



Ministry for the
Environment
Manatū Mō Te Taiao



New Zealand's Greenhouse Gas Inventory 1990–2009

Questions and Answers

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Introduction

This document provides questions and answers about New Zealand's Greenhouse Gas Inventory 1990–2009 which was released on 15 April 2011.

The inventory is the official annual report of all human-caused emissions and removals of greenhouse gases in New Zealand. The inventory measures New Zealand's progress against its obligations under the Kyoto Protocol as well as the United Nations Framework Convention on Climate Change.

The complete inventory submission is available on the Ministry for the Environment's website at: www.mfe.govt.nz/publications/climate/.

Section 1 – Latest information on emissions and removals from the 1990–2009 inventory

What are the latest estimates?

Total emissions under the United Nations Framework Convention on Climate Change (UNFCCC) and gross emissions under the Kyoto Protocol come from the following sectors:

- agriculture
- energy
- industrial processes
- waste
- solvent and other product use.

Net emissions under the UNFCCC are total emissions plus emissions and removals from land use, land-use change and forestry (LULUCF).

Net emissions under the Kyoto Protocol are gross emissions plus emissions and removals from activities under Article 3.3 of the Kyoto Protocol (afforestation, reforestation and deforestation) – a subset of LULUCF.

The main difference between the two definitions of net emissions is the exclusion from Kyoto Protocol accounting of removals from forests established before 1990. This 1990 baseline is a reference to measure progress against by allowing for comparison between countries and between sectors. For a full explanation of all differences between net emissions under the UNFCCC and the Kyoto Protocol see:

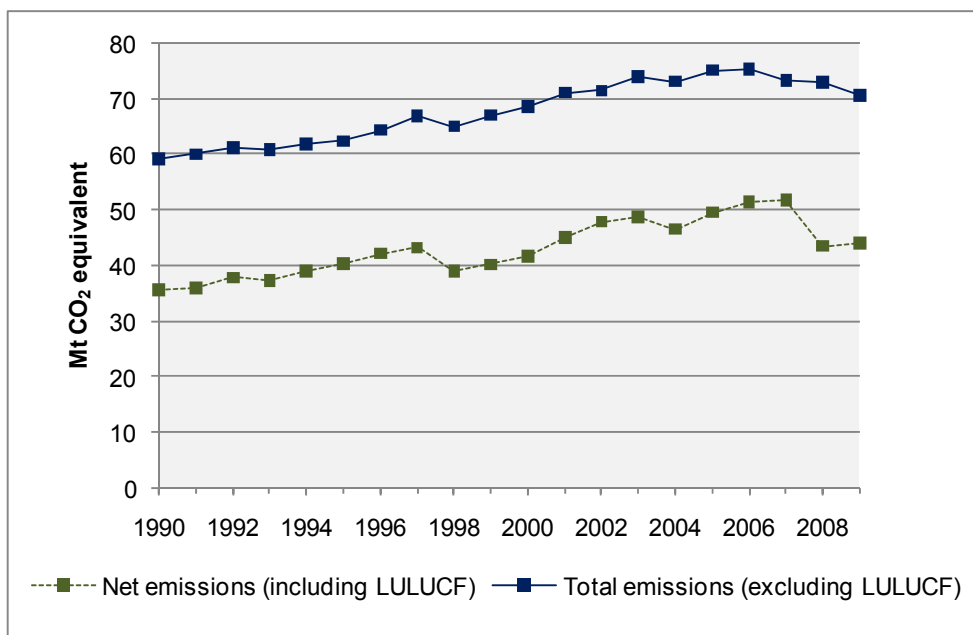
- [What is the difference between net removals under the land use, land-use change and forestry sector \(UNFCCC reporting\) and from Article 3.3 activities \(Kyoto Protocol\)?](#)

New Zealand's total emissions in 2009 were 70.6 million tonnes of carbon dioxide equivalent (Mt CO₂-e). New Zealand's total emissions have increased by 11.5 Mt CO₂-e (19.4 per cent) over the 1990 value of 59.1 Mt CO₂-e (Figure 1).

In 2009, net removals from the LULUCF sector under the UNFCCC were –26.7 Mt CO₂-e. This was an increase in net removals of 3.2 Mt CO₂-e (13.8 per cent) since the 1990 level of –23.5 Mt CO₂-e. New Zealand's net emissions under the UNFCCC in 2009 were 43.9 Mt CO₂-e.

In 2009, the net removals from Article 3.3 activities under the Kyoto Protocol were -17.3 Mt CO₂-e.

