



Carbon Inventory Report:



Chia Ltd

Period: 2021 financial year

Unverified Inventory



Date: September 2021

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1 Summary

This carbon inventory was prepared for Chia Ltd for the 2021 financial year.

Organisation background Name: Chia Ltd
Contact person: Chloe Van Dyke
Contact email: chloe@chia.co.nz
Area of business: Nelson, New Zealand
Full Time Equivalent (FTEs): 9

Chia Sisters are producers and distributors of high-nutrition health drinks and food. Their product ranges are made from natural ingredients, with no added sugar. They operate out of a solar-powered juicery and deliver to any doorstep within New Zealand.

Report period 01.04.2020 – 31.03.2021

Organisational boundary This measurement covers the following sites:

- Chia Sisters' Juicery and office – 89 Pascoe Street, Nelson.

Reporting boundary Business operations direct and indirect emissions resulting from:

- Direct (scope 1)
 - Stationary Fuels
 - Company Vehicles
 - Air Conditioning & Refrigerants
- Indirect electricity (scope 2)
 - Electricity
- Indirect (scope 3)
 - Purchased Goods & Services
 - Contracted bottling, water, paper, product labels
 - Fuel & Energy Related Emissions
 - Upstream Freight
 - Business Waste
 - Business Travel
 - Staff Commuting
 - Downstream Freight
 - End of Life Disposal of Products

Exclusions:

- Indirect (scope 3)
 - Purchased Goods & Services
 - Contracted museli production, packaging, ingredients
 - Downstream Freight
 - Storage of goods in distribution centres and retail stores not owned or paid for by Chia Sisters
 - Investments
 - Equity investment in Nudes Ltd

Emissions Total emissions: 85.27 tCO₂e

Offsets	Chia Lts Offset Summary	tCO ₂ e
	Mandatory offsets	40.85
	Voluntary inclusion of contracted services	2.12
	Sub total	42.97
	120%	51.53

Less pre purchased offsets	(0.19)
Total tCO₂e offset	51.34 (120%)

The amount offset does not include non-mandatory offset categories totalling 42.52 tCO₂e with the exception of contracted services. Non-mandatory activities applicable to Chia Sisters include: Purchased Goods & Services; Downstream Freight; End of Life Disposal of Products; and proportional Fuel & Energy Related Emissions.

Chia Ltd has elected to offset 120% of their footprint with New Zealand Carbon Units (NZUs) provided by Ekos. Through this measurement and offsetting, Chia Ltd has qualified for Climate Positive Business Operations certification for the 2021 financial year and has been issued certificate number 40000505.

2 Background

This report is the third annual greenhouse gas (GHG) emissions inventory, prepared for Chia Ltd. It was prepared in accordance with the requirements of ISO 14064-1 (2018) and covers the period 01.04.2020 – 31.03.2021.

2.1 Communication and dissemination

This inventory was prepared as a management tool for Chia 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 Chia 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 Chia Ltd, its shareholders and members. The summary of this inventory will be made available to all stakeholders on request.

2.2 Reporting period and base year

This inventory is for the 2021 financial year. The base year for Chia Ltd ' inventory was the 2020 Financial Year. The base year will be updated to the 2021 financial year for subsequent inventories due to the fact that this year's measurement has been completed to the 2018 ISO standard. Future measurements will be compared to the 2021 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). However, 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 Chia 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 Chia Ltd ' inventory, the operational control method has been used to consolidate emissions. This means that all emissions over which Chia Ltd has operational control have been included in the inventory.

Included within Chia Ltd ' organisational boundary are therefore all emission sources that occur within the Chia Ltd 's Juicery, located at 89 Pacoe Street, Nelson.

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, Chia Ltd has measured all relevant direct and indirect emissions shown below in this GHG inventory.

The included emission sources are shown in Figure 2 below:

