



He Waka Eke Noa

Primary Sector Climate Action Partnership

Pricing system administration costs

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Pricing system administration costs

Purpose

The administration cost analysis compares the estimated establishment and operational costs for the Processor-level NZ ETS, Farm-level Levy and Processor-level Hybrid Levy with Emissions/Sequestration Management Contracts (EMC and SMC). The Farm-level Levy with an output-based rebate and land-based rebate has also been included in the analysis.

Scope

The scope of the analysis is the overall administration cost to New Zealand of implementing a pricing system on agricultural emissions. Cost considerations include:

- **Farmer** - Time spent understanding obligations, responsibilities, and opportunities of the pricing system; measuring and recording additional data requirements; annually reporting and providing evidence for audit.
- **Processor** - Time and cost of reporting, paying the charge, alongside other associated costs.
- **Implementation Agency** - Cost of the IT system build; time spent administering the pricing system, including related science and policy; time spent undertaking audit and enforcement.

The costs of emissions, mitigations or production losses are excluded from the analysis, as are the wider economic impacts. These costs are assessed through the economic modelling and case study analyses.

Method

To develop the administration cost estimates, information was drawn from existing published data and reports. Discussions were also held with government agencies, sector groups, processors, regional councils, audit professionals, farm consultants, and reference group farmers.

The approach involved:

- Estimating system development capital and operational costs
- Estimating on-going system operation costs
- Estimating on-going science and policy costs
- Analysing a base case where each system runs smoothly to provide operational estimates for the pricing system and its related methodologies.
- Estimating where additional time or cost would be required based on poor understanding, errors, missed deadlines and contested decisions and compliance enforcement.

Indicators

Three indicators have been used to enable a comparison of the options:

- **Establishment cost:** This includes the capital and operating costs for the first three years of the pricing system; these figures have not been inflation adjusted.
- **Average annual operating cost:** This includes operating costs through to 2030 (post the establishment phase), including amortisation and the capital charge; these figures have been inflation adjusted.
- **Present value (2022-2030):** This includes non-inflation adjusted establishment and operating costs through to 2030; the amortisation costs have been removed from the operating costs for this calculation.

Key assumptions

A detailed explanation of the assumptions used for each analysis is provided in the Appendix.

The **establishment costs** are significantly impacted by the cost of the IT system. The IT system business case is yet to be developed for the Farm-level Levy or the Processor-level Hybrid Levy with EMC and SMC, so the costs provided are high-level estimates only. The IT system for the farm-level system will need to include a Client Relationship Management (CRM) system with web-based interface; geospatial mapping and recording system; data input and storage system (including document capture capability); calculation engine (including calculation of emissions liabilities, sequestration rewards, incentive payments); payment system; a compliance tracking system; and API data integration capability with other farm software or calculation tools. The Processor-level Hybrid Levy with EMC/SMC may have similar needs. The ranges provided in the analysis include a contingency of 20% and 60%. The price has been informed by previous government and private sector IT project costs of similar complexity and scale.

There may be an opportunity to rationalise components of the IT system build, e.g., through leveraging the NZ ETS infrastructure for sequestration or linking the CRM and payment to the IRD system. The feasibility of these options will be assessed as part of the detailed business case.

The **operational costs** are significantly impacted by the on-going farmer reporting costs. The dairy sector already captures most of the farm data requirements for the Farm-level Levy pricing methodologies; the additional time of five hours for the simple method and 10 hours for the detailed method reflects the need for more robust data capture and improved record keeping alongside annual reporting time.

Farm data requirements are more challenging for the red meat sector given the current spread of data capture and reporting practices. The additional time for the simple method is also estimated at five hours, and a range of 25 to 75 hours is used for the detailed method. While farm financial systems in conjunction with fertiliser company records capture most of the required data for the simple method, for the detailed method there will be a need for much improved data capture and record keeping; this will impose an increased operational cost upon many of the farms that could benefit from using the detailed method.

Increased uptake of farm data recording and management software and establishing API data integration capability with the central calculation engine, has the potential to significantly decrease the reporting costs over time for both farmers and the system administrator.

