

Regulatory Impact Statement: Improving the methodology that accounts for waste in the NZ ETS

Coversheet

Purpose of Document	
Decision sought:	This analysis and advice has been produced for the purpose of informing policy decisions to be taken by Cabinet. The specific policy decisions relate to improving the way the New Zealand Emissions Trading Scheme (NZ ETS) accounts for redisposed waste from landfills vulnerable to the effects of climate change.
Advising agencies:	Ministry for the Environment
Proposing Ministers:	Minister of Climate Change
Date finalised:	28 July 2021
Problem Definition	
<p>The current methodology in the NZ ETS to calculate emissions from waste does not accurately account for the emissions from redisposed waste that has already degraded in a closed landfill.</p> <p>The current emissions costs from redisposed waste are materially higher than the actual emissions. This imposes unjustified costs on persons undertaking redispposal, and could incentivise less environmentally suitable redispposal decisions.</p>	
Executive Summary	
<p>The effects of climate change are increasing the risks to closed landfills from flooding and erosion, creating challenges for landfill owners. As an example, in April 2019 the Fox River flooded and eroded the Fox Glacier Landfill. It is increasingly likely that waste from closed landfills will need to be excavated and disposed of elsewhere to address these risks.</p> <p>The NZ ETS incorrectly calculates emissions from waste that is redisposed. This is because NZ ETS settings assume a composition of waste that has not yet degraded. The current reported emissions, and associated costs, from redisposed waste are significantly higher than the actual emissions. Those potential costs are important considerations for decisions on where to redispouse excavated waste.</p> <p>In addition to the status quo, four options to address this problem are considered.</p>	

The options are as follow:

Option 1 - Status quo

Option 2 – Exemption from NZ ETS obligations

Option 3 – Redisposed waste stream-specific unique emissions factor (UEF) – waste composition

Option 4 – Redisposed waste stream-specific UEF – site-specific calculations

Option 5 – A default emissions factor (DEF) for redisposed waste

The preferred option is an exemption from NZ ETS obligations for redisposed waste. This option most closely aligns with the NZ ETS objectives, is more accurate than the status quo and is a clear and efficient option to implement. A majority of submitters were in favour of an exemption as a way to provide certainty of costs for redisposal of waste.

Options 3 and 4 provide more accurate ways of estimating emissions, but are cost and time intensive and complex. Option 5 was preferred by some submitters because it provides certainty, however it puts a disproportional cost on some redisposed waste due to the large variance in age and composition of redisposed waste.

Limitations and Constraints on Analysis

There were no limitations or constraints on the analysis. The entire range of feasible options is presented in this analysis. This analysis was informed by consultant reports and submissions from consultation.

Responsible Manager(s) (completed by relevant manager)

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29 July 2021

Quality Assurance (completed by QA panel)

Reviewing Agency:	Ministry for the Environment
Panel Assessment & Comment:	The Ministry for the Environment’s Regulatory Impact Analysis Panel has reviewed this Regulatory Impact Statement. The Panel confirms that the level of information provided meets the quality assessment criteria.

Section 1: Diagnosing the policy problem

What is the context behind the policy problem and how is the status quo expected to develop?

1. Operators of disposal facilities are mandatory New Zealand Emissions Trading Scheme (NZ ETS) participants under the Climate Change Response Act 2002 (the Act), if the waste is at least partially from households. The municipal waste sector has been part of the NZ ETS since 2013.
2. Landfill operators calculate emissions by multiplying total tonnes of waste disposed in the year by a default emissions factor (DEF), unless use of a unique emissions factor (UEF) has been approved. UEFs are based on either monitoring of waste composition, or in relation to collection and destruction of landfill gas. The calculation of UEFs relating to collection and destruction of landfill gas includes multiplication by the waste DEF.
3. The DEF quantifies the full amount of emissions from a tonne of waste, even though emissions from biodegradation can continue for many years. Consequently, landfill operators report potential lifetime emissions from the waste disposed in the year, not the actual emissions from the landfill in that year.
4. Closed landfills are not subject to NZ ETS obligations.

What is the policy problem or opportunity?

5. The effects of climate change are increasing the risks to closed landfills from flooding and erosion, creating challenges for the landfill owners. Waste from closed landfills that are vulnerable to the effects of climate change may need to be excavated and redispersed of in municipal landfills.
6. Default NZ ETS emissions reported from this redispersion will not accurately reflect the remaining methane emissions in this waste. Consequently, the emissions costs from redispersed waste are significantly higher than the costs that would reflect actual emissions.
7. The waste DEF in the NZ ETS does not distinguish between different types of waste, applying a single emission factor. However, re-disposed waste can differ significantly from general household waste. For example, relocated waste might be old and almost completely inert.
8. Landfill operators pass on NZ ETS costs to landfill users. The cost of redispersing waste will generally fall on local authorities, and will influence their assessment of redispersion options in a way that might not have the best environmental outcome.

