A Guide to the New Zealand Emissions Trading Scheme: 2022 Update

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Summary haiku

ETS reforms
will help us meet our targets;
challenges remain

1
Introduction

Emissions trading is a tool for sending price signals to producers, consumers and investors to encourage and enable them to reduce the greenhouse gas (GHG) emissions contributing to climate change. Globally, there were 24 emissions trading systems in force and eight under development as of January 2021.[1]

The New Zealand Emissions Trading Scheme (NZ ETS) began operation in 2008. The scheme continues to serve as a principal element of the policy response to climate change in Aotearoa New Zealand.

This guide explains how the NZ ETS works, describes the core design features of the system - and examines how and why they have evolved over time. As national circumstances change, so too will the NZ ETS. This guide offers a snapshot of how the system operates as of February 2022.

2
How emissions trading works

An ETS sets a regulatory limit on emissions by covered sectors and translates that limit into a market price. That market price then changes people's behaviour to reduce emissions.

Obligated parties are required to surrender to the government a tradable emissions unit for each tonne of emissions for which they are liable. The government limits the supply of emissions units into a trading market which then sets the emission price based on unit supply and demand.

The cost to obligated parties of surrendering emissions units gets passed on across the supply chain and has the effect of:

- raising the relative cost of higher-emissions goods and services
- making lower-emissions behaviour more competitive
- creating an incentive for businesses and consumers to reduce or avoid emissions.

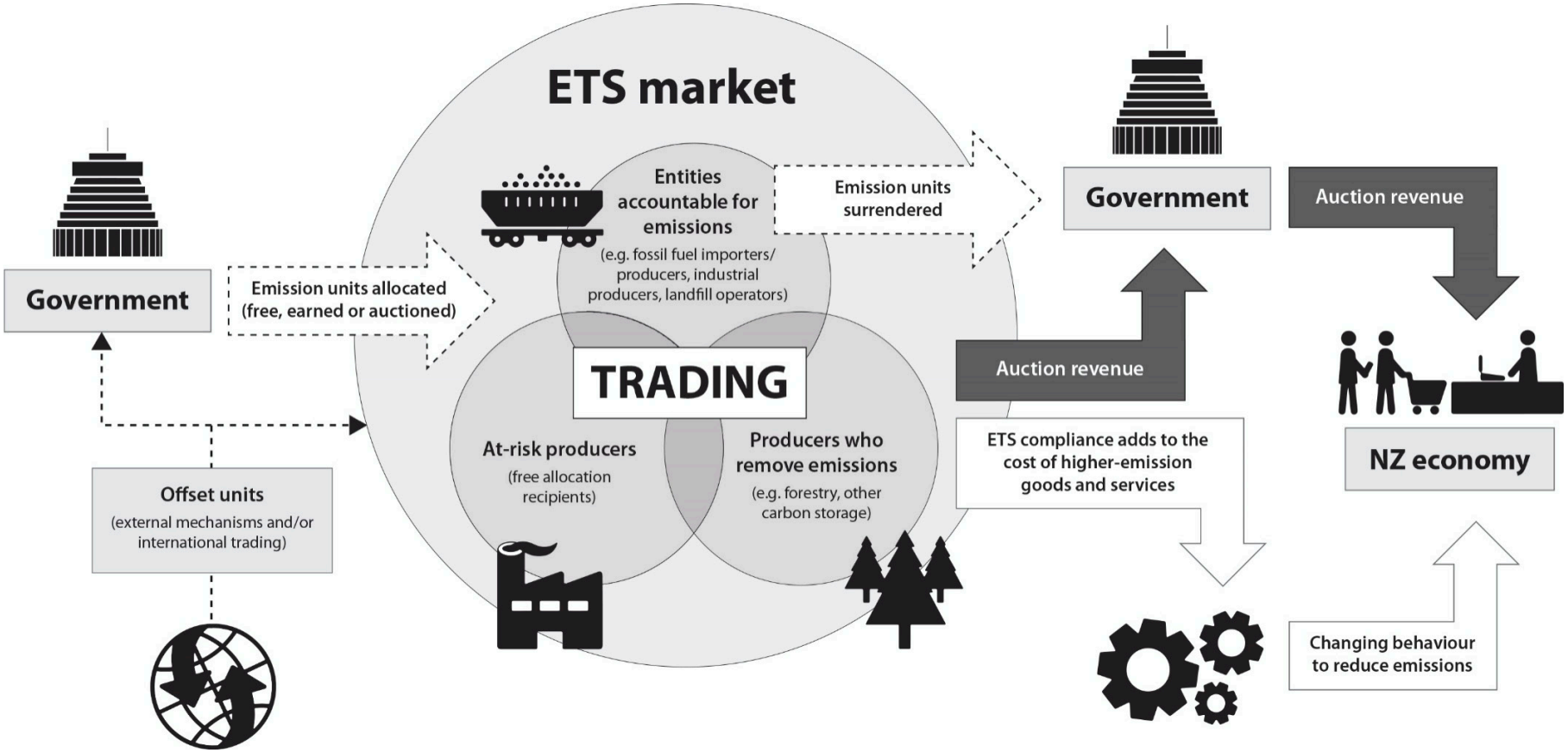
In any ETS in general (see Figure 1), participants can potentially acquire emissions units by:

- receiving them for free
- buying them from other participants (incentivising others to reduce their emissions and sell surplus units)
- buying them at auction (generating government revenue that can be returned to the economy)
- earning them by ETS removal activities (such as carbon storage in forests or industrial products)
- buying them from external offset mechanisms (domestic or international) or through international trading.

Unlike directive regulations, an ETS allows people in businesses and households to apply their own information about costs and preferences and decide where and how to reduce emissions. This lets them seek out least-cost emissions reduction opportunities across the participating sectors. Reducing the number of units available to the market (in line with emissions reduction targets) supports a planned transition to a low-emission economy.

Emissions trading can be an important part, but should never be the only part, of an effective strategy for reducing emissions. In Aotearoa's context, companion policies are needed to help overcome non-price barriers to change, drive coordination and investment at the innovation frontier, align mitigation with adaptation, achieve sectoral priorities beyond climate change, ensure a just transition that safeguards wellbeing, give effect to te Tiriti o Waitangi/the Treaty of Waitangi and safeguard the interests of future generations.[2]

Figure 1: How emissions trading works



An ETS translates a regulatory limit on emissions into an emissions price set by the market, which changes people's behaviour to reduce emissions. The limit on emissions is defined by the number of tradable emissions units (i.e., allowances to emit) in the market, which reduces over time. The key players are the **government** which allocates emissions units into the market, **ETS market participants** who trade emissions units and/or surrender emissions units for compliance and **businesses and households** who receive an emissions price incentive to choose lower-emission goods, services and activities. External offset mechanisms and/or international trading may also supply emissions units. Design details vary by system. As of February 2022, the NZ ETS is not directly linked to any ETS in another jurisdiction or any offshore offset mechanisms.

3
A brief history of the NZ ETS

The NZ ETS was enacted in September 2008 after more than a decade of consideration of emissions pricing by successive governments. Under the amended Climate Change Response Act 2002 (CCRA), it has the dual purpose of:

1. assisting Aotearoa to meet its international obligations under the United Nations Framework Convention on Climate Change, the Kyoto Protocol and the Paris Agreement
2. assisting Aotearoa to meet its 2050 emissions reduction target and emissions budgets.

The system was the first ETS in the world intended to cover all economic sectors and major GHGs over time. It took effect retrospectively from 1 January 2008, with sectors assuming emissions reporting and unit obligations in stages. As of February 2022, the system applies unit obligations to about 52% of Aotearoa's gross emissions.[3] It covers almost all emissions from fossil fuels, industrial processes and waste. It applies both unit obligations for deforestation and credits for eligible afforestation. Unit obligations for biogenic emissions from agriculture,[4] which account for about 48% of New Zealand's gross emissions,[5] have been deferred to date. Those emissions will face pricing under the NZ ETS or an alternative system starting no later than January 2025.

The NZ ETS allowed trading of units to and from the international Kyoto market from 2008 to mid-2015, at which point it de-linked. It currently operates as a domestic-only system.

The NZ ETS has had a series of reviews and amendments. The first review followed a change in Government in November 2008 and led to amendments which moderated the price impact of the system. The second review was done by statutory requirement in 2011 — and led to amendments which indefinitely extended the price moderation measures. The third review was done in two stages starting in 2015. The first stage resulted in an amendment to phase in a full one-for-one unit obligation in non-forestry sectors over 2017-2019 (see section 4.5). In mid-2017, the Government announced in-principle policy decisions to change post-2020 NZ ETS settings for unit supply, price management and linking. These were not legislated before the election in September 2017.

Starting in 2018, the new Government consulted on key climate change policies. In November 2019, the Climate Change Response (Zero Carbon) Amendment Act 2019 (ZCA) was passed, setting a new GHG target for 2050, providing for five-year emissions budgets and emissions reduction plans and establishing an independent advisory Climate Change Commission (CCC). Under the 2050 target:

- biogenic methane emissions[6] must be reduced at least 10% below 2017 levels by 2030 and 24–47% below 2017 levels by and beyond 2050
- all other GHGs much reach net zero by and beyond 2050.

In June 2020, the Climate Change Response (Emissions Trading Reform) Amendment Act 2020 (ETRA) was passed. This enacted substantial changes to unit supply, price management, industrial free allocation, forestry accounting, pricing of biogenic emissions from agriculture and coordination of future decisions on key settings.

Post-2020 NZ ETS policy is being developed under the amended CCRA framework. In May 2021, the CCC submitted its advice to the Government[7] on the first three emissions budgets (2022–2035) and the direction of policy for the first emissions reduction plan (2022–2025). This included recommendations for improving multiple aspects of the NZ ETS and positioning it in a broader policy portfolio. From July to September 2021, the government consulted on improving industrial free allocation and NZ ETS market governance.[8] In October and November 2021, the government consulted on the first emissions reduction plan.[9] Final Government decisions on emissions budgets through 2035 and the emissions reduction plan through 2025 are due by 31 May 2022. As of February 2022, work to shape the pricing of biogenic emissions from agriculture by 2025 is underway within He Waka Eke Noa (HWEN), the Primary Sector Climate Action Partnership,[10] the Government and the Climate Change Commission.

In November 2021, the Government announced a revised 2030 Nationally Determined Contribution (NDC) for New Zealand under the 2015 Paris Agreement: a reduction in net emissions of 50% below 2005 gross emissions by 2030.[11] The Government listed the reformed NZ ETS as a key policy tool for helping achieve New Zealand's NDC.

Table 1: Major milestones for the NZ ETS

2007	Apr	Government's Emissions Trading Group began NZ ETS design
2008	Jan	Forestry sector assumed unit obligations (retrospectively)
	Sep	Passage of the Climate Change Response (Emissions Trading) Amendment Act 2008
	Nov	New government began the first NZ ETS review
2009	Jan	Transport sector began voluntary reporting
	Nov	Passage of the Climate Change Response (Moderated Emissions Trading) Amendment Act 2009
2010	Jan	Stationary energy, industrial process and transport sectors began mandatory reporting
	Jul	Stationary energy, industrial process and transport sectors assumed unit obligations
	Dec	Government began the second NZ ETS review
2011	Jan	Waste, synthetic gas and agriculture sectors began voluntary reporting
	Dec	Ban on surrendering industrial-gas CERs took effect
2012	Jan	Waste, synthetic gas and agriculture sectors began mandatory reporting
	Nov	Passage of the Climate Change Response (Emissions Trading and Other Matters) Amendment Act 2012
	Dec	Ban on surrendering industrial-gas ERUs and large-scale-hydro ERUs/CERs took effect
2013	Jan	Waste and synthetic gas sectors assumed unit obligations
	Dec	Government announced future delinking of the NZ ETS from the Kyoto market
2014	May	Climate Change Response (Unit Restriction) Amendment Act 2014
2015	Jun	NZ ETS de-linked from the Kyoto market
	Nov	Government began the third NZ ETS review
2016	May	Passage of the Climate Change Response (Removal of Transitional Measure) Amendment Act 2016
2019	Nov	Passage of the Climate Change Response (Zero Carbon) Amendment Act 2019
2020	Jun	Passage of the Climate Change Response (Emissions Trading Reform) Amendment Act 2020
2021	Mar	Quarterly auctioning of NZUs began
	Jun	Fixed-price option no longer applied
	Nov	Government announced a revised 2030 NDC

Source: Leining (2021a). See the Annex for an explanation of acronyms.

