



Carbon Inventory Report:



ZJV (NZ) Ltd

Period: 2021 financial year

Unverified Inventory



Date: 19.10.21

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1 Summary

This carbon inventory was prepared for ZJV (NZ) Ltd for the 2021 financial year .

Organisation background Name:ZJV (NZ) Ltd
Contact person: Kenny Wynter
Contact email: kwynter@ziptrek.com
Area of business: Arts and recreation services
Full Time Equivalent (FTEs): 7

Ziptrek offers an exhilarating zipline eco-adventure situated 450m above Queenstown. Guests hang out in magnificent treehouses, breathe pristine mountain air and glide through the treetops on a series of ziplines with spectacular views. Ziptrek's knowledgeable guides manage everything technical, while guests enjoy a thrilling tour with an environmental focus.

Report period 01.04.2020 – 31.03.21

Organisational boundary This measurement covers the following sites:
45 Camp Street
Bops Peak course

Reporting boundary Business operations direct and indirect emissions resulting from:

- Direct (scope 1)
 - Stationary Fuels
 - Company Vehicles
- Indirect electricity (scope 2)
 - Electricity
- Indirect (scope 3)
 - Purchased Goods & Services
 - Fuel & Energy Related Emissions
 - Business Waste
 - Business Travel
 - Staff Commuting
 - Upstream Leased Assets
 - Downstream Transport

- Exclusions:**
- Indirect (scope 3)
 - Potable Water aspect of Purchased Goods & Services.
 - Transport aspect of Staff Commuting.
 - Downstream Transport.

Emissions Total emissions: 11.15 tCO_{2e}

Offsets Total offsets: 8.79 tCO_{2e} (excluding 2.36 tCO_{2e} of previously offset emissions)

ZJV (NZ) Ltd has elected to offset 100% of these emissions with New Zealand Carbon Units (NZUs) provided by Ekos. Through this measurement and offsetting, ZJV (NZ) Ltd has qualified for Zero Carbon Business Operations certification for the 2021 financial year and has been issued certificate number 40000512

2 Background

This report is the third annual greenhouse gas (GHG) emissions inventory, prepared for ZJV (NZ) Ltd . It was prepared in accordance with the requirements of ISO 14064-1 (2018) and covers the period between the 01.03.2020 – 31.04.2021.

2.1 Communication and dissemination

This inventory was prepared as a management tool for ZJV (NZ) Ltd to:

- Assist it in managing its response to climate change and its reduction of GHG emissions.
- Be a communication tool that demonstrates to stakeholders that ZJV (NZ) Ltd has identified its emissions profile, is aware of the significant issues related to climate change and is taking action to mitigate these issues, including offsetting unavoidable emissions.

The users of this report will include, but are not limited to, the staff, manager and Board of ZJV (NZ) Ltd , its shareholders and members. The summary of this inventory will be made available to all stakeholders on request.

2.1.1 2.1.2 Statement of Intent

Ziptrek Ecotours recognize the crucial role every business must play in creating a Future-Fit Society – one that is environmentally restorative, socially just and economically inclusive and we are committed to playing our part. We aspire to become a Future-Fit Business because we believe that our long-term success is tied to the value we provide to society. That means we must eliminate all of the potential negative impacts associated with what we buy, what we sell, and what we do.

2.2 Reporting period and base year

This inventory is for the 2021 financial year . The base year for ZJV (NZ) Ltd 's inventory is the 2019 financial year. This inventory will therefore be compared with this base year in this report as well as the 2020 financial year.

2.3 Verification and Compliance with Standard

This inventory is consistent with the International Standards Organisation's process for calculating and reporting GHG emissions 14064-1 (2018). Whilst this is the case, it should be noted that this measurement is an unverified inventory and that no verification audit has been conducted of the findings.

3 Organisational boundary

The organisational boundary identifies which facilities or subsidiaries of ZJV (NZ) Ltd are included or excluded from the carbon inventory. Emissions from all aspects of the organisation are consolidated to determine the total volume. Consolidation is done using one of these methods:

- Control, whereby all emissions over which the organisation has either *financial* or *operational* control are included in the inventory
- Equity share, whereby the organisation only includes emissions for the portion of the facilities and business that the organisation owns.

For ZJV (NZ) Ltd 's inventory, the operational control method has been used to consolidate emissions. This means that all emissions over which ZJV (NZ) Ltd has operational control have been included in the inventory.

Included within ZJV (NZ) Ltd 's organisational boundary are therefore all emission sources that occur within the ZJV (NZ) Ltd 's operations at 45 Camp Street and on the course at Bobs Peak.

4 Reporting boundary

The reporting boundary identifies which emission sources are included in the carbon inventory and which are excluded. ISO 14064-1(2018) categorises emissions as follows:

- Direct emissions (scope 1) are those resulting directly from the organisation's operations including stationary energy sources and vehicles owned by the company.
- Indirect emissions (scope 2 and 3) emissions are indirectly created by the company through the importation of electricity, heat or steam generated elsewhere or from the organisation's purchase of goods and services (such as business travel and the production of waste) that cause emissions to be generated by others.

