

GHG Inventory Protocol	World Resources Institute GHG Protocol (primary methodology), with two exceptions: (1) Accounting for refrigerant emissions: Given the large impact of refrigerants on wineries' carbon footprints, IWCA requires our wineries to include all refrigerant emissions in their Scope 1 calculations. This includes emissions from GHGs not covered by the Kyoto Protocol. This differs from the GHG Protocol, which states that non-Kyoto emissions should be reported separately from Scope 1 emissions. (2) Accounting for retailer and home energy use to store and cool wine: To totally close the life cycle of wine products, IWCA requires all wineries to consider all emissions related to energy consumed at the shop/supermarket — and energy consumed to cool wine before use — in their Scope 3 calculations. This differs from the GHG Protocol, which deems accounting for such emissions as optional.
3rd Party Auditor	Audit firm must either be ISO-14064-3 accredited or CDP accredited as a solutions provider in CDP's Greenhouse Gas Emissions Inventory services area. The audit firm's accreditation must be valid for the winery's specific geography or worldwide.
Total Scope	Primary production facility(ies), vineyards, and all business operations (see the "Initial Considerations" list below for details) GHG Protocol Scopes 1, 2, and 3 / ISO-14064-1:2018 Categories 1, 2, 3, 4, 5, and 6 (from the vineyard to the final disposal of the waste once the product is consumed)
Baseline Year	Determined by the individual winery and approved by IWCA
Production Unit	Chosen by the winery (either liters fermented or liters bottled); the emissions intensity metric will be calculated in terms of CO ₂ -equivalent/production unit

Initial Considerations about the GHG Inventory:

- The inventory must include the region where the organization's main winery (in bottle production) is located. The inventory must also include any other winery in the region so that the audit represents at least 90% of the organization's production volume in that region. The wineries' facilities need also to be included (owned logistics warehouse, water treatment plant, offices, hospitality centers, etc.).
- All GHG inventories must cover emissions from the vineyard to the final disposal of the wine product after it is consumed and include *at least* 95% of Scope 1 and 2 emissions and 80% of Scope 3 emissions.
- Emission reductions must be based on own efforts (i.e., no external compensations or offsets, including Renewable Energy Credits [RECs] or Guarantees of Origin [GOs] linked to energy generated outside of the electricity grid from which the winery consumes its electricity, nor CO₂ stored in planted vines, stoppers, or barrels). The use of external offsets is restricted, since IWCA's approach is consistent with wineries reducing their own emissions as a key priority and by themselves, without relying on offsetting solutions.
- Third-party verified reforestation or other carbon sequestration projects are acceptable on owned or permanently protected land that meets globally recognized permanence and additionality requirements for nature-based carbon removal. IWCA reserves the right to limit internal offsets up to a certain percentage of a winery's carbon footprint, as it relates to obtaining Gold-level membership.
- Market-based emissions factors for electricity emissions are acceptable. Market-based emissions factors may account for the purchase of grid-sourced renewable electricity so long as the renewable generation source/origin is verifiably connected to the same electricity grid from which the winery consumes its electricity. No other grid-sourced renewable electricity may be accounted for. All renewable electricity purchases are subject to IWCA approval on a case-by-case basis to ensure integrity. Renewable electricity purchases can only be used to cumulatively reduce a winery's Scope 2 emissions toward zero (0) and can never be used to generate negative emissions.
- The inventory can model Short Term Carbon Cycle emissions (vineyard photosynthesis, soil carbon sequestration and emissions from wine fermentation) but these cannot be included in Scopes 1, 2, or 3.
- Purchases or sales of Renewable Energy Credits (RECs) do not satisfy the criteria for onsite renewables or the GHG audit.
- Renewable energy purchased from the public electricity grid does not satisfy criteria (unless local grid is 100% renewable).

