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Index Carbon Analysis: NZ50

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KEY FINDINGS

- Scope 1&2 emissions have reduced from 2023 levels
- Top 5 emitters represent ~78% of index emissions (17% of market cap)
- Index faces 60% potential carbon liability under IPCC Net Zero scenario by 2050

i This series examines the carbon footprint of major indices, revealing key sector patterns, company-level drivers, and potential carbon liabilities under different climate scenarios.
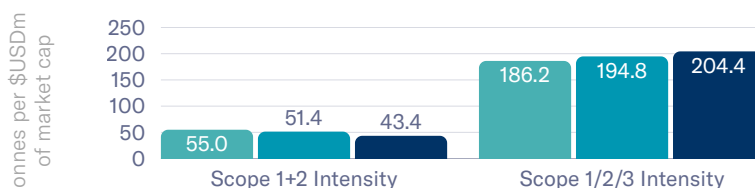
Emissions

NZ50 companies cut their Scope 1 and 2 carbon output in 2024, continuing a reduction from 2022. Supply chain emissions (Scope 3) experienced an uptick from 2023 to 2024 (although this is likely due to increased reporting rather than emissions).
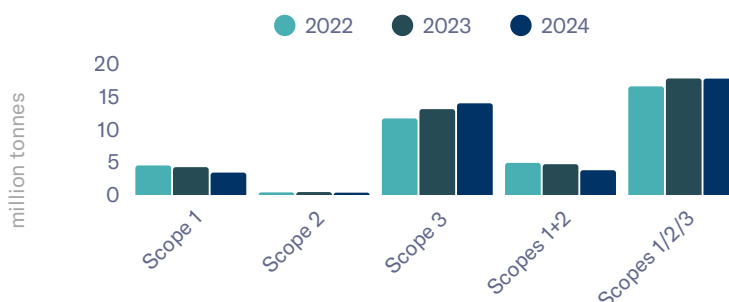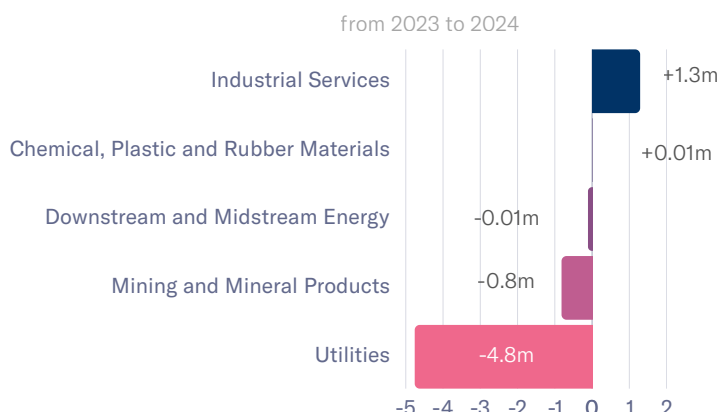

Emissions Intensity

Rising valuations and lower Scope 1 emissions in 2024 ensured Scope 1+2 'intensity' fell from 2023. However, increased Scope 3 emissions led to a marginal increase in Scope 1/2/3 intensity.

Sectors: Biggest Movers in Total Emissions

Analysis of Scope 1 and 2 emissions reveals a significant reduction in the utilities sector. This decrease can be attributed to the decarbonisation and alternative energy generation efforts of Genesis and Contact Energy.

Meanwhile, the industrial sector saw an uptick in emissions. This can be attributed to an increase in Air New Zealand's Scope 1 emissions as its operations continue to recover in the post-COVID period.


from 2023 to 2024

Industrial Services	+1.3m
Chemical, Plastic and Rubber Materials	+0.01m
Downstream and Midstream Energy	-0.01m
Mining and Mineral Products	-0.8m
Utilities	-4.8m

1. While 'divested', these emissions are captured under Scope 3 (Cat. 15 - Investments) as a deferred payment note.

Total Emissions Across Sectors

Industrials, utilities, and consumer non-energy materials make up the majority of Scope 1 and 2 emissions, collectively making up 88% of the index total.