4
Core design features
4.1 NZ ETS at a glance

Table 2: Summary of NZ ETS features as of February 2022

Commencement	· Effective from 1 January 2008; founding legislation passed in September 2008
Sectoral coverage	· Stationary energy, transport, industrial processes, waste, forestry (deforestation/ afforestation) and agriculture (reporting only to date) · All greenhouse gases (CO_2, CH_4, N_2O, HFCs, PFCs and SF_6)
Point of obligation	· Energy sector: Upstream where feasible; major fuel users can opt into obligations · Agriculture sector: Processor-level reporting at present; future options for unit and reporting obligations at the processor or farmer levels – inside or outside the NZ ETS · Other sectors: Point of emissions/removals unless designated otherwise
ETS unit supply	· New Zealand Units (NZUs) issued via auctioning, free allocation and entitlements for removals · Individual limits on auctioned and overseas units; overall limit on the sum of auctioned and overseas units and units available by other means (e.g., free allocation) without restricting the latter · Fixed-volume cost containment reserve operating through the auction · Free allocation and cost containment reserve units that cause an emissions budget to be exceeded must be backed by additional mitigation
Unit obligation	· One unit per tonne of CO_2e emissions
Free allocation	· Output-based free allocation for emissions-intensive and trade-exposed industrial producers · Fixed free allocation for pre-1990 forestry and fishing sectors (in the past) · Output-based free allocation for agricultural producers if unit obligations apply
Price management and banking	· Auction reserve price and confidential reserve price · Fixed-volume cost containment reserve with a trigger price at auction · Banking but no borrowing
Linking and offsets	· Currently a domestic-only system · Linkage to the international Kyoto market from 2008 to mid-2015 · Linkage to two domestic unit-based mechanisms (Permanent Forest Sink Initiative and Negotiated Greenhouse Agreements) – being phased out
Monitoring, reporting, verification and compliance	· Annual reporting and compliance periods · Use of default and unique emissions factors · Self-assessment of emissions with potential for government audit · Penalties apply for failure to surrender/repay units and report emissions
Legislation	· Climate Change Response Act 2002 and associated regulations
Institutional arrangements	· Ministry for the Environment leads policy oversight · Ministry for Primary Industries administers the forestry/agriculture sectors · Environmental Protection Authority administers the registry and compliance · Climate Change Commission provides independent advice on NZ ETS settings

4.2 Sectoral coverage and point of obligation

Current features (2022)

Obligations to both report emissions and surrender emissions units apply to the following sectors:

- forestry
- stationary energy (electricity and heat)
- transport
- industrial processes
- synthetic GHGs[12]
- waste.

Deforestation of pre-1990 forest land carries unit liabilities and entities can opt to receive emissions units for post-1989 afforestation. Biogenic emissions from agriculture (animal production and nitrogen fertilisers) currently carry reporting obligations only.

The system covers carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulphur hexafluoride (SF_6).

The NZ ETS excludes synthetic GHGs (HFCs and PFCs) in imported products, which are subject instead to a comparable levy. Entities can opt to receive units for embedding emissions in products or for destroying or exporting synthetic GHGs.

The entities with NZ ETS unit and/or reporting obligations (referred to as 'points of obligation') are defined by activity and subject to minimum thresholds. Energy-sector obligations generally apply upstream of emissions at the point of fuel production or import. Major fuel users can opt in as points of obligation with a corresponding carve-out of the upstream obligation.

Emissions reporting obligations for the agriculture sector currently apply at the processor level.[13] If the sector assumed unit obligations in 2025, as currently legislated, they would apply by default to processors for fertiliser and farmers for animals. Those settings could be changed to the alternative options (farmers and processors, respectively) by regulation. Unit obligations could begin earlier for both fertilisers and animals at the processor level if insufficient progress has been achieved by 2022 with the primary sector climate change commitments detailed in Schedule 5 of the CCRA. The legislation also enables pricing of farm-level emissions under an alternative system (see section 4.4).

In other sectors, obligations generally apply at the point of emissions or removals (see Table 3).

Changes over time

In the 2008 design of the NZ ETS, all economic sectors were to assume unit obligations in stages from 2008 to 2013. Some sector entry dates were adjusted in 2009. The synthetic GHG levy was established in the 2012 amendments. In 2020, the ETRA provided for the introduction of a new voluntary permanent forestry activity for post-1989 forests from 2023.

Unit obligations for biogenic emissions from agriculture were initially deferred from 2013 to 2015 (subject to review) in 2009 and then deferred indefinitely in 2012. In 2020, the ETRA provided for biogenic emissions from agriculture to face an emissions price no later than 1 January 2025 under either the NZ ETS (by default) or an alternative system for farm-level emissions (see section 4.4).

Rationale and practical outcomes

Broad coverage of sectors and GHGs was intended to support least-cost mitigation, equity and environmental integrity — as well as help achieve economy-wide targets. New Zealand's emission profile is dominated by biogenic emissions from agriculture (48% of gross CO_2e emissions in 2019) and energy (42%) while net forest sequestration offsets about 33% of gross emissions.[14] The Government's rationale for deferring unit obligations for agriculture in 2009 and 2012 included a lack of cost-effective mitigation options and competitiveness considerations. In 2020, the decision in the ETRA to proceed with pricing biogenic agricultural emissions from 2025 was influenced by the ambition of New Zealand's 2030

NDC and 2050 target, the need for all sectors to contribute to climate action and the administrative challenges of enabling farmer-level pricing for animal emissions.

Table 3: Sector coverage and points of obligation in the NZ ETS

Sector (start of unit obligations)	Points of obligation in the NZ ETS
Forestry (1 January 2008)	· Owner of forest land or forest owner with the agreement of the landowner
Liquid fossil fuels (1 July 2010)	· Owner of obligation fuel at the point where fuel goes through Customs and enters the market; large users can opt in with upstream carve-out
Stationary energy (1 July 2010)	· Point of fuel production or import for coal and natural gas; large users can opt in with upstream carve-out · Point of use for geothermal fluid · Point of emission for waste combustion · Point of petroleum refining involving the use of intermediate crude oil products for energy or feedstock purposes · Point of use of crude oil or other liquid hydrocarbons
Industrial processes (1 July 2010)	· Point of production; producers of products with embedded substances can opt in
Synthetic gases (1 January 2013)	· Point of import, manufacture or equipment operation
Waste (1 January 2013)	· Landfill operator
Agriculture (No later than 1 January 2025)	· Default: Processor for fertiliser (point of manufacture/import); farmer for animals (point of slaughter/dairy processing/export) · Alternative by Order in Council: Farmer or processor, respectively · Potential for an alternative pricing system for farm-level emissions or earlier entry at the processor level

Points of obligation were selected to keep compliance and administrative costs low, cover as many emissions as practicable, enable effective monitoring and verification and give appropriate emissions-reduction incentives. The system pioneered upstream points of obligation in the stationary energy and transport sectors.[15] The system covers almost all the fossil fuel, industrial process and waste sectors, with only 160 mandatory participants as of June 2021. The processor-level obligation for agriculture reduces participants from 20,000 to 30,000 small farm businesses to 77 processors.[16]

4.3 Sector outlook for forestry

Inclusion of the forestry sector with mandatory emissions liabilities as well as voluntary credits (an ETS world first) was intended to both discourage deforestation and incentivise afforestation. Deforestation had accelerated in Aotearoa in the lead-up to the first Kyoto commitment period (2008-2012). Applying an emissions price to the forestry sector with effect from 1 January 2008 proved an effective deterrent to deforestation and stimulated afforestation investment while emissions prices were sufficiently high.[17]

The sector-wide approach with continuous regulation has avoided the complexities of project-based crediting systems such as determining project baselines and accounting for leakage and non-permanence. To date, NZ ETS forestry definitions have generally mirrored international rules to help meet Aotearoa's international targets.[18] The system applies activity-based accounting using a 1990 reference year to distinguish 'additional' from 'business-as-usual' changes in forest carbon stocks reflecting pre-1990 land-use decisions. Carbon stock changes from management of pre-1990 forest, old-growth indigenous forest remaining in forest, fruit and nut trees and small-scale tree planting are excluded from the NZ ETS.

In the forestry sector to date, NZ ETS obligations have applied as follows:

- Pre-1990 forestry participants are liable for deforestation emissions unless they qualify for an exemption.[19] They are not liable for harvesting emissions if replanting occurs. Emissions returns must be submitted when deforestation occurs.
- Post-1989 forestry participants who opted into the NZ ETS before 2019 earn units as the forest grows and must surrender units to cover emissions from harvesting or deforestation (referred to as 'stock change' accounting). Emissions returns for registered post-1989 forest must be submitted within six months after the end of every five-year Mandatory Emissions Return Period (MERP) or when deforestation occurs. Emissions returns for post-1989 afforestation may be submitted voluntarily in any year.

In 2020, the ETRA enacted substantial changes to forestry accounting under the NZ ETS. Post-1989 afforestation registered from 1 January 2023 will be classified as either 'standard' or 'permanent'.

- Standard post-1989 forests will apply 'averaging' accounting rather than stock change accounting. Under averaging accounting, participants earn units as the forest grows up to the long-term average level of carbon stocks over multiple forest rotations. They do not face subsequent unit liabilities for harvesting or earn units for replanting after harvesting but remain liable for deforestation.[20] Standard post-1989 forests registered between 2019 and 2022 will be able to choose between stock change and averaging accounting.
- Permanent post-1989 forests are restricted from deforestation and clear-fell harvesting for at least 50 years and earn units using stock change accounting. From 1 January 2024, the new permanent forest activity will replace the Permanent Forest Sink Initiative (PFSI).[21] PFSI participants can opt into the NZ ETS under standard or permanent categories of post-1989 afforestation or choose to exit the system.

Figures 2 and 3 illustrate the different approaches to forestry accounting.[22] These changes are intended to increase incentives to register post-1989 afforestation in the NZ ETS and establish permanent forests.[23] As of September 2021, New Zealand had 2.1 million hectares of forest classified as either pre-1990 (67%) or post-1989 (33%). Of the total post-1989 forest (0.7 million hectares), 46% (0.3 million hectares) was registered in the NZ ETS.[24] Further forestry regulations will be enacted by October 2022 to enable implementation of the changes under the ETRA.

