



Updating New Zealand's first Nationally Determined Contribution under the Paris Agreement (NDC1): Fiscal, economic and feasibility considerations

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	Action sought:	Response by:
To Hon James Shaw, Minister of Climate Change	For information	21 June 2021

Actions for Minister's Office Staff	Return the signed report to MfE.
Number of appendices and attachments #3	Titles of appendices and attachments (ie separate attached documents): Appendix 1 – s 9(2)(j) Appendix 2 – [REDACTED] Appendix 3 – Initial assessment of associated costs and feasibility considerations of updating NDC1

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Updating New Zealand's first Nationally Determined Contribution under the Paris Agreement (NDC1): Fiscal, economic and feasibility considerations

Key Messages

1. The purpose of this briefing is to provide you with information on the fiscal, economic costs and feasibility issues associated with updating our first Nationally Determined Contribution (NDC1).
2. Under the Paris Agreement, NDCs must reflect a country's highest possible ambition in light of national circumstances, demonstrate progression from previous commitments, and represent a credible contribution to the global goal set out in the Paris Agreement of limiting warming to well below 2°C and pursuing efforts to limit global average temperature rise to 1.5°C above pre-industrial levels.
3. New Zealand's current NDC1 is to reduce greenhouse gas emissions 30% below 2005 levels by 2030, and can be met through a mixture of domestic emissions reductions, removals, and offshore mitigation.
4. In late 2020, you asked the Climate Change Commission (the Commission) to review whether the current NDC1 is compatible with global efforts to limit the global average temperature increase to 1.5°C above pre-industrial levels and to provide recommendations on any changes to NDC1 required to ensure it is compatible with this global temperature goal.
5. The Commission's final advice is that for NDC1 to be compatible with the global 1.5°C temperature goal, a reduction of much more than 36% below 2005 levels by 2030 (measured on a gross-net basis) would be required. Following receipt of the Commission's draft advice, you and the Prime Minister publicly committed to work to revise NDC1 this year, with a view to updating NDC1 prior to COP26 in November.
6. The Commission notes in its advice that *"due to the challenges, risks and likely impacts of meeting the NDC alone, offshore mitigation will be critical to meeting the current NDC"*.
7. This paper focuses on the costs and feasibility of securing offshore mitigation as a critical component of updating our NDC.
8. Our previous advice has identified there are currently limited sources of offshore mitigation with environmental integrity that can be used towards New Zealand's NDC1 (2021-B-07919 refers). This is due to the Paris Agreement, and carbon markets aligned with the Paris Agreement being in early stages of development.
9. Our advice continues to be that ETS linking is the most feasible option to deliver offshore mitigation with high environmental integrity at the scale New Zealand required for the current NDC1. Wider sources of supply such as projects, programmes, the Article 6.4 mechanism or government to government partnerships are emerging, still under development and likely to require significant new resource commitment from New Zealand to produce international units that would meet our expectations for environmental integrity.
10. The New Zealand Emissions Trading Scheme (NZ ETS) enables linking with larger economies that can supply international offsets, which is a strength. There are, however, practical constraints to the volume of international units that can be imported while remaining within the NZ ETS cap. This means at higher ambition NDCs, we expect ETS linking would need to be supplemented by other sources of offshore mitigation.
11. Our advice remains that we consider that it is feasible to secure international offshore mitigation through ETS links up to an NDC level of 40%. This is a level of ambition we have sufficient confidence is feasible in terms of NZ ETS function, s 9(2)(j)

12. As per your request, we are looking into a range of options for what changes to NZ ETS settings or other domestic policy initiatives would support a higher ambition target. Our initial view is this would require significant changes to the NZ ETS and there is a high degree of uncertainty that we would be able to secure supply at higher levels. Alternatively, the government could pursue bilateral arrangements to fund emission reductions outside the NZ ETS, or if new technologies, such as methane inhibitors, become available to make greater emissions reductions available domestically. We continue to explore these options.
13. The fiscal impact of meeting the NDC is significant under a status quo or updated scenario, as the government either forgoes auction revenue or has to separately fund international purchasing. From the current NDC up to an NDC level of 50% (a subset of the range assessed), this is forecast to be in the range from \$3.8 – 13.7 billion (lower price scenario) and \$6.8 – 22.0 billion (higher price scenario).

