



Ministry for the  
**Environment**  
Manatū Mō Te Taiao



## Joint ETG Report: Emissions Trading Scheme Legislative Review: Fiscal Neutrality

<b>Date:</b>	13 February 2009	<b>MfE Priority:</b>	NON-URGENT
<b>Security Level:</b>		<b>Number of Attachments:</b>	Nil if none
		<b>MfE Ref No:</b>	09-B-00363
		<b>Treasury Report No:</b>	T2009/268

### Action Sought

	Action Sought	Deadline
Minister of Finance Minister for Infrastructure	Note.	None.
Hon Bill English Minister of Energy and Resources	Note.	None.
Hon Gerry Brownlee Minister for Climate Change Issues	<b>Direct</b> officials to provide a forecast of revenue and expenditure flows associated with the package of 2009 legislative amendments when the final package is presented to Ministers and Cabinet.	27 February 2009
Hon Dr Nick Smith		
Minister of Agriculture Minister of Forestry	Note.	None.
Hon David Carter Associate Minister for Climate Change Issues (International Negotiations) Minister of Trade	Note.	None.
Hon Tim Groser Minister of Transport	Note.	None.
Hon Steven Joyce		

### Ministry for the Environment Contacts [if required]

Name	Position	Telephone		1st Contact
		(cell)	(work)	
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**THE TREASURY**  
Kaitohutohu Kaupapa Rawa

	Ministry for the Environment			
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# Emissions Trading Scheme Legislative Review: Fiscal Neutrality

## Executive Summary

This note indicates the potential revenue that may be generated by the ETS and discusses the concept of fiscal neutrality.

In the short term (i.e. 2008-2012) the ETS does not generate net revenues so the question of fiscal neutrality does not arise. In the long term quite significant levels of revenue could be generated through the sale of surplus emission units and from increased taxation and dividends from electricity generators. In this circumstance it would make sense for ETS revenues to be incorporated as an integral part of the Government's fiscal strategy with ETS revenues being used to ensure that other taxes were lower than they otherwise would be. This would reduce the economic impact of the ETS by allowing for the economic costs of other distortionary taxes to be reduced.

Where the Government wishes to demonstrate the existence of climate change related expenditure that provides benefits to offset the financial impact of the ETS, we recommend this be done by linking this expenditure to ETS revenues in public presentational material rather than any legislative requirement linking revenues to given expenditure programmes. This would allow the Government to retain control over the amount of funding provided to climate change initiatives and to maintain expenditure quality through assessing climate change initiatives against other spending priorities.

As part of Ministers' and Cabinet's consideration of the final package of 2009 legislative amendments to the ETS officials can provide a summary of the forecast revenue and expenditure flows associated with the package. Further to this, one option to make the fiscal implications of the ETS transparent would be a periodic requirement for the Government to report what ETS revenues had been received and how these had been allocated to promote fiscal neutrality. This change could be accommodated through the current review of the legislation if desired.

## Recommended Action

### **We recommend that you:**

- (a) **Note** the estimates of potential ETS revenue flows contained in this report; **Yes/No**
- (b) **Direct** officials to include a summary of the forecast revenue and expenditure flows associated with the package of 2009 legislative amendments when the final package is presented to Ministers and Cabinet. **Yes/No**

Stuart Calman, Acting General Manager  
**Ministry for the Environment**

Dominic Milicich, Acting Manager  
**Treasury**

Hon Dr Nick Smith  
**Minister for Climate Change Issues**

**Date**

# **Emissions Trading Scheme Legislative Review: Fiscal Neutrality**

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## **Purpose of Report**

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1. This briefing note is one of a series of briefing notes on possible amendments to the New Zealand Emissions Trading Scheme (ETS). This note indicates the potential revenue that may be generated by the ETS and discusses the concept of fiscal neutrality.

