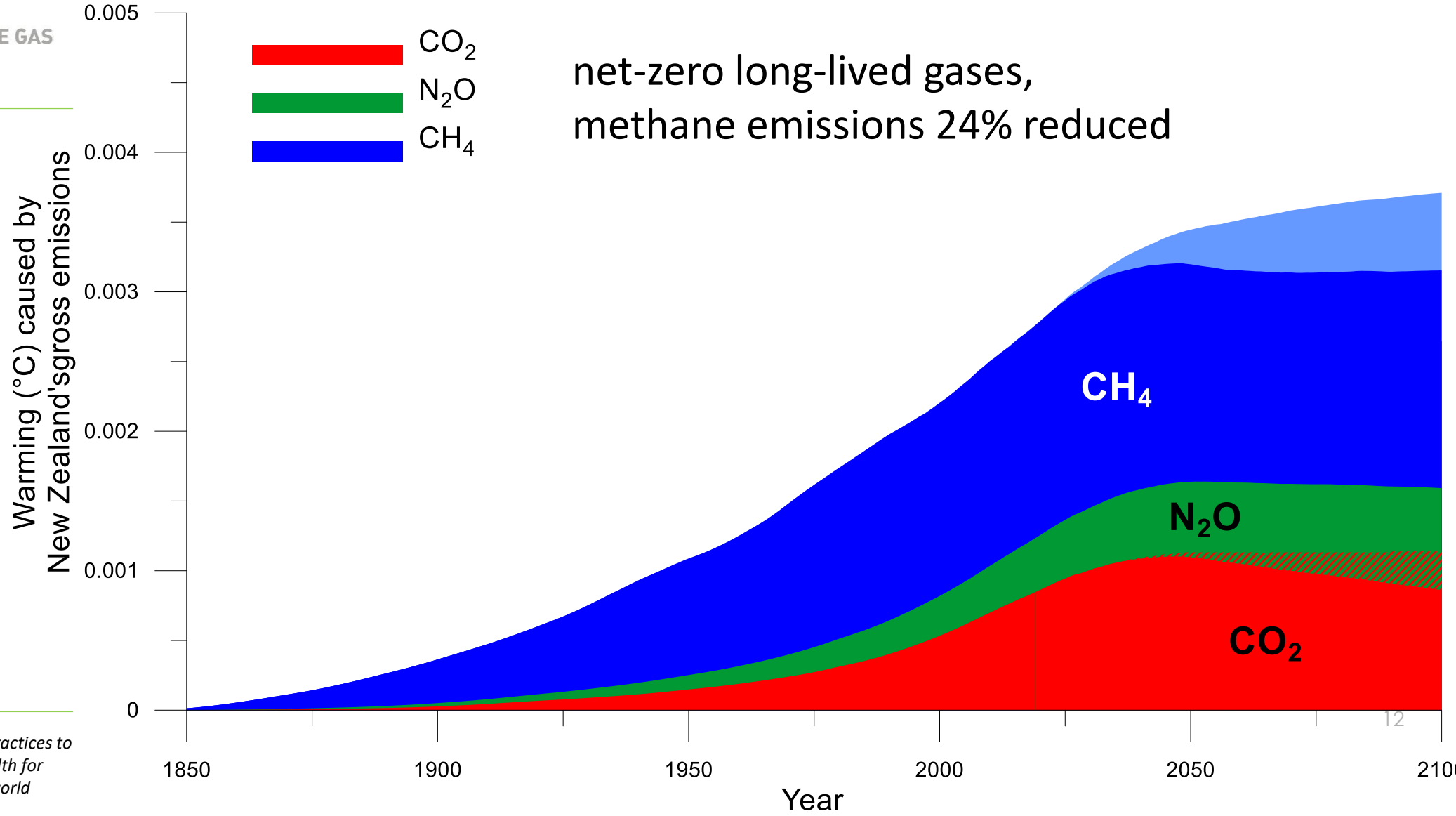
Actual climate outcomes

net-zero long-lived gases,
methane emissions 24% reduced



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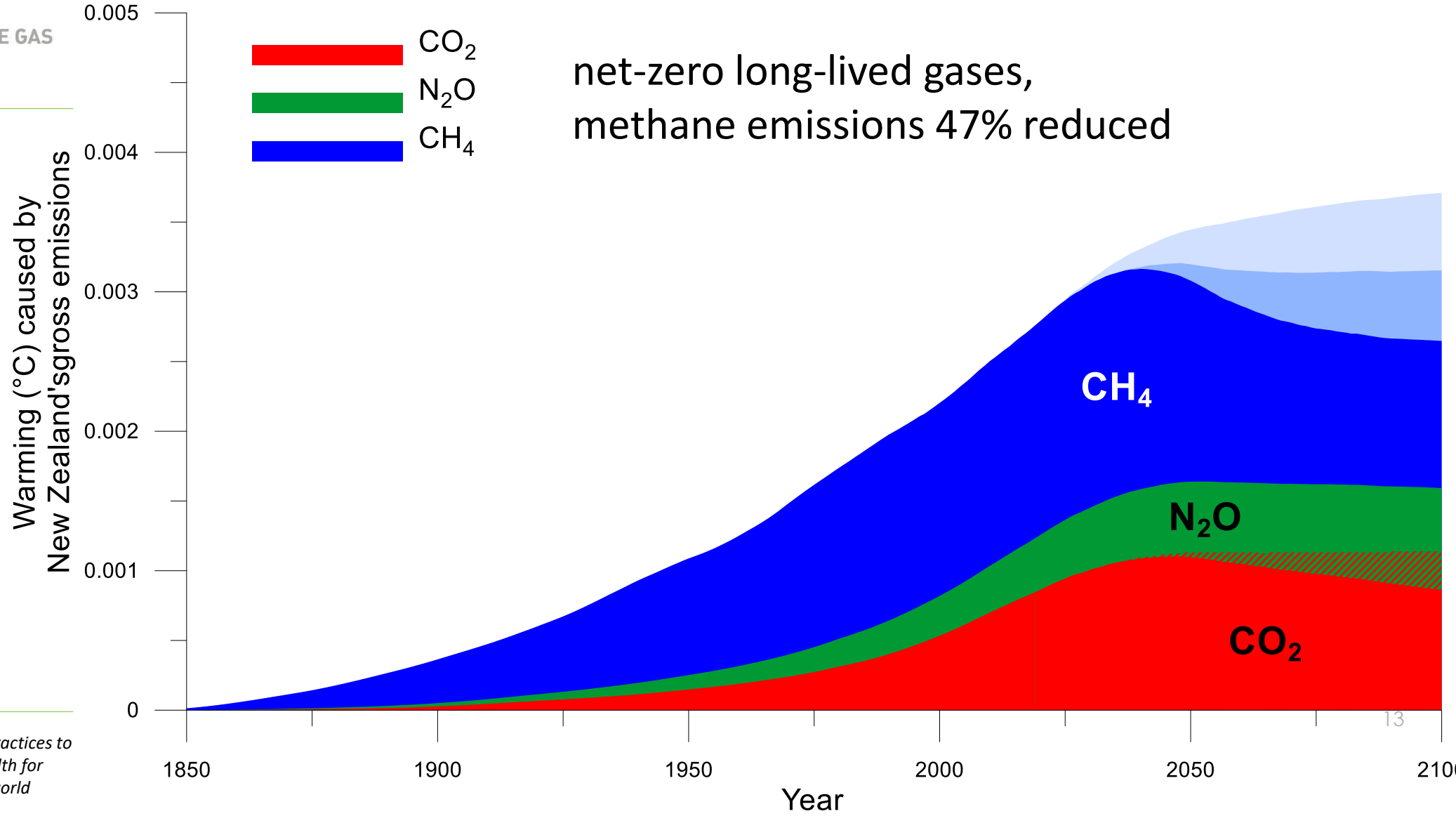
Actual climate outcomes

net-zero long-lived gases,
methane emissions 47% reduced



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Contention around 2050 targets

Is the biogenic CH4 target fair and reasonable?

- **"YES"**: emissions should go as low as possible to minimize warming. Aiming only for "no additional warming" implies a grandfathering approach, which would be unfair.
- **"NO"**: Warming from CO_2 keeps increasing, whereas warming from CH_4 would decline if emissions are reduced by 47%. We're not punishing fossil fuel emitters for the warming caused by their past emissions prior to 1990, so we should do the same for CH4 emitters.

➢ Equitable means "no additional warming" from CH_4, and that implies reductions of 10-22% by 2050

