

In Confidence

Office of the Minister for Climate Change

Chair, Environment, Energy and Climate Committee

Biogenic methane reductions required under the climate change Bill

Proposal

1. On 19 December 2018, the Cabinet Environment, Energy and Climate Committee (**ENV**) agreed to set a long term emissions reduction target for 2050 (**2050 target**) in the proposed climate change Bill (**the Bill**). The target will require New Zealand to:
 - 1.1. reach net zero emissions for all greenhouse gases, except biogenic methane, by 2050
 - 1.2. reduce emissions of biogenic methane (including if necessary, to net zero) by 2050.
2. Consideration of the level of the biogenic methane component of the 2050 target was deferred, however, and I was invited to report back with recommendations on the biogenic methane target settings and supporting text in early 2019.
3. I now seek your agreement to a 2050 target that will reduce gross emissions of biogenic methane within the range of 24-47 per cent below 2017 levels by 2050. This will include an interim requirement to reduce emissions of biogenic methane to 10 per cent below 2017 levels by 2030.
4. Following agreement from Cabinet, the 2050 target will be drafted into the proposed Bill, which I intend to introduce to the House of Representatives in May 2019.

Context

5. In December 2018, ENV agreed that the Bill will provide a framework under which New Zealand can develop and implement clear and stable climate change policies that contribute to the global effort to limit global average temperature rise to 1.5 degrees Celsius above pre-industrial levels [ENV-18-MIN-0053 refers].
6. The agreed framework includes:
 - 6.1. a new greenhouse gas emissions reduction target for 2050;
 - 6.2. a series of emissions budgets to support achievement of the 2050 target;
 - 6.3. a range of adaptation measures; and
 - 6.4. an independent Climate Change Commission.
7. It was further agreed that the 2050 target would contain two components: one for biogenic methane, and another for all other greenhouse gases [ENV-18-MIN-0053

refers]. This approach acknowledges the different atmospheric lifetimes, potency, and warming effects of different greenhouse gases.

8. ENV agreed that the first component of the 2050 target would reduce all greenhouse gases, except biogenic methane, to net zero by 2050. Consideration of the level of the biogenic methane target component was deferred, however, and I was invited to report back with recommendations on target settings for biogenic methane for inclusion in the Bill, and supporting text [ENV-18-MIN-0053 refers]

Analysis

9. Following consultation with my Ministerial colleagues, and consideration of economic impacts, technological advancements, and scientific advice I recommend that the Bill includes a 2050 target that specifies the reductions of biogenic methane that will be required by 2030 and 2050.

The reductions of biogenic methane required by the 2050 target should align with global scenarios consistent with limiting warming to 1.5 degrees Celsius

10. I recommend that the biogenic methane component of the 2050 target should be set as a range, rather than a fixed reduction. This reflects the uncertainty that currently surrounds both the actual reduction required to meet the temperature goal, and the technological developments that would reduce biogenic methane emissions. These uncertainties are represented in the ranges published by the Intergovernmental Panel on Climate Change (IPCC), Biological Emissions Reference Group (BERG), and the Parliamentary Commissioner for the Environment (PCE), although the goals of these three reports are not directly comparable.
11. I recommend that the 2050 target should reduce gross emissions of biogenic methane within the range of 24-47 per cent below 2017 levels by 2050. This reflects the IPCC special report, which found that in scenarios limiting warming to 1.5 degrees with limited or no overshoot, the central range of reductions in global agricultural methane emissions is 24-47 per cent below 2010 levels.¹ Although the IPCC range does not prescribe a target for any individual country, consistency with this global range ensures that New Zealand's 2050 target aligns with the 1.5 degree temperature goal, and signals a commitment to strong global action.
12. Requiring biogenic methane emissions to reduce to 24-47 below 2017 levels by 2050 would also be consistent with our obligations under the Paris Agreement, which obliges us to pursue efforts to limit temperature increase to 1.5 degrees Celsius above pre-industrial levels by the second half of the century. However, it has other advantages too.
13. The proposed reductions would reflect a strong commitment to limiting global warming to 1.5 degrees. It would also send a strong signal to New Zealand's waste and agricultural sectors, thereby encouraging innovation and investment and potentially positioning us at the forefront of technological developments.
14. Evidence and analysis shows that reducing biogenic methane emissions by between 24 and 47 per cent will be challenging, but achievable. For example:
 - 14.1. The BERG report (December 2018) set out that current and potential future emissions reduction technologies (e.g. methane vaccines and methane

¹ Intergovernmental Panel on Climate Change (2018) *Global Warming of 1.5°C: Summary for Policymakers*, p 16

inhibitors), could potentially reduce overall biological emissions from agriculture by 22-48 per cent by 2050.