Figure 1: New Zealand's total (gross) greenhouse gas emissions and net emissions under the UNFCCC from 1990 to 2009



How much do sectors contribute to total emissions?

In 2009, the agriculture sector was the largest source of emissions, contributing 32.8 Mt CO₂-e. Agriculture contributed 46.5 per cent to New Zealand's total greenhouse gas emissions in 2009 (methane and nitrous oxide).

In 2009, the energy sector (including electricity generation and transport) contributed 31.4 Mt CO₂-e. Energy was 44.4 per cent of total emissions (mainly carbon dioxide, but also some nitrous oxide and methane).

Emissions from the industrial processes, waste, and solvent and other product use sectors are a small component of New Zealand's inventory comprising 4.3 CO₂-e Mt (6.2 per cent), 2.0 Mt CO₂-e (2.9 per cent) and 0.03 Mt CO₂-e (0.04 per cent) in 2009 respectively.

Table 1: Total emissions (excluding LULUCF) by sector in 2009

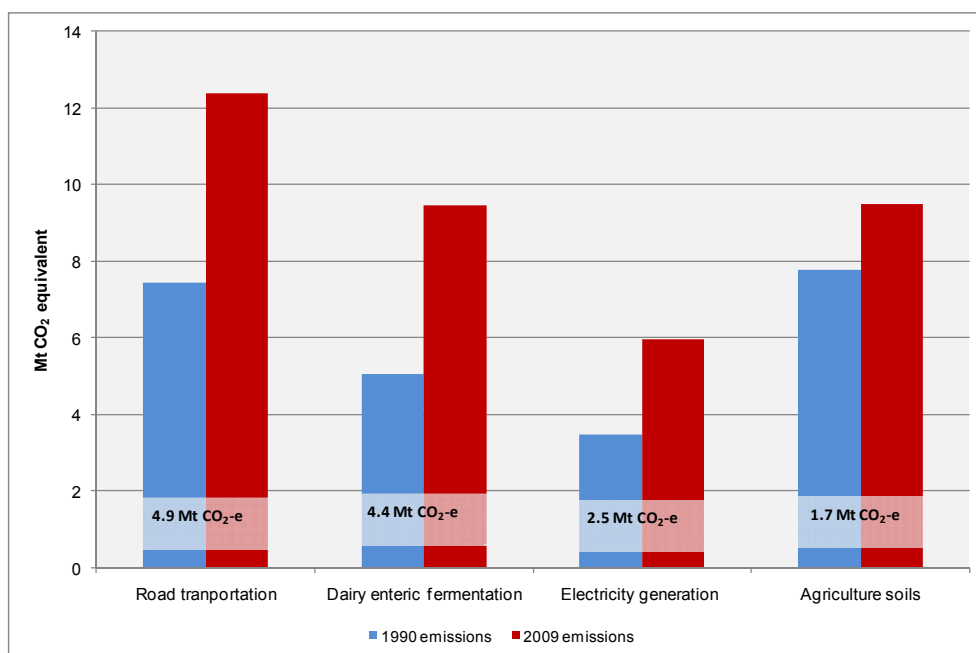
Description	Mt CO ₂ -e	%
Agriculture	32.8	46.5
Energy	31.4	44.4
Industrial processes	4.3	6.2
Waste	2.0	2.9
Solvent and other product use	0.03	0.04
Total	70.6	100.0

Why have New Zealand's total emissions increased since 1990?

In 1990, New Zealand's total emissions were 59.1 million tonnes of carbon dioxide equivalent (Mt CO₂-e). In 2009, this total had increased by 11.5 Mt CO₂-e (19.4%) to 70.6 Mt CO₂-e. This long-term trend is largely due to emissions from road transport, dairy enteric fermentation, electricity generation and agriculture soils (Figure 2).