The **operational costs** are also significantly impacted by the approach and uptake assumptions for the farm-level simple versus detailed methodology and processor-level EMC actions versus benchmarking methods.

Processor market sustainability programme data, sector farm segmentation data (innovators and early adopters) and the Sectoral impact report's uptake data (that assumes economically rational behaviour) were used to inform the uptake assumptions used.

For the Processor-level Hybrid Levy EMC, the potential for collectives or new technology providers to apply for an EMC was also considered as these could greatly increase uptake rates.

Action only and benchmarking only analyses were used to estimate the likely range of administration costs for the EMC approach.

Another key point of difference for the Processor-level Hybrid Levy EMC operational costs is the voluntary nature of the EMC and its provision of a reward; this results in much lower compliance and reporting costs (less incidence of failure to register and report) in comparison to the farm-level reporting system.

Summary

Table 1 provides a comparative summary of the administration costs (farmer, processor, and programme administrator) for each of the pricing system options. Where applicable the costs are shown as a range.

Table 1: Summary analysis of administrative costs

		Establishment cost (capital & operating)	Average annual operating cost to 2030	Present value of the cost (2022-2030)
Processor-level NZ ETS	Administrator	\$3m	\$2m	-\$50m
	Processor		\$8m	
	Total		\$10m	
Farm-level Levy	Administrator	\$117m to \$141m	\$41m to \$45m	-\$292m to -\$348m
	Farmer		\$28m to \$39m	
	Total		\$69m to \$84m	
Incentive payments (additional payments for new technology uptake)	Administrator	\$6m to \$7m	\$1.5m	-\$9m to -\$10m
	Farmer		\$0.5m	
	Total		\$2m	
Transitional Farm-level Levy	Administrator	\$114m to \$144m	\$32m to \$36m	-\$221m to -\$256m
	Farmer		\$19m	
	Stage 1 Total (2025-2027)		\$51m to \$55m	
	Administrator		\$43m to \$47m	
	Farmer		\$27m to \$37m	
	Stage 2 Total (2027-2030)		\$70m to \$84m	
Processor-level Hybrid Levy	Administrator	\$4m	\$2m	-\$31m
	Processor		\$4m	
	Total		\$6m	
Emissions/ Sequestration Management Contract (EMC and SMC)	Administrator	\$75m to \$125m	\$25m to \$41m	-\$144m to -\$251m
	Farmer		\$8m to \$19m	
	Total		\$33m to \$60m	
Farm-level Levy with land-based rebate	Administrator	\$124m to \$150m	\$43m to \$48m	-\$314m to -\$375m
	Farmer		\$31m to \$42m	
	Total		\$74m to \$90m	
Farm-level Levy with output-based rebate	Administrator	\$118m to \$144m	\$41m to \$45m	-\$297m to -\$353m
	Farmer		\$30m to \$41m	
	Total		\$71m to \$86m	

Processor-level NZ ETS

The administration costs for the Processor-level NZ ETS result in an estimated average operating cost through to 2030 of \$10 million per annum (\$8 million for processors and \$2 million for programme administration). The estimated establishment cost is \$3 million and the present value (PV) between 2022 and 2030 -\$50 million.

The programme administrator will face minimal cost for the updating of the NZ ETS, however, there are some one-off costs associated with setting up the agricultural system. After this, the costs relate to on-going regulation and methodology (output emission factor) development and system operation including registration, reporting, payment, audit, and compliance.

The processor costs relate to reporting, passing on the cost to farmers; negotiation of free allocation; purchase of NZU and hedging costs.

Processor costs will increase over time with the price of carbon, for example at double the carbon price the processor administration costs (specifically brokerage fees associated with NZU purchase and hedging) increase by approximately 50%.

An EMC revenue recycling option has not been included, as the NZ ETS system in combination with the processor point of obligation, requires processors to purchase NZU to offset their emissions.

