

Climate change and emissions trading: The journey of Aotearoa New Zealand

Presentation to the Chilean Ministry of Energy

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My background

Policy Fellow at Motu Economic and Public Policy Research

- Independent non-profit research organisation

Management Team, RESET Network

- Non-profit international research network focused on just energy transitions in the Global South; coordinated by The Environmental Defense Fund (EDF)

Former Commissioner, New Zealand Climate Change Commission

- Independent advisory body to the New Zealand Government (2019 – 2024)

NZ government official from 2003–2010

- Helped design the New Zealand Emissions Trading Scheme (NZ ETS) and was a UNFCCC negotiator for carbon markets (2008-2009)

Topics for today

New Zealand's climate change challenge

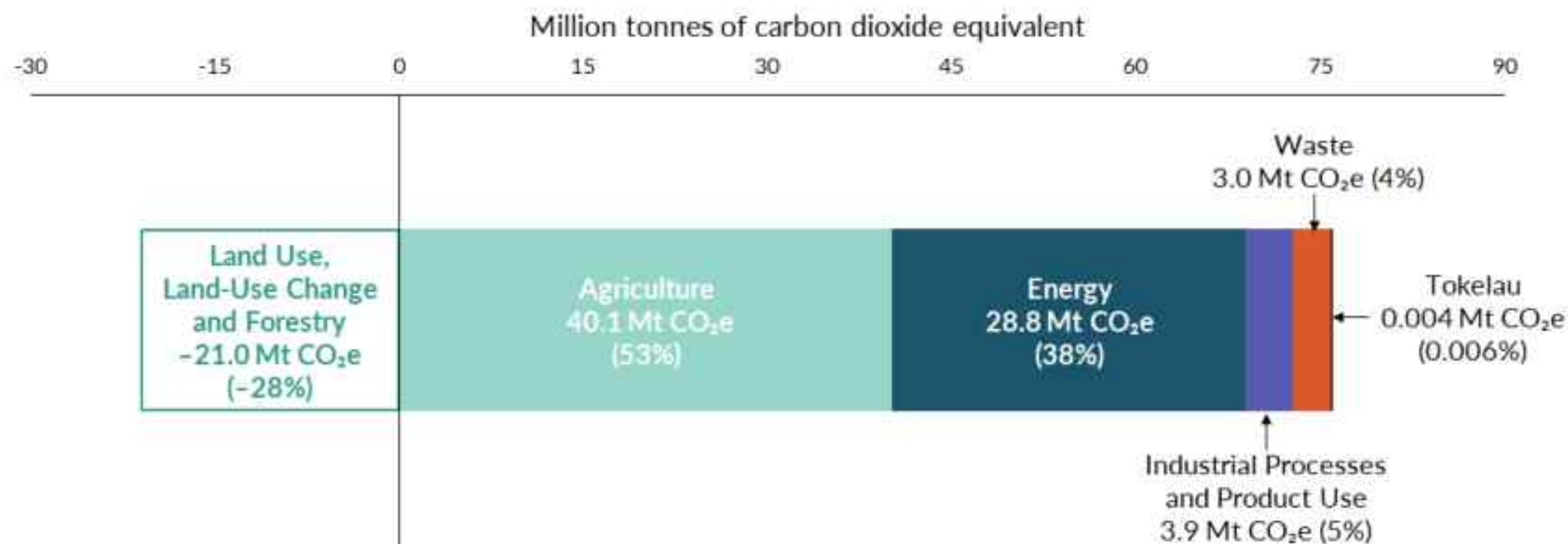
New Zealand Emissions Trading Scheme

Looking to the future of the NZ ETS

Top 10 insights for other jurisdictions

New Zealand's climate change challenge

NZ's greenhouse gas emissions: 2024

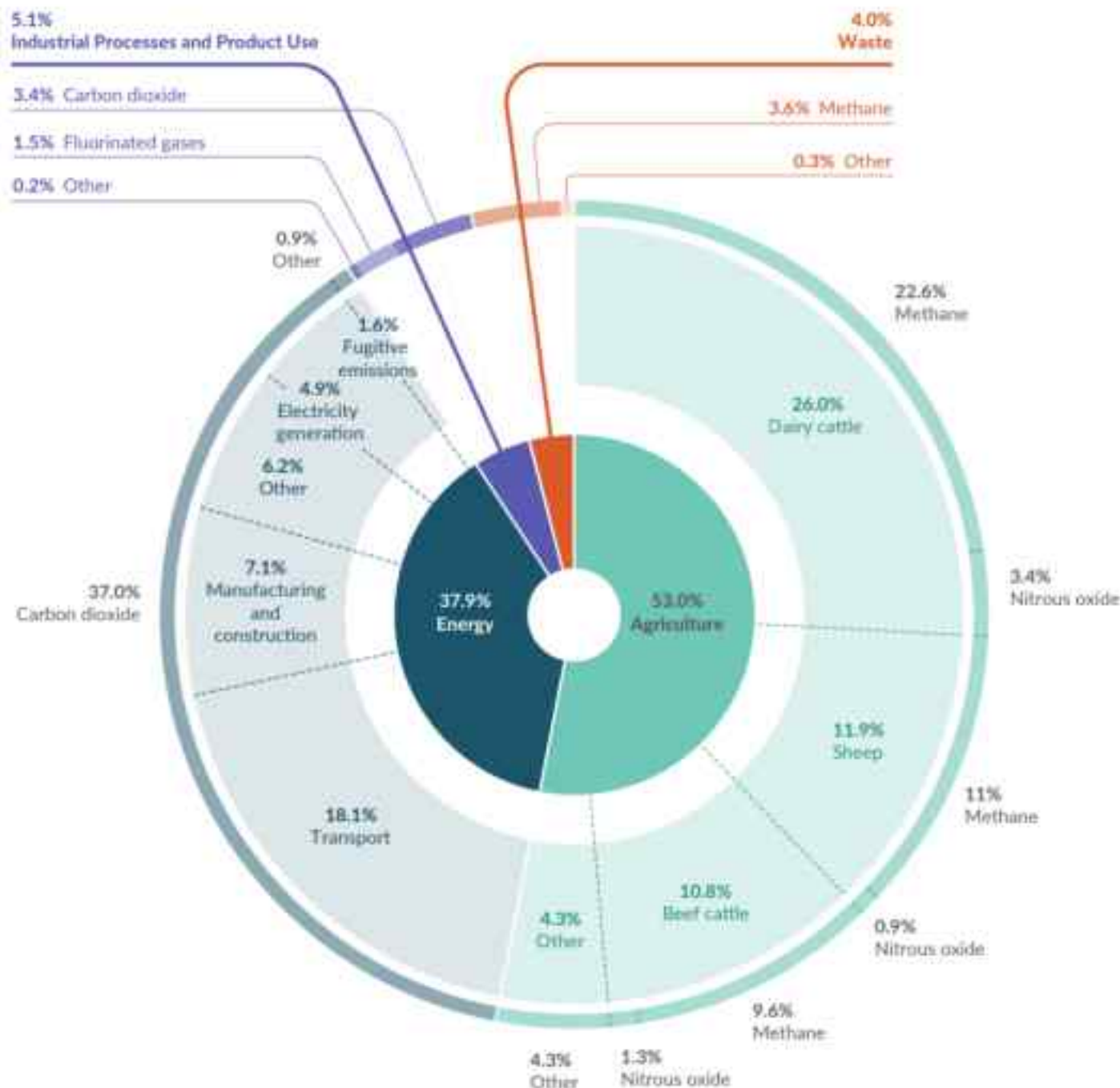


Source: Ministry for the Environment (2026). [New Zealand's Greenhouse Gas Inventory: Snapshot \(1990-2024\)](#).

