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**Report on the individual review of the inventory submission
of New Zealand submitted in 2015***

Note by the expert review team

* In the symbol for this document, 2015 refers to the year in which the inventory was submitted, and not to the year of publication.

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I. Introduction

1. This report covers the review of the 2015 inventory submission of New Zealand organized by the UNFCCC secretariat, in accordance with the “Guidelines for the technical review of information reported under the Convention related to greenhouse gas inventories, biennial reports and national communications by Parties included in Annex I to the Convention” (hereinafter referred to as the UNFCCC review guidelines) and particularly part III, “UNFCCC guidelines for the technical review of greenhouse gas inventories from Parties included in Annex I to the Convention”.¹ The review took place from 28 September to 3 October 2015 and was coordinated by Mr. Roman Payo (UNFCCC secretariat). Table 1 provides information on the composition of the expert review team (ERT).

Table 1

Composition of the expert review team

<i>Area of expertise</i>	<i>Name</i>	<i>Party</i>
Generalist	Mr. Tomas Gustafsson	Sweden
Energy	Ms. Songli Zhu	China
IPPU	Mr. Ole-Kenneth Nielsen	Denmark
Agriculture	Ms. Hongmin Dong	China
LULUCF	Mr. Robert Waterworth	Australia
Waste	Ms. Riitta Pipatti	Finland
Lead reviewers	Ms. Dong	
	Ms. Pipatti	

Abbreviations: IPPU = industrial processes and product use, LULUCF = land use, land-use change and forestry.

2. An overview of the total greenhouse gas (GHG) emissions² reported under the Convention for New Zealand is provided in annex I; table 6 shows total GHG emissions for selected years, and tables 7 and 8 show GHG emissions reported under the Convention by gas and by sector, respectively.

3. This report contains findings based on the assessment by the ERT of the 2015 inventory submission against the UNFCCC review guidelines. The ERT has made recommendations to resolve those findings related to issues.³ Other findings and, if applicable, the ERT’s encouragements to resolve them are also included.

¹ Annex to decision 13/CP.20.

² In this report, unless otherwise specified, “total GHG emissions” refers to the aggregated national GHG emissions expressed in carbon dioxide (CO₂) equivalent, excluding land use, land-use change and forestry, and including indirect CO₂ if reported by the Party.

³ Issues are defined in decision 13/CP.20, annex, paragraph 81.

II. Summary and general assessment of the 2015 inventory submission

4. Table 2 provides the ERT's assessment of the inventory submission with respect to the tasks undertaken during the review. Further information on the issues identified below, as well as additional findings, may be found in tables 3 and 5.

Table 2
Summary of review results and general assessment of the inventory

<i>Assessment</i>	<i>Issue ID number(s) in tables 3 and/or 5^a</i>			
Dates of submission	Original submission: 10 April 2015 (NIR), 31 July 2015, v1 (CRF tables) Revised submission: 31 July 2015 (NIR)			
Review format	Desk review			
Adherence to the UNFCCC Annex I inventory reporting guidelines	Have any issues been identified in the following areas:			
	1. Identification of key categories			No
	2. Selection and use of methodologies and assumptions			Yes E.16, E.25, I.10, W.7, W.9
	3. Development and selection of emission factors			Yes E.11, E.16, E.18, L.6
	4. Collection and selection of activity data			No
	5. Reporting of recalculations			Yes L.8
	6. Reporting of a consistent time series			Yes I.20
	7. Reporting of uncertainties, including methodologies	No		
	8. Quality assurance/quality control	Yes G.5, G.7, G.8		
	9. Other departures from the UNFCCC Annex I inventory reporting guidelines related to transparency, comparability, accuracy, and adherence to the UNFCCC Annex I inventory reporting guidelines	In addition to the issues listed above, see additional issues related to transparency, comparability, accuracy and adherence to the UNFCCC Annex I inventory reporting guidelines below and in tables 3 and 5		
Completeness	Is the inventory complete?	Energy: No	E.31	
	Missing categories that affect completeness, if any, are included in annex II to this document	IPPU: No Agriculture: Yes LULUCF: Yes Waste: Yes	I.16, I.18, I.21, I.22	

<i>Assessment</i>	<i>Issue ID number(s) in tables 3 and/or 5^a</i>		
	If one or more categories are not estimated because the Party determined that estimated emissions would be insignificant, has the Party provided information showing that the likely level of emissions meets the criteria in paragraph 37(b) of the UNFCCC Annex I inventory reporting guidelines?	Not sufficient	E.24, E.31, I.16, I.18, I.21, I.22, W.10
Corrections	Have emissions been reported without corrections (e.g. related to climate variations or electricity trade)?	Yes	
National inventory arrangements	This review was conducted as a desk review and the national inventory arrangements were not a focus of the review		
Implementation of previous recommendations	The ERT notes that the previous review report was published on 3 June 2015. On the basis of this publication date and taking into consideration national circumstances, the ERT concludes that the Party has demonstrated sufficient progress in implementing improvements in its submission	General: Yes Energy: Yes IPPU: Yes Agriculture: Yes LULUCF: Yes Waste: Yes	
Response from the Party during the review	Has the Party provided the ERT with responses to the questions raised, including the data and information necessary for the assessment of conformity with the UNFCCC Annex I inventory reporting guidelines and any further guidance adopted by the Conference of the Parties?	Yes	
Recommendation for an exceptional in-country review	On the basis of the issues identified, does the ERT recommend that the next review be conducted as an in-country review?	No	

Abbreviations: CRF = common reporting format, ERT = expert review team, GHG = greenhouse gas, IPPU = industrial processes and product use, LULUCF = land use, land-use change and forestry, NIR = national inventory report, UNFCCC Annex I inventory reporting guidelines = "Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part I: UNFCCC reporting guidelines on annual greenhouse gas inventories".

^a Additional issues and findings may be included in tables 3 and/or 5.

III. Status of implementation of issues raised in the previous review report

5. Table 3 compiles all the recommendations made in the previous review report. For each issue, the ERT specified whether it believes the issue has been resolved by the conclusion of the review of the 2015 inventory submission and provided the rationale for its determination.

Table 3
Status of implementation of issues raised in the previous review report

<i>ID#</i>	<i>Issue classification^a</i>	<i>Recommendation made in previous review report(s)</i>	<i>ERT assessment and rationale</i>
General			
G.1	National inventory arrangements (12, 2014). Transparency	Provide a clear statement in the NIR as to whether any changes have or have not occurred in the national inventory arrangements since the last annual submission	Resolved. Explicit information on changes to the national system is included
Energy			
E.1	Reference approach (21, 2014). Accuracy	Subtract the values for non-energy use of fuels in CRF table 1.A.(c) before performing the comparison between the reference and the sectoral approaches	Resolved. In CRF table 1.A.(c), non-energy use of fuels has been subtracted in the column 'Apparent energy consumption (excluding non-energy use, reductants and feedstocks)'
E.2	Reference approach (22, 2014), (26, 2013). Accuracy	Review the approach for justifying differences between the reference and sectoral approaches by taking into account the definitions applied in energy statistics and report on this review in its NIR	Resolved. Flare gas has been excluded from apparent energy consumption of natural gas in the reference approach
E.3	Reference approach (23, 2014).	Use the threshold of 2% as referenced in the UNFCCC Annex I inventory reporting guidelines instead of 5% as an indication of a discrepancy between emissions from the top-down reference approach and the bottom-up sectoral approach requiring additional explanations in the NIR	Not relevant. New Zealand continued to use 5% as the threshold, as indicated in the NIR (page 57). However, the ERT does not consider the problem described in the recommendation to be an issue. See E.19 in table 5
E.4	Reference approach (23, 2014). Accuracy	Exclude non-energy use of fuels from CRF table 1.A(c) before comparing the energy consumption and CO ₂ emissions from the reference approach and the sectoral approach	Resolved. Non-energy use of fuels has been excluded and the difference between the reference approach and the sectoral approach has been narrowed
E.5	Reference approach (24, 2014), (27, 2013), (40, 2012). Transparency	Endeavour to separate liquefied petroleum gas and natural gas liquid fuels with a view to improving the transparency of the reference approach as well as the accuracy of the reporting of non-energy use of fuels and feedstocks	Resolved. Although liquefied petroleum gas and natural gas liquid fuels are still reported aggregately, during the review the Party clarified that in New Zealand liquefied petroleum gas is not produced at petroleum refineries, but separated at gas processing facilities and therefore is essentially a primary fuel and not a secondary fuel
E.6	Reference approach (24, 2014), (27, 2013). Accuracy	Endeavour to separate naphtha and crude oil with a view to improving the transparency of the reference approach as well as the accuracy of the reporting of non-energy use of fuels and feedstocks	Not resolved. Naphtha and crude oil are still reported using aggregate values. New Zealand explained that, because naphtha and crude oil have the same default EFs and the production of naphtha is declining, combining these two fuels will not have an impact on the overall emissions. The ERT

ID#	Issue classification ^a	Recommendation made in previous review report(s)	ERT assessment and rationale
E.7	Reference approach (24, 2014), (27, 2013). Accuracy	Endeavour to separate lubricants and petroleum coke and bitumen with a view to improving the transparency of the reference approach as well as the accuracy of the reporting of non-energy use of fuels and feedstocks	<p>notes that although naphtha and crude oil have the same default CO₂ EFs in the 2006 IPCC Guidelines, their NCVs are different, and usually most of the naphtha is used for non-energy purpose. However, in the reference approach reported by the Party, all naphtha is assumed to be burned together with crude oil. The ERT considers that the disaggregation would improve the accuracy of the reference approach and further close the gap between the reference approach and the sectoral approach, and improve the transparency of the Party's reporting of non-energy use of fuels (see E.21 in table 5)</p> <p>Not resolved. Lubricants and petroleum coke and bitumen are still reported using aggregate values. For lubricants and petroleum coke and bitumen, the Party indicated that the 2014 annual review report was received too late for the country to address the recommendation</p> <p>The ERT considers that the disaggregation would improve the accuracy of the Party's reference approach and further close the gap between the reference approach and the sectoral approach, and improve the transparency of its reporting of non-energy use of fuels</p>
E.8	International bunker fuels liquid fuels (jet kerosene, residual fuel oil) – CO ₂ (25, 2014), (29, 2013). Consistency	Reconcile the differences between the monthly oil supply survey and the data from the industry survey on the delivery of petroleum fuels by industry (DPFI) and/or consider using the DPFI survey to report fuel consumption in the reference approach to ensure greater consistency	Resolved. The difference between the monthly oil supply survey and DPFI data has been eliminated by the revision of the data from the monthly oil supply survey for jet fuel and heavy fuel oil between 2003 and 2008 for both domestic and international consumption
E.9	Feedstocks, reductants and other non-energy uses of fuels Gaseous fuels (natural gas) – CO ₂ (26, 2014). Consistency	Improve the reporting of feedstocks and non-energy use of fuels in CRF table 1.A(d) as well as the consistency between CRF tables 1.A(b), 1.A(c) and 1.A(d)	Addressing. The consistency between CRF tables 1.A(b), 1.A(c) and 1.A(d) has been improved but some inconsistencies remain. However, most of these inconsistencies seem to be caused by the reporting software

