Ministry for Primary Industries
Manatū Ahu Matua

Minutes of the 2016 Agricultural Greenhouse Gas Inventory Advisory Panel Meeting

24 November 2016

10.00am – 2.40pm

Room 14.3, Pastoral House, Wellington

Attendees:

The Agricultural Greenhouse Gas Inventory Advisory Panel ('the Panel') comprises:

Dr Gerald Rys – Principal Science Adviser, MPI – Chair

Dr Harry Clark – Director, New Zealand Agricultural Greenhouse Gas Research Centre, (NZMethanet)

Dr Andy Reisinger – Deputy Director, New Zealand Agricultural Greenhouse Gas Research Centre (also for The Royal Society of New Zealand)

Dr Keith Lassey - Lassey Research and Education Ltd, (NZMethanet)

Prof Frank Kelliher – AgResearch (NZN2Onet)

Dr Andrea Brandon - Senior Analyst, MfE

In Attendance:

Phil Wiles – Resource Information & Analysis, MPI

Mike Rollo - AgResearch

Alice Ryan - Resource Information & Analysis, MPI

Joel Gibbs - Resource Information & Analysis, MPI

Andrea Kapoutsos – Resource Policy, MPI - Minute taker

The purpose of the meeting was for Panel members to discuss and consider approving proposed changes to the Agricultural Greenhouse Gas (GHG) Inventory. Changes which the Panel considers are scientifically robust enough to implement are recommended to the Deputy Director-General, Policy & Trade.

Opening and Introduction

Phil Wiles introduced himself and indicated that he had taken on the role of Team Leader, Resource Information & Analysis. Everyone else also introduced themselves.

Review of the 2015 Panel Meeting Minutes

The minutes and actions from the 2015 meeting were tabled and reviewed by the Panel. A document entitled 'Actions from last year – status' was distributed.

Mike Rollo indicated that emails had been sent in relation to the following action: Jim Fick and Mike Rollo to check that the following action from 2014 had been carried out: MPI to obtain from Bown et al. a revision of Table 12 based on New Zealand species, and then submit this to the Panel for approval at a later date.

Comments on the decisions and actions recorded in the 2015 minutes on the Panel Paper: Hill Country – Direct N_2O from Excreta (EF_3) included:

-MPI had not done work to consider how deer emission factors should be created.

-The way deer are dealt with in Overseer could be considered.

-We do not have any measurements of emissions from deer.

-A sensitivity analysis (as noted in point 6 on p.4 of the minutes) had not been carried out and would not be carried out.

-The methodology for calculating emissions by different slope classes has been incorporated into the inventory model, but the function has not been turned on. It is based on data up to 2012.

-Harry Clark indicated that he had received Keith Betteridge's data on N_2O emissions from excreta (EF_3) from Des Cossill and forwarded this to Jim Fick.

-Frank Kelliher had investigated whether a re-analysis of the meta-analysis with two slopes (less than 12 and greater than 12) could be done, but MPI did not sent out his findings to the Panel to get their recommendation. A decision had been made by MPI that a two stage process implemented for a limited time was not a good way to proceed, and instead it was planned that MPI would look to develop a one-step process.

-There needed to be more feedback during the year to the Panel on what actions are being taken by MPI in relation to what had been discussed at the last Panel Meeting.

-Is there a seasonal effect of the weather on nitrous oxide emissions from excreta?

-One Panel Member considered that only relatively minor work was needed to fix up the Panel's issues with the Hill Country paper, and it was felt that these issues could have been resolved via email. However, he was still happy for MPI to have made a different decision.

-A trial was underway which involved collecting more data on steep slopes for beef and sheep. Going forward data should be available for all three slope classes. This trial will be completed in early 2018.

Discussion on the Terms of Reference for the Panel

It was mentioned that the Terms of Reference do not make it clear if there is to be any compensation provided to Panel members for travel costs related to Panel meetings.

Panel Paper: Country-specific EF1 values for farm dairy effluent (FDE) and urea fertiliser

Comments during the discussion on this item included:

-Have the right number of trials been carried out in relation to farm dairy effluent, and have they been done in the right places?