- 14.2. Reducing biogenic methane emissions by 24-47 per cent aligns with New Zealand's historic efficiency improvement. If current trends continue, greenhouse gas emissions per unit of meat and milk production between 2016 and 2050 could reduce by approximately 29 per cent, assuming production levels remain constant.
 - 14.3. Some members of the agricultural sector are already taking steps to reduce emissions. For instance, Synlait committed to a set of sustainability targets and actions across on-farm and off-farm emissions in June 2018. These include a pledge to reduce its emissions intensity (per kilogram of milk solids) by 35 per cent on-farm by 2028.
 - 14.4. Since 2002, the waste sector has reduced its methane emissions by 15 per cent, and there are opportunities for further reductions (e.g. via landfill gas recovery for energy and the diversion of organic waste).
15. Finally, the latest IPCC report shows that a failure to limit global average temperature rise to 1.5 degrees Celsius will result in greater risks to our ecosystems and marine biodiversity, species loss, adverse impacts to health, food security and economic growth, and other irreversible impacts from climate change. I therefore consider it critical that our emissions of biogenic methane reduce in line with the central range of global scenarios that limit global temperature rise to 1.5 degrees Celsius.

The 2050 target will also stipulate the reductions in biogenic methane that are required by 2030 as an interim step

16. The target will include an interim goal to reduce gross biogenic methane emissions to 10 per cent below 2017 levels by 2030. This means that New Zealand's emissions of biogenic methane must reduce from 33.1 Mt CO₂-e in 2017 to 29.8 Mt CO₂-e in 2030.
17. This interim goal is supported by the Prime Minister's Chief Science Adviser. The evidence outlined below indicates that this is achievable.
18. The BERG reported that total biological emissions from agriculture (of all gases, including methane, nitrous oxide and carbon dioxide) could reduce by 10-21 per cent by 2030 relative to baseline projections, if a range of mitigation options is implemented in packages.
19. The report discussed the potential to reduce emissions through measures that are currently available.
 - 19.1. BERG suggests that there is potential to increase the uptake of on-farm mitigation measures. In a survey of 68 farmers, 64 per cent of respondents believed that New Zealand's agricultural emissions should be reduced, but 42 per cent were unaware of available mitigation strategies (other than planting trees).
 - 19.2. Modelling suggested that widespread adoption of currently available mitigation options (primarily farm management practices) could result in reductions of total (all-gases) emissions of up to 10 per cent.

20. The report also referenced work by the New Zealand Agricultural Greenhouse Gas Research Centre (**NZAGRC**), which assessed the likelihood of new technologies reducing agricultural methane specifically. These included:
- 20.1. a methane vaccine. NZAGRC indicated a low confidence that a methane vaccine would be available and could deliver a 30 per cent reduction by 2030 (but medium-high confidence that it would be available by 2050); and
 - 20.2. a grazing system methane inhibitor. NZAGRC indicated a medium-high confidence that a grazing system methane inhibitor would be available by 2030.
21. On average, greenhouse gas emissions per unit of meat and milk produced on New Zealand farms have dropped by around 1 per cent per year for at least the past 20 years. Despite these efficiency improvements, emissions have increased over this period due to an increase in production. While I expect that emissions per unit of production will continue to decrease, to achieve real emissions reductions and meet the 2030 interim requirement, leaders in the agricultural sector will need to set goals to improve the efficiency of their operations, and reduce their overall emissions.
22. As per the Coalition Agreement, to further assist the agriculture sector if the Interim Climate Change Committee determines that agriculture is to be included in the New Zealand Emissions Trading Scheme the upon entry, the free allocation to agriculture will be 95 per cent but with all revenues from this source recycled back into agriculture in order to encourage agricultural innovation, mitigation efforts to reduce agricultural greenhouse gas emissions, and additional planting of forestry.