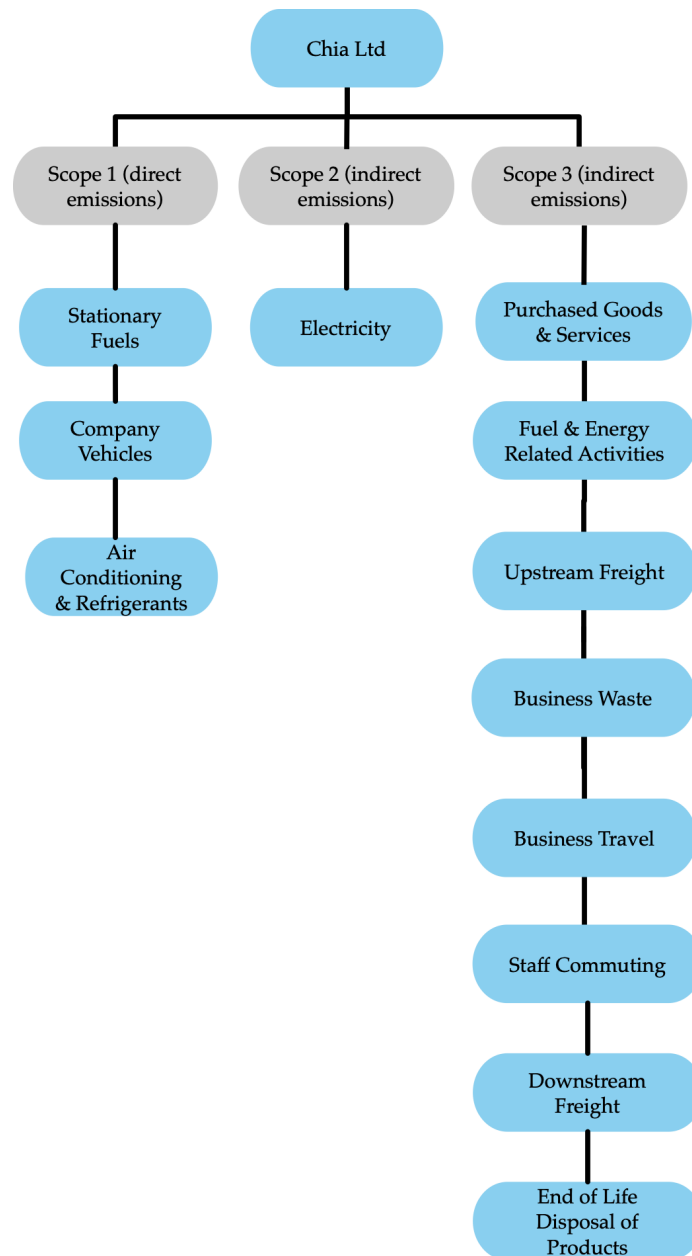


Figure 1: Emission sources for Chia Ltd ' 2021 financial year

Freight Boundary

Ekos' requires a minimum freight boundary of tier one¹ for both Upstream Freight and Downstream Freight. The Upstream Freight boundary for Chia Sister's incoming glass packaging went beyond Ekos' minimum requirements and extended to tier two suppliers².

¹ Tier 1 suppliers are companies with which the reporting company has a purchase order or financial agreement for goods or services.

² Tier 2 suppliers are companies with which tier 1 suppliers have a purchase order or financial agreement for goods and services.

Exclusions

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

- Purchased Goods & Services.
 - Proportional scope 1& 2 emissions of the following goods and services were not reported due to the unavailability of data:
 - The contracted manufacturing of Chia Museli
 - Packaging
 - Ingredients
- Downstream Freight
 - Emissions created in the storage of goods in distribution centres and retail stores not owned or paid for by Chia Sisters were not included due to the unavailability of data.
- Investments
 - Proportional equity emissions created in the operations of Nudes Ltd were not included due to being out of scope of the measurement boundary.

Ekos Recommendation

Chia Sisters should make every effort to report the proportional contracted manufacturing of Chia Museli in the 2022 FY.

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 Chia Ltd 's organisational GHG inventory is illustrated in the following diagram:

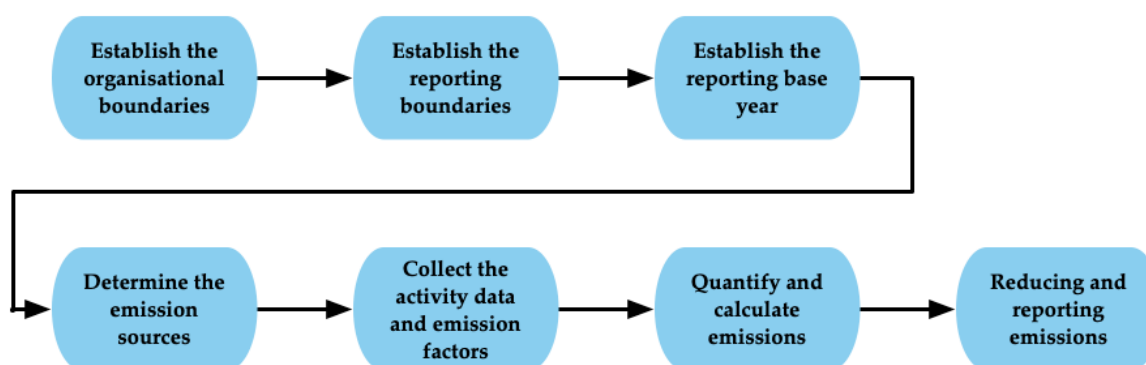


Figure 2: ISO 14064-1 (2018) methodology for measuring a GHG inventory

5.2 Data Collection

Data was collected by Chia Ltd staff with guidance where required from Ekos. Table 1 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 list of the emission factors used is provided in Appendix 1.