2024 Scope 1+2 Total Emissions Across Sectors

3.8m tonnes CO$_2$e
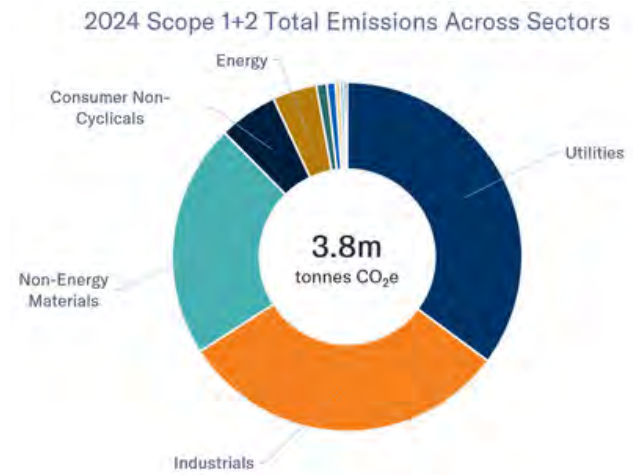
## Capital vs Emissions Weight of Top 5 Emitters   Scopes 1 and 2 (2024)

Of the 50 constituents in the index, 78% of total emissions come from just five companies, representing 17% of the index by capital weight.

- Air New Zealand Ltd.
- Fletcher Building Ltd.
- Genesis Energy Ltd.
- Contact Energy Ltd.
- Mainfreight Ltd.

Capital Weight in Portfolio (%) 16.8%

Emissions Weight 77.5%

Potential Carbon Liability (PCL)

Across the index, we observe a potential carbon liability of up to 60% under the IPCC Net Zero scenario in 2050, with no potential loss under the IPCC Four Degree and NGFS Current Policies scenarios.

IPCC Four Degrees 0%
NGFS Current Policies 0%
IPCC Two Degrees -18%
NGFS Net Zero 2050 -56%
IPCC Net Zero -60%
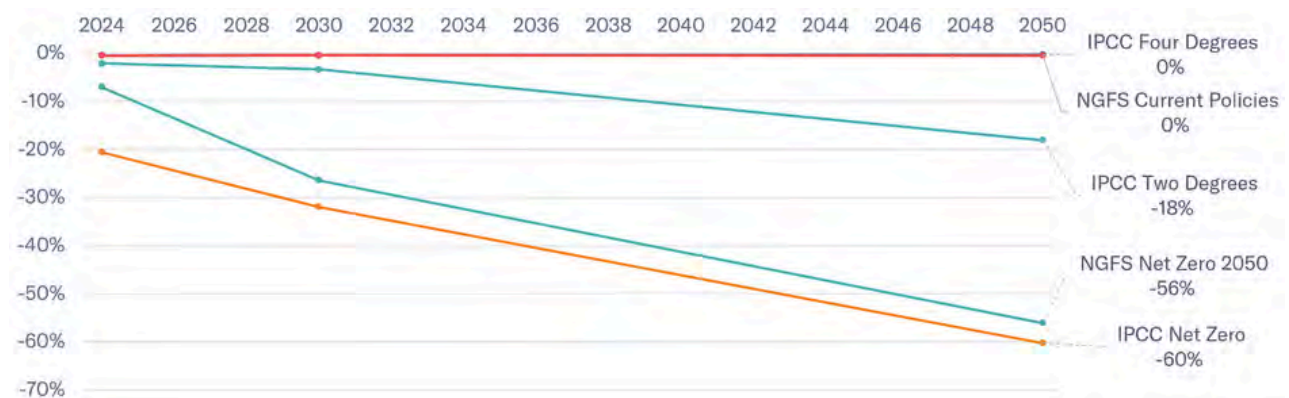
Total Emissions Across Sectors
Scope 1+2 (2023)

As expected, the high-emitting companies flow through to carbon risk, with utilities and consumer non-cyclicals generally the largest contributors of PCL across scenarios.
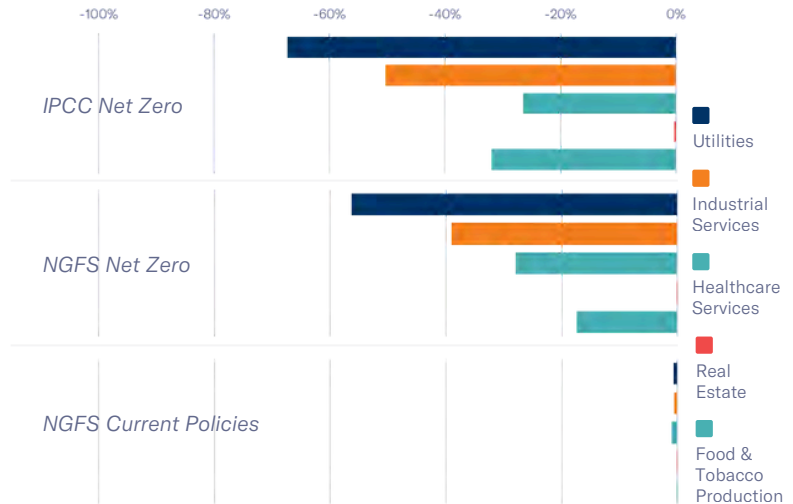
Delayed Arrival: Air New Zealand's Divergent Carbon Pathways

A closer examination of New Zealand's NZ50 index reveals Air New Zealand as the largest Scope 1 and 2 emitter, creating a compelling case study when analysed through competing climate frameworks.