<i>ID#</i>	<i>Issue classification^a</i>	<i>Recommendation made in previous review report(s)</i>	<i>ERT assessment and rationale</i>
E.10	Feedstocks, reductants and other non-energy uses of fuels Gaseous fuels (natural gas) – CO ₂ (27, 2014). Transparency	Improve the transparency of the reporting of feedstocks and non-energy use of fuels in both CRF table 1.A(d) and the NIR	Addressing. The reporting of the allocation of emissions from non-energy use in the production of methanol, urea and hydrogen is improving in both CRF table 1.A(d) and the NIR. However, the explanation in NIR is not sufficient yet (see E.23 in table 5)
E.11	1.A Fuel combustion (stationary combustion) solid fuels – CO ₂ (28, 2014). Accuracy	Critically assess whether the emissions trading scheme (ETS) factors reviewed in 2009 are more appropriate for the estimation of emissions from solid fuels and report on this assessment	Not resolved. New Zealand indicated during the review that it did not have enough time to address this recommendation in this submission. The Party will provide an update on how it is addressing this recommendation in the 2016 submission
E.12	1.A.1.a Public electricity and heat production biomass – CH ₄ , N ₂ O (31, 2014). Transparency	Improve the transparency of the information by, for example, including a table with the consumption of biomass, emissions and EFs by gas and type of biomass, and allocate the emissions to the appropriate categories in the CRF tables	Resolved. The information is provided in the 2015 NIR (pages 6 and 53)
E.13	1.A.3.b Road transportation liquid fuels – CO ₂ (29, 2014). Transparency	Include the calorific values from New Zealand Refinery Company in the NIR in order to improve transparency and to facilitate the work of future reviews	Resolved. The calorific values are included in table A4.1.2 of the NIR
E.14	1.A.5.b Mobile: liquid fuels – CO ₂ , CH ₄ and N ₂ O (32, 2014), (24, 2013). Transparency	Allocate mobile military emissions to category mobile (1.A.5.b) – military to the extent possible and improve the transparency in the NIR regarding these emissions	Not relevant. The ERT does not consider the allocation problem described in the recommendation to be an issue. New Zealand indicated during the review that currently data are not available and that it will investigate available data sources and provide an update on progress addressing this recommendation in the next NIR submission in 2016. See E.30 in table 5
E.15	1.B.2 Oil and natural gas and other emissions from energy production liquid and gaseous fuels – CO ₂ and CH ₄ (30, 2014), (34, 2013). Transparency	Improve the reporting by endeavouring to provide the required breakdown in the CRF tables and by improving the transparency of the information reported in the NIR regarding methodological issues related to the categories oil exploration and production (1.B.2.a.1 and 1.B.2.a.2) and natural gas exploration, production and processing (1.B.2.b.1, 1.B.2.b.2 and 1.B.2.b.3)	Not relevant. Emissions from oil production and gas exploration and production are still reported as aggregate values under venting and flaring (1.B.2.c). During the review, New Zealand indicated that it is hard to separate the emissions from the oil and gas systems because in New Zealand the companies that undertake exploration are almost exclusively looking for oil and not gas and therefore report both emissions together. The ERT does not consider the allocation problem described in the recommendation to be an issue. See

<i>ID#</i>	<i>Issue classification^a</i>	<i>Recommendation made in previous review report(s)</i>	<i>ERT assessment and rationale</i>
			E.33 in table 5
IPPU			
I.1	General (IPPU) (35, 2014). Transparency	Improve the description of the recalculations and improve QA/QC activities to rectify errors in the data obtained from companies in the preparation of the inventory	Resolved. The recalculations are adequately explained and no issues related to the QC of these data were found
I.2	General (IPPU) (37, 2014), (42, 2013). Transparency	Include in the NIR detailed information and methodological descriptions on how plant-specific data are estimated	Addressing. Some information has been added to the reporting in the form of a short description in chapter 4.4.2 of the NIR, but improvements still need to be made regarding the methodologies used by plants in their reporting to the New Zealand ETS. See the specific recommendation I.15 provided in table 5
I.3	2.A.1 Cement production (36, 2014), (40, 2013), (60, 2012). Transparency	Continue with efforts to improve the transparency of the reporting regarding information on cement production by providing more detailed information in the NIR, while maintaining the confidentiality of the sensitive data	Addressing. Work is still ongoing to improve the transparency. New Zealand is communicating with the industries involved, but so far without any resolution
I.4	2.A.3 Glass production (36, 2014), (40, 2013), (60, 2012). Transparency	Continue with efforts to improve the transparency of the reporting regarding information on glass production by providing more detailed information in the NIR, while maintaining the confidentiality of the sensitive data	Addressing. Work is still ongoing to improve the transparency. New Zealand is communicating with the industries involved, but so far without any resolution
I.5	2.A.4 Other process uses of carbonates (36, 2014), (40, 2013), (60, 2012). Transparency	Continue with efforts to improve the transparency of the reporting regarding information on limestone and dolomite use by providing more detailed information in the NIR, while maintaining the confidentiality of the sensitive data	Addressing. Work is still ongoing to improve the transparency. New Zealand is communicating with the industries involved, but so far without any resolution. The use of carbonates is mostly not considered confidential; also the emission estimation is based on stoichiometric calculations, making it possible to deduce the underlying activity based on the emissions reported
I.6	2.A.4 Other process uses of carbonates (36, 2014), (40, 2013), (60, 2012). Transparency	Continue with efforts to improve the transparency of the reporting regarding information on soda ash use, by providing more detailed information in the NIR, while maintaining the confidentiality of the sensitive data	Addressing. Work is still ongoing to improve the transparency. New Zealand is communicating with the industries involved, but so far without any resolution. The use of carbonates is mostly not considered confidential, also the emission estimation is based on stoichiometric calculations making it possible to deduce the underlying activity based on the emissions reported

<i>ID#</i>	<i>Issue classification^a</i>	<i>Recommendation made in previous review report(s)</i>	<i>ERT assessment and rationale</i>
I.7	2.A.4 Other process uses of carbonates (43, 2014), (41, 2013). Transparency	Report AD for soda ash use	Addressing. The AD are still reported as confidential. See also I.6
I.8	2.A.4 Other process uses of carbonates CO ₂ (44, 2014). Transparency	Improve the transparency of the reporting of CO ₂ emissions from glass production by limiting the number of emission reallocations and the use of confidential data	Addressing. There are still issues with the transparency of the reporting because of extensive problems with data confidentiality. New Zealand is communicating with the industries involved, but so far without any resolution
I.9	2.C.1 Iron and steel production (36, 2014), (40, 2013), (60, 2012). Transparency	Continue with efforts to improve the transparency of the reporting regarding information on steel slab production by providing more detailed information in the NIR, while maintaining the confidentiality of the sensitive data	Addressing. Work is still ongoing to improve the transparency. New Zealand is communicating with the industries involved, but so far without any resolution
I.10	2.F Product uses as substitutes for ozone depleting substances – HFCs and PFCs (38, 2014). Transparency	Include background information in the NIR to ensure that all subcategories are reported in line with the 2006 IPCC Guidelines, while maintaining confidentiality of sensitive data	Not resolved. There is still too little background information on the inventory for fluorinated gases (F-gases) presented in the NIR. For example, very limited information is presented on the source of AD, an assessment of the completeness, the methodologies used and the assumptions made. This information is necessary so that the ERT can understand the estimation method. See I.23 in table 5
I.11	2.F Product uses as substitutes for ozone depleting substances – HFCs (39, 2014). Adherence to UNFCCC Annex I inventory reporting guidelines	Change the notation keys “NA” and “NE” to “NO” for domestic refrigeration	Resolved. The notation keys have been changed
I.12	2.F Product uses as substitutes for ozone depleting substances – HFCs and PFCs (40, 2014). Transparency	For disposal emissions of HFC-134a and HFC-227ea in foam blowing and HFC-227ea in fire extinguishers, improve the transparency of reporting by providing a clear and detailed description of the emission estimation process in the NIR	Not resolved. The information provided on the F-gas inventory is still in need of improvement. For example, very limited information is presented on the source of AD, an assessment of the completeness, the methodologies used and the assumptions made. This information is necessary so that the ERT can understand the estimation method. See I.23 in table 5

<i>ID#</i>	<i>Issue classification^a</i>	<i>Recommendation made in previous review report(s)</i>	<i>ERT assessment and rationale</i>
I.13	2.F Product uses as substitutes for ozone depleting substances – HFCs and PFCs (41, 2014). Accuracy	Apply more specific QA/QC procedures to ensure that errors in the identification of key categories are avoided at the inventory preparation stage	Resolved. The error in the previous reporting has been corrected
I.14	2.F.3 Fire protection – HFCs (42, 2014). Transparency	Improve the description of the methodology used for estimating HFC emissions from fire extinguishers and further investigate if decommissioning is not occurring in New Zealand	Not resolved. The information provided in the F-gas inventory is still in need of improvement. For example, very limited information is presented on the source of AD, an assessment of the completeness, the methodologies used and the assumptions made. This information is necessary so that the ERT can understand the estimation method. See I.23 in table 5
Agriculture			
A.1	3.A.3 Enteric fermentation (swine) – CH ₄ (47, 2014). 3.B.3 Manure management (swine) – CH ₄ (47, 2014). Consistency	Correct the inconsistency in reporting the CH ₄ EF for swine, which is referred to as country-specific and as IPCC default in different parts of the NIR	Resolved. The NIR stated (on page 145) that the CH ₄ EF for swine for enteric fermentation was derived from the IPCC tier 2 method with country-specific values, but the EF for swine is included in the NIR (table A3.1.2.2, titled “EF for Tier 1”). New Zealand reported that the EF for swine is 1.06 kg CH ₄ /head/year for enteric fermentation and 5.94 kg CH ₄ /head/year for manure management, which are different from the IPCC default values. Despite the error in the title of NIR table A3.1.2.2.2, it is clear that the tier 2 method was used
A.2	3.B Manure management – CH ₄ (53, 2014), (60, 2013). Transparency	Provide information on the Australian Feeding Standards algorithms for cattle and sheep used to estimate manure management emissions of CH ₄	Resolved. New Zealand provided the information on the Australian Feeding Standards algorithms for cattle and sheep used to estimate CH ₄ emissions from manure management in its NIR (page 127)
A.3	3.D Agricultural soils – N ₂ O (55, 2014). Transparency	Make available the report “Quantification of reductions in ammonia emissions from fertilizer urea and animal urine in grazed pastures with urease inhibitors for agriculture inventory: New Zealand as a case study” on the website of the Ministry for Primary Industries	Resolved. There are many documents related to urease inhibitors on N ₂ O on the website of the Ministry for Primary Industries. Although the specific report “Quantification of reductions in ammonia emissions from fertiliser urea and animal urine in grazed pastures with urease inhibitors for agriculture inventory: New Zealand as a case study” is not included on the website, it was published in an international journal which is available on

<i>ID#</i>	<i>Issue classification^a</i>	<i>Recommendation made in previous review report(s)</i>	<i>ERT assessment and rationale</i>
			the Internet
LULUCF			
L.1	General (LULUCF) (59, 2014). Transparency	Provide additional information on the time series of land conversions, particularly regarding conversions from and to forest land	Resolved. New Zealand has addressed this issue by providing more information on land conversions during the review. This included estimates of rates of deforestation between the 1990 and 2008 maps
L.2	4.A.1 Forest land remaining forest land (62, 2014). Transparency	Report the time series of annually harvested areas from forest land remaining forest land and harvests including forest land that has been converted to other land uses to explain the inter-annual variations	Addressing. During the review, New Zealand provided these data and further explanations as to the differences between harvested area and wood removal statistics
L.3	4.B.2 Land converted to cropland (63, 2014). Transparency	Include information to explain the inter-annual variation in emissions from conversions from forest land to cropland	Resolved. The NIR now contains information on the inter-annual variation, in particular for pre- and post-1990 plantation forests. During the review, New Zealand provided additional information on conversions
L.4	4.C.2 Land converted to grassland (63, 2014). Transparency	Include information to explain the inter-annual variation in emissions from conversions from forest land to grassland	Resolved. The NIR now contains information on the inter-annual variation, in particular for pre- and post-1990 plantation forests. During the review, New Zealand provided additional information on conversions
L.5	Biomass burning – CO ₂ , CH ₄ and N ₂ O (64, 2014). Adherence to the UNFCCC Annex I inventory reporting guidelines	Improve the QA/QC procedures to ensure the correct use of notation keys	Resolved. The ERT notes that New Zealand has implemented the procedures set out in the 2006 IPCC Guidelines and as part of this has addressed the use of notation keys, including notes on why each has been used
Waste			
W.1	5.A Solid waste disposal – CH ₄ (68, 2014). Transparency	Publish the reports provided to the ERT or make the information in the reports otherwise available by other means (e.g. by submitting a summary in the NIR)	Not resolved. The reports were provided to the ERT during the review, as was the case during the previous review. However, the ERT did not receive a response to its question on whether the reports have been published. In addition, a sufficiently transparent summary was not included in the NIR

