

Average Environmental Product Declaration of HAprowine wineries

According to the Product Category Rules for wine - HAprowine 1.2 version.

Baseline year: 2010-2012

1.0 version



«Giants and mills» Raúl Sánchez Palacios
First prize of the HAprowine photography contest “Wine and Sustainable Development”.

ENVIRONMENTAL PRODUCT DECLARATION

of

1 bottle of 0.75 liters of average wine produced by 5 wineries of Castilla y León, including their primary packaging (bottle and capsule) and secondary packaging (distribution box and pallet)

VALIDITY PERIOD

Emission date: 3rd December 2013

Expiring date: 2nd December 2016

The product

This EPD is representative for the average wine of 5 wineries of the region of Castilla y León.

The HProWINE project

This EPD has been developed under the framework of the HProWINE LIFE08 ENV/E/000143 project, being verified by members of the consortium.

Geographic location of vineyards and wineries

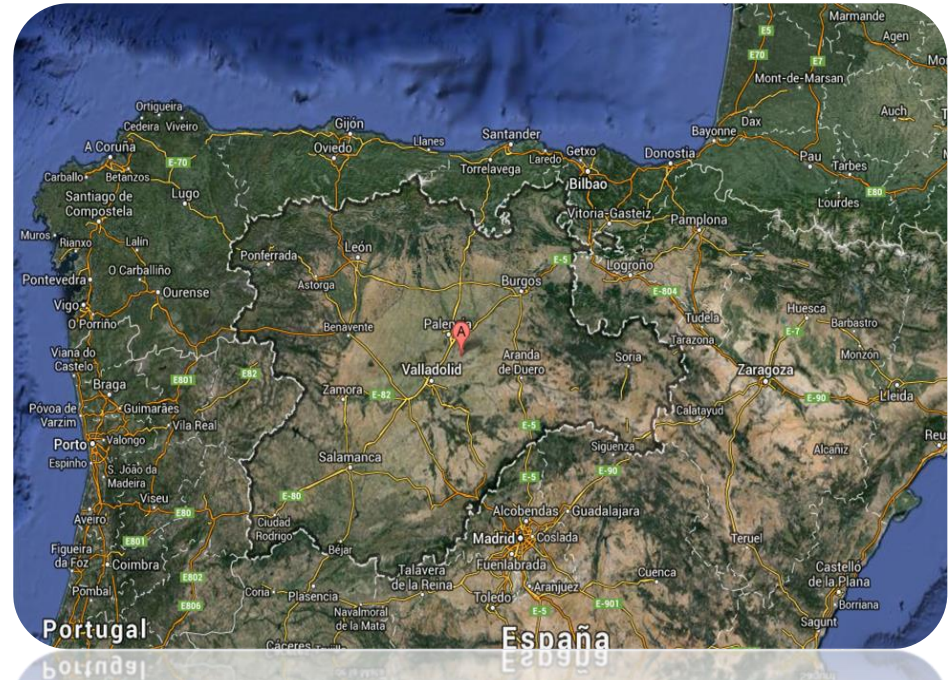
Vineyards and wineries are part of the rural landscape of Castilla y León, being closely linked to its natural and cultural surrounding. Wines of this region are a symbol of quality and excellence at the international level.

Contact information

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The current declaration is based on the Life Cycle Assessment undertaken by the HApróWINE project consortium following the ISO 14040 and 14044 norms and applying the PCR for wine. It is a “cradle to grave” study, including all phases of the wine life cycle, from the cultivation and harvest of grapes, winemaking and its packaging, distribution and consumption, and end of life phases.



«First tasting» M^a Esther Lucio Marino

Second prize of the HApróWINE photography contest
“Wine and Sustainable Development”.

Throughout the application of cutting rules established in the applied PCR, transportation processes (internal, raw materials and waste transportation) as well as barrel production have been excluded.

In the majority of the analyzed cases, during the **cultivation and harvest of grapes** phase, vineyards are watered using drip irrigation. When grapes have achieved the optimal grape maturity, vintage is undertaken both using traditional and mechanical methods. Once grapes are transported to the winery, the **winemaking** process begins, where the jacket cooling system to control the temperature is used.

Once the process of aging the wine in barrels is finalized, the wine is **bottled**, labelled and packed for its **distribution**. Packaging waste and the bottle are then treated at the end of life, recycling up to 66.6% of the glass bottle.

Functional Unit

The functional unit is 1 bottle of 0.75 litres of average wine produced by 5 wineries of Castilla y León, including their primary and secondary packaging.

Content material and chemical substances

Wine is bottled in glass bottles using a cork stopper and a metal capsule, representing from 26 to 44% (36% average) of the total product weight. Bottles are then packed into cardboard boxes that are later placed on wood pallets to be transported.

