Pricing Agricultural Emissions

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Proposal by He Waka Eke Noa for a Farm-Level System

Recently He Waka Eke Noa, the Primary Sector Climate Action Partnership (HWEN or the Partnership) released its *Recommendations for Pricing Agricultural Emissions Report to Ministers* (Report) which sets out its recommended Farm-Level pricing system to regulate agricultural emissions (Farm-Level System), as an alternative to inclusion of agriculture in the Emissions Trading Scheme (ETS). In this article we take a deep-dive into the key details of the proposed Farm-Level System.

Who is this for?

This article is relevant for:

- Any farming or primary industry business which may be directly affected the proposed Farm- Level System (if implemented by Government);
- Landowners;
- Forestry companies;
- Agritech and rural professionals who may have a significant role in assisting farmers to meet their reporting obligations under a Farm-Level System; and
- Funds, investors and third-party financers investing in the primary sector, or looking at investment opportunities or risks created by changes in NZ's climate policy.

Background: Who is He Waka Eke Noa and how do their recommendations fit in with NZ's climate commitment under the Climate Change Response Act 2002 (CCRA)?

The provisions of the CCRA set out NZ's international climate commitments requiring that emissions of biogenic methane[1] (Methane) are 10% less than 2017 emissions by 2030 and 24-47% less than 2017 emissions by 2050. It also requires that other GHG emissions such as N_20 and CO_2 reduce to net zero by 2050. Given that the agricultural sector accounts for 50% of NZ's gross emissions, approximately 94% of N_20 emissions and 91% of biogenic methane emissions[2], it is critical that agriculture contributes to meeting climate goals.

NZ's agricultural emissions aren't currently captured under the ETS (unlike other sources like industrial processes).

The CCRA also requires the Climate Change Minister and Minister of Agriculture to report on a system for pricing agricultural emissions as an alternative to the ETS by 31 December 2022. The report needs to address the matters stated in the Act and before preparing that report, the Ministers need to request a report from the Climate Change Commission (Commission) about what assistance, if any, should be given to participants.

Formed in January 2020, HWEN is a voluntary partnership of 12 partners from central Government, the primary sector and Māori[3] to advance work on climate

change action in the Primary Sector. The role of HWEN is:

- to implement a framework by 2025 to reduce agricultural GHG emissions and build the agriculture sector's resilience to climate change; and
- to empower farmers and growers to measure, manage and reduce on-farm emissions; recognise, maintain or increase integrated sequestration on farms; and adapt to a changing climate.

HWEN has been looking at practical, credible and effective alternatives to the Government's plan for including agriculture in the ETS committing to "work in good faith to design a practical and cost effective system for reducing emissions at farm level by 2025".[4] For more details on the Partnership, and its other workstreams outside of the Report, please see our earlier article here Framework to Regulate On-farm Emissions | Articles | Cooney Lees Morgan.

The Commission has also recently released its Report responding to the HWEN recommendations, which is briefly described at the end of this article. The Government will now consider the Partnership's recommendations alongside the Commission's advice and make a decision by the end of this year on how agricultural emissions will be regulated from 2025.

In a nutshell: What is the Proposed Farm-Level System?

HWEN is proposing a Farm-Level System instead of the default option of agriculture joining the ETS. As the name suggests, the farm-level split-gas levy would be calculated and paid at farm level. The concept of calculating and paying at farm level is that farmers and growers would understand and be responsible for the impact of their on-farm decisions.

Individual farms would annually calculate and report their emissions of Methane (short-lived gas emissions) and long-lived greenhouse gases[5] (CO_2e) separately and pay a separate levy for each, depending on the level of emissions. This is where the concept of 'split-gas' comes from.

There would be different rates for Methane and CO_2e, and an ability to recognise on-farm sequestration, which would also have a separately calculated price.

Emissions would be required to be reported and paid annually, aligning with a farm's annual tax accounts.[6]

Each farm's annual emissions reporting would be subject to audit. Currently it is envisaged that audits would be desktop and around 10% of farms would be audited annually at the discretion of the Implementation Agency.[7] On-farm audits would still be required in some cases, and aligned as much as possible with other existing or proposed farm audit systems (eg Freshwater Plan audits).