Energy sector: 38% of gross GHG emissions (2024)

- Electricity generation: 4.9%
- Manufacturing & construction: 7.1%
- Transport: 18.1%

Source: Same as previous slide.



New Zealand's GHG targets

Paris Agreement



2030:

Net emissions 50%
below 2005 gross emissions

2035:

Net emissions 51-55%
below 2005 gross emissions

Domestic legislation



Biogenic methane: at least
10% below 2017 by 2030
14-24% by 2050 and beyond

All other GHGs: at least
net zero by 2050 and beyond

Mitigation policy framework

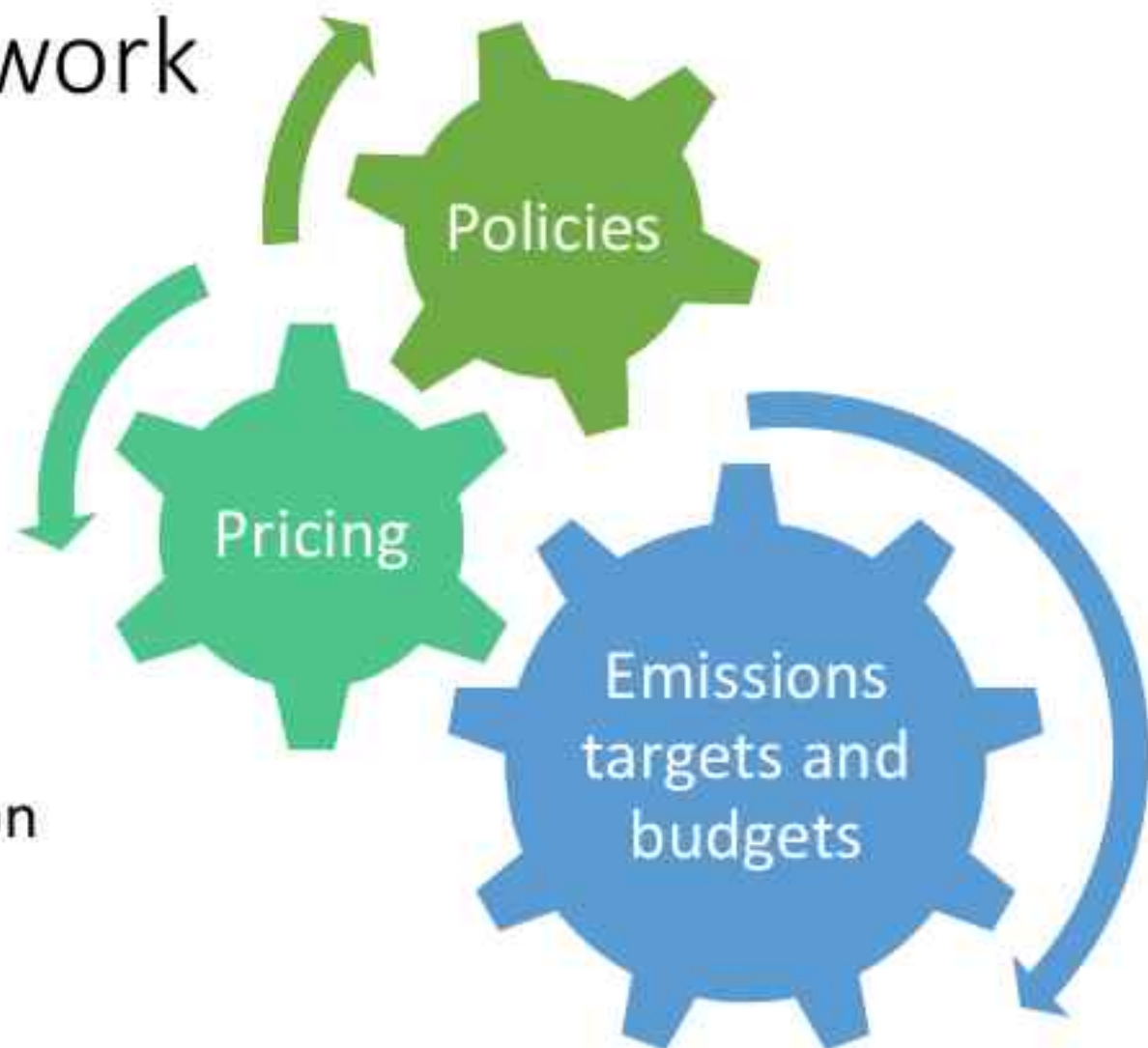
2050 emissions reduction target in legislation

Five-year emissions budgets as stepping stones – set for 15 years ahead

Five-year emissions reduction plans to deliver emissions budgets

Independent Climate Change Commission provides advice

These decisions drive NZ ETS settings



New Zealand Emissions Trading Scheme

Why New Zealand chose emissions trading



Pricing emissions can help prevent dangerous levels of climate change.

NZ planned a carbon tax on energy/industry but it lost political support in 2005.

An ETS limits emissions and creates a market price in line with targets to change behaviour.

An ETS offers more flexibility than a tax in how participants comply. Depending on design, it can also cap emissions.

What emissions pricing can't do – by itself

- 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 (the 1840 treaty between the Crown and Māori)
- Safeguard future generations

Key features of the NZ ETS

Operational since 2008

All sectors and gases (agriculture removed in 2024)

International linkage from 2008 to mid-2015; now domestic only

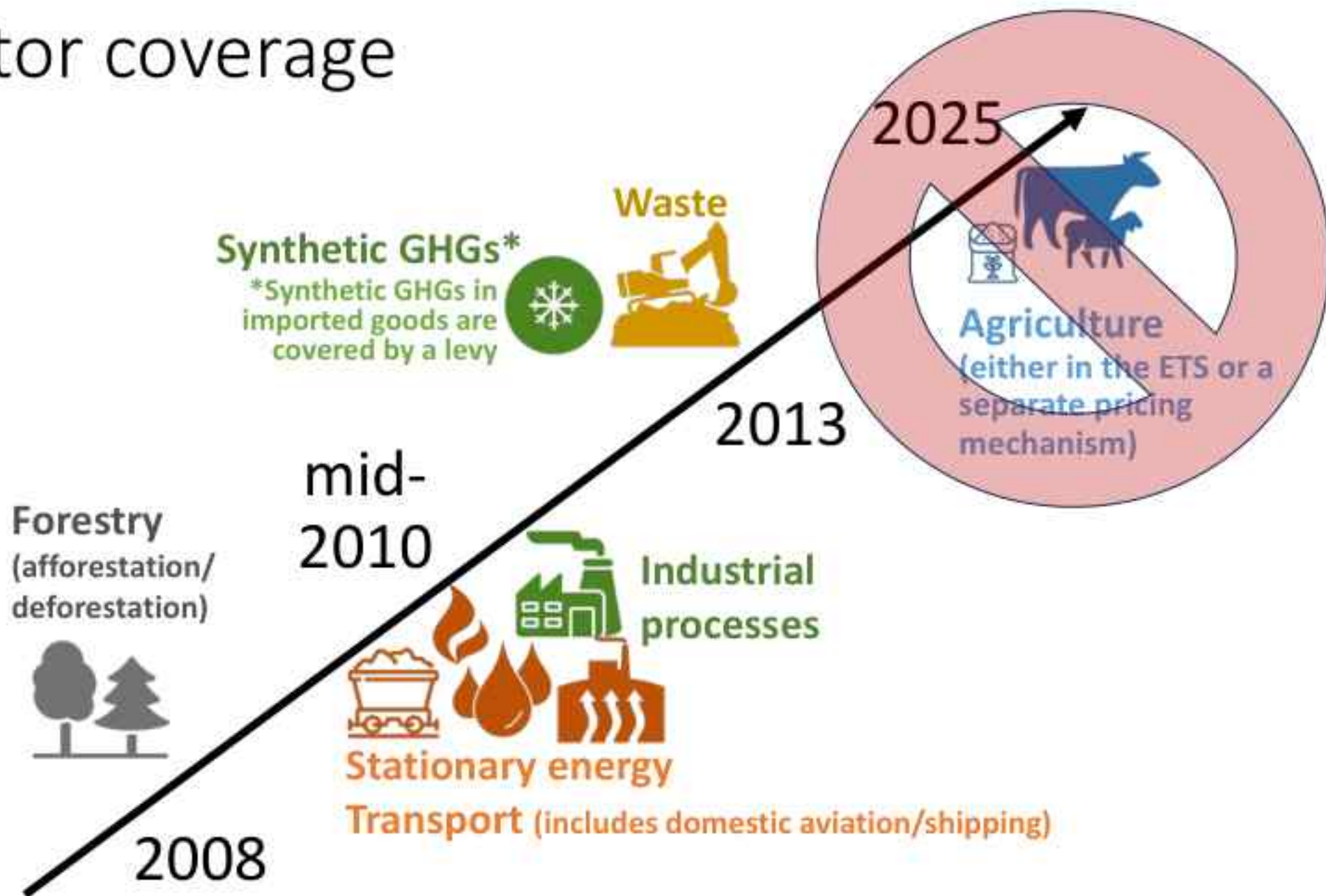
Mechanisms to reduce exposure to emissions prices