Policy challenges remain for managing forestry in the NZ ETS in alignment with New Zealand's climate change targets and broader goals for the land sector. Key examples include managing the balance between gross and net emissions reductions to achieve the 2050 target, incentivising native forests which grow and earn units more slowly than exotics but offer important co-benefits and rewarding improved management of pre-1990 forests and small-scale tree planting.[25]

Figure 2: Comparison of stock change and averaging accounting in the NZ ETS

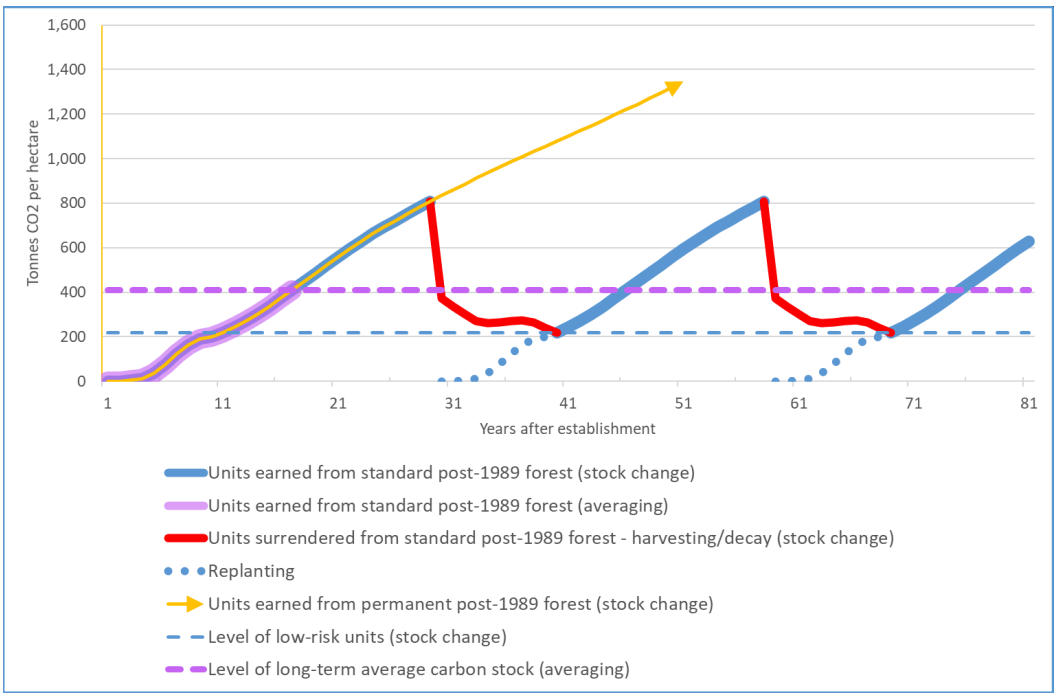


Figure 3: An example of units earned from different forestry regimes over 50 years

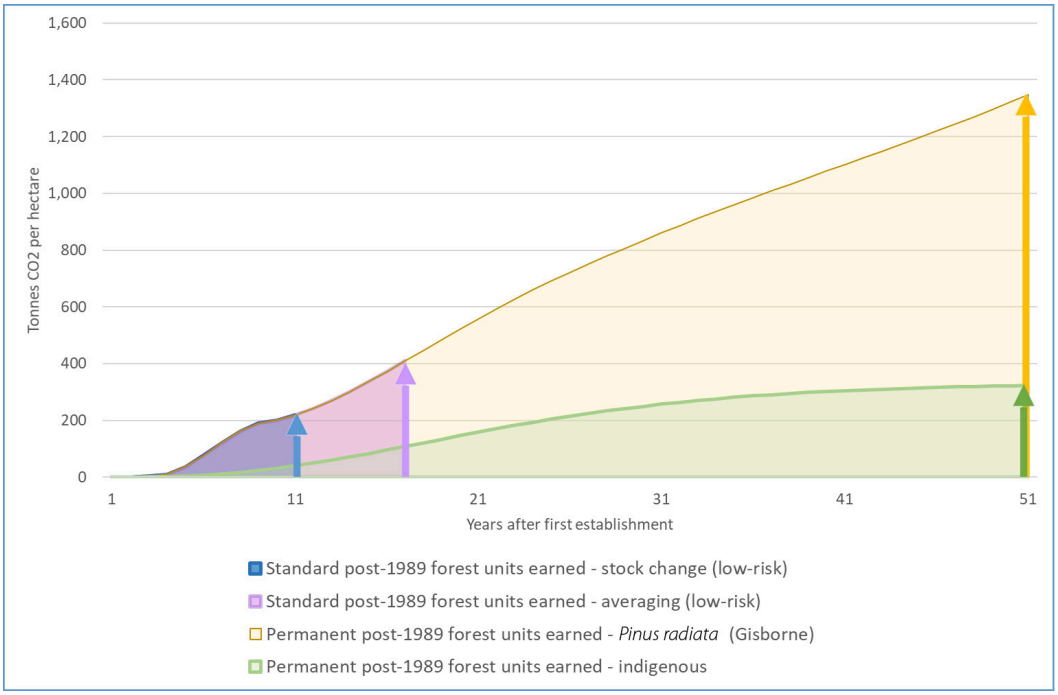


Figure 2 compares stock change and averaging accounting for post-1989 standard and permanent forest with *Pinus radiata* in Gisborne. In Figure 3, the arrows indicate total units earned over a 50-year period under alternative regimes, including permanent indigenous forest. The figures assume harvesting of standard forest every 28 years and a long-term average carbon stock level after 16 years. Permanent forest will accrue carbon beyond 50 years until it reaches a steady state but default values are not available. 'Low risk' units are less likely to be repaid or surrendered unless deforestation occurs or the forest is deregistered from the NZ ETS. Source: Data from Schedule 6 of the Climate Change (Forestry Sector) Regulations 2008; harvesting and averaging assumptions from Ministry for Primary Industries (2021).

4.4 Sector outlook for agriculture

New Zealand's agriculture sector generates biogenic emissions from the production of animals and use of synthetic nitrogenous fertilisers. The other emissions and removals associated with agricultural production (e.g., from energy, waste and forestry) are attributed to other sectors and already face the emissions price under the NZ ETS. Pricing of biogenic agricultural emissions has been enabled (but not implemented) under the NZ ETS since its inception, with default obligations at the processor level. Mandatory reporting of those emissions at the processor level began in 2012 but unit obligations have been deferred to date.

Government policy decisions in 2019 to proceed with pricing biogenic agricultural emissions were informed by recommendations from New Zealand's Interim Climate Change Committee (ICCC), the precursor to the CCC.[26] The ICCC recommended pricing emissions at the processor level for fertilisers through the NZ ETS and at the farmer level for animals through a levy/rebate system. It suggested starting pricing both fertiliser and animal emissions at the processor level as soon as practicable and shifting animal emissions to the levy/rebate from 2025. It proposed a hybrid approach to free allocation that combined output-based and land-based elements. It proposed returning the revenue from the levy to the sector for further mitigation programmes using a dedicated Agricultural Emissions Fund. The ICCC also called for investigation into options for rewarding pre-1990 forest management and small-scale tree planting on farms.

As discussed in section 4.2, the ETRA provided for the pricing of biogenic emissions to begin under the NZ ETS no later than 1 January 2025. By default, unit obligations for fertiliser emissions would apply at the processor level and for animal emissions at the farmer level. Reporting of animal emissions would change from the processor to the farmer level from 1 January 2024. The point of obligation for either emissions source could be changed to the alternative by regulation.

The ETRA enshrined primary sector climate change commitments to prepare farmers for emissions pricing. HWEN, the Primary Sector Climate Action Partnership, is tasked with meeting specific targets for farm emissions reporting and farm plans. The CCC must conduct a review of progress by 30 June 2022 and assess the sector's readiness to assume NZ ETS obligations for animal emissions. If sufficient progress has not been achieved, unit obligations can begin for emissions from both fertilisers and animals at the processor level earlier than 2025 (and as early as 2022). This pathway would require an Order in Council.

In addition, the ETRA requires the Minister of Climate Change and Minister of Agriculture to report on an alternative pricing system for farm-level emissions no later than 31 December 2022. The scope could include removals. This work is to be informed by advice from the CCC on what assistance, if any, should be provided to participants. As part of its work programme, HWEN is developing recommendations for the alternative pricing system.[27] These will be completed in 2022 for consideration by Ministers.

4.5 Unit supply and unit obligation

Current features (2022)

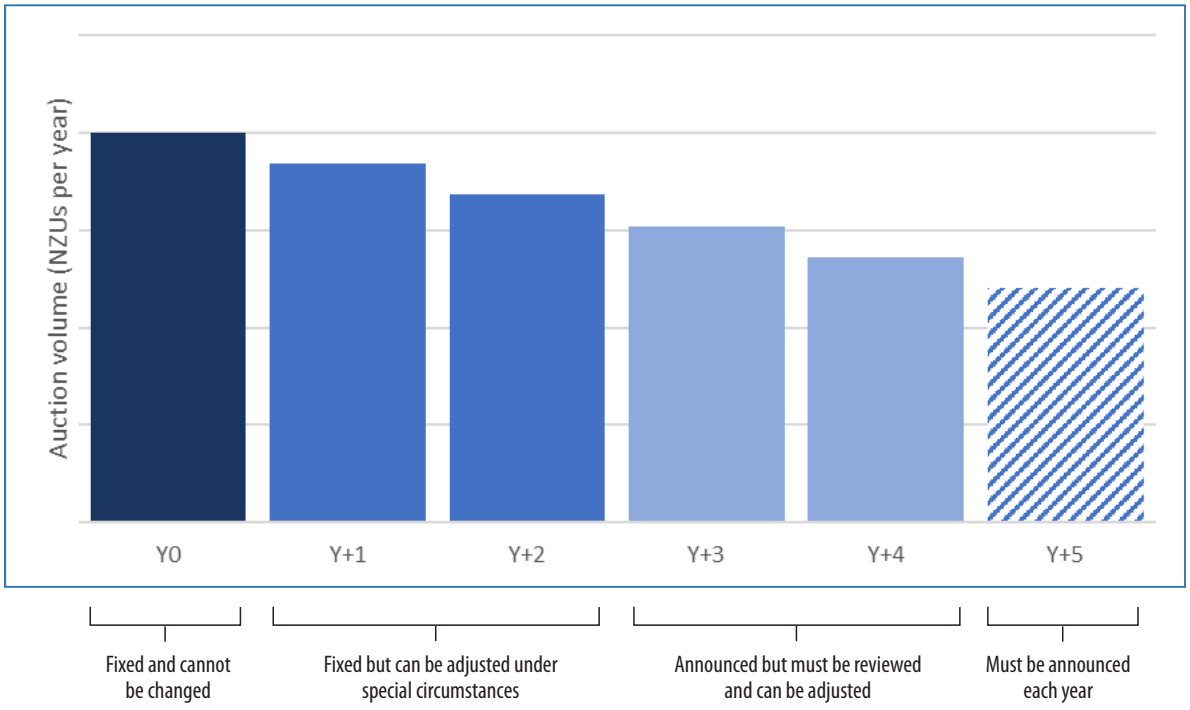
New Zealand Units (NZUs) are the primary domestic unit of trade. An NZU represents one metric tonne of carbon dioxide equivalent and can cover both emissions and removals. NZUs have no vintage date and do not expire. When issuing NZUs, the government must consider matters including New Zealand's international climate change obligations and effective operation of the system.

NZUs are issued via government auctioning, free allocation (currently limited to output-based free allocation in the industrial sector) and entitlements for forestry and industrial removals. NZUs are also issued under the PFSI,[28] which will end in 2023, and Negotiated Greenhouse Agreements (NGAs), the last of which will end in 2022.[29] Participants in all sectors must surrender one NZU against each tonne of emissions for which they are liable and participants in post-1989 forestry and other removal activities earn one NZU per tonne of removals.

Through regulations, the NZ ETS sets sub-limits on auctioning and overseas units[30] within an overall limit on supply that also accounts for units available by other means (e.g., free allocation or NGAs). The overall limit does not restrict the units available by other means. The regulations also prescribe the volume of a cost containment reserve (included in the auction volume and overall limit) whose units are released for auction when an auction trigger price is reached (see section 4.7).[31] The overall limit is intended to decline over time in a way consistent with Aotearoa's emissions budgets and 2050 target. To the extent that units from free allocation, NGAs or the cost containment reserve cause an emissions budget to be exceeded, they must be backed by further emissions reductions generated domestically or offshore.

The government decides the settings for unit supply for five years in advance and they are extended by one year each year. As shown in Figure 4, decisions are fixed only for the first year of each five-year block (Y0) on a rolling basis. The settings for any of the subsequent four years can be adjusted (subject to constraints) at the same time decisions are made each year on the next extension year (Y+5).

