

17 June 2021

Hon. James Shaw
Minister for Climate Change
Parliament Buildings
Wellington 6160

By email: j.shaw@ministers.govt.nz

Dear Minister

Re updating the NDC in light of the Climate Change Commission's advice

We refer to the final advice of the Climate Change Commission in relation to the NDC.

We assume that this advice will now be used to update Aotearoa New Zealand's NDC by setting a more ambitious target.

In your consideration of the Commission's advice, we wish to draw your attention to what we believe to be an important error in the Commission's analysis.

In order to assess the current NDC, the Commission considered what level of net emissions between 2021-2030 would be consistent with the findings of the IPCC's 2018 Special Report on Global Warming of 1.5°C. The Commission calculated that net emissions over this period should not exceed 568 Mt CO₂-e to be compatible with contributing to limiting warming to 1.5°C.

As you are aware, the 2018 Special Report determined the percentages by which anthropogenic emissions of different greenhouse gases must each be reduced in order to limit global warming to 1.5°C. The reductions required relative to 2010 levels to have a 50-66% chance of limiting warming to 1.5°C with no or limited overshoot are:

- for net carbon dioxide, -40% to -58% by 2030 and -94% to -107% by 2050; and
- for agricultural methane, -11% to -30% by 2030 and -24% to -47% by 2050.

In implementing this approach, however, the Commission made a logical error as to the required reductions in net carbon dioxide.

Based on the April 2021 Greenhouse Gas Inventory report, in 2010:

- the level of gross carbon dioxide emissions in Aotearoa New Zealand was 35.031 Mt; and
- the level of net carbon dioxide emissions in Aotearoa New Zealand was 5.048 Mt.

So, applying the 2018 Special Report, the maximum level of net carbon dioxide emissions in Aotearoa New Zealand should have been calculated as 2.120 to 3.029 Mt by reducing 5.048 Mt by -40% to -58%.

However, the Commission applied the -40% to -58% range to the 2010 level of *gross* carbon dioxide emissions. On the Commission's view, the 2030 limit for net carbon dioxide is 14.713 to 21.019 Mt and the overall net emissions limit for 2021-2030 is 568 Mt. In our view, this is a clear mathematical error.

If the Commission had correctly applied the -40% to -58% to net carbon dioxide emissions, then:

- the 2030 limit for net carbon dioxide would have been 2.120 to 3.029 Mt; and
- the overall net emissions limit for 2021-2030 would have been 484 Mt.¹

The Commission's explanation for its approach is that:²

Reductions of net carbon dioxide emissions have here been applied to gross carbon dioxide levels consistent with target accounting. This accounting recognises that land sector emissions need to be reduced, but land sector removals do not need to continue indefinitely.

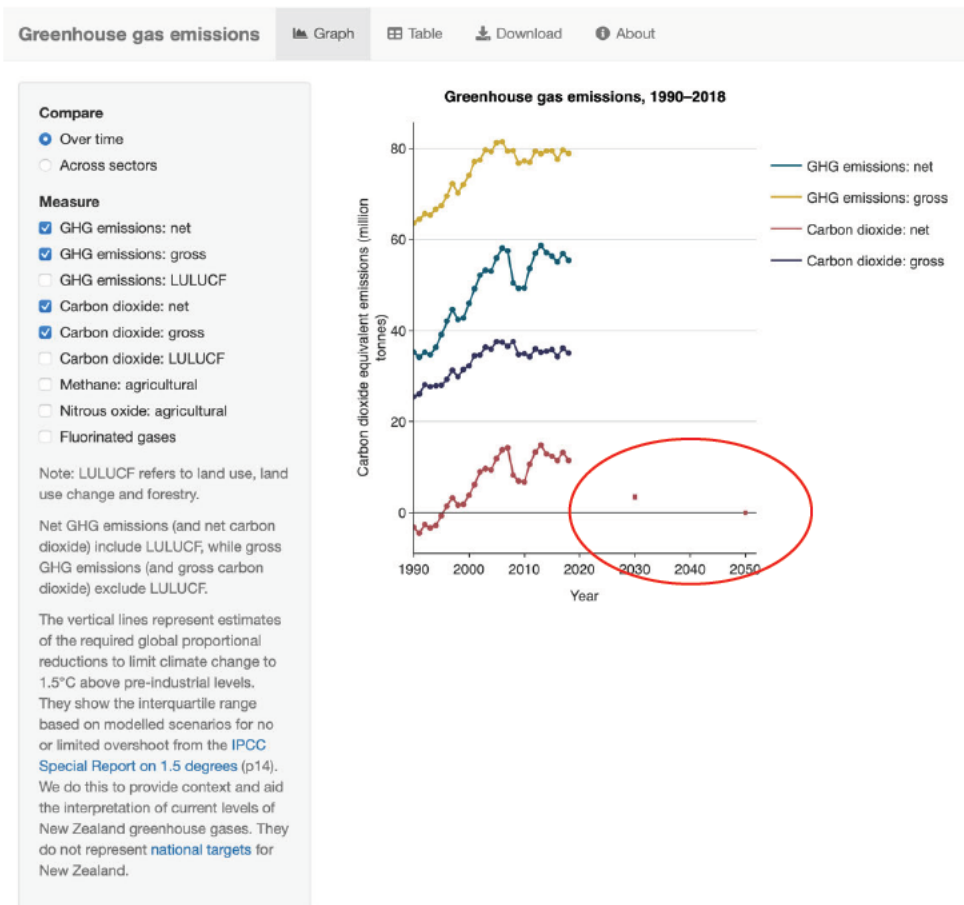
This explanation, however, conflates target accounting with the mathematical application of the 2018 Special Report findings to Aotearoa New Zealand's 2010 net carbon dioxide emissions to calculate an appropriate limit for 2030. This calculation can *only* be carried out by reference to 2010 net carbon dioxide emissions.

