NZGIF / NEW ZEALAND GREEN INVESTMENT FINANCE

EMISSIONS BENEFIT REPORT 2022-2023

EXECUTIVE SUMMARY

This is NZGIF's second emissions benefit report, which estimates the decarbonisation impact of our investments to 30 June 2023.

About our investments

NZGIF aims to demonstrate to the market that it is possible to deliver low carbon benefits alongside commercially viable investments — that capital coupled with purpose makes economic sense.

All our investments are made on a commercial basis. When we consider an investment we assess it against the contribution it would make towards meeting our objectives:

- The commercial terms (including risk and reward profile);
- The ability to attract co-investment over time;
- The market leadership and demonstration exhibited by us undertaking the investment, and;
- The decarbonisation contribution or 'estimated emissions reduction'.

Estimating emissions benefit

We define emissions benefit as the resulting positive contribution to decarbonisation from our investments.

There are many ways that NZGIF can positively contribute to decarbonisation, including demonstrating the viability of investment into lower emissions technologies, capability development and leveraging private sector funds into lower emissions business activities. In light of the long time horizons and enduring nature of our investments, rather than measuring emissions reduced in a backwards-looking manner, we estimate future emissions reductions associated with a project or company over their lifetimes ("estimated lifetime emissions reduction").

New Zealand Green Investment Finance Ltd is not a registered bank.

Our emissions benefit

As at 30 June 2023, the total estimated lifetime emissions reductions of our capital committed was 730k to 890k tonnes of CO_2-e.

The range was developed by applying +/-10% flex to the key driver of each investments estimated lifetime emissions reduction calculation. This is consistent with NZGIF's GHG Impact Estimation Methodology as approved by the Board in August 2021.

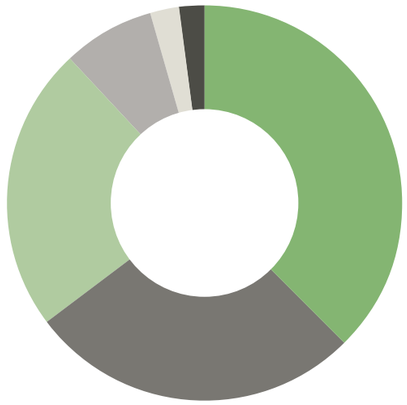
As at 30 June 2023, NZGIF had made 21 investments, of which 16 have a lifetime emissions reduction included in the estimated range. Refer to the 'Investments excluded' table in the Portfolio Emissions Estimation section for more detail on the investments excluded from our estimations.

Emissions reductions by sector

The chart to the right shows the estimated emissions reductions broken down by sector.

The majority of emissions reductions as at 30 June 2023 came from investments in the Transport sector, largely due to debt commitments to Kinetic and Sustainable Fleet Finance. Distributed Energy Resources was the second largest sector followed by Energy Efficiency.

GHG reduction breakdown by sector



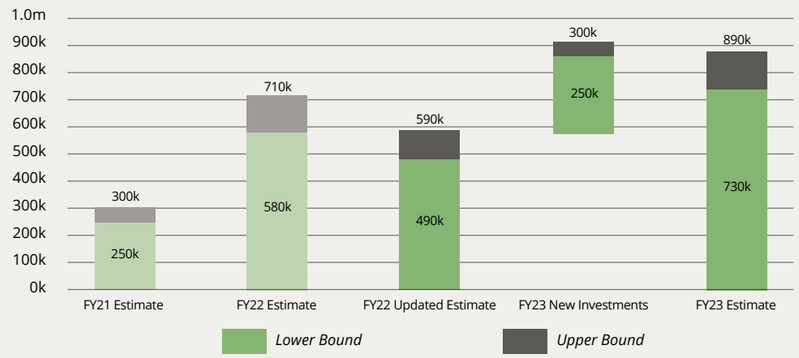
"The majority of emissions reductions as at 30 June 2023 came from investments in the Transport sector..."