Recommendations

14. We recommend that you:

- a. **Note** that this briefing is part of a package of material to support decisions on NDC1
- b. **Note** that this briefing provides supporting background analysis on the feasibility, fiscal and economic costs of updating NDC1
- c. **Note** this analysis was summarised in *BRF-137 Initial options for updating NDC1 under the Paris Agreement*
- d. **Note** that we continue to explore what additional policy changes or initiatives would be required to support a higher ambition target beyond the international ETS links assessed in this paper
- e. **Agree** that this briefing and appendices will be released proactively on the Ministry for the Environment's website after Cabinet decisions have been made on updating NDC1, subject to redactions applied consistent with the Official Information Act.

Signature



18/06/21

Craig Salmon
Chief Advisor, Climate Change

Hon James Shaw
Minister of Climate Change

Date

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Supporting material

Purpose

15. The purpose of this paper is to provide you with information on the fiscal, economic costs and feasibility issues associated with updating NDC1. These factors make up part of our 'national circumstances' and are important considerations for updating New Zealand's first Nationally Determined Contribution (NDC1).
16. This paper is part of a series of background papers to support decision-making on updating New Zealand's first Nationally Determined Contribution (NDC1) under the Paris Agreement, and should be in read in the context of those papers.
17. This paper:
 - a. briefly summarises the work of the Commission in identifying what emission reductions are possible to achieve domestically, and what that means for offshore mitigation at different NDC levels
 - b. provides a recap of the options available to purchase international units, and the feasibility of these options in the 2021 – 2030 period
 - c. sets out an assessment of the fiscal and economic impacts of purchasing offshore mitigation

Context

The Commission has made a detailed assessment of what domestic emission reductions are possible between now and 2030

1. The Commission's advice sets out a detailed assessment of the challenges and opportunities for New Zealand to reduce emissions in its final advice *Inaia tonu nei: a low emissions future for Aotearoa*.
2. In this advice the Commission sets out its proposed emission budgets for three budget periods from 2022 – 2035. The first two budgets cover the period of NDC1, and together with forecast emissions for 2021 set a total budget volume of 648 Mt CO₂-e for 2021 - 2030.
3. The Commission's assessment is a key element of our national circumstances – it sets the parameters of what is possible domestically. This, alongside the new policy architecture requiring the development of an Emission Reduction Plan, provides a stable platform for prioritising domestic emission reductions and removals over the NDC1 period.
4. For the purpose of the analysis included in this paper, we assume that the Commission's proposed budget figures form the basis of domestic emission reductions for the 2022 – 2030 period, noting that decisions on emission budgets is subject to separate advice currently under development.

The Commission's advice recognises the need to use offshore mitigation to meet the balance of emission reductions required for NDC1

5. The domestic emission budgets are focused on emissions reductions and removals that can be achieved domestically. There is, however, a gap between our domestic emissions budgets and what is required to meet our current NDC1. In its final advice the Commission notes "due to the challenges, risks and likely impacts of meeting the NDC alone, offshore mitigation will be critical to meeting the current NDC".
6. The Commission made an assessment of the levels of offshore mitigation required to meet an NDC at different levels. This table is copied below.

NDC approach	Level (Mt CO ₂ e)	Implied quantity of offshore mitigation (Mt CO ₂ e)
2017 estimate of the current NDC	601	47
Latest estimate of the current NDC (-30%)	596	52
Middle of the IPCC interquartile range (-36%)	568	80
Lower quartile emissions IPCC pathways (-45%)	527	121

7. Critical for New Zealand in delivering NDC1 will be identifying reliable sources we can use to secure the required offshore mitigation

The analysis in this paper focuses on the options to deliver offshore mitigation and the associated fiscal and economic implications

8. A key input into the decision to update NDC1 is the feasibility and potential fiscal and economic impacts of increasing the level of purchasing offshore mitigation.
9. The analysis and advice section below will recap the options available to secure offshore mitigation. It explains the use of international Emissions Trading Scheme (ETS) linking

10. We provide an assessment the potential volumes of additional mitigation required to meet the current NDC and an updated NDC of 45%. It assesses the feasibility and potential costs associated with these options and associated economic impacts.