## **Background**

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2. We have separated the discussion of potential revenue impacts of the ETS into two periods: pre-2013 (First Commitment Period or CP1) and post-2012 as the method for estimating revenues differs between those periods, with this report focusing on the post-2012 period. During the pre-2013 period the revenue position for the government is negative and estimated to be close to the Kyoto liability (currently estimated to cost approximately \$500m) as the level of units allocated and received under the ETS are expected to be broadly equal.
3. Officials are currently updating the net position. The results of the update will not be known until 20 March 2009, at which time you will receive a preliminary estimate. A full report on New Zealand's position will be provided to you in May 2009. We anticipate changes to the balance of Kyoto units and corresponding liability this year. These changes are largely positives for New Zealand and could be relatively significant. This information will not be able to be included in the March 2009 update as it is not to the required standard to pass the scrutiny of Audit New Zealand. We anticipate that there will be an interim update later in the year.
4. Over the medium to long term the ETS has the potential to generate revenue. This revenue is generated in two ways. First, as responsibility for emissions is devolved to emitters, the Government is eventually left with positive holdings of emissions units that it can sell. Second, renewable electricity generators make windfall gains, part of which accrue to government through a combination of higher taxes and higher dividends from state owned generators. Below we detail the levels of forecast revenue, and the uncertainties around this, and then suggest options for managing this revenue.

## **Revenue from Emission Unit Sales**

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5. Once all sectors have entered the scheme and are required to surrender units equal to their total emissions, net revenue accruing to the Crown under the ETS can be estimated as:

$$\text{Net Revenue} = (\text{AAUs}^1 - \text{NZUs freely allocated}) \times \text{World Carbon Price}$$

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<sup>1</sup> While the government will also receive RMUs we have not assumed any revenue from these, as over longer time periods the credits received also result in an equal liability (assuming the rules for forestry stay as they are).

## Emissions Trading Scheme Legislative Review: Fiscal Neutrality

6. AAUs (Assigned Amount Units) are the units that New Zealand receives as part of its Kyoto obligation. These AAUs are equivalent to our obligation under the Kyoto Protocol (i.e. for 2008-2012 this amount is equivalent to our 1990 gross emissions level each year). Any subsequent international agreement (for the sake of simplicity) has been assumed to also establish a cap on New Zealand’s emissions through the allocation of AAUs. Any variation from this cap would require/allow New Zealand to buy Kyoto compliant units/sell AAUs.
7. The actual level of emissions does not enter this equation and is irrelevant for estimating the level of government revenue. Liability for any increase in emissions falls on the emitting party so does not create any fiscal impact for the government.<sup>2</sup> In other words any units received above New Zealand's international obligation (represented in the equation as AAUs) would be required to be surrendered by New Zealand. If there is no future international agreement and the ETS continues then the AAUs in the equation represent the domestic cap which will need to be set.
8. This equation does not include any government expenditure on household and consumer assistance (of which there is none funded currently) or any government expenditure on research. The relationship of such expenditure with the concept of fiscal neutrality is discussed further below.
9. Table one below discusses a potential revenue path based on the assumptions that carbon prices will trend up over time and that New Zealand’s emission allowance will trend down over time. These numbers are taken from the matrix provided in Annex 1 which shows the revenue implications of various combinations of carbon prices and emissions allowances through time.

**Table One: A Potential Revenue Path**

Time Period	2013 – 2018	2019-2025	2025-2030
<b>Revenue Projections</b>	On current allocation plans, a quota of 5% below 1990 levels would result in a small surplus, potentially worth around \$159m p.a.	The phase-out of free allocation (starting in 2019) combined with rising carbon prices could generate annual revenues rising from around \$282m to around \$1252m over this period.	Again, higher carbon prices and the continued free allocation phase-out could generate annual revenues something like \$2290m rising to \$3923m over this period.

10. Table one shows that in the near term relatively little revenue will be generated. Our central projection indicates that government revenue may not go above \$500m per annum before 2022. The stricter the emissions reduction target required for New Zealand in the international agreement, and/or the lower the carbon price, the less revenue is generated. In some scenarios the Crown would lose revenue as a result of the ETS. For example if over 2013-2018 New Zealand’s quota or AAU

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<sup>2</sup> On current ETS settings this formula can be used from 2013 on as all sectors will have entered the scheme at that time. Should sectoral entry be deferred, different calculations would be required including estimates of emissions levels for the excluded sectors.

## **Emissions Trading Scheme Legislative Review: Fiscal Neutrality**

allowance is 15% less than our CP1 allowance and the price of carbon is \$50/tonne of CO<sub>2-e</sub> the Crown would be freely allocating more units than it has received to the value of \$177m per annum.