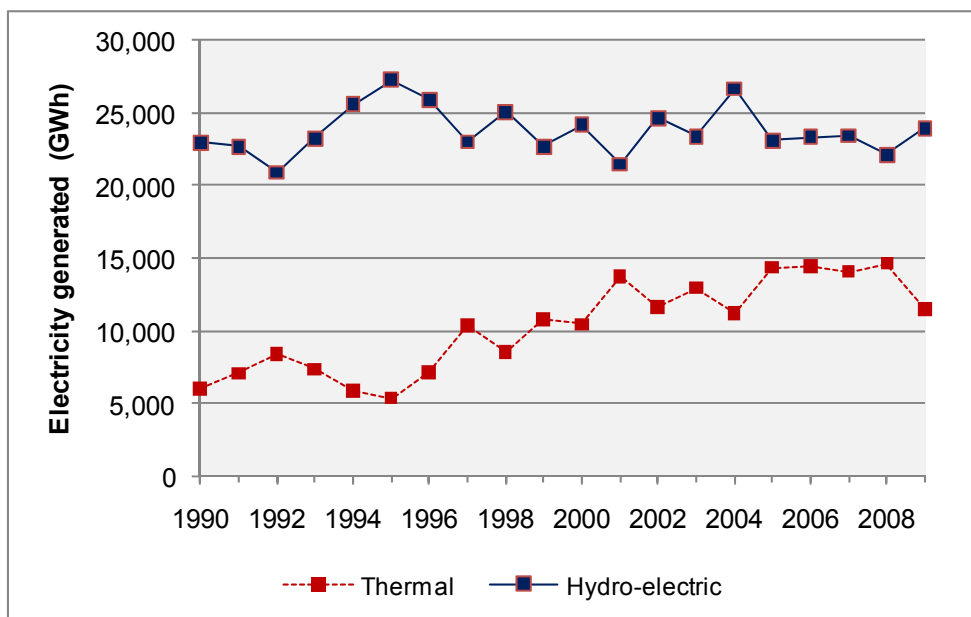
While agriculture was New Zealand's largest sector in 2009, since 1990 energy emissions have increased over three times as much as those from agriculture. Consequently, the proportion of energy emissions as part of total emissions has increased over time. Energy and agriculture emissions are now occupy almost equal proportions.

Figure 2: Change in emissions for the largest drivers of an increase in New Zealand's total emissions



Since 1990, the demand for electricity has been met primarily by increasing fossil fuel-based thermal generation. Thermal generation has increased since 1990 (Figure 3). Figure 3 also demonstrates there is annual variability in electricity produced through hydro or thermal due to events such as low flows into hydro storage lakes.

Figure 3: New Zealand's hydro-electric and thermal electricity generation from 1990 to 2009



Why have total emissions decreased between 2008 and 2009?

Between 2008 and 2009, New Zealand's total greenhouse gas emissions decreased 2.3 Mt CO₂-e (3.1 per cent).

This decrease resulted from:

- an increase in inflows into hydroelectric storage lakes which reduced demand for thermal electricity generation
- an increase in electricity supply from geothermal and wind generation which reduced demand for thermal electricity generation
- a reduction in road transport emissions due to the downstream effects of the 2008 economic downturn
- a reduction in the use of nitrogen fertiliser in New Zealand which reduced agricultural emissions. In addition, the effects from the widespread 2008 drought and lower returns for sheep, beef and deer relative to dairy continued to have an influence on sheep, non-dairy cattle and deer populations in 2009.

Why have total emissions been decreasing since 2006?

Between 2006 and 2007, the decrease in total emissions resulted from a reduction in:

- coal-fired electricity generation with the commissioning of the combined cycle gas turbine at the Huntly power station
- sheep, non-dairy cattle and deer populations from the widespread drought.

Between 2007 and 2008, the decrease in total emissions resulted from:

- a reduction in sheep, non-dairy cattle and deer populations from the widespread drought.

Why do total (gross) emissions exclude removals and emissions from land use, land-use change and forestry sector (LULUCF) and from Article 3.3 activities?

- All inventories under the Climate Change Convention and the Kyoto Protocol report emissions excluding the LULUCF sector and Article 3.3 activities when making reference to total (gross) emissions.
- The Climate Change Convention separates emissions and removals from the LULUCF sector from a Party's national total (gross) emissions.
- The Kyoto Protocol also excludes emissions and removals from Article 3.3 activities from total (gross) emissions.
- All inventories under the Climate Change Convention and the Kyoto Protocol report emissions excluding the LULUCF sector and Article 3.3 activities when making reference to total (gross) emissions.

What is the difference between net removals under the land use, land-use change and forestry sector (UNFCCC reporting) and from Article 3.3 activities (Kyoto Protocol)?

When reporting the years of the first commitment period (2008–2012), developed countries party to the Kyoto Protocol (like New Zealand) are required to report two 'net removal' figures in their national greenhouse gas inventory: Each of these net removal estimates can be subtracted from the total (gross) emissions figure to yield a 'net emissions' value.

1. an estimate of net removals from under the UNFCCC reporting requirements for the land use, land-use change and forestry (LULUCF) sector
2. an estimate of net removals from the subset of activities in the LULUCF sector covered by the Kyoto Protocol accounting rules.