Table 1: Data sources for Chia Ltd ' emissions 2021 financial year

Emission Source		Unit	Data Source
Stationary Fuel	LPG	kg	Suppliers & fuel cards
Company Vehicles		kms	Trip log, business records
Air Conditioning		kg	Invoices
Electricity		kWh	Electricity invoices
Purchased Goods and Services	Paper	Reams of paper	Purchase records
	Water	Cubic metres	Water bills
	General P&G Items	Scope 1 & 2	Supplier report
Fuel and Energy Related emissions	Transmission and Distribution Losses	kWh	Electricity invoices
	Fuel Related Emissions	Litres of fuel	Trip log, business records
	Freight Related Emissions	Tonne km	Freight reports
	Air Travel	Passenger km	Receipts

Upstream Freight		Tonne km	Freight reports
Business Waste	Landfill Waste	kg	Waste report
	Waste Water	Cubic metres	Water bills
Business Travel	Taxis	\$ spend	Receipts
	Air Travel	Passenger kms	Receipts
	Accommodation	Person nights	Receipts
	Staff mileage	km	Xero records
Staff Commuting		km	Staff survey
Downstream Transport		Tonne Km	Freight report
End of Life Disposal of Products		kgs	Invoices

5.3 Chia Ltd GHG Profile

Total emissions for Chia Ltd ' for the 2021 financial year were 85.27 tonnes of CO₂e.

5.3.1 Emissions breakdown by scope

Figure 4 below shows Chia Ltd ' 2021 financial year emissions by scope. The majority of emissions were indirect scope 3 emissions, at 86%. Direct scope 1 emissions comprised 7% as did indirect scope 2 emissions.

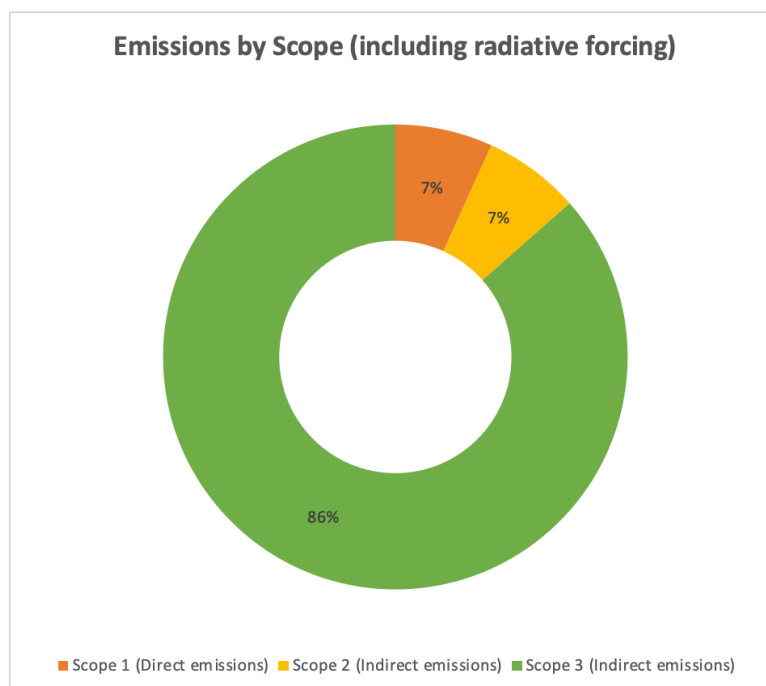


Figure 4: Chia Ltd ' 2021 financial year emissions by scope

Figure 5 and Table 2 below show the change in emissions over the 2020 financial year, Chia Ltd 's base year. Overall emissions increased by 59%.

The largest increase was in scope 3 emissions, at 70%. Scope 2 emissions increased by 28% and scope 1 emissions increased by 2%. However, it should be noted that the significant

increase in emissions has occurred as a result of additional activities being measured in the 2021 FY.