We have engaged in correspondence with Stats NZ over the correct application of the 2018 Special Report findings to net carbon dioxide.

¹ This has been calculated by using the Commission's methodology but applied to 2010 net carbon dioxide emissions of 5.048 Mt. We would be happy to provide the detailed calculations.

² See Evidence Chapter 13, note 6.

Stats NZ’s greenhouse gas emissions chart undertakes the same exercise of determining the implications of the 2018 Special Report findings to Aotearoa New Zealand’s net carbon dioxide emissions to calculate an appropriate limit for 2030.³ This is shown below with the short vertical lines at 2030 and 2050 (circled) showing the required level of net carbon dioxide to be compatible with contributing to limiting warming to 1.5°C.



In calculating the implications of the 2018 Special Report, Stats NZ carry out the same calculation as we do. That is, the range in the Special Report is applied to 2010 *net* carbon dioxide emissions.

We sought clarification that this was correct and tested whether they should have applied the range to our 2010 *gross* carbon dioxide emissions (as the Commission

³ See <https://www.stats.govt.nz/indicators/new-zealands-greenhouse-gas-emissions>

does). Stats NZ consulted with the Ministry for the Environment and confirmed that the range had to be applied to net carbon dioxide:⁴

We have confirmed with experts in the Climate Change directorate at the Ministry for the Environment that the IPCC table values for “CO2 emission change...” below refer to net greenhouse gas emissions and not gross greenhouse gas emissions. There is no value available in the table for gross emissions.

This was the reason these proportional reductions were applied to NZ’s *net* emissions in 2030 and 2050 relative to 2010, rather than *gross*.

We **attach** a copy of the correspondence.

We accordingly request that you acknowledge and take into account this calculation error in your independent assessment of the Commission’s advice.

On our calculation, this would require limiting overall net emissions in 2030 to 37.3 Mt. In NDC terms this would be a 55% reduction relative to 2005 gross emissions (or a 35% reduction relative to 2005 net emissions).

We accept that the implications for Aotearoa New Zealand could be onerous and that this is in part because of the high level of forestry removals in 2010 relative to our gross carbon dioxide emissions. However, it is imperative that each country does its share and that we are robust and transparent about where we sit relative to the required global average reductions. Accordingly, the first question to ask is what the science requires of us, and not to impose considerations of economic or political feasibility as the Commission appears to have done.

Stepping back, Aotearoa New Zealand’s net emissions for each of the three previous decades have been:⁵

- 447.8 Mt CO₂-e for 1991-2000;
- 536.8 Mt CO₂-e for 2001-2010; and
- 543.1 Mt CO₂-e for 2011-2020.

⁴ The chart and the correspondence are based on the previously reported 2010 net carbon dioxide emissions of 6.757 Mt. The April 2021 GHGI report updates this figure as 5.048 Mt.