Started auctioning under a cap in 2021

Core policy design principles

- Meeting short-term international targets at least cost
- Covering all sectors for economic efficiency and equity
- Agnostic about where emissions reductions came from
 - Sources versus sinks
 - Sectors
 - Onshore versus offshore (2008 to mid-2015)

Sector coverage



Points of obligation: energy/industry (2025)

Liquid fossil fuels	Owning obligation fuel	6
Stationary energy	Combusting used or waste oil used tyres, or waste	7
	Importing coal	3
	Importing natural gas	4
	Mining coal	11
	Mining natural gas	29
	Refining petroleum for energy or feedstock	0
	Using crude oil or other liquid hydrocarbons	1
	Using geothermal fluid	13
Industrial processes	Importing HFCs or PFCs	28
	Manufacturing HFCs or PFCs	0
	Operating electrical switchgear that uses SF6	11
	Producing aluminium	1
	Producing clinker, or burnt lime	4
	Producing glass using soda ash	2
	Producing gold	0
	Producing iron or steel	2
Total		122

Default for energy:

Upstream obligation (point of fuel production/import)

Downstream opt-ins:

- Liquid fossil fuels = 9
- Stationary energy = 5

Source: Environmental Protection Authority (2026). [Participants in the ETS](#).

History of price controls

- Progressive unit obligation in non-forestry sectors: 1 unit for 2 tonnes and then phased up to 1 unit for 1 tonne (2010 to 2018)
- Fixed price option (2010 to 2019 emissions): NZ\$25
- Fixed price option (2020 emissions): NZ\$35
- Auction reserve price (2021 to present)
- Cost containment reserve with trigger price (2021 to present) – initially one tier and now two tier (from December 2023)

Output-based industrial allocation

- Targeted to emissions-intensive and trade-exposed producers (excludes power generation and transport fuels)
- Firms without unit obligations can still receive free allocation they sell to others
- Covers direct emissions (energy/industry) plus indirect emissions from purchased electricity – based on sector-average historical emissions intensity and an electricity allocation factor
- Not bound by the ETS “overall limit” on unit supply
- Two levels: highly intensive (started at 90%) and moderately intensive (started at 60%) with a default phase-out rate
- Reforms in 2023 to address over-allocation

Linking

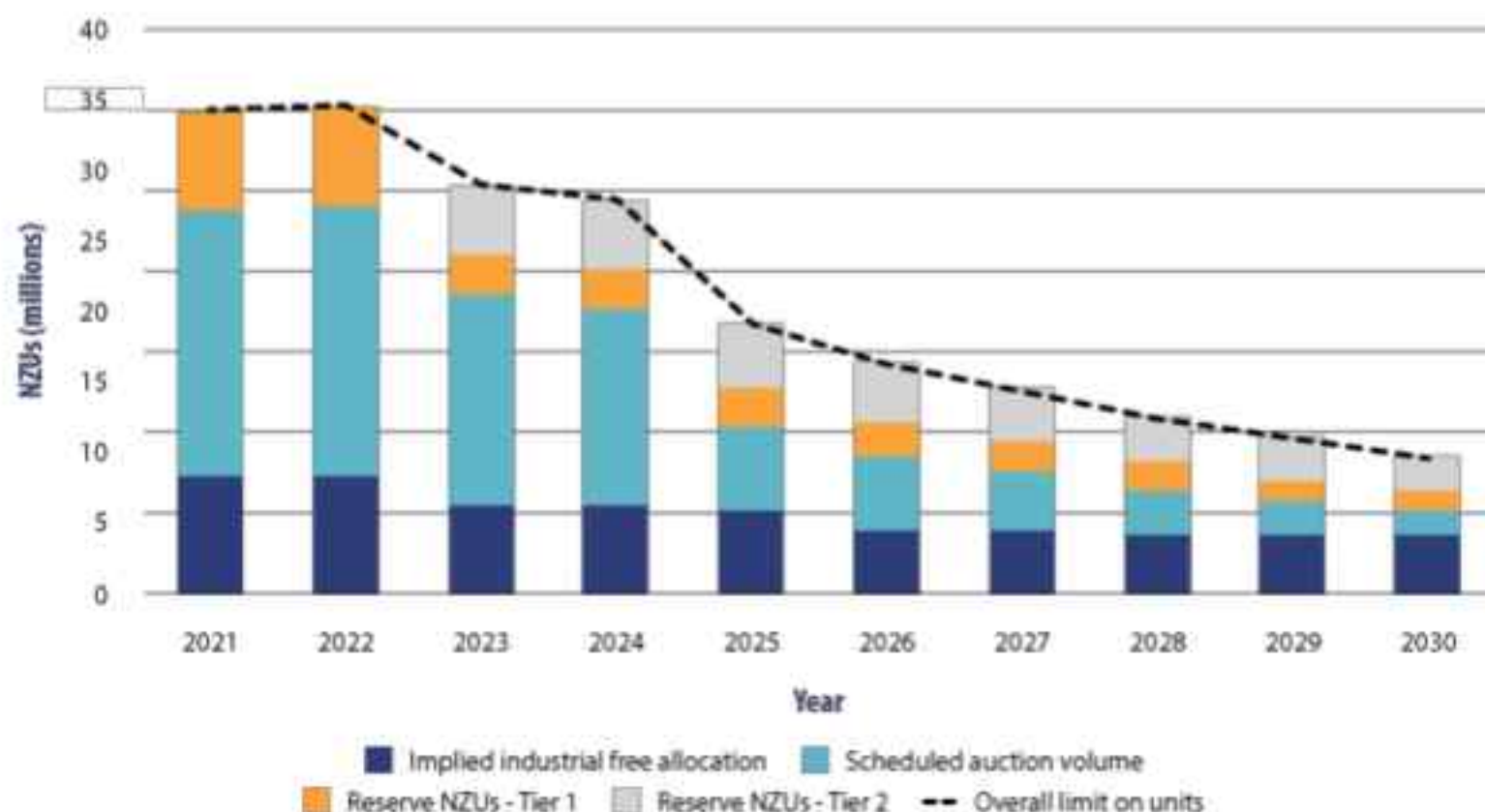
- The NZ ETS began with a buy-and-sell linkage to the international Kyoto market with no quantity limit. Imported AAUs were restricted, and eventually some limits were placed on industrial gas projects.
- The sell linkage was changed to forestry only once the fixed-price option was implemented.
- The system delinked from the international market in mid-2015, with the end of the true-up period for the first Kyoto commitment period.
- The system had linkages to domestic mechanisms left over from previous policies (Negotiated Greenhouse Agreements, Projects to Reduce Emissions and Permanent Forest Sink Initiative). These mechanisms have all ended.
- The unconstrained linking resulted in arbitrage and stockpiling.