HWEN has undertaken modelling to accompany its Report. It estimates the Farm-Level System would lead to a 4-5.5% reduction in Methane and a 2.9-3.2% reduction in gross N_20 emissions by 2030 (over and above the baseline achieved by other environmental policies).[8] Alongside existing environmental policies and 'business-as-usual' reductions via the waste sector, it is estimated this would achieve NZ's 10% Methane reduction target by 2030.[9]

Who would be captured under the Farm-Level System?

Any farms that are GST registered and annually average over any of the following would be captured under the Farm-Level System:[10]

1. 50 Dairy cattle;
2. 550 stock units (sheep, cattle, deer and goats);
3. 700 swine;
4. 50,000 poultry; and
5. 40 tonnes Nitrogen through synthetic fertilizer use.[11]

It is estimated that this definition captures around 23,000 farms and represent 96% of all agricultural GHG emissions.[12]

What are the advantages of the Farm-Level System?

The Partnership considered a range of options for an alternative pricing system to the ETS and consulted with farmers and growers on two options – a Farm-Level Levy and a processor-level hybrid levy.[13]

The recommended Farm-Level System reflects a strong preference among Partnership members and farmers for a farm-level pricing system that gives farmers control and autonomy over their farm business and emissions profile and any on-farm actions to reduce emissions.[14]

The split-gas approach reflects New Zealand's international "split gas climate commitment"[15] which has separate targets for Methane and other GHG emissions.[16] The advantage of having a split levy is that each target price is only as high as is needed to meet the Methane and CO2e targets respectively. [17] Setting a separate fixed price levy (as opposed to linking to the NZ ETS carbon price) may also shield farmers from price volatility of carbon in the ETS.

Who is responsible for reporting and paying for emissions?

Business owners[18] will be responsible for reporting and paying emissions. Eligible sequestration can be included but only with landowner permission (where the business owner is not also the land owner).

Collectives

Farm business owners can register as either an individual farm, or opt into a collective based on a shared processer, a Māori agribusiness enterprise, a catchment community or other grouping.[19] Such collectives can work together to report, pay, reduce and offset their emissions.[20] This enables internal trading within the collective.

The system will also allow for a farm business owner to delegate to a person or entity such as a farm advisor or accountant, who may act as an agent on a farmer's behalf.[21] Obligations and responsibility however still rests with the farm business.

Calculating Emissions

The cost for each farm would be calculated according to the following formula:

Cost of Methane emissions (farm Methane emissions (kg) price for Methane/kg) + Cost of CO2e emissions (farm CO2e emissions (kg) * price for CO2e/kg – incentive discount for approved actions that reduce emissions[22] – on farm*

*sequestration (kg CO2e * price for sequestration)*

A single centralised emissions calculator would be created that allows a consistent calculation across all farms, and would be designed to integrate data from existing calculators and other farm data sources. This is consistent with how emissions have been calculated in other agricultural emission programs worldwide such as Australia's Emission Reduction Fund which uses a centralised program FullCam for all its calculations and the Round Table for Sustainable Palm Oil which has a centralised GHG Palm calculator for producers to use.

Methane would be calculated by weight (kg) and N_2O and CO_2 will be calculated in carbon dioxide equivalents (CO2e) which is in line with international standards.

The calculator would have two methods:

- a simple method available for mandatory reporting in 2025; and
- a more detailed method (yet to be developed) intended to for used from 2027 onwards.[23]

The proposal is to establish a process to update the centralised calculator to include new mitigation and/or sequestration opportunities. The intention is for an annual update on new methodologies and mitigations, with an Implementation Agency to determine the process.[24]

We set out in more detail below how emissions and pricing for each would be calculated.