In compliance with the ISO Standard, ZJV (NZ) Ltd has measured all relevant direct and indirect emissions shown below in this GHG inventory.

The included emission sources are shown in Figure 1 below:

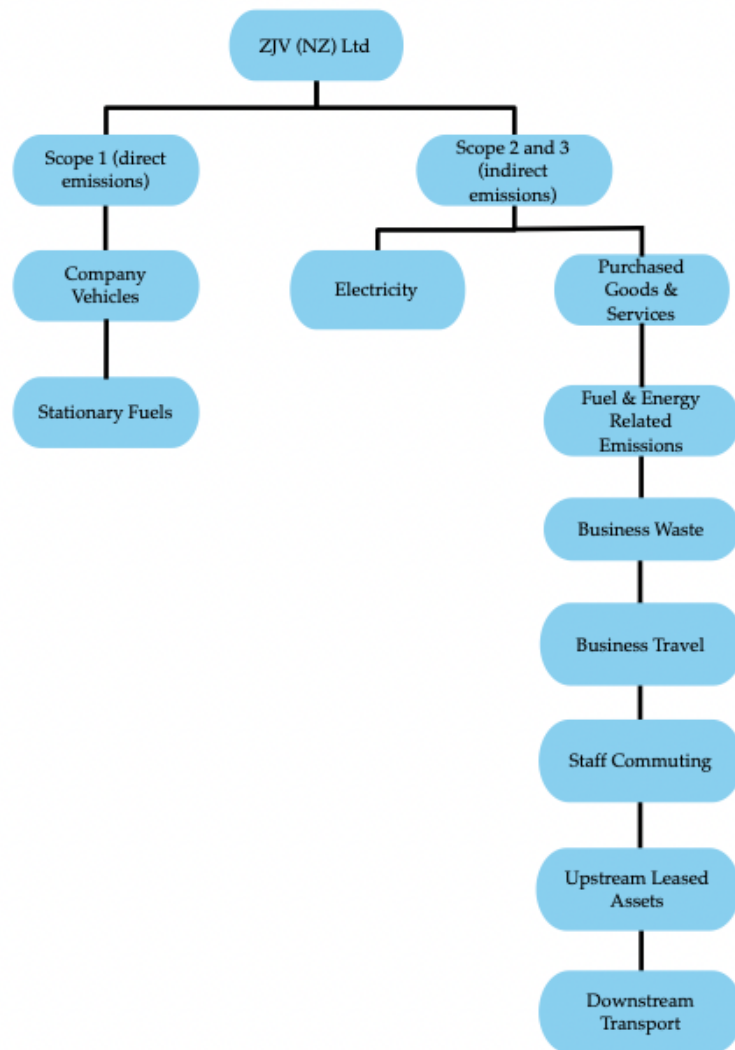


Figure 1: Emission sources for ZJV (NZ) Ltd for the 2021 financial year

The emissions calculation for Upstream Leased Assets was included in the scope 2 Electricity emissions calculation.

Exclusions

The following emission sources have been excluded from the reporting boundary:

- The Potable Water aspect of Purchased Goods & Services.
- The transport aspect of Staff Commuting.
- Downstream Transport.

These activities were excluded due to unavailability of data.

5 Greenhouse Gas (GHG) Inventory

5.1 Methodology

This GHG inventory was prepared to be consistent with the international Standards for calculating GHG emissions. These Standards are the World Resource Institute's "Greenhouse gas protocol, a corporate accounting and reporting standard (GHG protocol) and "ISO 14064-1 (2018) Specification with guidance at the organisation level for quantification and reporting of GHG emissions and removals" (ISO 145064-1 (2018)). In measuring this inventory, the five principles of ISO 14064-1 (2018) were strictly applied.

The methodology used in measuring ZJV (NZ) Ltd 's organisational GHG inventory is illustrated in the following diagram:

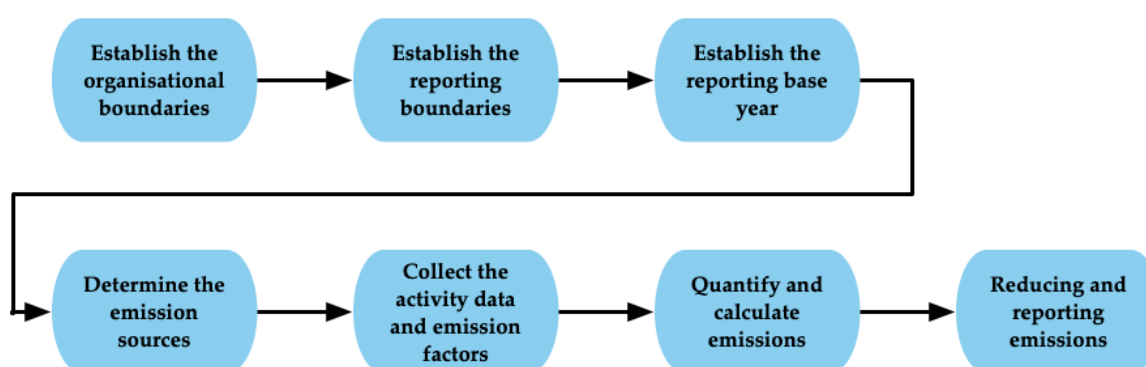


Figure 2: ISO 14064-1 (2018) methodology for measuring a GHG inventory

5.2 Data Collection

Data was collected by ZJV (NZ) Ltd staff with guidance where required from Ekos. The table below provides an overview of the data collected for each emission source. All emissions were calculated using an Ekos-developed calculator. The calculation method used to quantify emissions was the activity data multiplied by the appropriate emission factor:

$$\text{Tonnes CO}_2\text{e} = \text{Total GHG activity} \times \text{appropriate emission factor}$$

GHG emission factors were generally sourced from New Zealand's Ministry for the Environment. Where appropriate emission factors were not available, other reliable sources such as international government agencies or published research were used. A full list of the emission factors used is provided in Appendix 1.

Table 1: Data sources for ZJV (NZ) Ltd 's 2021 financial year emissions

Emission Source		Unit	Data Source
Stationary Fuel	Diesel	Litres	Supplier invoices
	Petrol	Litres	
Company Vehicles		Litres of fuel	Supplier account
Electricity		Kwh	Supplier invoices

Purchased Goods & Services	Paper	Reams of Paper	Internal records
	IT Services & Data Storage	Gigabytes consumed	Supplier records
Fuel & Energy Related Emissions	Transmission and Distribution Losses	Kwh	Scope 2 Electricity data
	Fuel Related Emissions	Litres of Fuel	Scope 1 Stationary Fuels and Company Vehicles data
	Air Travel	Passenger Km	Scope 3 Business Travel data
Business Waste	Landfill Waste	Litres	Waste contractor records
	Air Travel	Passenger kms	Supplier invoices
	Accommodation	Person nights	Supplier invoices
	Public Transport	Km	Internal records
Staff Commuting	Working from home	Employee per day	Internal records
Upstream Leased Assets		kWh	Captured in scope 2 Electricity emisisions calculation
Downstream Transport		Excluded	Excluded

5.3 ZJV (NZ) Ltd GHG Profile

Total emissions for ZJV (NZ) Ltd for the 2021 financial year were 11.15 tonnes of CO₂e.

5.3.1 Emissions breakdown by scope

The majority of ZJV (NZ) Ltd 's emissions were scope 1. See Figure 2 and Table 2 below which show the emission source distribution.

Figure 2 and Table 2 below show ZJV (NZ) Ltd 's emissions by scope with the majority of emissions coming from scope 1 at 55% followed by scope 3 at 28% and scope 2 at 17%.

Figure 2 and table 3 also shows the change in emissions between ZJV (NZ) Ltd 2021 financial year measurement, its base year measurement, and the 2020 financial year measurement.

Figure 3 and table 2 show a reduction of 62% when the 2021 financial year emissions are compared with the base year scope 1 emissions and a 46% reduction when these same emissions are compared with the 2020 financial year emissions.

Figure 3 and table 2 show a reductions of 1% when the 2021 financial year emissions are compared with the base year scope 2 emissions and a 23% reduction when these same emissions are compared with the 2020 financial year emissions.

Figure 3 and table 2 show a reductions of 87% when the 2021 financial year emissions are compared with the base year scope 3 emissions and a 80% reduction when these same emissions are compared with the 2020 financial year measurement.

Figure 3 and table 2 show an overall reduction in total emissions of 74% when the 2021 emisisions are compared with the base year emisisions and 62% when these same emissions are compared to the 2020 financial year measurement.

ZJV (NZ) Ltd should be applauded for achieving such significant emisisions reductions during the 3 years measured.