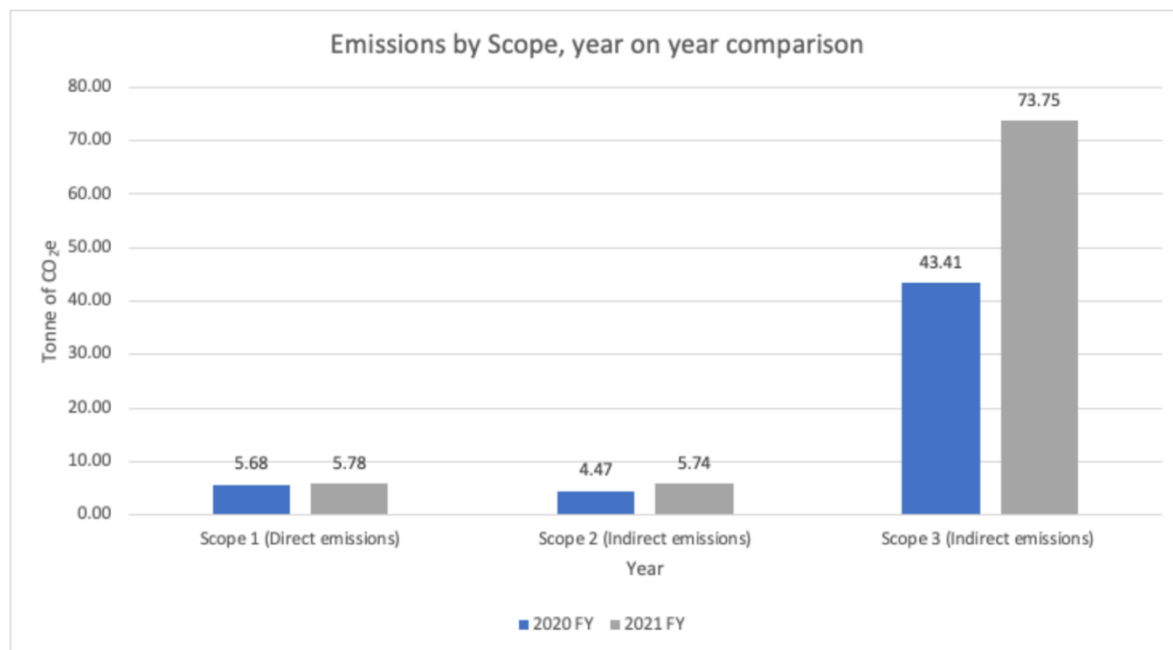


Figure 5: Chia Sister's emissions by scope, year on year comparison

Table 2: Chia Ltd ' emissions by scope, year on year comparison

Scope	Tonnes of CO ₂ e 2021 FY	% of total 2021 FY	% change from base year 2020 FY
Scope 1	5.78	7%	+2%
Scope 2	5.74	7%	+28%
Scope 3	73.75	86%	+70%
Total	85.27		+59%

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: Chia Ltd ' 2021 financial year scope1 emissions by gas type

Emissions source	Activity	Carbon Dioxide Equivalent Emissions	Carbon Dioxide Emissions	Methane Emissions	Nitros Oxide Emissions	HFC Emissions	PFC Emissions	Sulphur Hexaflouride emissions
Stationary Fuels	LPG	5.61	5.60	0.01	0.00	0.00	0.00	0.00
	Total	5.61	5.60	0.01	0.00	0.00	0.00	0.00
Company Vehicles	Petrol km	0.18	0.15	0.00	0.00	0.00	0.00	0.00
	Total	0.18	0.15	0.00	0.00	0.00	0.00	0.00
Air Conditioning/Refrigerants		0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total		5.78	5.75	0.01	0.00	0.00	0.00	0.00

5.3.3 Emissions breakdown by activity

Figure 6 shows Chia Ltd ' 2021 financial year emissions by activity. The majority of emissions came from Upstream Freight at 53%, followed by Fuel & Energy Related Emissions at 12% and End of Life Disposal of Products at 11%. Next highest was Electricity at 7%, Stationary Fuels at 7%, Downstream Freight at 3%, Purchased Goods & Services at 3% and finally Staff Commuting makes up the remaining 2 %.