Emissions reductions estimation movements over the current financial year

The difference between the 30 June 2023 estimate and the 30 June 2022 estimated range can be attributed to:

- The FY22 Estimate being recalculated (at 30 June 2023) due to refreshed data inputs such as updated Management forecasts and grid electricity emission factors, leading to an updated FY22 Estimate (FY22 Updated Estimate), and
- The new investments made in the current financial year (FY23 New Investments).

Estimated lifetime emissions reductions (tonnes of CO_2-e)



The impact of our investments

As at 30 June 2023

$288m

Total NZGIF capital committed and executed

$468m

Total co-investment committed

730k to 890k tCO$_2$-e

Estimated lifetime emissions reductions of our investments

Our portfolio of investments and their decarbonisation emissions benefit

Our emissions benefit impact can be seen across our portfolio of investments in multiple sectors, not only in emissions reductions but through other benefits such as market development, electricity system optimisation and resilience, and enabling international players to enter the New Zealand market.

Each investment is unique in its impact profile — but all offer decarbonisation benefits to New Zealand.

What are emissions benefits?

Emissions benefits are the resulting positive contribution to decarbonisation from our investments.

There are many ways that NZGIF can positively contribute to decarbonisation, including demonstrating the viability of investment into lower emissions technologies and assets, and leveraging private sector funds into lower emissions business activities. As part of measuring our emissions impact, we estimate the lifetime emissions reductions of an investment.

Why we estimate emissions reductions

We estimate emissions reduction impact for transparency and accountability purposes, to ensure we are meeting our objectives.

As a green investment bank, we model best practice behaviours. Our membership of the Green Bank Network helps us to identify international best practices and implement them here in New Zealand.

How we estimate emissions reductions

When possible, we estimate the lifetime emissions reduction resulting from an investment. We do this by comparing an estimated emissions profile against an alternative outcome ('baseline') emissions profile if the investment had not occurred. NZGIF's methodology is based on the methodology used by other institutions in the Green Bank Network and has been reviewed by a third party.* The methodology is further explained in the Greenhouse Gas Lifetime Emissions Estimation Methodology section.

* Due to the forward-looking and assumptions-based nature of our methodology, our estimates are not verified or audited, but have been reviewed by a third party.

CASE STUDY

KINETIC

KINETIC
moving people

Kinetic, Australasia's largest bus transport operator, is helping decarbonise public transport

Date: March 2023

Sector: **Transport**

NZGIF investment:
$50m senior debt facility

- Major financing deal to help decarbonise public transport in New Zealand
- NZGIF invested as part of a broader syndicate, accelerating the crowding-in of private capital
- Estimated lifetime emissions reduction potential of 103,000 to 125,000 tonnes of CO_2-e

In early 2023, NZGIF signed a deal with Kinetic to co-finance zero emissions buses and associated infrastructure for New Zealand. NZGIF's $50 million capex facility is part of a broader senior lending syndicate supporting Kinetic's strategic vision and sustainability goals to help reduce public transport emissions.

To decarbonise our transport system and meet our emissions reductions targets, we will need to rapidly increase the number of low and zero carbon emissions buses on our roads.

NZGIF's financing can enable faster uptake of electric buses to help us reach net zero quicker.

*Latest figures estimate **10.5%** bus fleet of 2,600 to be electrified*

Accelerating Kinetic's growth

Kinetic is not only the largest bus operator in Australasia but one of the fastest growing as well. The company is already well established in New Zealand through their acquisitions of NZ Bus and Go Bus.

Kinetic has ambitious plans to support councils in transitioning public bus fleets from diesel to battery electric buses. At the time of investment, Kinetic had already delivered over 150 electric buses to New Zealand streets in partnership with councils in Auckland, Wellington, Christchurch and Tauranga.

