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A Sustainability Scheme for the UK Wine Production Industry

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1. Summary

Sustainability in wine production has gained traction globally in recent decades, with the first schemes established in New Zealand and South Africa in the 1990s. The UK wine production industry has increased in size from 196 hectares (ha) of vineyards in 1975 to 2554 ha in 2017 and WineGB are currently considering introducing a UK scheme. In order to achieve a better understanding of sustainability schemes, and the desire for such a scheme in the UK, three groups were identified for interviews:

- Operators of sustainability schemes around the world.
- Members of two current wine sustainability schemes: Sustainable Wines New Zealand (SWNZ) and Long Island Sustainable Winegrowing (LISW).
- Producers within the UK wine production industry.

A review of existing schemes looked at:

- Cost of Membership.
- Benchmarking.
- Auditing.
- Viticulture.
- Winemaking.
- Packaging.
- Socio-economic components.

Proposals from the UK Sustainability Workgroup (a group of industry experts and producers brought together by WineGB) were compared against this review. Areas of overlap with existing schemes include soil management, nutrition, canopy management, and winemaking. Site selection and socio-economic components are not covered by the proposed UK scheme.

Of the 22 UK wine producers interviewed, 64% (14) producers said they were 'very likely' or 'definitely' in favour of a UK sustainability scheme.

2. Introduction

“Sustainability involves everything you do on the farm, including economics, environmental impacts of everything done on the farm and all aspects of human resources, including not only you and your family but your employees and the surrounding community”

- Ohmart, 2008¹

Sustainability is a complex subject as there is “no precise nor fixed definition of sustainability or sustainable practices.”² For the purposes of this research paper, ‘sustainability’ will be defined by Ohmart’s statement (above), which aligns with Barbier’s three pillars of sustainability (Figure 1)³.

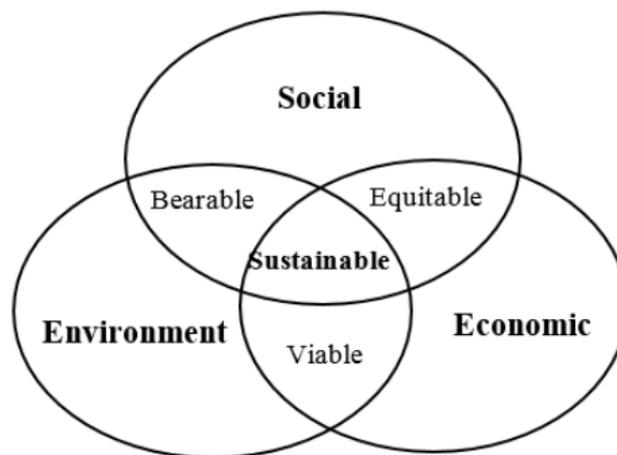


Figure 1 Barbier's Three Pillars of Sustainability

¹ Gerling, 2015

² Warner, 2007

³ Barbier, 1987

Sustainability is especially relevant today with growing consumer awareness regarding environmental impacts. A 2017 Unilever⁴ study states one-third of consumers actively choose to buy brands which they believe are doing social or environmental good. Data from Price Waterhouse Cooper (PwC)⁵ indicates this has led to 'green-washing'⁶: 72% of companies mention the UN's Sustainable Development Goals (SDGs) in their annual reports, but only 23% of companies disclosed meaningful Key Performance Indicators (KPIs) in relation to SDGs. This suggests it is not embedded in 'company culture'.

The UK wine production industry is still embryonic, though growing. A sustainability scheme for the UK was previously attempted (2010-2012)⁷ but was never implemented. This study will investigate whether there is now a greater desire for a scheme amongst UK wine producers and, if so, what it could encompass. The paper will investigate schemes from across the world in terms of scope, limitations, and successes. It will also investigate the experience of producers in two different regions/countries, seeking to illustrate the potential structure and viability of a UK scheme.

The specific research questions this research paper will investigate are:

- How are existing sustainability schemes set up in terms of auditing, viticulture, production and social/economic components? What elements of these schemes do Plumpton College and WineGB see as essential for a UK scheme in the future?

⁴ Unilver, 2017

⁵ PwC, 2018

⁶ The process of making a misleading environmental claim.

⁷ Foss, 2019

- What do established schemes think the benefits of a sustainability scheme are?
- What do established schemes see as the main obstacles/challenges to establishing a sustainability scheme?
- What is the receptiveness of current UK wine producers to the idea of a sustainability scheme?

3. Background and Context

Since the 1990s wine sustainability schemes have been established globally. There are many food production assurance schemes in the UK, some of which wine companies could join, but there is currently no sustainability scheme specifically for wine. Externally to the wine trade, since the Paris agreement⁸ in 2015⁹ there has been increased urgency regarding climate change action, reflected by the UK government's decision to bind itself to a 2050 target for the UK becoming carbon neutral¹⁰. Therefore, it is an appropriate time to reconsider a wine sustainability scheme for the UK.

This review will cover:

- International standards.
- A brief overview of key food schemes.
- Wine industry work.
- Consumer perceptions.
- Background on WineGB's previous attempts at a sustainability scheme.

3.1 Sustainability Schemes and International Standards

No legal international standards exist for sustainability, although there are initiatives to help sustainable practices. Two of the most important examples are the International Social and Environmental Accreditation and Labelling (ISEAL)

⁸ A UN-led agreement to attempt to limit global warming.

⁹ European Commission, 2019

¹⁰ GOV UK, 2019

organisation and the International Organization for Standardization (ISO) 14001 standard.

The ISEAL Alliance acts as the ‘standard of standards’¹¹, looking to increase the credibility, effectiveness, and adoption of sustainability standards. All major food standard organisations¹² including the Rainforest Alliance¹³, Fairtrade International and the Marine Stewardship Council (MSC) are members of ISEAL, as is Linking Environment and Farming (LEAF), a UK-based agricultural sustainability scheme. There is a substantial cost involved with ISEAL^{14 15}. Sustainable Winegrowing British Columbia (SWBC)¹⁶ and Certified California Sustainable Winegrowing (CCSW)¹⁷ subscribe but are unable to meet the full cost of membership¹⁸.

ISO 14001¹⁹ is an accreditation and global environmental management system²⁰ designed to help companies manage their use of resources and waste. In the UK some wine companies including Bibendum Wine²¹ are accredited. Sustainable Winegrowing Australia²² (SWA)²³ use ISO as one of their certification auditing options. Costs for ISO certification can vary based on organization size²⁴.

¹¹ ISEAL, 2014

¹² ISEAL, 2019a

¹³ Rainforest Alliance, 2019

¹⁴ ISEAL, 2018

¹⁵ Membership is £4,400 + 0.35% of total organisational income, and for full members there are full independent audits costing £3,100 each, and peer reviews costing £575 each.

¹⁶ Durisek, 2019

¹⁷ Venugopal, 2019

¹⁸ CCSW are ISEAL subscribers but not full members, cost is £500. They use it to access ISEAL’s resources, but their program is too small to merit investing in the full membership.

¹⁹ International Organization for Standardization 2015

²⁰ It covers air pollution, water/sewage, waste management, soil contamination, climate change mitigation and adaption, and use of resources and efficiency.

²¹ Kilcline, 2019

²² SWA replaced Entwine (change June 2019), but they follow the same guidelines.

²³ Longbottom, 2018

²⁴ From AUS\$5,000-10,000 in Australia (for SWA members). In the UK, for a seven-employee company such as Camel Valley, the cost is £2000.