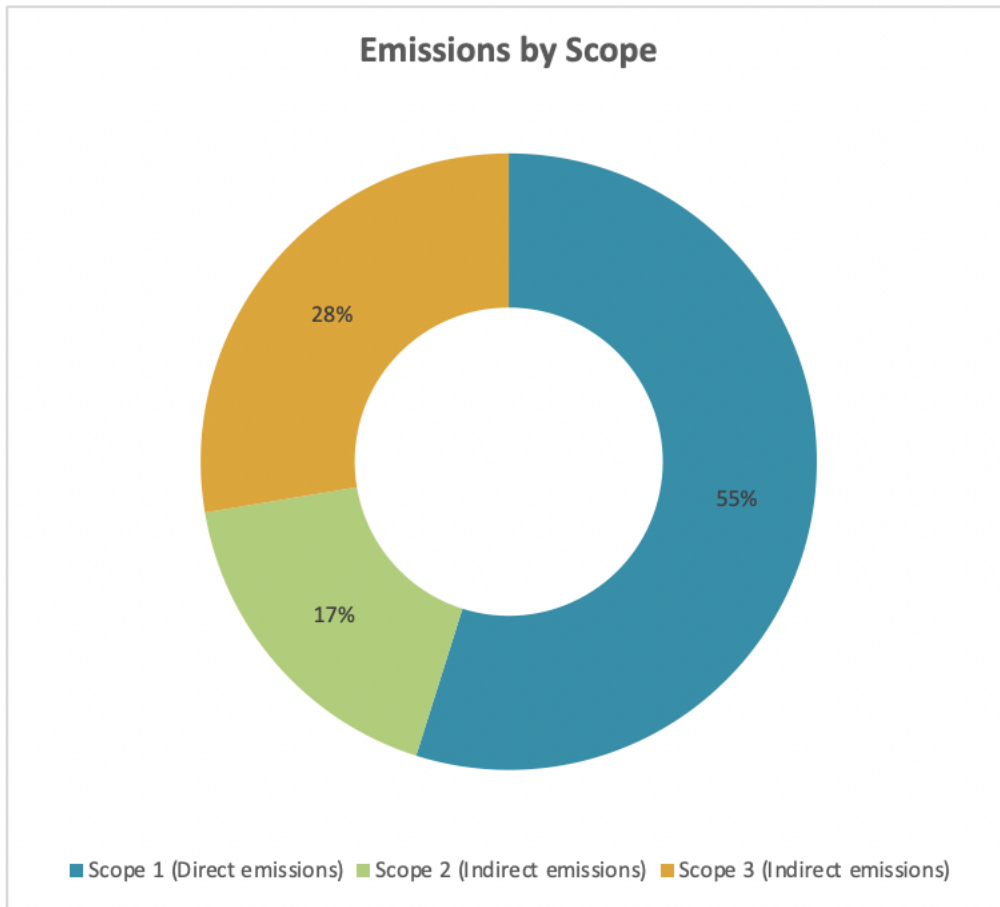


Figure 2: ZJV (NZ) Ltd 's 2021 financial year emissions by scope

Table 2: ZJV (NZ) Ltd 's 2021 financial year emissions by scope

Scope	Tonnes of CO ₂ e	% of total	% change from base year	% change from previous year
Scope 1	6.11	55%	-62%	-46%
Scope 2	1.95	17%	-1%	-23%
Scope 3	3.08	28%	-87%	-80%
Total	11.15			

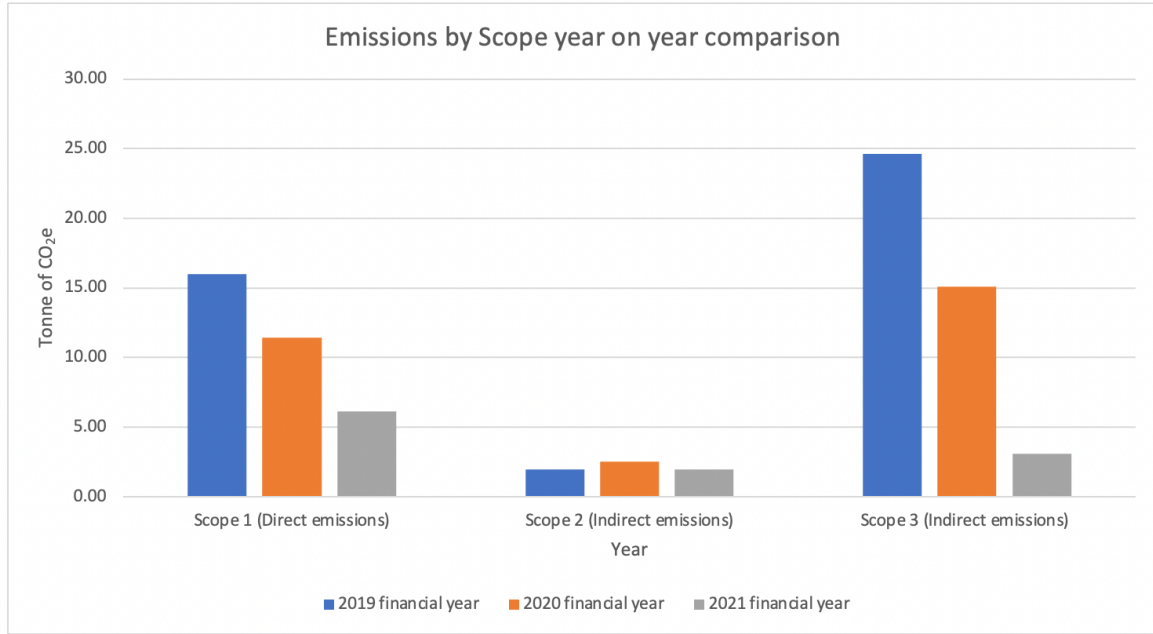


Figure 3: ZJV (NZ) 2021 emissions comparison by scope

5.3.2 Scope one emissions by gas type

ISO 14064-1 requires that Scope 1 emissions are reported separately by gas type. Table 3 below shows these separated emissions for each Scope 1 emissions source. The vast majority of this is carbon dioxide.