Farm-level Levy with incentive payments

The administration costs for the Farm-level Levy result in an estimated average operating cost through to 2030 of \$69 - \$84 million per annum (\$28 - \$39 million for farmers and \$41 - \$45 million for programme administration). The estimated establishment cost is \$117 - \$141 million and the PV for 2022 to 2030 ranges between -\$292 and -\$348 million.

When the incentive payments (additional payments for new technology uptake) are included, there is an additional operating cost of \$2 million per annum (\$0.5 million for farmers and \$1.5 million for programme administration) and an additional establishment cost of \$6 - \$7 million. It is assumed that the incentive payments are based on approved actions and incorporated within the calculator.

The Implementation Agency will incur significant costs from 2023 for the scope and build of the IT system; development of detailed regulations, methodologies, and guidance; hire and training of staff; and registering participants. After 2025, the focus moves to the pricing system operation including registration, reporting, levy payment, audit, and compliance; noting an on-going IT build cost has also been incorporated.

On-farm (administration) costs start from 2025 and consider the time and effort required to measure and report emissions and sequestration, alongside audit costs. Farm costs relating to the time spent measuring and reporting emissions data for red meat farms, and how this cost may change over time as technology and automation improve, provide a key point of uncertainty for the analysis. Two scenarios have been modelled based on the range from the AgResearch report¹ and sector, processor, consultant, and farmer reference group feedback (25 and 75 hours for the detailed method).

The proposed emissions calculation detailed methodology has the potential to be refined to reduce farm costs. A high-level sensitivity analysis has shown that limiting the recording of liveweight to the point of sale has limited impact on the emissions calculation for some farm systems. The analysis also showed emissions factors for different breeds of sheep and cattle would need to be developed if industry averages

¹ AgResearch, 2021, Farmer inputs and verification options for He Waka Eke Noa emissions reporting.

are to be used instead of liveweight data, otherwise perverse outcomes will occur for those that farm smaller breeds.

Some of the farm data requirements may also link with other environmental policy initiatives such as Freshwater Farm Plans. However, as these plans are risk-based, detailed livestock data will likely not be required for some farms, i.e., an extensive red meat farm will likely have a focus on sediment reduction and detailed livestock data is not required for this. As the actual reporting requirements for Freshwater Farm Plans will likely be confirmed in mid-2022, potential data efficiencies have not been included.

Some of the farm data may also support improvements in farm productivity and profitability, e.g., the Red Meat Profit Partnership benchmarking work. This benefit has not been included in the analysis.

Transitional Farm-level Levy with incentive payments

The administration costs for the Transitional Farm-level Levy system (Stage 1) results in an estimated average operating cost of \$51 million to \$55 million per annum (\$19 million for farmers and \$32 - \$36 million for programme administration). From 2027 these increase to similar levels to the Farm-level Levy, an estimated average operating cost through to 2030 of \$70 - \$84 million per annum (\$27 - \$37 million for farmers and \$43 - \$47 million for programme administration). The estimated establishment cost is \$114 - \$144 million and the PV for 2022 to 2030 ranges between -\$221 and -\$256 million.

When the incentive payments (additional payments for new technology uptake) are included, there is an additional operating cost of \$2 million per annum (\$0.5 million for farmers and \$1.5 million for programme administration) and an additional establishment cost of \$6 - \$7 million. It is assumed that the incentive payments are based on approved actions and incorporated within the calculator.

The key points to note are:

- The Transitional Farm-level Levy system (Stage 1) only has a simple calculator and limited sequestration which results in lower operating costs (\$36 million to \$58 million) for this two-year period.
- The Transitional Farm-level Levy (Stage 2) has operating costs which are comparable to the Farm-level Levy costs.
- The IT system build costs occur over a four-year period instead of a two-year period.
- The PV of the cost is significantly reduced (\$71 million to \$92 million) due to the spreading of capital costs over a four-year period and reduced operating costs during Stage 1.