What objectives are sought in relation to the policy problem?

9. The objectives of the NZ ETS regulations are to ensure the efficient and accurate operation of the NZ ETS. This can be considered as
 - a. Ensuring that the emissions reported by NZ ETS participants are accurate.
 - b. Ensuring that the emissions costs faced by participants accurately reflect the emissions associated with their activity.
10. With respect to this policy problem, another objective is to minimise perverse environmental outcomes occurring due to NZ ETS settings.

Section 2: Deciding upon an option to address the policy problem

What criteria have been used to compare options to the status quo?

11. The criteria for this decision will be the same as those used for consultation, and consistent with other changes to NZ ETS regulations.
12. NZ ETS regulations contribute to the objectives of the NZ ETS and SGG levy, and must be accurate, efficient and clear. Each option in this document is assessed against the status quo, using the following four criteria:
 - a. **Alignment** with the objectives of the NZ ETS. The objectives are to support and encourage global efforts to reduce the emission of greenhouse gases by assisting New Zealand to meet the:
 - i. international obligations under the Convention, the Protocol, and the Paris Agreement
 - ii. 2050 target and emissions budgets.
 - b. **Accuracy** requires ensuring the methodologies and emissions factors used in the regulations are as close as practically possible to those used in the Inventory and New Zealand's international and domestic emissions targets. Otherwise, participants or the Government will incur costs for emissions that are either not occurring or not covered by New Zealand's international obligations.
 - c. **Efficiency** concerns administrative and compliance costs for participants and the Government.
 - d. **Clarity** means the regulations must be unambiguous and consistent, so the obligations and costs imposed on regulated parties are equivalent and unavoidable.

What scope have options been considered within?

13. No options have been ruled out. Some options from previous work on 'Exempting Fox Glacier Landfill waste from the NZ ETS' have been considered.
14. Each option implies changes to regulations; there are no non-regulatory options in this proposal. The status quo is included for reference.

What options are there?

Option 1 - Status Quo

15. Current settings mean emissions assumed from redisposal of a tonne of recovered waste from a closed landfill are the same as from a tonne of new waste. Waste in historical landfills has degraded over time, meaning that its remaining potential emissions are far lower than emissions from new waste to landfill. Modelling of data from vulnerable waste has shown that as little as 3 percent of methane emissions may be remaining by the time relocation of waste from closed landfills is carried out. Redisposed waste has a significantly lower proportion of organic material than assumed by the default parameters.
16. The NZ ETS has an optional method for landfill operators who wish to calculate emissions using observations of waste composition. This allows landfill operators who are disposing waste that has lower emissions potential to apply lower emissions factors, and therefore incur lower NZ ETS costs. There are various requirements for the use of composition UEFs, including that all waste being disposed must be classified into classes which will have DEFs, and monitoring and testing rules. No policy intervention is needed to use this method, so it is included under the status quo.

Advantages to Status Quo

17. The status quo is efficient and needs no legislative intervention.

Disadvantages to the status quo

18. The status quo option will result in inaccurate reporting of emissions resulting from redispersed waste from closed landfills and therefore inaccurate emissions costs.
19. This cost discourages the relocation of waste from vulnerable closed landfills to a municipal landfill. This cost may influence relocation decisions and result less environmentally optimal decisions.
20. The UEF option will impose administrative costs on landfill operators that are disproportionate to the NZ ETS costs avoided by accurately estimating emissions from redispersed waste.

Option 2 – Exemption

21. Option 2 considers an exemption for landfill operators from NZ ETS obligations for redispersed waste from closed landfills.
22. The Minister of Climate Change can, under section 60 of the Act, recommend the making of an Order in Council for an NZ ETS exemption, providing various tests under that section are met. This exemption proposal has been assessed and meets these requirements.
23. The redispersed waste recovered from an at-risk closed landfill could be exempted from the NZ ETS reporting and associated unit surrender obligations of the receiving disposal facility.
24. Exemption would require a regulatory change, the best course being via an addition to the Climate Change (General Exemptions) Order 2009. This is the mechanism used to exempt any landfill operator from NZ ETS obligations for redispersing Fox Glacier Landfill waste.

Advantages to a UEF

25. There would be no administrative costs for the Government, beyond this policy change.
26. An exemption takes away ETS obligations from participants and does not impose disproportionate costs on them.
27. It is a clear and efficient way to deal with redispersed waste and aligns with the overall objectives of the NZ ETS.