Table 3: ZJV (NZ) Ltd 's 2021 financial year scope 1 emissions by gas type

Emissions source	Activity	Carbon Dioxide Equivalent Emissions	Carbon Dioxide Emissions	Nitros Oxide Emissions	Methane Emissions	HFC Emissions	PFC Emissions	Sulphur Hexafluoride emissions
		tCO2e	tCO2	tN2O	tCH4	tHFC	tPFC	tSF6
Stationary Fuel	Petrol	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Natural Gas	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	LPG	0.11	0.11	0.00	0.00	0.00	0.00	0.00
	Coal	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Firewood	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total	0.11	0.11	0.00	0.00	0.00	0.00	0.00
Company Vehicles	Petrol Litres	1.94	1.86	0.06	0.02	0.00	0.00	0.00
	Diesel Litres	4.06	3.99	0.06	0.01	0.00	0.00	0.00
	LPG Litres	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Petrol Km	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Diesel Km	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total	6.00	5.85	0.13	0.03	0.00	0.00	0.00
Total	6.11	5.96	0.13	0.03	0.00	0.00	0.00	

5.3.3 Emissions breakdown by activity

Figure 3 and Table 4 show ZJV (NZ) Ltd 's emissions by activity. The majority of emissions came from Company Vehicles at 54%, followed by Fuel & Energy Related Emissions at 18%, Electricity at 17%, Business Travel at 5%, Stationary Fuels at 1%, Staff Commuting at <1% and Purchase Goods & Services at <1%.

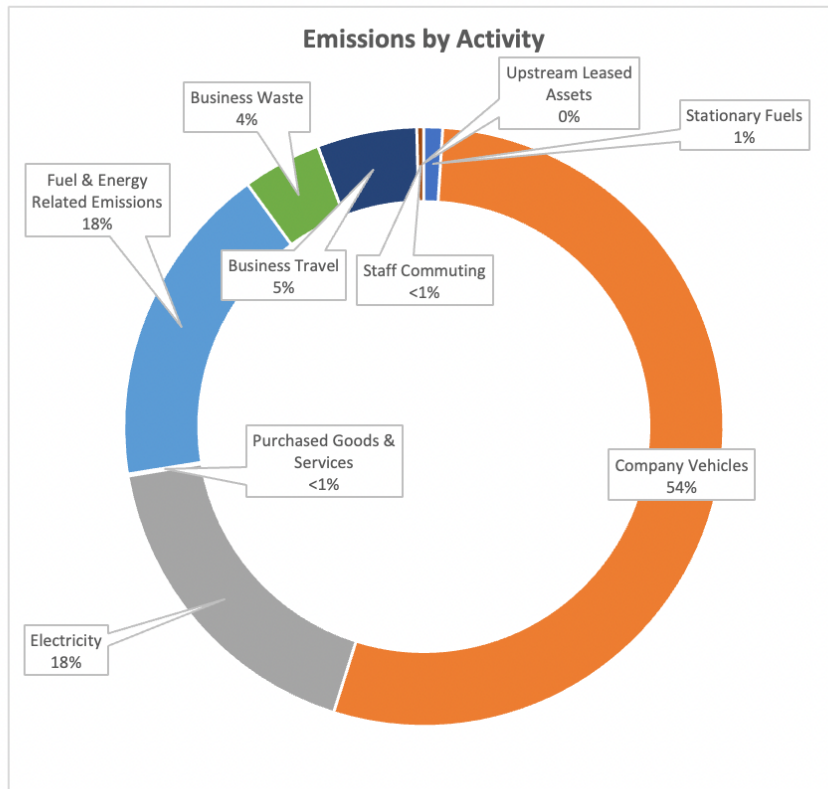


Figure 3: ZJV (NZ Ltd) 2021 financial year emissions by activity

Table 4 and Figure 4 also show the change in emissions over the base and previous year. When the 2021 financial year measurement is compared with the base year measurement, Table 4 and figure 4 show a reduction of 83% in Stationary Fuels emissions. When the same emissions are compared with the 2020 financial year measurement a reduction of 83% in Stationary Fuels emissions is also evident.

When the 2021 financial year measurement is compared with the base year measurement, Table 4 and figure 4 show a reduction of 61% in Company Vehicles emissions. When the same emissions are compared with the 2020 financial year measurement a reduction of 44% in Company Vehicles emissions is also evident.

When the 2021 financial year measurement is compared with the base year measurement, Table 4 and figure 4 show a reduction of 1% in Electricity emissions. When the same emissions are compared with the 2020 financial year measurement, a reduction of 23% in Electricity emissions is also evident.

When the 2021 financial year measurement is compared with the base year measurement, Table 4 and figure 4 show an increase of 1202% in Fuel & Energy Related Emissions. When the same emissions are compared with the 2020 financial year measurement, an increase of 928% and Fuel & Energy Related Emissions is also evident. This increase is due to additional inclusions under this category in the ISO 145064-1 (2018) standard.

When the 2021 financial year measurement is compared with the base year measurement, Table 4 and figure 4 show an increase of 493% in Business Waste emissions. When the same emissions are compared with the 2020 financial year measurement a reduction of 50% in Business Waste emissions is also evident.