Processor-level Hybrid Levy with Emissions/Sequestration Management Contracts

The administration costs for the Processor-level Hybrid Levy result in an estimated average operating cost through to 2030 of \$6 million per annum (\$4 million for processors and \$2 million for programme administration). The estimated establishment cost is \$4 million and the PV for 2022 to 2030 is -\$31 million.

The processor costs are approximately half those of the Processor-level NZ ETS as the Processor-level Hybrid Levy system has no transaction costs associated with purchasing NZU and hedging costs. The programme administration costs are assumed to be the same.

The administration costs for the EMC and SMC result in an estimated average operating cost through to 2030 of \$33 - \$60 million per annum (\$8 - \$19 million for farmers and \$25 to \$41 million for programme administration). The estimated establishment cost is \$75 - \$125 million and the PV for 2022 to 2030 ranges between -\$144 and -\$251 million.

Similarly, to the Farm-level Levy the programme administrator will incur costs from 2023 for the scope and build of the IT system (initially a scaled back version of the farm-level system but with the potential to transition to the full system over time); development of detailed regulations, methodologies, and guidance; hire and training of staff; and developing the EMC and SMC systems and processes. After 2025, the focus moves to the system operation including EMC and SMC application processing, audit, and compliance; noting an on-going IT build cost has also been incorporated.

Farm costs start from 2025 and consider the time and effort required to apply for an EMC and/or SMC, alongside audit costs. Two approaches to EMCs are considered: the actions-based approach is the lower cost system as the incentives received are calculated at the programme level; the benchmarking approach is more expensive as it involves detailed farm-level emissions calculations.

Land-based rebate

The administration costs for the Farm-level Levy with a land-based rebate result in an estimated average operating cost through to 2030 of \$72 - \$90 million per annum (\$31 - \$42 million for farmers and \$43 - \$48 million for programme administration). The estimated establishment cost is \$124 - \$150 million and the PV for 2022 to 2030 ranges between -\$314 and -\$375 million.

The additional cost is due an increase in the IT system build cost, and the development of a national land-rebate map. This is expected to be a challenging process.

Once the land-rebate map is released it is also likely that it will be disputed at farm-scale. A disputes process has been incorporated including both administrator and farmer costs. Consultant time to re-map the farm and provide a report has also been included. This cost would likely be a one-off process, although provision for on-going disputes as business ownership changes occur has also been provided for.

Output-based rebate

The administration costs for the Farm-level Levy with land-based rebate result in an estimated average operating cost through to 2030 of \$71 - \$86 million per annum (\$30 - \$41 million for farmers and \$41 - \$45 million for programme administration). The estimated establishment cost is \$118 - \$144 million and the PV for 2022 to 2030 ranges between -\$297 and -\$353 million.

The additional cost is due a slight increase in the IT system build cost, and the increased consultant time for some sheep and beef farmers (breeding farms and graziers). This time is to advise them around how to ensure they recoup the higher emissions price faced, noting this cost may become redundant in the medium- to long-term as market knowledge improves.

The analysis does not include the introduction of a livestock traceability option; noting there are upfront costs, but also significant long-term benefits associated with this.

Appendix

Processor-level NZ ETS

Pricing system	Assumptions	Reasoning
Processor-level ETS	Participants = 14 large; 50 small	Discussion with Processors and Fertiliser Manufacturers/Importers
	EPA costs = \$1.6m establishment and \$0.7m on-going	Discussion with EPA
	On-going operational policy and science = 15% of farm-level costs	Lesser cost as no farm-level methodology
	Processor reporting cost = \$50,000 large; \$8,000 small	Discussion with Processors
	Carbon price = \$85/tonne CO ₂ e	Climate Change Commission predictions
	Free allocation = 95%	Expected entry point for agriculture, noting this will likely decrease by 1% per annum there after
	Transaction cost (passing on the cost to farmers) = 1.1%	Discussion with Processors
	NZU Broker fee = 0.7%	Discussion with NZU Brokers
	Hedging fee = 4% with 20% of cost hedged	Discussion with Processors