On farm Sequestration

The Farm-Level System proposes that Farmers can obtain credit for on-farm sequestration for some "eligible" vegetation which currently includes:[25]

1. Permanent regenerating / planted native vegetation and riparian vegetation;
    1. Pre 1 Jan 2008 will receive the additional annual carbon gained by the management action of stock exclusion;
    2. On or after 1 Jan 2008 will receive total carbon stock.[26]

2. Riparian vegetation established on or after 1 Jan 2008 will receive national annual average total carbon stock.[27]
3. For Cyclical vegetation[28] (including fruit trees, nut trees and vineyards, shelter belts, scattered trees[29] and wood lots[30]);
    1. Established on or after 1 Jan 2008 will receive up to the long term average carbon stock (regardless of current age or rotation).[31]
4. NZETS eligible exotic vegetation is excluded, however NZETS eligible indigenous vegetation is able to be included provided double counting doesn't occur.[32]

The minimum area for sequestration is 0.25ha, although smaller areas can be aggregated.[33] A declaration would be needed to ensure land in woody vegetation prior to 1 Jan 1990 and is not ETS registered to receive total carbon stocks. Recognition of sequestration is optional. If sequestration is greater than emissions, the system would provide a payment or credit.

What is not included:

Currently sequestration only accounts for above ground biomass not soil carbon. It also does not recognise sequestration from tussock grassland, wetlands and blue carbon such as mangroves despite approved methodologies for these existing internationally.[34]

Requirements and potential liability

Vegetation areas for sequestration would be registered as interests against the title, and for permanent categories farms would be penalised if registered areas are cleared. For cyclical areas farms would be penalised if vegetation is cleared and not replanted within 5 years, or there is land use change.[35] The proposed liability is the amount of sequestration claimed up to that point, valued at the price of sequestration on the day the liability arises is faced plus a liability fee.[36]

There are however exemptions for adverse events: if an area of vegetation is destroyed or significantly damaged by an adverse event, the farm would not face any liability provided the vegetation is re-established within 5 years.[37] The farm would not receive any further sequestration value for that area until it reaches the

same pre adverse event state.

Pricing

What will the Pricing be and how will it be set? The big unanswered questions...

Prices for Methane, CO2e and sequestration are yet to be set, and this is the big unanswered question. The Partnership is recommending that legislation require the following factors to be balanced in setting levy rates:[38]

1. Trajectory of emission reductions towards emission targets;
2. Availability and cost of on farm mitigations;
3. Social, cultural and economic impacts on farmers, regional communities and Māori agribusiness;
4. Best available scientific, mātauranga Māori and economic information; and
5. Emissions leakage from production moving offshore, and impact on food security.

The levies set would be reviewed / updated every three years.

Methane Pricing

HWEN recommends that the price of methane: [39]

1. Be separate, and not connected, to the price of CO2e, sequestration, or the NZETS carbon price (i.e. price of NZUs).
2. Be the same per kg price regardless of source and not be related to emissions per hectare or per unit cost. This means that the price would be the same regardless of the efficiency of the farm business. Not all HWEN partners agree with this approach and some consider that there should be differentiation in price depending on intensity and performance. The main reasoning behind the single price is that currently the main mitigation comes from sequestration rather than direct source reduction, and not all farms have the same sequestration ability.

3. Is as low as possible to support practice change and meet emission reduction targets.

While no pricing has been set yet, HWEN is recommending a maximum price for methane no greater than $0.11/kg for the first three years of pricing until 2028, in effect creating a price ceiling. Current modelling based around reducing agricultural methane emissions by at least 4% by 2030 had a methane price of $0.11/kg in 2025 that rises to between $0.17 to $0.35/kg by 2030.[40]

CO2e Pricing

The levy for CO2e would initially be set at the level required to:[41]

1. Fund the total sequestration recognised in the system;
2. Fund the incentive discounts for approved actions for Nitrous Oxide (N_2O) reduction;
3. Fund R&D for N_2O reduction; and
4. Cover a share of administration costs.

From 2028 the CO2e price is proposed to be based on the cost of reductions and offsetting required to achieve any sector CO2e emission reduction goals. HWEN stops short however of actually recommending that the price of CO2e be linked to the NZETS, which would be the obvious way of ensuring alignment of pricing across sectors.