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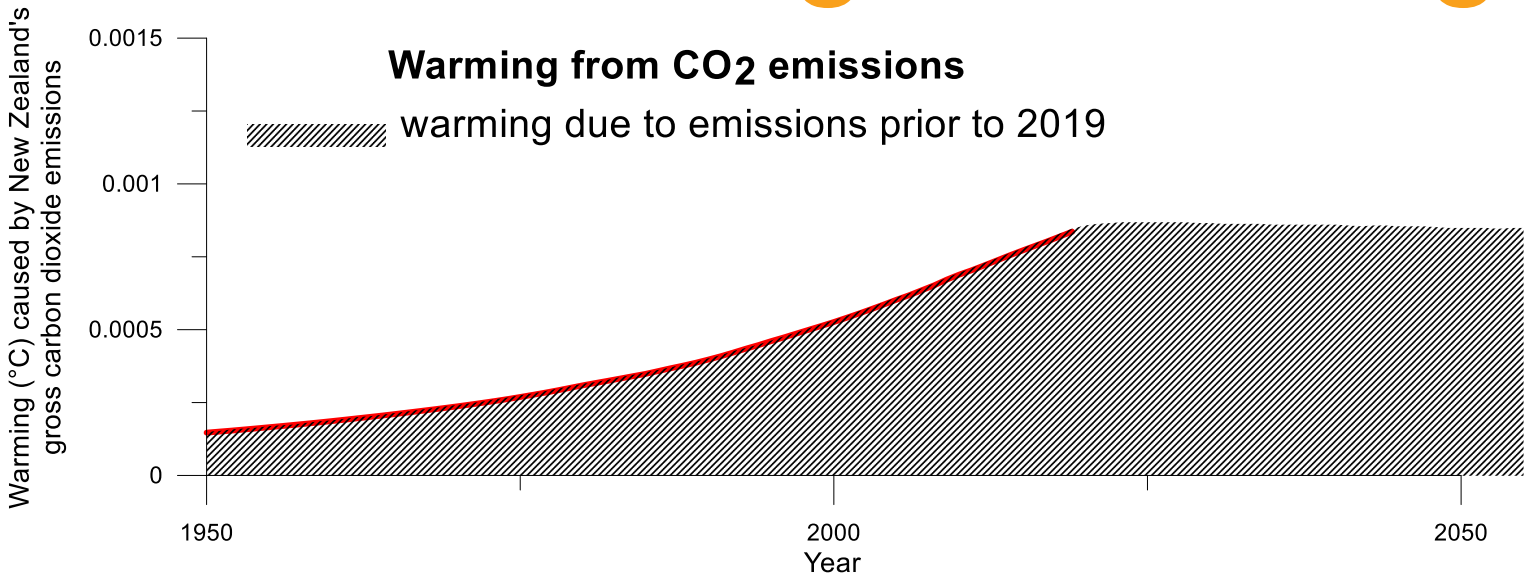
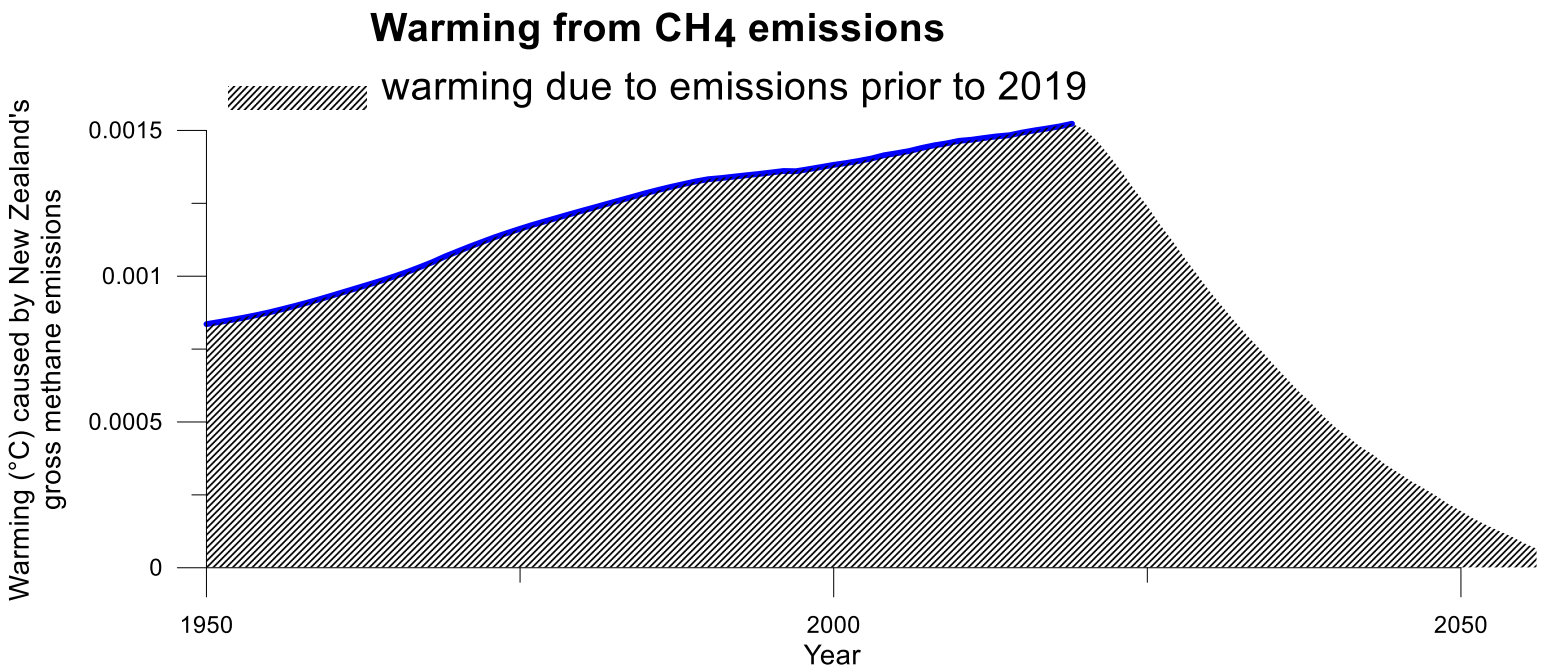
Grandfathering emission rights