Figure 4: Five-year rolling process for setting unit supply



Source: Adapted from Ministry for the Environment (2021d).

Auctioning is held on a quarterly basis and operated on behalf of the government by the NZX Managed Auction Service.[32] Auction participants must have an account in the New Zealand Emissions Trading Register and meet registration requirements. Units not sold in any one auction are carried forward to the next auction within the calendar year. Unsold units are not carried forward across calendar years.[33] Auctioning generates government revenue. Starting in 2022, NZ ETS auction proceeds will be used to support emissions reductions programmes through a Climate Emergency Response Fund.[34]

Changes over time

In the 2008 design, each NZU had to be backed by a Kyoto unit held by the Crown no later than the date for demonstrating compliance under the first Kyoto commitment period.[35] This requirement was removed (with retrospective application) in the 2012 amendments.

Although auctioning was enabled in legislation from 2012, it was not implemented until 2021. Past sources of unit supply which are no longer operational included:

- free allocation in the forestry and fishing sectors (see section 4.6)
- the option to purchase NZUs at fixed price for immediate surrender (see section 4.7)
- eligible offshore Kyoto units (see section 4.8).

If the agriculture sector were to assume unit obligations under the NZ ETS, free allocation would be provided on an output basis, providing a further source of supply.

In the 2008 design, all emissions and removals were assessed at one unit per tonne. In 2009, the unit obligation for non-forestry sectors was reduced to one unit per two tonnes of emissions. This was extended indefinitely in 2012. Following the 2016 amendments, a one-for-one unit obligation was phased in for non-forestry sectors as follows: one unit per 1.5 tonnes (67%) in 2017, one unit per 1.2 tonnes (83%) in 2018 and one unit per tonne (100%) from 2019 onward.

Rationale and practical outcomes

From 2008 to mid-2015, the NZ ETS intentionally used the international Kyoto market — rather than government auctioning — to help supply units and set the domestic price (see section 4.8). This approach clearly distinguished the NZ ETS from the previously proposed carbon tax, which would have returned revenue to the Government. It also avoided restricting unit supply in the domestic market, allowing domestic emissions to continue increasing. Since de-linking the NZ ETS from the Kyoto market in mid-2015, only NZUs have been eligible for surrender. During the gap between the end of linking and the start of auctioning, participants relied on stockpiled NZUs alongside ongoing supply from industrial free allocation and removals to satisfy demand. NZUs issued for free allocation and removal entitlements from inception through 2020/2021 are shown in Figure 5. Regulated NZU supply settings for 2021 through 2026 (as of February 2022) are shown in Figure 6.

Reducing the unit obligation for non-forestry sectors from 2009 was intended to moderate the system's cost during a time of recession. The Government's 2016 decision to phase in a one-for-one unit obligation for non-forestry sectors over 2017-2019 was intended to manage fiscal risks, transfer more mitigation responsibility to emitters, moderate the cost adjustment for households and firms and maintain market stability.

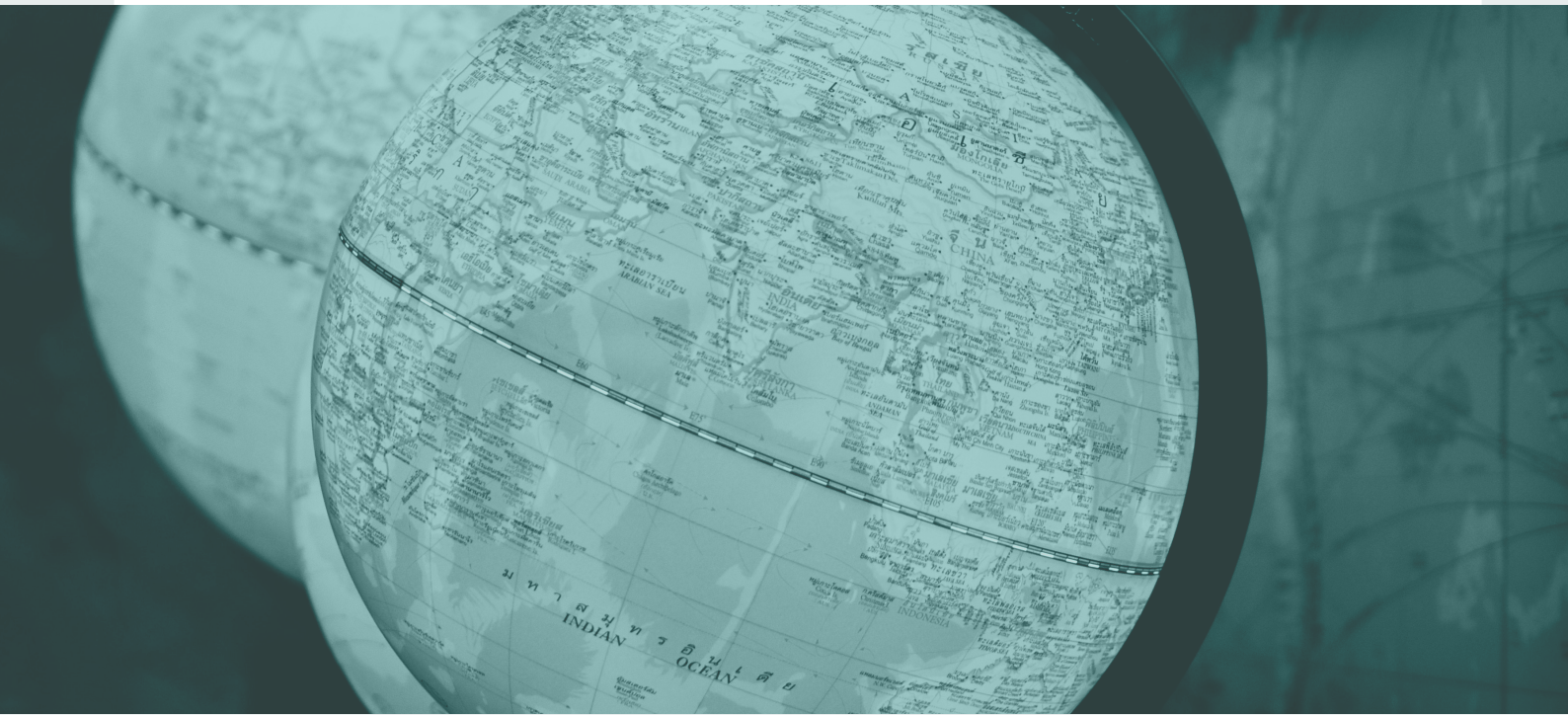
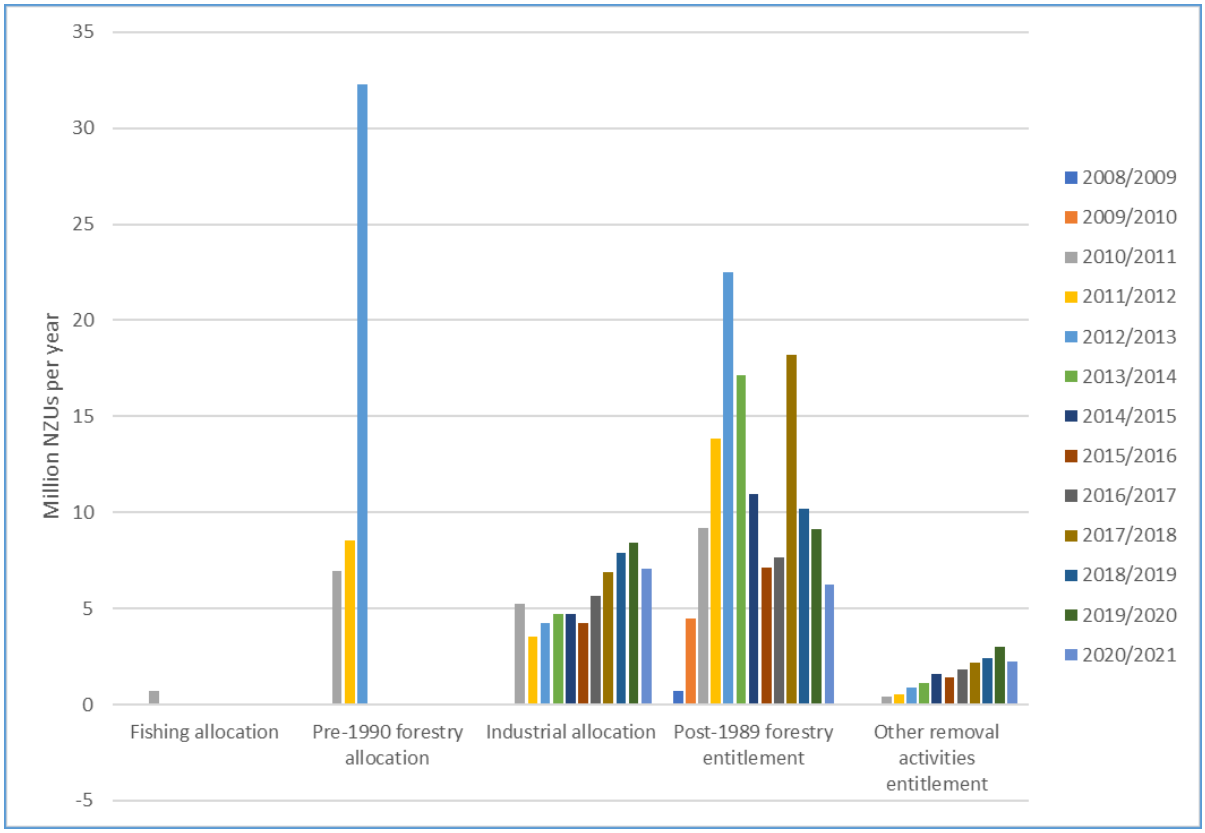
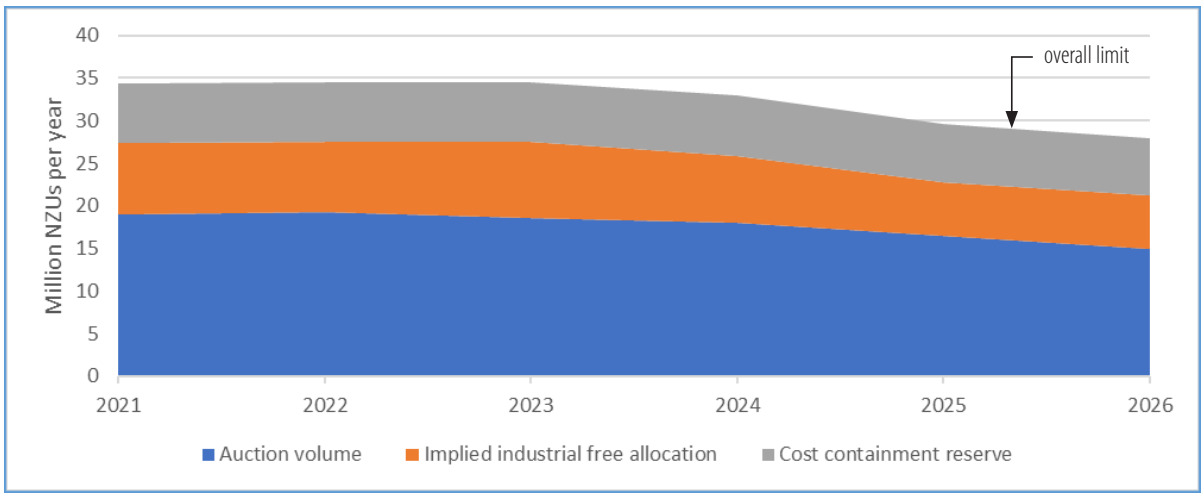


Figure 5: NZUs issued for free allocation and removal entitlements (net of repayments): 2008/2009 to 2020/2021



Financial years operate from July to June. The 2010 compliance year covered July through December for non-forestry sectors. Over 2010–2016, industrial free allocation was provided at 50% of the full entitlement while the one-for-two unit obligation was in place. This increased to 67% in 2017, 83% in 2018 and 100% in 2019. Pre-1990 forestry allocation has included some net repayments from 2015/2016 onward but they are not evident at this scale. Source: Data from Environmental Protection Authority (2021b).