Disadvantages of an exemption

28. Exemption would not account for any of the remaining emissions from the redispersed waste. The scale of emissions that may be unaccounted for has not been quantified, but will vary depending on the amount of waste and how much it has degraded. These emissions are considered likely to be very low in almost all cases based on data from waste from vulnerable landfills.

Option 3 - Redispersed waste stream-specific UEF – waste composition

29. Option 3 is to amend the regulatory requirements that impose administrative and monitoring costs on landfill operators wishing to use waste stream-specific UEFs based on waste composition.
30. For example, one or more representative surveys of the waste could be required, rather than two surveys at least three months apart, and developing new methods for

- quantifying organic proportions of waste from other material. This could need to include identification of position on methane decay rate curves, to account for age of waste
31. A modified Solid Waste Analysis Protocol (SWAP) would require amendment of the Climate Change (Unique Emissions Factors) Regulations 2009 (UEF Regulations). After the first UEF calculation, extra costs for the disposal facility are likely to be minimal, as the composition of the vulnerable waste stream would be considered consistent over time.

Advantage to a stream-specific UEF – waste composition

32. A waste stream specific UEF based on composition aims to improve accuracy of the emissions.

Disadvantages to stream-specific UEF – waste composition

33. While a waste stream specific UEF based on composition aims to improve accuracy of redisposed waste, implementation has risks. This option risks inaccurately recording the emissions from new waste being disposed at the landfill.
34. There is also a risk of operators selectively timing the samples to minimise NZ ETS obligations, noting that all waste will need to have UEFs under existing regulations.
35. Modification of the requirements for estimating and monitoring compositional UEFs will apply to all waste at all municipal landfills, therefore this inaccuracy risk is larger than just for those landfills redisposing waste.
36. There are also likely difficulties in identifying waste-type from redisposed waste, and although identification of position on methane decay rate curves to account for age of waste could address this, this is difficult.

Option 4 - Redisposed waste stream-specific UEF – site-specific calculations

37. Option 4 is to develop a waste stream-specific UEF based on site-specific calculations.
38. The difference between this option and option 3 is that this method uses characteristics specific to the source of the redisposed waste. In contrast, a waste stream-specific UEF – waste composition method requires sorting of redisposed waste and a separate classification of unidentifiable waste stream to calculate a UEF.
39. Site-specific information such as open and closure dates, landfill volume and the rate of filling could be used as the specific characteristics to calculate this more accurate UEF.

Advantages of waste stream-specific UEF – site-specific calculations

40. This is a more accurate method to assess emissions from vulnerable closed landfill waste that would use the principles of the NZ ETS and the UEF Regulations, but better reflect the remaining organic content and degraded nature of the waste.
41. This process would be similar to the current UEF process, but specific to waste from vulnerable landfills. It could be a relatively simple method that estimates remaining emissions from the waste.

Disadvantages of waste stream-specific UEF – site-specific calculations

42. It is unlikely there is detailed information about the operation of vulnerable landfills, so remaining emissions would be estimated based on limited information and assumptions. This would require further work, and likely additional consultation, before it could be implemented via amendment of the UEF regulations.

Option 5: DEF for redisposed waste

43. A default emissions factor (DEF) for redisposed waste could be developed. The DEF value (emissions per tonne of waste) could be calculated using available data from potentially vulnerable landfills.

Advantage of a DEF

44. Reported emissions and resulting emissions costs would be more accurate than under the status quo.

Disadvantage of a DEF

45. This option will have administrative and monitoring costs for landfill operators redisposing waste, as they will be required to weigh and record each tonne of this waste as a separate waste stream. This should not be a significant marginal cost as landfill operators maintain detailed data on waste classes entering their landfill to manage regulatory requirements and landfill operations.

46. This option would result in an overestimation of remaining emissions for some sites, and an underestimation for others. The expected over and underestimation could be assessed through a sensitivity analysis using the available data. A degree of conservatism would ensure emissions are not substantially underestimated, however this would result in some participants expected to face NZ ETS costs disproportionate to actual emissions.

How do the options compare to the status quo?

	Option 1 Status Quo	Option 2 Exemption	Option 3 Waste stream specific UEF – waste composition	Option 4 Waste stream specific UEF – site specific calculations	Option 5 DEF specifically for redisposed waste
Alignment with NZ ETS objectives	0	0 Consistency with reporting of emissions from waste in closed landfills. However, will not incentivise consideration of lower emission options.	+	+	+
Accuracy	0	+	+	+	+
Efficiency	0	+	--	-	-
Clarity	0	++	--	-	++
Overall assessment	0	+			
<p>Key</p> <p>++ much better than doing nothing/the status quo + better than doing nothing/the status quo 0 about the same as doing nothing/the status quo - worse than doing nothing/the status quo -- much worse than doing nothing/the status quo</p>					

What option is likely to best address the problem, meet the policy objectives, and deliver the highest net benefits?