Revenue recycling

- 2010 to 2020: Fixed price option revenue directed to the general budget
- 2021 to 2024: Auction revenue directed to the Climate Emergency Response Fund
 - Decarbonisation initiatives in transport, energy, and industry
 - Agriculture and land-sector programmes
 - Climate adaptation
 - Building system capability
- 2024 to present: Auction revenue directed to the general budget
- Total NZ ETS auction revenue:
 - NZ\$3.8 billion to date
 - None received since December 2024

Auction settings: 2021 to 2030

Regulated NZ ETS unit settings from 2021 to 2030 as of January 2026 (millions)



Note: The regulated auction settings for years 2027 to 2030 are subject to change. The volumes of industrial free allocation are implied by other regulated settings. Source: Data on auction volumes from [Climate Change \(Auctions, Limits, and Price Controls for Units\) Regulations 2020](#).

Source: Leining (2026). [A guide to the New Zealand Emissions Trading Scheme: 2026 update](#).

Results



With unlimited Kyoto linkage through mid-2015, domestic emissions prices fell from 2011 and participants stockpiled units.

Participants have chosen least-cost options: offshore mitigation and domestic forestry.

Because of low prices and uncertain policy, the NZ ETS has not significantly reduced domestic gross emissions to date but has significantly influenced land-use change.

NZ ETS prices: 2010 to 2025

Emissions price of
NZ\$53.83
on 3/07/2026

NZU prices in the secondary market from January 2010 to January 2026 (NZ\$ nominal)

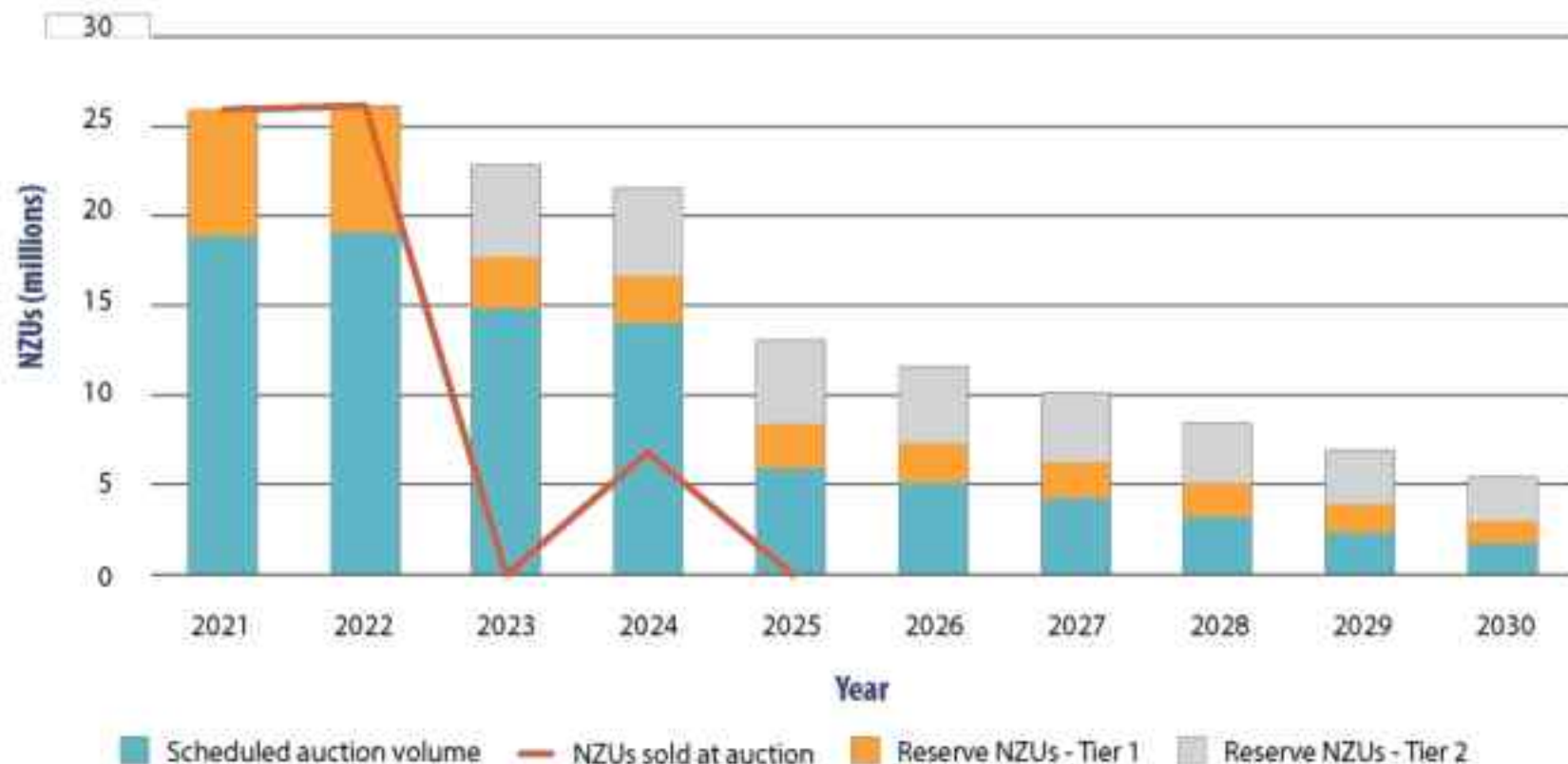


Note: Data from OM Financial and Jarden (used with permission).

Source: Leining (2026). [A guide to the New Zealand Emissions Trading Scheme: 2026 update](#).

Auction outcomes

Regulated NZ ETS auction volumes from 2021 to 2030 and auction outcomes from 2021 to 2025 (millions)

