



the
**PORTO
PROTOCOL**

From Porto to the world -
CATALYZING CLIMATE ACTION
in the world of wine

“The canary in the coal mine” has been an increasingly used saying when one talks about vineyards and the climate crisis. It is easy to understand the challenges that growing grapes and wine production are facing in an ever changing and increasingly unpredictable climate. These were the words used by Greg Jones, a renowned climatologist and member of the Global Steering Committee of the Porto Protocol Foundation, on the CBS program *60 minutes*, emphasizing how easily we tell the story of climate change through wine.

In line with this point of view, scientists and historians have established a record of harvests since 1354 and found that the air temperature has warmed so much – especially in the last 30 years – that the grapes are picked almost two weeks earlier than their historical norm¹.

“The harvest records are the longest phenological records in Europe”, states [Elizabeth Wolkovich](#), biologist at the British Columbia University, who researches the relationship between wine and climate. “We have hundreds of years of data on the temperatures that were registered in the summer, and we can use this information as a reference thermometer.”

Endorsing the history of wine and climate change, just over five years ago, several renowned names, Barack Obama, Al Gore and Mohan Munasinghe together drew the world’s attention to two major conferences held in the city of Porto, *“Climate Change*

¹ <https://www.natgeo.pt/meio-ambiente/2019/10/alteracoes-climaticas-estao-alterar-o-paladar-do-vinho>

the PORTO PROTOCOL

*Leadership and Solutions For the Wine Industry*². These highly attended conferences took place in 2018 and 2019.³

Alongside these personalities, countless other names from the wine world gathered at Porto City to share experiences, solutions and best practices that foster adaptation and/or mitigation to climate change within their viticultural and wine production practices.

These two events brought a paradigm shift in the wine sector, as they focused directly on solutions to the climate crisis, promoting a spirit of action and sharing for the development of a wine industry that has greater adaptive capacity and resiliency in the future.

The potential of the wine industry to be a leader in the response to the climate crisis is also obvious in the following aspects:

- Wine's distinctive character depends on the *"terroir"*, a unique combination of plant, soil, climate and geography;
- Thousands of grape and wine production businesses around the world have been in the same family for decades and even hundreds of years, so it is natural for them to think long-term and have the will to preserve that land for future generations;
- No other agricultural product speaks more directly to the consumer like wine, nor generates the same sort of emotional connection to its sense of place.



the
**PORTO
PROTOCOL**

And it is precisely in this context that the Porto Protocol (PP)⁴ was envisioned. The purpose/goal of creating this movement was immediately clear to Adrian Bridge,

mentor, CEO of the organization and of The Fladgate Partnership Group (Taylor's,

² <https://climatechange-porto.com/>

³ <https://www.natgeo.pt/meio-ambiente/2018/07/conheca-principais-conclusoes-do-climate-change-leadership-porto>

⁴ <https://www.portoprotocol.com/>

the PORTO PROTOCOL

Fonseca, Croft, The Yeatman Hotel, World of Wine): the climate crisis is a reality and as we are all part of the problem, we can all choose to be part of the solution. Within the wine sector many solutions already exist and are being implemented throughout the entire wine value chain, without the need to reinvent the wheel. Therefore, the Porto Protocol, a solutions-based sharing platform, was born.

Rising from the two seminal conferences, the Porto Protocol has become a foundation for the wine industry and a worldwide movement for all. It counts with more than 250 members and partners spread across the entire wine value chain, with a full range of dimensions, profiles, and levels of climate action. Inclusiveness, Collaborative Sharing and Collective Action are the fundamental pillars of the organization from which it will be possible to foster, solve and guarantee the sustainability of the wine sector.

Porto Protocol's mission is to accelerate climate action worldwide in the wine value chain and, based on collaborative sharing, build a platform of solutions and a network of change makers that will facilitate saving of resources and time to respond to challenges. By carrying out this mission, Porto Protocol has the support of several regional representatives in strategic geographies, and a Global Thinking (aka Steering) Committee of excellence and an Expert Panel that acts as a guarantee of the quality of the solutions shared by the members.

