

<b>GHG Inventory Protocol</b>	World Resources Institute GHG Protocol (primary methodology), with two exceptions: <b>(1) Accounting for refrigerant emissions:</b> 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. <b>(2) Accounting for retailer and home energy use to store and cool wine:</b> 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.
<b>3rd Party Auditor</b>	Audit firm must either be ISO-14064 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.
<b>Total Scope</b>	Primary production facility(ies), vineyards, and all business operations (see the "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)
<b>Baseline Year</b>	Determined by the individual winery and approved by IWCA
<b>Production Unit</b>	Chosen by the winery (either liters fermented or liters bottled); the emissions intensity metric will be calculated in terms of CO <sub>2</sub> -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 or offsets, including Renewable Energy Credits linked to energy generated outside of the electricity grid from which the winery consumes its electricity, nor CO<sub>2</sub> 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.
- (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. 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.
- (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	
<b>Direct Emission Sources</b>	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 <sub>2</sub> 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	
<b>Electricity</b>	Electricity purchased from local utility grid (either location-based or market-based emissions allowed)
	Onsite renewable electricity generated

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

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

## Relevant Links for GHG Emissions Inventory Accounting & Verification

<b>WRI GHG Protocol</b>	<a href="https://ghgprotocol.org/">https://ghgprotocol.org/</a>
<b>ISO-14064 Process</b>	<a href="https://www.iso.org/standard/66453.html">https://www.iso.org/standard/66453.html</a>
<b>SBTi Criteria &amp; Recommendations</b>	<a href="https://sciencebasedtargets.org/resources/files/SBTi-criteria.pdf">https://sciencebasedtargets.org/resources/files/SBTi-criteria.pdf</a>

\* **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.