Table 4: ZJV (NZ) Ltd 's 2021 financial year emissions by activity

Scope of emissions	Activity	tCO2e	% of total emissions	% change from base year	% change from previous year
Scope 1	Stationary Fuels	0.11	1%	-83%	-83%
	Company Vehicles	6.00	54%	-61%	-44%
	Industrial Processes	NA	NA	NA	NA
	Air Conditioning/Refrigerants	NA	NA	NA	NA
	Agriculture	NA	NA	NA	NA
Scope 2	Electricity	1.95	17%	-1%	-23%
Scope 3	Purchased Goods & Services	0.01	<1%	NA	NA
	Capital Expenditure	NA	NA	NA	NA
	Fuel & Energy Related Emissions	1.95	18%	1202%	928%
	Upstream Freight	NA	NA	NA	NA
	Business Waste	0.47	4%	493%	-50%
	Business Travel	0.60	5%	-98%	-95%
	Staff Commute	0.04	<1%	NA	NA
	Upstream Leased Assets	0.00	0%	NA	NA
	Downstream Transport	Excluded	Excluded	Excluded	Excluded
	Processing of Sold Goods	NA	NA	NA	NA
	Use of Sold Goods	NA	NA	NA	NA
	End of Life Treatment of Sold Goods	NA	NA	NA	NA
	Downstream Leased Assets	NA	NA	NA	NA
	Franchises	NA	NA	NA	NA
	Investments	NA	NA	NA	NA
Total		11.15	-74%	-62%	
FTEs		7		12	17
Emissions Intensity per FTE		1.59 tCO2e		3.55 tCO2e	1.71 tCO2e

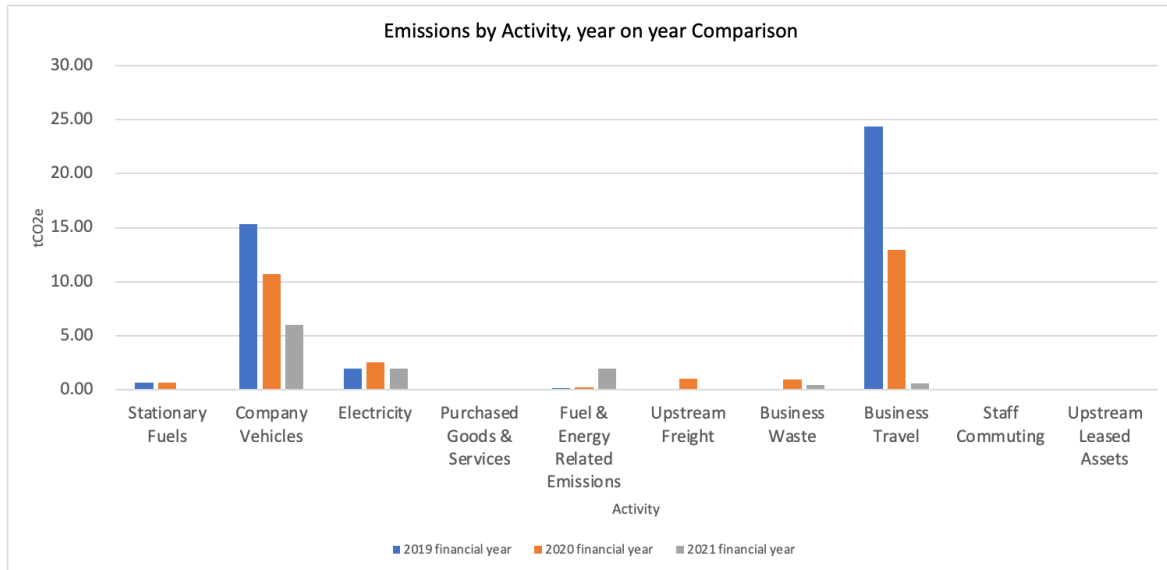


Figure 4: ZJV (NZ Ltd) 2021 financial year emissions by activity, year on year comparison

5.4 Uncertainty and Data Quality

Where accurate data is not available, it is appropriate to estimate to ensure that a comprehensive inventory measurement is completed. Estimates must be carried out on a scientifically-derived basis to ensure accuracy. For ZJV (NZ) Ltd 's GHG inventory, there are the following areas of uncertainty:

- Stationary Fuels and Company Vehicles

Petrol consumption data from a petrol generator was unable to be separated from the Company Vehicles fuel data as the fuel was purchased on the same supplier account. In future measurements these different areas of fuel consumption need to be separated so that the generator fuel use can be calculated under the Stationary Fuels category instead of being included in the Company Vehicles category.

- Business Waste

Whilst accurate waste volumes were provided by a waste contractor, the accuracy of the waste emissions calculation would be improved if this data could be provided in kgs. It is important to note that the current waste data is sufficient if weight based data is unavailable.