In addition, the Partnership recommends establishment of a price ceiling where the levy rate for CO2e would be no more than if Agriculture entered the NZETS with current free allocation (95% free allocation phasing down by 1% per annum).[42]

This results in an estimated starting price of $4.25/tCO2e in 2025, and modelling suggests that the cost for tCO2e would rise to $13.80/t in 2030.[43] The Partnership considers these prices would be comparable with the ETS carbon price once free allocation has been considered.

However, as at 11 August 2022, NZUs were trading at NZD$80.25 on the spot

market.[44] The proposed pricing seems at odds with movements underfoot in the government to significantly reduce the current free allocation of credits to heavy emitters given the large surplus of credits in the NZETS and over-allocation of free credits to industrial users, which has been a recognised problem for some time. The government is considering making a significant reduction in free Industrial allocation (potentially in the realm of 1-1.5million tonnes / year) in order to drive up auction volumes and expects to introduce these changes via legislation towards the end of the year.[45] Currently there is a 150 million NZUs surplus sitting in the NZU registry, a year-on-year increase of 12 million, with just over half of them (86 million) held by NZETS participants.[46] This means currently there are 64 million issued NZUs sitting with parties that do not have future retirement obligations under the ETS therefore will be looking to on-sell these back into the market at some stage.

The Partnership foresees that the funds collected through the CO2e levy would fund the mitigation and sequestration offset costs, as well as the R&D and associated administration costs . It will be interesting to see if this methodology leads to a material mis-alignment between CO2e pricing under the ETS.

Sequestration Pricing

The initial price for sequestration would be linked to the ETS carbon price, but discounted to reflect that only some of the Farm-level System sequestration counts towards NZ’s Nationally Determined Contribution targets; and requires a lower burden of proof than the ETS. An indicative range provided was 75-90% of the NZETS carbon price.

The Recommendations note that sequestration (and associated maintenance) carries significant costs for farmers in terms of locking up land and ongoing fencing, weed and pest management. Partnership modelling indicates that sequestration would need to be priced around $70tCO2e before farmers establish new indigenous vegetation or register post 2007 indigenous vegetation and this price would need to be around NZD$170/tCO2e to cover assumed costs of fencing, weed and pest control.[47]

This is interesting as the costs of sequestration modelled by the Partnership are considerably higher than what the current price would be, if sequestration is priced

using the recommended 10-25% discount on the current NZU price of 80 per ton which is trading at historic highs. Also given the relatively low price suggested to be set for Methane and CO2e, it remains unclear whether there will be sufficient incentives for farmers to offset using sequestration rather than just paying their levy as a cost of business and passing it on to consumers.

From 2028, there would be a review of sequestration and its pricing method. The price for sequestration would be initially updated annually to maintain alignment with the ETS carbon price. The Partnership also recommends that ultimately all sequestration should be recognised in the NZETS rather than separately by the Farm-Level System.

2028 Pricing Review

The Partnership recommends a detailed pricing review in 2028 by the System Oversight Board to test the effectiveness of the system in meeting its objectives, and it seems this review is broad enough to completely overhaul the pricing system should it be required.[48]

Incentive Discounts

The Farm-Level System proposes that farmers receive an incentive discount for approved actions (eligible practices and technologies) i.e. a list of approved actions that deliver measurable reductions and create a clear financial incentive for farmers to uptake actions that reduce emissions.[49] Examples could be feed additives or selecting low methane genetic stock for breeding, which may not be widely adopted if the cost of implementation and ongoing per unit cost is higher than the levy cost.[50]

The incentive discount should incentivise and assist farmers to make changes while these measures are not widely adopted.[51] The incentive discount is subtracted from the levy cost, and would be incorporated into the centralised calculator. [52] The cost of the incentive discount would be related to the cost of implementing the approved action and the associated emission reductions.

The incentive discount approach, and its discount value, would be monitored regularly and reviewed by the System Oversight Board alongside other price

settings.[53]

Levy relief mechanism

The Partnership also proposes a limited levy relief mechanism on a case-by-case basis as a transition measure until 2030 with strict eligibility criteria that include:[54]

1. Access to sequestration is severely restricted by national and local body regulation;
2. No access to mitigation technologies; and
3. Where emissions pricing has had a severe impact on financial viability.