<i>ID#</i>	<i>Issue classification^a</i>	<i>Recommendation made in previous review report(s)</i>	<i>ERT assessment and rationale</i>
W.2	5.C Incineration and open burning of waste CO ₂ , CH ₄ and N ₂ O (71, 2014). Transparency	Improve the reporting of AD	Not resolved. Improved reporting on AD was not identified by the ERT (see W.5 in table 5)
W.3	5.C Incineration and open burning of waste CO ₂ , CH ₄ and N ₂ O (71, 2014). Transparency	Provide more information on waste incineration practices in the country, including information on practices that are considered as open burning	Resolved. The description of the incineration practices and provision of EFs/parameter by type has been improved to a satisfactory level. Open burning is addressed as an insignificant source (see G.2 and W.11 in table 5)
W.4	5.D.2 Wastewater treatment and discharge – CH ₄ (70, 2014). Transparency	For the industrial wastewater categorization, ensure consistency between the NIR and the CRF tables and improve transparency	Resolved. Inconsistencies between the CRF tables and the NIR were not identified in the 2015 submission, and therefore transparency was improved

Abbreviations: AD = activity data, CRF = common reporting format, EF = emission factor, ERT = expert review team, ETS = emissions trading scheme F-gases = fluorinated gases, IPPC = Intergovernmental Panel on Climate Change, IPPU = industrial processes product use, LULUCF = land use, land-use change and forestry, NCV = net calorific value, NIR = national inventory report, NO = not occurring, QA/QC = quality assurance/quality control, UNFCCC Annex I inventory reporting guidelines = “Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part I: UNFCCC reporting guidelines on annual greenhouse gas inventories”, 2006 IPCC Guidelines = 2006 IPCC Guidelines for National Greenhouse Gas Inventories.

^a References in parentheses are to the paragraphs and the years of the previous review reports where the issue was raised.

IV. Issues identified in three successive reviews and not addressed by the Party

6. In accordance with paragraph 83 of the UNFCCC review guidelines, the ERT noted that the issues included in table 4 have been identified in three or more successive reviews, including the review of the 2015 inventory submission of New Zealand, and have not been addressed by the Party.

Table 4
Issues identified in three or more successive reviews and not addressed by the Party

<i>ID#</i>	<i>Issue identification</i>	<i>Number of successive reviews issue not addressed</i>
General: No such general issues were identified		
Energy		
E.6*	Endeavour to separate naphtha and crude oil with a view to improving the transparency of the reference approach as well as the accuracy of the reporting of non-energy use of fuels and feedstocks. If this is not possible for the 2016 submission due to significant resource demands, as indicated in New Zealand's response to the ERT's main provisional findings, the ERT recommends that New Zealand report on progress made in addressing the recommendation in the NIR	3 (2013–2015)
E.7*	Endeavour to separate lubricants and petroleum coke and bitumen with a view to improving the transparency of the reference approach as well as the accuracy of the reporting of non-energy use of fuels and feedstocks. If this is not possible for the 2016 submission due to significant resource demands, as indicated in New Zealand's response to the ERT's main provisional findings, the ERT recommends that New Zealand report on progress made in addressing the recommendation in the NIR	3 (2013–2015)
IPPU: no such issues were identified in the IPPU sector		
Agriculture: no such issues were identified in the agriculture sector		
LULUCF: no such issues were identified in the LULUCF sector		
Waste: no such issues were identified in the waste sector		

Abbreviations: ERT = expert review team, IPPU = industrial processes and product use, LULUCF = land use, land-use change and forestry, NIR = national inventory report.

Note: an asterisk is included after any issue identification number where the underlying issue is related to accuracy or completeness of a key category, a missing category or a potential key category, as indicated in decision 13/CP.20, annex, paragraph 83.

V. Additional findings made during the 2015 technical review

7. Table 5 contains findings made by the ERT during the review of the 2015 inventory submission of New Zealand that are additional to those identified in table 3 above.

Table 5

Additional findings made during the 2015 technical review

<i>ID#</i>	<i>Finding classification</i>	<i>Description of the finding with recommendation or encouragement^a</i>	<i>Is the finding an issue? If yes, classify by type</i>	
General				
G.2	Completeness	<p>The ERT noted that New Zealand reported “NE” or “NO” for several categories that occur in New Zealand and for which the 2006 IPCC Guidelines provide default methodologies to estimate emissions (see E.24, I.16, I.18, I.21, I.22). During the review, New Zealand stated that emissions from these categories could be considered insignificant</p> <p>The ERT recommends that New Zealand estimate emissions for categories that occur and where methodologies exist in the 2006 IPCC Guidelines or provide a quantitative total aggregate of estimated emissions for all gases and categories considered insignificant in order for the ERT to assess whether the sum remains below 0.1% of the national total GHG emissions (without LULUCF, for the latest reporting inventory year)</p>	Yes	Completeness
G.3	Inventory planning	<p>The ERT considers that there is lack of transparency in all sectors (see sector-specific findings in tables 3 and 5 for more detailed information). In response to questions raised by the ERT during the review, in several cases, the Party provided supporting information that facilitated the replication and assessment of the inventory</p> <p>The ERT recommends that New Zealand prioritize resources to resolve the issues related to improving the transparency of the NIR in accordance with the detailed recommendations given under the different sectors</p>	Yes	Transparency
G.4	Inventory planning	<p>The ERT noted that tier 1 uncertainty estimates (based on default uncertainty values from the 2006 IPCC Guidelines) are available in the NIR (annex 2), but that New Zealand has not performed a tier 2 key category analysis. In the NIR, section 1.2.3, New Zealand stated that the prioritization of improvements is guided by “uncertainty surrounding existing emission and removal estimates”. The ERT noted that there is no further information on how uncertainties are used in the Party’s inventory planning procedures. During the review, the Party gave several examples of where the element uncertainties have been taken into consideration in the inventory planning; for example the difficulties in disaggregating fugitive emissions from gas</p>	No	

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		wells from combined oil and gas exploration wells in the energy sector.		
		The ERT encourages New Zealand to use uncertainty information systematically in its prioritization of activities by implementing a tier 2 key category analysis or by using the uncertainties as qualitative criteria in the key category analysis, and to improve the transparency of its NIR by including information on how uncertainty estimates are taken into account during inventory planning		
G.5	QA/QC and verification	<p>In the NIR, section 10.2, New Zealand explains that the previous review report (FCCC/ARR/2013/NZL) was published after New Zealand's 2015 submission was submitted and therefore too late to be taken into account in the 2015 submission. The ERT noted that table 10.2.1 in the current NIR, "New Zealand's response to expert review team recommendations from the individual review of New Zealand's 2013 Inventory submission", is supposed to show the Party's response to the recommendations in the previous review report. However, the ERT also noted that the first listed issues for the energy sector are not referring to the previous review report, but to the one before that (FCCC/ARR/2012/NZL). In addition, the table includes only the recommendations for the energy and LULUCF sectors, while the recommendations for the rest of the sectors (cross-cutting, IPPU, agriculture and waste sectors) are missing. During the review, the Party provided updated information on its progress in responding to the recommendations for each sector</p> <p>The ERT commends New Zealand for its efforts to facilitate the review process by including this table in the NIR</p> <p>The ERT recommends that the Party ensure that it includes in its NIR information on changes in response to the review process, including in response to any recommendations made in previous review reports</p>	Yes	Adherence to UNFCCC Annex I inventory reporting guidelines
G.6	Uncertainty analysis	<p>In the 2015 NIR, annex 2, New Zealand presents its tier 1 uncertainty analysis. The ERT noted that the combined uncertainty estimated for all HFCs in the IPPU sector is high ($\pm 99.5\%$) compared with other Parties included in Annex I to the Convention (Annex I Parties). In the NIR, section 4.7.3, more disaggregated uncertainty estimates are available for HFC categories; the highest uncertainty for a subcategory is for aerosols at $\pm 56\%$. During the review, the Party explained that the high uncertainty estimates for all HFCs in the IPPU sector were due to errors in the uncertainty calculations, and provided recalculated uncertainty estimates for HFCs, including the combined uncertainty estimate for all HFC emissions in the IPPU sector ($\pm 36.2\%$)</p> <p>In order to avoid similar errors in future submissions, the ERT encourages the Party to strengthen its QC procedure regarding the reporting of the results of its uncertainty analysis</p>	No	

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G.7	QA/QC and verification	<p>In its NIR, section 1.2.3, New Zealand gives a general introduction to its QA/QC system. However, the ERT noted that much of the relevant information is only referenced, instead of being actually included in the NIR (e.g. selections of the internal QC checks and quality assurance reviews). During the review, the Party provided supporting information on its QA/QC procedures, including New Zealand's (non-public) <i>National Inventory System Guidelines for Compiling New Zealand's Greenhouse Gas Inventory</i></p> <p>The ERT recommends that New Zealand include more information from its national QA/QC system (especially on its inventory system guidelines) in its NIR (e.g. in an annex, or to make the information publicly available by other means)</p>	Yes	Transparency
G.8	QA/QC and verification	<p>The ERT noted several inconsistencies between information reported in the CRF tables and the NIR in the energy (E.17), IPPU (I.25) and LULUCF (L.11) sectors, which led to difficulties for the ERT when assessing parts of the submitted information</p> <p>The ERT recommends that New Zealand strengthen its QA/QC procedures related to consistency checks between information reported in the CRF tables and the NIR, in order to avoid similar mistakes in the next submission, and thus improve the transparency of its reporting</p>	Yes	Transparency
Energy				
E.16	General (energy sector); all fuels	<p>In the energy sector, methodologies and default EFs from the Revised 1996 IPCC Guidelines and IPCC good practice guidance are still intensively used in this submission. During the review, New Zealand indicated that changing to methodologies from the 2006 IPCC Guidelines would be a significant undertaking, and that updating all the EFs would have come at a cost for very little additional improvement in quality. During the review, New Zealand made recalculations to the subcategories where default EFs from the 2006 IPCC Guidelines are higher than those from the Revised 1996 IPCC Guidelines and the IPCC good practice guidance. The results show the overall emissions (all sectors) would increase by 0.22% in 2013. The categories and gases for which this occurs are: gas combustion in commercial, residential, industry and domestic transport; LPG combustion in industrial and commercial; liquid fuel combustion in agriculture; and biomass burning in stationary combustion. The Party indicated that it will ensure that all default EFs used in its 2016 inventory submission will be from the 2006 IPCC Guidelines</p> <p>The ERT recommends that New Zealand fully implement the 2006 IPCC Guidelines, in particular for the methodologies used to estimate emissions and for the use of default EFs (in cases where country-specific EFs are not available)</p>	Yes	Adherence to UNFCCC Annex I inventory reporting guidelines

