

To what extent does New Zealand's environmental performance align with its "clean and green" international reputation?

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ABSTRACT

New Zealand's "100% Pure" tourism brand and broader "clean and green" reputation are economically valuable, but they are not equivalent to proof of environmental sustainability. This secondary-data comparative policy analysis evaluates alignment across greenhouse gas emissions, renewable electricity, freshwater quality, biodiversity, waste, and tourism impacts. Official national datasets and peer-reviewed evidence are prioritised, with Ireland used as the principal comparator because both countries are small, high-income economies in which pastoral agriculture has an unusually large emissions role. The evidence shows partial but limited alignment. New Zealand generated 88.1% of its electricity from renewable sources in 2023, and waste-sector emissions have declined since 1990. However, agriculture produced about 53% of gross greenhouse gas emissions in 2023; nitrate leaching remains concentrated in intensive farming regions; more than 4,000 native species are threatened or at risk; and waste disposal remains high by developed-country standards. Tourism also benefits from environmental imagery while adding transport emissions and local pressure. The policy framework contains credible targets and emissions budgets, yet the Emissions Trading Scheme excludes agriculture and permits forestry removals to substitute for some direct reductions. Overall, the reputation is supported in selected areas but exceeds the breadth and consistency of measured performance.

1 INTRODUCTION

Tourism New Zealand launched "100% Pure New Zealand" in 1999 as a destination-marketing campaign centred on landscapes, culture, and distinctive visitor experiences (Tourism New Zealand, 2024). It should therefore be distinguished from the broader national reputation that New Zealand is "clean and green", and from the stronger claim that the country is environmentally sustainable. The first is a tourism brand, the second is a public and commercial image extending beyond tourism, and the third requires measurable environmental outcomes. Earlier government research recognised that the clean-and-green image had economic value and could be weakened by poor environmental performance (Ministry for the Environment, 2001).

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There are genuine foundations for the reputation. New Zealand has dramatic landscapes, extensive conservation land, and an electricity system dominated by renewable generation. At the same time, its economy depends heavily on land- and nature-based industries whose production can create greenhouse gas emissions, nutrient pollution, waste, and pressure on ecosystems. The research question therefore cannot be answered by treating the brand as either wholly accurate or wholly false. It requires an indicator-based assessment of both alignment and misalignment.

This paper argues that New Zealand's environmental performance aligns with its reputation only to a limited and uneven extent. Renewable electricity and some improvements in waste emissions provide material evidence of alignment. However, persistent pressures from agriculture, freshwater contamination, biodiversity decline, high waste disposal, and tourism-related emissions are too broad to support an unqualified national claim of environmental sustainability.

2 METHODOLOGY AND ANALYTICAL FRAMEWORK

2.1 Research design and source selection

The paper is a secondary-data study combined with comparative policy analysis. It does not generate primary field data. Sources were selected in the following order: official New Zealand environmental inventories and statistical releases; reports from independent public agencies; peer-reviewed research for issues not fully captured in national reporting; and official overseas sources for comparison.

The indicators were selected because they test the main environmental expectations created by the reputation and are represented in comparable national evidence: greenhouse gas emissions and renewable electricity; freshwater quality; biodiversity; waste; and tourism impacts. Agriculture receives particular attention because it combines emissions, land use, freshwater, exports, and the clean-and-green image. Ireland is the primary comparison country because pastoral agriculture forms a large share of national emissions in both countries and both use green national imagery. The Netherlands is included only as a limited policy illustration.

2.2 Criteria for alignment

Alignment is assessed at three levels. Strong alignment exists where national outcomes and recent trends consistently support the environmental expectation. Partial alignment exists where credible strengths coexist with significant, persistent shortcomings. Misalignment exists where major indicators or the treatment of a core sector contradict the reputation. Policy announcements alone are not counted as performance: the analysis considers whether appearances cover the principal sources of harm and whether reported outcomes are improving. Because the indicators are not directly commensurable, the conclusion is a reasoned qualitative judgement rather than a single numerical score.