The Levy relief mechanism would be formally reviewed in 2028.

Recognising Māori rights and interests

The Federation of Māori Authorities (representing Māori landowners, land managers and land users across Aotearoa) provided a number of recommendations in relation to whenua Māori.[55]

They noted that only 1.4 million hectares of land remains as Whenua Māori, that 67% is in LUC classes 6-8 and located in areas of recognised social deprivation and predominantly Māori rural communities. The legal structures for Whenua Māori differ (governed by the Te Ture Whenua Māori Act 1993, which has competing objectives of retaining Māori land ownership while promoting land development) and that Māori land use decision-making applies a tikanga approach. It also notes the expectation by Māori that their contribution to carbon sequestration to date should be recognised (with 33% of Whenua Māori in indigenous biodiversity compared to 9% of general title land (if the DOC estate is excluded)).

Amongst the recommendations are:

1. Farm-level eligible sequestration from Whenua Māori should be made available to others in the primary sector under mutually agreed arrangements between the parties;

2. The use of sequestration on Whenua Māori which is subject to lease arrangements is possible only by a formal prior agreement with the Whenua Māori owners; and
3. All levy revenue from Whenua Māori is to be ringfenced for Whenua Māori.

How will the revenue from the system be used?

Revenue from the levy is proposed to be invested back into the primary sector for R&D to support further emission reductions and lower emissions food and fibre production; as well as contributing to the administrative costs of the system.

A dedicated fund to support opportunities for Māori landowners would be governed by an independent Māori board. [56]

System Oversight

The Partnership recommends a System Oversight Board (SO Board) with expertise and representation from Primary sector, working closely with an independent Māori Board to recommend levy rates, prices, and incentive discounts and set the strategy for use of levy revenue.[57] Members of the Independent Māori Board would also sit on the SO Board.[58] Day to day administration will be undertaken by an Implementation Agency (which could be an existing or newly formed agency) which would be responsible to the Boards. The practical details, and roles and responsibilities remain unknown, however it seems that the Implementation Agency would not be a decision-making, entity.

The key details of setting levy rates, including who makes these decisions, and the role of the Boards would need to be fleshed out in regulations and legislation (yet to be drafted or enacted). The Partnership recommends that the SO Board have the following key roles and responsibilities:[59]

1. Strategy and direction for investment of levy system revenue, including priorities for R&D, new products and support to the primary sector for emissions reduction and mitigation;
2. Governing Role over the Implementation Agency; and
3. Involvement in setting levy rates and prices, by providing recommendations to

Ministers.

The Partnership recommends working closely with Ministers to nominate members of the SO Board.

What will the financial impact on Farmers be?

As no price has been set yet, impacts were modelled on a range of prices (Methane, CO2e, Sequestration and Incentive discounts).[60] The Partnership has been clear to note that all modelling output should be interpreted as indicative only.[61]

The modelled variation on average farm profit varied from 0 to 7.2% reduction in average farm profitability, but there is significant variation across different farm systems.[62] Modelling showed that even at prices of $0.11/kg for methane and $4.25/tonne CO2e there could be significant profit reduction impacts for some farmers, particularly those without sequestration or ability to use new mitigation technology.[63] The cost, availability and effectiveness of future emission reduction mitigation technologies has a significant impact on farms profit and production.[64]

Based on the indicative modelling, deer, sheep and beef operations would face a greater impact on their bottom line than dairy under the same levy rates. At the extreme this may see farms exiting meat production.[65]

The bottom line is, depending on where the levy rates are set, there could be significant financial impacts on NZ's agricultural sector.[66]

Effect on the ETS

This has not been addressed in the Recommendations, but it will also be interesting to understand what will happen to ETS pricing if the Farm-Level System is adopted by Central Government and the single largest source of potential demand (being agriculture) is taken out of the ETS system given its current over-supply. It remains to be seen whether this would lead to a significant softening of NZU prices and if so, how this would factor into the pricing for sequestration (if the sequestration pricing is based on a discount to NZU pricing).