3.2 Key Food Accreditation Schemes

Given the size and experience of many food sustainability schemes, there may be much the wine industry can learn from them. Key schemes cover the three pillars of sustainability in varying proportions, for example according to the International Trade Centre (ITC)²⁵ the MSC comprises 57% environmental standards and 13% social standards, whilst the Equitable Food Initiative (EFI) is 40% social standards and 26% environmental standards.

Audit cycles of many schemes, including Fairtrade International²⁶, run triennially. This ensures a regular but not overburdensome update process. There are costs involved with joining these schemes, although many adapt to size and geography as required²⁷.

One potential criticism of food assurance schemes is the variable amount of 'assured' ingredients permitted in certified products, for example the Rainforest Alliance received censure for allowing products to use its logo when just 30% of one ingredient is from certified sources²⁸. This factor could affect wine production if a certified producer buys in uncertified grapes.

As well as LEAF, a food assurance scheme open to UK vineyards is the Red Tractor programme. Red Tractor²⁹ was established in 2000 following the Bovine spongiform encephalopathy (BSE) and Salmonella outbreaks. It covers quality assurance (animal welfare and food safety) rather than sustainability. Detractors have highlighted issues

²⁵ ITC, 2019

²⁶ Fairtrade International, 2019a

²⁷ Fairtrade International, 2019b

²⁸ Carlile, 2018

²⁹ Red Tractor, 2019

with the audits: a 2018³⁰ newspaper exposé found fewer than 1% of audits were unannounced alongside poor animal welfare standards on certified farms.

3.3 Wine Sustainability Schemes

Pullman et al.³¹ investigated how food and wine differ in terms of sustainability. They found that winery managers following environmental practices improved wine quality. They also noted that the supply chains of food and wine can differ, for example waste costs, pointing towards the need for differing food and wine sustainability schemes.

In 1997³², New Zealand launched the first wine sustainability scheme. There are now more than 20 worldwide, including in Chile³³, Australia³⁴ and the U.S. The latter has no national scheme but multiple regional schemes including LIVE certified³⁵ (Low Input Viticulture and Enology) covering Oregon, Washington State and Idaho; LISW³⁶ in New York State; Lodi Rules³⁷ and CCSW³⁸, both in California. In Europe, Terra Vitis³⁹ was established in 2001 in France. In 2012 Eco Prowine⁴⁰ was trialled as a multi-country⁴¹ scheme. The Comité Champagne launched its own scheme, Viticulture Durable en Champagne,⁴² in 2014 and is aiming for 100% producer certification by

³⁰ Graham, 2018

³¹ Pullman et al., 2010

³² Tate, 2018

³³ Wines of Chile, 2018

³⁴ AWRI, 2019

³⁵ LIVE, 2019

³⁶ LISW, 2019

³⁷ Lodi Wines California, 2019

³⁸ Wine Institute, 2012

³⁹ Laniesso, 2019

⁴⁰ Mainar, 2019

⁴¹ Which covers Spain, Italy, Portugal, Austria, Bulgaria, and Greece.

⁴² Comité Champagne, 2019

2030, (currently 15%)⁴³. The International Organisation of Vine and Wine (OIV) released guidelines for sustainable vitiviniculture, in 2008⁴⁴.

3.4 Sustainability and the Wine Industry

In addition to the accredited sustainability schemes, some trade and producer associations create guidance for their members, such as the Wine and Spirit Trade Association (WSTA) has an 'Environmental Best Practice Booklet'^{45 46}.

Many regional appellations and generic bodies have been working on sustainability initiatives. For example, in Italy⁴⁷ the Consorzio of Conegliano Valdobbiadene Prosecco Superiore DOCG banned the use of glyphosate. In Corbières⁴⁸ the AOC is introducing an environmental requirement to the appellation: producers of this AOC are required to hold environmental certifications (e.g. Terra Vitis or Agriculture Biologique⁴⁹).

3.5 The Consumer and Sustainability

The Wine Intelligence's Sustainable, Organic and Lower Alcohol (SOLA) wine⁵⁰ report found relatively low consumer knowledge of sustainably-produced wines. In the UK⁵¹ only 18% of respondents had an awareness of this category of wine, and only 2% had

⁴³ Lawrence, 2019

⁴⁴ OIV, 2008

⁴⁵ Joosten, 2019

⁴⁶ It covers reduction of carbon footprint, renewable energy, wildlife protection, landfill reduction, transportation, and site waste.

⁴⁷ Riley, 2019

⁴⁸ Millar, 2019

⁴⁹ The French organic certification body.

⁵⁰ Wine Intelligence, 2018

⁵¹ UK consumer sample size – 1000.

an intent-to-purchase. This rose to a 3% intent-to-purchase for those aged between the legal drinking age (LDA) to 34-years old, compared to 8% for Organic and Fairtrade. This was higher in the U.S. perhaps as there are already established wine sustainability schemes, with an 8% intent-to-purchase⁵² on sustainably produced wines. The category with the highest intent-to-purchase was 35-54-year olds (10%). Given the U.S. is the UK's primary export market⁵³, a UK-based scheme could increase sales there by appealing to the sustainably-minded consumer demographic.

A 2015 Nielsen⁵⁴ report found that consumer goods brands which demonstrated a commitment to sustainability grew more than 4% globally, compared to 1% for those with no commitments. The survey⁵⁵ revealed that consumers perceive levels of sustainability differently, with mixed views on how they assess a brand's sustainability credentials (e.g. organic vs global carbon footprint). Age was also an important factor: 51% of Baby Boomers (1946-1964) spend more on products with sustainable credentials, increasing to 72% for Generation Z (1996-present) and 75% for Millennials (1977-1995). As Millennials only account for an estimated 10% of wine sold in retail stores⁵⁶, sustainable credentials could encourage greater engagement from them.

Studies indicate that although sustainability in the wine industry still needs to build traction, it could be a key message in the future. Pullman et al.⁵⁷ argued that sustainability is likely to become an international competitive advantage. However as

⁵² Sample size 2000.

⁵³ WineGB, 2019c

⁵⁴ Nielsen, 2015

⁵⁵ Sample size - 30,000 people in 60 countries.

⁵⁶ Kell, 2019

⁵⁷ Pullman et al., 2010

Remaud and Sirieix⁵⁸ maintain it is difficult to get across the message of ‘green wine’ as wine is already seen as a ‘natural’ product, whilst Schäufele and Hamm⁵⁹, when looking at organic wine, found that informed consumers are seeking more wines that are ‘chemical-free’ and made by ‘natural processes’.

3.6 WineGB and the UKVA Sustainability Project

WineGB, the UK wine industry’s generic body, was created in 2017 by merging the United Kingdom Vineyards Association (UKVA)⁶⁰ and English Wine Producers (EWP)^{61 62}.

One of the earliest attempts at a sustainability scheme was attempted by a group of English producers including Davenport, Oatley Vineyards and Bothy Vineyard. Unfortunately, following the death of the committee leader, no-one else was prepared to take on the role. According to Jane Oatley⁶³ it was a lack of resource rather than lack of desire for a scheme, which resulted in the scheme being put on hold, until the UKVA and Plumpton College took on the project⁶⁴. Any UK scheme should look to employ a salaried scheme leader, rather than relying on volunteers to ensure scheme continuity in the future.

⁵⁸ Remaud and Sirieix, 2012

⁵⁹ Schäufele and Hamm, 2017

⁶⁰ Cowderoy, 2019

⁶¹ The UKVA was the government-recognised industry body representing the grape growers in the UK. The EWP launched in the 1990s to enable English producers to pool resources to attend trade fairs and grew as a collaborative marketing group that promoted not just the individual producers but collectively communicated a message about the whole industry. As the UK industry grew the two bodies united to share expertise.