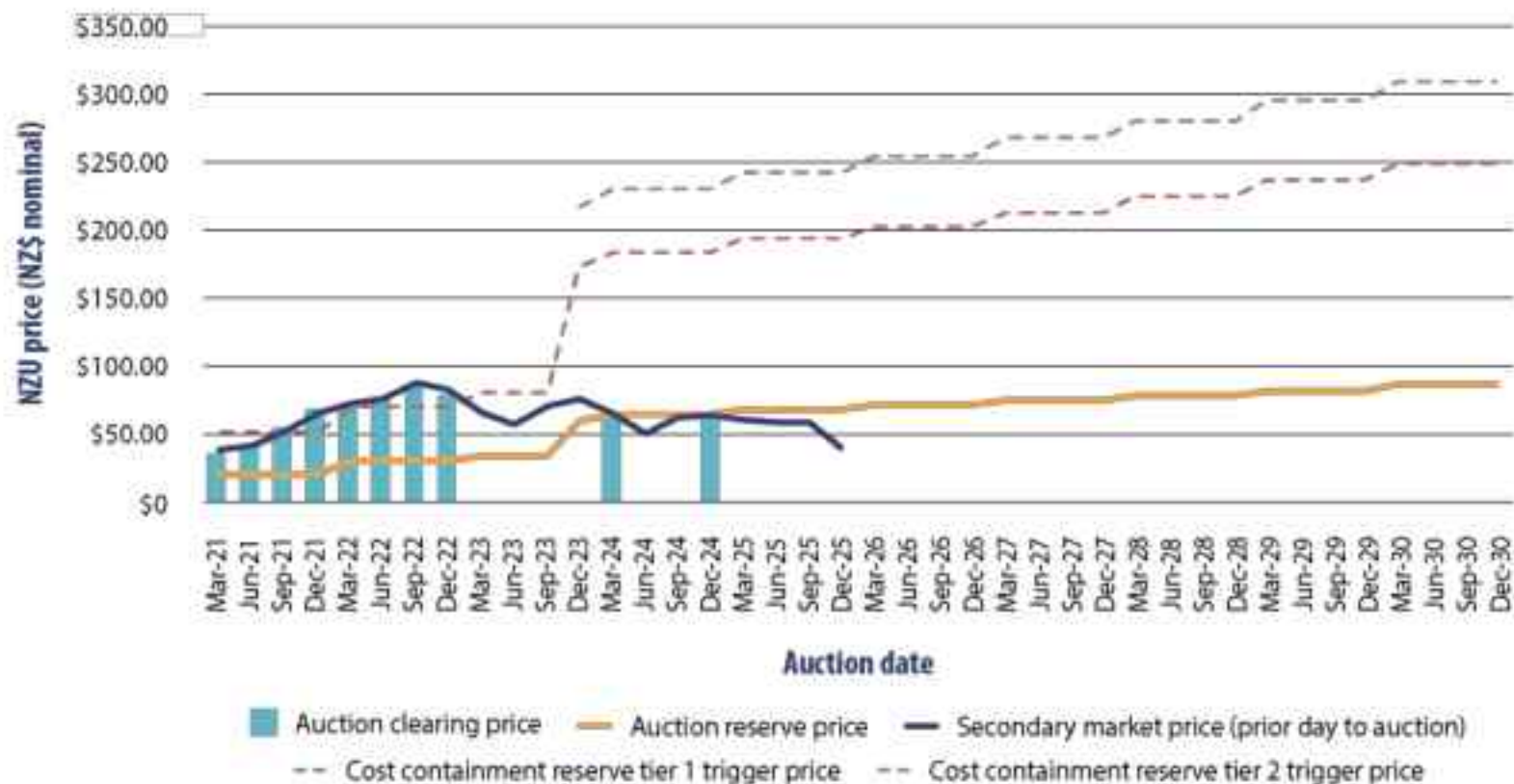


Note: The regulated auction settings for years 2027 to 2030 are subject to change. Source: Data on auction volumes from [Climate Change \(Auctions, Limits, and Price Controls for Units\) Regulations 2020](#). Data on NZUs sold at auction from NZX-EEX (n.d.-a).

Source: Leining (2026). [A guide to the New Zealand Emissions Trading Scheme: 2026 update](#).

Price controls

Regulated price control settings at auction from 2021 to 2030 and actual auction clearing prices from 2021 to 2025 (NZ\$ nominal)



Source: Data on regulated price control settings from [Climate Change \(Auctions, Limits and Price Controls for Units\) Regulations 2020](#). Data on auction clearing prices from NZX-EEX (n.d.-a).

Source: Leining (2026). [A guide to the New Zealand Emissions Trading Scheme: 2026 update](#).

Participant-held stockpile of NZUs

Trends in the participant-held stockpile of NZUs relative to surrender volumes from 2016/17 to 2024/25 (millions)



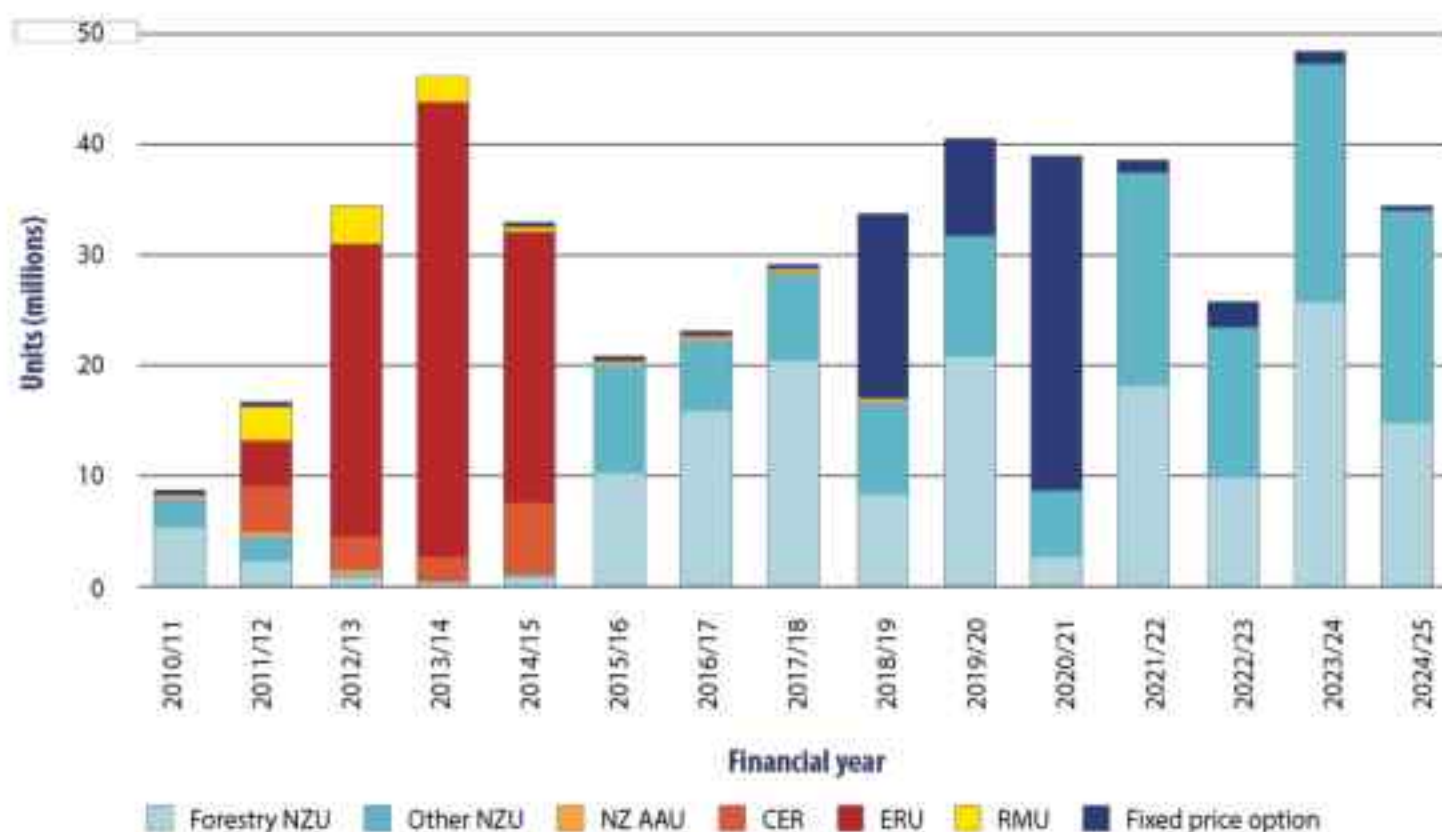
The stockpile has ranged from 3 to 6 times the annual surrender volume since 2016/17.