Next Steps and Climate Change Commission feedback

In early July, the Commission provided its report[67] to the Ministers for Climate Change and Agriculture on the progress made towards the milestones of the Partnership and the establishment of a farm level reporting and pricing mechanism.[68] The report contained the Commission's analysis and feedback on the Partnership's proposed Farm-Level System.

Overall the Commission has agreed with the Partnership's farm-level approach, however there are some significant divergences in relation to key aspects of the Farm-Level System and how it should be implemented including recognising sequestration, pricing, and the readiness and ability of the government to be able to implement such a system by 2025. We will provide a more detailed breakdown of the Commission's analysis in a follow-up article.

The Ministers will consider the Partnership's recommendations alongside the Commission's Report before making its decision in December 2022 on how agricultural emissions are to be priced from 2025 onwards. If the Government agrees to the Farm-Level System, then the relevant legislation will need to be drafted in 2023. Despite this, it is still possible for the Government to roll the agriculture sector (livestock and fertilizer) into the New Zealand Emissions Trading Scheme prior to 2025.[69]

Want to find out more?

If you're interested in finding out more about changes in climate policy and how they may affect you please contact Rachael Zame , or another member of the team.

[1] Biogenic methane means methane gas produced from the agriculture and waste sectors. For the purposes of the Farm-level system, the focus is on agricultural methane emissions.

[2] Emissions Reduction Plan, Chapter 13: Agriculture.

[3] Partners are Beef + Lamb New Zealand, Dairy NZ, Federated Farmers of New Zealand, Horticulture NZ, Federation of Māori Authorities (FOMA), Ministry for the Environment (MfE), Ministry of Primary Industries (MPI), Foundation for Arable Research (FAR), Dairy Companies Association (DCANZ), Deer Industry New Zealand

(DINZ), Meat Industry New Zealand (MIA), Irrigation New Zealand, and Apiculture NZ.

[4] For more details see the Primary Sector Climate Change Commitment at Primary-Sector-Climate-Change-Commitment-1.pdf (environment.govt.nz)

[5] For the purposes of the Report, Long lived GHG emissions include nitrogen oxide (N_20) and Carbon Dioxide (CO_2), and are referred to together as CO_2 equivalent or CO2e.

[6] Recommendations Report page 38

[7] Recommendations Report page 39.

[8] For example the National Policy Statement for Freshwater, and Forestry in the NZETS.

[9] Recommendations for Pricing Agricultural Emissions page 6.

[10] Recommendations Report page 14 and 33.

[11] Currently organic N fertiliser and emissions from lime have not been included, although it is noted they could be considered in the future, Recommendations Report, page 33.

[12] Recommendations Report page 33.

[13] Where emissions would be calculated at the meat, milk and fertiliser process level, based on the quantity of product received from farms, the costs of which would then be passed on to farms.

[14] Note the other main option considered was setting a levy at the processer level.

[15] NZ’s current targets are to reduce emissions of Methane by 10% below 2017 levels by 2030 and to reduce by 24 to 47% by 2050; and for Net zero emissions of other GHGs (excluding biogenic methane) by 2050.

[16] This includes Carbon Dioxide, Nitrous Oxide and HFCs.

[17] Recommendations Report page 21.

[18] Person(s) responsible for the overall operation of the farming business, Recommendations Report page 34.

[19] Ibid.

[20] Recommendations Report page 34.

[21] Recommendations Report page 35.

[22] These will be approved actions (practices or technologies) that have clear and credible emission reductions.

[23] Recommendations Report page 36.

[24] Recommendations Report page 39.

[25] Recommendations Report page page 16, section 8 page 56.

[26] This means it will receive an annual sequestration rate based on the yearly accumulation of carbon in growing biomass stock, Recommendations Report, Section 8 page 59.

[27] Must be at least 1m wide from the edge of the bank and more than 50% woody vegetation, Recommendations Report, Section 8 page 56.