Figure 6: Overall limit on NZU supply for 2021 to 2026 (as of February 2022)



Note the regulated settings for years 2023 to 2026 are subject to change. Source: Data from Climate Change (Auctions, Limits, and Price Controls for Units) Regulations 2020.

4.6 Free allocation

Current features (2022)

Output-based free allocation is given annually to eligible emissions-intensive and trade-exposed industrial producers. Two emissions intensity thresholds determine eligibility: moderately intensive sectors have an emissions intensity of 800–1,600 t CO_2e/million NZD revenue and highly intensive sectors have an emissions intensity of at least 1,600 t CO_2e/million NZD revenue. An activity qualifies as trade exposed unless there is no international trade of the output of the activity across oceans or it is not economically viable to import or export the output of the activity. Electricity generation is deemed explicitly not trade exposed. Producers can be eligible to receive free allocation regardless of if they are also points of obligation in the NZ ETS.

The scope of industrial free allocation includes both direct emissions from stationary energy and industrial processes and indirect emissions from purchased electricity. The amount of free allocation is calculated as the product of annual output, an allocative baseline for that output[36] and a level of assistance. It is awarded provisionally based on the previous year's production and adjusted for actual production. In 2022, the levels of assistance are 88% and 58%, respectively.

Changes over time

In the 2008 design, the total amount of industrial free allocation was fixed at 90% of 2005 levels with no expansion for new entrants. The allocation methodology for the fixed amount was not specified in legislation. Industrial free allocation was to be phased out over 2019 to 2029.

In 2009, industrial free allocation changed to an output basis without an overall quantity limit and the phase-out rate was slowed. The initial levels of assistance for industrial free allocation, which applied from mid-2010 through 2020, were 90% for highly emissions-intensive producers and 60% for moderately emissions-intensive producers. While a partial unit obligation applied through 2018, free allocation was credited on the same partial basis. The 2012 amendments deferred the phase-out of industrial free allocation indefinitely.

In 2020, the ETRA initiated a default phase-out for industrial free allocation by reducing the levels of assistance by one percentage point per year from 2021 to 2030, two percentage points per year from 2031 to 2040 and three percentage points per year from 2041 to 2050. The phase-out rates can be amended in either direction if supported by advice requested from the CCC. In 2021, the Government consulted on future improvements to industrial free allocation in the NZ ETS.[37]

By legislation, fixed amounts of free allocation were also provided to owners of pre-1990 forest and fishing quota recipients. For pre-1990 forest owners, this occurred in two stages: at the time of registration and in 2013. The amount varied according to features of forest ownership defined in legislation. Commercial fishers received free allocation on a one-off basis in 2010. These sectors no longer receive free allocation.

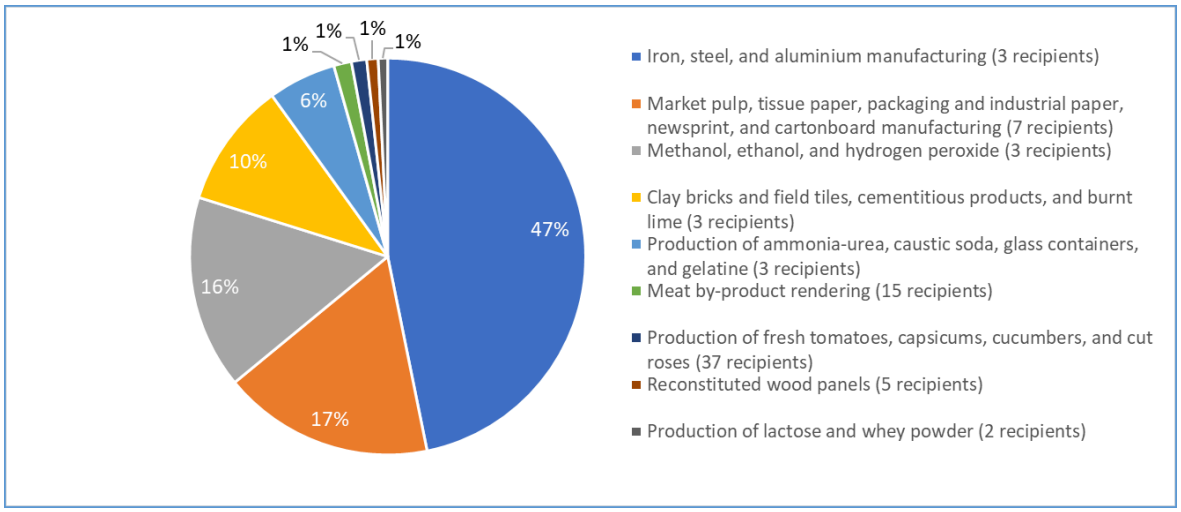
If biogenic agricultural emissions assume unit obligations in the NZ ETS, they will be eligible for output-based free allocation starting with a level of assistance of 95%.

Rationale and practical outcomes

Free allocation can help producers adjust more gradually to the cost of emission constraints while they continue to face incentives to reduce emissions. One-off free allocation to the forestry and fishing sectors was intended to help compensate for loss in asset value due to the NZ ETS. Ongoing output-based free allocation to emissions-intensive and trade-exposed industrial producers was intended to prevent leakage of production and emissions offshore. It was also intended to avoid economic regrets from losing domestic production that would be competitive if more jurisdictions had comparable emissions pricing.[38] Non-trade-exposed producers (such as electricity generators and transport fuel suppliers), which can pass on emission costs to their customers, are not eligible for free allocation.

In FY 2020–2021, 7.1 million NZUs were allocated for free, equivalent to 18 per cent of the surrender volume of 38.9 million units.[39] The breakdown of final allocation decisions across 78 recipients in 2020 is provided in Figure 7. In that year, the five largest recipients received 75% of the total free allocation.[40]

Figure 7: Final industrial free allocation decisions: 2020



Source: Data from Environmental Protection Authority (2021c).

4.7 Price management and banking

Current features (2022)

The NZ ETS operates with three price management measures.

1. An auction reserve price (a form of price floor) sets a minimum price at which the government will sell units at auction.
2. A confidential reserve price at auction is set by the Minister based on prevailing prices in the secondary market and helps align auction prices with those in the secondary market.
3. A cost containment reserve (a form of price ceiling) holds a fixed volume of NZUs that are released if the cost containment reserve trigger price is reached in the auction.

These measures do not constrain emissions prices in the secondary market or prevent the auction price from exceeding the cost containment reserve trigger price. For 2022, the auction reserve price was set at NZ$30 per unit, the cost containment reserve trigger price at NZ$70 per unit and the cost containment reserve volume at 7 million NZUs.[41] The auction reserve price and cost containment reserve trigger price are set to increase 5% and 10% per year plus inflation, respectively. As with unit supply, price management settings are decided for five years in advance and extended by one year each year, with flexibility for adjustments subject to constraints (see Figure 4). The trajectories for the auction reserve price and cost containment reserve trigger price as of February 2022 are shown in Figure 8.

The NZ ETS permits unlimited banking of NZUs but not borrowing of NZUs from future years. However, emissions are reported on a calendar-year basis and compliance units must be surrendered by 31 May in the following year. This enables free allocation recipients to help meet obligations from one year, using free allocation received in respect of the following year's emissions.

Changes over time

In the 2008 design, the NZ ETS did not include a price ceiling or price floor. It allowed both banking of all unit types and surrenders of international Kyoto units without quantity limits. The 2009 amendments introduced a fixed price option (a form of price ceiling) set at NZ$25 per tonne. This was extended indefinitely in 2012. The system stopped accepting international Kyoto units in mid-2015.

In 2020, the ETRA provided for the fixed price option to increase to NZ$35 per tonne for surrenders covering 2020 emissions and then be discontinued for emissions from 2021 onward. The transition out of the fixed price option overlapped with the introduction of the new price management mechanism described above in 2021.

Rationale and practical outcomes

In the 2008 design, the system relied on participants' unlimited use of international Kyoto units and banking to support market liquidity and help guard against price volatility. The introduction of the NZ$25 fixed-price option in 2009 provided a further safeguard against high emission prices. With the one-for-two unit obligation in place from 2010 to 2016, the system provided an effective emission price ceiling of NZ$12.50 per tonne for non-forestry sectors.

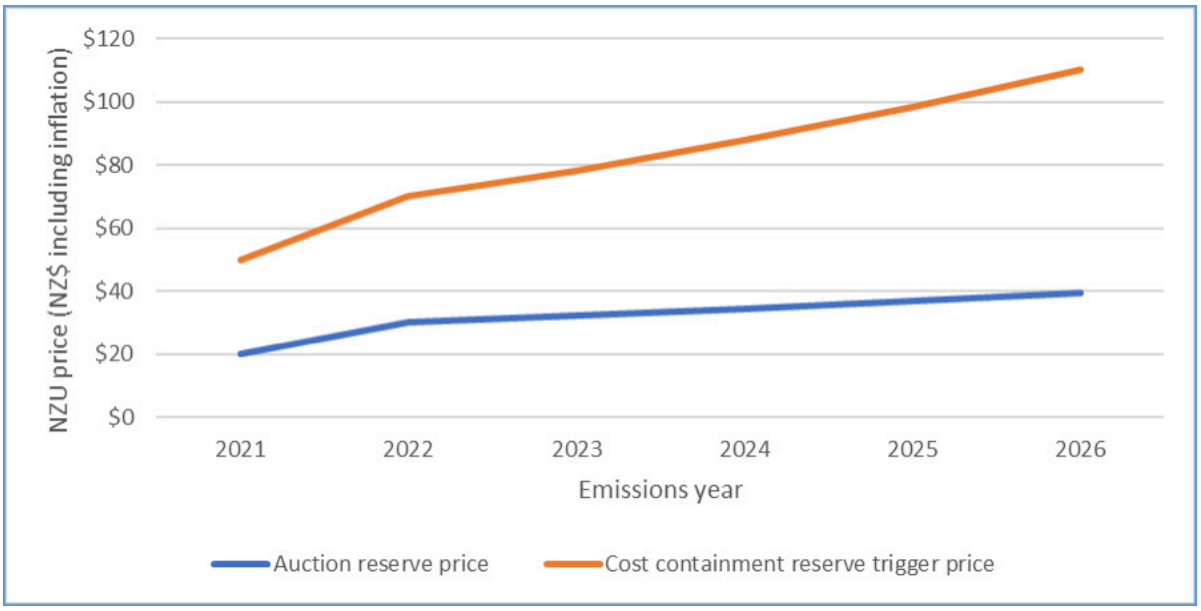
While the system was linked to the international Kyoto market (see section 4.8), international emissions prices set domestic prices. As a result of global oversupply of Kyoto units made worse by the global financial crisis and withdrawal of the US and Canada from the Kyoto Protocol, the prices of international Kyoto units declined from mid-2011 — and NZU prices followed suit (see Figure 9).

When the prospect of future de-linking from the Kyoto market arose in late 2012 (the result of the Government's decision to take its emissions reduction target for the 2013-2020 period outside of the Kyoto Protocol), NZUs began to command higher prices than international Kyoto units. Across the period from 2011 through 2015, many NZ ETS participants chose to stockpile NZUs issued for free allocation and removals and meet their obligations using lower-cost offshore Kyoto units. After delinking in mid-2015, participants shifted to surrendering NZUs. As domestic emissions prices rose toward the level of the fixed price option, more participants opted to use that option (see Figure 10).