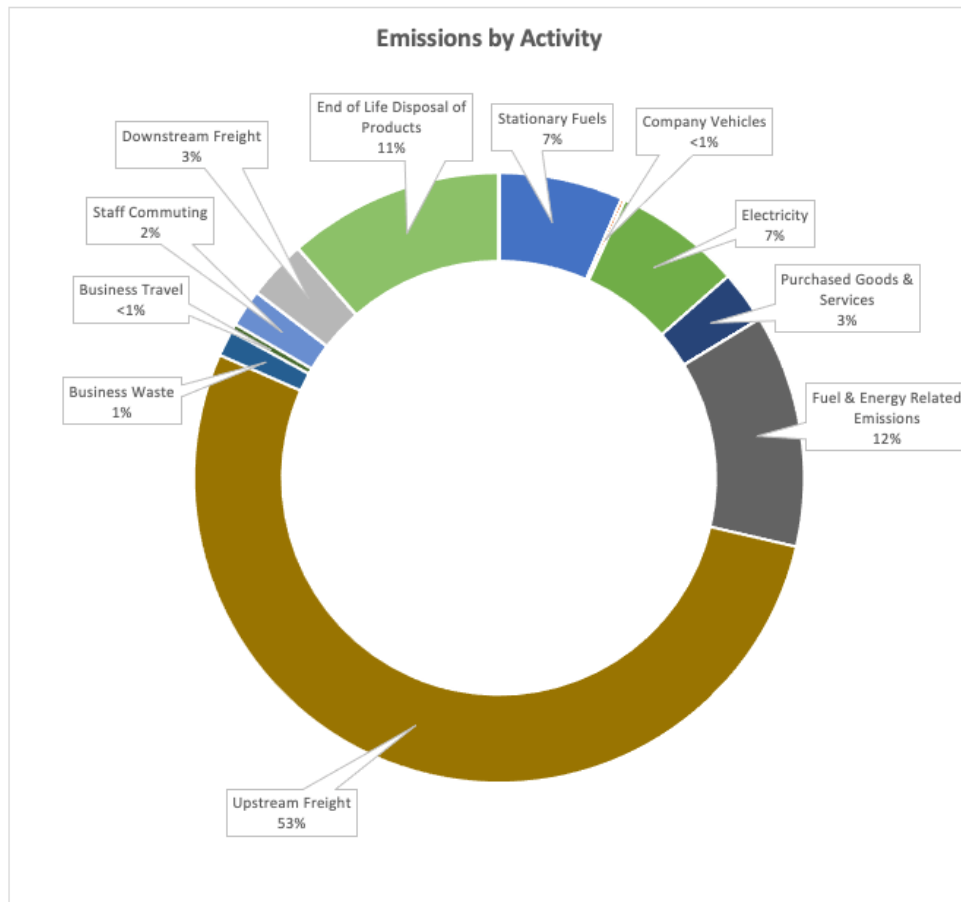


Figure 6: Chia Ltd 's 2021 financial year emissions by activity

Figure 7 and Table 4 below show the change in emissions over the base year. Overall, Chia Sisters' emissions increased by 59% however this was a result of the inclusion of new activities in the 2021 financial year, rather than an increase in emission-related activity.

In comparison with the base year, the most significant increase in emissions was an increase in Electricity of 28%. There was also an increase in Upstream Freight of 15%³ and a small increase in Stationary Fuels of 8%. The most significant decrease was in Business Travel at 87%. Company Vehicles reduced by 62% and Business Waste reduced by 18%.

³ The increase in emissions is a result of extending the boundary of incoming glass packaging to tier 2.