Analysis and Advice

We need to purchase offshore mitigation to meet our current NDC1

11. New Zealand's NDC1 is our total commitment to reduce CO₂-e in the global atmosphere within the period 2021-2030. This can be achieved through three main ways:
 - i. New Zealand reduces its domestic gross emissions

- ii. New Zealand increase domestic carbon removals (i.e. largely through growing more trees)
- iii. New Zealand purchases offshore mitigation to account towards our NDC1

12. As set out in the previous section, the emissions reductions that New Zealand intends to achieve through methods one and two will be primarily set through the “domestic” budgets and the Emissions Reduction Plan. These will set out how New Zealand intends to reduce domestic emissions from “status quo” emissions projections (i.e. the Commission’s Currently Policy Reference scenario) in an ambitious but feasible way.

Updating the level of our NDC means increasing the level of international purchasing

13. New Zealand is currently committed to a NDC to reduce GHG emissions to 30% below 2005 levels by 2030. Meeting this NDC is already based on the assumption that additional mitigation outside of the domestic reductions and removals laid out in our emissions budgets will have to be delivered through the use of offshore mitigation. In the Commission’s advice they describe how the gap between the first NDC and their recommended emissions budget will have to be met by purchasing offshore mitigation¹.

There are a range of potential sources of supply for international units, but limited options available at scale in the near term.

14. International carbon markets under the Paris Agreement are very different from the Kyoto Protocol. The Paris Agreement does not create a centralised global carbon market among Parties with targets; instead, it is up to Parties to develop their own market linkages. The responsibility and ability to make choices to ensure environmental integrity is devolved to each Party (rather than being determined centrally). The Paris Agreement, and Paris Agreement aligned carbon markets are in their infancy – however countries are taking steps to develop these; s 9(2)(j)

There is uncertainty about how far and fast other market linkages will develop.

15. The most feasible option to deliver offshore mitigation with high environmental integrity at the scale New Zealand requires for the current NDC1 is ETS linking. s 9(2)(j)

We have prepared a draft Cabinet paper for you seeking Cabinet approval to begin formal talks on ETS linking options, which you have indicated you will bring to Cabinet alongside decisions to consult on an enhanced NDC (2021-B-08005 refers).

There are other options for accessing international mitigation, but these are emerging and uncertain

18. There are currently limited existing sources of offshore mitigation with environmental integrity (2021-B-07919 refers). Other sources of supply such as projects, programmes, the Article 6.4 mechanism or government to government partnerships are emerging, still under development and in the near term are likely to require significant new resource commitment from New Zealand to produce international units that would meet our expectations for environmental integrity.

19. Alternative sources of supply may become available before the end of the NDC1 period, for example, if the rules for the 6.4 mechanism are agreed at COP26 then this could become operational in the medium term. New Zealand could also pursue bilateral agreements where the Government could directly purchase additional offshore mitigation outside the NZ ETS, although we expect any non-ETS bilateral arrangements would

¹ Commission draft advice, pg 157.

require significant investment and planning to secure high-integrity units between now and 2030.

20. For example, while it would be possible for New Zealand to source offshore mitigation from projects, or programmes as Switzerland s 6(a) this would require New Zealand to identify a suitable partner country, agree an overarching agreement with this country and then to support individual projects to be set up and then evaluated before any credits could be issued. This would be highly resource and time intensive relative to the volume of offshore mitigation we expect from such projects. s 6(a)

21. You have indicated that you would like officials to investigate the potential for cooperation with Pacific Island Countries (PICs) s 6(a)

s 6(a)

22. s 6(a)

23. s 9(2)(g)(i)

s 9(2)(g)(i)

Our understanding is that no country is using REDD+ as a source of offshore mitigation under Article 6. REDD+ use for Article 6 is a contentious issue due to challenges around environmental integrity including avoiding double counting and ensuring additionality.

24. It is important to note that this assessment relates to REDD+ suitability for Article 6 only. New Zealand (led by the Ministry of Primary Industries) continues to support global efforts to discourage deforestation and encourage sustainable forest management, s 9(2)(f)(iv)

New Zealand assists developing countries to meet the qualifying criteria for accessing REDD+ and related investments by assisting them to improve their forestry carbon accounting methods.