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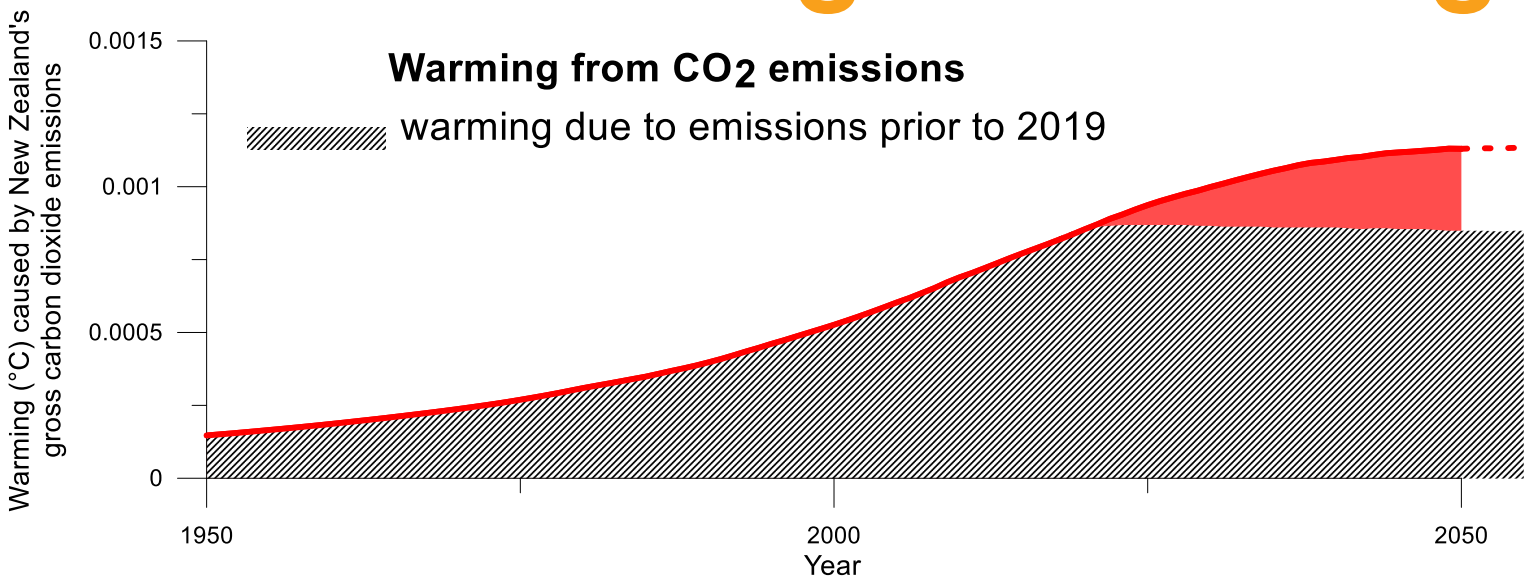

