

GHG Inventory Protocol	World Resources Institute GHG Protocol (primary methodology), with one exception: how IWCA accounts for refrigerant emissions. Given the large impact of refrigerants on wineries' carbon footprints, IWCA requires its 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.
3rd Party Auditor	Audit firm must be ISO-14064-3 accredited either in the winery's specific geography or worldwide
Total Scope	Primary production facility(ies), vineyards, and all business operations (see "Initial Considerations" list below for details) Scopes 1, 2, and 3 (from the vineyard to the final disposal of the waste once the product is consumed)
Baseline Year	Determined by individual winery and approved by IWCA Founding Members
Production Unit	Chosen by the winery; the final result needs to be calculated in terms of CO ₂ -equivalent/production unit

Initial Considerations about the GHG Inventory:

- (1) The inventory must include the main winery (in bottle production) of the organization.
- (2) The inventory must include any other winery in the region so that the audit represents at least 90% of the organization's volume in the specified region. The wineries' facilities need also to be included (owned logistics warehouse, water treatment plant, offices, hospitality centers, etc.).
- (3) Emission reductions must be based on own efforts (i.e., no external compensations, nor CO₂ stored in the vineyard, stoppers, 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.
- (4) 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.
- (5) Market-based emissions factors for electricity emissions are acceptable.
- (6) 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.
- (7) Purchases or sales of Renewable Energy Credits (RECs) do not satisfy the criteria for onsite renewables or the GHG audit.
- (8) 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 Scope classifications:

SCOPE 1	
Direct Emission Sources	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
	CO ₂ 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

SCOPE 2	
Electricity	Electricity purchased from local utility grid (either location-based or market-based emissions allowed)
	Onsite renewable electricity generated

SCOPE 3	
Purchased Products	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
Packaging Materials	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.
Outsourced Transportation	Any other packaging material
	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)
Outsourced Production	Wine club shipments
	Own land harvesting performed by third party
Travel	Wine bottled in third party bottling plant
	Employee commute
Fuel Use	Business travel (car, plane, train, etc.)
	Upstream stationary and mobile fuel emissions not accounted for in another category
Offsite Waste / Loss	Offsite solid waste and recycling (including its transport)
	Location- / market-based transmission and distribution losses (from purchased electricity)
Postconsumption	Disposal of the product (if not recycled)
	Energy consumed at the shop / supermarket and energy consumed to cool the wine before use
Other	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
	Row cropping sequestration
Anthropogenic Biogenic Emissions	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 Founding Member approvals.*