⁶² Trustram-Eve, 2019

⁶³ Oatley, 2019

⁶⁴ Liwicki, 2019

Between 2010 and 2012 the UKVA⁶⁵ considered a sustainability scheme and commissioned a report to assess the desire for one within the UK wine industry. The report analysed practices including producers' financial, environmental, and social conduct. It concluded that the industry needed a simple, low-cost scheme to avoid limited grower engagement and suggested an online self-assessment tool to reduce costs. The report proposed working with existing schemes such as LEAF. The report received 27 responses to their online survey (representing 6% of vineyard area at the time⁶⁶) and just 17 responses to the request for interviews. Since then, the UK's area under vine has doubled (from 1,428 ha in 2012⁶⁷ to 2,888 ha in 2019), with three million vines planted in 2019 alone⁶⁸. UK wines are now available in most UK supermarkets⁶⁹ and there has been growth in exports: in 2018 8% of all English wine produced was exported, up from 4% in 2017⁷⁰.

Running concurrently to this, Chris Foss and Alistair Nesbitt⁷¹ analysed the content of sustainability schemes around the world. They used this to create Plumpton College's WineSkills⁷² workbook, covering the same topics as international schemes⁷³.

⁶⁵ Laurence Gould Partnership Ltd et al., 2012

⁶⁶ Laurence Gould Partnership Ltd et al., 2012

⁶⁷ WineGB, 2017

⁶⁸ WineGB, 2019b

⁶⁹ Sussex uncorked, 2017

⁷⁰ WineGB, 2019c

⁷¹ Foss, 2019

⁷² Plumpton, 2011

⁷³ These topics include crop management, soil management, vine nutrition, integrated pest management, conservation, biodiversity and ecosystem management, energy management, greenhouse gas management, water use, waste management, traceability, and quality assurance.

Chris Foss⁷⁴, chairman of the new WineGB Sustainability Wine Group⁷⁵, believes that the original scheme did not work due to the withdrawal of government funding for Plumpton's WineSkills course, as well as the difficult 2012 harvest⁷⁶. Sustainability schemes can take time to build momentum: New Zealand's SWNZ was running for over 10 years with just 20% uptake, until it introduced mandatory requirements regarding marketing⁷⁷, which led to increased membership (now 98%)⁷⁸.

⁷⁴ Foss, 2019

⁷⁵ Plumpton College, 2019

⁷⁶ BBC, 2012

⁷⁷ Producers need SWNZ membership to participate in events such as the London Annual Trade Tasting and the New Zealand Wine of the Year Awards.

⁷⁸ Tate, 2018

4. Methodology

The primary research for this paper involved interviews⁷⁹ conducted with:

- Selected sustainability schemes.
- Producer members of SWNZ and LISW.
- UK wine producers.

4.1 Participants

4.1.1 Sustainability Schemes

Eleven schemes (Table 1) from around the world were chosen for interview⁸⁰, representing larger, more established schemes (e.g. SWNZ) to smaller schemes more recently implemented by producers (e.g. LISW). LEAF was also interviewed even though they are non-wine specific.

All schemes are broken down in different ways, therefore the viticultural and production comparison is based on OIV standards⁸¹. These are broken down into 12 topics: site selection, soil management, nutrition, canopy management, water management, biodiversity, pests and diseases, phytosanitary products, packaging and warehousing, energy, winemaking, and waste management⁸².

⁷⁹ These interviews took place over Skype or telephone for the international producers, and telephone or in person for the UK wine producers. All interviews were recorded.

⁸⁰ Interview questions are in Appendix 2.

⁸¹ OIV, 2008

⁸² A comparison can be found in Appendix 5.

Sustainability Scheme	Acronym	Date Established	Scope	Country/Region	Membership/Uptake
Certified California Sustainable Winegrowing ⁸³	CCSW	2000	Regional	California	25% of vineyard area, 70% of case production
Eco Prowine ⁸⁴		2012	International	Europe	49 wineries
Integrated Production of Wine ⁸⁵	IPW	1998	National	South Africa	80% of cellars and farms
Linking Environment and Farming ⁸⁶	LEAF	1991	International	UK based	578 farmers in the UK, 1032 internationally
Long Island Sustainable Wine ⁸⁷⁸⁸	LISW	2012	Regional	Long Island	50% of acreage - 21 members
Sustainability Code Chile ⁸⁹	SCC	2008	National	Chile	75% of all exports
Sustainable Winegrowing Australia ⁹⁰	SWA	2009	National	Australia	600 members
Sustainable Winegrowing British Columbia ⁹¹	SWBC	2014	Regional	British Columbia	65 vineyards & wineries
Sustainable Winegrowing New Zealand ⁹²	SWNZ	1997	National	New Zealand	98% of area under vine
Terra Vitis ⁹³		2001	National	France	700 producers
Vignerons en Développement Durable ⁹⁴	VDD	2007	National	France	5% of French wine production

Table 1 - Sustainability schemes from around the world selected for interview and scheme comparison (ordered alphabetically)

The Plumpton College written WineSkills workbook⁹⁵ was selected as the basis for the UK scheme, as proposed by Chris Foss and the UK Sustainability Workgroup.

Alongside WineGB, Plumpton College was consulted due to their knowledge and

⁸³ Venugopal, 2019

⁸⁴ Mainar, 2019

⁸⁵ Schietekat, 2019

⁸⁶ Redmore, 2019

⁸⁷ Olsen-Harbich, 2019

⁸⁸ Wise, 2019

⁸⁹ Parra, 2019

⁹⁰ Longbottom, 2019

⁹¹ Durisek, 2019

⁹² Tate, 2018

⁹³ Laniesse, 2019

⁹⁴ Borrut, 2019

⁹⁵ Plumpton College, 2011

experience from their previous attempt to establish a UK sustainability scheme. There are some areas of the WineSkills workbook that go into more detail than the OIV standards, for instance the OIV standards mentions biodiversity but offers no actions. Therefore, the WineSkills workbook has been used as the foundation for the following comparisons in Appendix 5: Biodiversity (Table 19) and energy use (Table 24 - Energy Comparison Part 2). SWA and Eco Prowine (Appendices 6 and 7) are not included in this comparison as they have a completely different approach with questions focussed around measurable benchmarking factors.

4.1.2 International Producers

Members of SWNZ and LISW were interviewed (Appendix 3). Producers in New Zealand were chosen as SWNZ is the longest-established scheme with the highest uptake (98% of vineyard area⁹⁶). Ten producers were selected by the date they joined the scheme, from inception to certification from the 2018 vintage. They are spread across a spectrum of regions and vary in size from 280 Hectolitres (hl) production to over 45,000 hl. Long Island was selected as a more recently-implemented scheme, established in 2012. Its production is similar to the UK's (approximately six million bottles per annum⁹⁷). Producers in Long Island spanned those that joined between 2012 and 2014 and cover five of the 21 members. For each scheme, an additional non-member producer was also interviewed, to understand why they had not joined. Uptake on requests for interviews was mixed. In New Zealand 75% of those invited responded. In Long Island just 25% of those contacted responded. Due to the

⁹⁶ SWNZ, 2017

⁹⁷ LISW, 2019

relatively small sample sizes involved, the interview data must only be considered as directional.