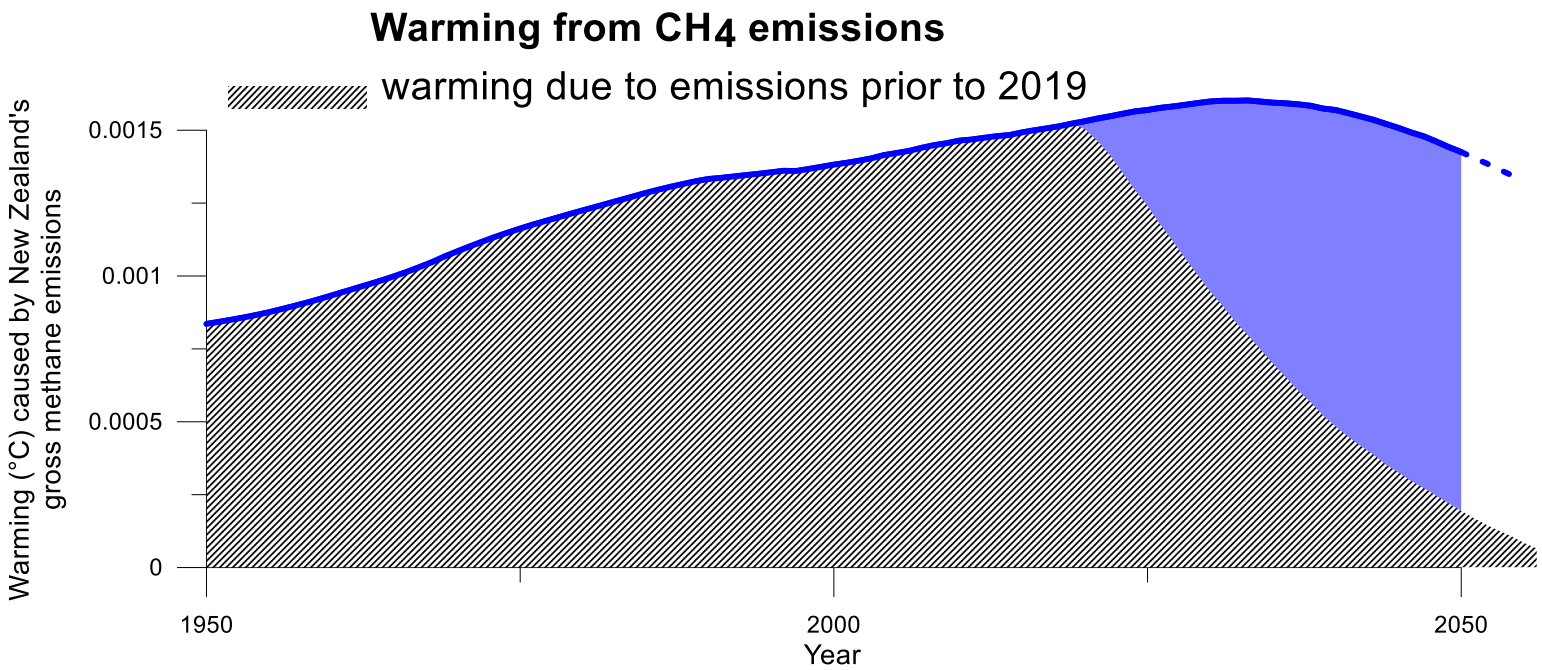

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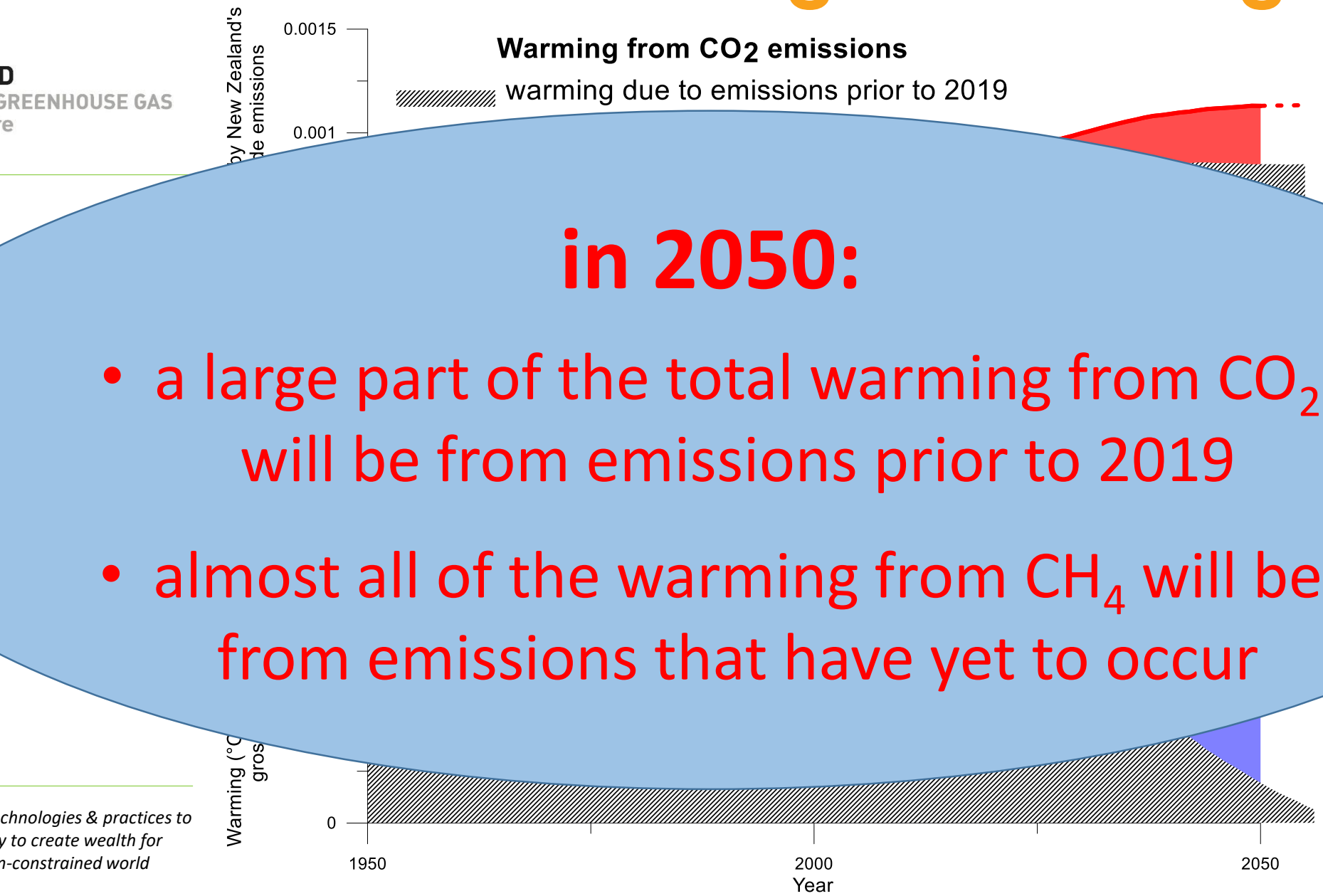

in 2050:

- a large part of the total warming from CO_2 will be from emissions prior to 2019
- almost all of the warming from CH_4 will be from emissions that have yet to occur

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Offsetting CH_4 with CO_2

Some agriculture stakeholders argue that CO_2 removals by LULUCF should be used to offset on-going CH_4 emissions

- … illogical if the argument for a split-gas target was that the two gases are fundamentally non-fungible
- … if fungibility is ok, the rationale for a split-gas target becomes problematic (economic protection for sector?)
- … common claim that it is more important to reduce CO_2 than reduce CH_4, so wouldn't offsetting be better for the climate?

Actual climate outcomes under offsetting can be modelled; CH_4 reductions avoid more climate change in the near term (more than a century) than if emissions are offset using GWP

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Offsetting CH_4 with CO_2

own calculations (MAGICC)

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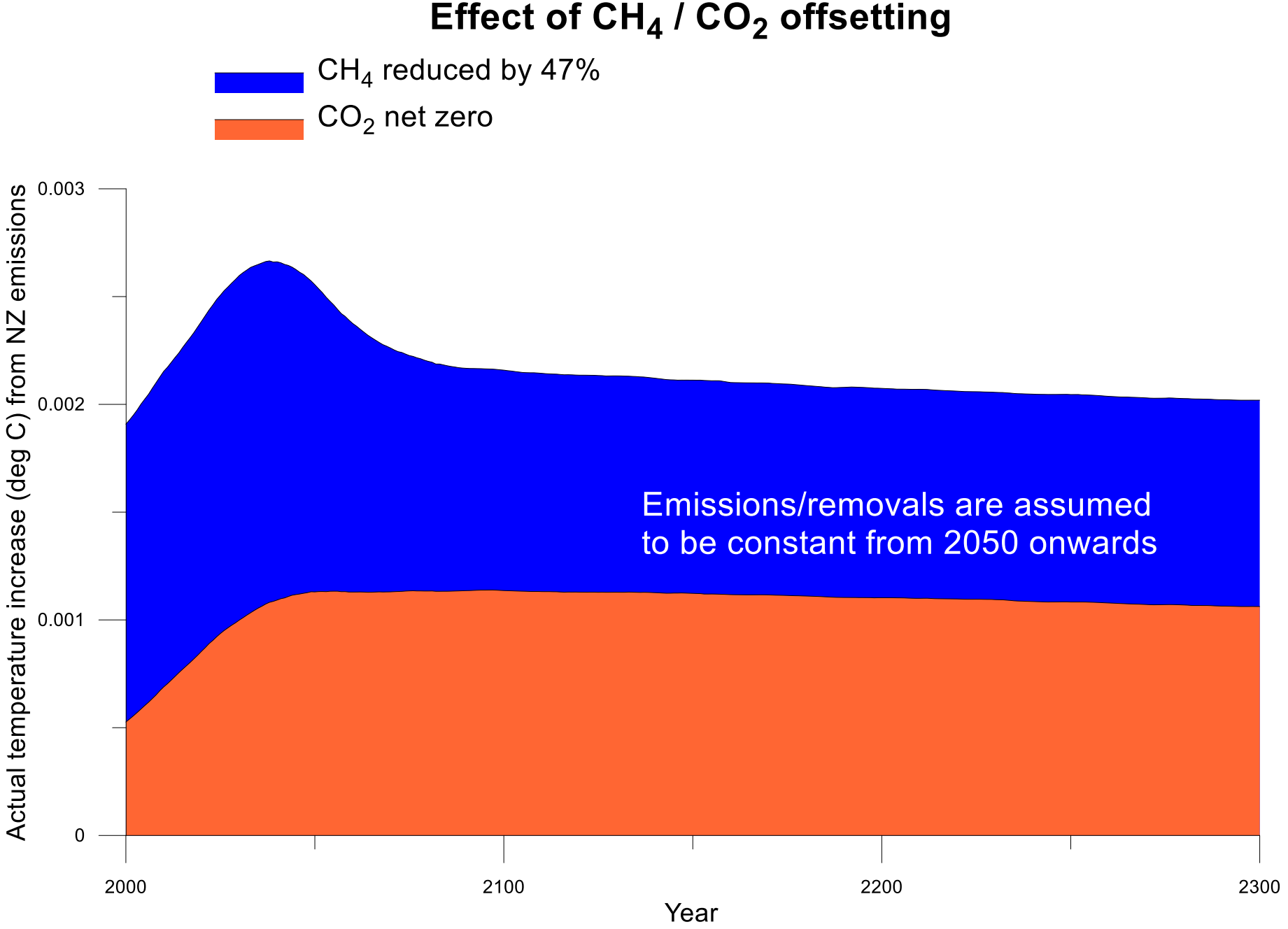