All participating wineries use chemical products during the agricultural phase (herbicides, fungicides and/or insecticides).

Data quality

When possible, specific data for the cultivation and harvest of grapes, and winemaking has been used. In the case of the cultivation and harvest of grapes module, data refer to the period of 1 year, as data collection for a longer period has not been possible.

To do the inventory of the inputs and outputs of electricity and fuel production, raw materials and product transportation, packaging and bottle production, and waste treatment processes, data from the GaBi and ELCD databases has been used.

«Grape transportation»
Abdón F. Acevedo
Álvarez

Third prize of the
HAprO WINE
photography
contest “Wine and
Sustainable
Development”.





The environmental performance is declared according to the Product Category Rules for wine - HaproWINE. For the accounting of the Life Cycle Assessment, the LCA GaBi v6 software has been used. The impact evaluation method applied is CML 2001 (updated in November 2010). Data shown is the result of average data from the impact results of the 5 participating wineries.

Global Warming Potential (100 year time horizon): the stage where more Greenhouse Gases are emitted is the “winemaking and bottling” phase where **0.98 kg/CO₂ eq. per bottle** are emitted. Natural gas and fuel combustion are the main sources.

Ozone layer depletion: the emission of Halon (1301) and R114 used for cardboard boxes production explains why the “Bottling and packaging” phase is the most relevant in this impact category.

Acidification of land and water resources: acidification substances are mainly emitted during the agricultural phase due to the fertilizers application, as well as the glass production for the bottles and the use of electricity in the winery.

Eutrophication: the stage that contributes the most to this impact category is the “cultivation and harvest of grapes” phase due to emissions to air, water and soil of different substances, mainly nitrates, phosphates and ammonia.

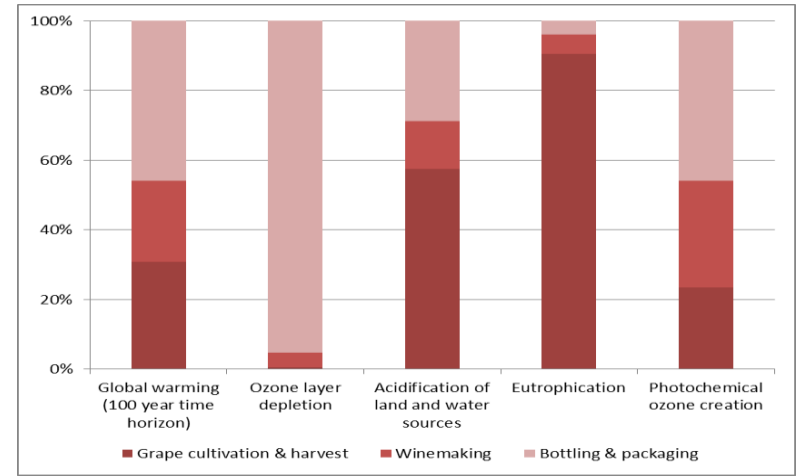
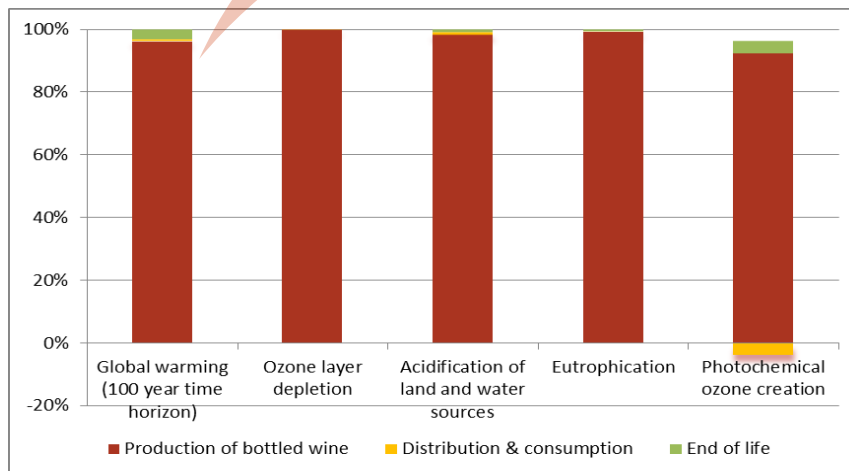
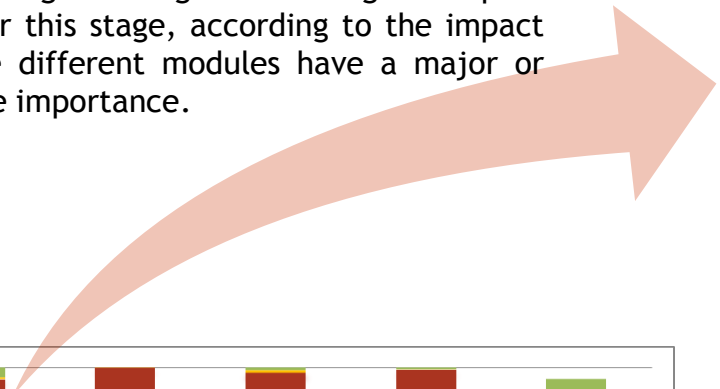
Photochemical ozone creation: the emission to the atmosphere of a group of emissions (volatile organic compounds, methane, carbon monoxide, etc.) contribute to the photochemical smog formation. Also, it is important to stand out the positive effect of nitrogen oxide emissions (NO) due to fuel combustion used in transport.