In any given year, New Zealand's net removal estimate under the Kyoto Protocol accounting rules may differ significantly from the net removal estimate under UNFCCC reporting. This is because the Kyoto Protocol estimate captures a subset of the LULUCF sector designed to reflect (and influence) human activities related to land-use change and forestry since 1990, as set out in Article 3.3.

The Kyoto Protocol accounting rules for Article 3.3 activities were intended to treat emissions and removals from forestry equitably with emissions from other sectors (agriculture, energy, etc) and to incentivise change. To achieve this, countries agreed to a base year for the calculation of targets as a reference against to estimate emissions and removals. For most countries, this base year is 1990.

Net removals from Article 3.3 activities include greenhouse gas :

- removals from the growth of forests planted after 1989
- emissions from harvesting post-1989 planted forests
- emissions from the deforestation of pre-1990 planted forest, post-1989 planted forest, and natural forest.

Net removals from Article 3.3 activities exclude greenhouse gas:

- removals from the growth of forests established before 1990 (both natural and pre-1990 planted forests)
- emissions from harvesting pre-1990 planted forests
- emissions from non forest land uses not included as part of one of the forestry activities listed above.

Why are deforestation estimates different between the inventory and the National Exotic Forest Description?

Differences are due to different data sources with different types of forests and time periods for each data source as shown in Table 2.

Table 2: Reasons for the differences for 2009 between the inventory and the National Exotic Forest Description

Deforestation estimate	Inventory	National Exotic Forest Description
Source	Land-use mapping from the Land Use Carbon Analysis System	Combination of responses to the 2009 <i>National Exotic Forest Description</i> survey and input from forestry experts
Includes	All types of forest: pre-1990 planted forest, post-1989 forest, and natural forest	Pre-1990 and post-1989 planted forest only
Time period	Year ending 31 December 2009	Year ending 31 March 2009

How is harvesting distinguished from deforestation before the window of replanting closes?

Estimates of deforestation and harvesting areas are obtained through different methods.

Where areas of forest destocking are unable to be confirmed as either harvesting or deforestation, the areas are flagged for tracking for four years from the date of clearing. Those areas which are not replanted within four years are deemed to be deforested as at the date of clearance.

New Zealand has used a combination of data sources to identify the location and timing of deforestation after 1 January 2008.

- Land-use data generated from classification of SPOT-5 satellite imagery acquired between November 2006 and April 2008 was compared with Disaster Monitoring Constellation satellite imagery acquired in 2009/10 summer in conjunction with some field verification.
- From this, temporarily destocked land and land converted from a forest land use to a non-forest land use was identified.
- Evidential information to confirm land-use change was collected using higher-resolution aerial photography and field visits.
- Areas of possible deforestation were confirmed using oblique aerial photography. Supporting information from regional councils, Ministry of Agriculture and Forestry district offices, and forestry consultants was also used to see if deforestation or restocking could be confirmed.

The estimate of the total area of planted forest harvested each year between 1990 and 2009 is based on the harvested area reported in the *National Exotic Forest Description*, a survey conducted by the Ministry of Agriculture and Forestry (MAF). This ensures a consistent approach is applied from 1990 to 2008 and throughout the commitment period.

Data for the year ending 31 December 2009 was not available. Therefore, a combination of MAF's roundwood statistics (the volume of roundwood harvested) and the ratio of roundwood volume to area harvested over the five-year period 2003–2008, was used to estimate the area harvested in 2009 from the volume of roundwood produced. The harvesting values for 2009 will be updated in next year's submission when finalised planted forest data for 2009 becomes available.

What has been the impact of the NZ Emissions Trading Scheme?

There are two impacts from the NZ ETS for the inventory:

- the impact on the trend of emissions and removals
- the impact of new information which provides better accuracy in emission and removals estimates.

Up until the end of 2009, the only sector included in the NZ ETS was forestry. Forest land was introduced into the scheme on 1 January 2008. Under the scheme, owners of post-1989 forest land may voluntarily participate in the NZ ETS and receive emissions units for any increase in carbon stocks in their forests from 1 January 2008.

While the conversion of land from one land use to another is not uncommon in New Zealand, plantation forest deforestation on the scale seen between 2004 and 2008 was a new phenomenon. Most of the area of planted forest that was deforested from the mid-2000s onwards has subsequently been converted to grassland. This conversion is due in part to the relative profitability of some forms of pastoral farming (particularly dairy farming) compared with forestry, as well as to the anticipated introduction of the NZ ETS.