Note: Emissions reports and surrenders covering calendar-year emissions are due by May in the following year. Reporting by the Environmental Protection Authority applies a financial year ending in June. From 2010–2016, non-forestry sectors surrendered one unit per 2 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: Environmental Protection Authority (2026b, 2026c).

Source: Leining (2026). [A guide to the New Zealand Emissions Trading Scheme: 2026 update.](#)

Unit surrenders

Unit surrenders in the NZ ETS from 2010/11 to 2024/25 (millions)

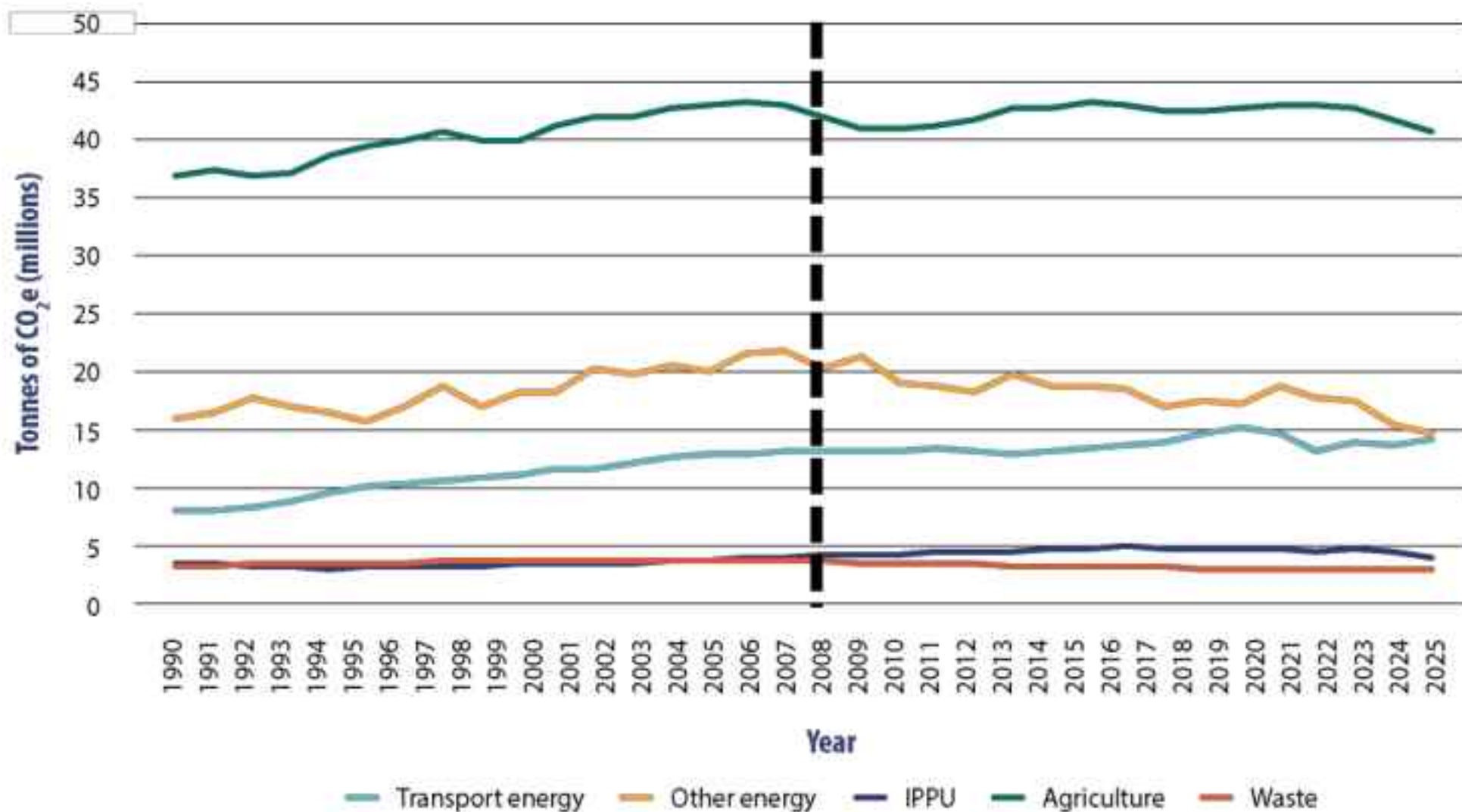


Note: The 2010 compliance year covered July through December. See the Annex for an emissions unit typology. From 2010–2016, non-forestry sectors surrendered one unit per 2 tonnes of emissions. This increased to one unit per 1.5 tonnes in 2017, one unit per 1.2 tonnes in 2018, and one unit per tonne in 2019. Source: Data from Environmental Protection Authority (2026c).

Source: Leining (2026). [A guide to the New Zealand Emissions Trading Scheme: 2026 update.](#)

Impact on
gross
emissions

Gross national emissions from 1990 to 2023 (Mt CO₂e)

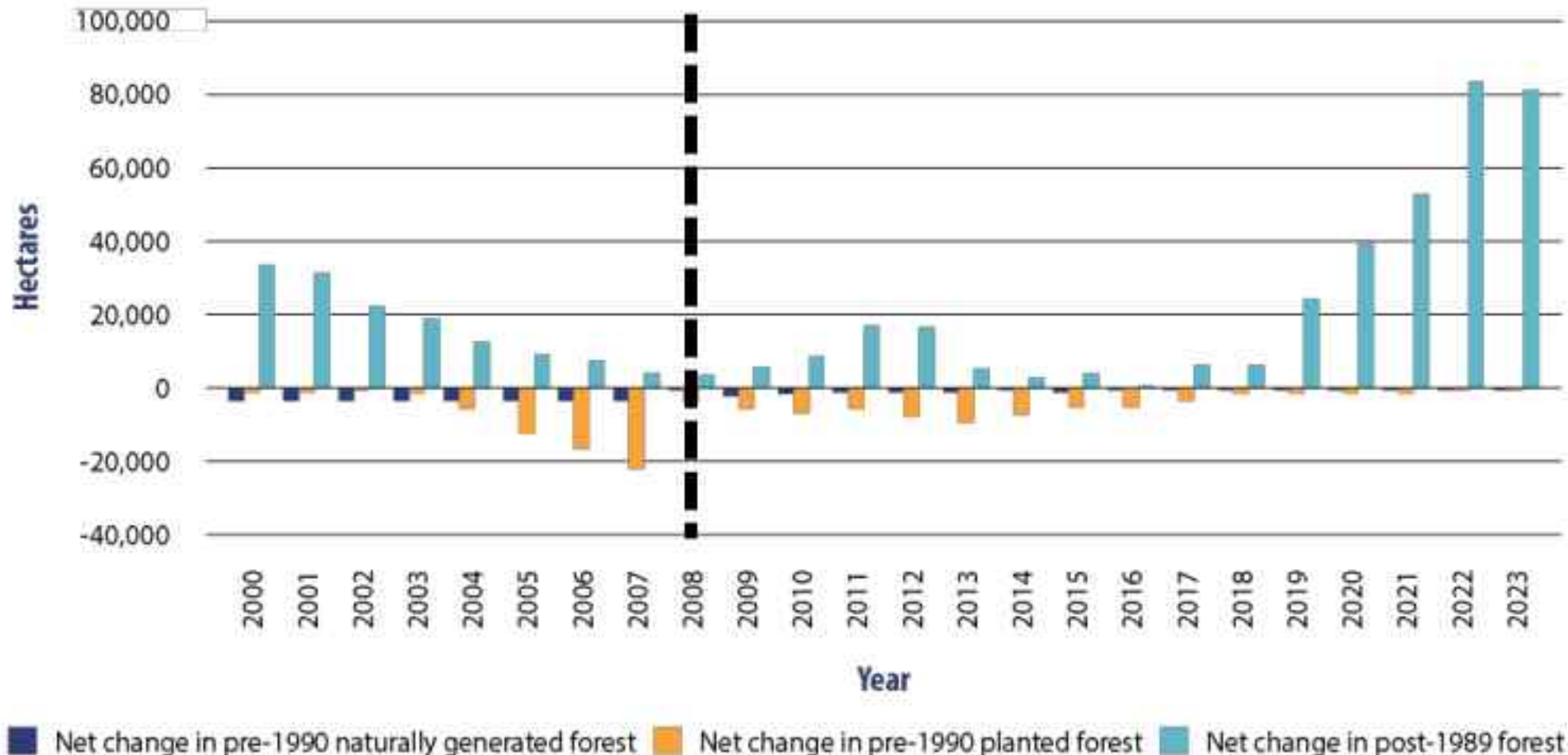


Source: Data from Ministry for the Environment (2025e).