11. In the longer term the Crown could be generating revenue of between \$2 billion and \$6 billion in 2030. However, even increased revenue of \$4b (as per our central projection) in 2030 is still likely to only be around 1% of GDP at that time. Currently total Crown revenue is around 34% of GDP. Obviously policy changes would alter predicted revenues. Any increase in the current levels of free allocation would reduce government revenues, the corollary being that any reduction of free allocation would increase revenues. Further slowing, or reducing altogether, the proposed phase-out of free allocation would reduce revenues.

### **Increased Revenue from Electricity Generators**

12. Annex two contains an estimate of the increased government revenue that may accrue from windfall gains generated by renewable generators. These gains occur because wholesale prices increase when the marginal plant operating in the electricity market is a thermal generator that has to incorporate the cost of carbon in its bids. Renewable generators receive this increased wholesale price for their output but do not face the associated underlying increase in input costs, thereby generating a net increase in margins<sup>3</sup>.
13. The Ministry of Economic Development (MED) has modelled the potential size of windfall gains that may accrue to electricity generators. This estimation is subject to a large degree of uncertainty. The gains have been split into two parts. The first table in annex two estimates the total size of the windfall gains that may be generated. The second table estimates the portion of these gains which would flow through in cash terms to the government based on increased tax and increased dividends. At a carbon price of \$25/tonne CO<sub>2eq</sub>, the estimates of increased Government revenue generally range between \$50m to \$100m per annum.

### **A Goal of Fiscal Neutrality**

14. You have indicated that you are interested in adopting a policy of fiscal neutrality for the ETS. An explicit approach to the treatment of revenue is not currently a feature of the ETS. While revenue from the scheme may not be significant for some time, we consider that there would be benefits from explicitly adopting a method for dealing with revenue from the scheme. Technically, the term fiscal neutrality implies that any revenue from the scheme would be offset by reducing other forms of government revenue such as income taxes. It does not generally refer to tied expenditure arrangements whereby revenue from a given source is required to be spent on related activities as this approach does involve an increase in the overall level of taxation.
15. In the short term (i.e. 2008-2012) the ETS does not generate net revenues so the question of fiscal neutrality does not arise. In the long term quite significant levels

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<sup>3</sup> Note that this is not something unique to the electricity market as many commentators suggest but is a common feature of most markets. The lowest cost producer of a commodity will typically make inframarginal gains as the market price will be set by the highest cost unit of production necessary to match supply and demand.

## **Emissions Trading Scheme Legislative Review: Fiscal Neutrality**

of revenue could be generated, depending of course on the results of future international agreements. In this circumstance it would make sense for ETS revenues to be incorporated as an integral part of the Government's fiscal strategy with ETS revenues being used to ensure that other taxes were lower than they otherwise would be. Using ETS revenues to reduce other taxes would reduce the economic impact of the ETS by allowing for the economic costs of other distortionary taxes to be reduced. The Government could adopt a principle of fiscal neutrality for the scheme and develop the mechanism to achieve this closer to the time at which revenues become material. In the meantime, one option to make the fiscal implications of the ETS transparent would be a periodic requirement for the Government to report what ETS revenues had been received and how these had been allocated to promote fiscal neutrality. This change could be accommodated through the current review of the legislation.

16. We understand that the Government may want to demonstrate the existence of climate change related expenditure that provides benefits to offset the financial impact of the ETS. We recommend that this should be done via linking this expenditure to ETS revenues in the Government's public presentational material rather than any legislative requirement linking revenues to given expenditure programmes. This would allow the Government to retain control over the amount of funding provided to climate change initiatives and to maintain expenditure quality through assessing climate change initiatives against other spending priorities.
17. As part of Ministers' and Cabinet's consideration of the final package of 2009 legislative amendments to the ETS officials can provide a summary of the forecast revenue and expenditure flows associated with the package.

