



Common Greenhouse Gas Accounting Framework for the Australian Fresh Produce Industry



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Common Greenhouse Gas Accounting Framework

Framework Purpose

The Australian Fresh Produce Alliance (AFPA), in conjunction with Sustenance Asia, has created a Common Greenhouse Gas Accounting Framework (the Framework) for the Australian fresh produce industry. This Framework represents a significant first step towards gaining a proper understanding of the fresh produce industry's emissions profile and, with this future knowledge, the opportunities and challenges that lay ahead.

In the absence of data and evidence to support informed policy and decision-making around the horticulture industry's emissions, or any widely recognised and endorsed methodology for capturing this information, this Framework has been developed to enable Australian fresh produce businesses to take a common approach to accounting their emissions.

This document outlines a Common Greenhouse Gas Accounting Framework for the fresh produce industry based on accounting and reporting steps as required by the Greenhouse Gas (GHG) Protocol Corporate Standard. Key decisions for each step of the GHG Protocol, (i.e. the boundaries, calculation tool, data inputs/sources) have been agreed to by the members of the AFPA, who collectively account for over 50 percent of Australia's fresh produce sector by turnover value.

The Framework briefly details each step, the AFPA's reasoning behind each decision, and provides some real-world scenarios for context.

The Australian fresh produce sector is currently experiencing one of its most difficult periods in history. Resilience among horticulture businesses has been worn thin by successive challenges, including supply-chain and workforce disruptions, extreme weather events and low farmgate prices. These challenges – coupled with new regulatory and policy pressures on industry – are stretching the industry's capacity to adapt and respond to new demands. The Framework was developed to provide a consistent, low cost and plain English approach to support broader uptake by Australian horticulture producers.

It is hoped that the release of this Framework will relieve some pressure on industry by taking the guesswork out of a complicated topic – how to navigate Greenhouse Gas Accounting. By following this Framework, horticulture businesses will be able to make more informed decisions, support a level-playing field, contribute to industry-wide knowledge, and identify and unlock new opportunities within their business and across the broader industry.

The AFPA continues to advocate that the fresh produce industry is naturally positioned to be part of the solution for reducing Australia's emissions and achieving Australia's broader environmental ambitions. There are numerous opportunities to explore in fresh produce, including better utilising our existing assets such as orchards for carbon capture and sequestration. However, to progress this work, and other related initiatives, industry, government, and stakeholders first need to better understand the industry's emissions profile, which this Framework supports.

Australian Horticulture Industry

Horticulture is now Australia's third largest agricultural sector by value (\$16.25 billion) and includes fruit, vegetables, nuts, flowers, turf, and nursery products. The industry is a crucial economic contributor. Its supply of nutritional and safe fresh produce is fundamental to the health and wellbeing of Australians and underpins national food security. A thriving and sustainable fresh produce industry is vital to Australia's future and its viability should be a national priority.

Australia's diverse climate enables more than 100 varieties of fruit and vegetable to be grown productively in regions around the nation. This advantageous environment has enabled a large number and wide variety of fruit and vegetable producing businesses to be established. From family-owned orchards to large-scale commercial farms; the Australian fresh produce industry encompasses a broad spectrum of enterprises, each playing a role in bringing food from the farm to the table.

For generations, fresh produce growers have flourished by responsibly managing their environment and the resources available to grow sustainably. The industry recognises that sustainability is about meeting the needs of the present without compromising the ability of future generations to meet their needs. That is, producing fresh produce in a way that is economically, socially, and environmentally responsible to ensure the industry's ongoing viability.

Lack of Horticulture Emissions Data

Australia's agriculture industry accounts for approximately 16.8% of national emissions.

There is, however, insufficient data to provide an accurate and complete assessment of the horticulture sector's emissions profile in Australia – it is estimated to represent a small fraction (1-2%) of the agriculture industry's total emissions. There is also a global lack of industry-wide research into horticulture emissions and reporting.

Furthermore, existing studies of the horticulture sector's emissions (in Australia and globally) vary in approach and methodology; there is no common standard for accounting the sector's emissions.

In the absence of a universally regarded standard for accounting horticulture's GHG emissions, the AFPA, in conjunction with Sustenance Asia, have developed a Framework that caters to Australia's diverse industry and environment, and could be used to overcome this key challenge of collecting accurate data.

Common Greenhouse Gas Accounting Framework continued

What are Scope 1, 2 and 3 Emissions?

Greenhouse emissions are attributable to a range of gases, but for tracking and reporting requirements they are converted to a standard measurement called 'carbon dioxide equivalent' (CO₂-e). They are tracked and reported as being either Scope 1, 2 or 3 emissions.