Electrifying public bus fleets to help decarbonise public transport in New Zealand

Latest figures estimate 10.5 percent of New Zealand's public bus fleet of 2,600 is electrified. Public buses drive on average 80,000kms per year, nearly six times the average distance of our light vehicle fleet, so each bus we electrify delivers a significantly larger reduction in emissions per vehicle compared with light vehicles.

Barriers to electric bus uptake in New Zealand:

- Lack of availability of electric bus models in New Zealand
- High upfront capital cost of a new electric bus compared to a diesel bus
- New Zealand lacks a mature used vehicle market for electric buses
- High costs for charging units, depot reconfiguration and grid connection upgrades
- Lack of ready financing for the New Zealand market

$50m senior debt facility
As part of a senior lending syndicate alongside 12 major banks

Which is expected to finance
150 zero emission buses

And reduce emissions by
103,000 – 125,000 tonnes of CO_2-e

Reduced emissions

Investment impact

NZGIF's $50 million senior debt facility will be used to co-fund more than 150 zero-emission buses over the term of the facility. If fully drawn, the facility will help New Zealand avoid more than 100,000 tonnes of CO_2 emissions over the life of the assets.

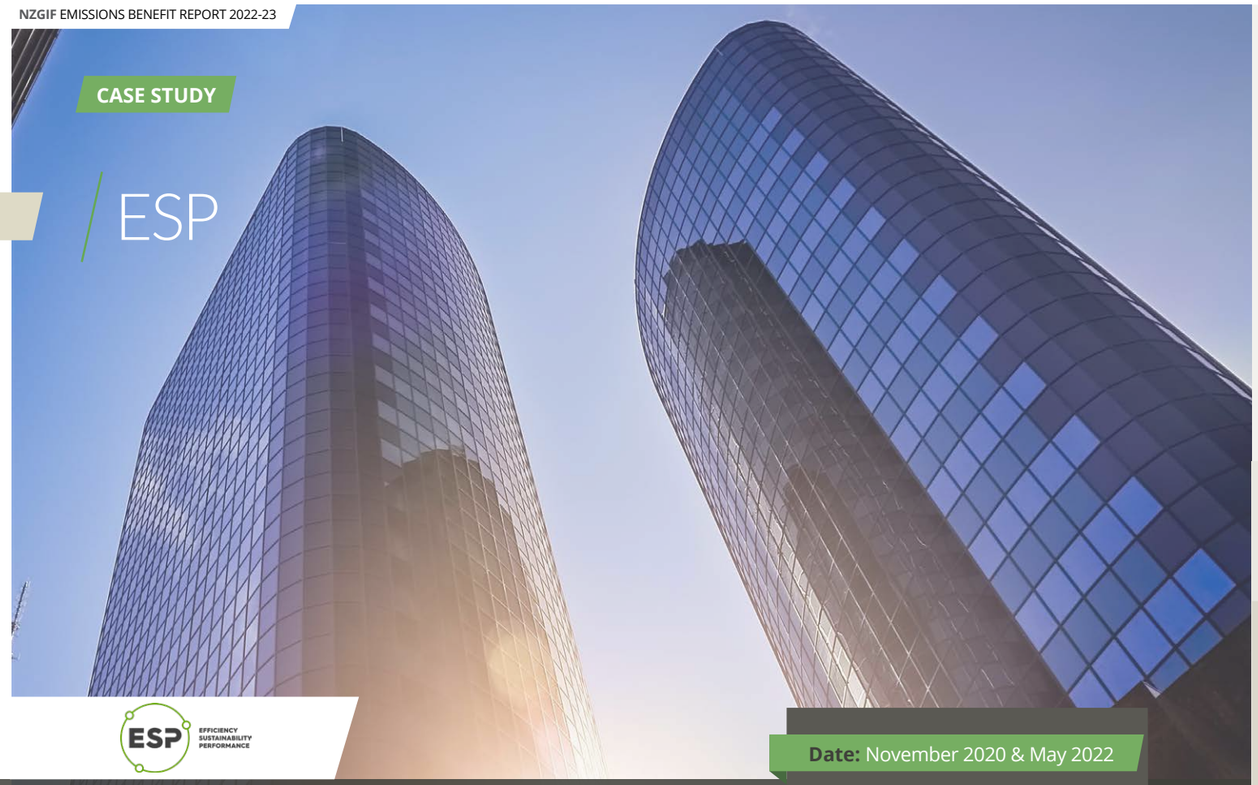
At September 2023, Kinetic had utilised $13.6 million of the facility to co-finance 43 electric buses for Auckland transport operations and charging infrastructure for the New Lynn depot, and put down deposits for a further 42 electric buses and EV chargers.