# Emissions Trading Scheme Legislative Review: Fiscal Neutrality

## ANNEX 1: ETS GOVERNMENT REVENUE IMPLICATIONS – SALE OF UNITS BASED ON HYPOTHETICAL AAU ALLOCATIONS

<b>Key:</b> Government's international target
Scenario 1: 5% below 1990 levels of emissions
Scenario 2: 15% below 1990 levels of emissions
Scenario 3: 30% below 1990 levels of emissions

### Phase-out 2018-2030

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total (\$m)
<b>Crown revenue if carbon price = \$30/tonne of CO<sub>2-e</sub> (million)</b>																			
Scenario 1: CP1 less 5%	\$159	\$159	\$159	\$159	\$159	\$159	\$282	\$404	\$527	\$649	\$772	\$894	\$1,017	\$1,217	\$1,340	\$1,462	\$1,585	\$1,707	\$12,807
Scenario 2: CP1 less 15%	-\$106	-\$106	-\$106	-\$106	-\$106	-\$106	\$16	\$139	\$261	\$384	\$506	\$629	\$751	\$952	\$1,074	\$1,197	\$1,319	\$1,442	\$8,036
Scenario 3: CP1 less 30%	-\$371	-\$371	-\$371	-\$371	-\$371	-\$371	-\$249	-\$126	-\$4	\$119	\$241	\$364	\$486	\$687	\$809	\$932	\$1,054	\$1,177	\$3,265
<b>Crown revenue if carbon price = \$50/tonne of CO<sub>2-e</sub> (million)</b>																			
Scenario 1: CP1 less 5%	\$265	\$265	\$265	\$265	\$265	\$265	\$469	\$673	\$878	\$1,082	\$1,286	\$1,490	\$1,694	\$2,028	\$2,233	\$2,437	\$2,641	\$2,845	\$21,345
Scenario 2: CP1 less 15%	-\$177	-\$177	-\$177	-\$177	-\$177	-\$177	\$27	\$232	\$436	\$640	\$844	\$1,048	\$1,252	\$1,587	\$1,791	\$1,995	\$2,199	\$2,403	\$13,394
Scenario 3: CP1 less 30%	-\$619	-\$619	-\$619	-\$619	-\$619	-\$619	-\$414	-\$210	-\$6	\$198	\$402	\$607	\$811	\$1,145	\$1,349	\$1,553	\$1,757	\$1,962	\$5,442
<b>Crown revenue if carbon price = \$100/tonne of CO<sub>2-e</sub> (million)</b>																			
Scenario 1: CP1 less 5%	\$530	\$530	\$530	\$530	\$530	\$530	\$938	\$1,347	\$1,755	\$2,163	\$2,572	\$2,980	\$3,388	\$4,057	\$4,465	\$4,873	\$5,282	\$5,690	\$42,690
Scenario 2: CP1 less 15%	-\$354	-\$354	-\$354	-\$354	-\$354	-\$354	\$55	\$463	\$872	\$1,280	\$1,688	\$2,097	\$2,505	\$3,173	\$3,582	\$3,990	\$4,398	\$4,807	\$26,787
Scenario 3: CP1 less 30%	-\$1,237	-\$1,237	-\$1,237	-\$1,237	-\$1,237	-\$1,237	-\$829	-\$420	-\$12	\$396	\$805	\$1,213	\$1,621	\$2,290	\$2,698	\$3,106	\$3,515	\$3,923	\$10,884
<b>Central Revenue Projection</b>	<b>\$159</b>	<b>\$159</b>	<b>\$159</b>	<b>\$159</b>	<b>\$159</b>	<b>\$159</b>	<b>\$282</b>	<b>232</b>	<b>436</b>	<b>640</b>	<b>844</b>	<b>1048</b>	<b>1252</b>	<b>2290</b>	<b>2698</b>	<b>3106</b>	<b>3515</b>	<b>3923</b>	<b>\$21,219</b>

Note that these tables represent an intuitive treatment of net revenues. This will not be the same as the accounting treatment that will be applied in the Budget documents.

## ANNEX 2: ETS REVENUE IMPLICATIONS FROM IMPACTS ON ELECTRICITY GENERATORS

### Estimate of windfall gain in generator revenues (\$ millions)

\$25 carbon price	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
SOE portion	\$80	\$84	\$71	\$113	\$123	\$91	\$148	\$247	\$75	\$121	\$69	\$111	\$44	\$8
Private portion	\$65	\$68	\$57	\$88	\$122	\$83	\$108	\$161	\$43	\$73	\$45	\$73	\$18	-\$8
<b>TOTAL</b>	<b>\$145</b>	<b>\$152</b>	<b>\$128</b>	<b>\$201</b>	<b>\$244</b>	<b>\$174</b>	<b>\$256</b>	<b>\$408</b>	<b>\$118</b>	<b>\$195</b>	<b>\$113</b>	<b>\$184</b>	<b>\$62</b>	<b>\$0</b>