⁵ These figures are derived from the April 2021 GHGI report. The April 2021 GHGI report only reports up to 2019. Accordingly, the figure for 2011-2020 has been calculated by taking the total for 2011-2019 and multiplying by 10/9.

We do not see how an NDC which implies an overall net emissions limit for 2021-2030 of 568 Mt can be said to be consistent with the need to urgently and deeply reduce our net emissions.

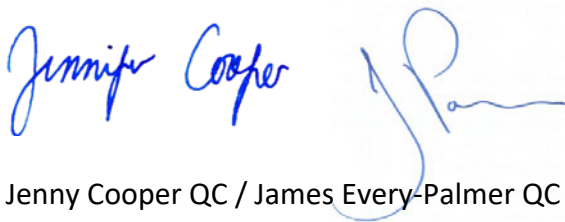
In a similar vein, we urge you to consider:

- expressing our NDC in net:net rather than gross:net terms to avoid giving a misleading impression of our level of ambition; and
- whether 2005 is an appropriate base year for the NDC for similar reasons.

We would also be grateful for your advice as to the timeframe and process you intend to follow in revising the current NDC.

Finally, we have other concerns regarding the lawfulness of the approach taken by the Commission in its advice as to the first three proposed emissions budgets. These relate to the Commission's interpretation of its statutory purpose, its use of the modified-activity based measure of emissions, its exclusion of offshore mitigation from the proposed budgets and the lack of ambition in its proposed budgets compared with the scientific consensus as to what is required by 2030 to limit global warming to 1.5°C. We will write further regarding these matters shortly.

Yours sincerely



Jenny Cooper QC / James Every-Palmer QC
President / Treasurer, Lawyers for Climate Action NZ

enc

Subject: RE: Greenhouse gas Emissions Query
Date: Tuesday, 25 May 2021 at 1:48:31 PM New Zealand Standard Time
From: [REDACTED]
To: James Every-Palmer, [REDACTED]
CC: [REDACTED]
Category: Key doc
Attachments: image004.png, image003.png