New electric bus depots launched

In January 2023, Kinetic unveiled New Zealand's first and Australasia's largest fully electric bus depot in Panmure, Auckland. The site is home to 35 electric buses, which are among 152 the company will deliver in partnership with Auckland Transport over the next two years. Kinetic launched its New Lynn electric bus depot in September this year.

Calculation assumptions

- Number of vehicles financed by the facility
- How many kilometres those vehicles drive
- CO_2-e emissions difference between the new electric buses and diesel buses currently being used
- Asset life of 12.5 years



CASE STUDY

ESP

ESP helps companies understand and optimise their utility consumption

Date: November 2020 & May 2022

Sector: Energy Efficiency

NZGIF investment:
$4.45m equity investment

- Enabling energy optimisation for multiple companies
- Estimated emissions reduction potential of 201,000 to 244,000 tonnes of CO_2-e over the next three years
- Growing ESP's customer base
- Financing ESP's acquisition of carbon accounting software company BraveGen

Using leading-edge technology, ESP enables its clients to reduce energy usage and GHG emissions and deliver tangible cost savings. ESP's energy and carbon management solutions deliver 10-20 percent energy savings for large energy users, many of whom are in commercial property, with some clients achieving up to 50 percent energy savings through decreased electricity usage. ESP monitors around 80,000 tonnes of CO_2-e per annum and has helped clients directly avoid 59,000 tonnes of CO_2-e since the platform was established.

ESP helped clients directly avoid ***12,000 tonnes of CO_2-e in FY23***

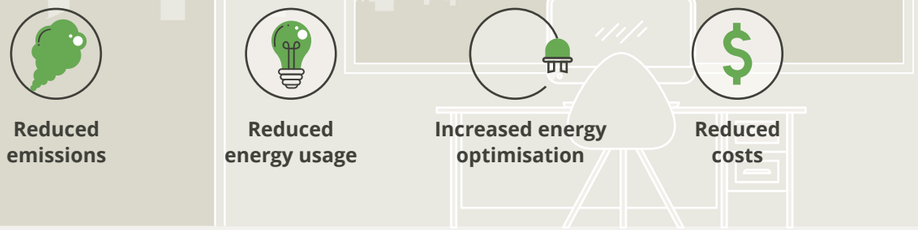
The technology advantage

ESP has differentiated itself in the market by offering carbon management services that combine 'big data' analytics, artificial intelligence and machine learning. A core part of ESP's value proposition is its ability to directly support decisions that provide tangible cost savings and reduce carbon emissions. By integrating emissions data alongside electricity and gas usage, clients can bring carbon management into everyday business analysis.

We're financing ESP to improve their carbon management technology and acquire new customers

NZGIF made a $2.7 million equity investment in ESP in 2020. This investment helped build additional client interface capability, further integrate AI into deliverables, and advance ESP's GHG reporting and avoidance technology. In 2022, NZGIF made an additional $1.75 million equity investment to support ESP's acquisition of BraveGen — a leader in enterprise carbon accounting, environmental compliance and sustainability management systems.