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E.17	General (energy sector)	<p>The ERT identified a few inconsistencies between the NIR and the CRF tables and within the NIR itself. For example, New Zealand reported the difference in CO₂ emissions between the reference approach and the sectoral approach for 2013 as 2.4% in the NIR (page 49), however, it is reported as 3.8% in CRF table 1.A(c); the CO₂ EF of LPG in the NIR (page 439) is 19.1 t C/TJ although it is reported as 15.26 t C/TJ in CRF table 1.A(b) (reported under natural gas liquids); the IEF of natural gas is reported as 14.52 kt C/PJ in CRF table 1.A(b), whereas the Party clarified during the review that it should be 14.63 kt C/PJ. All the inconsistent information or errors identified by the ERT have been communicated to New Zealand and the Party has acknowledged them</p> <p>The ERT recommends that the Party resolve all of the identified inconsistencies</p>	Yes	Transparency
E.18	General (energy sector): liquid fuels – CO ₂	<p>New Zealand reported the CO₂ EF of LPG as 20.1 t C/TJ in terms of NCV (19.1 t C/TJ in GCV) in the NIR (page 437), which is much higher than the default EF in the 2006 IPCC Guidelines (17.2 t C/TJ, with a range of 16.8–17.9 t C/TJ, table 1.3 in volume 2, page 1.21). During the review, New Zealand indicated that the actual CO₂ EF used for LPG is 16.06 t C/TJ based on NCV (15.26 t C/TJ on GCV), which is also outside the default range. The Party also indicated that the source of the country-specific EF of LPG is unclear</p> <p>The ERT recommends that the Party clarify the source of the country-specific CO₂ EF for LPG or use the default CO₂ EF of LPG</p> <p>The ERT encourages the Party to investigate the country-specific NCV and the CO₂ EF for LPG in future submissions, because New Zealand treats LPG as a primary fuel not as a secondary fuel, which is not common among Parties (see E.5 in table 2)</p>	Yes	Accuracy
E.19	Reference approach – CO ₂	<p>As indicated in the previous review report and in the NIR (page 57), New Zealand used 5% as the threshold to explain the differences in CO₂ emission estimations between the reference and the sectoral approaches. The ERT noted that the threshold used should be 2%, as indicated in CRF table 1.A(b) (footnote 6) (see E.3 in table 2)</p> <p>The ERT encourages the Party to use 2% as the threshold and to investigate and document all possible reasons for the differences in CO₂ emission estimations between the reference and the sectoral approaches</p>	No	
E.20	Reference approach – CO ₂	<p>For 2013, the difference in CO₂ emissions between the reference and sectoral approaches is 3.8%. Although the NIR includes some explanations, the ERT considers that they are not sufficient. During the review, the Party provided more explanations, including the statistical differences</p> <p>The ERT encourages New Zealand to improve the explanations of the differences in CO₂ emissions between the sectoral and reference approaches by including the information provided</p>	No	

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		during the review (including the statistical differences)		
E.21	Reference approach – CO ₂	<p>Naphtha and crude oil are still reported using aggregate values (see E.6 in table 3)</p> <p>The ERT therefore recommends that the Party disaggregate the naphtha and crude oil data in its 2016 submission. If this is not possible because of significant resource demands, as indicated in New Zealand’s response to the ERT’s main provisional findings, the ERT recommends that New Zealand report in its NIR on progress made in addressing the recommendation</p>	Yes	Accuracy
E.22	Reference approach – CO ₂	<p>Lubricants and petroleum coke and bitumen are still reported using aggregate values (see E.7 in table 3)</p> <p>The ERT recommends that the Party endeavour to incorporate disaggregated data for lubricants, petroleum coke and bitumen in the 2016 submission. If this is not possible because of significant resource demands, as indicated in New Zealand’s response to the ERT’s main provisional findings, the ERT recommends that New Zealand report in its NIR on progress made in addressing the recommendation</p>	Yes	Accuracy
E.23	Feedstocks, reductants and other non-energy uses of fuels – CO ₂	<p>New Zealand reports on five main sources of stored carbon in the country: natural gas used in methanol production; natural gas used in urea production; natural gas used in hydrogen production; bitumen for road asphalt; and coal used in the iron and steel industry. Natural gas used as feedstock or for energy purposes has been disaggregated either by using a carbon balance approach or by using data provided by companies. However, the explanation of the allocation of emissions relating to methanol, urea and hydrogen production is not fully transparent in the NIR. During the review, New Zealand clarified that emissions from natural gas combusted for energy purposes in the process of manufacturing methanol are included in chemical industry (1.A.2.c) together with combustion emissions from the manufacture of urea and hydrogen peroxide production. The Party also clarified that fugitive emissions from gas distribution to methanol production facilities are included in natural gas distribution (1.B.2.b.5) together with similar fugitive emissions from urea production facilities and hydrogen peroxide production. The Party further clarified that all carbon within the natural gas used as a feedstock in methanol production is assumed to be stored within the methanol itself, so process emissions of methanol production (2.B.8.a) are reported as not occurring (“NO”) (although the ERT noted that they are reported as “IE” in CRF table 2(I).A–H and CRF table 9 explains that they are reported as “IE” because they “cannot be distinguished from emissions associated with supply of energy to these processes.”), whereas most of the carbon stored in the feedstock gas used for urea production is stored in the product, this carbon is later emitted when the urea is used on farms as fertilizer. These emissions are reported in the agriculture sector. The ERT notes that New Zealand provided transparent explanations during the review</p> <p>The ERT recommends that the Party improve the transparency of its reporting of non-energy</p>	Yes	Transparency

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		<p>uses of fuels by adding a table on energy and non-energy uses of fuels for natural gas together with associated emissions and the categories where these are reported</p> <p>The ERT also recommends that the Party review the notation keys reported for emissions from the different categories</p>		
E.24	1.A.1.c Manufacture of solid fuels and other energy industries: solid fuels – CO ₂ , CH ₄ and N ₂ O	<p>The ERT notes that CO₂, CH₄ and N₂O emissions from own on-site coal use in the coal mining industry are reported as “NO” in CRF table 1.A(a). During the review, New Zealand indicated that these emissions occur but it had not estimated emissions from own use of coal in the coal mining industry. In addition, by assuming that coal consumption in coal mines accounts for 10% of the “losses” between coal production and sales, New Zealand estimated these emissions to be 2.10 kt CO₂ eq, which is insignificant (0.0026% of the total emissions)</p> <p>The ERT recommends that the Party estimate and report these emissions or, if these emissions are considered insignificant by the Party, report them as “NE” and provide a quantitative estimate of the likely level of the emissions in accordance with paragraph 37(b) of the UNFCCC Annex I inventory reporting guidelines in order for the ERT to assess whether the sum of all gases and categories considered insignificant remains below 0.1% of the national total GHG emissions</p>	Yes	Completeness
E.25	1.A.3.a Domestic aviation: liquid fuels – CO ₂	<p>New Zealand reported emissions from domestic aviation by using the tier 1 method that does not use landing and take-off cycles. This subcategory is identified as a key category, so according to the 2006 IPCC Guidelines (page 3.59) a tier 2 method should be used by taking into account landing and take-off cycles. During the review, the Party explained that the New Zealand Ministry of Transport is now developing a model for forecasting aviation fuel use, and this model considers aircraft models and take-off and landing cycles. New Zealand also explained that it will investigate the feasibility of using this model to adopt a tier 2 method for estimating past emissions</p> <p>The ERT recommends that New Zealand estimate CO₂ emissions from domestic aviation using a tier 2 or 3 methodology, in accordance with the 2006 IPCC Guidelines</p>	Yes	Accuracy
E.26	1.A.3.b Road transportation: liquid and gaseous fuels – CO ₂	<p>New Zealand reported all AD and CO₂ emissions from road transportation under the subcategory “cars”, without disaggregating between light-duty trucks, heavy-duty trucks and buses, and motorcycles (all these subcategories are reported as “IE”). The Party explained during the review that it used a tier 1 approach for CO₂ emissions, so those emissions are not available by mode and by fuel. The ERT noted that data on vehicle fleet by mode and by fuel together with respective vehicle-kilometre travelled have been collected in order to estimate CH₄ and N₂O emission by the bottom-up approach using the COPERT model. The ERT also noted that it would be good practice to verify the CO₂ estimates obtained using the tier 1 approach with the CO₂ emissions estimated based on vehicle-kilometres travelled</p>	Yes	Adherence to UNFCCC Annex I inventory reporting guidelines

<i>ID#</i>	<i>Finding classification</i>	<i>Description of the finding with recommendation or encouragement^a</i>	<i>Is the finding an issue? If yes, classify by type</i>	
		The ERT recommends that the Party continue to estimate the CO ₂ emissions based on fuel sold but report the CO ₂ emissions disaggregated by vehicle mode using the data collected for the estimation of the CH ₄ and N ₂ O emissions. If a discrepancy occurs between the top-down and bottom-up approaches and it cannot be solved in the 2016 submissions, the ERT recommends that the Party continue to estimate the CO ₂ emissions based on fuel sold and report them aggregated, but investigate and describe in detail in the NIR the possible reasons for the discrepancy		
E.27	1.A.3.b Road transportation: liquid and gaseous fuels – CO ₂	In the 2014 ARR, the ERT had encouraged the Party to report the NCV and GCV for each fuel in its NIR. During the review, the Party indicated that, owing to the delay in publishing the 2014 ARR, the encouragement was not addressed in the Party’s 2015 submission The current ERT reiterates the encouragement that the Party provide the NCV and GCV for each fuel in the 2016 submission in order to improve transparency and comparability	No	
E.28	1.A.3.b Road transportation: liquid and gaseous fuels – CH ₄ and N ₂ O	New Zealand reported in its NIR (page 71) that the COPERT model has been used to estimate CH ₄ and N ₂ O emissions from road transportation. However, neither disaggregated AD nor disaggregated emissions were reported in the NIR or the CRF tables for the different vehicle categories and all emissions were allocated to the subcategory “Cars” (AD and emissions are reported as “IE” for the other subcategories). During the review, New Zealand clarified that the country did estimate CH ₄ and N ₂ O emissions by mode; however, since New Zealand employed a tier 1 approach for estimating CO ₂ emissions, which does need to disaggregate by mode, CH ₄ and N ₂ O emissions are consequently reported as an aggregate value. As requested by the ERT, New Zealand provided disaggregated emissions of CH ₄ and N ₂ O by mode The ERT recommends that New Zealand report disaggregated AD and CH ₄ and N ₂ O emissions from road transportation by mode in both the NIR and in CRF table 1.A(a)s3, in order to improve transparency	Yes	Transparency
E.29	1.A.3.e.i Pipeline transport (gaseous fuels) – CO ₂ , CH ₄ and N ₂ O	New Zealand has reported CO ₂ , CH ₄ and N ₂ O emissions from gaseous fuels for pipeline transport (1.A.3.e.i) as “NE”. During the review, New Zealand explained that the notation key should be “IE”, as energy use by utilities would be included under the commercial or industrial sectors depending on the operating company’s industrial classification (ANZSIC code), and natural gas transmission and distribution losses are included under fugitive emissions The ERT recommends that the Party revise the notation key for pipeline transport	Yes	Comparability
E.30	1.A.5.b Other (mobile): liquid and gaseous fuels – CO ₂ , CH ₄	There is no information regarding the reporting of emissions from military activities in New Zealand’s NIR. During the review, the Party explained that mobile military emissions are reported under commercial/institutional because currently data are not available to remove military emissions from the commercial sector, so implementing this disaggregation may take	No	