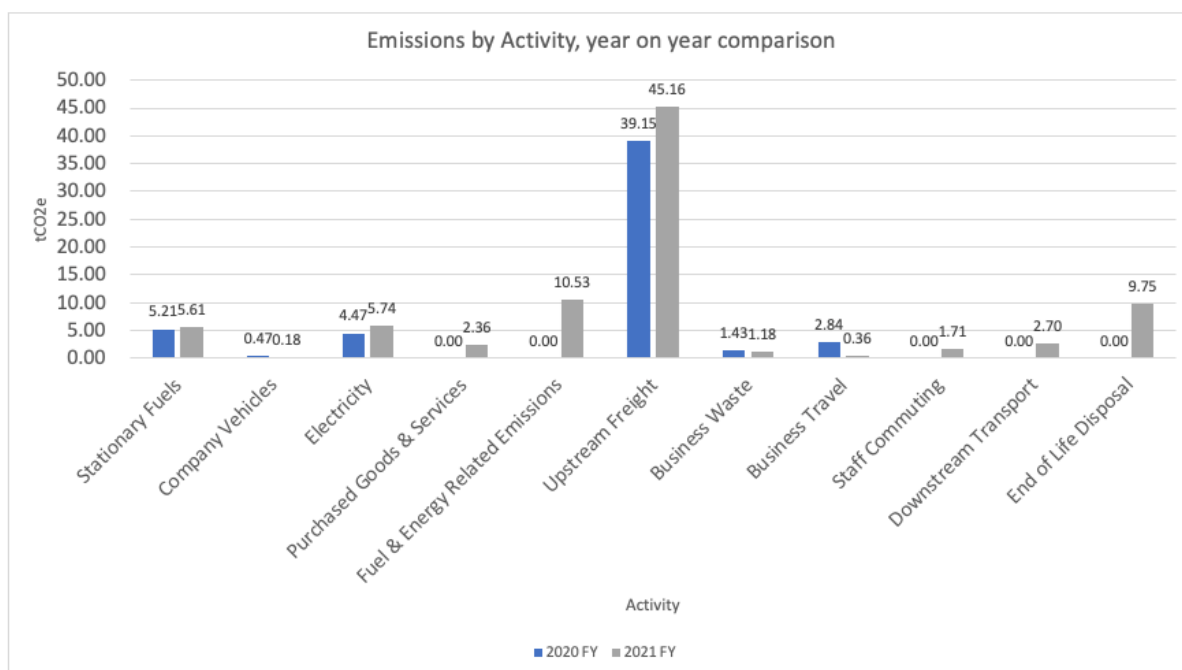


Figure 7: Chia Sisters emissions by activity, year on year comparison

Table 4: Chia Ltd emissions by activity, year on year comparison

Scope of emissions	Activity	tCO2e 2021 FY	% of total emissions	% change from base year
Scope 1	Stationary Fuel	5.61	7%	+8%
	Company Vehicles	0.18	<1%	-62%
	Industrial Processes	NA		
	Air Conditioning/Refrigerants	0.00	0%	0%
	Agriculture	NA		
Scope 2	Electricity	5.74	7%	+28%
	Purchased Goods & Services	2.36	3%	NA ⁴
Scope 3	Capital Expenditure	NA		
	Fuel and Energy Related Emissions	10.53	12%	NA ⁵
	Upstream Freight	45.16	53%	+15% ⁶
	Business Waste	1.18	1%	-18%

⁴ New activity added to the 2021 financial year measurement

⁵ Fuel & Energy Related Emissions is a new activity added to the 2021 financial year measurement. It includes the well to tank emissions created by the direct and indirect use of fuel and energy.

⁶ Upstream Freight now includes both inwards and outwards freight paid for or controlled by Chia. The comparison against the base year was adjusted appropriately.

Business Travel	0.36	<1%	-87%
Staff Commute	1.71	2%	NA ⁷
Upstream Leased Assets	NA		
Downstream Freight	2.70	3%	NA ⁸
Processing of Sold Goods	NA		
Use of Sold Goods	NA		
End of Life Disposal of Products	9.75	11%	NA ⁹
Downstream Leased Assets	NA		
Franchises	NA		
Investments	NA		
Total	85.27		-59%
FTEs	9		+80%
Emissions Intensity per FTE	10.97		-12% ¹⁰

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 Chia Ltd ' GHG inventory, there are these areas of uncertainty:

- Upstream Freight

Exact data for the mode of freight used was not available therefore Ekos defaults were applied. For freight that travels out of the region, Ekos applied a 30:70 split of courier van and truck. For freight delivered locally Ekos applied 100% van.

Exact data around the freight of glass packaging measured at tier 2 was not available therefore it was assumed that connection routes were carried out by 100% truck, based on the weight of the goods freighted.

- End of Life Disposal of Products

Exact data around the end of life disposal of products produced and sold by Chia is not available. Chia Sisters makes every effort to use recyclable products such as glass and cardboard boxes, but there is still a high degree of uncertainty around whether people place items in the correct bin and whether the materials end up being recycled due to the risks of contamination. Therefore Ekos has applied an over-

⁷ Staff Commute is a new activity added to the 2021 financial year measurement

⁸ Downstream Freight is a new activity added to the 2021 financial year measurement. This includes freight and transport not paid for by Chia Sisters.

⁹ End of Life Disposal of Goods is a new activity added to the 2021 financial year measurement.

¹⁰ This calculation is based on 5 FTEs in 2020 FY and 9 FTEs reported in 2021 FY.

conservative assumption that 41% of recyclable materials end up in landfill. Ekos also over-conservatively assumed that all landfills are without gas recovery.

Other materials such as compostable courier packs and labels were excluded from the measurement due to the unavailability of appropriate emission factors.

Recommendations to improve uncertainty in the future:

- Set up a consumer survey to better understand whether users of Chia Products recycle glass and cardboard appropriately (rinse glass) and whether they compost courier bags.

These improvements should start as soon as possible.

6 Offsets and Certification

To qualify for Climate Positive Business Operations Certification with Ekos, an organisation must measure its business operations (carbon footprint) and offset at least 120% of direct emissions and indirect emissions from mandatory categories.