Impact results (average of the 5 wineries)

IMPACT CATEGORY	UNITS	Winemaking and bottling	Distribution and consumption	End of life	TOTAL
Global warming (100 year time horizon)	kg of CO ₂ equivalent	9.81E-01	6.14E-03	3.28E-02	1.02E+00
Ozone layer depletion	kg of CFC11 equivalent	2.33E-09	1.08E-13	2.73E-12	2.33E-09
Acidification of land and water sources	kg of SO ₂ equivalent	3.11E-03	2.79E-05	2.75E-05	3.17E-03
Eutrophication	kg of PO ₄ ³⁻ equivalent	2.54E-03	6.43E-06	1.45E-05	2.56E-03
Photochemical ozone creation	kg of ethane equivalent	2.30E-04	-9.15E-06	1.00E-05	2.31E-04
INDICATOR	UNITS	Winemaking and bottling	Distribution and consumption	End of life	TOTAL
Primary renewable energy consumption	MJ	1.70E+01	8.53E-02	7.78E-02	1.72E+01
Primary non renewable energy consumption	MJ	5.97E+00	3.34E-03	4.41E-03	5.98E+00
Fresh water consumption	m ³	6.53E+02	3.31E-01	2.80E+00	6.56E+02
Total waste	kg	5.83E-01	0.00E+00	5.47E-01	1.01E+00
Recyclable waste	kg	3.47E-01	0.00E+00	3.23E-01	6.69E-01

Relative contribution of the different life cycle stages to the assessed impact categories.

It is clearly seen that “bottled wine production” is by far, the stage that generates higher impact results. Under this stage, according to the impact category, the different modules have a major or lower relative importance.



Breakdown of the impacts of the winemaking and bottling stages.

Note: the negative value of photochemical ozone creation in the distribution and consumption stage is due to the fact that CML 2001 method considers that the nitrogen oxide (NO) emitted by the truck used to transport the wine, has a reduction effect.

This EPD represents the average performance of a 0.75 l wine bottle of the 5 participating wineries in the HAprO WINE project. The deviation degree of the average results in comparison with the ones provided by each of the wineries is shown, as an environmental impact result, in the following table.

On the other hand, the deviation of the impact results of the average wine of each winery in comparison with the products they produce is not known.

IMPACT CATEGORIES	UNITS	TOTAL	STANDARD DEVIATION
Global warming (100 year time horizon)	kg of CO ₂ equivalent	1.02E+00	2.61E-01
Ozone layer depletion	kg of CFC11 equivalent	2.33E-09	7.24E-10
Acidification of land and water sources	kg of SO ₂ equivalent	3.17E-03	1.26E-03
Eutrophication	kg of PO ₄ ³⁻ equivalent	2.56E-03	1.04E-03
Photochemical ozone creation	kg of ethane equivalent	2.31E-04	5.64E-05

This EPD represents the average performance of a 0.75 l bottle of wine of the 5 participating wineries in the HAprowINE project. The deviation degree of this product in comparison with the average products of each of the wineries is not known.

Product comparison must be done using the same functional unit, this is, including all stages of the product life cycle. On the other hand, those EPD that have been developed using other PCR can not be compared.



References

1. Gazulla C, Liedke A, Núñez Y, Pereda L and Gómez S. "Product Category Rules for wine - HAprowINE" Version 1.2 (October 2013). Results of the LIFE08 ENV/E/000143 project. Available at www.haprowine.eu.
2. Life Cycle Assessment models of the wines of the 5 participating wineries.
3. Pictograms obtained from: www.clker.com and www.flaticom.com

The HAprowINE project partners want to thank through this EPD the participating companies of the project for their active collaboration, key to achieve this document.



www.haprowine.eu