Source: Leining (2026). [A guide to the New Zealand Emissions Trading Scheme: 2026 update.](#)

Forestry impact

Net annual change in national pre-1990 and post-1989 forest area from 2000 to 2023 (hectares)

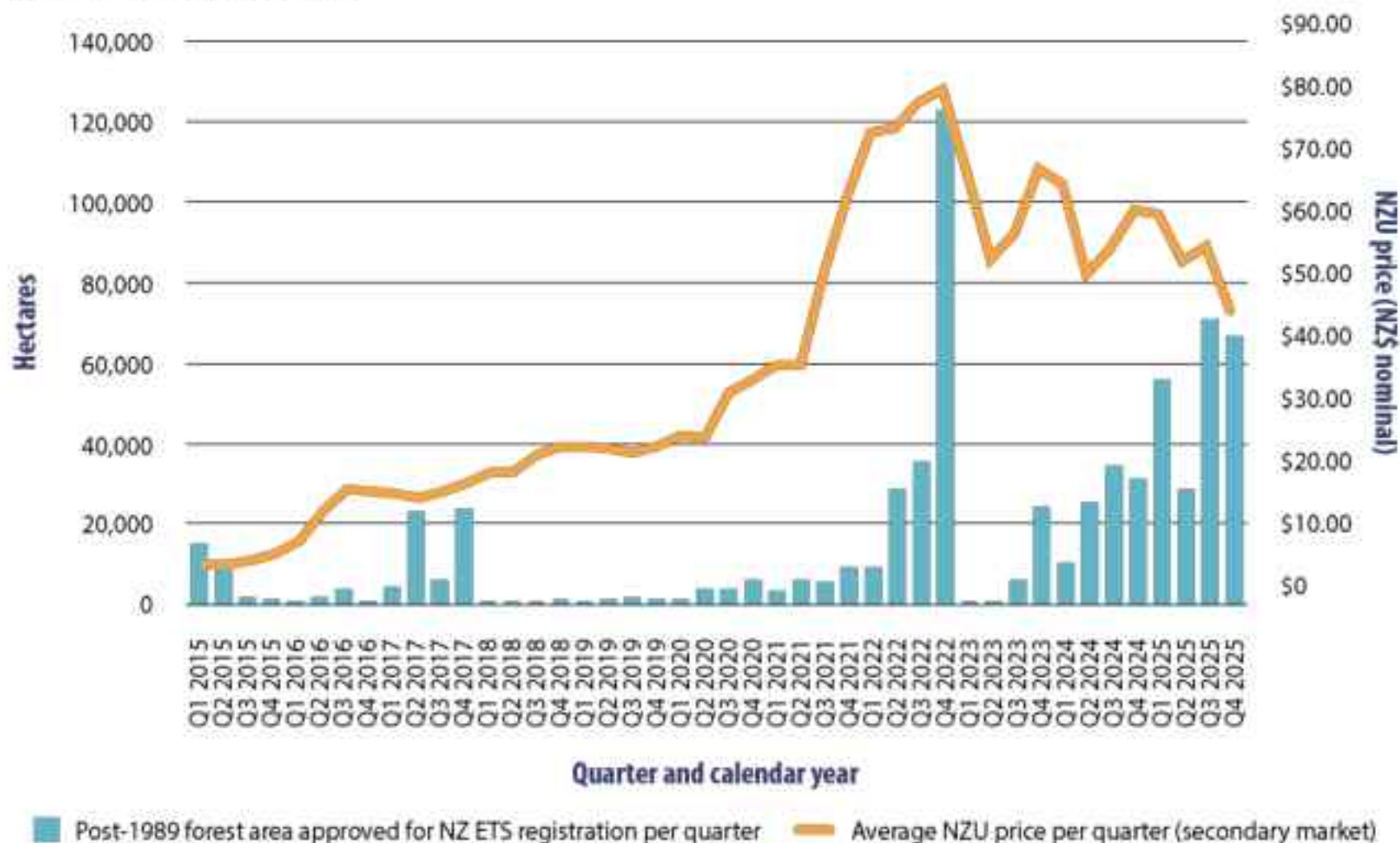


Source: Note that methodological differences preclude the direct comparison of data from the Land Use and Carbon Analysis System (LUCAS) and NZ ETS reporting systems. While both systems use the same definition of forest, they apply different mapping standards and scales. Data on total forest area by LUCAS forest type provided by the Ministry for the Environment, personal communication, 9 December 2025.

Source: Leining (2026). [A guide to the New Zealand Emissions Trading Scheme: 2026 update](#).