Producer	Country	Region	Date Joined Sustainability Scheme
Brancott ⁹⁸	New Zealand	Marlborough	1997
Cloudy Bay ⁹⁹	New Zealand	Marlborough	1997
Esk Valley ¹⁰⁰	New Zealand	Hawkes Bay	1997
Hihi Wines ¹⁰¹	New Zealand	Gisborne	Not currently a member
Lime Rock ¹⁰²	New Zealand	Hawke's Bay	2004
Millton Vineyards ¹⁰³	New Zealand	Gisborne	Not disclosed
Mount Difficulty ¹⁰⁴	New Zealand	Central Otago	1997
Saint Clair ¹⁰⁵	New Zealand	Marlborough	2007
Seifried ¹⁰⁶	New Zealand	Nelson	1997
Yealands ¹⁰⁷	New Zealand	Marlborough	2008
Valli ¹⁰⁸	New Zealand	Central Otago	2017
Macari Vineyards ¹⁰⁹	USA	Long Island	Not currently a member
Mudd Vineyard ¹¹⁰	USA	Long Island	2014
Paumanok Vineyards ¹¹¹	USA	Long Island	2014
Roanoke Wine ¹¹²	USA	Long Island	2012
Shinn Estate Vineyards ¹¹³	USA	Long Island	2012
Wölffer Estate ¹¹⁴	USA	Long Island	2012

Table 2 – SWNZ and LISW members interviewed (ordered by country and then alphabetically)

⁹⁸ Dann, 2019

⁹⁹ Mason, 2019

¹⁰⁰ Russell, 2019

¹⁰¹ Nimmo, 2019

¹⁰² Tynan, 2019

¹⁰³ Millton, 2019

¹⁰⁴ Dicey, 2019

¹⁰⁵ Clark, 2019

¹⁰⁶ Seifried-Houghton, 2019

¹⁰⁷ Christensen, 2019

¹⁰⁸ Parr, 2019

¹⁰⁹ Macari, 2019

¹¹⁰ Mudd, 2019

¹¹¹ Massoud, 2019

¹¹² Pisicano, 2019

¹¹³ Shinn, 2019

¹¹⁴ Roth, 2019

4.1.3 UK Producers

Twenty-two interviews were conducted with producers around the UK¹¹⁵.

Producer	Established	Vineyard Hectares Owned	Winemaking Facilities	County Base
Albury* ¹¹⁶	2009	5 ha	No	Surrey
Blackbook*	2017	0 ha	Yes	Greater London
Bothy	1978	1.5 ha	Yes	Oxfordshire
Camel Valley	1989	9.7 ha	Yes	Cornwall
Castlebrook	2004	2 ha	No	Herefordshire
Chapel Down*	2001	283 ha	Yes	Kent
Davenport*	1991	10 ha	Yes	Kent / East Sussex
Denbies	1986	102 ha	Yes	Surrey
Digby	2009	0 ha	No	West Sussex
Fulbeck Gardens Vineyard	2010	1.3 ha	No	Lincolnshire
Giffords Hall	1992	4.5 ha	Yes	Suffolk
Halfpenny Green	1983	12 ha	Yes	Staffordshire
Hattingley Valley	2008	11 ha	Yes	Hampshire
Langham	2009	11.5 ha	Yes	Dorset
Laverstoke Park	2007	9 ha	No	Hampshire
Lovells Vineyard	2010	5 ha	No	Worcestershire
Nyetimber	1988	260 ha	Yes	West Sussex
Oatley Vineyard	1985	1 ha	No	Somerset
Ridgeview*	1998	4.5 ha	Yes	East Sussex
Sixteen Ridges	2007	8.5 ha	Yes	Worcestershire
Tintern Parva	1979	1 ha	No	Monmouthshire, Wales
Winbirri	2007	13.5 ha	Yes	Norfolk

Table 3 - UK producers interviewed (ordered alphabetically)

Interviews were preferred over an online questionnaire, given the previous sustainability report had a low response rate. Producers were selected based on vineyard size (with a minimum of 1 ha), covering:

¹¹⁵ See Appendix 4 for interview questions.

¹¹⁶ *Ridgeview, Chapel Down, Albury and Blackbook are all now members of the WineGB Environmental Sustainability Workgroup.

- Small vineyard, no wine-producing facilities (1-5 ha).
- Vineyard and production (under 5 ha).
- Vineyard and production (over 5 ha).
- Production only.

Producers were selected using Stephen Skelton's website¹¹⁷. The uptake on interview requests was high given the previous report's experience: only one producer did not respond.

4.2 Trade Interviews

Interviews were carried out in the UK with three UK wine agencies: Bibendum Wine, Liberty Wines, and Enotria&Coe, regarding their approaches to sustainability. Marks and Spencer¹¹⁸ were interviewed from a retailer perspective due to their 'Plan A' project¹¹⁹.

4.3 Data Analysis

All interviews were typed and answers were split into themes using a grid system to record trends. Trends were analysed to see which had the highest number of responses, to demonstrate the factors most important to producers as well as the sustainability schemes.

¹¹⁷ Skelton, 2019

¹¹⁸ Marks and Spencer, 2019

¹¹⁹ Plan A is Marks and Spencer's internal ethical programme.

4.4 Limitations

English was not the first language of some interviewees, but the author worked with translators to mitigate this issue.

Whilst efforts were made to find producers of different size and experience, this research still represents small numbers in each section of the industry. In the UK many of the producers interviewed represented the over-5 ha total production group. Therefore, there could be an over-representation of larger producers, whose views and scale may differ from smaller producers. Three organic and/or biodynamic producers were interviewed, which represents a much higher percentage than the industry average (approximately 3%)^{120 121}, but where relevant this has been considered in the analysis.

Eco Prowine recently finished a trial and is preparing to go live, so was only able to give limited information on the scheme's standards (a basic checklist was provided by Grandes Vinos, a scheme member¹²²). Similarly, Vignerons en Développement Durable (VDD)¹²³ wouldn't share their full checklist, so their environmental comparison was taken from the limited information on their website.

¹²⁰ Exact figures on Organically or biodynamically certified vineyards are difficult to ascertain. This number is based on the total number of vineyard's in Stephen Skelton's UK vineyard list (803) along with a list of 25 certified vineyards provided by Will Davenport (Davenport Vineyards, Albury, Oxney, Laverstoke park, Seddlescombe, Forty hall, Bridewell organic gardens, Clayton farm (Mayfield), Woodreed Vineyard, Bugsell Park vineyard, Ancre Hill, Avalon vineyard, Quoins vineyard, Trebivvan Mill, Limeburn Hill, Black Mountain Vineyard, Bartley Mill Vineyard, Failand Farm Vineyard, First Light Vineyard, Harbourne Vineyard, Grove Farm Vineyard, Lakeside Vineyard, Moneys farm, Moor Hill Vineyard, Spring Hollow Vineyard.) Producers such as Tillingham Vineyards are only certified for the winery, so the grapes are not necessarily organic.

¹²¹ Organic / Biodynamic producers made up 14% (3) of the UK producers interviewed.

¹²² Soriano, 2019

¹²³ Vignerons en Développement Durable, 2019

4.5 Relationship to WineGB

A steering committee for a proposed sustainability scheme for the UK was set up in early 2019 by WineGB. This research paper was approved prior to the committee's establishment. As a result of the research topic the author was invited to attend WineGB sustainability meetings but WineGB have had no influence on the scope or direction of this paper. The general findings of this paper have been confidentially shared with the group to help further the scheme¹²⁴.

¹²⁴ The author was promoted to deputy chair of the group in July 2019.

5. Results and Analysis

5.1 How are Existing Sustainability Schemes set up in Terms of Auditing, Viticultural, Production and Social/Economic Components? What Elements of these Schemes do Plumpton College and WineGB see as Essential for a UK Scheme in the Future?

Eleven sustainability schemes were interviewed to investigate how they are organised. This was followed by a review of what Plumpton College and WineGB view as essential for a future UK scheme.

5.1.1 Cost of Membership¹²⁵

Producers' membership fees help cover the costs of schemes, including:

- Administration: costs vary as some schemes have a salaried team (SWNZ) whilst others work on a voluntary basis (LISW).
- Marketing: website costs, education for the wine industry, advertising, PR.
- Benchmarking and data entry: computer software for producers' online self-assessments.
- Auditing: Some schemes pay for this from membership fees charged (LISW, SWNZ).