Since the introduction of the NZ ETS in 2008, owners of pre-1990 planted forest are now able to deforest only two hectares in any five-year period without having to surrender emissions units. Above this level of deforestation they are required to surrender units equal to the reported emissions, with some exemptions for smaller forest owners. This has led to a significant reduction in the rate of deforestation of pre-1990 planted forest since the inception of the scheme. Post-1989 forest owners that are registered in the scheme also have legal obligations to surrender units if the carbon stocks in their registered forest area fall below a previously reported level (for example, due to deforestation, harvesting or fire).

The annual area of new planting is expected to increase with the implementation of the NZ ETS, Permanent Forest Sinks Initiative, and Afforestation Grant Scheme.

During 2010, data from the NZ ETS was reconciled with the 1 January 2008 land-use map. The NZ ETS data contains post-1989 forest boundaries as submitted by forest owners and verified by the Ministry of Agriculture and Forestry.

Why have historic emissions data changed since the last inventory submission?

The inventory is under continuous improvement. As better data, emission factors or methodologies become available, emissions are back-calculated throughout the time-series to reflect these improvements. Ensuring consistency through time is one of the Intergovernmental Panel on Climate Change's good practice principals. For more information see:

- [Is the inventory accurate?](#)

The most significant improvements in this year's report are:

a. **Backcasting of land use, land-use change and forestry**

Data on areas in various land uses since 1962 was used to estimate lagged emissions and removals from land-use change before 1990 which continued to have an effect between 1990–2009 (also known as backcasting). Backcasting reduced net removals in 1990 by 5.1 Mt CO₂-e and reduced net removals in 2008 by 0.02 Mt CO₂-e.

b. **Mapping of deforestation**

Mapping of deforestation based on satellite imagery and aerial photography replaced previous estimates that were based on a deforestation intentions survey. This had the impact of decreasing the emissions from deforestation by 2.5 Mt CO₂-e in 2008.

c. **Dung emission factor**

A New Zealand-specific emission factor for estimating nitrous oxide emissions from cattle, sheep and deer dung was introduced to the calculation of agricultural soil emissions. Previously, one New Zealand-specific emission factor was used for dung and urine emissions from these species. However, the research to develop this single New Zealand-specific emission factor was generally carried out on urine samples.

New research showed that N₂O emissions from dung are substantially lower than emissions from urine. Consequently, a new emission factor for dung was developed for the purpose of estimating nitrous oxide emissions from cattle, sheep and deer. For consistency, the emission factor has been applied to the entire period (1990–2009). The introduction of the dung emission factor has reduced total emissions by 1.6 Mt CO₂-e in 1990 and 1.5 Mt CO₂-e in 2008.

d. **Solid waste disposal to land**

The accuracy of the estimates for net methane emissions from solid waste disposal to land has been improved largely due to improved methodologies. These improvements have come from:

- a better understanding of the management and design of landfills with operational CH₄ recovery systems
- the application of nationally consistent assumptions on the composition of solid waste.

These improvements are largely responsible for the recalculation of the trend in the waste sector which now shows that waste emissions in 2009 are 0.03 Mt CO₂-e (1.6 per cent) below waste emissions in 1990, as opposed to the decrease of 0.8 Mt CO₂-e (31.5 per cent) as reported in the previous inventory submission.

Section 2 – Background to the inventory

What is the greenhouse gas inventory?

The inventory is an annual report of all human-induced emissions and removals of greenhouse gases in New Zealand. The inventory is produced each year as part of New Zealand's obligations under the United Nations Framework Convention on Climate Change (the Climate Change Convention) and the Kyoto Protocol.

Why is the data in the inventory only reported to the end of 2009 when it is now 2011?

The international reporting guidelines govern what the inventory covers and when it is submitted. The inventory year is 15 months behind the current calendar year to give time for countries to collect data and prepare the inventory. The 2009 inventory, published in April 2011, contains data from 1990 to 2009 inclusive. All developed countries report using the same international guidelines.

What sectors are covered in the inventory?

The inventory reports greenhouse gas emissions and removals from six sectors:

- agriculture
- energy – emissions from fuel combustion such as transport, electricity generation and fuel used by industries such as agriculture
- industrial processes – chemical transformation of materials from one substance to another
- land use, land-use change and forestry (LULUCF)
- waste
- solvent and other product use.

Under the Climate Change Convention, the inventory reports emissions and removals from the entire land use, land-use change and forestry (LULUCF) sector. Under the Kyoto Protocol, reporting is limited to the activities of afforestation, reforestation and deforestation since 1 January 2008 (commonly referred to as Article 3.3 activities).