Farm-level Levy with incentive payments

Pricing system	Assumptions	Reasoning
Farm-level Levy with incentive payments	Participants = 23,000 <ul style="list-style-type: none"> Dairy = 11,000 Other = 12,000 	Reporting workstream farm definition work
	IT system costs (establishment and on-going)	Discussion with MPI Discussion with Processors Discussion with FarmIQ Discussion with IT Developers/ Project Managers
	Detailed methodology uptake: <ul style="list-style-type: none"> Dairy = 70% Other = 25% 	Discussion with Dairy Processors Dairy and RMPP farmer segmentation analysis
	Sequestration uptake <ul style="list-style-type: none"> Dairy = 10% Other = 60% 	Dairy Processor data Red Meat Sector sequestration report Discussion with Farmer Reference Group

<p>Farmer reporting initial time</p> <ul style="list-style-type: none"> • Dairy – Simple = 5 hours • Dairy – Detailed = 10 hours • Other – Simple = 5 hours • Other – Detailed = 25 and 75 hours 	<p>AgResearch methodology report</p> <p>Discussion with Farmer Reference Group</p> <p>Discussions with Sector Groups</p> <p>Discussions with Processors</p> <p>He Waka Eke Noa Reporting Working Group</p>
<p>Incentive payments:</p> <ul style="list-style-type: none"> • See processor-level action-based EMC assumptions and in addition • Uptake: <ul style="list-style-type: none"> ○ No EMC for sequestration ○ Dairy = 35% ○ Other = 20% • IT system cost = 10% of Farm-level 	<p>He Waka Eke Noa Reporting Working Group</p>
<p>Farmer reporting time efficiency gains over time</p> <ul style="list-style-type: none"> • Dairy = 10% after three years • Other = 20% after three years 	<p>Discussion with Farmer Reference Group</p> <p>Discussion with Processors</p>
<p>Farm consultant support time (Detailed method only)</p> <ul style="list-style-type: none"> • Dairy = 10% farms use 5 hours • Other = 20% farms use 10 hours 	<p>Discussion with Processors</p> <p>Discussion with Consultants</p>
<p>Compliance</p> <ul style="list-style-type: none"> • Initial registration rate = 70% • No report lodged <ul style="list-style-type: none"> ○ Dairy = 10% ○ Other = 20% • Incorrect reporting <ul style="list-style-type: none"> ○ Dairy = 10% ○ Other = 30% 	<p>Discussion with Regional Councils (consent compliance and water measurement data)</p> <p>Discussion with Processors (market programme compliance data)</p>
<p>Audit</p> <ul style="list-style-type: none"> • Desk-top = 10% (4 hours) • On-farm = 10% (12 hours) 	<p>Discussion with primary sector Audit Service Providers</p> <p>Discussion with Processors</p>
<p>Farmer time = hourly rate based on a \$120,000 pa salary</p>	<p>Market data for a Farm Manager position</p>
<p>Implementation agency operational costs</p>	<p>MPI data</p>

Transitional Farm-level Levy with incentive payments

The base assumptions used in the Transitional Farm-level Levy analysis remained the same as for the Farm-level Levy analysis, with the following exceptions:

Pricing system	Assumptions	Reasoning
Transitional Farm-level Levy	Business case costs were increased by \$500,000	The two-step business case process will incur additional cost
	The IT system costs remained the same but were split between Stage 1 and Stage 2 on a 60:40 ratio	Analysis of the IT system costs indicates the system will still require significant investment upfront despite the simplified method and reduced sequestration recognition
	The timing of the IT CAPEX and IT OPEX costs were changed to reflect the updated timeline	Transitional system timeline
	Only the simple calculation method is available for Stage 1	As per proposed transitional farm-level levy system
	Sequestration uptake was reduced for Stage 1 to 20% for red meat and 1% for dairy	As per proposed transitional farm-level levy system Estimates based on QEII, Nga Whenua Rahui, Māori Reservation, and Regional Council covenant data
	Audit and verification costs remained the same	The transitional compliance mechanism will require similar resourcing (to provide confidence to government and wider stakeholders), despite a commitment from sector bodies and processors, and support from rural processors, to ensure farmers are 'match-fit' by 2025.