- Staff Commuting

The working from home data that was provided included some assumptions on days worked. Reporting of working from home data should be improved in order to improve the accuracy of this aspect of the carbon emissions calculation.

To increase the quality of the carbon inventory, ZJV (NZ) Ltd should plan to improve data collections as soon as possible.

6 Offsets and Certification

To qualify for Zero Carbon Business Operations Certification with Ekos, an organisation must measure its business operations (carbon footprint) and offset 100 of direct and indirect emissions.

ZJV (NZ) Ltd has measured all required activity emissions, totalling 11.15 tonnes of CO₂e.

ZJV (NZ) Ltd has offset 100 of these emissions, totalling 8.79 tonnes of CO₂e (excluding 2.36 tonnes of CO₂e of previously offset emissions).

ZJV (NZ) Ltd has qualified for Zero Carbon Business Operations Certification for the 2021 financial year .

The offsets sourced are New Zealand Carbon Units (NZUs) produced in the Kānuka Hill Native Regeneration Project in Golden Bay, New Zealand. These offsets are retired in the New Zealand Carbon Register.

7 Carbon Emission Reduction Planning Process

As part of the programme rules for Ekos' carbon measurement programme, it is recommended that ZJV (NZ) Ltd develop a Carbon Emissions Reduction Plan.

Deciding on what reductions should occur and when offsetting should occur can be difficult. To assist in developing a Carbon Emissions Reduction Plan, Ekos recommends undertaking the following four-step process.

7.1 Rank emissions activities by contribution to organisational emissions

First, identify the highest emitting activities they undertake. This will show where the greatest opportunity to reduce emissions can be found. For ZJV (NZ) Ltd , the emission sources in order of highest to lowest emissions are shown in Table 5 below:

Table 5: ZJV (NZ) Ltd 's emissions sources from highest to lowest emissions

Activity	% of emissions	Change in position from base year	Change in position from previous year	Tonnes of CO ₂ e
Company Vehicles	54%	-61%	-44%	6.00
Fuel & Energy Related Emissions	18%	1202%	928%	1.95
Electricity	17%	-1%	-23%	1.95
Business Travel	5%	-98%	-95%	0.60
Business Waste	4%	493%	-50%	0.40
Staff Commuting	<1%	NA	NA	0.04
Purchased Goods & Services	<1%	NA	NA	0.01

7.2 Actions that could be taken to reduce emissions

The next step is to identify actions that will reduce emissions for each of ZJV (NZ) Ltd emissions activities. This can be done through a workshop with staff or just one or two people. No idea is a silly idea, just record everything that comes to mind. Ekos has made the

following recommendations for actions to reduce emissions in the top three emission sources.

- **Company Vehicles**

In the short term, Ekos recommends regular servicing to optimise the efficiency of the company vehicles. Ekos also recommends using alternative low carbon forms of transport in the short term (where appropriate). This could include encouraging the use of bikes for small local business errands (where appropriate).

In the long term Ekos recommends transitioning to a hybrid or electric vehicle fleet (when/if an appropriate model of electric vehicle enters the market).

- **Fuel & Energy Related Emissions**

This category relates to the well to tank emissions associated with the production of electricity and the consumption of fossil fuels. Reducing the following business activity emissions will also result in a reduction in Fuel & Energy Related Emissions;

- Business travel
- Company Vehicles
- Staff Commuting

Staff Commuting emissions reductions can be achieved through encouraging car pooling and incentivising the use of low carbon transport options such as bikes (where appropriate). An example of incentivising the use of low carbon transport options could be agreeing to pay staff their hourly rate for time spent commuting by bike.

- **Electricity**

Ekos recommends focussing on improving behaviour around electricity consumption. Encouraging staff to focus on turning off lights in rooms that are not in use and shutting down IT equipment at the end of the work day are the main areas to focus on in regard to improving electricity consumption behaviour. Ekos also suggests that ZJV (NZ) Ltd give material consideration to energy efficiency if purchasing equipment/appliances in future (if this is not already an internal policy).

7.3 Ranking actions (marginal cost abatement analysis)

The next step is to rank the actions identified previously according to cost. Some research will be required to find out the associated cost of each potential action. Rank the actions as negative cost (1) low cost (2), medium cost (3), or high cost (4).

The aim of this process is to identify the “low hanging fruit”, on the carbon emissions reduction (abatement) tree as shown in Figure 4.