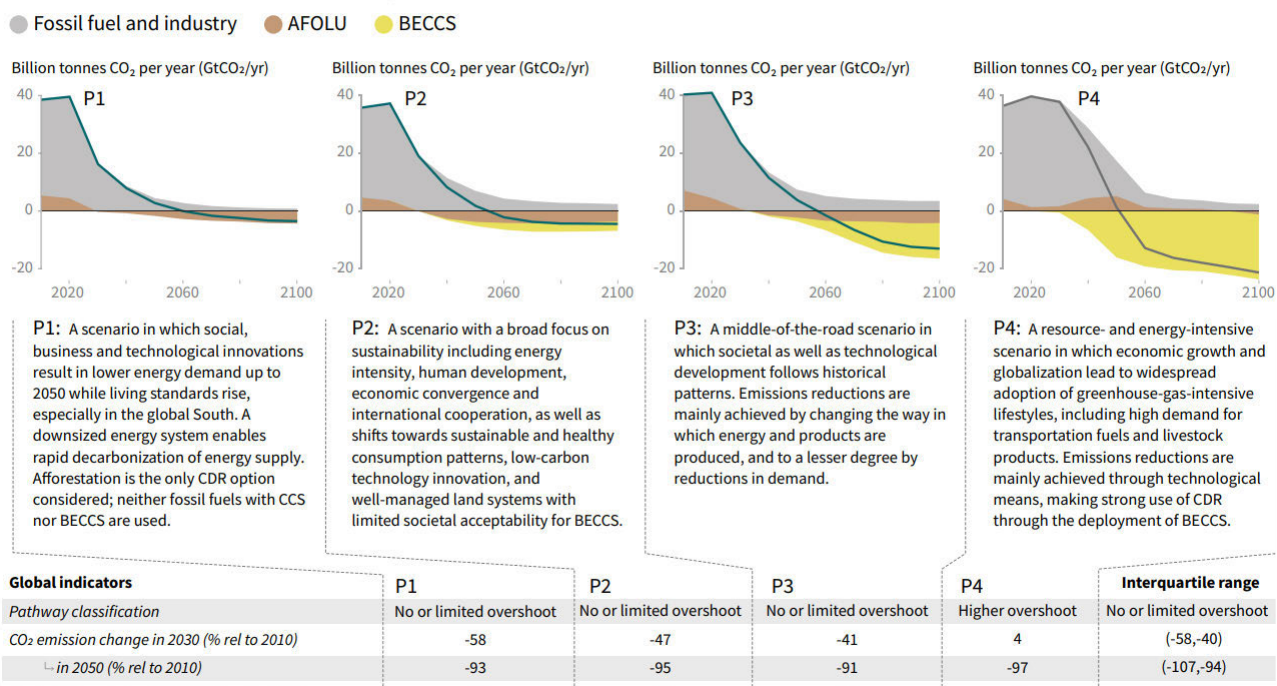
Kia ora James,

Thanks for your email.

We have confirmed with experts in the Climate Change directorate at the Ministry for the Environment that the IPCC table values for “CO2 emission change...” below refer to net greenhouse gas emissions and not gross greenhouse gas emissions. There is no value available in the table for gross emissions.

This was the reason these proportional reductions were applied to NZ’s *net* emissions in 2030 and 2050 relative to 2010, rather than *gross*.

Breakdown of contributions to global net CO2 emissions in four illustrative model pathways



Cheers,

[REDACTED]

From: [REDACTED]@stats.govt.nz
Sent: Tuesday, 18 May 2021 7:25 AM
To: James Every-Palmer <James.EveryPalmer@stoutstreet.co.nz>
Cc: [REDACTED]@stats.govt.nz; [REDACTED]@stats.govt.nz
Subject: RE: Greenhouse gas Emissions Query

Kia ora James

Your follow-up question raises a good point. I'll check in with colleagues who worked on the figures and get back to you soon.

Ngā mihi,

██████████

From: James Every-Palmer <James.EveryPalmer@stoutstreet.co.nz>
Sent: Monday, 17 May 2021 1:37 PM
To: ██████████ <██████████@stats.govt.nz>
Cc: ██████████ <██████████@stats.govt.nz>; ██████████ <██████████@stats.govt.nz>
Subject: Re: Greenhouse gas Emissions Query

Hi ██████████

Thanks very much for the reply. I suspected it was just a question of it getting to the right person, so thanks also ██████████ for forwarding it on.

I did have one follow-up question:

Why do you use the 2010 net CO₂ figure (6.7569) as the starting point for determining the 2030 target for CO₂?

Couldn't you use the gross CO₂ figure as at 2010 (34.958) as the starting point?

This would produce a 2030 range for net CO₂ of 14.682 to 20.975 Mt.

Many thanks
James

From: ██████████ <██████████@stats.govt.nz>
Date: Monday, 17 May 2021 at 1:21 PM
To: James Every-Palmer <James.EveryPalmer@stoutstreet.co.nz>
Cc: ██████████ <██████████@stats.govt.nz>, ██████████ <██████████@stats.govt.nz>
Subject: RE: Greenhouse gas Emissions Query

Kia ora James

Apologies for the length of time it's taken to get back to you. We just received your query today.

We calculated the values for the vertical lines in 2030 and 2050 representing global proportional reductions to limit climate change to 1.5°C for agricultural methane, agricultural nitrous oxide, and net CO₂ to provide context and aid the interpretation of current levels of New Zealand greenhouse gases (as noted in the shinyapp).

The attached excel table has the output behind the shinyapp values for:

- net carbon dioxide
- agricultural methane
- agricultural nitrous oxide

Please note:

- we use R code to create the shinyapps but have provided you with a csv for ease of use.
- Rounding to 3 decimal places in the hover-overs on the 2010 values for agricultural methane, agricultural nitrous oxide, and net CO₂ in the shinyapp are why your calculations may differ very slightly from the ones in the attached excel table.

We hope this helps.

Again, apologies it's taken so long to get you a response. If you have any further questions, please get in touch.

Ngā mihi,

[REDACTED]

[REDACTED]
Insights Analyst | Kaitātara Māramatanga
Stats NZ | Tauranga Aotearoa | stats.govt.nz | [REDACTED]

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From: [REDACTED] [@stats.govt.nz](mailto:[REDACTED]@stats.govt.nz)>
Sent: Monday, 17 May 2021 9:59 AM
To: [REDACTED] [@stats.govt.nz](mailto:[REDACTED]@stats.govt.nz)>; [REDACTED] [@stats.govt.nz](mailto:[REDACTED]@stats.govt.nz)>
Subject: FW: Greenhouse gas Emissions Query

Hi both

Can someone look into this today? It seems to have got lost in the system and the customer has now been waiting some time.....