Processor-level Hybrid Levy with Emissions and Sequestration Management Contracts

Pricing system	Assumptions	Reasoning
Processor-level Hybrid Levy with EMC and SMC	Same as Processor-level NZ ETS, but in addition: <ul style="list-style-type: none"> No NZU Brokerage fee No hedging costs 	No market trading is required as the levy is a simple pass-through mechanism
	Participants = 23,000 <ul style="list-style-type: none"> Dairy = 11,000 Other = 12,000 	Same reasoning as farm-level participants

<p>EMC IT system costs (establishment and on-going)</p> <ul style="list-style-type: none"> • Sequestration = Farm-level cost • Actions-based approach = 25% of farm-level emissions method cost • Benchmark-based approach = 75% of farm-level emissions method cost 	<p>Same reasoning as farm-level IT system with percentage reduction applied</p>
<p>EMC Uptake = 12,500</p> <ul style="list-style-type: none"> • Dairy = 7,700 (70%) • Other = 3,000 (25%) 	<p>Farm-level detailed methodology uptake Alignment with pan-sector level modelling so comparable</p>
<p>Sequestration Management Contract (SMC) uptake</p> <ul style="list-style-type: none"> • Dairy = 10% • Other farms = 60% 	<p>Same reasoning as Farm-level sequestration uptake</p>
<p>Farmer SMC and EMC time</p> <ul style="list-style-type: none"> • Dairy – Action = 4 hours • Dairy – Benchmark = 16 hours • Dairy – Sequestration = 4 hours • Other – Action = 4 hours • Other – Benchmark = 32 hours • Other – Sequestration = 4 hours 	<p>Reporting Group Discussion with Processors The voluntary EMC approach will attract innovators and early adopters that already have good recording systems in place</p>
<p>Farm consultant support time (Benchmark method only)</p> <ul style="list-style-type: none"> • Dairy = 50% farms use 8 hours • Other = 50% farms use 16 hours 	<p>Discussion with Processors Discussion with Consultants Complexity of red meat versus dairy farms</p>
<p>EMC Compliance</p> <ul style="list-style-type: none"> • No report lodged = 5% farms • Incorrect reporting = 10% farms 	<p>Lower non-compliance than farm-level as participants have voluntarily signed up to receive a reward as opposed to being legislated to complete a GHG return</p>
<p>EMC Audit 10% of EMC audited per annum</p> <ul style="list-style-type: none"> • Desk-top = 5% (4 hours) • On-farm = 5% (12 hours) 	<p>Lower audit requirement as participants have signed up to receive a reward as opposed to being legislated to complete a GHG return</p>
<p>Farmer time = hourly rate based on a \$120,000 pa salary</p>	<p>Market data for a Farm Manager position</p>
<p>Implementation operational costs</p>	<p>MPI data</p>

Land-based rebate

The same assumptions as the farm-level system were used but in addition:

Pricing system	Assumptions	Reasoning
Land-based rebate	Additional \$5 million for the land-based rebate system build. This includes development and agreement of the land-based map (\$2 million) and the land-based rebate system build (\$3 million)	Additional cost in developing and agreeing the land-based map and system
	Disputes: <ul style="list-style-type: none"> • 50% of farms dispute the land-based map in the first year of the pricing scheme operation • 50% of farms dispute the land-based map when business ownership changes occur 	On-going disputes around a properties map category

Output-based rebate

The same assumptions as the farm-level system were used but in addition:

Pricing system	Assumptions	Reasoning
Output-based rebate	Additional \$2 million for the output-based rebate system build	Additional calculations and data interoperability needs.
	Red meat farms that are predominantly breeding or grazing units (approximately 30% - based on B+LNZ economic service data) use an additional four hours of consultant time per year for market pricing advice to ensure they are recouping the additional price faced.	There are mixed views around whether the cost faced by breeding units and graziers (as they don't receive a rebate) will be easily passed-up the value chain. Farm consultant time has been included to address this.