Cost of membership varies significantly between schemes with some entirely funded by the country's generic body¹²⁶.

¹²⁵ Bank of England, 2019

¹²⁶ British Columbia Wine Institute invest CA\$30,000 each year into SWBC.

Sustainability Scheme	Acronym	Cost in local currency	Cost in GBP (£)
Sustainable Winegrowing British Columbia	SWBC	Free	Free
Integrated Production of Wine	IPW	R300-483	£16-25
Sustainable Wine Australia	SWA	AUS\$110	£58
Sustainable Winegrowing New Zealand	SWNZ	NZ\$190 for a single vineyard site or NZ\$150 per site for multiple sites. NZ\$250 to 1000 for winery accreditation (depending on size)	£95 single vineyard, or £75 for multiple sites £126-503 for winery accreditation
Linking Environment and Farming	LEAF	£110 (below 121ha) to £430 (over 700ha)	£110 (below 121ha) to £430 (over 700ha)
Certified California Sustainable Winegrowing	CCSW	Vineyard membership: \$200 (50 acres) - \$2000 (2001+ acres). Winery fees: \$200 (50K cases) - \$2000 (5m+ cases). \$100 saving if certifying both the vineyard and winery.	Vineyard membership: £153-£1526. Winery fees: £153-£1526. £76 saving if certifying both the vineyard and winery.
Eco Prowine		Free for trial (€200-500 going forward)	£169-424
Long Island Sustainable Wine	LISW	\$500 for first 2 years, then \$300 a year	£382 for the first 2 years, then £229 per year
Vignerons de Développement Durable	VDD	€300-10000	£254-8475
Terra Vitis		Varies based on size and location but average is c. €800	c. £678
Sustainability Code Chile	SCC	\$1600-7000. There is a 20% extra charge if they are not a member of the generic body. Biannual charge in line with scheme's audit interval	£1221-5555

Table 4 – Cost of membership rounded to the nearest pound (cost in GBP calculated 12th December 2019¹²⁷) (ordered by cost of membership)

The UK Sustainability Workgroup has initially proposed a charge of £100 for membership of its new scheme. This wouldn't cover the cost of auditing, based on

¹²⁷ Bank of England, 2019

auditing costs¹²⁸. Membership of £100 is consistent with LEAF membership for producers below 121 ha, but LEAF’s membership doesn’t cover auditing costs¹²⁹.

SWNZ separates out the cost of accreditation for the vineyard and winery, helping reduce costs for those that are either only growers or winemakers. This would be an interesting avenue for the UK to investigate as there are increasing number of farmers growing¹³⁰ and selling their grapes to other producers¹³¹.

5.1.2 Benchmarking

Scheme	Benchmarking
CCSW	yes
Eco Prowein	yes
IPW	no
LEAF	no
LISW	no
SCC	yes
SWA	yes
SWBC	yes
SWNZ	yes
Terra Vitis	no
VDD	no

Table 5 – Summary of which schemes carry out benchmarking of producers’ data (ordered alphabetically)

Table 5 shows the variability between schemes regarding benchmarking. ISEAL¹³² recommends benchmarking and suggests schemes should work based on outcome-based metrics. Mardi Longbottom¹³³, Senior Viticulturist of the Australian Wine

¹²⁸ Table 6, p.26

¹²⁹ WineGB could consider a joining fee of £450 (to be confirmed when they have appointed auditors), similar to LISW’s joining fee, to ensure the initial auditing costs are covered. Auditing costs should then be broken down and charged over a period of three years until the next audit.

¹³⁰ Vineyard Magazine, 2019

¹³¹ James Dodson, 2019

¹³² ISEAL, 2019a

¹³³ Longbottom, 2018

Research Institute (AWRI) states that “benchmarking is the advantage of joining SWA. Smaller producers do not see the benefit for improvement until they receive benchmarking data and realise they are using more fuel than their neighbours”.

The software required to enable a benchmarking scheme in the UK could prove costly. Dr Alistair Nesbitt, who runs sustainability consultancy firm Vinescapes, developed the Climate Vine¹³⁴ ¹³⁵app alongside Professor Steve Dorling¹³⁶. It cost £20,000 to develop plus £5,000 for annual maintenance. This is indicative of the cost of the technology that could be used for benchmarking. Although benchmarking is not essential, it does assist producers with understanding where they can make improvements.

5.1.3 Auditing

Scheme	Audit	Cost	How often audited
LEAF	yes	£300-500	Annually
SWA	yes	Depends on accreditation body selected - ISO 14001 is annual and costs AUS\$5,000-10,000; Freshcare runs triennially and is less than AUS\$1000	1-3 years
LISW	yes	Included in membership	1-3 years
VDD	yes	Included in membership	18 months
Sustainability Code Chile	yes	\$600 per day	2 years
CCSW	yes	\$500-2500	3 years (large producers annually)
IPW	yes	Cost is included unless they fail the audit	3 years
SWNZ	yes	Included in membership	3 years
Terra Vitis	yes	€600	5 years
Eco Prowine	no	n/a	n/a
SWBC	no	n/a	n/a

Table 6 – Auditing: costs and frequency (ordered by audit interval)

¹³⁴ Climate Vine, 2019

¹³⁵ The app offers UK grape growers the ability to monitor and record growing-season weather conditions.

¹³⁶ Dorling, 2019

LISW, VDD and SWNZ include auditing cost as part of membership. This allows LISW producers to spread the cost of auditing over several years. This could be useful for the UK's potentially large number of smaller producers, due to their limited budgets.

The auditing interval for the schemes varies between 1-5 years. Frequent auditing can add to the cost of the scheme. The triennial audit interval period required by five schemes corresponds to that of food assurance schemes such as Fairtrade International¹³⁷. The paperwork required can be onerous if producers do not have compliance officers¹³⁸. Producers in the UK with small teams may find the paperwork over-burdensome and this could limit the uptake of a scheme.

5.1.4 Scheme Content Overview

Many schemes are based around similar standards including vineyard, winery, socio-economic and tourism standards.

Scheme	Vineyard	Winery	Socio Economic	Tourism
CCSW	yes	yes	yes	no
Eco Prowine	yes	yes	yes	no
SWA	yes	yes	no	no
IPW	yes	yes	yes	no
LEAF	yes	no	yes	yes
LISW	yes	no	no	no
Sustainability Code Chile	yes	yes	yes	from 2019/20
SWBC	yes	yes	yes	yes
SWNZ	yes	yes	yes	no
Terra Vitis	yes	yes	yes	no
VDD	yes	yes	yes	no
Wine Skills	yes	yes	yes	no

Table 7 - Scheme content: the components of each sustainability scheme

¹³⁷ Fairtrade International, 2019a

¹³⁸ Longbottom, 2018

Most schemes look at socio-economic factors, with just SWA and LISW excluding these. LISW does not include social responsibility explicitly, but it does review education of vineyard staff¹³⁹. Seven schemes require a health and safety plan to be in place. This would be a logical requirement for a UK scheme to include and is currently in the WineSkills workbook. SCC¹⁴⁰ covers the highest number of social factors, including discrimination, working conditions, and the full HR cycle from hiring to dismissal/retirement. The UK has strict laws relating to employment, health and safety, discrimination and hours worked, so most UK producers should have examined this already, so is not necessarily needed, though it would be good practice for producers to have relevant paperwork maintained. Eco Prowine¹⁴¹ has specific questions on the number of women employed in the workforce and the number in senior roles. This is topical in the UK,¹⁴² therefore could be examined. Additionally, SCC requires a commercial plan to be in place and a profit and loss tracker. Although simple, these tools could help to improve the business plan management of the growing number of small producers¹⁴³ setting up in the UK.