In the simple terms, Scope 1, 2 and 3 emissions are outlined below:

Scope 1 emissions come from your direct actions (Direct Emissions).

They can be both mechanical (e.g. from diesel burnt to run your company-owned tractors) and non-mechanical (e.g. emissions from applying nitrogen fertiliser to soil, which reacts with oxygen to release nitrous oxide).

Scope 2 emissions come from fossil-fueled electricity used in the operations you own (Indirect Emissions).

This is purchased electricity.

Scope 3 emissions come from all the third-party activities associated with your operations (Other Indirect Emissions).

For example, emissions released as part of manufacturing the fertiliser you use, or from transporting that fertiliser to your farm. These are the hardest to accurately measure because they are outside of your control.

What is GHG accounting and reporting?

This Framework aims to support AFPA members and other fresh produce growers to collect and record data at a sufficiently disaggregated level for accounting purposes, and to consolidate that data into a format that meets a range of reporting requirements.

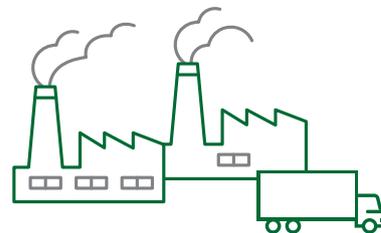
This Framework is based on the [GHG Protocol Corporate Standard](#) (GHG Protocol) and [Agricultural Guidance](#). It is also cross checked against [Agriculture Innovative Australia guidance for sectoral GHG reporting](#), to be as consistent as possible with future whole-of-horticulture industry reporting.

GHG accounting is the recognition and consolidation of GHG emissions from operations in which a parent company holds an interest (either control or equity) and linking the data to specific operations, sites, geographic locations, business processes, and owners.

GHG reporting is the presentation of GHG data in formats tailored to the needs of various reporting uses and users. Annual reporting, sustainability reporting, or compliance reporting are some common examples.

Scope 3 emissions

- Production & transport of fertilisers, pesticides bought by you
- Emissions from activities of third parties working for you (production contracts and capital leases, contractors, ripening, propagation, etc)



Scope 1

Non-mechanical emission

Direct and non-direct soil emissions from fertiliser, lime, and crop residues

Fertiliser



Row crops



Crops residue

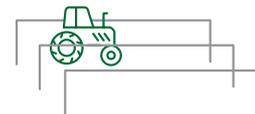


Tree crops



Mechanical emission

- Mobile machinery
- Stationary machinery
- Refrigeration



Vine crops



Protected crops



Scope 2 emissions

Purchased electricity



Summary of the Framework for the Australian fresh produce industry

This Framework covers nine (9) key components of GHG accounting. Each of these components requires a business decision, which could be made in isolation by each individual fresh produce business. Against each of these nine components, the members of the AFPA have agreed to a collective approach. This means that all AFPA members have agreed to record and account their emissions using the same methodology.

There is an opportunity for all fresh produce businesses to adapt this same methodology to ensure that all emissions data collected can be compared, collated, and used to chart a way forward for businesses and the fresh produce industry as a whole.

An addendum to this document, is a more detailed version of the Framework, providing a greater technical information and background of each of these components and the agreed AFPA approach.

Components of the Framework

Each component of the Framework is outlined below. A further written summary of each component is contained in Table 1 (page 4).

1. **System Boundary:** Defines where in the value chain the reporting entity stops and starts accounting for its greenhouse gas emissions.
2. **Operational Boundary:** Confirms reporting entities must account for their scope 1 (direct) and scope 2 (purchased electricity) emissions and defines what scope 3 (other indirect) emissions could be accounted for.
3. **Organisational Boundary:** Defines a common approach to accounting for emissions from different legal and organisational structures.
4. **Base Period:** Defines a specific period of time used as a reference point or benchmark against which future changes, comparisons, or assessments are made.
5. **Calculation Tool:** Refers to a specialised software or platform used to automate the quantification of GHG emissions.
6. **Acceptable Data Sources:** Defines the reliable and credible sources from which organisations can obtain input data (such as electricity, fuel, and fertiliser use) for their GHG calculations.
7. **Data Collection:** Any efficient and accurate process for collecting input data.
8. **Calculation Approach:** Emission factors and methods for estimating greenhouse gas emissions.
9. **Accounting and Reporting:** Any requirements and guidance for producers preparing a GHG emissions inventory and report.

Using the AFPA Framework with the H-GAF Calculation Tool

The AFPA has developed this Framework to ensure Australian producers are taking a common approach to calculating and reporting emissions.

