NZ SUPERFUND
Te Kaitiaki Tahua Penihana Kaumātua o Aotearoa

Carbon Footprint

2021

In line with our climate change investment strategy, the Guardians is reducing the NZ Super Fund's exposure to carbon. We define the Fund's carbon exposure as both current carbon emissions intensity (emissions intensity) and potential future carbon emissions from fossil fuel reserves (fossil fuel reserves).

Our targets are to reduce the potential emissions from fossil fuel reserves held by the Fund by at least 80% and the carbon emission intensity of the Fund by at least 40%, by 2025. We first achieved these targets in 2020 and have made further carbon reductions in 2021. Notably, the Fund no longer has any material, long-term holdings of fossil fuel reserves.

Notably, the Fund no longer has any material, long-term holdings of fossil fuel reserves.

As well as reducing the Fund's exposure to carbon, our climate change investment strategy also includes:

- analysing investments for their exposure to risk from climate change;
- engaging with companies on their climate change strategies; and
- searching for new investment opportunities that arise from climate change and related policy responses.

This footprint report, which has been assured by KPMG, shows the carbon reductions we have achieved relative to our 2025 targets.

The Fund's 2021 carbon footprint is an estimated:

- -47.1% as measured by emissions intensity (target -40%); and
- -93.6% as measured by fossil fuel reserves (target -80%).

The percentage reductions are measured against the Fund's unadjusted Reference Portfolio as at 30 June 2021 (i.e. what the Fund would have owned if we hadn't implemented the carbon reductions).

We report on the Fund's carbon footprint annually in order to track our progress. The climate change strategy is a long-term one and there may be volatility in the footprint from year to year. It is the trend in the footprint relative to our targets over time that is most important.

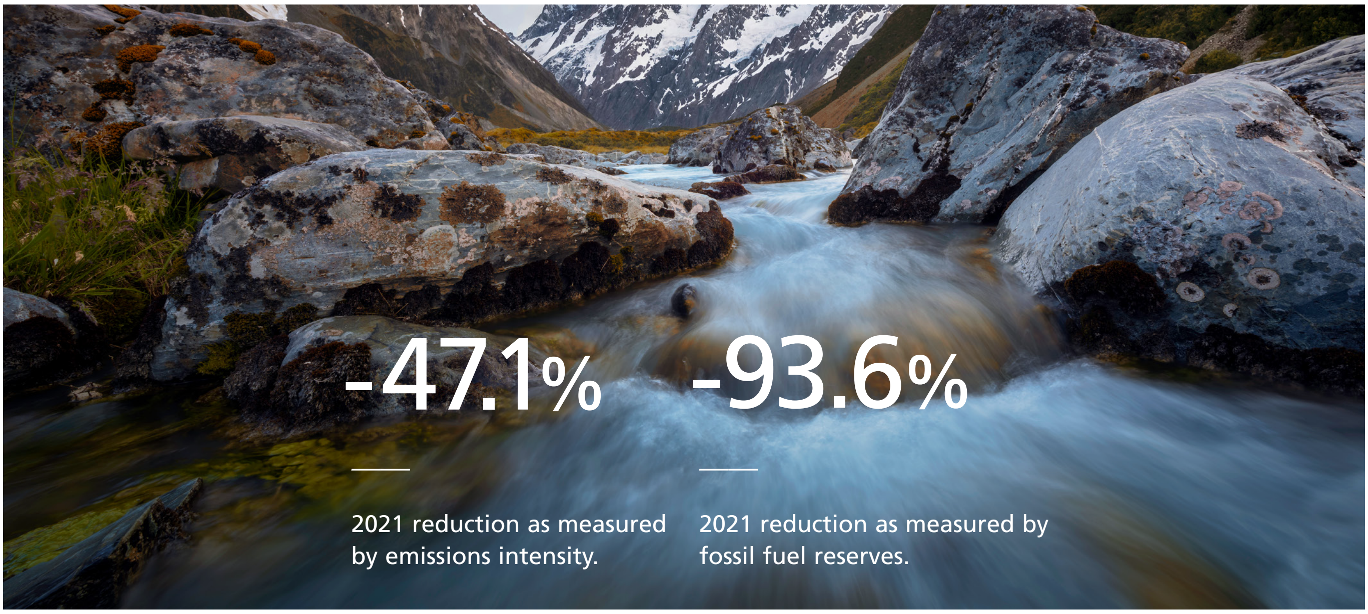


Table 1:

2021 CARBON FOOTPRINT (EMISSIONS INTENSITY) OF THE NZ SUPER FUND[1]

	30th June 2018	30th June 2019	30th June 2020	30th June 2021
	Target Footprint Metrics[2]			
	Emissions Intensity per $ of firms sales (tonnes of CO_2e^3/$USm Sales)			
Unadjusted Reference Portfolio	241.6	230.7	212.9	207.1
NZ Super Fund	196.3	131.8	127.6	109.5
% Reduction	**-18.7%**	**-42.9%**	**-40.0%**	**-47.1%**
	Potential Emissions from Fossil Fuel Reserves per $ invested (tonnes CO_2e/NAV[4] $USm)			
Unadjusted Reference Portfolio	2,578	2,740	2,324	1,663
NZ Super Fund	1,752	1,319	233	106
% Reduction	**-32.1%**	**-51.9%**	**-90.0%**	**-93.6%**

—

1 *NZ Super Fund portfolio footprint includes active and passive listed physical equities, passive equity derivative exposures, and other unlisted assets. Further details provided in Box 2.*

2 *Refer to Box 2 on definitions of reported metrics.*

3 *Greenhouse gases are usually measured as a CO_2 equivalent (CO_2e), and for simplicity in this paper we use the word 'carbon' to refer to all these greenhouse gases. See https://www.msci.com/www/research-paper/carbon-footprinting-101-a/0229050187 for formulas for carbon metrics.*

4 *Net Asset Value (NAV).*

The methodology we have used in order to reduce the Fund's carbon footprint is set out below in Box 1. Box 2 outlines the main metrics used for the calculations.

Box 1:

OUR REDUCTION METHODOLOGY – APPLIED TO PASSIVE PHYSICAL LISTED GLOBAL EQUITIES

In 2017 we created a bespoke methodology for reducing the carbon exposure of the Fund's listed portfolio based on independent third-party data on emissions intensity and fossil fuel reserves provided by MSCI ESG Research. Our focus was on stocks with high carbon footprints without regard to sector. The methodology identifies stocks that exceed thresholds for either emissions intensity and stocks with fossil fuel reserves.

Emissions Intensity

Stocks with high emissions intensity that were in the top quartile of MSCI ESG Research's "Carbon Emissions" score – reflecting less risk due to better management than their peers with respect to climate issues – are retained in the Fund's portfolio. Stocks that were not in the top quartile have been eliminated from the portfolio one-by-one until a 50% reduction for the passive physical global equity portfolio has been achieved.

Fossil Fuel Reserves

This year we aimed for a 100% reduction in fossil fuel reserves within the Fund's global listed equity portfolio in order to exceed our Fund-wide target of an 80% reduction in reserves. We therefore removed holdings in all listed companies with fossil fuel reserves from the Fund's portfolio. For a fuller explanation of these changes please refer to the 2021 Climate Change Report).

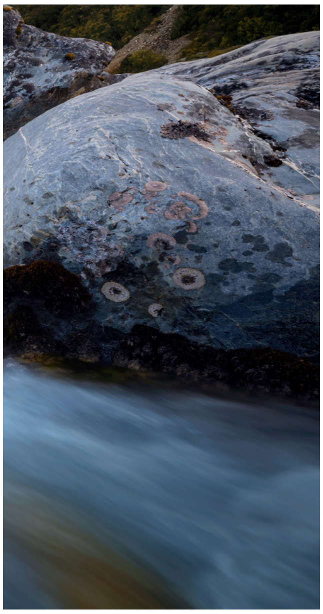
We will continue to refine this methodology and will reapply it annually.

-100%

In 2021 we reduced exposure to fossil fuel reserves in the Fund's global listed equity portfolio by 100%.

Box 2:

THE FUND'S APPROACH TO CARBON FOOTPRINTING



Listed Portfolio

We obtained MSCI ESG Research's footprint calculations for our Actual Fund Equities (this includes active and passive listed physical equities, and passive equity derivative exposures), which accounts for 53.4% of the Fund's holdings by asset value at 30 June 2021. Our equity derivative exposures were treated as equivalent in emissions intensity and fossil fuel reserves as their underlying physical equities equivalents, even though there is not necessarily any underlying holding of physical equities.

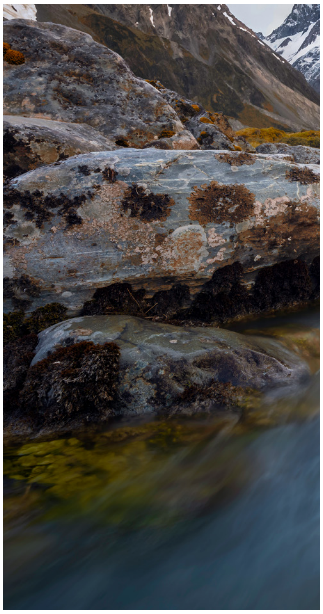
The MSCI ESG Research data used covered 99.4% of our listed equity holdings (by market value). MSCI is able to collect reported footprints for 79.7% (by market value) of the portfolio. Model-based estimates are used to calculate the emissions for 19.7% of the portfolio (by market value).