Currently only SWBC¹⁴⁴ and LEAF consider tourism. SCC will introduce standards for this during 2020¹⁴⁵. With more producers opening cellar doors and initiatives such as 'The Wine Garden of Kent'¹⁴⁶ advertising local vineyards, wine tourism is important to

¹³⁹ Wise et al., 2015

¹⁴⁰ Wines of Chile, 2018

¹⁴¹ Mainar, 2019

¹⁴² Powell, 2019

¹⁴³ WineGB, 2019a

¹⁴⁴ Sustainable Wine British Columbia, 2016c

¹⁴⁵ Parra, 2019

¹⁴⁶ French, 2018

the UK market; cellar doors account for 32% of sales¹⁴⁷, so this should be considered in a UK scheme.

5.1.5 Viticulture Comparison

The international schemes and the OIV recommendations cover the same topics¹⁴⁸ in varying levels of detail (Appendix 5).

Site selection is covered in eight schemes and by the OIV. Site selection is important when discussing sustainability as a poor choice of location, incorrect rootstock and cultivar/clone could create issues with ripening and disease.

Other OIV standards that are consistent across the schemes include pest and disease management¹⁴⁹ and phytosanitary controls¹⁵⁰. The UK scheme could consider LEAF's six-metre no-spray zone around the edge of the property when located close to residential or business properties, to protect the public¹⁵¹.

The percentage of certified grapes in a wine is another consideration (Table 8). Schemes that have this requirement are in-line with other grape certifications, including environmental certifications (organic/biodynamic) and appellation laws (governing percentage required from a region, grape variety, or vintage). The Soil

¹⁴⁷ WineGB, 2019a

¹⁴⁸ Including site selection, soil analysis, nutrition management, canopy management, water management, biodiversity, and pest and disease management.

¹⁴⁹ Table 26, p. 87

¹⁵⁰ Table 27, p. 88

¹⁵¹ LEAF, 2016

Association¹⁵² states “organically certified wine needs to be made from 100% organic grapes”. According to European Law, for a grape variety to be put on the front label, 85% of the grapes must come from the appropriate cultivar¹⁵³. Considering the criticism the Rainforest Alliance has received regarding quantity of certified ingredients in a labelled packets, this should be considered for a UK scheme.

Producer	Regulation
Entwine	85% of fruit must come from certified vineyards
CCSW	85% of grapes must come from certified vineyard; 100% of the wine from a certified winery
LISW	Wine must contain a minimum of 95% LISW certified fruit
SWNZ	Made from 100% accredited vineyard grapes, produced in accredited winery
IPW	100% of the grapes must be sourced from IPW farms and cellars

Table 8 – Regulations regarding the sourcing of certified grapes, for the schemes that control this (ordered by percentage of fruit that must be certified)

5.1.6 Winemaking and Packaging

As with viticulture, the OIV standards and schemes compared cover similar topics¹⁵⁴ in varying depths (Appendix 5).

The OIV standards have extensive guidelines on waste management, whilst the SWBC recommendations go further, considering tourism waste (recommending banning disposable plastic cutlery or cups). The use of single-use plastic is a rising consumer concern¹⁵⁵ so could be considered in the UK.

¹⁵² Teagle, 2019

¹⁵³ Food Standards Agency, 2018

¹⁵⁴ Including phytosanitary rules, packaging & warehouse, energy efficiency, winemaking, and waste management.

¹⁵⁵ Laville, 2018

In winemaking, equipment such as sustainably sourced barrels are included in many schemes' guidelines. Sustainable oak can be sourced from a producer certified by the Programme for the Endorsement of Forest Certification (PEFC)¹⁵⁶. OIV guidelines additionally suggest considering the integrity and longevity, and where relevant, recyclability of any wine container used for wine production (e.g. steel, concrete).

Eco Prowine, CCSW and IPW all address packaging. California Wine's Carbon footprint report (Figure 2)¹⁵⁷ shows that packaging, including bottles, represents 38% of wine's carbon footprint. Given the UK's 2050 carbon neutral target, any proposed guidelines for a UK scheme should address this area.

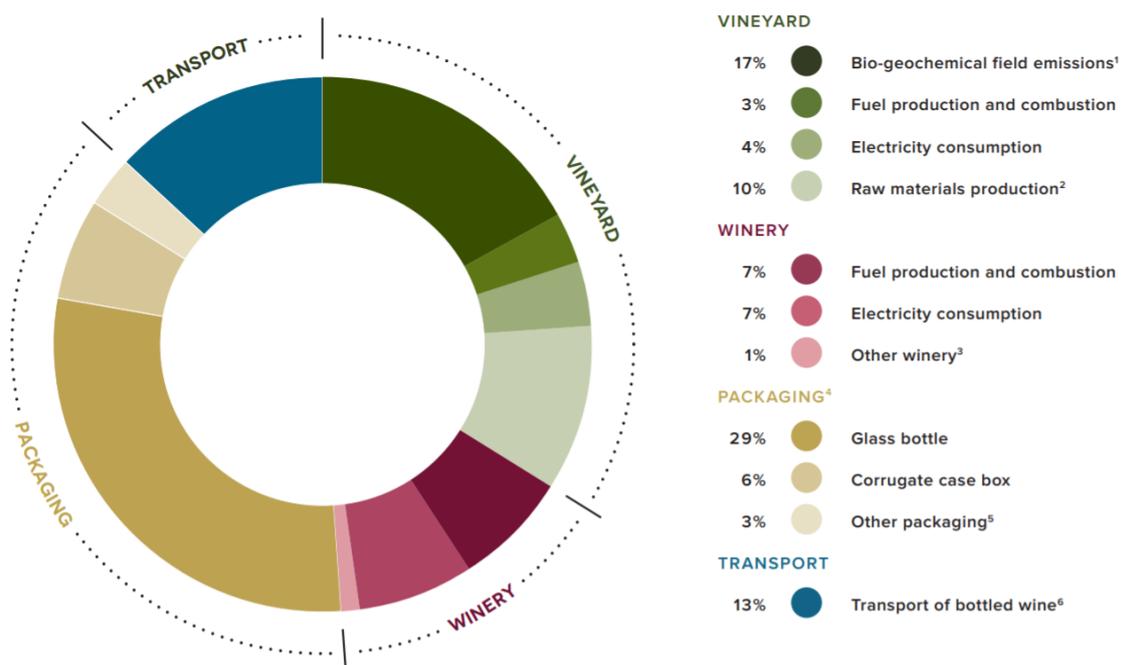


Figure 2¹⁵⁸ – The Carbon footprint of packaged wine in California, cradle-to-retail gate

¹⁵⁶ PEFC, 2019

¹⁵⁷ Wine Institute, 2012

¹⁵⁸ Wine Institute, 2012

CCSW found that supply chain and transportation typically make up 13% of a wine's carbon footprint¹⁵⁹. The majority of UK wine is currently consumed in the country of origin, however with increased exports¹⁶⁰ transportation, and its carbon footprint, will become increasingly important.

5.1.7 What Elements of the International Schemes do Plumpton College and WineGB see as Essential for a UK Scheme in the Future?

WineGB¹⁶¹ requested that their Sustainability Workgroup only review and advise on environmental sustainability rather than socio-economic aspects. If a scheme is launched in this way, then it will be missing two of the sustainability pillars elsewhere. WineGB should instigate a parallel workgroup to analyse these factors.