The nine components of the Framework can be used as a process, where the output is a report of an individual enterprise's greenhouse gas emissions.



Common Greenhouse Gas Accounting Framework continued

Horticulture Greenhouse Gas Accounting Framework

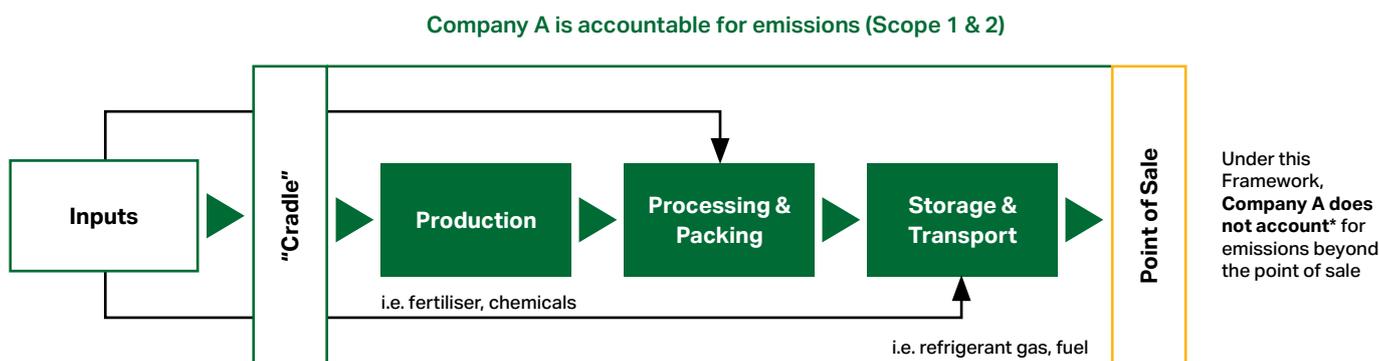
AFPA Agreed Approach

	System Boundary	Cradle to first point of sale
Boundaries	Defines where in the value chain the reporting entity stops and starts accounting for its greenhouse gas emissions.	GHG emissions will be counted from 'cradle' to first point of sale, which -in most instances is from on-farm production to delivery to a retailer or wholesaler's distribution centre.
	Operational Boundary	Scope 1 and 2 emissions only
	Confirms reporting entities must account for their scope 1 (direct) and scope 2 (purchased electricity) emissions and defines what scope 3 (other indirect) emissions should be accounted for.	Work on scope 1 and 2 emissions has been prioritised; the AFPA members will work towards reporting scope 3 emissions (greater than 1% of total emissions) in the future.
	Organisational Boundary	Financial control
	Defines a common approach to accounting for emissions from different legal and organisational structures.	Consistent with international accounting standards, the AFPA members will account for 100% of the emissions of operations over which they can direct financial and operating policies with a view to gaining economic benefits. Under this criterion, the economic substance of the relationship between the company and the operation takes precedence over legal ownership, so a company may have financial control even if it has a minority interest in that operation. Emissions from joint ventures where partners have joint financial control are allocated on an equity-share approach.
Base Period	Earliest year for which a producer has verifiable scope 1 and 2 emissions data	
Defines a specific period of time used as a reference point or benchmark against which future changes, comparisons, or assessments are made.	Pragmatism determined that a base year, instead of a base period, be agreed to, and that it be individually set due to most of the industry's producers not having previously compiled accounts, nor having access to required historic data to retrospectively account emissions.	
Calculation and data	Calculation Tool	University of Melbourne's H-GAF Tool
	Refers to a specialised software or platform used to automate the quantification of GHG emissions.	The University of Melbourne has created a publicly available tool that automates emissions calculations based on inputs and is frequently updated.
	Acceptable Data Sources	Standardised Data Sources – Outlined in Tables 1, 2 and 3 (pg. 12-13)
	Defines the reliable and credible sources from which organisations can obtain input data (such as electricity, fuel, and fertiliser use) for their GHG calculations.	In order to ensure that calculated results are consistent and comparable, data sources used to perform these calculations must also be aligned. The AFPA members have agreed on aligned data sources for all inputs required to calculate GHG emissions. A list of these data sources is available on pages 12 and 13 of this document.
Data Collection	Individualised approach to data collection	
Any efficient and accurate process for collecting input data.	Producers can develop their own methodologies for collecting data in their businesses; enabling the selection of either a centralised or decentralised approach to aggregate data from multiple sites or business units.	
Calculation Approach	Standardised emission factors	
Emission factors and methods for estimating greenhouse gas emissions.	Standardised emission factors included in the chosen calculation tool shall be used to calculate fluxes. Emission factors shall be consistent with the latest National Greenhouse Gas Inventory report.	
Accounting & Reporting	Standardised Accounting & Reporting	
Any requirements and guidance for producers preparing a GHG emissions inventory and report.	The AFPA members have agreed to several accounting and reporting standards outlined on page 13, including calculating absolute emissions (t CO ₂ e) and intensity emissions (t CO ₂ e/t product sold) at business aggregate level and reporting in single year periods. The AFPA may aggregate (non-attributable to individual members) GHG emissions in the future.	