3 CONTEXT AND COMPARATIVE BASIS

New Zealand's environmental profile is structurally unusual. Its electricity system benefits from hydroelectric, geothermal, and wind resources, while its emissions profile is dominated by biological

methane and nitrous oxide from agriculture. Its geographical isolation also increases the transport component of trade and international tourism. These features do not excuse environmental damage, but they affect which policies and comparisons are meaningful.

Ireland provides the clearest comparison. In 2023, agriculture accounted for 37.8% of Ireland's greenhouse gas emissions, compared with about 53% of New Zealand's gross emissions (Environmental Protection Agency, 2024; Ministry for the Environment, 2025). Both figures are unusually high for developed economies, although New Zealand's exposure is greater. The comparison is therefore used to examine institutional choices in agricultural climate policy, not to claim that the countries are identical.

4 ENVIRONMENTAL PERFORMANCE

4.1 Evidence of alignment

The strongest evidence of alignment is electricity generation. Renewable sources supplied 88.1% of electricity in 2023, a very high share by international standards (Ministry of Business, Innovation and Employment, 2024). This reduces the emissions intensity of electricity and provides a credible basis for part of New Zealand's environmental image. It does not, however, make the whole energy system renewable: transport and industrial heat remain much more dependent on fossil fuels.

Waste-sector emissions also show that regulation can produce measurable improvement. Landfill-gas capture and changes in waste management contributed to waste-sector emissions in 2022 being 19.8% below 1990 levels (Ministry for the Environment, 2024b). These gains matter because they demonstrate that the reputation is not entirely disconnected from performance. Their significance is nevertheless indicator-specific and must be weighed against the wider volume of waste disposed and the larger emissions and freshwater pressures discussed below.

4.2 Agriculture, freshwater, and biodiversity

Agriculture is the clearest source of misalignment. In 2023 it produced about 53% of New Zealand's gross greenhouse gas emissions, with enteric fermentation from ruminant livestock the dominant agricultural source (Ministry for the Environment, 2025). Figure 1 shows that the expansion of dairy cattle emissions has been a major driver of the increase since 1990, even though declining sheep numbers reduced emissions elsewhere in the sector. This pattern means that efficiency improvements have not removed the aggregate environmental pressure created by the composition and scale of production.

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The dairy-for-sheep swap dominates the emissions record

Categories changing by more than 1,000 kt CO₂-e between 1990 and 2023.
Agricultural categories are shown in full colour.

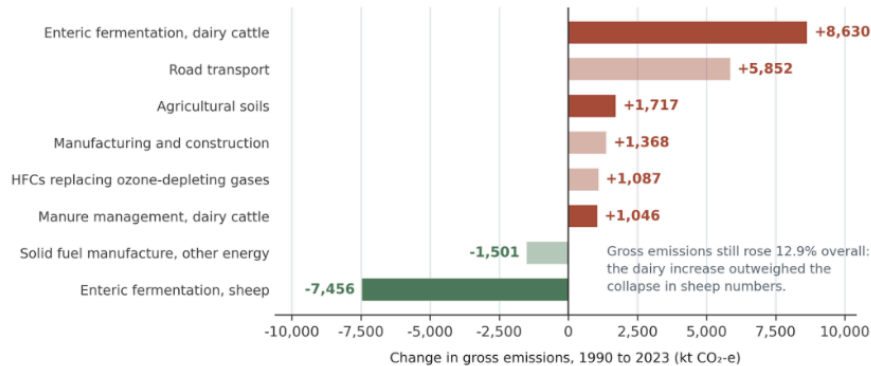


Figure 1. Categories with the largest change in New Zealand's gross greenhouse gas emissions, 1990-2023 (kt CO₂-e).

Source: Author's chart using Ministry for the Environment (2025), New Zealand's Greenhouse Gas Inventory 1990-2023.

Freshwater evidence reinforces this conclusion. Modelled nitrate-nitrogen leaching from livestock increased from about 189,000 tonnes in 1990 to about 200,000 tonnes in 2017. Dairy cattle contributed 65% of the modelled 2017 total, and the highest regional levels occurred in Waikato, Manawatu-Whanganui, Taranaki, and Canterbury (Ministry for the Environment & Stats NZ, 2019). Excess nutrients encourage algal growth, reduce oxygen, and degrade habitat, so the issue is ecological as well as aesthetic.