Examining Air New Zealand through both IPCC Net Zero and NGFS Net Zero scenarios (see graph) shows significant variations in carbon risk.

This difference stems from NGFS's sectoral approach to carbon budgets, which acknowledges technological challenges in hard-to-abate sectors. While the total NGFS budget requires a 99% reduction by 2050, the transportation sector faces a more lenient 65% target. (This accommodation comes at the expense of the energy sector, which must achieve net-negative emissions to compensate.)

These real-world challenges were clearly demonstrated in 2024 when Air New Zealand became the first major carrier to abandon its 2030 emissions reduction target. Though it remains committed to the industry-wide 2050 Net Zero goal, the target was dropped because of difficulties in securing more efficient aircraft and sustainable jet fuel.

For Air New Zealand, these model nuances translate to markedly different Potential Carbon Liabilities by 2030: 84% under IPCC compared to 54% under NGFS.

However, the long-term outlook remains stark: without substantial decarbonisation, the airline faces 100% carbon liability by 2050 under both Net Zero scenarios, highlighting that sector-specific allowances merely delay rather than eliminate transformation requirements.

Company Analysis – Potential Carbon Liability
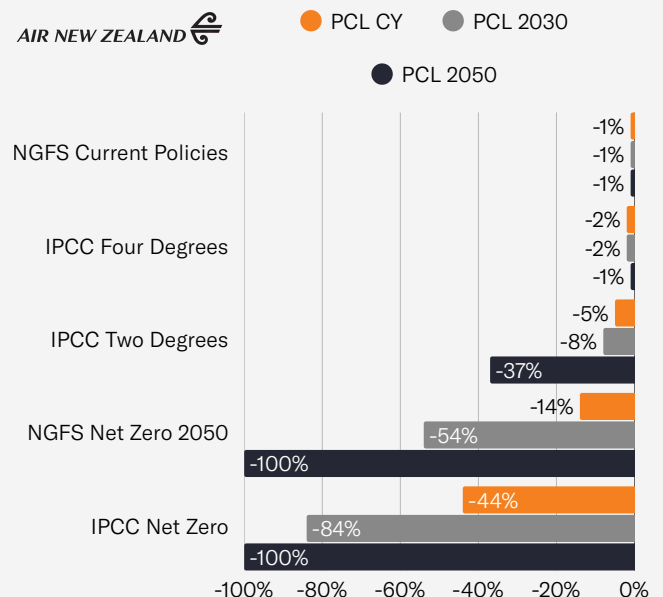
Methodology notes: Our machine learning models achieve strong accuracy across all scopes, with WMAPE (Weighted Average Median Absolute Percentage Error) ranging from 15.3% to 18.1%.

For detailed methodology and validation metrics, read our white paper: emmi.io/newsroom/white-paper-nov-2024

This analysis applies to the current STI constituents, using market values as of each year-end to determine index weightings.

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About Emmi Solutions

Emmi is 'your net-zero investor toolkit' – we provide financed emissions data and climate risk analysis across all major public and private asset classes. These support climate-related reporting, and analysis that feeds into investment management processes.

We use a combination of reported emissions, proprietary machine-learning models and algorithms to do this. Our tools translate emissions into financial implications, based on climate and pricing scenarios. This gives our clients actionable insights about their carbon exposure.

This diagnostics 'toolkit' is backed by our team of climate and finance experts.

Emmi believes that a low carbon economy is possible, and that properly incentivising and mobilising capital is the fastest and most cost-effective way to reach Net Zero and beyond.

Incorporating the cost of carbon into every decision will enable the finance sector, and its customers, to efficiently allocate resources towards this goal, which will accelerate decarbonisation.

To achieve this, and to meet regulatory requirements, there is a need for a broad spectrum of quality carbon emissions data and climate risk analysis. We have built Emmi to solve that problem.