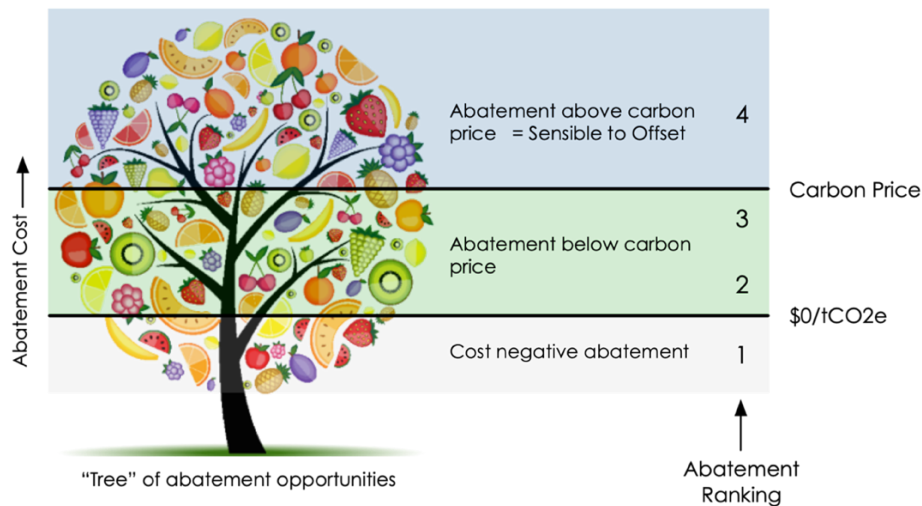


Figure 4: The abatement tree

The lowest actions (fruit), category 1, are actions like changing policies or processes. Category 2 actions (those slightly higher up the tree) will require some expense, but not a lot, such as replacing lightbulbs for more efficient LEDs. Category 3 action are those costing slightly more but still relatively low cost, such as buying new equipment. While category 4 actions are very expensive, such as building energy efficient buildings or are just not possible yet.

An efficient reduction strategy targets the lowest cost actions first and will not move to higher ones until the lowest are complete. For the most expensive actions, it is cheaper for ZJV (NZ) Ltd to buy offsets rather than it is to sink money into these projects.

This process is shown in Table 6.

Table 6: The “abatement tree” ranking categories

Abatement ranking	Action	Examples from the recommended actions
1. Cost negative and easy wins.	➡ Highest priority actions. Do these first.	Improving energy efficiency behaviour.
2. Cost positive but still easy wins.	➡ Second highest priority. Do these second.	Purchasing the most energy efficient appliances/equipment on the market when/if upgrades are necessary.
3. Cost positive harder wins but below the carbon price.	➡ Third highest priority. Do these after 1 & 2 above.	Replacing petrol cars with electric models.
4. Cost positive and above the carbon price.	➡ Don't do these because offsetting is cheaper to enable reductions than paying for the action	Installation of solar PV panels

7.4 Implement emission reduction plan and repeat

The next step is set a time frame for when the plan will be implemented. This will include setting aside funding in annual budgets to pay for the actions and monitoring the plan going forward. One thing that may be useful to consider at this point is committing dedicated staff time to the project and establishing an implementation group.

Finally, the process starts again and repeats the following year by measuring once more. This enables ZJV (NZ) Ltd to monitor progress of the reduction plan and its impact on organisational emissions. At this point new actions can be identified and ranked in terms of the abatement tree and added to the plan, as implementation continues.

8 Glossary

De minimis

Certain activities contribute less than 1 percent of the total of CO₂e emissions. These may be excluded from the GHG inventory, provided that the total of excluded emissions does not exceed a materiality threshold of 5 percent. That is, the total of all excluded emission sources should not exceed 5 percent of the total inventory.

Greenhouse gas (GHG)

Gaseous constituent of the atmosphere, both natural and anthropogenic, that absorbs and emits radiation at specific wavelengths within the spectrum of infrared radiation emitted by the Earth' surface, the atmosphere and clouds. These include:

- Carbon dioxide (CO₂)
- Methane (MH₄)
- Nitrous oxide (N₂O)
- Hydrofluorocarbons (HFCs)
- Perfluorocarbons (PFCs)
- Sulphur hexafluoride (SF₆)

GHG Scopes:

- Scope 1: Direct emissions from sources owned or controlled by reporting entity. For example diesel generator, coal heating, own vehicle fleet, agriculture
- Scope 2: Indirect emissions generated by purchased energy. For example, electricity, gas.
- Scope 3: Indirect emissions that are a consequence of activities undertaken by the reporting organisation or related individual, but not directly controlled by the organisation. For example, flights, freight, non-company vehicles, waste, electricity line distribution and transmission losses.

Appendix 1: Emission Factors

Ekos uses emission factors provided by the New Zealand Ministry for the Environment (MfE) publication *Measuring Emissions: A Guide for Organisations 2019*. Ekos emission factors for air travel include Radiative Forcing, which helps organisations account for the wider climate effects of aviation, including water vapour and indirect GHGs. This is an area of active research, which seeks to express the relationship between emissions and climate warming effects of aviation.

Ekos uses a multiplier of 1.9 to account for radiative forcing effects in line with the Ministry for the Environment publication *Measuring Emissions: A Guide for Organisations 2019*.

Where emission sources are not covered by the MfE publication, Ekos identifies suitable factors for use have been sourced from the Department for Environment and Rural Affairs (DEFRA), UK Government document *Factors for Greenhouse Gas Reporting 2018*, the Motu institute and Aslan, J. Mayers, K. Koomey, J. France, C. 2017. *Electricity Intensity of Internet Data Transmissions, Untangling the Estimates*. *Journal of Industrial Ecology*, Volume 22, number 4.