Banking has given participants flexibility to manage their obligations strategically over time. This feature is particularly valuable in a system where annual emissions can be affected significantly by variable levels of renewable generation, operational changes by large producers and forest harvesting/replanting. However, motivated by arbitrage opportunities associated with first offshore units and then the fixed price option, participants have accumulated a substantial stockpile of NZUs which has exceeded annual surrender volumes by a factor of more than three to five since 2017 (see Figure 11).

Despite the market being significantly overallocated for several years, domestic emissions prices have continued to rise, driven by market expectations for long-term unit supply constraints and continuation of banking.

Figure 8: Price management trajectory: 2021 to 2026 (as of February 2022)

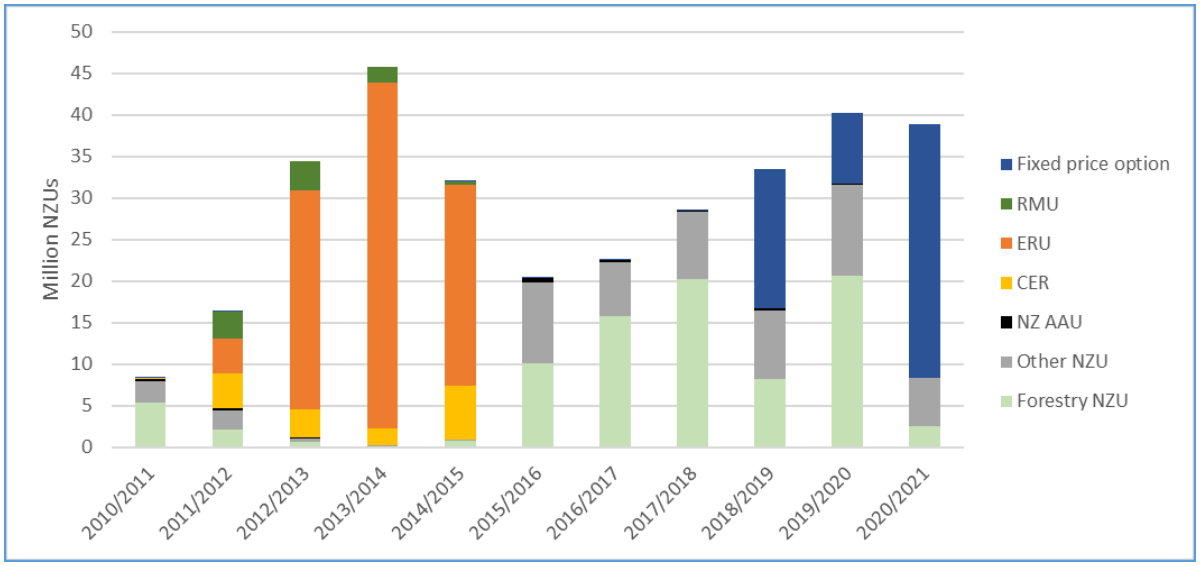


Note the regulated settings for years 2023 to 2026 are subject to change. Source: Data from Climate Change (Auctions, Limits, and Price Controls for Units) Regulations 2020.

Figure 9: NZU prices in the NZ ETS: 2010 to 2021

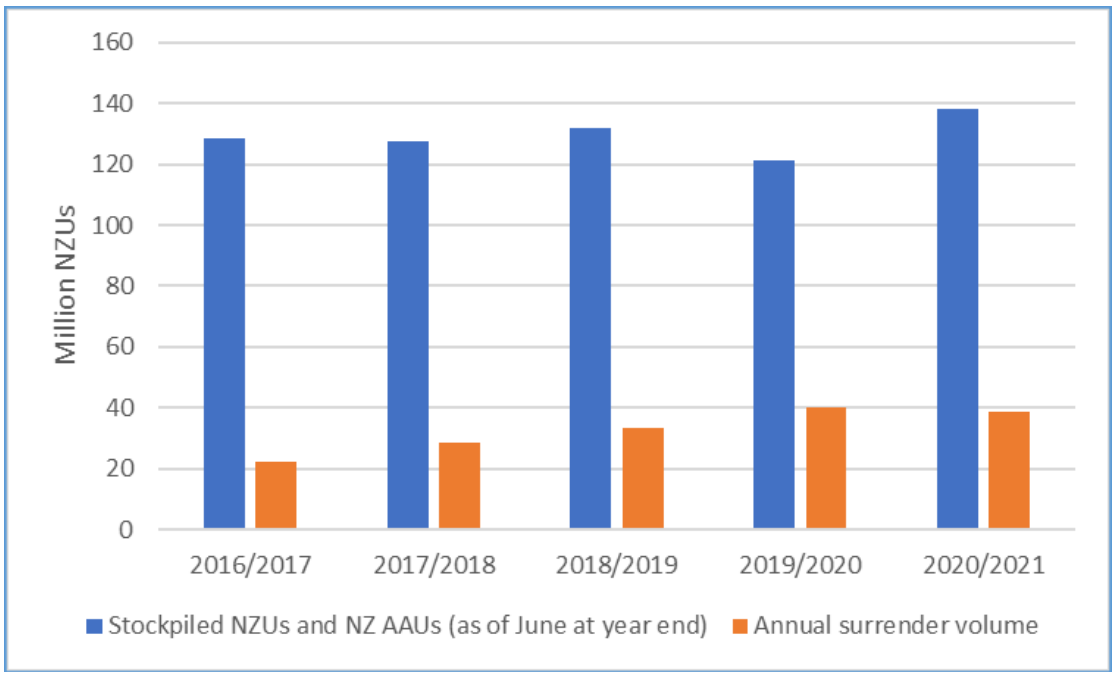
Source: Data from Jarden. Reprinted with permission.

Figure 10: Unit surrenders in the NZ ETS: 2010/2011 to 2020/2021



The 2010 compliance year covered July through December. See the Annex for an emissions unit typology. From 2010-2016, non-forestry sectors surrendered one unit per two tonnes of emissions. This increased to one unit per 1.5 tonnes in 2017, one unit per 1.2 tonnes in 2018 and one unit per tonne in 2019. Source: Data from Environmental Protection Authority (2021a).

Figure 11: NZU stockpile compared to the annual surrender volume: 2016/2017 to 2020/2021



Source: Data from Environmental Protection Authority (2021a, e).

4.8 Linking and offsets

Current features (2022)

Linking refers to recognising units from another ETS or external mechanism, for compliance by participants. Although linking was a prominent feature in the past, the NZ ETS currently operates as a domestic-only system. The legislation enables recognition of overseas units by regulation, which leaves open the possibility of future linking. If the system did re-open to offshore units in the future, they would be subject to a sub-limit within the overall limit on unit supply.

The NZ ETS accepts units issued under two domestic unit-based mechanisms which are being phased out: the PFSI (ending after 2023) and NGAs (ending in 2022).[42]

Changes over time

In the 2008 design, the NZ ETS had both buy-and-sell linkages with the international market under the Kyoto Protocol, with buying primarily through the Clean Development Mechanism and Joint Implementation. Some restrictions applied to the types[43] but not the quantity of international Kyoto units that could be surrendered. NZUs from all sectors were eligible for conversion to New Zealand Assigned Amount Units (NZ AAUs) for sale overseas. When the price ceiling was introduced in 2009, unit exports were permitted only for forestry NZUs after exchange for NZ AAUs. The NZ ETS de-linked from the Kyoto market in mid-2015.

The Government's 2002 climate change policy package, based around a proposed carbon tax, had included three domestic unit-based mechanisms: PFSI, NGAs and Projects to Reduce Emissions (PRE). These mechanisms generated units which were tradable in the NZ ETS or offshore. The Government honoured NGA and PRE commitments after the policies were discontinued. As discussed in section 4.3, the PFSI will be replaced by the new permanent post-1989 forest activity being introduced in the NZ ETS from 2023.

Rationale and practical outcomes

Given Aotearoa's relatively small market, higher-cost domestic mitigation opportunities and interest in international cooperation, the NZ ETS was fundamentally conceived as an internationally linked ETS. It was designed to operate nested within the international Kyoto cap and use the Kyoto market to supply units and set the domestic price. This was to let NZ ETS participants access least-cost mitigation options globally in a manner consistent with the Kyoto Protocol — and to make efficient domestic production and investment decisions influenced by the international price of emissions.

As discussed in section 4.7, operating with an unconstrained international linkage left the NZ ETS market fully exposed to international emissions prices through mid-2015. As those prices declined from 2011, so did emissions prices in the NZ ETS. This price decline removed the incentive to reduce domestic emissions and led to the purchase and surrender of offshore Kyoto units accompanied by stockpiling of NZUs. The New Zealand Government ended the first Kyoto commitment period (2008–2012) with a large surplus of Kyoto units. The Government carried those units into the 2013–2020 period and used some of them to help meet its 2020 target under the UNFCCC.[44]

Over time, New Zealand officials have explored bilateral linking options with other ETS. No ETS linking agreements have been reached to date. Aotearoa continues to support the development of global carbon market mechanisms and advancement of longer-term emissions trading opportunities through multilateral, regional and bilateral initiatives.

4.9 Monitoring, reporting, verification and compliance

Current features (2022)

Annual compliance periods for reporting emissions and surrendering units apply to most participants. Post-1989 forest owners who opt into the NZ ETS have a mandatory emissions reporting period of five years. However, they can voluntarily report annually to receive units and must report when making changes to their registration in the system.

To calculate emissions, default emission factors are provided for all sectors. Non-forestry participants have the option to apply for unique emission factors in some cases.[45] When measuring changes in forest carbon stocks in post-1989 forests, participants with less than 100 hectares must use Government look-up tables, whereas those with areas of 100 hectares or more must use a Field Measurement Approach involving sample plots. For measuring deforestation emissions, pre-1990 forest participants must use Government look-up tables.

Participants follow a 'self-assessment' model for emissions monitoring, reporting and verification (MRV). No independent third-party verification is required of emission reports but the Government has the power to conduct audits. Each year, the Environmental Protection Authority selects a sample of NZ ETS participants and free allocation recipients for internal and third-party reviews of compliance.

For infringements from 1 January 2021, the following penalties apply:[46]

- Participants who fail to surrender or repay units by the due date must supply the units and pay a financial penalty calculated as the dollar value of the emissions price on the due date, multiplied by three. Exceptions apply for some post-1989 forestry activities carried out before 1 January 2023 involving liabilities of less than 25,000 units.
- Participants who fail to submit an emissions return or allocation adjustment by the due date (or who submit incorrect information in an emissions return or allocation application/adjustment) must pay a financial penalty calculated as the amount of emissions/removals/units involved, multiplied by the dollar value of the emissions price on the due date, multiplied by a 'culpability factor'. The culpability factor varies according to if the participant did not take reasonable care, was grossly careless or knowingly failed. No penalty applies if reasonable care was taken.

Penalties not paid accrue interest. The Environmental Protection Authority publishes an annual list of those who incurred penalties. The Authority reports names and penalty amounts in all cases of surrender failures — and in cases of reporting failures involving gross carelessness or knowing failure.[47]

Changes over time

A different penalty regime applied under the CCRA before the passage of the ETRA. Failure to surrender emissions units resulted in a requirement to supply those units and pay a financial penalty of NZ$30 per unit. Interest accrued until the penalty was paid. Failure to comply with data collection, record-keeping, reporting, registration or notification requirements carried a fine (subject to court proceedings). Knowingly providing false information carried a larger fine and/or a prison term.

Rationale and practical outcomes

The calendar-year basis for emissions reporting aligns with the Government's processes for national GHG inventory reporting and target assessment under its international obligations. It does not align with the Government's (or participants') financial year for budget decisions or organisational accounting.

Providing default emission factors and forestry look-up tables is intended to reduce administrative complexity and costs and support consistency of emissions reporting. Enabling unique emission factors accommodates those who deviate significantly from the average and can help with improving the precision of the national GHG inventory. The Field Measurement Approach is intended to improve the precision of emissions reporting for those with large areas of post-1989 forest.