-A proposal had been made to round the emission factors to one decimal point, and a question was asked about what the general practice/right process was for rounding.

-Two Panel members considered that the rounding should be relative to the uncertainty in the number.

-A discussion took place about whether a reviewer should be given a draft report or the final report.

Decision 1

The Panel recommended that external peer reviewers be given a draft paper for review and that the comments from the reviewer should be sent to the paper author. Then once the reviewer receives the final paper he/she should write up the approval for change form.

-There is a need to be cautious about reviewers quoting overseas studies as they may not be relevant to New Zealand.

Decision 2

The Panel did not agree to the recommendation that a new emission factor of 0.3% be adopted for farm dairy effluent. It also did not agree to a new emission factor of 0.6% being adopted for urea fertiliser.

Instead the Panel wanted MPI to check with Tony van der Weerden if the best estimates for the emission factors are those that are recorded in Table 6 on p.24 of the report, i.e. 0.26% for farm dairy effluent and 0.59% for urea fertiliser. If these are the best estimates the Panel agreed that new emission factors be adopted and that these values should be the ones adopted.

It was mentioned that differences had been noticed between the farm dairy effluent emission factor used in the scientific paper (0.25% in Table 1 on p.135) and in the report (0.26% in Table 6 on p.24).

Once MPI has spoken to Tony it should report back to the Panel to confirm the exact value for the proposed new emission factors.

Panel Paper: Revised equations for calculating methane from sheep

Harry Clark declared a conflict of interest in relation to this item as he is an author for this work. It was mentioned that he would participate in the discussion about this item but would not participate in the decision making in relation to the proposed recommendation.

Comments made on this item included:

-The final report MPI received was the one put together after the reviewer had provided comments.

-What are other countries around the world using? Two stages or one?

-It is necessary to consider the IPCC guidelines.

-The *best* method should be used, not the *simplest* method.

Decision 3

The Panel decided that a. the equations proposed by Swainson, Muetzel and Clark (2016) were the best to use for calculating enteric methane emissions from sheep.

The Panel agreed to the above-mentioned equations being included in the inventory.

This decision was made because the IPCC recommends two equations and as two equations give the best estimate.

Panel Paper: Uncertainty of Agricultural Soil Emissions

Frank Kelliher declared a conflict of interest in relation to this item as he is an author for this work. It was mentioned that he would participate in the discussion about this item but would not participate in the decision making in relation to the proposed recommendation.

Comments made on this item included:

-There were two referees for the journal article as well as Donna Giltrap carrying out a review.

-It was mentioned that the method outlined in the manuscript by Kelliher, Henderson and Cox (2016) for estimating emissions uncertainty from agricultural soils would allow an MPI policy analyst to do updates each year.

-We need to follow what the IPCC says.

-We could check what the section on uncertainty in the IPCC guidelines says and see how much room there is for difference.

-It would be okay to use a country-specific way of analysing the uncertainty as NZ has more data on this than other countries do.

-In the approval for change form, the reviewer recommended the proposed change to the method of estimating emissions uncertainty from agricultural soils be made, subject to four conditions being met. The Panel considered that three of these conditions had been met, and did not understand what the reviewer meant in relation to the fourth condition of 'Correlation between N input and EF NOT included'.

Decision 4

The Panel agreed to the recommendation that the method outlined in the manuscript by Kelliher, Henderson, and Cox (2016) be used to estimate emissions uncertainty from agricultural soils, subject to Alice Ryan checking that this fits okay with the IPCC guidelines.

This does not mean that the Panel excludes using a Monte Carlo analysis in the future. The reason why the analytical method is recommended is because it enables MPI to do updating.

The Panel took a break for lunch at 12.56pm and the meeting resumed at 1.28pm.

Annual UNFCCC/Kyoto inventory review outcomes

Joel Gibbs spoke to a document summarising and assessing the 2015 inventory submission, which was written by the UNFCCC.