Lifetime emissions reductions of this investment estimated to be in the range of ***201,000 to 244,000 tonnes of CO_2-e***



ESP's growth will support energy efficiency and carbon reductions in New Zealand

The benefits enabled by ESP are accessible to many New Zealand businesses.

It's estimated 20 percent of New Zealand's total $12 billion stationary electricity spend is 'wasted' and could be avoided. New Zealand's focus on reducing emissions is expected to grow as more businesses become aware of their carbon footprint and policy incentives influence investment decisions.

> *Our investment in ESP's growth is a win-win for New Zealand. We see potential for significant growth for ESP as New Zealand companies recognise that to be successful, to meet the expectations of shareholders and customers, they need to do business with less carbon.* *Jenny Lackey, NZGIF Chief of Corporate Affairs*

Calculation assumptions

- CO_2-e reductions is a function of customer base growth
- Customer base growth is estimated in line with ESP's financial forecasts
- Average emissions reduced for existing customers
- Additional CO_2-e reductions for new customers are estimated for eight years, which aligns with ESP's customer retention profile

GREENHOUSE GAS LIFETIME EMISSIONS ESTIMATION METHODOLOGY

Overall approach

NZGIF estimates the lifetime emission reductions of an investment by comparing an estimated emissions profile against an alternative outcome ('baseline') emissions profile if the investment had not occurred. NZGIF's methodology is based on the approach taken by institutions in the Green Bank Network. Estimations are checked by an independent party. The methodology is further explained below.

Principles

NZGIF's lifetime estimation approach is underpinned by these key principles:

- **Conservative** — NZGIF should be conservative when estimating the impact of its investments.
- **Scalable** — NZGIF's estimation approach should be replicable across multiple investments where feasible.
- **Transparent** — Assumptions and data sources should be recorded and visible where appropriate.
- **Reviewable** — The estimation approach and assumptions should be periodically reviewed by third parties.
- **Efficient** — Given the assumption-led approach to estimation we need to balance the time and cost of making estimations against achieving absolute certainty and accuracy. This is also why we provide a range for our estimates.
- **Multi-dimensional** — NZGIF can reflect the impact of projects in other appropriate ways, such as case studies.
- **Updatable** — Data should be able to be updated without significant effort when/if new data becomes available.

These principles ensure the methodology is appropriate given NZGIF's purpose of accelerating investment.

Application of Methodology to Projects

Parameters and assumptions

Prior to the estimation calculation, the appropriate parameters and assumptions are identified. Many of these assumptions will be unique to the investment. The counterfactual scenario that is built from those assumptions will therefore be unique to the investment.

Examples of the questions we ask ourselves to construct the counter/actual scenarios are:

- How many kilometres would have been driven by internal combustion engine cars if these electric vehicles had not been financed?
- How many tonnes of CO_2-e would these buildings have emitted if the company we invested in did not monitor and manage that building's energy efficiency and carbon profile?

There are some assumptions and parameters in the estimation methodology that we use across the portfolio:

- NZGIF includes 100 percent of the project's emission reduction in the calculation, regardless of co-investment levels.
- NZGIF will usually define the 'lifetime' as the useful life of the underlying assets or technology. In some cases, NZGIF may link lifetime to the duration of the financial instrument.
- NZGIF includes only operating emissions over the lifetime of the project.
- The counterfactual scenario NZGIF uses as a baseline will be a scenario using actual/existing technologies/ solutions easily available or in use currently.
- Emissions factors used are those supplied by the Ministry for the Environment unless more appropriate assumptions are supplied to NZGIF by industry and regulatory bodies.
- For equity investments, lifetime emission estimates are discounted relative to the stage of the investment. This reflects the inherent uncertainty in estimating the future emissions benefit that a company will generate (as our estimation may be based on sales projections rather than derived from specific assets or projects). The discounts applied are as follows: Seed has a probability weighting of 0.1, the three stages of Venture Capital are 0.2, 0.3 or 0.5, and Private Equity is 0.7. (These discount factors are consistent with those used by other green banks.)
- For debt investments, NZGIF considers the proposed use of the funds, and the timing of the project beginning (i.e., when the debt is drawn/ utilised).