47. The preferred option to address the problem is Option 2 being an exemption for disposing waste from closed landfills.
48. Data analysis from an expert report shows that redispersed waste from closed landfills may have as little as 3% of methane emissions remaining at the time of relocation. This estimate is based on relocation of the waste 50 years following site closure. Based on data used, 72% of closed landfill sites fall into this age category.
49. The percentage of residual emissions is very sensitive to the closure date of the site, due to the exponential decline in methane generated over time. Younger sites would have larger organic content. However, these make up a smaller number of the total landfills. Additionally, waste initially deposited from 2008 have their emissions covered by NZ ETS obligations paid at deposition.
50. While an exemption will not accurately record any emissions that do arise from further decomposition, it is more accurate than assuming the emissions potential of the waste is the same as new municipal waste. In most cases, redispersed waste will have at most very little emissions potential due to the full biodegradation of most organic content (except some old wood), and assuming zero emissions is more accurate than the default. This assumption is confirmed by analysis referred to in para 48.
51. Use of an exemption will have some administrative costs for landfill operators as it will be necessary to separate and record the quantity of this waste stream. This cost also occurs with the other options, however this cost is not expected to be significant, particularly in comparison to the ETS costs of the status quo.
52. There is no data on the number of participants affected by redispersed waste currently, however redispersion of waste will become more common in the near future with the increasing impacts of climate change.
53. The majority of submissions were in favour of exemption. Submitters did not favour option 3 and 4 given the difficulty and costs in estimating compositions from old waste that would be unidentifiable and mostly non-organic. There was some support for a redispersed waste specific DEF. However, this would require waste and emissions reporting under the NZ ETS that would have costs to participants disproportionate to their actual emissions. Given the likely variation in redispersed waste, the DEF would be inaccurate in almost all cases as remaining emissions will vary with waste age, composition, and origin, and lead to ETS costs for some participants when their waste has no emissions potential.

What are the marginal costs and benefits of the option?

54. To make use of the exemption, municipal landfill operators will need to record the quantity of redispersed waste passing their weighbridge. This should not be a significant marginal cost as landfill operators maintain detailed data on waste classes entering their landfill to manage regulatory requirements and landfill operations. Use of the exemption when reporting under the NZ ETS will have very little cost to participants as the option for deduction will be built into the emissions reporting tool.
55. There are material benefits for landfill operators from an exemption, in that they will no longer be required to purchase and surrender emission units for the inaccurately assumed amount of potential emissions from redispersed waste.
56. Conversely, this reduction in surrendered emission units will be a reduction in NZ ETS revenue for the Crown for any redispersed waste. At this stage, it is thought that redispersed waste is a minor, although likely increasing, component of overall waste disposed to landfills facing NZ ETS costs. This cost is justified in that the government

- would report very few emissions in its national greenhouse gas inventory from redispensed waste, and the status quo consequently imposes different costs on NZ ETS participants and the government. Exemption removes almost of this cost difference.
57. The government agency responsible for the operation of the NZ ETS, the Environmental Protection Authority, will not incur costs or receive any benefits from exemption, other than to ensure waste participants are able to deduct redispensed waste from NZ ETS obligations in their annual reporting. This will be a minor one off cost.

Affected groups	Comment	Impact	Evidence Certainty
Additional costs of the preferred option compared to taking no action			
Regulated group: Waste participants	Minor additional NZ ETS costs from monitoring and reporting	Low	High
Regulator EPA	Will have to provide for exclusion of this waste class in waste participant's emissions returns	Low	High
Crown	Reduced NZ ETS revenue from no surrender of emission units	Low	High
Total monetised costs	None		
Non-monetised costs	None		
Additional benefits of the preferred option compared to taking no action			
Regulated groups: Waste participants	Removal of need to face NZ ETS obligations (\$48 per unit at July 2021)	High	High
Regulator EPA	No benefits	NA	High
Total monetised benefits	Reduces unjustified NZ ETS costs for waste participants	High	
Non-monetised benefits	Addresses the core problem of the status quo potentially disincentivising the redispensed option with the lowest environmental impact	High	

Section 3: Delivering the option

How will the new arrangements be implemented?

1. The proposal will be given effect through amendment of the Climate Change (General Exemptions) Order 2009. The amendment will come into force 30 days after being published in the NZ Gazette. This is expected to be in early 2022. These are able to take retrospective effect, so will be given an effective date of 1 January 2022.

How will the new arrangements be monitored, evaluated, and reviewed?

2. The impact of the proposal will be monitored by the EPA, the regulator of the NZ ETS. They will monitor and evaluate the impact of the exemption through their existing compliance regime.