Unlisted Portfolio

Where carbon data is available, we obtain information directly from our external managers or asset operators. This year we were able to collect data from FarmRight, Retire Australia, Horizon Roads, Kiwi Group Holdings (Kiwibank and Kiwiwealth), Altogether Group, Longroad, Galileo, Rubicon, KKR EIGF and KKR Flexible Mandate. These companies represent 4.1% of the Fund's holdings by asset value.

Box 2:

THE FUND'S APPROACH TO CARBON FOOTPRINTING – *Continued*



We are looking to move to completing the assessment of our rural and timber managers in-house: (1) because our previous provider signalled that it no longer intended to provide this service and (2) because previous estimates did not match estimates from other sources. FarmRight has completed its own footprint this year. For the other assets, we have elected to proxy our timber assets and Palgrove using current revenue data and the previous year's emission intensity. We reviewed using alternative proxies and concluded that this approach was more conservative than using other business activity data. These companies represent 3.5% of emissions.

For the remaining unlisted assets where no data was available (6.5% of the Fund), the emissions intensity and fossil fuel reserves have been proxied based on the general sector of activity of the asset as referenced in the Global Industry Classification Standard (GICS). MSCI provides carbon data on these sectors.

Assets excluded or assumed to have nil emissions

Our bond investments make up approximately 10.0% of the portfolio and are considered to have no carbon footprint (and no revenue) assigned based on the market cap approach to allocating emissions.

Our equity positions taken as part of our strategic tilting program and other market neutral strategies, as well as life settlements, natural catastrophe insurance, active collateral, and 5G spectrum (23.0% of the Fund in total) have been excluded from this analysis.

Calculation

Total portfolio footprinting is a combination of our listed portfolio emissions (calculated by MSCI), obtained carbon data, and proxy-based estimates.

Data and Definitions

Greenhouse gases are usually measured as a CO_2 equivalent (CO_2e), and for simplicity in this paper we use the word 'carbon' to refer to all these greenhouse gases. See https://www.msci.com/www/research-paper/carbon-footprinting-101-a/0229050187 for formulas for carbon metrics.

We have followed the approach of measuring Scope 1 and Scope 2 emissions in our footprint.

Scope 1 emissions are the direct emissions from a company's own production or controlled by the company. It includes emissions from combustion in the company's own boilers, furnaces and vehicles, as well as fugitive emissions.

Scope 2 emissions are the emissions from the production of electricity, heat or steam used by that company (including the transmission and distribution losses associated with some purchased entities).

Scope 3 emissions are the indirect emissions from the production of goods and services purchased by that company or other indirect emissions that occur from sources not owned or controlled by the company. It includes the emissions of contractors and other outsourced activities, such as third party deliveries, business travel and the ultimate use of the product or service. Thus, it covers upstream and downstream emissions. We did not include scope 3 in our footprint calculations other than for fossil fuel reserves (see below) as scope 3 estimation methodology is still developing[5].

MSCI has used the Greenhouse Gas Protocol as the basis of their footprinting calculations https://ghgprotocol.org/.

—
5 *Source: MSCI ESG Research.*

Box 2:

THE FUND'S APPROACH TO CARBON FOOTPRINTING – *Continued*

Footprint Target Metrics Reported:[6]

Emissions Intensity: measured tonnes CO_2e/$m sales = Tonnes of carbon emissions divided by $million of company sales. This measures the portfolio in terms of carbon emissions per unit of output and provides a measure of the overall efficiency of the portfolio by comparing emissions to the economic activity that produces them. This metric is robust to movements in market valuations. The emissions/sales of listed equities is derived from MSCI.

Potential Emissions: measures tonnes CO_2e/$m invested = Tonnes of carbon emissions divided by $million invested. This measures the carbon equivalent emissions stored in fossil fuel reserves that would be released if those fossil fuel reserves were produced and used in the future, relative to dollars invested. Fossil fuel reserves include thermal coal, gas and oil. MSCI ESG Research calculates the potential emissions should all fossil fuel reserves be produced and burnt expressed as tonnes of CO_2 equivalent using the Potsdam Institute methodology. This includes proved and probable fossil fuel reserves.

Fossil Fuel Reserves Calculations

For listed holdings, fossil fuel reserves data is received from MSCI. Given our knowledge of the unlisted assets that report on their footprint, we assume that they own no fossil fuel reserves, except for KKR Shale[7]). For KKR Shale, we estimated the fossil fuel reserves by calculating the potential emissions from fossil fuel reserves per $m invested for the GICS Energy Sector using underlying holdings carbon data from MSCI, and applying this ratio to the KKR asset.