Cheers

From: [REDACTED] [@stats.govt.nz](mailto:[REDACTED]@stats.govt.nz)>
Sent: Monday, 17 May 2021 9:56 AM
To: [REDACTED] [@stats.govt.nz](mailto:[REDACTED]@stats.govt.nz)>
Subject: FW: Greenhouse gas Emissions Query

FYI

This is from James :

[REDACTED]

Advisor – Outreach and Information | Kaitohutohu - Toro Haere Me Ngā Mōhiohio
Customer Service Delivery | Whakarato Ratonga Kiritaki

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From: James Every-Palmer <James.EveryPalmer@stoutstreet.co.nz>
Sent: Monday, 17 May 2021 9:47 AM
To: [REDACTED] <[\[REDACTED\]@stats.govt.nz](mailto:[REDACTED]@stats.govt.nz)>
Subject: Re: Greenhouse gas Emissions Query

Hi [REDACTED]

My request if about a graph on the Statistic NZ website.

If you have decided to transfer the request to MfE, this has to be in accordance with s14 of the Official Information Act. In particular, you have to transfer it; you cannot just say here's their website address.

If the calculation of the vertical lines was carried out by MfE and provided to Statistics NZ, can you please provide copies of documents which contain or evidence this calculation? Otherwise, can I please have a proper response from Statistics NZ?

Kind regards
James

From: [REDACTED] <[\[REDACTED\]@stats.govt.nz](mailto:[REDACTED]@stats.govt.nz)>
Date: Monday, 17 May 2021 at 9:38 AM
To: James Every-Palmer <James.EveryPalmer@stoutstreet.co.nz>
Subject: Greenhouse gas Emissions Query

Kia Ora James ,

I am sorry for the delayed response. I suggest you try the Ministry for the Environment :

www.mfe.govt.nz

Kind Regards

[REDACTED]

From: James Every-Palmer <James.EveryPalmer@stoutstreet.co.nz>

Sent: Saturday, 15 May 2021 11:41 AM
To: Info Mailin - Shared Mailbox <info_mailin@stats.govt.nz>
Subject: Re: Greenhouse gas emissions and 2030 targets

Kia ora,
It is now over 20 working days since my initial email.
Are you able to respond please?
James

From: James Every-Palmer <James.EveryPalmer@stoutstreet.co.nz>
Date: Sunday, 9 May 2021 at 6:58 PM
To: "info@stats.govt.nz" <info@stats.govt.nz>
Subject: Re: Greenhouse gas emissions and 2030 targets

Kia ora, Just following up on this. I presume I will get a substantive response shortly? Can you please acknowledge receipt? Kind regards, James

From: James Every-Palmer <James.EveryPalmer@stoutstreet.co.nz>
Date: Friday, 30 April 2021 at 8:25 AM
To: "info@stats.govt.nz" <info@stats.govt.nz>
Subject: Re: Greenhouse gas emissions and 2030 targets

Good morning, Just following up on this as I haven't had a reply yet? Many thanks, James

From: James Every-Palmer <James.EveryPalmer@stoutstreet.co.nz>
Date: Thursday, 15 April 2021 at 11:03 AM
To: "info@stats.govt.nz" <info@stats.govt.nz>
Subject: Greenhouse gas emissions and 2030 targets

Morena

I have a question about the calculation of the vertical lines representing global proportional reductions in methane and net CO2 to limit climate change to 1.5 degrees in the graph below.

In terms of the 2030 vertical lines, I assume that:

- the starting point is the 2010 figures for agricultural methane (28.577) and net CO2 (6.757)
- the range for the vertical bars has been calculated using the interquartile range at page 14 of the IPCC report referred to in the sidebar, being -30% to -11% for methane and -58% to -40% for net CO2

By my calculation the resulting ranges are 20.004 to 25.434 Mt for methane and 2.838 to 4.054 Mt for net CO2.

This seems to match the graph, but it would be great if someone could confirm that this is how the vertical lines were calculated?

And is this a calculation that MfE has done, or is it a Stats NZ calculation?