Groundwater monitoring also identifies widespread human influence. For 2014-2018, 44% of 424 monitored sites had median nitrate-nitrogen concentrations associated with industrialised agriculture and a high likelihood of human impact (Ministry for the Environment & Stats NZ, 2020). Figure 2 maps the distribution of monitored concentrations; it is discussed here because the spatial pattern connects national statistics with the intensive farming regions in which exposure is concentrated.



Figure 2. Median nitrate-nitrogen concentration at monitored groundwater sites, New Zealand (mg/L NO₃-N).

Source: Ministry for the Environment and Stats NZ (2020), Our Freshwater 2020; underlying data from the MfE Data Service.

More recent research on rural domestic supplies sharpens the concern without representing every household. Rogers et al. (2025) analysed more than 3,800 samples collected in 2022-2024. In Canterbury, Southland, and Waikato, 43.1%, 39.9%, and 15.0% of rural samples respectively, exceeded half the maximum acceptable value of 11.3 mg/L nitrate-nitrogen. Isotope evidence indicated that animal waste was an important source of high nitrate concentrations. Figure 3 presents these regional results; its limitation is that the sampling programme focused on rural self-supplies and should not be generalised to all drinking water.

Nitrate in rural drinking water tracks dairy intensity

Domestic bore and spring supplies in the three most intensively converted dairy regions. National survey of 3,800+ samples, 2022–24.

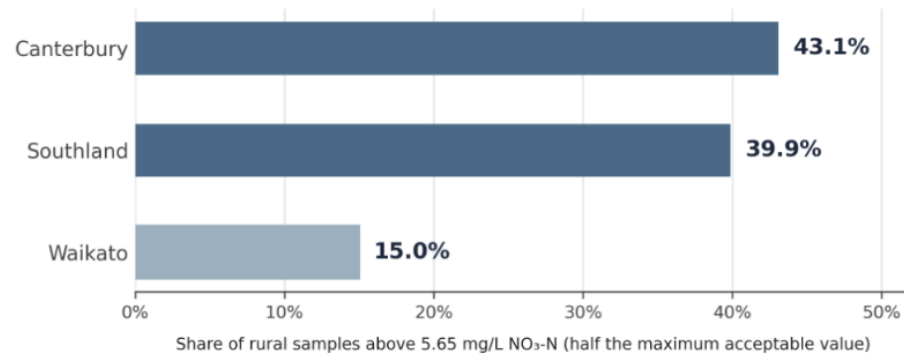


Figure 3. Share of rural domestic drinking-water samples exceeding half the maximum acceptable value for nitrate-nitrogen, 2022–2024.

Source: Author's chart using Rogers et al. (2025).

Biodiversity provides a second national-scale contradiction. More than 4,000 native species are classified as threatened or at risk, reflecting pressures that include invasive species, habitat loss, pollution, and landscape fragmentation (Department of Conservation, 2021). New Zealand's distinctive endemic biodiversity strengthens the international image, but its vulnerability also raises the performance standard the country must meet.

Taken together, the emissions, nitrate, and biodiversity evidence indicates substantial misalignment in land management. Agriculture remains economically important, and some emissions have recently declined, but the sector's scale means that unresolved impacts cannot be treated as marginal exceptions to the national reputation.

4.3 Waste

Waste presents a mixed result. Municipal landfills received an average of 3.9 million tonnes of household and commercial waste each year from 2021 to 2023, equal to 688 kg per person. Only 9.8% of that material was reported as reused, repurposed, or recovered. Disposal per person has recently trended down, but New Zealand remained among the highest per-capita waste disposers in the developed world in the longer OECD series (Ministry for the Environment & Stats NZ, 2024).

The decline in waste-sector emissions is therefore a genuine policy success, but it does not establish strong alignment on resource use. Gas capture reduces climate harm after disposal; it does not replace waste prevention, reuse, or material recovery. The distinction between lower emissions from landfills and lower material consumption is important when assessing a broad sustainability reputation.