The 'self-assessment' model for MRV is modelled on the New Zealand tax system. The combined possibility of an audit and substantial penalties acts as a deterrent for non-compliance. Applying a unit make-good

requirement (plus a financial penalty for failing to surrender units) is intended to safeguard the system's environmental integrity.

The 2015/2016 review of the NZ ETS concluded the compliance regime "… was not fit for purpose, was not rigorous enough to sufficiently deter non-compliant behaviour, did not provide certainty for participants and created a significant administrative burden." The Government made changes under the ETRA that were intended to:

- raise the financial penalties for surrender failures (in the context of rising market prices and fiscal risks to the Government from surrender failures)
- align more closely with ETS compliance regimes in other jurisdictions to help future linking
- give a more nuanced and efficient approach to infringements for low-level offending (using a strict liability approach instead of involving the court system)
- make allowances for post-1989 forestry participants during a time of transition to new accounting rules.[48]

4.10 Legislative and institutional arrangements

Current features (2022)

The enabling legislation for the NZ ETS is the CCRA. This Act also defines institutional arrangements for meeting New Zealand's international climate change obligations. More operational specifications are defined by regulations. Both legislation and regulations can be amended as required to improve operation of the system and adapt it to changes in policy.

The main ministerial responsibilities for the NZ ETS rest with the Minister of Climate Change or the Minister of Finance. Operational responsibilities for the NZ ETS are defined in legislation and delegated to specific government departments. The Environmental Protection Authority fulfils most general administrative, compliance and registry functions. The Ministry for Primary Industries manages operations for forestry and agriculture, under delegation from the Environmental Protection Authority. The Ministry for the Environment administers the CCRA and leads development of NZ ETS and overarching climate change policy, collaborating with other departments. The allocation of responsibilities across government departments is confirmed in a Memorandum of Understanding and detailed in an ETS Operations Manual.

Unit transactions under the NZ ETS are managed through the New Zealand Emissions Trading Register. Selected information on unit holdings and transactions is reported publicly by the Environmental Protection Authority on an annual basis under its legislative requirements.

Under the amended CCRA, the CCC provides independent technical advice to the Government on reviews of the 2050 target, emissions budgets, the direction of policy for emissions reduction plans, NZ ETS operational matters and other issues requested by the Minister of Climate Change under section 5K. In all cases, decisions rest with the Government. For NZ ETS operational matters, the Commission's responsibilities to date include:

- advice on recommended limits and price control settings for units in the NZ ETS (annual from 2022)
- advice on progress towards achieving the primary sector climate change commitments and the readiness of livestock farmers to start complying with NZ ETS requirements (2022) (see section 4.4)
- advice on what level of assistance, if any, should be given to participants in an alternative pricing system for farm-level emissions (2022)
- advice on changes to the level of assistance for industrial free allocation (if requested by the Minister of Climate Change).

The NZX Managed Auction Service does auctioning on behalf of the Government (see section 4.5). The provider was selected through a competitive tender. The ETRA provides for the Government to appoint an independent auction monitor by regulation. Until that appointment has been made, the Ministry for the Environment serves as the interim auction monitor.[49]

Changes over time

In the 2008 design, operational responsibilities were delegated to the Ministry of Economic Development,[50] Ministry of Agriculture and Forestry[51] and Ministry for the Environment. Delegations were adjusted in 2011 with the establishment of the Environmental Protection Authority.

While Aotearoa had an emissions reduction target under the Kyoto Protocol (2008–2012), a common registry (then called the New Zealand Emissions unit Register) was used to administer unit transactions relating to both New Zealand's international obligations under the Kyoto Protocol and the NZ ETS.

In 2021, the Government consulted on options for improving market governance.[52] No decisions had been taken as of February 2022.

Rationale and practical outcomes

Administration of the NZ ETS is complex and relevant to the domain of multiple government departments. Ensuring clear delegation of responsibilities and coordination among departments was a priority throughout the design and implementation of the system. The separation of administrative and registry functions from policy making functions has helped distribute effort and decision-making authority across departments and improve transparency.

Delegating NZ ETS operations for forestry and agriculture to the Ministry for Primary Industries has enabled subject specialists to meet the unique needs of NZ ETS participants in those sectors.

Enabling independent technical advice on NZ ETS settings by the CCC is intended to improve the quality, consistency and credibility of Government decision making over time.

The power to appoint an independent auction monitor was given in the ETRA to safeguard the integrity of the auction mechanism and help ensure effective operation of the market. The auction monitor is tasked with monitoring the conduct of auction agents and participants, periodically assessing the auction system and recommending improvements, supporting reporting of key metrics and providing further functions requested by the Minister. Requirements apply for the sharing and management of confidential information involving the auction monitor.

5
Emissions trends in NZ ETS sectors

The Government's 2015/2016 review of the NZ ETS concluded that while the NZ ETS had operated with integrity and supported the Government with meetings its international targets, it had not had a significant impact on domestic emissions or business decisions (outside of the forestry sector) because of sustained low emissions prices and policy uncertainty. As shown in Figure 12, gross emissions in non-forestry sectors remained relatively stable (with minor fluctuations) over the period from 2010 to 2019.

Analysis suggests landowner decisions on deforestation and afforestation were influenced by emissions prices but also by other factors, such as timber and agricultural commodity prices. The fall in emissions prices after 2011 increased incentives for deforestation and harvesting and decreased those for new afforestation. It also contributed to a period of deregistration (with some reregistration) of post-1989 forest from the NZ ETS, as landowners who had earned NZUs took advantage of the opportunity to clear future harvesting or deforestation liabilities using low-cost offshore Kyoto units and either exit the NZ ETS or reregister to continue earning NZUs. This arbitrage opportunity was closed through the 2014 amendment to the CCRA.[53] The trend in forestry emissions and removals in the NZ ETS from 2009 to 2019 is challenging to evaluate due to many factors, most notably:

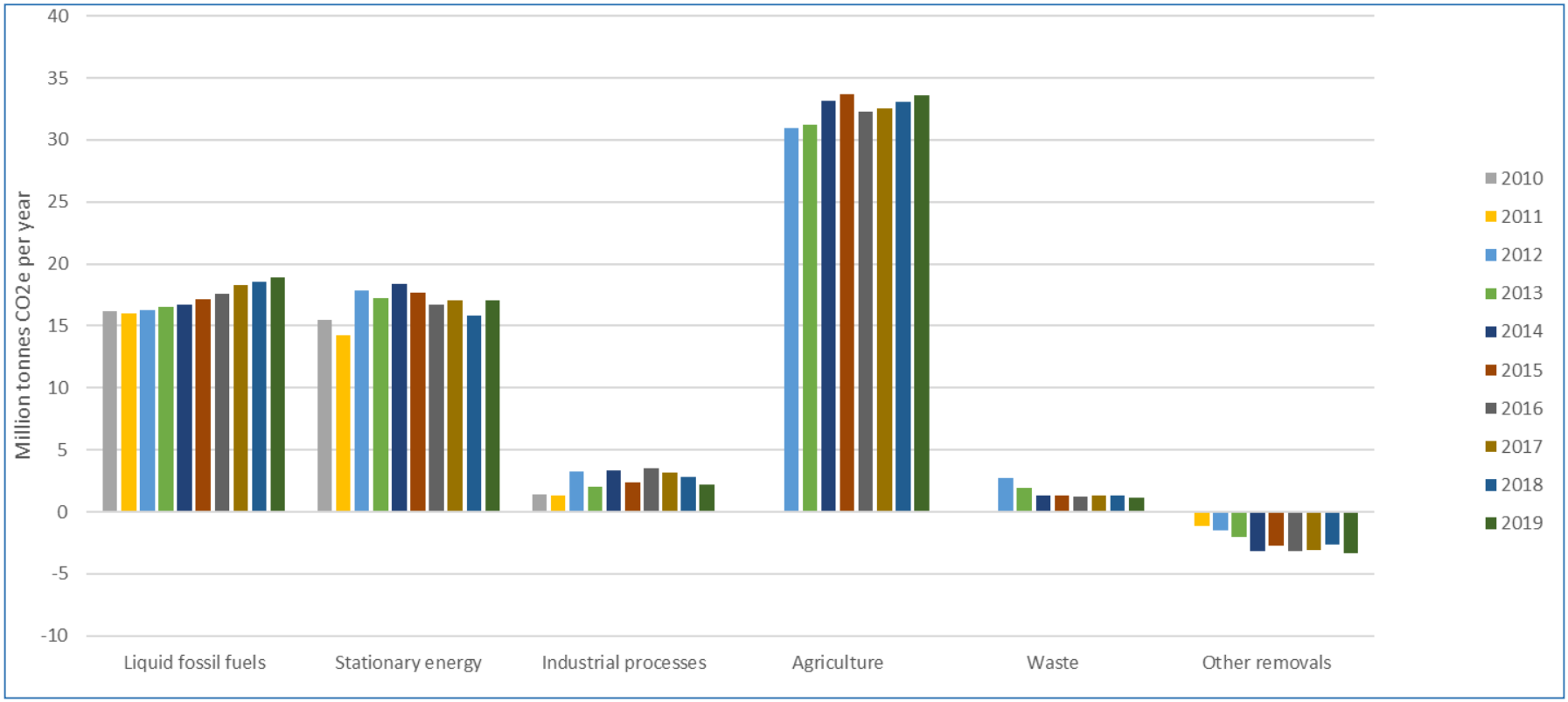
- a lag in the start of reporting and unit surrender obligations for the forestry sector
- the use of mandatory five-year reporting periods for post-1989 forests, with the option for interim reporting
- the reporting of emissions liabilities from deregistration of post-1989 forest, which may not reflect actual emissions
- a 'surrender cap' which means participants are not liable to surrender more units in relation to any carbon accounting area (or part thereof) than the unit balance (the net number of NZUs the forest land has received since being registered in the NZ ETS)
- the time lag between emissions price signals and changes in forestry activities
- the interaction between emissions prices and other market drivers of land-use decisions.

Figure 13 compares trends in NZU liabilities and entitlements for forestry in the NZ ETS with those for land-use change and emissions/removals associated with afforestation/reforestation and deforestation in the national GHG inventory.

Considering New Zealand's population increased by 18%[54] and GDP increased by 77%[55] from 2008 to 2019, the trend shows some decoupling of emissions from economic activity. However, it does not show significant progress toward decarbonisation of the domestic economy.