1. The System Boundary – Cradle to Point of Sale

The system boundary defines the limits of the system being analysed for the purpose of assessing and reporting greenhouse gas emissions. The agreed system boundary is cradle to first point of sale, which in most instances is from on-farm production to delivery to a retailer or wholesaler’s distribution centre.

Figure 1: the Framework’s System Boundary



* The Framework recommends industry focus on accounting Scope 1 & 2 only, as this is a priority for several reasons. In future, consideration will be given to Scope 3, including 'upstream' and 'downstream' emissions.

Explanatory Scenarios

Figure 2, over page, illustrates how this boundary is applied to three common scenarios described below.

Scenario 1 – Company A supplies direct to a wholesaler/retailer

Company A grows bananas and has an arrangement to sell their bananas to a wholesaler. Company A must account for all emissions created as part of growing, harvesting, processing, packing and, depending on their arrangement with the wholesaler, transporting the bananas to the wholesaler’s storage and distribution facilities. Once delivered and accepted by the wholesaler, Company A has sold their bananas, and under this Framework is no longer responsible for any emissions associated with the bananas. Company A does not have to account for the emissions from the energy used during the storage/ripening of the bananas, fuel for transporting the bananas to their next destination, etc. Note, this may change in future as industry becomes more advanced in GHG accounting, or due to regulatory or other requirements.

Scenario 2 – Company A outsources and uses the services provider Company B

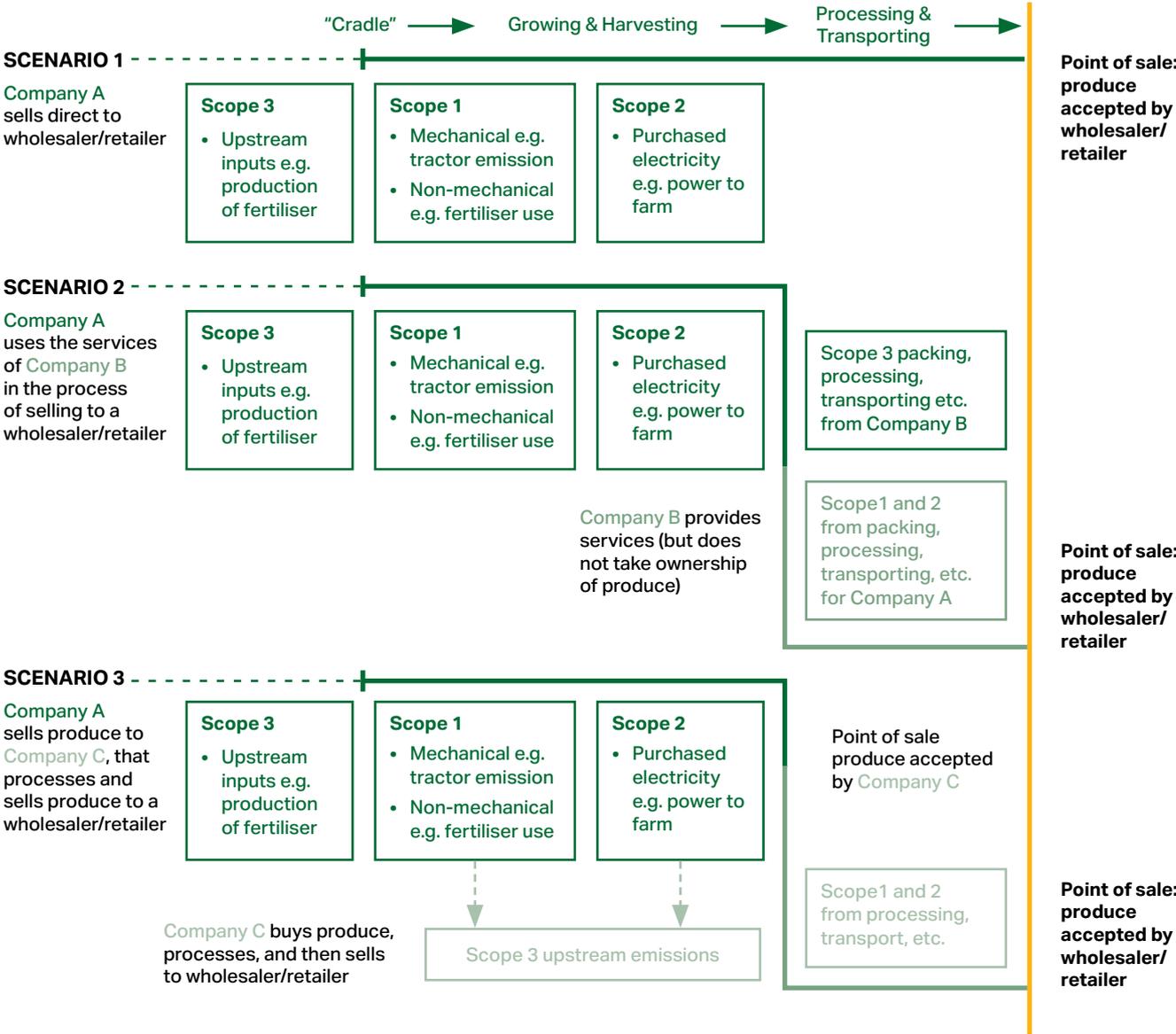
Company B offers a service to Company A, for example to process, pack, transport and sell the bananas for a fee or commission (trading as an agent under the Horticulture Code of Conduct). Company A delivers its bananas to Company B as part of the arrangement. Company B is taking possession of the bananas, but not ownership. Under this Framework, all emissions created in the provision of services (processing, packing, transporting and selling the produce) are considered scope 1 and 2 for Company B and scope 3 emissions for Company A, until the produce is sold.