The NZ ETS, the cap and ETS linking

25. The New Zealand ETS has been in operation since 2008, but underwent significant reform in 2020, allowing for the implementation of an emissions cap and unit auctioning.

26. These reforms also put in place new controls on any use of international units in the NZ ETS:

- a. The NZ ETS settings include a maximum volume limit for international units as part of the overall cap to ensure the NZ ETS continues to drive emissions reductions in New Zealand (currently the limit is zero);
- b. Only international units that have been approved by the Government could be eligible for use in the NZ ETS. We have been clear as a Government that we would only consider international units with demonstrable environmental integrity.

27. The NZ ETS cap is based on the total domestic emissions budget minus emissions that are not covered by the scheme, predominantly the agricultural sector. The volume of units available to the Government to auction is determined by taking the NZ ETS cap, making any required adjustments, including to account for the currently large stockpile of banked units and removing units the Government allocates for free through the free allocation mechanism.
28. The remaining units are available for the Government to auction to participants as their "right-to-emit", whilst still ensuring there is a limited volume to not exceed the cap. Foresters also earn units for the carbon they sequester through their forests that they are able to sell to emitters through the secondary market. There is no cap on forestry units as these units represent real emissions removals that have occurred in New Zealand.
29. The volume of offshore mitigation imported via ETS linking needs to stay under the NZ ETS cap to have environmental integrity. In practice this means we need to manage the level of offshore mitigation imported via ETS linking to the level that we expect to be able to auction into the NZ ETS under the revised domestic emission budgets.

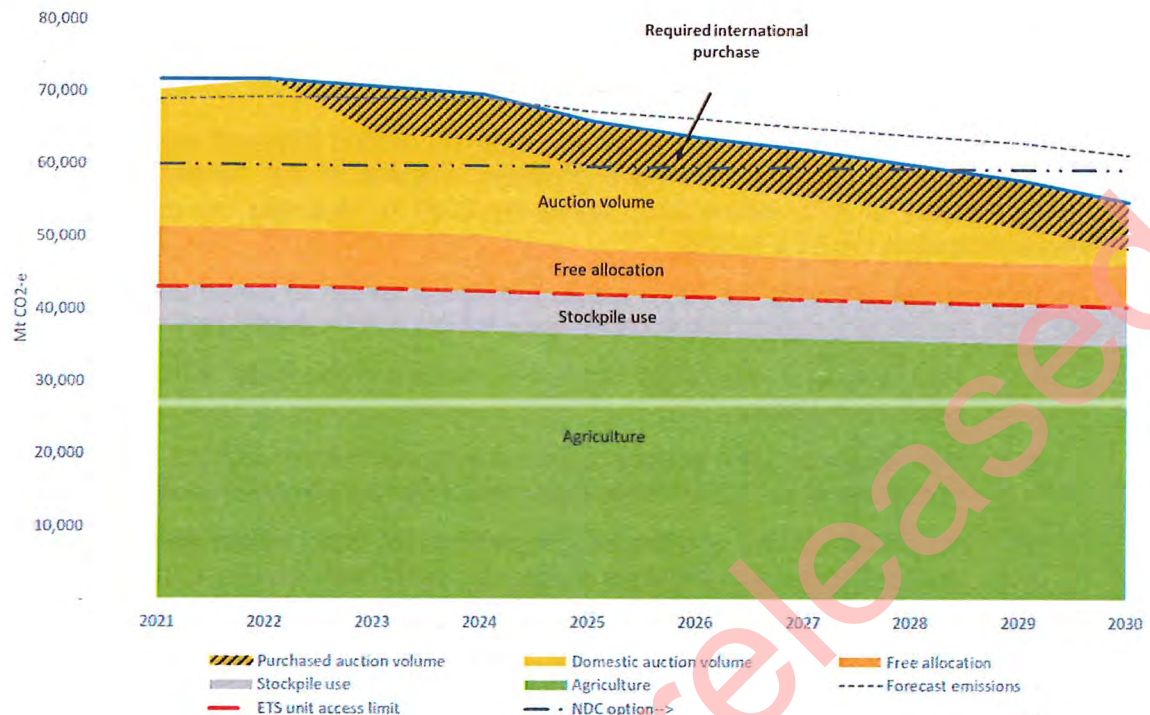
s 9(2)(j)