From wine producers to academia, from packaging companies to sustainability certifications, the information and knowledge shared via Porto Protocol is immense and comes from a variety of stakeholders. This enables the team to build an eagle's eye view of the world of wine, helping it respond to the following issues:

1. How are the various members feeling the IMPACT of climate change?
2. How does the sector TACKLE climate change?
3. What are the various stakeholders doing to adapt and mitigate its effects (SOLUTIONS)?
4. What are the main TRENDS?

the PORTO PROTOCOL

1. IMPACT OF CLIMATE CHANGE

In different parts of the world, a growing number of members of the Protocol have experienced rare or even unparalleled situations, such as periods of extreme water scarcity with limited water availability for agriculture and for human consumption in the region of Western Cape, in South Africa; the failure of the Ice Wine Harvest⁵ in 2019 due to a very hot winter; an Australia on fire, with an unprecedented and irreparable loss to its ecosystems, lives and businesses; real-time reports over the weeks during which California was ravaged by glass fires, causing many winegrowers to lose their harvest due to smoke impacts; and, more recently, in France, where early season growth due to a warm winter was followed by extreme frost and widespread damage to the crop.

Alongside these more extreme events, the climate crisis has impacted the wine sector in several other ways, namely:

- Increases in average temperatures during dormant and growing seasons
- Warmer nights compared to days, which lowers the thermal amplitude;
- Changes in grapevine growth and productivity;
- Water scarcity and stress;
- Thermal stress;
- Changes in the ripening period of the grapes;
- Earlier and compressed harvest periods;
- Change in the characteristics of the grapes and, consequently, of the styles of wine;
- Change in the frequency and severity of pests and diseases.
- Consequences in terms of planning, adapting and changing the varieties planted;
- The rise of new wine regions, while existing ones are faced with changes;
- The hottest regions facing the potential challenges of not being able to produce wine in the future.

⁵ This is a wine of German origin (Eiswein – ice wine) that is produced from frozen grapes still on the vine, resulting in a higher concentration of sugars.

the PORTO PROTOCOL

2. HOW DOES THE WINE SECTOR IMPACT CLIMATE CHANGE?

It is equally important to understand the impact that wine production has on the environment and how it can influence climate change. The figure below categorizes the areas that most contribute to the sector's carbon footprint.

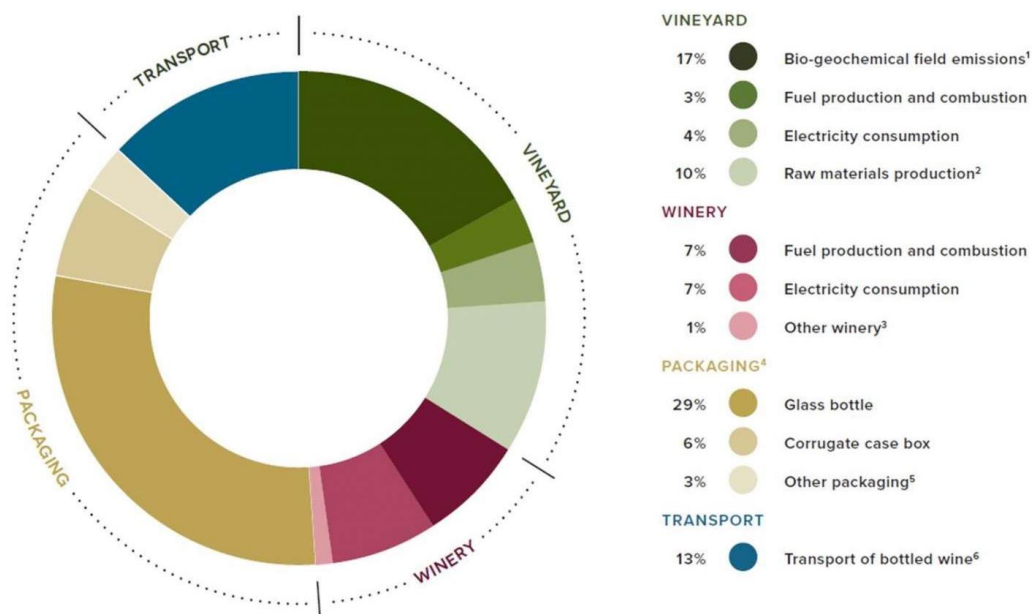


Figure 1 – Carbon footprint impacts regarding wine packaging from production to retail sale. Source: California Sustainable Winegrowing Alliance (CSWA)

The element with the greatest influence is packaging since glass bottle production is highly carbon intensive. This factor even has more impact because there is (still) a perception in the industry that consumers associate the weight of the bottle with the quality of the wine. The rule being: the heavier the bottle, the bigger its carbon footprint.