Scenario 3 – Company A sells its produce to Company C, which processes and sells it to a retailer

Company C purchases Company A's bananas. Company A delivers the produce to Company C as part of the purchase arrangement. Once delivered and accepted by Company C, a sale is complete and, under this Framework, Company A is no longer required to account for downstream emissions associated with its bananas, including processing, packing, storage, transport, etc. Company C is accountable for all emissions while the bananas are in its ownership and will decide if it should also account for the scope 1, 2 and 3 emissions generated by Company A in growing the bananas.

1. The System Boundary – Cradle to Point of Sale continued

Figure 2: The Framework’s System Boundary applied to common scenarios in the Horticulture Industry



2. The Framework's Operational Boundary – Scope 1 and 2

This Framework supports industry to develop reporting on all Scope 1 and 2 emissions as a priority. The AFPA members will work towards incorporating and reporting Scope 3 emissions (>1% of total emissions) into the Framework in the future. Addressing Scope 1 and Scope 2 emissions has been prioritised for several reasons:

- **Direct Control:**

- Scope 1 (Direct Emissions): These emissions arise directly from the activities or operations of the business, such as emissions from owned vehicles. Businesses have direct control over these sources, making it more feasible to implement changes and reduce emissions.
- Scope 2 (Indirect Energy-Related Emissions): These emissions result from the production of purchased energy, such as electricity, heating, or cooling. While businesses do not directly control the energy production, it can influence the type and amount of energy it purchases, often through contracts with energy providers or by investing in renewable energy sources.

- **Easier Measurement:**

Scope 1 and 2 emissions are typically easier to measure and manage because they involve activities within the businesses boundaries or closely related to its operations. Businesses have more direct access to data and this creates less barriers to action.

- **Regulatory Compliance:**

Many regulatory frameworks and reporting standards initially emphasise Scope 1 and 2 emissions. The Australian Government is in the process of implementing mandatory climate disclosures and retailers have also indicated a desire to begin reporting on their scope 3 emissions, which are producer's Scope 1 and 2 emissions. Focusing on these emissions helps businesses to comply with existing and future regulations and reporting requirements.

- **Immediate Impact on Carbon Footprint:**

Addressing Scope 1 and Scope 2 emissions yields a more immediate and tangible impact on a business' overall carbon footprint. By focusing on emissions directly associated with their activities and energy consumption, businesses can make significant strides in reducing their environmental impact, showcasing a commitment to sustainability.

- **Stakeholder Expectations:**

Stakeholders, including customers, investors, and employees, increasingly expect businesses to take responsibility for their direct emissions and energy-related emissions. Prioritising Scope 1 and 2 emissions aligns with stakeholder expectations, enhances transparency, and contributes to building trust in the business's environmental stewardship.

While Scope 1 and 2 emissions are prioritised in the immediate term, the Framework acknowledges the importance of incorporating and reporting Scope 3 emissions (>1% of total emissions) in the future. This progressive approach aligns with the evolving landscape of sustainability reporting and positions businesses to address their entire environmental footprint comprehensively.