Emissions budgets will support achievement of the 2050 target, including the reductions in emissions of biogenic methane required by 2030

23. ENV agreed that emissions budgets will be set with a view to meeting the 2050 target [ENV-18-MIN-0053 refers]. The additional requirement to reduce emissions of biogenic methane to 10 per cent below 2017 levels by 2030 will be included in the 2050 target. This means that the first two emissions budgets, which will run from 2022-2025 and 2026-2030, should seek to achieve the reductions required in 2030.

The 2050 target will be reviewed by the Climate Change Commission

24. In December, ENV agreed that any and all aspects of the 2050 target will be reviewed by the Climate Change Commission in conjunction with its advice on the fourth, fifth and sixth emissions budgets, or at the request of Government [ENV-18-MIN-0053 refers]. In the absence of a Government request, the first review will take place in 2024.
25. The 2030 reduction in biogenic methane would be within the scope of the review in 2024 and, if revised, may require changes to the second emissions budget. (2026-2030).
26. The earliest the target could be revised in response to the 2024 review would be 2025. This would require a legislative process, including scrutiny by the House.

Consultation

27. The following agencies were consulted in the finalisation of this paper: Department of Prime Minister and Cabinet, State Services Commission, the Treasury, Ministry of Foreign Affairs and Trade, Ministry of Primary Industries, Ministry of Transport, Ministry of Business, Innovation and Enterprise, Department of Internal Affairs, the Energy Efficiency and Conservation Authority, and the Ministry of Health.

Financial implications

28. There are no financial implications beyond those agreed by Cabinet on 19 December 2018 [ENV-18-MIN-0053].

Legislative implications

29. There are no legislative implications beyond those agreed by Cabinet on 19 December 2018 [ENV-18-MIN-0053].

Regulatory impact analysis

30. This paper has no regulatory impacts beyond those discussed in the Regulatory Impact Analysis considered by ENV on 19 December 2018.

Human rights

31. The proposals in this paper are consistent with the New Zealand Bill of Rights Act 1990 and the Human Rights Act 1993.

Publicity and public release

32. The Bill has been widely discussed amongst New Zealanders and in the media, both before and during consultation on the discussion document, *Our Climate, Your Say*, in June and July 2018.

33. I propose to release this Cabinet paper on the Ministry for the Environment's website no later than when the draft Bill is introduced into the House of Representatives in mid-2019.

Recommendations

The Minister for Climate Change recommends that the Committee:

1. **note** that on 19 December 2018, the Cabinet Environment, Energy and Climate Committee agreed (ENV-18-MIN-0053 refers) that the Climate Change Bill will set a greenhouse gas emissions reduction target for New Zealand to achieve:
 - 1.1. net zero emissions for all greenhouse gases, except biogenic methane, by 2050
 - 1.2. a reduction in emissions of biogenic methane (including, if necessary, to net zero) by 2050
2. **agree** that the biogenic component of the 2050 target (recommendation 1.2) will require a reduction in gross emissions of biogenic methane within the range of 24-47 per cent below 2017 levels by 2050, and will include an interim requirement to

reduce gross emissions of biogenic methane to 10 per cent below 2017 levels by 2030

3. **agree** that the Climate Change Commission will review all aspects of the 2050 target in conjunction with its advice on the fourth emissions budget in 2024, including the reduction of biogenic methane emissions required by 2030
4. **note** that the Climate Change Commission will make recommendations on all target from 2024 and future governments will have the opportunity to revise targets
5. **note** consequential amendments to other parts of the Bill may be required as a result of recommendations 2 and 3
6. **agree** that the Minister for Climate Change may make this Cabinet paper publicly available, subject to appropriate redactions, no later than when the draft Bill is introduced into the House
7. **note** that a communications plan for the announcement of the target settings and the introduction of the Bill will be developed and consulted on

Authorised for lodgement.

Hon James Shaw

Minister for Climate Change