[28] Defined as vegetation that is planted and may be felled and re-established, Recommendations Report section 8 page 56.

[29] Minimum 15 stems /ha, Recommendations Report, Section 8 page 56.

[30] Up to 1ha and at least 0.25ha and greater than 30% canopy cover, Recommendations Report, Section 8 page 56.

[31] This is the average carbon after adjusting for losses from harvesting and gains from replanting. It also applies an “average age” for the vegetation, Recommendations Report, Section 8, page 60.

[32] Recommendations Report, Section 8 page 56.

[33] Recommendations Report, Section 8, page 56.

[34] For examples see the voluntary carbon standard methodology VM0007 which allows for both above ground and below ground biomass including wetlands and mangroves, and the Australian Emission Reduction Fund which has approved methodologies for soil carbon and blue carbon.
See https://verra.org/methodology/vm0007-redd-methodology-framework-redd-mf-v1-6/, https://www.cleanenergyregulator.gov.au/ERF/Choosing-a-project-type/Opportunities-for-the-land-sector/Vegetation-methods/tidal-restoration-of-blue-carbon-ecosystems-method ,
and https://www.cleanenergyregulator.gov.au/ERF/Choosing-a-project-type/Opportunities-for-the-land-sector/Agricultural-methods.

[35] Recommendations Report, Section 8 page 63.

[36] Recommendations Report, Section 8 page 63.

[37]Recommendations Report, Section 8 page 63.

[38] Recommendations Report page 14 and section 6 page 41.

[39] Recommendations Report section 6, page 42.

[40] Recommendations Report page 43.

[41] Recommendations Report page 15

[42] This is consistent with the approach taken in the NZETS for emissions intensive and trade exposed industries which receive some free allocation which is stepped down over time to reduce the risk of emissions leakage, Recommendations Report, page 15 and section 7, page 43.

[43] Recommendations Report, section 7, pages 43 -44.

[44] https://carbon-pulse.com/category/new-zealand/ quoting spot prices from Jarden Securities.

[45] See NZ govt to fix over-allocation of NZUs to heavy emitters, July 21, 2022, Carbon Pulse, https://carbon-pulse.com/166999/.

[46] See Carbon Pulse, Speculator NZU holdings increase by 14 mln year-on-year, as NZ ETS surplus continues to grow, https://carbon-pulse.com/165510/. July 08 2022, https://carbon-pulse.com/165510/

[47] This assumes a sequestration rate of 1.83t/ha. Recommendations Report, page 45.

[48] Recommendations Report page 49.

[49] Recommendations Report, page 15, Section 7, page 50.

[50] Interestingly, it specifically will not provide direct incentives for land use change to exotic forestry, Recommendations Report, page 15, Section 7, page 50-51.

[51] Recommendations Report, Section 7, page 50.

[52] Recommendations Report, Section 7, page 51-52.

[53] Recommendations Report, Section 7, page 52.

[54] Recommendations Report, page 15, Section 7 page 53.

[55] Recommendations Report page 19

[56] Recommendations Report, page 17

[57] Recommendations Report, page 13.

[58] Recommendations Report page 30.

[59] Recommendations Report page 31.

[60] Recommendations Report, Section 10, page 70.

[61] Recommendations Report page 11, section 10, page 70.

[62] Recommendations for Pricing Agricultural Emissions page 7.

[63] Recommendations Report, Section 10, page 70.

[64] Recommendations Report, Section 10, page 70.

[65] This was based on profitability impact of prices at $0.35kg of methane and $13.80 tCO2e, Recommendations Report, Section 10, page 71.

[66] Ibid.

[67] Climate Change Commission: Progress towards meeting agricultural emissions pricing, June 2022, available at https://www.climatecommission.govt.nz/our-work/advice-to-government-topic/agricultural-emissions/agricultural-progress-assessment/full-report-agricultural-progress-assessment

[68] These are set out in Schedule 5 to the CCRA, and are the GHG reporting and accounting frameworks and farm plan requirements for the agriculture covered in this article.

[69] CCRA s219(4)(c).