For more information on the difference between reporting forestry under the Climate Change Convention and the Kyoto Protocol see:

- What is the difference between net removals under the land use, land-use change and forestry sector (UNFCCC reporting) and from Article 3.3 activities (Kyoto Protocol)?

The composition of the sectors is defined by international reporting guidelines.

What gases are covered in the inventory?

The inventory reports emissions from six direct greenhouse gases:

- carbon dioxide (CO₂)
- methane (CH₄)
- nitrous oxide (N₂O)
- hydrofluorocarbons (HFCs)
- perfluorocarbons (PFCs)
- sulphur hexafluoride (SF₆).

Only emissions and removals of these six direct greenhouse gases are reported in the national greenhouse gas total.

The inventory also reports indirect greenhouse gases but they are not included in New Zealand's greenhouse gas total. The indirect gases are:

- oxides of nitrogen (NO_x)
- sulphur dioxide (SO₂)
- carbon monoxide (CO)
- non-methane volatile organic compounds (NMVOCs).

Who is responsible for the New Zealand inventory?

The Ministry for the Environment (MfE) as the 'Inventory Agency' is responsible for submitting the greenhouse gas inventory under the Climate Change Convention every year by 15 April. The MfE is also New Zealand's designated single national entity for the greenhouse gas inventory under the Kyoto Protocol.

MfE works closely with the Ministry of Economic Development and the Ministry of Agriculture and Forestry to compile the data. Many of the values used in the inventory are derived from data collated by Statistics New Zealand.

What is the uncertainty in the national inventory?

For New Zealand, the uncertainty in total emissions (excluding removals) for the 2009 calendar year is ± 11.8 per cent. However, uncertainty in the trend in emissions since 1990 is only ±2.8 per cent, because the uncertainty in emissions factors in any one year cancels out over time. It is the trend in emissions that is paramount under the Climate Change Convention and the Kyoto Protocol.

Is the inventory accurate?

The New Zealand inventory is compiled under the definitions of Intergovernmental Panel on Climate Change (IPCC) Good Practice. The inventory is reviewed annually against the criteria of being:

- Transparent – assumptions and methodologies used for an inventory should be clearly explained to facilitate replication and assessment of the inventory by users of the reported information. The transparency of inventories is fundamental to the success of the process for the communication and consideration of information.
- Accurate – estimates should be accurate in the sense that they are systemically neither over nor under true emissions or removals, as far as can be judged, and that uncertainties are reduced as far as practical.
- Complete – the inventory covers all sources and sinks, as well as all gases, included in the IPCC Guidelines as well as other existing relevant source/sink categories which are specific to individual countries and, therefore may not be included in the IPCC Guidelines. Completeness also means full geographic coverage of sources and sinks.
- Consistent – the inventory should be internally consistent in all its elements with inventories of other years. An inventory is consistent if the same methodologies are used for the base, and all subsequent years, and if consistent data sets are used to estimate emissions or removals from sources or sinks. Under certain circumstances an inventory using different methodologies for different years can be considered to be consistent if it has been recalculated in a transparent manner, in accordance with the IPCC Guidance.
- Comparable – estimates of emissions and removals reported in inventories should be comparable among countries. For this purpose, countries should use the methodologies and formats agreed by the Conference of the Parties for estimating and reporting inventories. The allocation of different source/sink categories should follow the split of the IPCC Guidelines.

Is the inventory reviewed against ‘international best practice’?

The greenhouse gas inventory is reviewed annually by a team of international experts. The review team is selected from a roster of experts managed by the Secretariat to the Climate Change Convention. Most of the reviews are conducted in Bonn, Germany, but every three to four years, the review team will come to New Zealand for one week for an in-depth, in-country review. The last in-country review for New Zealand was in August/September 2010. However, the review report was not published in time for the finalisation of the 2011 submission of the inventory.

The last published review was from New Zealand’s 2009 inventory submission (1990–2007) which was assessed through a centralised review in Bonn in September 2009. The main conclusions were:

- The inventory is in line with the Revised 1996 IPCC Guidelines, the IPCC good practice guidance and the IPCC *Good Practice Guidance for Land Use, Land-Use Change and Forestry*. The 2009 inventory submission is of a high quality and shows improvement in the major issues, such as increased capacity of the national system and increased quality assurance and quality control activities and institutional arrangements, as compared with the 2008 submission.

The review reports are available for anyone to access from the [Climate Change Convention website](#).

What would happen if the inventory did not comply with good practice?

If the expert review team found that New Zealand's inventory had incomplete data; or was inconsistent with the methodologies by the Intergovernmental Panel on Climate Change; or was not sufficiently transparent to evaluate data quality, under the Climate Change Convention review process New Zealand would be encouraged to make improvements in future submissions.