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	and N ₂ O	<p>some time, and the Party will investigate available data sources and will provide an update on the progress in the NIR of the 2016 submission</p> <p>The ERT encourages the Party to report on progress to allocate mobile military emissions to the category other (mobile) (1.A.5.b)</p>		
E.31	1.B.1.a.i Coal mining and handling – CH ₄	<p>New Zealand did not report fugitive CH₄ emissions from abandoned mines, although the 2006 IPCC Guidelines provide methodologies and default CH₄ EFs. During the review, the Party explained that this improvement is a lower priority than others because of resource availability and it will consider including this in future submissions when resources become available</p> <p>The ERT recommends that New Zealand estimate these CH₄ emissions or, if these emissions are considered insignificant by the Party, report them as “NE” and provide a quantitative estimate of the likely level of the emissions in accordance with paragraph 37(b) of the UNFCCC Annex I inventory reporting guidelines in order for the ERT to assess whether the sum of all gases and categories considered insignificant remain below 0.1% of the national total GHG emissions</p>	Yes	Completeness
E.32	1.B.2.b.3 Natural gas processing – CO ₂ and CH ₄	<p>In CRF table 1.B.2 New Zealand reported the AD of natural gas processing (1.B.2.b.3) as “NA” but CO₂ emission estimates are reported for the entire time series. The documentation box indicates that “This is CO₂ venting from gas treatment plants”. CH₄ emission estimates are reported as “NE” for the entire time series. During the review, New Zealand explained that AD are reported as “NA” because no relevant AD are required to estimate the emissions as the amount of CO₂ vented is measured by the operator of Kapuni gas treatment plant. The Party also explained that CH₄ is not vented from the plant, and that any CH₄ emissions from this plant will be as a result of gas leakage but not venting and that all leakage emissions are reported under the category other (industrial plants and power stations) (1.B.2.d)</p> <p>The ERT encourages New Zealand to report fugitive (leakage) CH₄ emission from natural gas processing under the category natural gas processing to enhance comparability with other Parties. If this is not possible, the ERT recommends that the Party report these emissions as “IE” and clearly explain the allocation of the fugitive CH₄ emissions of Kapuni gas treatment plant in the NIR</p>	Yes	Comparability
E.33	1.B.2.c Venting and flaring – CO ₂ and CH ₄	<p>New Zealand reported fugitive CO₂ and CH₄ emissions for oil production (1.B.2.a.2) and gas production (1.B.2.b.2) as “IE” and reported these emissions together under venting and flaring (combined) (1.B.2.c.iii). The ERT noted that the issue has been raised in the 2013 and 2014 review reports. During the review, New Zealand explained that all exploration wells are oil wells that occasionally provide gas as well, and this makes estimates of separate fugitive emissions for this category highly uncertain and costly</p> <p>The ERT considers that these national circumstances provide justification to continue the</p>	No	

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		current reporting (aggregate estimates for fugitive emissions from oil and gas production) and encourages the Party to explain its national circumstances in the NIR. The ERT also encourages the Party to report the fugitive emissions from oil and gas production under oil production (1.B.2.a.2) and separately from the emissions from venting and flaring (1.B.2.c)		
IPPU				
I.15	General (IPPU)	<p>As noted in previous review reports the transparency of the IPPU sector is limited in some categories because the AD are reported as confidential and the use of New Zealand emission trading scheme (ETS) emission data is not transparently described, as it includes no information on the methodological requirements by plants reporting under the New Zealand ETS. During the review, New Zealand explained that work is ongoing with industry to improve transparency. Additionally, New Zealand provided a reference to the specific regulation under the New Zealand ETS that contains a lot of relevant information regarding the coverage and methodologies used for reporting under the New Zealand ETS. This information allowed the ERT to better understand the quality of the data reported under the New Zealand ETS. Additionally, New Zealand provided information on issues not covered by the ETS regulation, such as the lack of requirements regarding the frequency of measurements</p> <p>The ERT recommends that New Zealand incorporate in the NIR the information available in the ETS regulation, including regarding coverage and methodologies used for reporting, as well as the additional information not included in the ETS regulation provided to the ERT during the review, for example, the frequency of measurement</p>	Yes	Transparency
I.16	2.A.4.a Ceramics (other process uses of carbonates) – CO ₂	<p>The NIR does not include information on ceramics production (2.A.4.a). In the CRF tables, AD and CO₂ emissions are reported as “NO”. During the review, New Zealand confirmed that ceramics production does occur in New Zealand, for bricks and tiles and for pottery. New Zealand informed the ERT that historical analysis data indicated that the carbonate content of clay used in this activity in New Zealand was less than 0.1%, which would mean that the emissions from this source are likely to be immaterial. The ERT notes that in the absence of specific data the default assumption in the 2006 IPCC Guidelines is 10% carbonate content in the clay</p> <p>The ERT recommends that New Zealand report AD and CO₂ emissions for ceramics or, if these emissions are considered insignificant by the Party, report “NE” and provide a quantitative estimate of the likely level of the emissions in accordance with paragraph 37(b) of the UNFCCC Annex I inventory reporting guidelines in order for the ERT to assess whether the sum of all gases and categories considered insignificant remains below 0.1% of the national total GHG emissions</p>	Yes	Completeness

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I.17	2.B.1 Ammonia production – CO ₂	<p>The CO₂ emissions reported for ammonia production excluded the amount of CO₂ used for urea production in accordance with the 2006 IPCC Guidelines. However, in CRF table 2(I).A-Hs1 the CO₂ recovered is not reported (reported as “NO”), meaning that the IEF is not comparable with that of other Parties. In response to a question raised during the review, New Zealand provided the time series for the recovered CO₂</p> <p>The ERT recommends that New Zealand report the CO₂ recovered from ammonia production</p>	Yes	Comparability
I.18	2.B.5 Carbide production – CO ₂	<p>New Zealand does not report CO₂ emissions from acetylene production and use. During the review, New Zealand explained that acetylene is produced in New Zealand from imported calcium carbide and that emissions from this category were assessed in the past as likely to be immaterial</p> <p>The ERT recommends that New Zealand report AD and estimate CO₂ emissions from acetylene production and use or, if the Party considers these emissions to be insignificant, provide a quantitative estimate of the likely level of the emissions in accordance with paragraph 37(b) of the UNFCCC Annex I inventory reporting guidelines in order for the ERT to assess whether the sum of all gases and categories considered insignificant remains below 0.1% of the national total GHG emissions</p>	Yes	Completeness
I.19	2.B.8.a Methanol (petrochemical and carbon black production) – CH ₄	<p>According to the NIR (page 102), the default CH₄ EF from the 2006 IPCC Guidelines (2.3 kg CH₄/t methanol produced, from volume 3, page 3.74) is used for estimating emissions from methanol production. CRF table 2(I).A-Hs1 reports a methanol production of 1,419.99 kt in 2013, which would result in 3.3 kt CH₄. However, the CH₄ emissions are reported as “IE”. New Zealand explained during the review that the emissions had been allocated to the category fugitive emissions from oil and natural gas (1.B.2) and will be reallocated in accordance with the 2006 IPCC Guidelines in the next submission</p> <p>The ERT recommends that New Zealand report CH₄ emissions from methanol production under methanol (2.B.8.a) and provide information on the EF consistent with the estimation in the NIR</p>	Yes	Comparability
I.20	2.C.3 Aluminium production – CF ₄	<p>The NIR (page 107) states that for 1990–1992 the IPCC tier 1 methodology is applied (for 1993–2013 tier 2 is used). However, the ERT noted that the CF₄ EF used by New Zealand (0.31 kg/t) is not the default from the 2006 IPCC Guidelines (0.4 kg/t). During the review, New Zealand explained that the EF used for these years was sourced from the IPCC good practice guidance, and has not been recalculated to comply with the 2006 IPCC Guidelines and that this will be corrected in the next submission</p> <p>The ERT recommends that New Zealand recalculate CF₄ emissions from aluminium production for 1990–1992 using an EF that is in accordance with the 2006 IPCC Guidelines</p>	Yes	Accuracy

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I.21	2.C.5 Lead production – CO ₂	<p>New Zealand reports CO₂ emissions from lead production as “NO”. During the review, New Zealand confirmed that secondary lead production is occurring in New Zealand, but that the emissions can be considered to be insignificant</p> <p>The ERT recommends that New Zealand report AD and CO₂ emissions from lead production or change the notation key to “NE” and provide a quantitative estimate of the likely level of the emissions in accordance with paragraph 37(b) of the UNFCCC Annex I inventory reporting guidelines in order for the ERT to assess whether the sum of all gases and categories considered insignificant remains below 0.1% of the national total GHG emissions</p>	Yes	Completeness
I.22	2.D Non-energy products from fuels and solvent use – CO ₂ , CH ₄ and N ₂ O	<p>New Zealand reports AD and CO₂, CH₄ and N₂O emissions from lubricant use and paraffin wax use as “NE” and “NO”, respectively, for 1990–2013, while AD and CO₂ emissions from urea catalysts used in road transport (reported under other (non-energy products from fuels and solvent use)) are reported as “NO” or “NE” and CH₄ and N₂O emissions are reported as “NA”. During the review, New Zealand informed the ERT that data for lubricant use had been received for 2011–2014 but after the deadline for the 2015 inventory submission. New Zealand also informed the ERT that no data are currently available for the use of paraffin wax (e.g. candles) and urea-based catalysts in New Zealand and that both sources are believed to be small</p> <p>The ERT recommends that New Zealand report AD and CO₂, CH₄ and N₂O emissions or change the notation key for the emissions to “NE” and provide a quantitative estimate of the likely level of the emissions in accordance with paragraph 37(b) of the UNFCCC Annex I inventory reporting guidelines for each of these categories in order for the ERT to assess whether the sum of all gases and categories considered insignificant remains below 0.1% of the national total GHG emissions</p>	Yes	Completeness
I.23	2.D Electronics industry 2.F Product uses as substitutes for ozone-depleting substances 2.G Other product manufacture and use – HFCs, PFCs, SF ₆ and NF ₃	<p>The information provided in the NIR regarding the inventory for F-gases is very brief and is insufficient to carry out an in-depth review. This issue had been raised during the previous review. The problem is compounded by the fact that the background documentation report (CRL Energy, 2014) referenced in the NIR (e.g. page 110) is not publicly available. During the review, New Zealand provided the background report, responded to further questions and indicated that the information provided in the NIR would be reviewed for future submissions. The ERT welcomes this intention</p> <p>The ERT recommends that New Zealand include all the information indicated in the section “reporting and documentation” of the 2006 IPCC Guidelines for these categories (e.g. volume 3, chapter 7.5.4.2 for the information to be included for the category product uses as substitutes for ozone-depleting substances)</p>	Yes	Transparency
I.24	2.F Product uses as substitutes for	Table 4.7.1 of the NIR states that for metered dose inhalers (MDIs) the emissions from the initial charge are assumed to be 100% in the first year, while on page 114 of the NIR it is stated	Yes	Transparency

ID#	Finding classification	Description of the finding with recommendation or encouragement ^a	Is the finding an issue? If yes, classify by type	
	ozone-depleting substances – HFCs	<p>that 50% emissions per year is assumed. Also, the HFC emissions from MDIs included in the background report (CRL Energy, 2014) differ from the emissions reported in the CRF tables. During the review, New Zealand clarified that 50% emissions per year is assumed and that the correct emission estimates are those reported in the CRF tables</p> <p>The ERT recommends that New Zealand review the reporting of emissions from MDIs (methodological description in the NIR and HFCs emissions in the CRF tables) and correct the identified errors regarding total HFC emissions and emissions from the initial charge</p>		
I.25	2.G Other product manufacture and use – SF ₆	<p>The calculation of SF₆ emissions from electrical equipment is not transparently presented in the NIR. For example, frequent mention is made of the IPCC good practice guidance rather than the 2006 IPCC Guidelines. During the review, New Zealand acknowledged that the text in the NIR was unclear and that it will be reviewed for the next submission. New Zealand also clarified that the methodology used to estimate SF₆ emissions is tier 1 from the 2006 IPCC Guidelines for the main operator and tier 2b from the IPCC good practice guidance for the remaining operators</p> <p>In addition to the recommendation in I.23 above regarding the need to improve the transparency of the methodological description, the ERT recommends that the Party use a methodology in accordance with the 2006 IPCC Guidelines for all operators</p>	Yes	Transparency
I.26	2.G Other product manufacture and use – SF ₆	<p>The NIR does not mention SF₆ emissions from SF₆ use in shoes for the years around 2000 (which is reported in many Parties' inventories for those years) and double-glazed windows, which are also a frequent source of SF₆ emissions. During the review, New Zealand informed the ERT that these uses do not occur in New Zealand. Also, the Party indicated that additional information is available in the background report (CRL Energy, 2014)</p> <p>The ERT recommends that New Zealand include in the NIR the explanations provided to the ERT during the review on the analysis of SF₆ emissions from SF₆ use in shoes and double-glazed windows that were provided as direct responses and through the background report</p>	Yes	Transparency
I.27	2.G Other product manufacture and use – NMVOC	<p>New Zealand has allocated emissions from solvent use and asphalt production/use to the category other product manufacture and use (2.G) rather than non-energy products from fuels and solvent use (2.D) in accordance with the 2006 IPCC Guidelines. During the review, New Zealand explained that this was an error that would be corrected in the next submission</p> <p>The ERT encourages New Zealand to reallocate the emissions from solvent use and asphalt production/use to the category non-energy products from fuels and solvent use (2.D)</p>	No	
Agriculture				
A.4	3.A Enteric	New Zealand improved the description of the country-specific EFs by subcategory (dairy cattle, non-dairy cattle, sheep and deer) for CH ₄ and N ₂ O emissions for manure management (and, in	Yes	Transparency