3. The Framework’s Organisational Boundary – Financial Control

Like the broader industry, the AFPA member’s businesses vary in their legal and organisational structures. Some member businesses participate in joint ventures, are the parent companies of subsidiaries, or have other arrangements that create additional complexity to accounting GHG emissions. The Framework accommodates this business diversity by setting an organisational boundary that ensures businesses can consistently determine what GHG emissions they are and are not responsible for; to support this the agreed operational boundary is financial control.

Financial Control

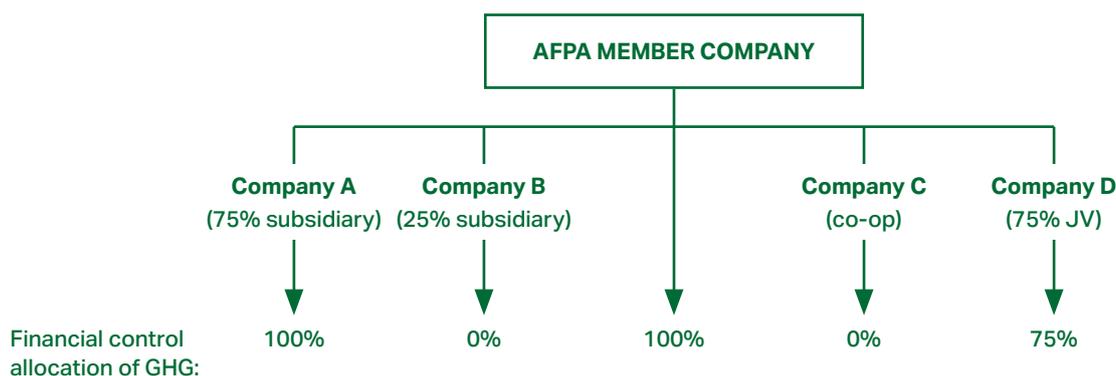
Under this Framework, horticulture businesses use Financial Control as their default approach to define which business operations will be included in their inventory. Financial Control is a common accounting practice that considers the authority and ability of an entity to direct the financial and operating policies of another entity.

In the majority, Financial Control exists where a business has the largest interest in an operation, for example more than 51%. However, consistent with international accounting standards, Financial Control can also exist even if a business has a minority interest in that operation. The concept of Financial Control goes beyond strict ownership percentages and considers the practical ability of an entity to direct the financial and operating policies of another entity. Here are some key factors that can contribute to a business having financial control, even if it has a minority interest:

- **Operational Decision-Making Authority:** A business with a minority interest may have operational decision-making authority, influencing key aspects of the operation’s strategy, financial management, and day-to-day activities.
- **Board Representation:** A business with the minority interest has greater representation on the board of an operation, and may have a direct role in shaping and approving significant decisions, contributing to its financial control.
- **Contractual Arrangements:** The terms of contractual agreements between the entities can define the level of influence and control. For example, specific clauses in contracts may grant decision-making powers to the minority interest holder.

Under Financial Control, the AFPA members will account for 100% of the emissions of operations over which they have the ability to direct financial and operating policies with a view to gaining economic benefits.

Example organisational structure using financial control GHG allocation approach



4. Selecting a Base Year

A base year helps companies compare performance against a point in the past. The AFPA members have agreed to use a base year, being the earliest year for which there is verifiable scope 1 and 2 emissions. This base year will vary across AFPA member companies.

A base year was selected instead of a base period, as it will be very difficult (and hence a barrier to action) for members and other growers who haven't previously compiled accounts to source data for several past years. The base year will be a financial year, to align with financial reporting and with [Australian Accounting Standards Board draft climate-related financial disclosure guidance](#).

There is an opportunity for industry to review progress and discuss with members if a base period of 3-5 years should be used in future, instead of the base year chosen now.

5. The Calculation Tool: H-GAF

A common calculator is critical to ensuring a unified approach to GHG accounting. In reviewing common tools available, it was determined that the H-GAF tool, developed by the University of Melbourne, was the most suitable. This is based on a range of factors, however, important characteristics also includes that the tool is free, publicly available, and is accessible as a Microsoft Excel document – this enables members to use the data across multiple functions and limits significant concerns about data security that would exist in other online/portal based solutions.

What is the H-GAF tool?

The Primary Industries Climate Challenges Centre (PICCC) has developed a range of Farm Greenhouse Accounting Tools that are freely available, including a calculator for horticulture production. PICCC was launched by the University of Melbourne in February 2011 as a research centre to address the impacts of a changing climate on agriculture. PICCC's tools align with the National Greenhouse Gas Inventory and predict the magnitude and sources of Greenhouse Gases emitted from a farm and a product at farm gate.