Under the Kyoto Protocol, the expert review team has the mandate to recommend the improvements are made during the review period. New Zealand would be provided with opportunities to correct any problems.

If New Zealand was not able to make the corrections, the expert review team would recommend an adjustment to the emissions or removals. An adjustment would result in a more conservative estimate to ensure New Zealand is not under-estimating emissions or over-estimating removals. The compliance committee of the Kyoto Protocol would decide whether to apply the adjustment. New Zealand would then either accept or reject the adjustment recommendation.

Disagreements are forwarded to the Kyoto Protocol Compliance Committee who would resolve the issue. This process is the same for all Parties listed in Annex B of the Kyoto Protocol (ie, those with Kyoto Protocol targets).

Section 3 – The inventory and the Kyoto Protocol

How does the inventory link with the Kyoto Protocol?

The inventory is a requirement under both the Climate Change Convention and the Kyoto Protocol. This means all developed countries, including the USA, are required to produce an annual inventory. Countries that have also ratified the Kyoto Protocol are required to include additional information in the inventory on matters related to the Kyoto Protocol, eg, transfer of units from the registry, and reporting and accounting of land use and land-use change activities included under Article 3.3 of the Kyoto Protocol.

How ‘good’ is New Zealand’s inventory in meeting the Kyoto Protocol requirements?

New Zealand has consistently met the reporting requirements (including timelines and quality) under the Climate Change Convention and the Kyoto Protocol.

The national system for the greenhouse gas inventory, the national registry, and the 1990 (base year) greenhouse gas inventory were reviewed by an expert review team in February 2007. This was the initial review under the Kyoto Protocol, and occurred before the beginning of the first commitment period to determine New Zealand’s assigned amount and to ensure all requirements were being met including those for the inventory and registry systems. The expert review report concluded that:

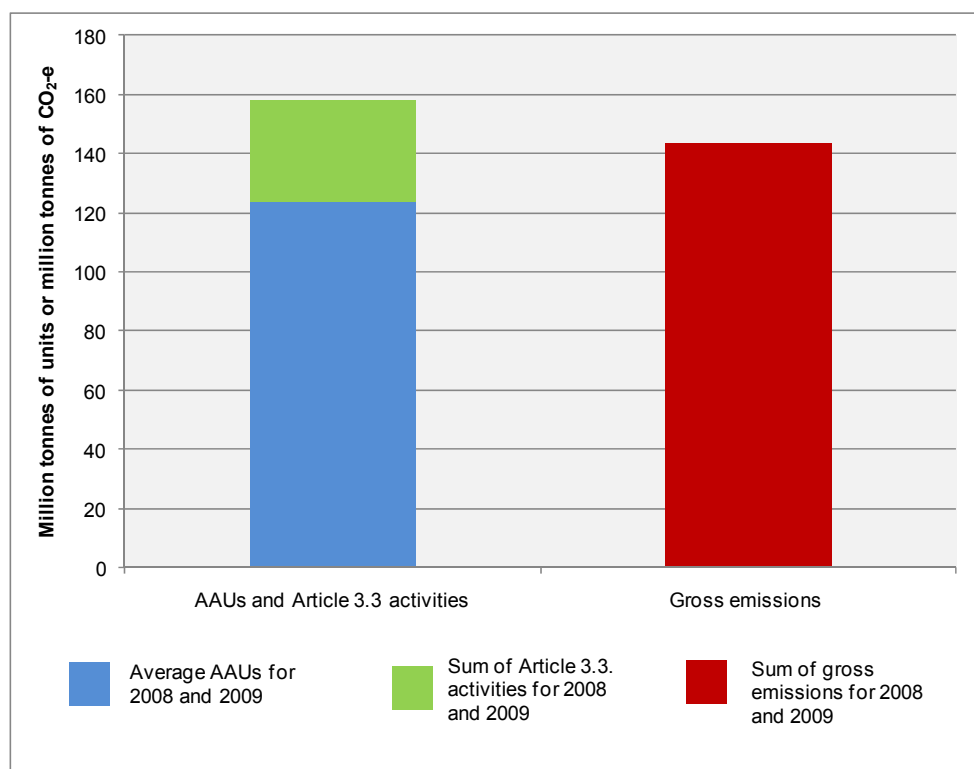
- “New Zealand’s greenhouse gas inventory is consistent with the Revised 1996 IPCC Guidelines and the IPCC good practice guidance, and adheres to the reporting guidelines under Article 7 of the Kyoto Protocol”
- “New Zealand’s national system is prepared in accordance with the guidelines for national systems under Article 5, paragraph 1, of the Kyoto Protocol and reported in accordance with the guidelines for the preparation of the information required under Article 7 of the Kyoto Protocol”
- “New Zealand’s national registry is fully compliant with the registry requirements as defined by decisions 13/CMP.1 and 5/CMP.1”.