All the inputs noted below must be considered, not necessarily grouped under the same categories but following the below classifications:

ISO-14064-1:2018 Categories	GHG Protocol Scopes	Emissions Categories
CATEGORY 1	SCOPE 1	
Direct GHG Emissions	Direct Emission Sources	<ul style="list-style-type: none"> Any/All fuel use for company business (winery / vineyard / logistics fuel use, natural gas, propane, gasoline, diesel, butane, etc.) Change in land use (i.e., deforestation to plant new vineyards) Fugitive emissions from refrigerant gases CO₂ used in winemaking or any other process Vineyard soil emissions and fertilizer emissions from nitrogen application On-site waste (methane from wastewater treatment) Any other accountable category that represents more than 1% of annual emissions
CATEGORY 2	SCOPE 2	
Indirect GHG Emissions from Imported Energy	Electricity	<ul style="list-style-type: none"> Electricity purchased from local utility grid (either location-based or market-based emissions allowed) Self-generated onsite renewable electricity
CATEGORIES 3-6	SCOPE 3	
Category 4: Indirect GHG Emissions from Products Used by the Organization	Purchased Products	<ul style="list-style-type: none"> Crop protection materials (e.g., herbicides, pesticides, fungicides) and fertilizers production Grapevine trellising Purchased grapes from external grower partners; purchased wine, bulk wine, or distillate Biomass treatment (used as fuel for biomass boiler) Winemaking gases (purchased embedded emissions) and winemaking products (yeast, bentonite, etc.) Wastewater treatment and/or water purification products Purchased wine barrels Purchased municipal water
Category 4	Packaging Materials	<ul style="list-style-type: none"> Wine bottles; wine bag in box; corks; capsules (poly); capsules (tin); screwcaps; labels; stickers; etc. Partitions; separators; carton; knock down boxes; pads; tissue paper; slip sheets; etc. Pallets (include embedded emissions for purchased pallets); wood boxes; etc. Scarfs; neckers / neck scarfs; bottle adornments; etc. Any other packaging material
Category 3: Indirect GHG Emissions from Transportation	Outsourced Transportation	<ul style="list-style-type: none"> Harvesting transport (for internal fruit only) and grape transport (for grower fruit only) Purchased bottling material and wine barrel transport Purchased wine and distillate transport (includes third-party transport of wine / juice between facilities) Biomass transport (used as fuel for biomass boiler) Case goods transport (to distributors and consumers) Wine club shipments
Category 4	Outsourced Production	<ul style="list-style-type: none"> Own land farming and/or harvesting performed by third party Wine bottled in third party bottling plant
Category 3	Travel	<ul style="list-style-type: none"> Employee commute Business travel (car, plane, train, etc.)
Categories 3 and 4	Fuel Use	<ul style="list-style-type: none"> Upstream stationary and mobile fuel emissions not accounted for in another category
Categories 3 and 4	Offsite Waste / Loss	<ul style="list-style-type: none"> Offsite solid waste and recycling (including its transport) Location- / market-based transmission and distribution losses (from purchased electricity)
Category 4	Postconsumption	<ul style="list-style-type: none"> Disposal of the product (if not recycled)
Category 5: Indirect Emissions Associated with the Use of Products from the Organization	Other	<ul style="list-style-type: none"> Energy consumed at the shop / supermarket and energy consumed to cool the wine before use Any other accountable category that represents more than 1% of annual emissions

Acceptable GHG Emissions Compensation (to be applied to the result from the above inventory)

Third-party verified reforestation or other carbon sequestration projects on owned or permanently protected land that meets globally recognized permanence and additionality requirements for nature-based carbon removal

Optional Best Practice (tracked annually but not included in Scopes 1-2-3)

Short Term Carbon Cycle (i.e., biogenic emissions)	Vineyard biomass photosynthesis Wine fermentation emissions
Anthropogenic Biogenic Emissions	Row cropping sequestration Biomass used as fuel

Relevant Links for GHG Emissions Inventory Accounting & Verification

WRI GHG Protocol	https://ghgprotocol.org/
ISO-14064 Process	https://www.iso.org/standard/66453.html
SBTi Criteria & Recommendations	https://sciencebasedtargets.org/resources/files/SBTi-criteria.pdf

* **Exceptions:** If a winery can demonstrate that any given emissions category is less than 1% of its total annual emissions, and ongoing data collection is determined to be overly time consuming or unreliable, it is acceptable to only perform the GHG calculation in the baseline year and reuse the calculated emissions number for future years without recalculating it, unless the production volume increases by more than 5% versus the baseline year, where in that case the emissions number has to be increased proportionally. Case-by-case exceptions are subject to IWCA Board approvals.