The WineSkills workbook overlaps with international schemes and OIV, especially regarding soil management¹⁶², nutrition¹⁶³, canopy management¹⁶⁴, and winemaking. It goes further than the OIV standards regarding energy use, where it requires the measurement of fossil fuels used and includes recommendations to switch to renewable fuels. These elements should be maintained.

¹⁵⁹ Wine Institute, 2012

¹⁶⁰ WineGB, 2019c

¹⁶¹ Foss, 2019

¹⁶² Table 21, p. 83

¹⁶³ Table 22, p. 84

¹⁶⁴ Table 23, p. 85

There are many areas that need to be re-examined, however. Site selection and planting is not included in the WineSkills workbook¹⁶⁵. James Dodson¹⁶⁶, of Vineworks¹⁶⁷, has found most landowners don't become interested in sustainability until the vineyard is fully established and productive. With the significant plantings the UK is recording each year, site selection is an area that the UK workgroup should review.

Water has limited focus within the WineSkills workbook compared to international schemes. Currently, there is no issue with too-little water, as the UK receives regular rainfall throughout the year¹⁶⁸, but climate change could affect future water supply with the Chief Executive of the Environment Agency warning that England could run short of water within 25 years¹⁶⁹. A UK scheme should therefore continue reviewing what is being practiced elsewhere to future-proof itself.

¹⁶⁵ Table 20, p. 82

¹⁶⁶ Dodson, 2019

¹⁶⁷ A vineyard planting and management service.

¹⁶⁸ Met Office, 2016

¹⁶⁹ Carrington, 2019b

5.2 What Do Established Schemes Think the Benefits of a Sustainability Scheme Are?

The perceptions of the benefits of sustainability schemes, from the interviews with scheme representatives and members, are summarised below.

Benefit	No. and Name of Schemes	No. of LISW Producers	No. of SWNZ Producers
Environmental impact	All Schemes	5	10
Marketing / customer perception	Five Schemes (SWNZ, IPW, LEAF, Sustainability Code Chile, SWA)	1	10
Collaboration	Four Schemes (Terra Vitis, LISW, VDD, CCSWW)	3	2 (benchmarking against peers) ¹⁷⁰

Table 9 – The perceived main benefits of sustainability programmes (by interviewed scheme representatives and members)

5.2.1 Environmental Impact

All schemes believe they have a positive impact on the environment, but only three schemes (SWNZ, LEAF and CCSW) release data on this. All SWNZ and LISW producers interviewed also cited environmental impact as one of the key benefits of the scheme.

¹⁷⁰ SWNZ members mentioned collaboration only in respect to benchmarking results and examining how they measure against other producers.

In New Zealand¹⁷¹, members have:

Activity
Set aside 2,500 ha for biodiversity protection.
Diverted 92,033m ³ of by-product from landfill by using off-cuttings for composting/mulch and encouraging further reuse and recycling.
Since 2001 SWNZ members have reduced the frequency of insecticide applications by over 50%.

Table 10 – Environmental successes that members of SWNZ have enacted due to their sustainability programme

James Millton¹⁷², chair of the Organic and Biodynamic subcommittee for SWNZ, notes that “many producers join SWNZ and start down the sustainability path before moving to organic and biodynamic viticulture”, suggesting that sustainability can become a starting platform for more effective environmental practices.

Improvements reported by LEAF¹⁷³ include:

Activity
54% of producers report improved energy efficiency
66% of farmers report increased biodiversity
53% received an improved Landscape Value (an area with scenic value, protected by the local authorities.)
64% report improved soil conditions

Table 11 – Environmental successes that members of LEAF have enacted due to their sustainability programme

¹⁷¹ SWNZ, 2017

¹⁷² Milton, 2019

¹⁷³ LEAF, 2017

Soil condition improvement is important considering that the Sustainable Soils Alliance asserts one-third of UK soils are showing signs of degradation¹⁷⁴, which could affect the viability of farming in the UK.

In California¹⁷⁵:

Activity
85% of producers use micro-irrigation systems allowing for targeted irrigation and optimizing water use, essential in a region that regularly suffers from extreme drought. ¹⁷⁶
84% of producers use cultural methods (e.g. leaf removal, cover crops and irrigation) to naturally manage pests, reducing the need for pesticides.
95% of growers encourage soil nutrient cycling by allowing resident vegetation to grow in the vineyard, using cover crops or composting.
37% of wineries implemented a renewable energy source or use a third-party renewable power provider.

Table 12 – Environmental successes that members of CCSW have seen due to their sustainability programme

As well as the environmental benefits demonstrated, this area is where the schemes can gain the most PR traction with consumers. With the focus on the environment from the press and the wider public, a UK scheme should capitalise on this interest to discuss its achievements and sustainable improvements, once they are measurable.

¹⁷⁴ Sustainable Soils Alliance, 2019

¹⁷⁵ CSWA, 2015

¹⁷⁶ Lam, 2019

5.2.2 Marketing

Five schemes identified marketing potential as one of the key benefits of memberships. This was backed up by one LISW member and all ten SWNZ members interviewed. Aside from LEAF, the sustainability schemes were unable to provide data on customer recognition, just anecdotal evidence.

Labelling and the use of a logo on the label was mentioned by ten of the producers interviewed. In New Zealand, Hamish Clark, winemaker at Saint Clair¹⁷⁷ believes “consumers might not look for a bottle of sustainable wine, but when comparing wines on the shelf the sticker may be a deciding factor”. Similarly, Brancott¹⁷⁸ include the SWNZ logo whenever possible to demonstrate their commitment to sustainability; they also believe it appeals to the Millennial demographic.

The high level of marketing recognition of SWNZ members is because SWNZ worked with New Zealand Winegrowers so that only SWNZ-accredited producers would receive marketing support for their products¹⁷⁹. Using this kind of incentive could increase the uptake in a UK-based scheme.

Appealing to retail buyers is also important: 97% of LEAF farms¹⁸⁰ reported that the certification helped secure access to new market opportunities, with 36% reporting extra income because of certification. Marks & Spencer’s are one example of a retailer

¹⁷⁷ Clark, 2019

¹⁷⁸ Dann, 2019

¹⁷⁹ Tate, 2018

¹⁸⁰ CCRI, 2017

with a growing focus on sustainability in their sourcing. Emmanuel Hopkinson¹⁸¹, of their 'Plan A' team, reported that they are aiming for 100% of food products to come from a member of a food assurance scheme such as LEAF. LEAF¹⁸² also found that retailer engagement was essential for the success of the scheme. When they were initially struggling with producer engagement, recognition from large retailers such as M&S and Waitrose meant that producers were more likely to sign up.

Some importers and wine agencies also consider ethical or sustainable standards in their sourcing. Although they do not yet have a formal buying policy, UK agents Liberty Wines¹⁸³ and Enotria&Coe¹⁸⁴ both have a clear preference to work with producers that are demonstrably operating in an ethical way. Liberty considers the ethos of the producer and how they work within their environment; whereas Enotria&Coe prefers a formal certification, where possible.

Despite the evidence of growing awareness within some businesses, sustainability does not yet appear to carry a high level of importance within the UK wine trade more broadly. However, as can be seen from LEAF's experience with the endorsement of large retailers, an essential part of setting up a successful UK wine sustainability scheme is likely to be engaging with retailers and UK agents to gain support for the initiative.

¹⁸¹ Hopkinson, 2019

¹⁸² Redmore, 2019

¹⁸³ Hoang, 2019

¹⁸⁴ Gale, 2019

5.2.3 Collaboration

Some sustainability schemes such as SWNZ and LISW were instigated due to producer demand. In Long Island, four producers originally planned the scheme. Founder, Rich Olsen-Harbich¹⁸⁵ thinks the debate between producers once they are in the scheme has made it representative of the needs of the region and has led to greater producer interaction.