PICCC's tools include a horticulture-specific resource, H-GAF, which is a Microsoft Excel document. The H-GAF tool is easily accessible, it produces data in a familiar format that can be easily utilised and ensures that each business' valuable data can be kept internally and secure.

PICCC's Horticulture Greenhouse Accounting Tool can be downloaded from the following link: <https://piccc.org.au/resources/Tools.html>



6. Acceptable data sources

To ensure calculated results are consistent and comparable, data sources used to perform these calculations must be aligned. The AFPA members have agreed on aligned data sources for all inputs required to calculate GHG emissions.

Table 1: Acceptable data sources direct operations (to be reported by users, per chosen operational boundary).

Activity		Data point	Unit	Acceptable data source				
Environmental factors		Climate zone: low <600mm rainfall/high >600mm rainfall	Low/high	Orchard via BOM				
Farm production data		Area cropped	Ha	Orchard data				
		Mass sold* (see below for definition)	t	Sales data				
Activity	Emissions	Source category	Data point	Unit	Acceptable data source			
Farm input data	Scope 1 non-mechanical (land management) emissions	Agricultural soils (direct and indirect N ₂ O from fertiliser)	Non-urea nitrogen applied (including organic fertiliser)	t	Purchase/ accounting records			
			Urea applied	t				
			Urea-ammonium nitrate applied	t				
						Urease inhibitor used	Yes/no	
						Nitrification inhibitor used	Yes/no	
						Phosphorous application	t	Purchase/ accounting records
						Potassium application	t	
						Sulphur application	t	
						Lime and dolomite applied	t	
				Fraction of lime as (limestone/dolomite)	%			
				Deposition, leaching and runoff	Calculated from fertiliser input data			
		Residue burning		Fraction of annual crop area that is burnt	%	N/A		
	Scope 1 mechanical emissions	Inputs for agricultural processes (machinery, packing sheds etc)		Diesel consumption: e.g. record of purchases per year	L	Purchase/ accounting records		
				Petrol consumption	L			
				LPG consumption	L			
			Cool rooms refrigerant gas	Name	Site (maybe several gases)			
Scope 2 purchased electricity	Farm, packing, storage		Grid-supplied electricity (Av grid intensity per state, or actual to reflect low emission use)	KWh	Electricity			
			Proportion of grid-supplied electricity that is renewable	%	Electricity			
**Scope 3 pre-farm (direct operations). H-GAF calculates automatically.	Pesticide production		Pesticide applied	Kg a.i.	Purchase records			
	Fertiliser and lime production		Calculated from input data above	N/A				
	Fertiliser and pesticides transport		Calculated from input data above	N/A	Calculated from farm input data			

* Mass sold is the total declared weight of produce. For produce sold by the piece, a standard unit weight is the mid-point of weight ranges from retailer specifications.

** While not actively recording and reporting Scope 3 emissions, the chosen calculator will automatically make a Scope 3 calculation on items listed. These emissions relate only to direct operations.

Table 2: Acceptable data sources third party operations (optional, per the chosen operational boundary)

Activity	Data point	Unit	Acceptable data source	Unit	Acceptable data source
Third party input data	Scope 3 (third party operations)	Third party inputs for agricultural processes (contractor machinery, packing sheds etc) if more than 1%	Diesel consumption	L	AFPA members will meet in future to agree acceptable data sources for these, and any other material third party emissions (e.g., purchased water).
			Petrol consumption	L	
			LPG consumption	L	
			Cool rooms refrigerant gas	Name	
			Charge size (amount of refrigerant gas in appliance)	t	
			Grid-supplied electricity	KWh	
			(Av grid intensity per state, or actual to reflect low emission use)		
Proportion of grid-supplied electricity that is renewable	%				

Table 3: Scope 1 removals of GHG

Farm input data	Scope 1 removals	Perennial woody crops	CO ₂ removal due to change in area of perennial woody crops (agroforestry, forest restoration, windbreaks, biodiversity zones)	Ha	Orchard data** (see below for definition)
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** To be eligible to be counted as a windbreak, managed restoration zone, etc., these areas must meet minimum density requirements. AFPA members will in the short term adopt the SBTi FLAG definition of a forest: Land spanning more than 0.5 hectares with trees higher than 5 metres and a canopy cover of more than 10 percent, or trees able to reach these thresholds in situ.

Appropriate definition of this item is marked for further work, to support greater understanding and investment in carbon offsets.