ID#	Finding classification	Description of the finding with recommendation or encouragement ^a	Is the finding an issue? If yes, classify by type		
fermentation – CH ₄ 3.B Manure management – CH ₄ and N ₂ O	<p>addition, for CH₄ emissions for enteric fermentation) by including basic energy equations and links to websites that present documents on methodologies (important to derive country-specific CH₄ and N₂O EFs) in the NIR. However, only aggregated AD of animal populations were provided in the NIR. During the review, New Zealand stated that regional population data are considered to be commercially sensitive and confidential, but national-level data (aggregated from regional-level data) are not considered to be commercially sensitive or confidential. In addition, New Zealand provided the complete and transparent document titled “Detailed methodologies for agricultural greenhouse gas emission calculation, Version 3”, which included detailed descriptions on methodology equations, disaggregate AD by subcategories under dairy cattle and non-dairy cattle, EFs and major parameter inputs of each subcategory at the national level. The Party indicated that this report will be available on the MPI website in June 2016. New Zealand also provided a comparison between the estimates produced by the country-specific and the IPCC tier 2 methodologies</p> <p>The ERT recommends that New Zealand improve the transparency of the country-specific EFs for enteric fermentation (CH₄ emissions) and manure management (CH₄ and N₂O) for the different livestock subcategories used in the estimations by providing detailed methodologies, the AD used in the estimation of the country-specific EFs, country-specific EFs by subcategory, and major parameters used in the estimates as presented in the above-mentioned document for each key subcategory in the NIR</p>				
A.5	<p>3.A Enteric fermentation (swine) – CH₄</p> <p>3.B Manure management (swine) – CH₄ and N₂O</p>	<p>New Zealand developed country-specific EFs for swine for emissions from enteric fermentation (CH₄) and manure management (CH₄/ N₂O) by using the IPCC tier 2 equation and country-specific values of gross energy intake from a survey of 56 farms. During the review, New Zealand provided a report by Hill (2012) as supplemental material to improve the transparency of the estimations, and explained that, so that it could be included in New Zealand’s inventory, the report was peer reviewed and the outcome of that review was put to an Agricultural Advisory Panel for a recommendation as to whether the work (i.e. EFs) should be included in New Zealand’s inventory. The Party indicated that this report had been also made available on the MPI website^b</p> <p>The ERT commends New Zealand for developing a country-specific weighted EF based on the IPCC tier 2 method for the non-key category swine</p> <p>The ERT encourages New Zealand to include in its NIR supporting documentation on the methodology used and major parameter inputs (e.g. body weight) used to develop country-specific EFs for swine for enteric fermentation (CH₄) and manure management (CH₄ and N₂O)</p>	No		
A.6	3.A Enteric	<p>The NIR (page 127) provides the equations used to calculate the metabolizable energy requirement (ME_{TOTAL}) and links to websites that include methodology documents. However,</p>	Yes	Transparency	

ID#	Finding classification	Description of the finding with recommendation or encouragement ^a	Is the finding an issue? If yes, classify by type	
	fermentation – CH ₄	<p>the ERT noted that the equation for energy requirement in the NIR is not fully consistent with that in the website documents. During the review, New Zealand provided methodology documents and clarified that there are typographical errors listed for these equations in the 2015 NIR</p> <p>The ERT recommends that New Zealand correct the equations in the NIR and cross-check all other related equations used in the calculation of the metabolizable energy requirement</p>		
A.7	3.A Enteric fermentation – CH ₄	<p>The values of gross energy in CRF table 3.As2 for 2013 are 1,238,004,316.30 MJ/day for dairy cattle and 508,834,598.47 MJ/day for non-dairy cattle, which are unusually large compared with those reported by other Parties. The same occurs for all other years in the time series (1990–2012). During the review, New Zealand stated that values of gross energy listed in the table are the gross energy per day across the entire population. Although the table is not explicit in stating that the gross energy values refer to average values per animal in the categories referred to, the ERT believes that this is the intention of the table, as only then can meaningful comparison across Parties be made. This is also the approach used by most reporting Parties</p> <p>The ERT recommends that New Zealand provide the gross energy values in MJ/day per head and provide all values for a disaggregate list of the animal classes actually reported in CRF table 3.As2</p>	Yes	Comparability
A.8	3.B Manure management – CH ₄	<p>New Zealand provided the comparison between the country-specific CH₄ EF for manure management for 2012 and the default EF from the 2006 IPCC Guidelines and the IPCC good practice guidance in table 5.3.6 of the NIR, but no country-specific CH₄ EF of manure management in the year 2013 is provided</p> <p>The ERT encourages New Zealand to include the comparison of the country-specific CH₄ EF of manure management for the latest reported year with at least the default values from the 2006 IPCC Guidelines</p>	No	
A.9	3.D Agricultural soils – N ₂ O	<p>New Zealand provided the percentage of synthetic fertilizer nitrogen derived from urea in 1990–2013 in its NIR (page 165); while the data on inorganic nitrogen fertilizer and organic nitrogen fertilizer were provided in CRF table 3.D. There are no available data on synthetic fertilizer nitrogen in the NIR. During the review, New Zealand provided the time series data on synthetic fertilizer between 1990–2013 as supplemental material</p> <p>The ERT recommends that New Zealand include the time series data on synthetic fertilizer in the NIR</p>	Yes	Transparency
A.10	3.D Agricultural	Following the recommendation made in the previous review report, New Zealand reported	No	

<i>ID#</i>	<i>Finding classification</i>	<i>Description of the finding with recommendation or encouragement^a</i>	<i>Is the finding an issue? If yes, classify by type</i>	
	soils – N ₂ O	<p>progress with the uncertainty analysis for direct N₂O emissions from soils. However, most of the information on uncertainty analysis is for uncertainty of the year 2012, and the NIR (page 176) stated that the overall inventory uncertainty analysis is shown in annex 7, but this annex 7 does not exist in the NIR. During the review, New Zealand explained that the reference to annex 7 was a typographical error and it should refer to annex 2 of the NIR, and that additional work regarding the uncertainty analysis for direct N₂O emissions from soils has been planned (a project will run in the 2015–2016 financial year and then it will be put to the Agricultural Advisory Panel for their recommendation on whether to include the work in New Zealand’s Agricultural GHG inventory)</p> <p>The ERT commends New Zealand for planning improvements to the uncertainty analysis, and encourages New Zealand to report back on the progress in its NIR</p>		
LULUCF				
L.6	General (LULUCF) – CO ₂ , CH ₄ and N ₂ O	<p>The carbon fractions of biomass applied in all categories have not been updated to the default values in the 2006 IPCC Guidelines. This affects all biomass pools and related CO₂ and non-CO₂ emissions</p> <p>The ERT recommends that New Zealand review and, where necessary, update the carbon fractions using the appropriate values in the 2006 IPCC Guidelines</p>	Yes	Adherence to UNFCCC Annex I inventory reporting guidelines
L.7	General (LULUCF) – CO ₂ , CH ₄ and N ₂ O	<p>The NIR indicates that LULUCF emissions are estimated using a mix of tier 1 and 2 methods. The ERT notes that paragraph 13 in the UNFCCC Annex I inventory reporting guidelines encourages Parties to report LULUCF using tier 3 methods</p> <p>The ERT encourages New Zealand to: review the current classifications of methods used and, where appropriate, reclassify (e.g. biomass in most forestland subdivisions as tier 3); and provide further details on where New Zealand plans to move to tier 3 methods in the future</p>	No	
L.8	4.A.1 Forest land remaining forest land 4.A.2 Land converted to forest land – CO ₂	<p>For forest land remaining forest land and for land converted to forest land, a number of improvements and recalculations were made in this submission. The main changes were to the age-class distribution of the planted forests (pre- and post-1990 planted forests) and the growth curves. The ERT finds that the changes improve the inventory estimates but are not always documented transparently in the NIR</p> <p>The ERT commends New Zealand for making these improvements and encourages the Party to continue to make improvements in the future by continuing to review the growth curves and age classes and improving documentation</p> <p>The ERT recommends that New Zealand improve the transparency of its reporting by improving the documentation on the recalculations by providing figures showing the</p>	Yes	Transparency

ID#	Finding classification	Description of the finding with recommendation or encouragement ^a	Is the finding an issue? If yes, classify by type	
		differences in the age-class distributions and growth rates		
L.9	4.A.1 Forest land remaining forest land Forest land converted to other land uses CO ₂ , CH ₄ and N ₂ O	The ERT noted that small changes in small areas of forest land could possibly move the land to a conversion category even if not all the area is cleared. This could result in an overestimation of emissions. Similarly, small areas of forest below the forest area threshold that then become ‘forest’ because of a small increase could lead to an overestimation of removals The ERT encourages New Zealand to assess the likelihood of errors of omission or commission owing to small movements over the forest definition threshold and report on this in its NIR	No	
L.10	Forest land converted to other land uses – CO ₂	The NIR (table 6.1.3) provides a single value for the EFs used for pre-1990 natural forest converted to other land uses, split by shrubs and tall forests. However, during the review New Zealand explained that the actual value applied depends on the year of clearing as growth of regenerating forest is included in the estimates. The method described by New Zealand during the review is more comprehensive than is suggested in the NIR (pages 196–199) The ERT recommends that New Zealand: update the NIR to include information on how the EFs are calculated and applied each year rather than suggesting a single value is used; and include further information on how the percentage of mature forest cleared is calculated and why the percentage varies over time	Yes	Transparency
L.11	Forest land converted to other land uses CO ₂ , CH ₄ and N ₂ O	New Zealand does not have annual maps for mapping forest land converted to other land uses. As such, New Zealand interpolates using other information, as explained in the NIR (page 238, figure 6.4.3). During the review, the ERT noted that the text and methods describing the method in the NIR were not consistent with the values in figure 6.4.3 or the CRF tables. New Zealand noted this inconsistency and provided further details on the methods applied The ERT recommends that New Zealand correct the inconsistency identified and include in the NIR the information on the interpolation methods provided during the review	Yes	Transparency
L.12	Forest land converted to other land uses CO ₂ , CH ₄ and N ₂ O	New Zealand allocated forest lands converted to other land uses to low-producing grassland in 2013 The ERT encourages New Zealand to provide in the NIR further details on why forest lands converted to other land uses are allocated to low-producing grassland in 2013, as indicated to the ERT during the review	No	
L.13	Forest land converted to other land uses	As indicated above (L.2), during the review, New Zealand provided more information on forest land converted to other land uses, including estimates of rates of deforestation between the 1990 and 2008 maps The ERT recommends that New Zealand provide further information on the interpolation used	Yes	Transparency