Accessing mitigation through the NZ ETS for an updated NDC1

35. The charts in the following section show the analysis behind different levels of NDC and their impact on the NZ ETS. We have provided analysis of the current NDC1 and an enhanced NDC1 of 45% below 2005 levels by 2030 to illustrate the practical limit for offshore mitigation via ETS linking.
36. In completing this analysis, we have made a series of assumptions have been made. The assumptions and data sources used for the below charts are:
- a. New Zealand meets its domestic emissions budgets without the use of offshore mitigation
 - b. New Zealand gains access to an international market in 2023, and before that continues to set NZ ETS caps and unit volumes based on domestic budgets
 - c. An equal volume of offshore mitigation units is accessed annually based on the total mitigation required divided by years with access to the international market. Front-loading of unit purchase would not be available.
 - d. Current industrial allocation policy and forecasts continue
 - e. A stable stockpile reduction volume continues until 2030 to ensure excess stockpiled units do not cause the domestic emissions budgets to be exceeded²
 - f. Agriculture remains outside of the NZ ETS and emissions reductions in the agricultural sector are based on reductions from the Commission's Demonstration Path
37. Figure 1 is a breakdown of the domestic emissions budget and the NZ ETS over the NDC period. It illustrates how many units would have to be purchased via the NZ ETS to achieve the current NDC target and achieve 52 Mt additional mitigation (the current NDC1).
38. Under the current NDC1 approximately 43% of all domestic auction volume would have to be purchased internationally through the NZ ETS. This starts at 32% of auction volume in 2023 and increases to 76% by 2030.

² The total stockpile reduction volume assumed over the ten-year period is 54 million units, whilst the current NZU stockpile is approximately 140 million.

Figure 1: Impact of international purchasing on the NZ ETS to meet current NDC



39. Increasing the ambition of the NDC increases the portion of units within the NZ ETS that would have to be purchased internationally or backed by international units. Initially international units can be imported under the NZ ETS cap. This is either via Government auction of units backed by offshore mitigation, or purchased directly from an international market, depending on the ETS linking mechanism.

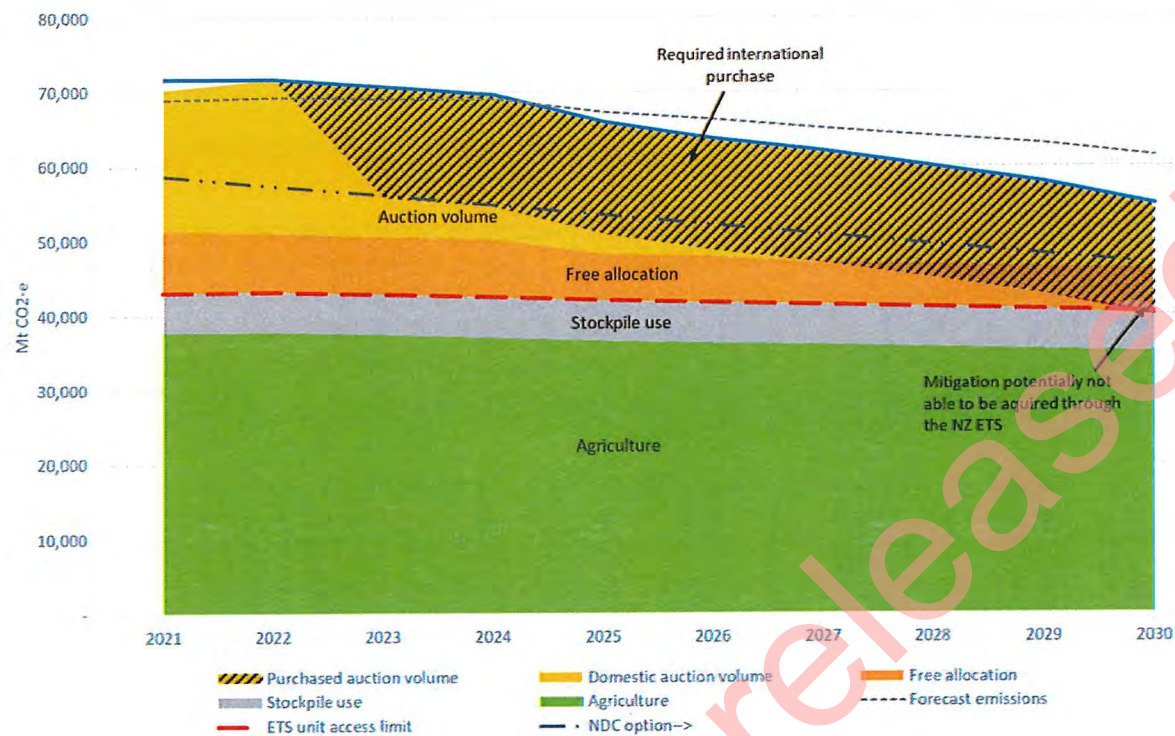
40. s 9(2)(j)