Chia Ltd has measured all required activity emissions, totalling 85.27 tonnes of CO₂e.

Chia Ltd has offset 120% of these emissions, totalling 51.34 tonnes of CO₂e.

Chia Ltds Offset Summary	tCO ₂ e
Mandatory offsets	40.85
Voluntary inclusion of contracted services	2.12
Sub total	42.97
120%	51.53
Less pre purchased offsets	(0.19)
Total tCO₂e offset	51.34 (120%)

The amount offset does not include non-mandatory offset categories totalling 42.52 tCO₂e with the exception of contracted services. Non-mandatory activities applicable to Chia Sisters include: Purchased Goods & Services; Downstream Freight; End of Life Disposal of Products; and proportional Fuel & Energy Related Emissions.

Chia Ltd has qualified for Climate Positive Business Operations Certification for the 2021 financial year.

Offsets have been sourced from New Zealand Carbon Units (NZUs) produced in the Rameka Carbon Forest 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 Chia Ltd develop a Carbon Emissions Reduction Plan.

Chia Ltd is already taking the following steps to reduce carbon emissions:

2019

- Installed solar panels on juicery
- Purchased an electric company vehicle

2020 FY

- Implemented a no air-freight policy

2021 FY

- Replaced all lights with LEDs
- Established returnable kegs for cafes to reduce packaging, and introduced 750 ml bottles to reduce single serve.
- Replaced plastic courier packs with home compostable courier packs.
- Replaced diesel company van with petrol company vehicle
- Have opted to put the \$2586 saved on non-mandatory offsets for the 2021 financial year into a carbon-reduction fund.

Deciding on what further reductions should occur and when offsetting should start, however, 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 Chia Ltd, the emission sources in order of highest to lowest emissions are shown in Table 5 below:

Table 5: Chia Ltd' emissions sources from highest to lowest emissions

Activity	% of emissions	Tonnes of CO ₂ e	% of emissions 2020 FY
Upstream Freight	53%	45.16	70%
Fuel & Energy Related Emissions	12%	10.53	NA
End of Life Disposal of Products	11%	9.75	NA
Electricity	7%	5.74	7%
Stationary Fuels	7%	5.61	9%
Purchased Goods & Services	3%	2.36	NA
Staff Commuting	2%	1.71	NA
Business Waste	1%	1.18	3%

<i>Business Travel</i>	<1%	0.36	9%
<i>Company Vehicles</i>	<1%	0.18	1%

7.2 Actions that could be taken to reduce emissions

The next step is to identify actions that will reduce emissions for each of Chia Ltd emissions activities. This can be done through a workshop of 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 from the top three emission sources:

Upstream Freight

This is the largest emitting category for Chia Sisters due to the fact that Chia opted to measure the incoming freight emissions of their glass bottles from tier 2 suppliers, rather than tier 1 suppliers. This decision allowed enhanced analysis of the real carbon impact of freight in Chia Sisters supply chain. Table 6 below shows that the carbon impact of shipping bottles from Saudi Arabia is far higher than shipping from New Zealand. This data reveals a good carbon reduction opportunity in the procurement of Chia Sisters' glass packaging.

Table 6: Chia Ltd ' Downstream Freight emissions breakdown

Freight Description	% of bottles	tCO2e
<i>Glass bottles sourced from Saudi Arabia</i>	65%	24.34
<i>Glass bottles sourced from New Zealand</i>	35%	1

Influence: Research and give preference to any freight companies that are using or upgrading to lower emission freight routes e.g. train and shipping freight or hybrid, electric and hydrogen vehicles. The uptake of low emission freight technology is very much in its infancy, but if you can let your freight companies know you are shopping for this - the sooner we will see a transition to more efficient technologies. It is unlikely that a company will be perfect over-night, so preference companies that have ambitious 2030 goals and are implementing changes now.

Influence & Behaviour: Explore partnerships with freight companies to offer slow-delivery options.

One of the most significant ways that 'consumers' of freight can start to decrease the impact of freight, is to change consumer expectations around the speed of delivery. Overnight or fast deliveries, can put pressure on suppliers and freight companies that result in vehicles travelling half empty or inefficiently.

Think about how Chia Sisters can provide its customers the option of selecting a slow freight delivery option. This is a consumer experience and engagement opportunity that prioritises education and behaviour change.

Apply this thinking to Chia Sisters' own business orders. Where possible, let your suppliers know that you want them to use a freight company that is actively prioritising lowering their emissions, even if this means a slower form of delivery.

Influence: Apply pressure on your freight provider to offset their own emissions - the sooner freight companies take responsibility for their emissions, the sooner we will see a transition to more efficient technologies.