4.4 Tourism

Tourism illustrates the difference between a destination brand and environmental performance. The 100% Pure campaign was designed to communicate a distinctive New Zealand experience rather than certify that every activity is pollution-free (Tourism New Zealand, 2024). Nevertheless, repeated use of natural landscapes makes environmental quality part of the expectation sold to visitors, so deterioration in those places can undermine the credibility of the brand.

Tourism industries accounted for 6.9% of New Zealand's industry and household greenhouse gas emissions in 2019, with transport a major component (Stats NZ, 2021). Long-haul aviation is partly a consequence of geography, but the resulting emissions remain part of the wider footprint associated with attracting international visitors. At destinations, visitor concentration can also add waste, wastewater, transport, and habitat pressures. Tourism therefore aligns with the reputation in the experience it offers, while partially misaligning through the environmental costs of delivering that experience at scale.

5 POLICY RESPONSE

5.1 The New Zealand Emissions Trading Scheme

The New Zealand Emissions Trading Scheme (NZ ETS) is the central market instrument for reducing net emissions, but its coverage limits the strength of the response. Agricultural activities were removed from the scheme in November 2024, leaving the largest emissions sector without NZ ETS reporting or surrender obligations (Ministry for the Environment, 2024a). The amended second emissions reduction plan also states that the Government will not proceed with an on-farm agricultural emissions pricing system by 2030 and will instead rely on a technology-led approach (Ministry for the Environment, 2026). Technology investment may reduce emissions intensity, but without a binding sector mechanism its aggregate effect is less certain.

The Climate Change Commission has also warned that excess units weaken the NZ ETS and that its current operation can allow forest carbon storage to displace action on gross emissions. The Commission reports that the scheme covers less than half of national emissions under internationally agreed measures and argues that New Zealand needs both direct reductions and removals (Climate Change Commission, 2024). This is a more precise criticism than treating all offsetting as ineffective: removals are necessary, but they should complement rather than substitute for reductions at source.

New Zealand's statutory framework contains emissions budgets and a net-zero target for long-lived gases. The 2025 amendment, however, reduced the 2050 biogenic-methane target from 24-47% to 14-24% below 2017 levels, while retaining the 10% reduction target for 2030 (Climate Change Response (2050 Target and Other Matters) Amendment Act 2025). This change does not by itself determine environmental performance, but it lowers the long-term ambition applied to the country's largest distinctive emissions source.

5.2 Forestry offsetting

Forestry removals are valuable, but the type and purpose of planting matter. Fast-growing exotic plantations can accumulate carbon quickly and support timber production, while native forests generally provide stronger long-term biodiversity, habitat, and landscape benefits. A strategy dominated by short-rotation exotic planting may therefore improve carbon accounting without delivering the wider environmental outcomes implied by a clean-and-green reputation.

The Parliamentary Commissioner for the Environment (2019) warned that heavy reliance on forest offsets could delay serious reductions in gross carbon dioxide emissions and expose climate policy to risks affecting forest sinks. Figure 4 illustrates the central problem: gross emissions were higher in 2023 than in 1990, while removals from land use were smaller. Afforestation should remain part of the response, particularly on erosion-prone land, but it should not be the default substitute for energy, transport, industrial, waste, or agricultural reductions.