<i>ID#</i>	<i>Finding classification</i>	<i>Description of the finding with recommendation or encouragement^a</i>	<i>Is the finding an issue? If yes, classify by type</i>	
		to estimate rates of deforestation between 1990 and 2008		
L.14	4.B.2 Land converted to cropland 4.C.2 Land converted to grassland	As indicated above (L.3 and L.4), during the review New Zealand provided additional information on the inter-annual conversion of forest land, in particular pre- and post-1990 plantation forests, to cropland and grassland The ERT encourages New Zealand to include the information provided during the review in its NIR	No	
L.15	4.C.1 Grassland remaining grassland – CO ₂	Changes in mineral soil carbon stocks for subdivisions within grassland remaining grassland categories (grassland with woody biomass (GWB), low-producing grassland (low PG) and high-producing grassland (high PG)) are reported as “NA” in CRF table 4.C where there has been no change between these categories. During the review New Zealand noted that changes in mineral soil carbon stocks due to management within the grassland remaining grassland category are accounted for through changes between the GWB, low PG and high PG subdivisions. The Party assumes that management within each division is constant and/or does not lead to changes in mineral soil carbon stocks The ERT encourages New Zealand to provide additional evidence to support the assumption that there are no carbon stock changes within each subdivision even where no change between subdivision has occurred. This could include an improved description in the NIR of how lands in each subdivision have been managed since 1990, or greater disaggregation of the activity data to include main management practices within each subdivision	No	
L.16	4.G Harvested wood products – CO ₂	New Zealand has included estimates for the harvested wood products pool for the first time. The ERT commends New Zealand for this work, noting however, that the transparency of the reporting could be improved The ERT encourages New Zealand to describe more transparently how consistency is maintained between the estimation of carbon stock changes in harvested forests and the related changes in stocks of harvested wood products	No	
Waste				
W.5	General (waste) – CH ₄	New Zealand does not provide any AD in the NIR for any of the categories in the waste sector. Also, in the CRF tables, AD are not provided disaggregated at the level at which the calculations are done. This makes it impossible for the ERT to reproduce the calculations and difficult for the ERT to understand how the methods have been applied and how different factors impact the estimated emissions and the time series. The ERT considers that this hampers	Yes	Transparency

ID#	Finding classification	Description of the finding with recommendation or encouragement ^a	Is the finding an issue? If yes, classify by type	
		<p>the review, especially of the subcategories under solid waste disposal (see W.6, W.7, W.8, W.9, W.10 and W.11 below)</p> <p>The ERT recommends that New Zealand provide, in the NIR, tables with information on AD (full time series) at the level at which the estimates are calculated, or where this is not possible owing to large amount of data or for confidentiality reasons, provide summaries of AD at an appropriate level, to increase transparency, and to allow the review of the accuracy of the estimates and time series</p>		
W.6	5.A Solid waste disposal – CH ₄	<p>In the NIR, New Zealand describes the types of solid waste disposal sites (SWDSs) and sources of AD for municipal and non-municipal SWDSs used as farm fills, but does not give any numerical values for AD or estimates on how the AD are distributed across the different landfill types. According to the NIR (page 297), the recent AD for municipal SWDSs come from two sources (data collected annually under the Waste Management Act (2010 onwards) and the New Zealand ETS (2013 onwards)) whereas previous data (from 1982) are based on national periodic surveys and interpolation and, for the years before 1982, on back-casting using GDP as the driver. AD for non-municipal landfills excluding farm fill waste come from the operators of the SWDSs and, in the case of farm fill waste, from two surveys made in 2012 and 2013. As the New Zealand submission does not provide disaggregated AD on the amounts and type of waste taken to the different disposal site types it is not possible for the ERT to review and assess if the methods used by New Zealand to fill in gaps in AD are appropriate, or to evaluate how the parameter ranges given in the NIR apply to different SWDSs. It is also uncertain which of the data on amounts disposed are based on estimates/modelling and which on weighing at the site</p> <p>The ERT recommends that New Zealand improve the transparency of its reporting by providing a summary of AD (amount) for the entire time series by waste type and SWDS type as well as additional information on the source of the data</p>	Yes	Transparency
W.7	5.A Solid waste disposal – CH ₄	<p>New Zealand calculates the CH₄ emissions including CH₄ recovery at the site level when a SWDS has landfill gas recovery (in 2013, 23 landfill sites had CH₄ recovery systems). To estimate CH₄ recovered, New Zealand uses a mix of metered data (available only for one year (2007) and for four sites) to define site-specific values for CH₄ recovery and a “country-specific default factor for methane recovery efficiency” when site-specific metered data are not available. The country-specific default value of 50% is based on a report (SKM 2009) using a range given in the 2006 IPCC Guidelines of 10–90%. The Party uses this range when no data are available other than the fact that the SWDS has landfill recovery. The ERT notes that the 2006 IPCC Guidelines recommend a default of 20% in such cases. The country-specific default divided by two (i.e. a recovery of 25%) is also used in some cases for SWDS, for which there is no certainty that CH₄ recovery is actually taking place. The assumption for the country-specific default recovery factor is based on metered data from one SWDS – the data are not reported as</p>	Yes	Accuracy

ID#	Finding classification	Description of the finding with recommendation or encouragement ^a	Is the finding an issue? If yes, classify by type	
W.8	5.A Solid waste disposal – CH ₄	<p>they are considered confidential. In addition, New Zealand increases or decreases the country-specific default value when information on factors that can increase recovery are available (including liner, capping, active or passive recovery, placement of wells) but the increase/decrease (8% per factor) is not explained. Site-specific data on these factors are not given in the NIR or in the above-mentioned report</p> <p>The ERT recommends that New Zealand provide substantive justification for the country-specific default values on CH₄ recovery efficiency, including on the factors that can enhance the recovery (e.g. through measurement results or scientific literature confirming the used values) or that New Zealand revise its estimates for CH₄ recovery at SWDSs for which metered data are not available to 20% in order to be consistent with the guidance in the 2006 IPCC Guidelines</p> <p>For the four sites where metered data are only available for one year, the ERT also recommends that the data used for each year be confirmed, either by continuous monitoring of the CH₄ recovered from the sites or by using drivers such as electricity production using the recovered gas in accordance with the 2006 IPCC Guidelines</p> <p>A list of SWDSs with CH₄ recovery and AD on the recovered CH₄ is not provided in the NIR.</p> <p>The ERT recommends that New Zealand provide data on the SWDSs at which it is confirmed that CH₄ recovery takes place and data on the amount of CH₄ recovered for which metered data on the recovery is available in each future annual inventory submission.</p> <p>The ERT also recommends that the Party provide this information separately for energy recovery and flaring. The information can be provided as an aggregate value for the SWDSs in question</p>	Yes	Transparency
W.9	5.A Solid waste disposal – CH ₄	<p>The description in the NIR, as well as additional material provided to the ERT during the review, on the parameters used in the calculation of CH₄ generated refers both to the 2006 IPCC Guidelines and data from a report by the Environmental Protection Agency (EPA) of the United States of America from 2007. The latter data are used for the estimation of CH₄ emissions from non-municipal SWDS, with some exceptions. Methodologies from the 2006 IPCC Guidelines are used in the estimations for the rest of the SWDSs. The ERT considers that the use of data from US EPA for part of the SWDS disposal sites leads to internal inconsistency with the estimates, and may also lead to an underestimation of the CH₄ emissions, because the CH₄ generation rate in the US EPA model is lower than for the SWDS for which the parameters in the 2006 IPCC Guidelines are used</p> <p>The ERT recommends that New Zealand ensure consistency in the methodology and parameters used to estimate CH₄ generation across SWDSs and, if the methodology and parameters are not from the 2006 IPCC Guidelines, justify the applicability of the methodology</p>	Yes	Consistency

ID#	Finding classification	Description of the finding with recommendation or encouragement ^a	<i>Is the finding an issue? If yes, classify by type</i>	
		<p>used to the national circumstances</p> <p>The ERT also recommends that New Zealand improve the description in the NIR, when SWDS-specific parameters are used in the estimation of the CH₄ emissions from SWDSs, by clarifying the sources for the parameters and providing the reasons why different parameters are used</p>		
W.10	5.B Biological treatment of solid waste – CH ₄ and N ₂ O	<p>New Zealand did not estimate CH₄ and N₂O emissions from biological treatment of solid waste because it considers that emissions are insignificant. In the NIR (page 303), New Zealand has provided adequate qualitative explanations for the assessment of the insignificance, but quantitative estimates on the potential level of the emissions are not provided in the NIR</p> <p>The ERT recommends that New Zealand provide a quantified estimate of the potential emissions in its NIR so that the ERT can assess whether the sum of all gases and categories considered insignificant remains below 0.1% of the national total GHG emissions</p>	Yes	Completeness
W.11	5.C Incineration and open burning of waste – CO ₂ , CH ₄ and N ₂ O	<p>New Zealand did not estimate CO₂, CH₄ and N₂O emissions for open burning of waste because it considers that emissions are insignificant. New Zealand has provided adequate qualitative explanations for the assessment of the insignificance in the NIR (page 303). During the review, the Party provided a quantitative estimate of the potential maximum level of the CO₂, CH₄ and N₂O emissions indicating that this category is likely responsible for less than 0.02% of total national emissions, excluding LULUCF</p> <p>The ERT recommends that New Zealand provide in its NIR a quantitative estimate of the likely level of the emissions in accordance with paragraph 37(b) of the UNFCCC Annex I inventory reporting guidelines for this category in order for the ERT to assess whether the sum of all gases and categories considered insignificant remain below 0.1% of the national total GHG emissions</p>	Yes	Completeness
W.12	5.D Wastewater treatment and discharge – CH ₄ , N ₂ O	<p>The NIR does not include detailed methodological descriptions for the estimation of CH₄ and N₂O emissions from wastewater treatment. During the review, New Zealand provided additional information (the documents are referenced in the NIR) explaining the estimation of CH₄ and N₂O emissions from wastewater treatment. Based on the additional material provided, the ERT noted that New Zealand has developed country-specific parameters to estimate the CH₄ and N₂O emissions from industrial wastewater treatment plants (e.g. for the wine and meat industries) using the IPCC default methodology (tier 1, 2006 IPCC Guidelines) as the basis</p> <p>The ERT commends New Zealand for the development of the country-specific parameters and notes that dissemination of the information, especially in relation to the CH₄ emissions, to the IPCC emission factor database (EFDB) could enhance the improvement of estimations of wastewater treatment emissions for other countries</p>	No	

Abbreviations: ARR = annual review report, ERT = expert review team, F-gas = fluorinated gas, GCV = gross calorific value, GDP = gross domestic product, GHG = greenhouse gas, GWB = grassland with woody biomass, IE = included elsewhere, IEF = implied emission factor, IPCC = Intergovernmental Panel on Climate Change, IPCC good practice guidance = IPCC Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories, IPPU = industrial processes and solvent and other product use, LPG = liquefied petroleum gas, LULUCF = land use, land-use change and forestry, MPI = Ministry for Primary Industries, NA = not applicable, NCV = net calorific value, NE = not estimated, NIR = national inventory report, NMVOCs = non-methane volatile organic compounds, NO = not occurring, PG = producing grassland, QA/QC = quality assurance/quality control, Revised 1996 IPCC guidelines = Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories, SWDS = solid waste disposal site, UNFCCC Annex I inventory reporting guidelines = “Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part I: UNFCCC reporting guidelines on annual greenhouse gas inventories”, 2006 IPCC Guidelines = 2006 IPCC Guidelines for National Greenhouse Gas Inventories.

^a Recommendations are related to issues as defined in decision 13/CP.20, annex, paragraph 81, identified by the ERT during the review. Encouragements are made to the Party to address all findings not related to issues.