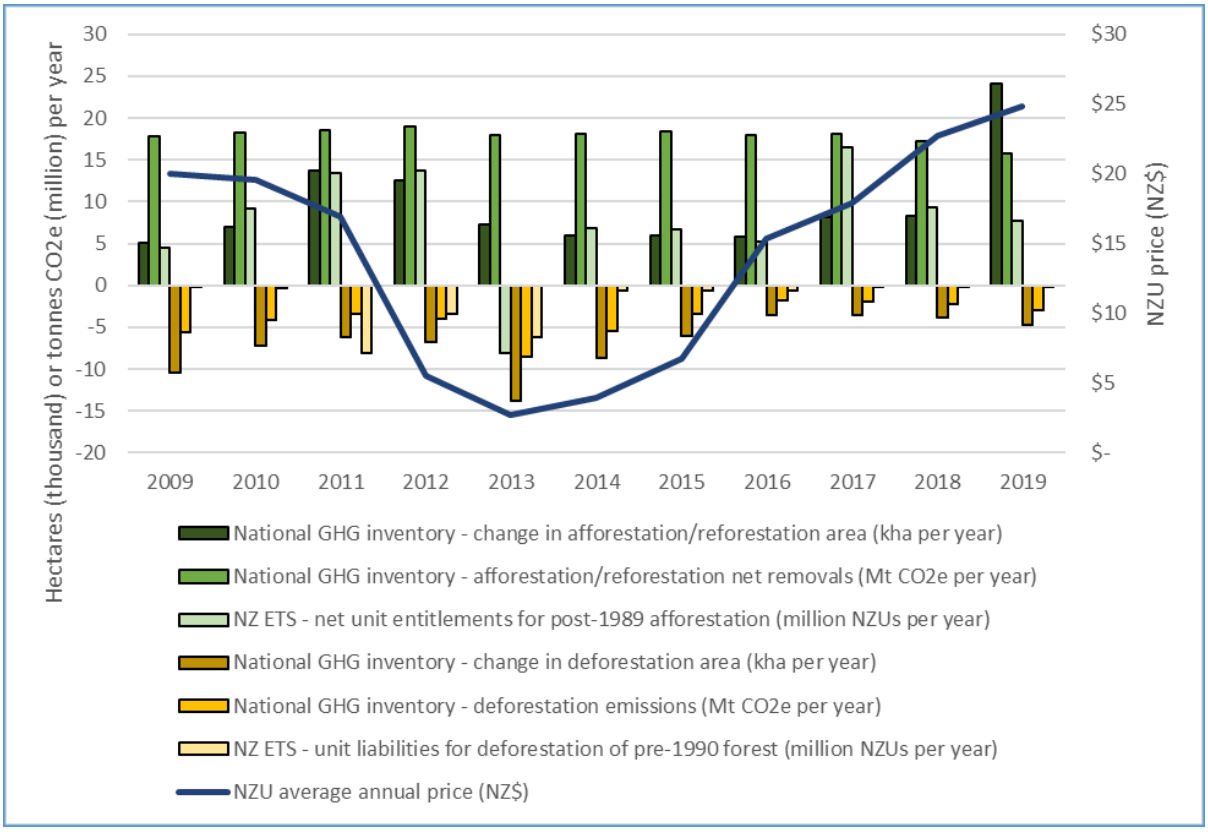
Reflecting the new policy framework established by the ZCA and ETRA, NZ ETS emissions prices have risen in 2021, despite the supply of NZUs exceeding demand and the economic effects of the COVID-19 pandemic. This suggests market expectations for sustained mitigation ambition over the longer term as Aotearoa prepares to meet its emissions reduction targets under the CCRA and the 2015 Paris Agreement.

Figure 12: NZ ETS emissions trends in non-forestry sectors: 2010 to 2019



Note mandatory emissions reporting started for liquid fossil fuel, stationary energy and industrial process sectors in 2010; and waste, synthetic gas and agriculture sectors in 2013. "Other removals" include producing a product with embedded substances or exporting/destroying HFCs and PFCs. Note that the 'other removals' represent avoided emissions that are still reported under the stationary energy and industrial process categories. Source: Data from Environmental Protection Authority (2021a).

Figure 13: Forestry trends and NZU prices: 2009 to 2019



Hectares, removals and net unit entitlements from afforestation/reforestation are assigned a positive value and hectares, emissions and unit liabilities from deforestation a negative value. Net unit entitlements from post-1989 afforestation in the NZ ETS include emissions liabilities associated with deregistration and may not reflect actual emissions. This is particularly evident in 2013. Source: Data from Environmental Protection Authority (2021a); Ministry for the Environment (2014, 2021c); and Jarden.

6
Links for more information

More information about the NZ ETS is available on the following Government websites:

Climate Change Response Act 2002

Climate Change (Agriculture Sector) Regulations 2010

Climate Change (Auctions, Limits, and Price Controls for Units) Regulations 2020

Climate Change (Eligible Industrial Activities) Regulations 2010

Climate Change (Forestry Sector) Regulations 2008

Environmental Protection Authority

Ministry for Primary Industries

Ministry for the Environment

7
Annex: List of acronyms

AAU	Assigned Amount Unit: Unit derived from the emissions reduction target of an industrialised (Annex I) country under the Kyoto Protocol
CCC	He Pou a Rangi New Zealand Climate Change Commission
CER	Certified Emissions Reduction: Unit generated by emissions reduction projects in developing (non-Annex I) countries under the Kyoto Protocol's Clean Development Mechanism (CDM)
CCRA	Climate Change Response Act 2002
CH_4	Methane
CO_2	Carbon dioxide
CO_2e	Carbon dioxide equivalent
ERU	Emissions Reduction Unit: Unit generated by emissions reduction projects in industrialised (Annex I) countries under the Kyoto Protocol's Joint Implementation (JI) mechanism
ETRA	Climate Change Response (Emissions Trading Reform) Act 2020
GHG	Greenhouse gas
HFC	Hydrofluorocarbon
HWEN	He Waka Eke Noa: Primary Sector Climate Action Partnership
ICCC	Interim Climate Change Committee
ITMO	Internationally Transferred Mitigation Outcome: Mitigation transferred between countries under Article 6 of the Paris Agreement
lCER	Long-term Certified Emissions Reduction: Unit issued for forestry projects in the CDM; it expired at the end of the crediting period of the project, which could be renewed over a period up to 60 years
N_2O	Nitrous oxide
NGA	Negotiated Greenhouse Agreement
NZ ETS	New Zealand Emissions Trading Scheme
NZU	New Zealand Unit: Unit issued by the New Zealand government for use in the NZ ETS which corresponds to one tonne of carbon dioxide equivalent
PFC	Perfluorocarbon
PFSI	Permanent Forest Sink Initiative
PRE	Projects to Reduce Emissions
RMU	Removal Unit: Unit issued for net forestry removals in an industrialised (Annex I) country with an emissions reduction target under the Kyoto Protocol
SF_6	Sulphur hexafluoride
tCER	Temporary Certified Emissions Reduction: Unit issued for forestry projects in the CDM; it expired at the end of the Kyoto commitment period after the one in which it was issued
UNFCCC	United Nations Framework Convention on Climate Change
ZCA	Climate Change Response (Zero Carbon) Amendment Act 2019

8
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9
Endnotes

1 See International Carbon Action Partnership (2021).

2 For more in-depth information on all aspects of ETS design, refer to World Bank Partnership for Market Readiness and International Carbon Action Partnership (2016).

3 Gross emissions exclude the forestry sector whereas net emissions include the forestry sector.

4 The biogenic emissions from agriculture include methane from animal production and nitrous oxide from synthetic fertiliser.

5 This figure reflects data from 2019 (Ministry for the Environment 2021c).

6 Biogenic methane emissions are those from agriculture and waste.

7 See Climate Change Commission (2021).

8 See Ministry for the Environment (2021a,e).

9 See Ministry for the Environment (2021f).

10 See https://hewakaekenoa.nz/.

11 That is equivalent to reducing net emissions 41% below 2005 gross emissions by 2030 using the emissions-budget accounting methodology applied to the initial NDC submitted in 2016 (30% below 2005 gross emissions by 2030) (see New Zealand Government (2021)).

12 Synthetic GHGs are HFCs, PFCs and SF_6 excluding PFCs from aluminium smelting.

13 For fertilisers, the processor level corresponds to the point of manufacture or import. For animal production, it corresponds to the point of slaughter, dairy processing or export.

14 This figure reflects the full carbon stock accounting methodology under the UNFCCC reporting framework, rather than the activity-based accounting methodology applied under New Zealand's international targets. See Ministry for the Environment (2021c).

15 See Leining, Allan and Kerr (2017).

16 See Environmental Protection Authority (2021d).

17 See Carver, Dawson and Kerr (2017).

18 Under the CCRA, eligible forest land is an area of land of at least one hectare that has (or will have) tree crown cover from forest species of more than 30% in each hectare and with an average width of at least 30 metres. This includes land that is likely to revert to meet those requirements. Forest species must be capable of reaching at least five metres in height at maturity in their location.

19 Pre-1990 forest is exempt from deforestation liabilities in the following cases: (1) the forest clearance was due to a natural event preventing re-establishment; (2) less than two hectares of pre-1990 forest is deforested in any five-year period commencing from 1 January 2008; (3) the area has been granted a 'tree weed' exemption or 'less than 50 hectares' exemption (with special provisions for some Māori land or land with 10 or more owners); (4) a carbon-equivalent forest is established elsewhere (referred to as 'pre-1990 offsetting'); or (5) the forest is pre-1990 indigenous forest. For more information, see Ministry for Primary Industries (2021).

20 An exemption applies if they establish a carbon-equivalent forest elsewhere (referred to as 'post-1989 offsetting').

21 The PFSI was introduced through a 2006 amendment to the CCRA. It enabled participants to earn tradable units for post-1989 afforestation managed under a forest covenant. In the past, the PFSI issued NZ AAUs for eligible removals. This was changed to NZUs after New Zealand took its international commitment for the period 2013 to 2020 under the UNFCCC instead of the Kyoto Protocol. Both types of units were eligible for trading in the NZ ETS.

22 For more information on forestry accounting in the NZ ETS, see Carver, Dawson and Kerr (2017); Cortés-Acosta, Grimes and Leining (2020); and Ministry for Primary Industries (2021).

23 See Ministry for Primary Industries (2019).

24 See Te Uru Rākau (2021).

25 See Climate Change Commission (2021) and Ministry for the Environment (2021f).

26 See Interim Climate Change Committee (2019).

27 See He Waka Eke Noa (2022).

28 See endnote 21.

29 NGAs were part of the government's 2002 climate change policy package. They enabled exemption from the proposed carbon tax in return for a firm's commitment to a pathway representing world's best practice in emissions management. The two signed NGAs were honoured under the NZ ETS, which superseded the proposed carbon tax.

30 As of 2022, overseas units are not eligible in the NZ ETS.

31 See the Climate Change (Auctions, Limits, and Price Controls for Units) Regulations 2020.

32 See https://www.etsauctions.govt.nz/.

33 See Ministry for the Environment (2020).

34 See Robertson (2021).

35 The end of the true-up period for the first commitment period under the Kyoto Protocol was 18 November 2015.

36 The allocative baseline (i.e., reference level) for free allocation reflects industry-average emissions per unit of output and is set in regulation. This was calculated over the period from 2006/2007 to 2008/2009 for most participants. See Leining (2021b).

37 See Ministry for the Environment (2021e).

38 See Leining (2021b).

39 See Environmental Protection Authority (2021b).

40 See Environmental Protection Authority (2021c).

41 See the Climate Change (Auctions, Limits, and Price Controls for Units) Amendment Regulations 2021.

42 See endnotes 21 and 29.

43 Imported ERUs, CERs and RMUs were eligible for compliance in the NZ ETS, subject to some restrictions on sources. As of mid-2015 (before de-linking from the Kyoto market), the following types of Kyoto units were excluded from the NZ ETS: imported AAUs, tCERs, lCERs and CERs and ERUs from industrial-gas, large-scale-hydro and nuclear projects.

44 See Leining, Ormsby and Kerr (2017); Leining, Kerr and Bruce-Brand (2019); and Kerr, Ormsby and White (2021).

45 Unique emission factors can apply to the following activities: owning obligation fuel; purchasing obligation jet fuel; importing, mining or purchasing coal; purchasing natural gas; using geothermal fluid; combusting waste products; or operating a waste disposal facility.

46 Infringements before 1 January 2021 are subject to the previous non-compliance measures as on 31 December 2020.

47 See Environmental Protection Authority (2020).

48 See Ministry for the Environment and Ministry for Primary Industries (2020).

49 See Ministry for the Environment (2021b).

50 This is now the Ministry for Business, Innovation and Employment.

51 This is now the Ministry for Primary Industries.

52 See Ministry for the Environment (2021a).

53 See Ministry for the Environment (2016) and Carver, Dawson and Kerr (2017).

54 Source: Statistics New Zealand data accessed online in December 2021. See https://www.stats.govt.nz/topics/population.

55 The increase in GDP from 2008 to 2019 was calculated using GDP expressed in current (2021) international dollars, converted by a purchasing power parity (PPP) conversion factor. To access the World Bank national accounts data, see https://data.worldbank.org/indicator/NY.GDP.MKTP.KD.ZG?locations=NZ. These data were accessed in December 2021.

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