Alice Ryan indicated that the comments on the 2015 inventory submission had been addressed, and indicated that it was most important to address the comments from the review of the 2016 annual submission. The first comment related to a typo kind of error. In relation to the second comment it was mentioned that MPI was not sure how this had happened but its procedures would be checked. Thus the two comments were in hand.

Inventory improvement planning and prioritisation of future research

During this item the document entitled 'Agriculture Greenhouse Gas Inventory Research Projects November 2016' was discussed.

Harry Clark spoke about the comments he had made while reviewing the project on 'Statistical analysis to determine a nationally representative sampling programme'.

The next step for supplemental feed use in the dairy industry would be to do an analysis of what the effects are.

The fertiliser emissions from hill country project was a desk top exercise.

MPI had been working to progress the 'Understanding cattle methane yields' project, and was expecting it get underway in early 2017.

The 'Accounting for changes in our soil carbon' project was for pastoral systems.

<u>Topics on which it would be good to carry out work on in future:</u>

-Dung/urine partitioning. It was mentioned that it is best to use data for the inventory, rather than a literature review.

-Assumptions around diet components in terms of energy and nitrogen

-Pasture quality. It was mentioned that this topic had been put in the 'too hard basket' in the past.

-Methane. It was mentioned that methane is becoming more important, and that the project on cattle methane yields being contracted out will be very important, as there is not a rigorous set of data on this.

-It was mentioned that MPI should link in with the New Zealand Agricultural Greenhouse Gas Research Centre's work on soil carbon.

Other Business

Joel Gibbs was thanked for the work he had done in preparing for this meeting and Gerald Rys was thanked for chairing the meeting.

Andrea Brandon said she was seeking authors and reviewers for the 2019 refinements of the IPCC guidelines.

The meeting closed at 2.40pm.

Actions

1. MPI to look to see if there is anything significantly different in the 2007 CSIRO equations (vs the 1990 CSIRO equations) that could be put into the inventory.

2. MPI to do more thinking about how deer are handled. A review paper should be prepared on whether or not there is a better way to deal with deer.

3. MPI (Joel Gibbs) to send out Frank Kelliher's meta-analysis to the Panel and explain the decisions made by MPI about how this matter is going to be moved forward.

4. MPI to ensure it provides feedback during the year to the Panel on the actions that are taken in relation to what is decided at this meeting.

5. MPI to prepare the minutes of this meeting and send them out to the Panel by 24 December.

6. MPI (Joel Gibbs) to add in a point 30 to the Terms of Reference document indicating that MPI will compensate Panel members for reasonable travel costs related to them attending a Panel meeting. He should be able to find appropriate wording for this in the Terms of Reference of another MPI committee

7. MPI to advise reviewers and authors of the process recorded in Decision 1 in these minutes. Authors needed to be aware that papers submitted to the Panel require a review from a suitably qualified expert.

8. MPI to make sure that contracts reflect that authors need to consider the changes requested by reviewers.

9. MPI to send Tony van der Weerden the comments made by the reviewer on 'Recommendations for country-specific EF_1 values for farm dairy effluent (FDE) and urea fertiliser'. MPI to also talk to Tony about his views on the comments made by the reviewer.

10. MPI to take the action outlined above in Decision 2 in these minutes.

11. MPI to action the decision outlined in Decision 3 in these minutes.

12. MPI (Joel Gibbs) to alter Section 11 of the paper entitled 'Uncertainty of Agricultural Soils Emissions' so it reads as:
    'When using the method outlined by Kelliher, Henderson, and Cox (2016) the estimated uncertainty for agricultural soils emissions for 2014 was +-61%. A Monte Carlo analysis would give an uncertainty off the same data of -35% and +91%. Like the earlier Monte-Carlo analyses undertaken in the past, most of the uncertainty is due to the variability in emission factors.

13. MPI (Alice Ryan) to check what the IPCC guidelines on uncertainty say and that Decision 4 fits okay with these.

14. MPI (Alice Ryan) to send out the OnFarm Research report on partitioning and the review of this to all.

15. Andrea Brandon to send out to the Panel a list of topics for which she is seeking authors and reviewers - in relation to the 2019 refinements of the IPCC guidelines.