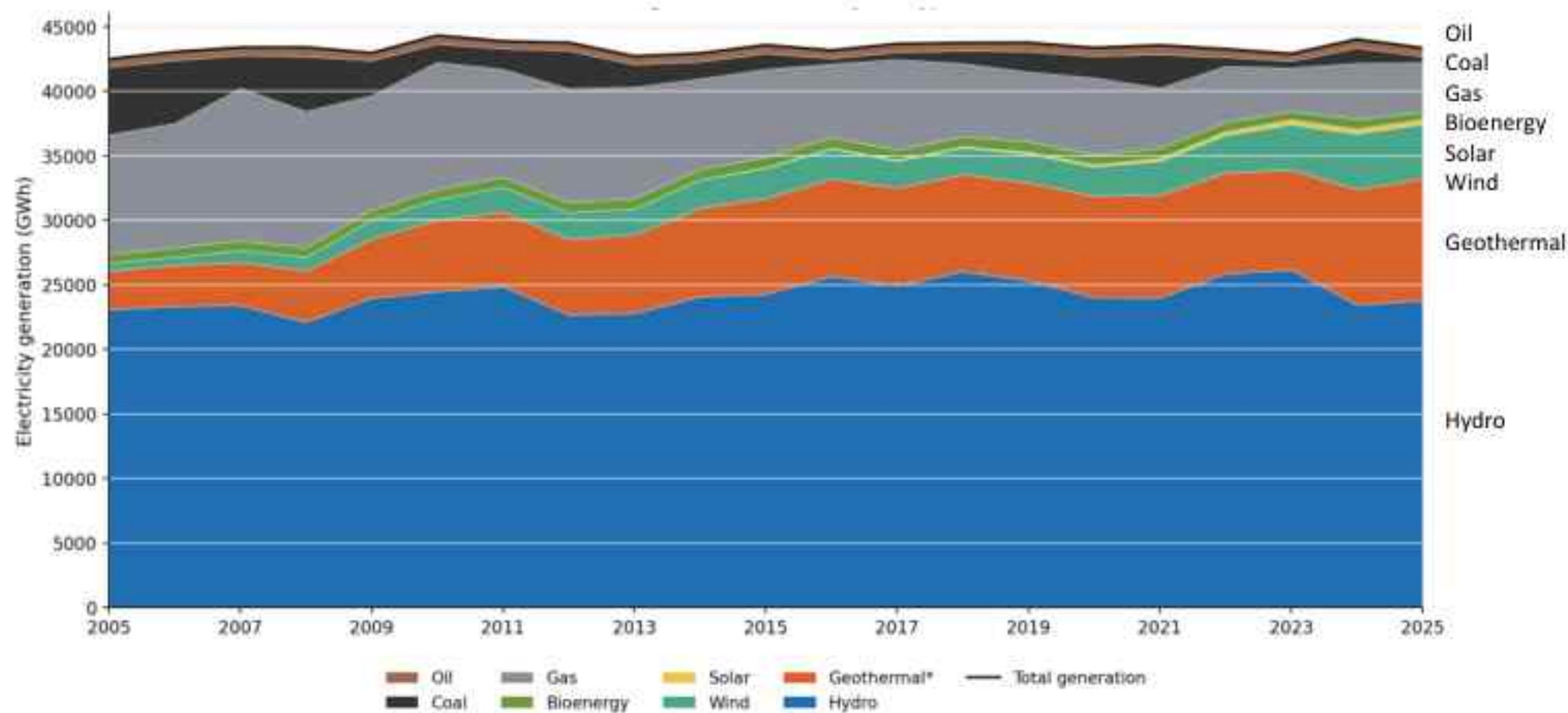
Forestry ETS registrations 2015 - 2025

Approved applications to register post-1989 forest in the NZ ETS and average NZU prices by calendar-year quarter from 2015 to 2025



Note: Data may include areas previously registered under the PFSI that transitioned into the NZ ETS after the PFSI closed on 31 December 2023. Source: Data on registered forest area from Ministry for Primary Industries (2026d). Data on NZU prices from OM Financial and Jarden (used with permission).

Electricity generation mix: 2005 to 2025



Sources: Our World in Data (2020), compiled from Ember and the Energy Institute Statistical Review of World Energy. Figures validated against MBE (e.g. 2005 Hydro 23,014 GWh; 2024 geothermal 8,741 GWh).
*('Geothermal' here is the dataset's other renewables-excluding-bioenergy, which for New Zealand is essentially all geothermal. Totals differ slightly (~1-2%) from MBE's national series due to definitional differences (e.g. gross vs net).

Case study: Synlait dairy processor

Sustainability strategy:

- Reporting of corporate GHG emissions
- Targets to reduce off-farm and on-farm emissions
- No new coal boilers

Installed NZ's first electrode boiler (2019)

- 6MW unit is 99% efficient and was expected to save 14,000 tonnes CO₂eq per year
- Government grant of NZ\$250,000
- Assumed an emission price of NZ\$40 per tonne in 2023 and NZ\$62 per tonne in 2026



Source: Synlait (2019). Media Release, 26 March 2019; Synlait (2020). Sustainability Website; Coughlan, T. (2019). "Dairy Companies Pricing Massive ETS Changes," *Newsroom*, 6 June 2019. Photo from Synlait; used with permission.

Case study: Ngāwhā Generation (geothermal)

Because of the high gas content of its geothermal fluid, the plant's NZ ETS liabilities absorbed 30% of its revenue in 2021.

When the Climate Change Commission suggested the need for closure, the management looked for an innovative approach to gas reinjection.

They budgeted NZ\$6 million and found it only cost a couple hundred thousand dollars with very little operational impact.

They went from annual emissions of 128,000 tonnes per year in 2021 to an expectation of net zero by 2025.



Source: Ngāwhā Carbon Zero Project. Video available from <https://ngawhageneration.co.nz/>.

Case study: New Zealand Steel

In May 2023, the Government committed to contribute \$140 million under the Government Investment in Decarbonising Industry (GIDI) Fund to help New Zealand Steel install an electric arc furnace.

This is projected to reduce 800,000 tonnes per year.

The money came from the Climate Emergency Response Fund – with recycled NZ ETS revenue.

The lifetime abatement cost was estimated at \$16.20 per tonne of emissions.

The investment case assumed avoided industrial free allocation at a cost to taxpayers of \$70 per tonne.



Source: Woods (2023). [Engagement with Very Large Emitters – Investment package for significant decarbonisation proposal](#) (Cabinet paper). [Beehive media release](#) 21 May 2023.

Case study: Kapuni Gas Field

The Government's second emissions reduction plan for 2026-2030 assumed carbon capture and storage (CCS) would begin at the Kapuni Gas Field in 2027.

This was projected to save 1 million tonnes of emissions over 2027-2030.

In May 2025, Todd Energy reported this would not be feasible given the current emissions price of around \$50 per tonne.



Source: Gibson (2025). Carbon Capture: [Pivotal project for cutting greenhouse gas emissions looks shaky](#). Radio NZ, 19/05/2025.

Looking to the future of the NZ ETS

Challenges facing the NZ ETS

- **Non-price barriers to decarbonisation:** Lack of information, infrastructure, access to capital, split incentives...
- **Policy uncertainty:** Desired gross/net emissions balance, forestry rules, offshore mitigation, 2050 target, reductions in ag emissions...
- **Sunset of auctioning:** By the late 2030's, the government will lose its current supply and price controls through auctioning
- **Oversupply:** The existing NZU stockpile, projected (exotic) forestry, projected industrial free allocation, and new removals (CCUS agreed, others being considered)
- **No incentives for removals beyond NZ ETS liabilities:** These are essential for current targets – and for future net negative targets
- **Inadequate incentives for native afforestation:** Fast-growing exotics are heavily incentivised under current settings

Three ETS options get the most attention

Unconstrained low-cost removals as offsets

- Low/slow decarbonisation OR
- Decarbonisation driven by market forces

Constrained low-cost removals as offsets

- Chosen balance between gross and net emissions reductions

High-cost removals as offsets

- Enables deeper decarbonisation
- Easier for native afforestation to compete

The problem: None of these will support mitigation beyond net zero

Another solution space needs attention

Removals as contributions

- Shift the long-term target to net negative emissions
- Create new policies and market mechanisms to incentivise diverse removals as contributions, not just offsets
- Decouple emissions prices for gross emissions and forestry removals
- Combine ambitious pricing with policies to guide and support deep decarbonisation across sectors

Top 10 insights for other jurisdictions

1. One size does not fit all. Each jurisdiction has unique needs – and can learn from what others have done.
2. Emissions pricing is essential – but not sufficient – for decarbonisation. Other policies are needed for non-price barriers, other sectoral outcomes, and just transitions.
3. An ETS is a tool, not a strategy. It should be shaped by goals for:
 - Level of ambition for mitigation and emissions prices
 - Contributions to targets from gross emissions reductions and removals
 - Relative roles of emissions pricing and other policies
 - Distribution of sectoral responsibilities and costs for mitigation.

4. Decarbonisation is messy; don't rely on expectations and assumptions.
5. An ETS must evolve over time, balancing flexibility with predictability.
6. Plan ahead for a future of net zero – and net negative – emissions.
7. ETS revenue is politically important but uncertain. Don't make important initiatives dependent only on ETS revenue.
8. Policy uncertainty creates risks and costs for businesses and investors and can derail decarbonisation.
9. Enduring cross-party support is essential to success.
10. People respond to price signals. Set them wisely!

For more information

Read Motu's papers on the NZ ETS:
www.motu.nz

Explore or join the RESET Network:
www.reset-network.org

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