Reporting eligibility

NZGIF takes a per-project approach, assessing assumptions based on the bespoke nature of each investment case, rather than applying generic assumptions across transactions within the same sector.

NZGIF only reports on projects that have reached a final investment or commitment decision to which NZGIF is 'contractually committed'.

For small equity investments (<$2 million where emissions data may be difficult to obtain from the investee company or is dependent on future growth) estimates may not be provided.

When re-financing an existing project, NZGIF does not consider the re-financing as a new transaction and therefore does not include the re-financed portion in our estimate.

NZGIF will continue to report on projects where NZGIF's investment has ended but the project or company is still in operation.

After exiting an investment, NZGIF will continue to include the emissions benefit in the cumulative estimate.

NZGIF will not include the emissions benefit for a project if it is believed that the operations will cease.

Data integrity

Data is managed in a workbook with clear data owners and where appropriate data processes are clearly documented.

Periodically, estimations and re-estimations may be checked by an independent party.

Data presentation

GHG lifetime estimates are presented as a range. The range is an estimate and actual outcomes may differ.

The range is developed by performing scenario and sensitivity analysis on the key assumptions made by NZGIF in each individual estimate.

Numbers are rounded to the nearest thousand CO_2-e tonne.

Re-estimation timeframes

Generally, estimates will be reviewed every 12 months. If material information emerges, they will be re-evaluated at that time.

Periodically, the estimate will be reassessed to ensure it is up to date with current NZGIF methodology and available information.

Information sources

We used the following publicly available information sources to develop our emissions estimation methodology:

- Ministry for the Environment Measuring Emissions Detailed Guide 2023
- Sixth Assessment Report of the Intergovernmental Panel on Climate Change 2021 – Chapter 7 The Earth's Energy Budget, Climate Feedbacks and Climate Sensitivity
- www.nzgeothermal.org.nz/geothermal-in-nz/what-is-geothermal/

PORTFOLIO EMISSIONS ESTIMATIONS

As at 30 June 2023, NZGIF had made 21 investments, of which 16 have a lifetime emissions benefit included in the estimated range.

Five investments were excluded as they do not meet the Reporting Eligibility criteria (see below).

The table below outlines how each investment was estimated. The outputs have not been rounded (but the aggregate has been rounded to the nearest 10,000).

The "Key Driver" is what has been used to develop the range of each estimate, with figures at either end of the range included in the "Result (tonnes CO_2-e)" "Low" and "High" columns. Other inputs used for each estimate are also shown in the "Other Inputs" column.

Brief details of how each investment was estimated are outlined in the table below as well as the difference between the 30 June 2023 and the 30 June 2022 estimates. The outputs have not been rounded.