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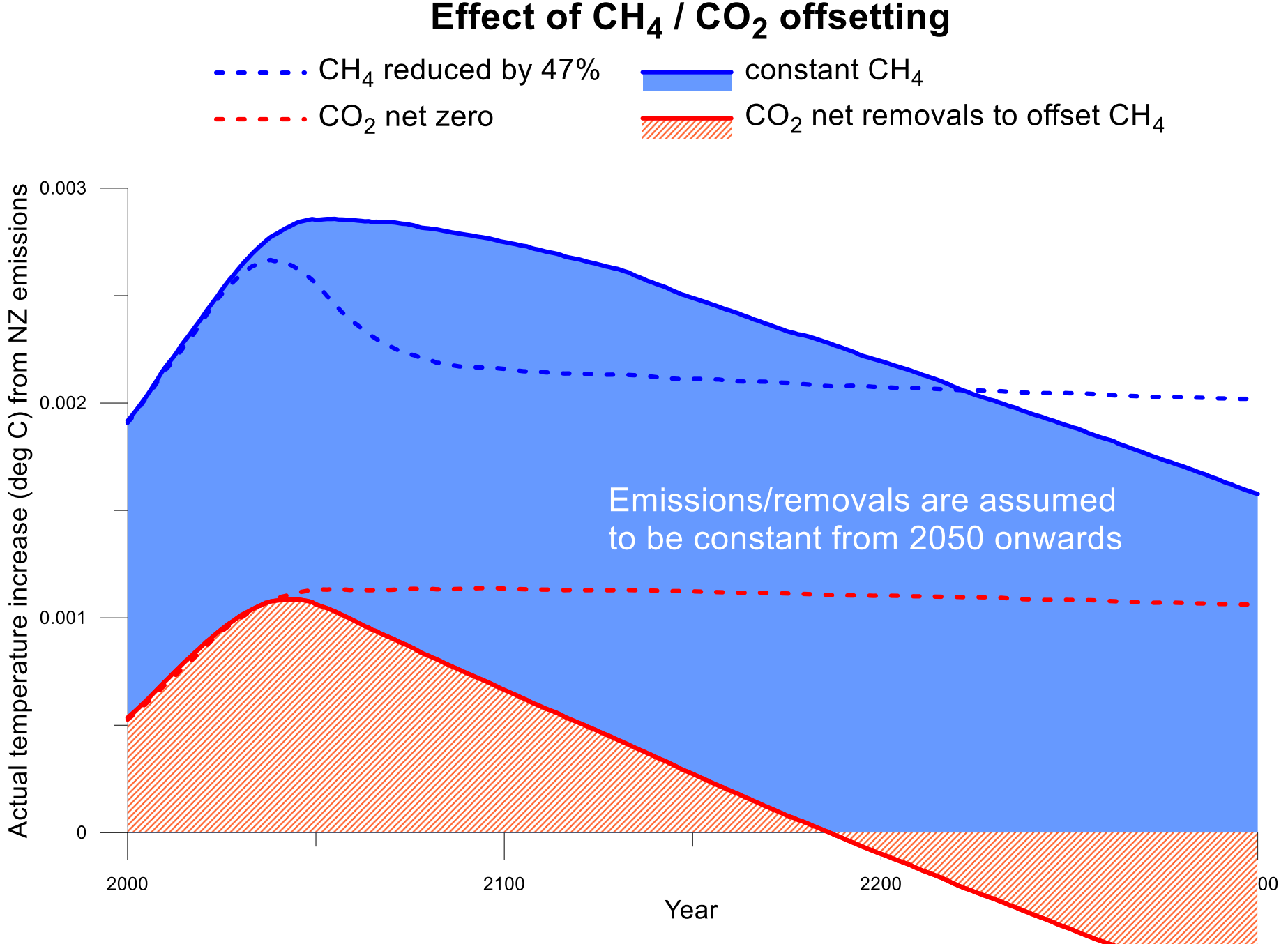