^b J Hill (2012). *Recalculate Pork Industry emissions inventory*. Ministry of Agriculture and Forestry technical paper No: 2012/05. Available at <<http://www.mpi.govt.nz/document-vault/2953>>.

Annex I

Overview of greenhouse gas emissions and removals for New Zealand for submission year 2015

Table 6 shows total greenhouse gas (GHG) emissions, including and excluding land use, land-use change and forestry and, for Parties that have decided to report indirect carbon dioxide (CO₂) emissions, with and without indirect CO₂. Tables 7 and 8 show GHG emissions reported under the Convention by New Zealand by gas and by sector, respectively.

Table 6
Total greenhouse gas emissions for New Zealand, base year^a to 2013
 (kt CO₂ eq)

	Without indirect CO ₂		With indirect CO ₂ ^b	
	Total with LULUCF	Total without LULUCF	Total with LULUCF	Total without LULUCF
Base year (1990)	38 065.71	66 720.16	38 065.71	66 720.16
1990	38 065.71	66 720.16	38 065.71	66 720.16
1995	43 011.12	70 675.53	43 011.12	70 675.53
2000	46 996.85	77 342.38	46 996.85	77 342.38
2010	47 611.16	79 667.73	47 611.16	79 667.73
2011	50 196.82	80 079.87	50 196.82	80 079.87
2012	54 229.13	82 077.89	54 229.13	82 077.89
2013	54 200.53	80 961.64	54 200.53	80 961.64

Abbreviation: LULUCF = land use, land-use change and forestry.

Note: If emissions from the sector “other” are reported, they are excluded from total greenhouse gas emissions.

^a “Base year” refers to the base year for the Party under the Convention specified in decision 24/CP.19, annex, paragraph 8.

^b New Zealand chose not to report indirect CO₂ emissions.

Table 7
Greenhouse gas emissions by gas, base year^a to 2013
 (kt CO₂ eq)

	<i>CO₂</i>	<i>CH₄</i>	<i>N₂O</i>	<i>HFCs</i>	<i>PFCs</i>	<i>SF₆</i>	<i>NF₃</i>
Base year (1990)	25 392.26	33 291.36	7 294.72	NO, NA	734.56	7.25	NA
1990	25 392.26	33 291.36	7 294.72	NO, NA	734.56	7.25	NA
1995	28 111.96	34 305.42	7 959.67	136.20	153.28	9.01	NA
2000	32 315.11	36 224.48	8 446.08	282.71	67.61	6.37	NA
2010	34 604.69	35 052.19	8 689.25	1 254.87	47.56	19.16	NA
2011	34 338.44	35 234.99	8 857.49	1 597.42	35.15	16.38	NA
2012	35 604.83	35 781.48	9 061.07	1 563.66	47.46	19.39	NA
2013	34 610.86	35 615.92	9 052.81	1 615.24	48.13	18.69	NA
Per cent change base year–2013	36.3%	7.0%	24.1%	NA	–93.4%	157.7%	NA

Abbreviations: NA = not applicable, NO = not occurring.

Note: CO₂, CH₄ and N₂O emissions do not include emissions and removals from the land use, land-use change and forestry sector. New Zealand did not report indirect CO₂ emissions in CRF table 6.

^a “Base year” refers to the base year for the Party under the Convention specified in decision 24/CP.19, annex, paragraph 8.

Table 8
Greenhouse gas emissions by sector, base year^a to 2013
 (kt CO₂ eq)

	<i>Energy</i>	<i>IPPU</i>	<i>Agriculture</i>	<i>LULUCF</i>	<i>Waste</i>	<i>Other^b</i>
Base year (1990)	23 994.57	3 276.03	34 350.57	-28 654.45	5 098.99	
1990	23 994.57	3 276.03	34 350.57	-28 654.45	5 098.99	
1995	26 111.91	3 126.49	36 162.12	-27 664.41	5 275.00	
2000	30 334.03	3 286.50	38 306.28	-30 345.53	5 415.57	
2010	32 189.50	4 600.89	37 713.19	-32 056.58	5 164.16	
2011	31 555.74	5 004.08	38 426.09	-29 883.05	5 093.96	
2012	32 694.92	4 955.59	39 347.48	-27 848.76	5 079.90	
2013	31 658.91	5 071.48	39 177.29	-26 761.11	5 053.96	
Per cent change base year-2013	31.9%	54.8%	14.1%	-6.6%	-0.9%	NA

Abbreviations: IPPU = industrial processes and product use, LULUCF = land use, land-use change and forestry, NA = not applicable.

Note: New Zealand does not report indirect CO₂ emissions in CRF table 6.

^a “Base year” refers to the base year for the Party under the Convention specified in decision 24/CP.19, annex, paragraph 8.

^b New Zealand did not report emissions estimates or notation keys for the sector ‘other’ except for indirect CO₂ and indirect N₂O emissions (reported as “not occurring” and “included elsewhere” in CRF table 6, respectively).

Annex II

Additional information to support findings in table 2

A. Missing categories that affect completeness

The following categories were reported as “NE” (not estimated) or the expert review team (ERT) otherwise determined that there is an issue with the completeness of reporting in New Zealand’s inventory:

- Coal mining and handling (1.B.1.a.1) – CH₄ from abandoned coal mines (see E.31 in table 5);
- Other process uses of carbonates (2.A.4): ceramics – CO₂ (see I.16 in table 5);
- Carbide production (2.B.5) – CO₂ (see I.18 in table 5);
- Lead production (2.C.5) – CO₂ (see I.21 in table 5);
- Non-energy products from fuels and solvent use (2.D) – CO₂, CH₄, N₂O (see I.22 in table 5).

B. Recommendation for an in-country review: list of issues

The ERT does not recommend that an exceptional in-country review be carried out.

Annex III

Documents and information used during the review

A. Reference documents

Intergovernmental Panel on Climate Change. *2006 IPCC Guidelines for National Greenhouse Gas Inventories*.

Available at <<http://www.ipcc-nggip.iges.or.jp/public/2006gl/index.html>>.

“Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part I: UNFCCC reporting guidelines on annual greenhouse gas inventories”. Annex to decision 24/CP.19.

Available at <<http://unfccc.int/resource/docs/2013/cop19/eng/10a03.pdf#page=4>>.

“Guidelines for the technical review of information reported under the Convention related to greenhouse gas inventories, biennial reports and national communications by Parties included in Annex I to the Convention”. Annex to decision 13/CP.20.

Available at <<http://unfccc.int/resource/docs/2014/cop20/eng/10a03.pdf#page=6>>.

Annual status report for New Zealand for 2015.

Available at <<http://unfccc.int/resource/docs/2015/asr/nzl.pdf>>.

Aggregate information on greenhouse gas emissions by sources and removals by sinks for Parties included in Annex I to the Convention. Note by the secretariat.

Available at <<http://unfccc.int/resource/webdocs/agi/2015.pdf>>.

FCCC/ARR/2014/NZL. Report on the individual review of the annual submission of New Zealand submitted in 2014.

Available at <<http://unfccc.int/resource/docs/2015/arr/nzl.pdf>>.

FCCC/ARR/2013/NZL. Report of the individual review of the annual submission of New Zealand submitted in 2013.

Available at <<http://unfccc.int/resource/docs/2014/arr/nzl.pdf>>.

FCCC/ARR/2012/NZL. Report of the individual review of the annual submission of New Zealand submitted in 2012.

Available at <<http://unfccc.int/resource/docs/2013/arr/nzl.pdf>>.

B. Additional information provided by the Party

Responses to questions during the review were received from Ms. Olia Glade (Climate Change Directorate, Ministry for the Environment, New Zealand), including additional material on the methodology and assumptions used. The following documents¹ were also provided by New Zealand:

Harry Clark. 2011. *Guidelines to accompany computerised inventory*. MAF Technical Paper No: 2011/85. Report prepared for Ministry of Agriculture and Forestry By AgResearch. ISBN 978-0-478-38737-7.

Harry Clark, Ian Brookes, Adrian Walcroft. *Enteric methane emissions from New Zealand ruminants 1990 - 2001 calculated using an IPCC Tier 2 approach*.

¹ Reproduced as received from the Party.

CRL Energy Ltd. 2014. *Inventory of HFC, SF₆ and Other Industrial Process Emissions for New Zealand 2013*. Report commissioned by the Ministry for the Environment.

Olia Glade. *New Zealand's National Inventory System Guidelines for compiling New Zealand's Greenhouse Gas Inventory (NIS)*. Version 1.5 July 2015. Ministry for the Environment.

Jaye Hill. 2012. *Recalculate Pork Industry emissions inventory*. Ministry of Agriculture and Forestry technical paper No: 2012/05. Available at <<http://www.mpi.govt.nz/document-vault/2953>>.

S. Saggart et al. 2013. *Quantification of reductions in ammonia emissions from fertiliser urea and animal urine in grazed pastures with urease inhibitors for agriculture inventory: New Zealand as a case study*. *Science of the Total Environment* 465 (2013) 136–146.

M. Kelliher et al. 2014. *Statistical analysis of nitrous oxide emission factors from pastoral agriculture field trials conducted in New Zealand*. *Environmental Pollution*. 186 (2014) 63–66.

Simon Wear. 2013. *Detailed methodologies for agricultural greenhouse gas emission calculation (Version 2)*. MPI Technical Paper No: 2013/27. Prepared for MPI by Dr Andrea Pickering. Revised for MPI by Simon Wear August 2013. ISBN No: 978-0-478-42020-3 (online). ISSN No: 2253-3923 (online).

Beca Infrastructure Ltd. 2007. *Industrial Wastewater Greenhouse Gas (GHG) Estimates from the Pulp and Paper, Wool Scouring and Wine Industries for New Zealand's GHG Inventory*. Report commissioned by the Ministry for the Environment.

SCS Wetherill Environmental. 2002. *National Greenhouse Gas Inventory from the Waste Sector 1990–2020*. Wellington, report commissioned by the Ministry for the Environment.

SKM. 2009. *Estimates of landfill methane recovered in New Zealand 1990–2012*. Wellington, report commissioned by the Ministry for the Environment.

Tonkin and Taylor Ltd. 2014. *GHG Estimates from Non-municipal Landfills New Zealand*. Wellington, report commissioned by the Ministry for the Environment.

Annex IV

Acronyms and abbreviations

AD	activity data
C	carbon
CH ₄	methane
CMP	Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol
CO ₂	carbon dioxide
CO ₂ eq	carbon dioxide equivalent
COP	Conference of the Parties
CRF	common reporting format
EF	emission factor
ERT	expert review team
GHG	greenhouse gas; unless indicated otherwise, total GHG emissions are the sum of CO ₂ (including indirect CO ₂ emissions if reported by the Party), CH ₄ , N ₂ O, HFCs, PFCs and SF ₆ without GHG emissions and removals from LULUCF
ha	hectare
HFCs	hydrofluorocarbons
IE	included elsewhere
IEA	International Energy Agency
IEF	implied emission factor
IPCC	Intergovernmental Panel on Climate Change
IPPU	Industrial processes and product use
ITL	international transaction log
kg	kilogram (1 kg = 1,000 grams)
kt	kilotonne (1 kt = 1 gigagram (Gg))
LULUCF	land use, land-use change and forestry
N	nitrogen
N ₂ O	nitrous oxide
NA	not applicable
NE	not estimated
NF ₃	nitrogen trifluoride
NIR	national inventory report
NO	not occurring
PFCs	perfluorocarbons
PJ	petajoule (1 PJ = 10 ¹⁵ joule)
QA/QC	quality assurance/quality control
SF ₆	sulphur hexafluoride
TJ	terajoule (1 TJ = 10 ¹² joule)
UNFCCC	United Nations Framework Convention on Climate Change