Many thanks
James

Key findings

Greenhouse gas emissions

Graph

Table

Download

Info

Compare

- Over time
- Across sectors

Measure

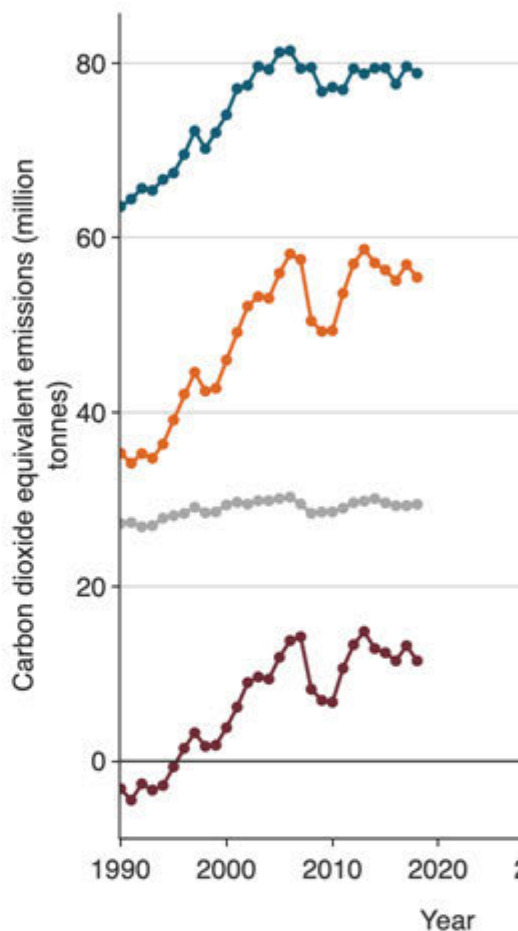
- GHG emissions: net
- GHG emissions: gross
- GHG emissions: LULUCF
- Carbon dioxide: net
- Carbon dioxide: gross
- Carbon dioxide: LULUCF
- Methane: agricultural
- Nitrous oxide: agricultural
- Fluorinated gases

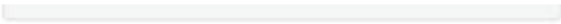
Note: LULUCF refers to land use, land use change and forestry.

Net GHG emissions (and net carbon dioxide) include LULUCF, while gross GHG emissions (and gross carbon dioxide) exclude LULUCF.

The vertical lines represent estimates of the required global proportional reductions to limit climate change to 1.5°C above pre-industrial levels. They show the interquartile range based on modelled scenarios for no or limited overshoot from the [IPCC Special Report on 1.5 degrees](#) (p14). We do this to provide context and aid the interpretation of current levels of New Zealand greenhouse gases. They do not represent [national targets](#) for New Zealand.

Greenhouse gas emissions





Advisor – Outreach and Information | Kaitohutohu - Toro Haere Me Ngā Mōhiohio
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| year | key | base_year | base_emissions | upper_or_l | percent_change_from_base_year | Calculation |
|------|-----------------------------|-----------|----------------|------------|-------------------------------|-------------|
| 2030 | Carbon dioxide: net | 2010 | 6.7569 | lower | -0.4 | 4.05414 |
| 2030 | Carbon dioxide: net | 2010 | 6.7569 | upper | -0.58 | 2.837898 |
| 2050 | Carbon dioxide: net | 2010 | 6.7569 | lower | -0.94 | 0.405414 |
| 2050 | Carbon dioxide: net | 2010 | 6.7569 | upper | -1.07 | -0.472983 |
| 2030 | Methane: agricultural | 2010 | 28.576577 | lower | -0.11 | 25.43315353 |
| 2030 | Methane: agricultural | 2010 | 28.576577 | upper | -0.3 | 20.0036039 |
| 2050 | Methane: agricultural | 2010 | 28.576577 | lower | -0.24 | 21.71819852 |
| 2050 | Methane: agricultural | 2010 | 28.576577 | upper | -0.47 | 15.14558581 |
| 2030 | Nitrous oxide: agricultural | 2010 | 6.43341 | lower | 0.03 | 6.6264123 |
| 2030 | Nitrous oxide: agricultural | 2010 | 6.43341 | upper | -0.21 | 5.0823939 |
| 2050 | Nitrous oxide: agricultural | 2010 | 6.43341 | lower | 0.01 | 6.4977441 |
| 2050 | Nitrous oxide: agricultural | 2010 | 6.43341 | upper | -0.26 | 4.7607234 |