7. Data Collection

In order to complete the calculation and reporting of greenhouse gas emissions, data collection at an enterprise level is required. This enterprise level collection will then support overarching industry data collection.

Given the range of different operating models within the fresh produce industry, the data collection process will be left to individual companies to determine the most efficient and effective way to collect, collate and aggregate data at an enterprise level. This is possible as the calculations of overall emissions will be standardised as a result of the previous decisions made within the Framework.

8. Calculation Approach

The agreed collective use of the H-GAF tool means that emissions factors are standardised, these factors are built into the calculator and support calculating fluxes (movements in emissions). Importantly, emission factors shall be consistent with the latest National Greenhouse Gas Inventory report and latest Australian National Greenhouse Accounts Factors.

There is an opportunity for industry to collectively invest in future research to use direct measurement or new modelling if practices are likely to result in fluxes that are significantly different to those estimated by emission factors.



9. Accounting and Reporting

The AFPA members have agreed to a range of accounting and reporting standards:

- The AFPA members will calculate absolute emissions (t CO₂e) and intensity emissions (t CO₂e/t product sold) at business aggregate level.
- Reporting periods for horticulture should be one year (i.e., not a three or five-year average).
- Net CO₂ fluxes to/from organic carbon (C) stocks in soils and biomass are accounted as zero.
 - GHG Protocol Agricultural Guidance is companies should report the net CO₂ fluxes (in tonnes CO₂) to/from organic C stocks in mineral/organic soils and above-ground and below-ground woody biomass, as well as the CO₂ emissions from dead organic matter and biomass combustion. However, H-GAF assumes these to be in equilibrium, and are reported as zero.
- No amortising changes in carbon stocks over time.
- Agricultural offset and renewable energy projects:
 - Accounting for renewable energy projects
 - If the energy is consumed on-site, the project may reduce the amount of electricity or fuel consumed, resulting in a reduction in scope 1 or scope 2 emissions that will be evident when comparing inventories over time.
 - If the energy is sent off-site, it shall not be used to lower scope 1 or scope 2 emissions.
 - Accounting for transactions in offset credits
 - Should a company sell an offset that has been generated within its organisational boundaries, it shall remove the associated emissions reductions from its corporate inventory to prevent double counting. It should also disclose the sale, and the protocol used to verify the emissions reductions.

The AFPA may aggregate non-attributable individual member GHG emissions data in the future. Aggregated reporting could include total AFPA CO₂e GHG emissions, and/or the proportion of Australia's total emissions, average AFPA CO₂e GHG emissions per kilogram of product sold and/or total AFPA GHG removals and/or total carbon sinks in AFPA orchards.

This approach to aggregated data could be expanded across sectors within the industry, or aggregated across the entire industry.

Outcomes and next steps for industry

In the absence of data and evidence to support informed policy and decision-making around horticulture's emissions, or any widely recognised and endorsed methodology for capturing this information, this Framework has been developed to enable Australian fresh produce businesses to take a common approach to accounting their emissions.

The intended benefits of GHG accounting and reporting for the AFPA members and the fresh produce industry are to:

- Identify opportunities to reduce net GHG emissions, track performance and, if desired, to set reduction targets.
- Enable GHG inventories to meet the decision-making needs of management to:
 - Identify opportunities to reduce emissions, reduce costs and increase productivity. This includes co-benefits from GHG reduction measures, such as reduced inputs and increased soil health.
 - Manage reputational risks and market access opportunities.
- Enable GHG inventories to meet the decision-making needs of customers and other external stakeholders.

The intended benefits of a consistent industry approach to GHG accounting and reporting are to:

- Achieve a common understanding of GHG accounting terminology and how methods can be consistently applied across horticulture and the many activities that comprise the growing and supply of fresh fruit and vegetables.
- Have a clear and consistent approach for GHG accounting and reporting that team members, auditors (if applicable) and others can consistently follow at any fresh produce business.
- Have clearly defined boundaries to bring greater clarity and to provide informed expertise to shape industry GHG reporting to customers and government.
- Help all of the AFPA members and other growers cost-effectively prepare GHG inventories.
- Proactively prepare for future accounting and assurance requirements for when climate and broader sustainability disclosures are mandated.

With this Framework, fresh produce businesses will be able to cohesively begin recording their emissions. For industry more broadly, this will enable the aggregation of enterprise data to give a holistic view of industry's emissions profile.

With an improved view of the sector-wide emissions profile, improved decision-making around emissions is possible. This includes considering if and where reductions are appropriate or possible at an enterprise level, where appropriate investment would support broader emissions strategies, and what opportunities exist to improve the calculation of emissions, for example by the inclusion of harvestable trees.





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