Fuel & Energy Related Emissions

Reduction in fuel consumption through Chia Sisters direct and indirect activities will also reduce Fuel & Energy Related Emissions as these reflect the emissions arising from the production, processing and delivery of fuel.

End of Life Disposal of Products

Product design: There is a lot to consider when you are designing or selecting the packaging of your products. An essential consideration is whether your product packaging promotes the goals of circularity. The emerging Circular Economy is founded on the principle that resources are kept in use for as long as possible, designing out waste from our economy.

When we apply a business operations carbon analysis to the end-of life treatment of Chia Sisters products, Table 7 below shows that the highest emitting material at the end-of life is the cardboard boxes (9.59tCO₂e). This is followed by the 'compostable museli' packets, and finally the glass that represents 0 tCO₂e due to the fact that glass is an inert material and does not release any emissions inside the landfill. The scope of this analysis is limited due to the fact that the emission factor only analyses greenhouse gases released inside the landfill.

Table 7: Chia Ltd ' End of Life Disposal of Products emissions breakdown

Material	tCO₂e emissions in landfill
Glass	0
Cardboard	9.59
Chia Museli Packets (mostly paper)	0.15
Total emissions	9.75

A Life Cycle Analysis (LCA) is a more thorough and useful scientific-based tool for assessing a packaging's environmental impact over its entire life cycle and value chain. LCAs may reveal that packaging options that have poor end of life choices, are still better performers when their cradle to grave life cycle is considered. LCA also uses metrics other than carbon, which allows for a far more in-depth analysis.

Infrastructure: When it comes to End of Life Disposal of Products within New Zealand, it comes down to whether New Zealand has the infrastructure, policy and behaviours in place that will enable effective re-use, recycling and composting of packaging. Introducing systems for re-use will likely involve partnerships and cooperation both within the food and beverage sector, and outside. We recommend that you start looking for waste minimisation funds that can help you get started with the necessary research & development on implementing a system like this.

Compostable packaging is a great initiative, however not all households have composting at home. Educating your consumers on how to set up a simple home-

compost system capable of breaking down your packaging could be a behaviour education opportunity that extends beyond carbon.

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 8.

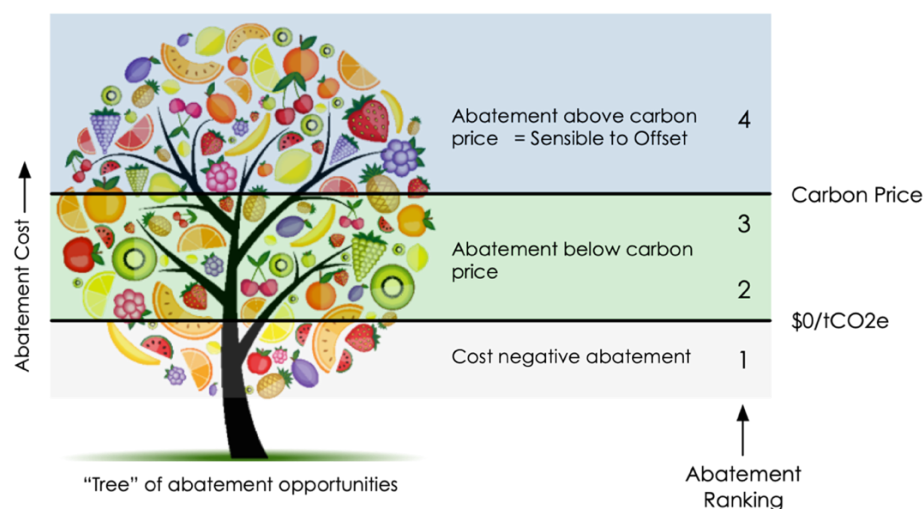



Figure 8: The abatement tree




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 Chia Ltd to buy offsets rather than it is to sink money into these projects.

This process is shown in Table 8 below:

Table 8: 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.	Research and influence freight provider to provide lower-carbon freight options. Set up and run a consumer survey and education

			campaign to increase % of materials recycled.
2. Cost positive but still easy wins.		Second highest priority. Do these second.	Procure your packaging closer to home.
3. Cost positive harder wins but below the carbon price.		Third highest priority. Do these after 1 & 2 above.	Conduct an energy audit and implement changes
4. Cost positive and above the carbon price.		Offsetting is a cheaper option in the interim. This does not mean you shouldn't pursue these goals, but they may require policy and infrastructure investments to make them feasible before doing so.	Installation of solar PV panels to meet all of Chia's energy demands

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 Chia 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 (CH₄)
- 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.