41. Figure 2 illustrates the impact that an NDC with a 45% reduction that requires 120 Mt of additional mitigation would have on the NZ ETS and required international unit purchase.

42. Under this scenario, 75% of all auction volume would have to be purchased internationally in 2023. Free allocation would have to begin being purchased internationally by 2027, reaching 100% of unit supply in the entire NZ ETS by 2030. In 2030 other sources of international units beyond ETS linking may also be needed.

43. s 9(2)(j)

Figure 2: ETS impacts of international purchasing at an NDC level of 45%



MfE's initial recommendation on an updated NDC1

44 s 9(2)(f)(iv)

s 9(2)(j)

45. Securing ETS links will require a commitment from Government to enter into agreements with other jurisdictions, including a decision to significantly reduce ETS auction revenue once the link is operational from 2023. If alternative avenues for offshore mitigation are identified, then NDC1 ambition could be revisited.

Increasing ambition above 40% is likely to require a mix of changes to the NZ ETS, securing an alternative source of international supply and/or favourable conditions for greater domestic emission reductions

46. You asked us to undertake additional analysis to identify if there are additional options that would allow for increased purchasing either through ETS links or via a government-to-government agreement and related domestic policy changes.

47. s 9(2)(j)

48. This preliminary assessment is based solely on modelling, and further analysis would be necessary to understand the impacts on the ETS market, particularly from further reducing unit supply (noting that there are constraints on making changes to unit supply settings and impacts on NZU prices). s 9(2)(j)

49. In addition, here are two potential alternative sources of emission reductions that could lift the feasibility of NDC1 towards 45%:

- a. As discussed above, wider sources of supply such as projects, programmes, the Article 6.4 mechanism or government to government partnerships are emerging and still under development but could be advanced by the government. This would require significant new resource commitment from New Zealand to produce international units that would meet our expectations for environmental integrity. A programme to secure ~5Mt per annum from 2026 onwards would be required to bridge the gap to a 45% NDC target.

s 9(2)(f)(iv)

- b. Greater emission reductions could be more strongly targeted domestically, to significantly over-achieve the domestic budgets. The Commission's "Tailwinds" scenario explores the greater possible reductions if new technologies (such as methane inhibitors) were to become widely available, although the Commission does not currently see this scenario as achievable. Emissions in this scenario are 25Mt lower across the NDC period than the Commission's demonstration pathway.

Economic and fiscal impacts of an enhanced NDC1

50. The fiscal impact of meeting the NDC is significant under a status quo or updated scenario, as the government either forgoes auction revenue or has to separately fund international purchasing.

51. Forecasts for ETS auction cash will be affected by the method of international linking, international prices, and will depend on the volume of international units involved.

52. By using a range of estimated international unit purchase costs, the cost of meeting the current NDC is forecast to be between \$3.8 - \$6.8bn. Under an enhanced NDC of 45% the estimated costs are forecast to be between \$10.4 and \$17.3bn. This is increased due to the requirement for Government to bear 100% of the purchase cost for a portion of free allocation units.