Investment	Investment Description	Estimate Description	Key Driver	Other Inputs	Result (tonnes CO_2-e)	
					Low	High
ESP Limited	$4.45m equity investment in ESP.	Estimate based on budgeted revenue of ESP and the average CO_2-e emissions saved per $ of revenue. Only 70% of output is taken due to private equity discount (see Greenhouse Gas Lifetime Emissions Estimation Methodology).	Annual revenues ($)	The average CO_2-e emissions saved per $ of revenue earned by each customer.	201,209	244,442
Kinetic	$50m senior debt facility to Kinetic Tco Pty Ltd to finance new zero emission buses and associated infrastructure in New Zealand.	Estimate based on the number of vehicles financed by the facility, how many kms those vehicles drive and the CO_2-e emission difference between the new electric buses and current diesel buses being used.	Distance driven per vehicle per year (km)	The difference between CO_2-e emissions resulting from solar use and NZ electricity grid use.	102,607	125,408
Sustainable Fleet Finance Limited	$35m across seven credit facilities to SFF to provide financing for electric vehicles and low emission vehicles for corporate fleets.	Estimate based on yearly vehicle take up and how many kms those vehicles drive.	Distance driven per vehicle per year (km)	1. Yearly customer vehicle take-up forecast of SFF. 2. The average CO_2-e emission difference between financed vehicles (light electric and low-emission) vs current light petrol vehicles being used.	85,818	104,889
solarZero Energy Services Limited	$53.77m mezzanine debt facility to accelerate the uptake and deployment of solarZero's innovative 'solar as a service' model.	Estimate based on number of new customers enabled by the facility, KwH per annum generation per customer and the difference between CO_2-e emissions resulting from solar use and NZ electricity grid use.	Annual generation per customer (kWh)	1. Projected number of new customers per year. 2. The difference between CO_2-e emissions resulting from solar use and NZ electricity grid use.	73,185	89,449
Zenobē	$20m credit facility to support Zenobē with the deployment of electric bus (E-Bus) fleets under long-term lease agreements with major operators in New Zealand.	Estimate based on the number of vehicles financed by the facility, how many kms those vehicles drive and the CO_2-e emission difference between the new electric buses and current diesel buses being used.	Distance driven per vehicle per year (km)	CO_2-e emission difference between the new electric buses and current diesel buses being used.	64,752	79,271
Kayasand	$3.5m equity investment in Kayasand.	Estimate is based on Kayasand's current contract deployment pipeline, freight requirements (volume and distance travelled), the difference in CO_2-e emissions produced using Kayasand compared to current concrete products, and the total Kayasand requirements for the different sized concrete plants. Only 30% of output is taken due to venture capital discount (see Greenhouse Gas Lifetime Emissions Estimation Methodology).	Volume of Kayasand required for different sized plants (kg/m3 of concrete)	1. Projected contracts in Kayasand's deployment pipeline. 2. The difference in CO_2-e emissions produced using Kayasand compared to current concrete products. 3. The difference in kms freight vehicles travel between quarries, ports and concrete plants for Kayasand compared to current concrete products.	53,456	65,335
Solagri Energy Limited	$10m senior debt facility to Solagri Energy Ltd to finance agricultural Power Purchase Agreements (PPAs) for solar installations on farms.	Estimate based on the number of solar sites built on farms using the facility, the generation of kWh per farm and the difference between CO_2-e emissions resulting from solar use and NZ electricity grid use.	Annual generation per install (kWh)	The difference between CO_2-e emissions resulting from solar use and NZ electricity grid use.	29,816	36,442

Investment	Investment Description	Estimate Description	Key Driver	Other Inputs	Result (tonnes CO_2-e)	
					Low	High
Eastland Group	$25m subordinated debt facility to Eastland Group Ltd to fund the construction of connection assets thereby facilitating the associated geothermal generation capacity.	Estimate is based on the difference between CO_2-e emissions resulting from median emissions of a geothermal plant and the average emissions of the national electricity grid.	Annual geothermal plant generation (kWh)	The difference between CO_2-e emissions resulting from a geothermal plant while operating and NZ electricity grid use.	25,485	31,149
SFF Low Emissions Delivery Limited	$10m mezzanine debt facility to accelerate the transition of the NZ Post fleet and its delivery contractors' vehicles, to electric vans (E-Vans) or low emissions vehicles (LEVs).	Estimate based on the number of vehicles taken up by facility, how many kms those vehicles drive and the CO_2-e emission difference between electric vehicles and current diesel vehicles being used.	Distance driven per vehicle per year (km)	The CO_2-e emission difference between electric vehicles and current diesel vehicles being used.	20,856	25,490
Genesis Energy	$1.2m senior debt facility to finance electric heat pumps as part of Genesis's heat as a service offering to Van Lier Nurseries.	Estimate is based on Van Lier Nurseries' annual heating requirements (kWh) and the difference between CO_2-e emissions resulting from electric heat pump use and gas heating.	Annual electricity use (kWh)	The difference between CO_2-e emissions resulting from electric heat pump use and gas heating.	17,164	20,978
Rural Energy	$10m asset finance facility to Rural Energy SPV Ltd to refinance operational Power Purchase Agreement backed solar arrays.	Estimate is based on the number of installs financed by the facility and the generation of kWh per install and the difference between CO_2-e emissions resulting from solar use and NZ electricity grid use.	Annual generation per install (kWh)	The difference between CO_2-e emissions resulting from solar use and NZ electricity grid use.	16,147	19,736
TNUE Limited	$2.875m equity investment in TNUE Ltd.	Estimate is based on the tonnes of CRM-coated fertiliser used and the difference in CO_2-e emissions the coated fertiliser produces compared to current fertiliser products. Only 70% of output is taken due to private equity discount (see Greenhouse Gas Lifetime Emissions Estimation Methodology).	Controlled Release Membrane (CRM) coated fertiliser sold per year (tonnes)	CO_2-e emission difference between fertiliser coated with urease inhibitor and fertiliser not coated with urease inhibitor.	15,618	19,089