Nevertheless, there are other aspects of wine production that contribute to the increase of CO₂ in the atmosphere and to the negative impact that this cycle can have in the environment: fossil fuels used in several stages of production, from transport to tractors; carbon emissions during the fermentation period (in pure state); the nature and quantity of pesticides used in viticulture; high levels of water consumption along the whole production cycle;

the PORTO PROTOCOL

3. SOLUTIONS

Being aware of the impacts on wine production is the starting point for understanding the myriad dimensions of the challenge, helping to identify critical areas of action, looking for solutions that can be replicated easily, or new solutions that can be developed collaboratively. This path must promote a systemic approach that encompasses the entire value chain and that guarantees the active involvement of all its stakeholders.

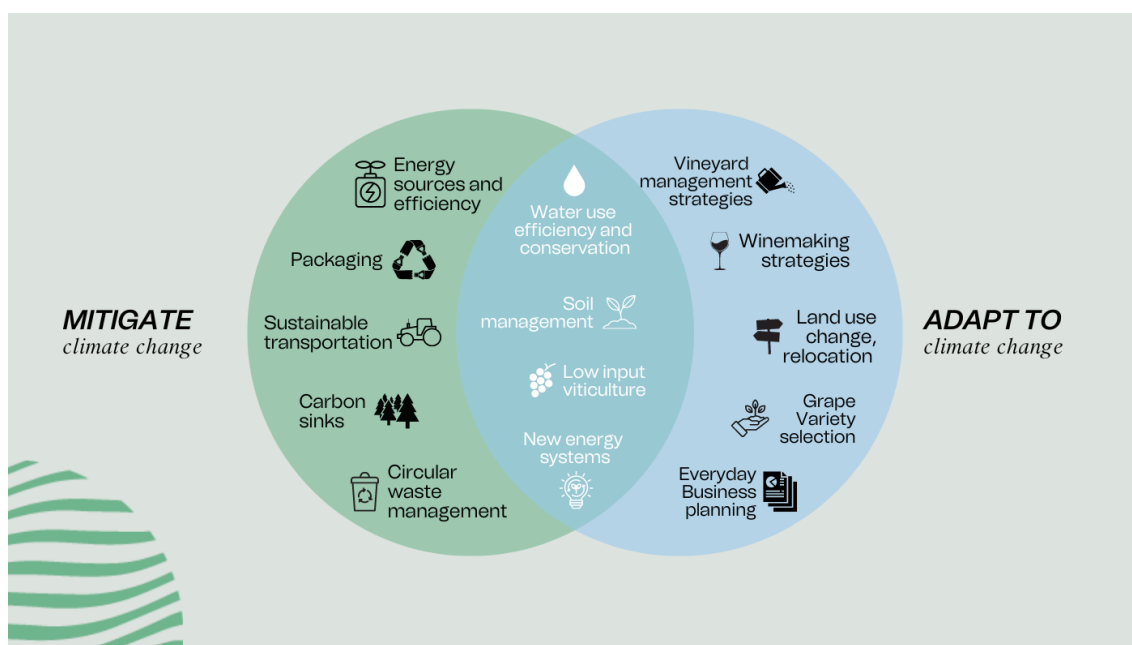


Figure 2 – Building Climate Resilience. Inspired by: Wine Australia 2020

There are numerous solutions⁶ that have been shared by the world wine community, varying in complexity, investment, and typology. Here are some of the many that have been addressed:

- Reducing bottle weight or choosing packaging materials with a lower carbon footprint;
- Using plant-based cover crops and other natural solutions that promote (bio)diversity in the soil, in the vineyard, and in the entire ecosystem;