These significant developments allowed New Zealand to be one of the first four Parties to be eligible to participate in the Kyoto Protocol mechanisms. New Zealand’s registry was operational on 1 January 2008.

How is New Zealand tracking under the Kyoto Protocol?

Under the Kyoto Protocol, New Zealand’s target is to return emissions to 1990 levels on average over the commitment period or otherwise take responsibility for the excess. Figure 4 shows New Zealand’s total emissions for 2008 and 2009 compared to the Kyoto Protocol target (AAUs) and net removals from Article 3.3 activities.

Figure 4: The Kyoto Protocol compliance equation applied to 2008 and 2009



Note: AAUs are assigned amount units. New Zealand selected 'end of commitment period accounting' for Article 3.3 activities under the Kyoto Protocol. This means that removal units generated by post-1989 forests are not added to New Zealand's assigned amount until the end of the commitment period. Due to ongoing improvements to inventory reporting, all data (for both gross emissions and Article 3.3 activities) is subject to change before the end of the commitment period.

Why does the 1990 year get recalculated each time? Shouldn't that figure remain constant now we are in the first commitment period?

For the first commitment period of the Kyoto Protocol, New Zealand's assigned amount is the gross greenhouse gas emissions in 1990 multiplied by 5. The assigned amount is based on the 1990 value reported in the inventory submitted as part of New Zealand's Initial Report under the Kyoto Protocol and reviewed by an international review team in February 2007. The assigned amount does not change during the first commitment period of the Kyoto Protocol.

In contrast, emissions and removals for all years of the inventory are subject to change due to continuous improvement. Consequently, the level of total emissions in 1990 reported in 2009 inventory submission is less than (4.7 per cent) the 1990 level used in the initial assigned amount calculation.

All countries face this issue, and accept that although the 1990 assigned amounts are fixed for the first commitment period, inventories are required to continue to improve and this may lead to the 1990 estimates increasing or decreasing.

Are the planted forests in the LULUCF sector our Kyoto sinks?

The LULUCF sector of the inventory is not the same as forest sinks or afforestation under the Kyoto Protocol. Under the UNFCCC, emissions and removals from all forests (planted and natural) for all years are reported in the LULUCF sector, whereas under the Kyoto Protocol only new forest (land that became forest after 31 December 1989) and any deforestation over the first commitment period is accounted for.

What is the difference between the Net Position estimate and the greenhouse gas inventory report?

The Greenhouse Gas Inventory report is the official annual report of human-caused emissions and removals of greenhouse gases in New Zealand. The 2011 inventory submission covers emissions and removals from 1990 through to 2009. The greenhouse gas inventory measures New Zealand's progress against New Zealand's obligations under the Climate Change Convention and under the Kyoto Protocol.

The net position estimate provides a projection of New Zealand's likely balance of Kyoto Protocol emissions units at the end of the first commitment period (CP1: 2008–2012). An emissions unit is equivalent to one tonne of carbon dioxide. The net position is one component of the Kyoto Protocol Financial Position.

The Kyoto Protocol Financial Position is updated at the end of each month to account for changes in the price of carbon in New Zealand dollars, and for any net transfers from the Crown's assigned amount balance. Whether New Zealand will be in deficit or credit in relation to its Kyoto commitment will not be known until 2015 when the review of the final greenhouse gas inventory for the first commitment period has been completed. New Zealand will submit this final inventory in April 2014, and the international review process takes about a year to complete. Countries are then given a period of 100 days (the 'true-up period') to undertake final transactions to achieve compliance if this is necessary.

Does New Zealand report Article 3.4 activities under the Kyoto Protocol?

The accounting of Article 3.4 activities under the Kyoto Protocol is optional. This includes forest management, cropland management, grazing land management and re-vegetation. New Zealand has elected not to account for any of the optional activities under Article 3.4 of the Kyoto Protocol for the first commitment period.

When will New Zealand account for Article 3.3 activities under the Kyoto Protocol?

New Zealand will account for Article 3.3 activities (afforestation, reforestation and deforestation) at the end of the first commitment period. Parties were given a choice to either account annually or at the end of the commitment period. New Zealand stated its choice in the Initial Report under the Kyoto Protocol.