\$50 carbon price	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
SOE portion	\$203	\$202	\$209	\$266	\$196	\$163	\$207	\$239	\$162	\$210	\$170	\$212	\$151	\$120
Private portion	\$144	\$143	\$147	\$186	\$172	\$134	\$165	\$189	\$105	\$138	\$106	\$135	\$79	\$56
<b>TOTAL</b>	<b>\$347</b>	<b>\$345</b>	<b>\$356</b>	<b>\$452</b>	<b>\$368</b>	<b>\$297</b>	<b>\$371</b>	<b>\$428</b>	<b>\$267</b>	<b>\$347</b>	<b>\$276</b>	<b>\$346</b>	<b>\$230</b>	<b>\$175</b>

\$100 carbon price	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
SOE portion	\$305	\$287	\$320	\$394	\$361	\$307	\$384	\$445	\$260	\$279	\$220	\$262	\$203	\$153
Private portion	\$207	\$184	\$203	\$247	\$281	\$210	\$264	\$309	\$150	\$169	\$130	\$163	\$112	\$94
<b>TOTAL</b>	<b>\$512</b>	<b>\$471</b>	<b>\$523</b>	<b>\$642</b>	<b>\$642</b>	<b>\$517</b>	<b>\$648</b>	<b>\$754</b>	<b>\$409</b>	<b>\$448</b>	<b>\$350</b>	<b>\$425</b>	<b>\$315</b>	<b>\$246</b>

As the expected carbon price increases, the expected windfall gain in revenue also increases. However, at the same time the expected revenue loss for thermal generators also dramatically increases, and at \$100 /tCO<sub>2</sub> the model elects to discontinue coal generation in 2017.

### Estimate of Government "gain" in revenue from ETS (\$ millions)

\$25 carbon price	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
SOE portion	\$40	\$42	\$36	\$56	\$61	\$45	\$74	\$123	\$38	\$61	\$34	\$56	\$22	\$4
Private portion	\$20	\$20	\$17	\$26	\$37	\$25	\$32	\$48	\$13	\$22	\$13	\$22	\$6	-\$2
<b>TOTAL</b>	<b>\$60</b>	<b>\$62</b>	<b>\$53</b>	<b>\$83</b>	<b>\$98</b>	<b>\$70</b>	<b>\$106</b>	<b>\$172</b>	<b>\$50</b>	<b>\$83</b>	<b>\$48</b>	<b>\$78</b>	<b>\$27</b>	<b>\$1</b>

\$50 carbon price	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
SOE portion	\$101	\$101	\$105	\$133	\$98	\$82	\$103	\$120	\$81	\$105	\$85	\$106	\$75	\$60
Private portion	\$43	\$43	\$44	\$56	\$52	\$40	\$49	\$57	\$32	\$41	\$32	\$40	\$24	\$17
<b>TOTAL</b>	<b>\$145</b>	<b>\$144</b>	<b>\$149</b>	<b>\$189</b>	<b>\$150</b>	<b>\$122</b>	<b>\$153</b>	<b>\$176</b>	<b>\$112</b>	<b>\$146</b>	<b>\$117</b>	<b>\$146</b>	<b>\$99</b>	<b>\$77</b>

\$100 carbon price	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
SOE portion	\$153	\$144	\$160	\$197	\$181	\$153	\$192	\$222	\$130	\$140	\$110	\$131	\$102	\$76
Private portion	\$62	\$55	\$61	\$74	\$84	\$63	\$79	\$93	\$45	\$51	\$39	\$49	\$34	\$28
<b>TOTAL</b>	<b>\$215</b>	<b>\$199</b>	<b>\$221</b>	<b>\$271</b>	<b>\$265</b>	<b>\$216</b>	<b>\$271</b>	<b>\$315</b>	<b>\$175</b>	<b>\$190</b>	<b>\$149</b>	<b>\$180</b>	<b>\$135</b>	<b>\$105</b>

Portion of revenue returned to shareholder	SOE	50%
Portion of revenue as tax	Private	30%