⁶ <https://www.portoprotocol.com/solutions/>

the PORTO PROTOCOL

- Addressing water and energy inefficiencies, through the installation of meters, sensors, solar panels, etc...;
- Installing a precision irrigation system or dry-farming when possible;
- Implementing a waste management policy that seeks to reduce the materials used as a whole (i.e., whenever possible, eliminating disposable plastics, optimising primary, secondary and tertiary packaging, etc.);
- Opting for a circular approach that focuses on forwarding certain waste products to other industries, thus giving rise to alternative products;
- Educating and involving everyone across all sectors of wine, from organisations to suppliers, contributing to joint commitments and to a shift in company's culture and personal behaviours;
- Raising awareness and educating consumers on the impact of the wine value chain;
- Usage of carbon footprint tools to assist in the measurement, diagnosis, and implementation of targets (provided free of charge by Porto Protocol).

So many of these solutions and best practices offer business opportunities to companies that aim to improve their resource management, by contributing to increased energy efficiency, boost innovation and inspire new products and services that are less carbon intensive.

Ultimately, they enhance the resiliency of supply chains and reduce dependence on fossil fuels through greater resource efficiency and a transition to renewable energy. Together, these actions can foster competitiveness and unlock new market opportunities.

Above all, they will be unavoidable and certainly less cost effective if tackled now than if they are postponed.

the PORTO PROTOCOL

4. THE TRENDS

Two macro-trends stand out:

1. The incorporation of climate change in business risk management frameworks stands out as a macro trend, based on a sustainable development model, where it is possible to combine and balance the financial, environmental, and social challenges of the wine sector.
2. The notion that climate change and greater social justice are a growing and integral part of the same cause and experienced by the wine industry as a whole.

But trends emerge from different perspectives, from the grape producer to the end-consumer, and the most evident are the following:

- Regenerative viticulture practices, aimed at slowing climate change, enhance soil health, water retention and its natural ability to store and sequester carbon;
- Promoting biodiversity, above and below ground. From restoring wetlands to batboxes in the vineyards, from covercrops to Miyawaki Mini-Forests, ecosystems services (aka nature) are coming back and doing their “job”.
- Sustainability certifications as a way of showing the market and a growing group of consumers that the path and commitment to sustainable development is already being traced within the business;
- Carbon neutrality in the sector –in several countries, the wine industry, for example Australia or New Zealand, have stated its neutrality commitment;
- Lighter glass bottles, thus lowering the carbon footprint of packaging as a whole. In fact, very recently several large retailers signed a pact, led by the Sustainable Wine Roundtable, to gradually lower the weight of the bottle to 420g. The Nordic markets pioneer the measures in regards to packaging restrictions;
- Reusable bottles schemes coming to life in different parts of the world (with France at the forefront), as glass ability to be reused is proven in several other beverages.

the PORTO PROTOCOL

- **New packaging formats** –many alternatives already available on the market and with a lower carbon footprint, namely flat bottles and of recycled plastic, aluminium cans, paper, Tetra Pak, etc;
- Carbon capture during fermentation, which is carbon in its pure state;
- Exploring of new varieties and **rootstocks**, including hybrids, that have greater resilience to diseases, heat stress, soil salinity, and water stress;
- Electric tractors;
- Alternative energies, from solar to geothermal;
- Production and use of **Biochar**;
- Reduction or even removal of **pesticides and herbicides**;
- Increasing market demands in terms of sustainable practices;
- A growing number of consumers is demanding and looking for sustainable, organic, natural products;
- Carbon trading – market for carbon credits may prove to be a possibility and an opportunity for agribusinesses;
- Technological advancements to collect and process macro and micro data for decision making – use of satellite data, for instance;
- Precision viticulture;
- Responsible consumption.

Overall, trends in the wine industry are diverse and converge towards the sustainability of the sector. But far more important is the need to act now, not letting perfection get in the way of action and ultimately focusing on continuous improvement.

Within the concept of collaborative action lies another big growing macro trend, the power of the multiplier effect, critical to tackle the challenge we face.

Climate change goes beyond vineyard borders and the immense challenge upon us can only be tackled by acting together.

Will you join us?