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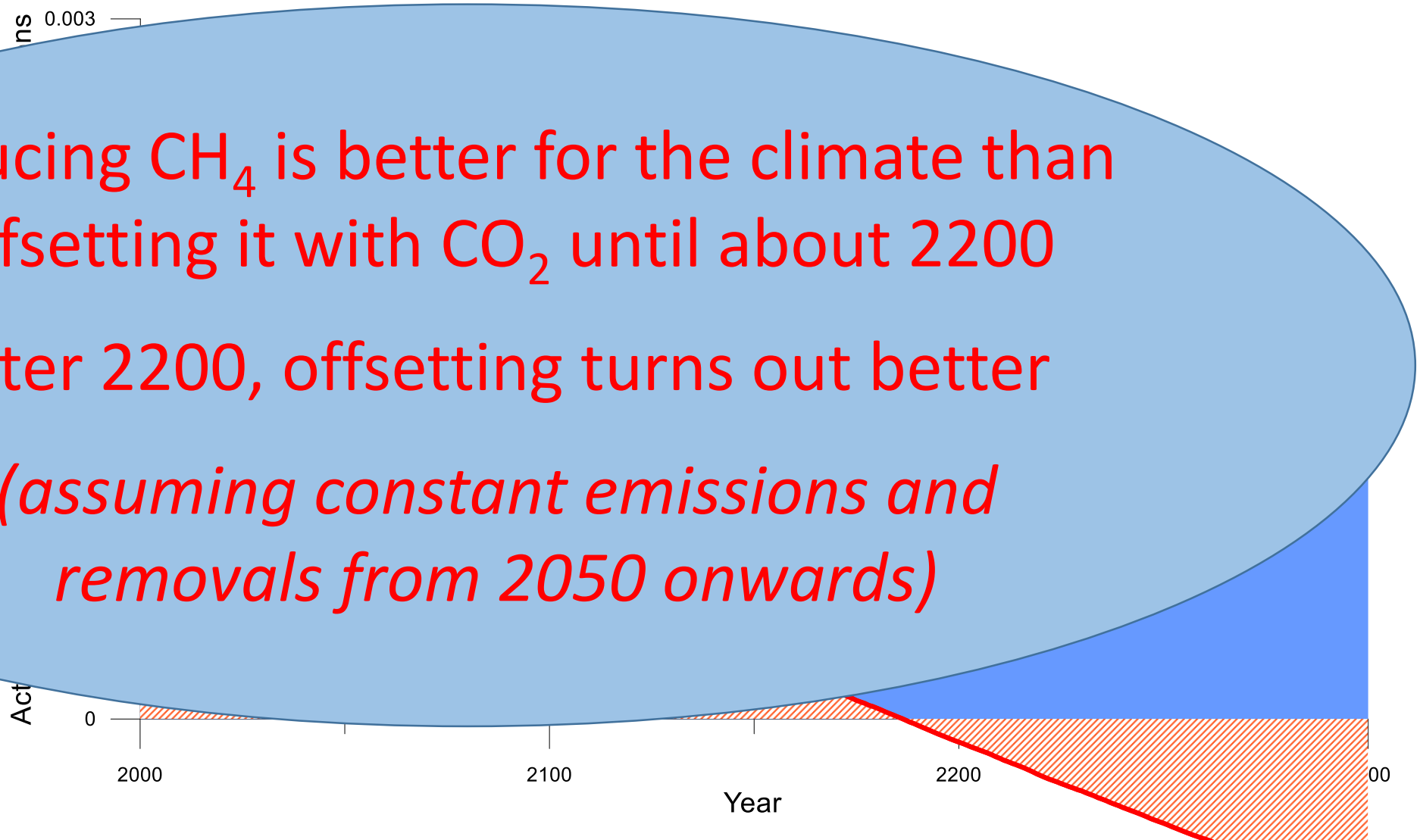
Offs… C…

- reducing CH_4 is better for the climate than offsetting it with CO_2 until about 2200
- after 2200, offsetting turns out better
- *(assuming constant emissions and removals from 2050 onwards)*



own calculations (MAGICC)

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Summary and next steps

(my view) No good prima facie reason why aiming for "no additional warming" from an individual gas and emitter is a useful benchmark within a global commons problem

… especially when gases differ fundamentally in their lifetimes

… and historical *as well as* future responsibility of countries.

➢ Select Committee report-back; final Government decisions

- to advise on target, important work needed on actual mitigation potential and economic/social costs of mitigation in agriculture, as well as leakage / competitiveness modelling …
- … and actual policies to reduce emissions (—> ICCC report)

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Thank you !

Zero Carbon Bill: www.parliament.nz/en/pb/bills-and-laws/bills-proposed-laws/document/BILL_87861/climate-change-response-zero-carbon-amendment-bill

Ministry for the Environment: www.mfe.govt.nz/climate-change/zero-carbon-amendment-bill

Interim Climate Change Committee: iccc.mfe.govt.nz

Parliamentary Commissioner for the Environment: pce.parliament.nz

NZAGRC and Zero Carbon Bill technical note: www.nzagrc.org.nz; www.nzagrc.org.nz/user/file/1941/Scientific%20aspects%20of%202050%20methane%20targets.pdf

Farming matters (farmers' resources): www.farmingmatters.nz

Disclaimer: any views expressed in this presentation are my own and not necessarily those of NZAGRC partners individually nor collectively

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