Investment	Investment Description	Estimate Description	Key Driver	Other Inputs	Result (tonnes CO_2-e)	
					Low	High
solarZero Commercial PPAs Limited	$10m senior debt facility to solarZero to finance Power Purchase Agreements (PPAs) for solar installations on commercial buildings.	Estimate based on the number of commercial sites built using the facility, the resulting total generation (kWh) and the difference between CO_2-e emissions resulting from solar use and NZ electricity grid use.	Annual generation per install (kWh)	The difference between CO_2-e emissions resulting from solar use and NZ electricity grid use.	13,919	17,012
solarZero Public Sector PPAs Limited	$8m senior debt facility to solarZero to finance Power Purchase Agreements (PPAs) for solar installations on New Zealand schools.	Estimate based on the number of solar sites built on schools using the facility, generation of kWh per school and the difference between CO_2-e emissions resulting from solar use and NZ electricity grid use.	Annual generation per school (kWh)	The difference between CO_2-e emissions resulting from solar use and NZ electricity grid use.	10,586	12,939
CentrePort Limited	$15m green credit facility used exclusively to fund low carbon projects which reduce CentrePort's overall carbon footprint.	Estimates provided by CentrePort. Projects include the development of rail lines in the port, the purchase of electric bomb carts and replacing CentrePort's lighting with LEDs.	Distance per truck trip (km, Rail into Port Project). Generation per annum (kWh, CP LED Lighting Project).	No other inputs.	2,103	2,570
solarZero Letter of Credit	$10m Letter of Credit to solarZero Ltd to support the continued purchase of solar equipment from Panasonic New Zealand Ltd.	Estimate is based on the number of residential installations enabled by the LoC, the generation of kWh per install, and the difference between CO_2-e emissions resulting from solar use and NZ electricity grid use.	Annual generation per install (kWh)	The difference between CO_2-e emissions resulting from solar use and NZ electricity grid use.	492	602

Investments excluded

Five investments were excluded from the lifetime GHG emissions benefit estimated range for the reasons outlined below.

Counterparty	Reason not Included
Ruminant BioTech	Early-stage equity investment with product still in the development phase.
CGHL	Emissions benefit is accounted for via SFF debt commitments.
solarZero Developments Limited	Facility is used as a short-term bridging facility and refinanced via solarZero Public Sector and Commercial facilities which the emissions benefit has been separately accounted for.
Thinxtra	Non-material emissions benefit impact, Thinxtra's emissions benefit will be reassessed during FY24 for future inclusion.
Thundergrid	Used to fund EV charging which is an enabling technology and does not have a direct emissions benefit but which benefits decarbonisation more generally.

NZGIF / NEW ZEALAND GREEN INVESTMENT FINANCE

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