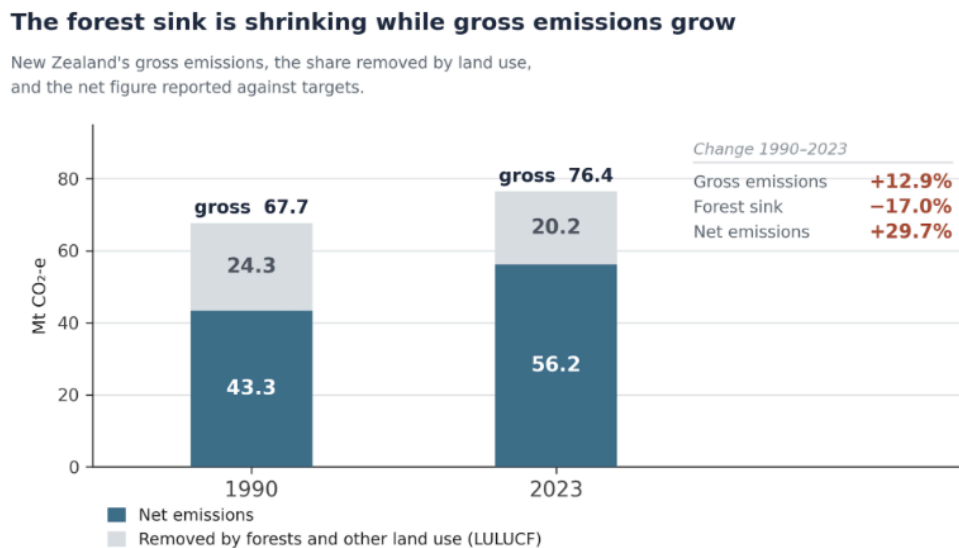


Figure 4. Gross emissions, removals from land use, and net emissions, 1990 and 2023 (Mt CO₂-e).

Source: Author's chart using Ministry for the Environment (2025), New Zealand's Greenhouse Gas Inventory 1990-2023.

6 COMPARATIVE POLICY ANALYSIS

Ireland offers a useful institutional comparison rather than a model of completed success. It has legally binding economy-wide carbon budgets and a sectoral ceiling requiring a 25% reduction in agricultural emissions by 2030 compared with 2018 (Government of Ireland, 2022). Its climate plans connect that ceiling to measures such as lower-emission manure management, reduced fertiliser use, diversification, and methane-reduction technologies. New Zealand has the larger agricultural share of national emissions but no equivalent binding agricultural price or ceiling.

Ireland's framework should not be overstated: the Environmental Protection Agency projected in 2026 that Ireland would remain off track for its national 2030 target even with planned measures (Environmental Protection Agency, 2026). The lesson is therefore that binding budgets and sectoral accountability improve clarity, but they still require implementation, investment, and monitoring. This makes Ireland a stronger comparison than a simple claim that overseas policy has already solved agricultural emissions.

The Netherlands plays a narrower role in the analysis. Its nitrogen strategy combines national measures with region-specific packages, innovation support, nature restoration, and voluntary farm buy-outs (Government of the Netherlands, n.d.). Because its population density, regulatory setting, and geography differ substantially from New Zealand's, it is used only to illustrate how policy can be tailored to local nitrogen hotspots, not as a direct ranking benchmark.

For New Zealand, the most relevant policy implication is a coordinated package: measurable agricultural obligations linked to emissions budgets; targeted funding for methane and nitrogen mitigation; NZ ETS settings that preserve incentives for gross reductions; greater emphasis on permanent native restoration where biodiversity and erosion benefits are priorities; and transparent outcome reporting for freshwater, waste, and tourism pressure. These recommendations follow from the identified gaps rather than adding unrelated policy ambitions.

7 CONCLUSION

New Zealand's environmental performance aligns with its clean-and-green reputation to a limited and uneven extent. High renewable electricity generation, reduced waste-sector emissions, conservation institutions, and formal climate budgets provide credible evidence of alignment. These strengths are substantial and mean that the reputation is not merely fictional.

However, the broader sustainability claim is not supported consistently across the selected criteria. Agriculture remains the dominant source of gross greenhouse gas emissions and a major source of nitrate leaching; freshwater contamination is concentrated in intensive farming regions; biodiversity risk is extensive; material disposal remains high; and tourism adds emissions and local pressures while benefiting from environmental imagery. Policy design reinforces this imbalance because agriculture is outside the NZ ETS and forestry removals can substitute for some direct reductions. On balance, New Zealand performs well in selected environmental domains, but the scope of its international reputation is wider than the scope of its demonstrated performance. Greater alignment would require measurable improvement across the sectors that most depend on, and most strongly shape, the clean-and-green image.

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To what extent does New Zealand's environmental performance align with its "clean and green" international reputation?

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