53. Appendix 3 sets out the full range of estimated costs for the options assessed from maintaining the status quo of 30% below 2005 level up to 70% below 2005 levels as included in our previous advice [BRF-137 refers]. This shows these options range from \$3.8 – 17.3 billion (lower price scenario) to \$6.8 – \$31.2 billion (higher price scenario) over the NDC period. s 9(2)(j)

54. s 9(2)(j)

55.

s 9(2)(j)

56. There could be changes in the economic impact on NZ ETS participants (and flow-on to energy prices) depending on the extent that prices in linked ETS are allowed flow through to the NZ ETS. For example, through an arrangement where emitters pay directly for offshore mitigation from the international linked market.
57. Any price flow through would need to be carefully managed to maintain the integrity of New Zealand's domestic emission budgets (e.g. lower NZ prices could lead to reduced domestic action). There would be additional changes to the fiscal impacts, as changed NZ ETS auction prices would affect ETS auction proceeds. Impacts in the NZ ETS are likely to be more significant with higher volumes of offshore mitigation in the NZ ETS.
58. After the point the volume of international purchasing exceeds the level of auction volume, there is no existing policy mechanism to devolve the cost of international purchasing to emitters, and this will fall entirely to the government as a fiscal cost. s 9(2)(f)(iv)
59. s 9(2)(f)(iv)
60. It is important that any changes to the NZ ETS to increase the volume of offshore mitigation also consider the impact these changes could have on the workability, durability and credibility of the NZ ETS to ensure it can continue to function as an effective market with incentives to reduce emissions within New Zealand.

Consultation and Collaboration

61. We have discussed this analysis with MFAT, MBIE and MPI and consulted with the Treasury on the ETS modelling and associated fiscal and economic analysis.

Risks and mitigations

62. s 9(2)(j)

Next Steps

63. You are discussing NDC options with your colleagues at the next Climate Response Ministers Group on 23 June ahead of Cabinet decisions on consultation on 5 August.
64. This paper should be considered alongside advice we have previously or are in the process of providing to inform decisions on NDC options ahead of consultation. These papers are:
- i. BRF-137: Initial options for updating New Zealand's first Nationally Determined Contribution under the Paris Agreement (NDC1).

- ii. BRF-213 Consistency of NDC1 with efforts to limit global warming to 1.5 degrees
 - iii. BRF-211 Supporting paper - methodologies for defining and accounting for New Zealand's NDC
 - iv. BRF-245 Updating New Zealand's first Nationally Determined Contribution under the Paris Agreement (NDC1): Our emissions profile and country comparisons
65. We understand MFAT is providing separate advice on international considerations.

Proactively released

Proactively released

Appendix 3 – Initial assessment of associated costs and feasibility considerations of updating NDC1

	A. 30% below 2005 levels	B. 36% below 2005 levels	C. 40% below 2005 levels	D. 45% below 2005 levels	E. 50% below 2005 levels	F. 70% below 2005 levels
Additional purchasing beyond current NDC1:	-	~28 Mt (roughly x1.5)	~45 Mt (roughly x1.8)	~68 Mt (roughly x2.3)	~91 Mt (roughly x2.8)	~181 Mt (roughly x4.5)
Cost (total cost of purchasing mitigation) ¹	\$3.8 to \$6.8bn	\$5.9 to \$10.5b	\$7.1 to \$12.7bn	\$10.4 to \$17.3bn	\$13.7 to \$22.0bn	\$17.1 to \$31.2bn
Net ETS cash flow (+/-) ²	+\$7.5 to +\$4.5bn	+\$5.9 to +\$1.3bn	+\$4.3 to -\$1.2bn	+\$1.0 to -\$5.8bn plus up to \$0.1bn additional purchasing outside ETS	-\$1.0 to -\$9.0bn plus \$0.4 to \$0.7bn additional purchasing outside ETS	-\$11.7 to -\$21.5bn plus \$5.2 to \$8.8bn additional purchasing outside ETS
Feasibility (based on ETS links)	✓✓ Achievable via current ETS linking options – s 9(2)(j)	✓ Likely achievable via current ETS linking options s 9(2)(j)	✓ Potentially achievable with existing plans for ETS links - s 9(2)(j)	✗ Other options likely to be necessary s 9(2)(j)	✗ Other options likely to be necessary for a large amount of units s 9(2)(j)	✗✗ Not likely to be possible via existing plans or other mechanisms