For assets with proxy-based estimates, we assumed that a company has no fossil fuel reserves unless it is a fund that can invest across a range of sectors and it is plausible that some investments could have fossil fuel reserves. In the latter case, fossil fuel reserves are proxied using the average fossil fuel reserves for our unadjusted Reference Portfolio, which was calculated by MSCI.

Portfolio footprints have been reported in USD terms to facilitate easier comparison both over time and to other international funds.

—

6 Source: MSCI ESG Research.

7 Note: this investment is not considered financially material to the Fund and is in wind-down.

Independent Limited Assurance Report to the Directors of the Guardians of the New Zealand Superannuation

Conclusion

Our limited assurance conclusion has been formed on the basis of the matters outlined in this report.

Based on our limited assurance engagement, which is not a reasonable assurance engagement or an audit, nothing has come to our attention that would lead us to believe that the Carbon Footprint (emissions intensity) presented in the NZ Super Fund Portfolio Carbon Footprint 2021 ("Portfolio Carbon Footprint") for the period 1 July 2020 to 30 June 2021 (the "subject matter") has not, in all material respects, been prepared in accordance with the requirements of Guardians of the New Zealand Superannuation management criteria (the "Criteria").

Information subject to assurance

We have performed an engagement to provide limited assurance in relation to Guardians of the New Zealand Superannuation's ("GNZS's") Carbon Footprint (emissions intensity) presented in the Portfolio Carbon Footprint, for the period 1 July 2020 to 30 June 2021.

Criteria

The subject matter was evaluated against the Criteria specified in 'Box 2: Fund's Approach to Carbon Footprinting (emissions intensity)' contained within the Portfolio Carbon Footprint.

Standards we followed

We conducted our limited assurance engagement in accordance with International Standard on Assurance Engagements (New Zealand) 3000 (Revised) *Assurance Engagements other than audits or reviews of historical financial information* and International Standard on Assurance Engagements (New Zealand) 3410 *Assurance Engagements on Greenhouse Gas Statements* ("ISAE (NZ) 3410"). We believe that the evidence we have obtained is sufficient and appropriate to provide a basis for our conclusion. In accordance with those standards we have:

- used our professional judgement to plan and perform the engagement to obtain limited assurance that the Carbon Footprint (emissions intensity) is free from material misstatement and non-compliance, whether due to fraud or error;
- considered relevant internal controls when designing our assurance procedures, however we do not express a conclusion on the effectiveness of these controls; and
- ensured that the engagement team possess the appropriate knowledge, skills and professional competencies.

The procedures performed in a limited assurance engagement vary in nature and timing from, and are less in extent than for a reasonable assurance engagement. Consequently the level of assurance obtained in a limited assurance engagement is substantially lower than the assurance that would have been obtained had a reasonable assurance engagement been performed.

Restriction of distribution and use

Our report should not be regarded as suitable to be used or relied on by any party's other than GNZS for any purpose or in any context. Any party other than GNZS who obtains access to our report or a copy thereof and chooses to rely on our report (or any part thereof) will do so at its own risk.

To the fullest extent permitted by law, we accept or assume no responsibility and deny any liability to any party other than GNZS for our work, for this independent limited assurance report, or for the conclusions we have reached.

Our report is released to GNZS on the basis that it shall not be copied, referred to or disclosed, in whole (save for GNZS own internal purposes) or in part, without our prior written consent.

Management's responsibility for the Carbon Footprint (emissions intensity)

Management of GNZS are responsible for the preparation and fair presentation of the subject matter in accordance with the Criteria. This responsibility includes such internal control as Management determine is necessary to enable the preparation of a subject matter that is free from material misstatement whether due to fraud or error.

Our responsibility

Our responsibility is to express a conclusion to the directors on whether anything has come to our attention that the Carbon Footprint (emissions intensity) presented within the Portfolio Carbon Footprint has not, in all material respects, been prepared in accordance with the Criteria.

Our independence and quality control

We have complied with the independence and other ethical requirements of Professional and Ethical Standard 1 International Code of Ethics for Assurance Practitioners (Including International Independence Standards) (New Zealand) issued by the New Zealand Auditing and Assurance Standards Board, which is founded on fundamental principles of integrity, objectivity, professional competence and due care, confidentiality and professional behaviour.

The firm applies Professional and Ethical Standard 3 (Amended) and accordingly maintains a comprehensive system of quality control including documented policies and procedures regarding compliance with ethical requirements, professional standards and applicable legal and regulatory requirements.

Our firm has also provided advisory services to GNZS. Subject to certain restrictions, partners and employees of our firm may also deal with GNZS on normal terms within the ordinary course of trading activities of the business of GNZS. These matters have not impaired our independence as assurance providers of GNZS for this engagement. The firm has no other relationship with, or interest in, GNZS.

KPMG.

KPMG
Wellington, New Zealand

17 September 2021