Three out of the five LISW members agreed this was a benefit, and Rich Pisicano¹⁸⁶ of Roanoke Vineyards stated one of the key aspects of joining the scheme was “The support from the group, it is a huge thing, it gives you the confidence to take risks.” A successful UK scheme should ensure consultation with producers, to allow them to realise the benefits of collaboration. Only two SWNZ producers mentioned working with other producers and that was more in terms of benchmarking rather than working together. This highlights that collaboration should be encouraged by scheme operators.

5.3 What Do Established Schemes See as the Main Obstacles / Challenges to Establishing a Sustainability Scheme?

The perceptions of the obstacles of sustainability schemes, from the interviews with scheme representatives, is summarised below.

¹⁸⁵ Olsen-Harbich, 2019

¹⁸⁶ Pisicano, 2019

Obstacle	No. and Name of Schemes	No. of LISW Producers	No. of SWNZ Producers
Relevance (Region and Customer)	Five schemes (LEAF, SWA, Terra Vitis, Long Island, VDD)	0	0
Recruitment / Barriers to Membership	Five schemes (SWA, IPW, Chile, CCSW and SWNZ)	5	10
Funding	Two schemes (VDD and SWBC)	0	0

Table 13 - The perceived main challenges to establishing sustainability programmes (by interviewed scheme representatives and members)

Whilst the scheme representatives found three main obstacles; for the producers the issues all related to barriers to recruitment of members. These were administration (cited by 12 producers: two from LISW; all ten from SWNZ), and cost (cited by all 15 producers from LISW and SWNZ).

5.3.1 Relevance

A key concern raised by the scheme representatives over starting a sustainability scheme was the relevance of the scheme to the region and consumers.

The marketing message of sustainability can be difficult to communicate to consumers in different markets. Terra Vitis raised the issue regarding consumer messaging of sustainability: in the French market, consumers are more aware and interested in the organic message than the broader message of sustainability¹⁸⁷. Wine Intelligence's

¹⁸⁷ Laniesse, 2019

SOLA report similarly found UK consumers having more intent to purchase organic wines rather than wines with sustainable credentials¹⁸⁸. The Centre for the Promotion of Imports (CBI)¹⁸⁹ states that ‘sustainable wine’ is mostly associated with organics and that entering the sustainable market involves the challenge of communicating the value of your sustainable approach. This suggests that organics does have a clearer customer message than sustainability. This is a challenge all sustainability schemes need to overcome; not just one in the UK.

Finally, ensuring that the scheme maintains relevance for the local industry is very important. LISW attempt to tackle this through annual updates to their guidelines to ensure they remain relevant and tailored to the region’s challenges¹⁹⁰. The UK scheme workgroup should engage with producers around the country to ensure the guidelines will work for them, a trial before a full launch could help to ensure this, and will enable collaboration, cited as one of the benefits of joining in a scheme.

5.3.2 Recruitment

Another key issue mentioned, especially by representatives of the larger schemes, was recruitment of members. Recruitment of members can affect the viability of the scheme as the lack of membership fees could potentially hamper the ability for a scheme to continue running. Paperwork and membership fees were the most cited areas by producers as a potential obstacle to membership.

¹⁸⁸ Wine Intelligence, 2018

¹⁸⁹ CBI, 2016

¹⁹⁰ Olsen-Harbich, 2019

Twelve producers interviewed mentioned the issue of resource in relation to the paperwork required. Large SWNZ producers including Saint Clair¹⁹¹ and Brancott¹⁹² have a full-time quality assurance team who manage this for them. Smaller producers are not so well resourced. Valli Wine Estate¹⁹³, who are accredited by SWNZ from the 2018 vintage onwards, stated that a significant amount of time was required for paperwork, requiring a high number of man hours required, when they don't have the resources to dedicate a full-time member of staff to the role.

Hihi Wines¹⁹⁴ source grapes from accredited vineyards but feel unable to join SWNZ themselves due to their small operation and an inability to cope with the administrative burden.

All SWNZ and LISW members interviewed mentioned cost as an obstacle to membership. Many producers in the UK could find additional financial burden a big detractor of a scheme. However, all schemes require income to continue running, so the correct balance must be found.

5.3.3 Funding

Funding is clearly an essential challenge in the establishment and ongoing operation of any scheme. It can be received from a country's or region's generic body (SWNZ,

¹⁹¹ Clark, 2019

¹⁹² Dann, 2019

¹⁹³ Parr, 2019

¹⁹⁴ Nimmo, 2019

SWA, IPW, SCC) or via private or government grants (Long Island, CCSW). VDD and SWBC both stated that funding was a struggle for them, as either the generic body has limited resources, or the funding comes 100% from members. The latter can lead to higher membership fees and make joining prohibitive.

The UK wine industry is relatively small-scale, therefore potential revenues derived from membership would be low. Chris Foss¹⁹⁵ maintains that the lack of external funding was one of the key reasons for the failure of the Sustainability Workgroup in 2010-2012. External funding would help to reduce the cost of membership for producers, as well as aid the delivery of free or subsidised sustainability training. Prior to 2010 government funding was available for education, but the ‘austerity programme’ meant that this funding was removed. According to David Rutley MP^{196 197}, a new incentive will be put in place post-Brexit to support this: The Environmental Land Management (ELM) system. This includes proposed funding to encourage landowners to implement sustainable practices. However, this is dependent on a Brexit deal being achieved, and a continuous government policy.

External funding, or higher joining fees, are most likely to be required in the earlier stages of the scheme to enable set up. It will be needed for initial audits and a scheme manager, even if on a part-time basis.

¹⁹⁵ Foss, 2019

¹⁹⁶ Rutley, 2019

¹⁹⁷ The Parliamentary Under Secretary of State for Food and Animal Welfare.

5.4 What is the Receptiveness of Current UK Wine Producers to the Idea of a Sustainability Scheme?

UK wine producers were asked a series of questions about their knowledge, approach and interest in a sustainability scheme. Producers ranged in size from 1 ha to 283 ha. Due to the relatively small sample size (22), approximately 4.7% of the total population¹⁹⁸, it is important to state that the results from the interviews are directional rather than indicative. Of the 22 producers interviewed:

- Two had production facilities only, purchasing 100% of their grapes.
- Nine have vineyards of 5 ha or less, three of these have their own facilities, six use contract winemaking facilities.
- Eleven have vineyards over 5 ha (three are over 100 ha).
- Five hold other sustainable accreditations (organic, biodynamic, LEAF)¹⁹⁹

5.4.1 Knowledge and Current Application of Sustainability

Of the 22 producers, 73% (16) had heard of wine sustainability schemes, most commonly mentioning SWNZ and LIVE. Of these 16:

- All linked sustainability to the environment.
- 75% (12) to economic sustainability.
- 38% (6) to social sustainability.

All producers claimed to have implemented sustainable practices, including those that did not have knowledge of sustainability schemes. These included: solar power (4);

¹⁹⁸ Based on approximately 473 producers in the UK. Skelton, 2019

¹⁹⁹ Since completion of the interviews a further producer has attained the ISO 14001 accreditation.

sourcing electricity from ‘green’ suppliers (2); an organic producer trialling biofuel in their tractors (1); using lighter-weight bottles (4); and implementing measures to minimise waste (e.g. bio-digesters) (5). Two of the producers using lighter weight glass and solar panels were organic or LEAF certified.

Sustainability can mean different things to different people, but this range of activities implemented could be streamlined by giving producers guidelines to work towards. Additionally, UK producers’ sustainable practices should be investigated to see if they should be included in a scheme.

5.4.2 Perceived Positives and Negatives

Producers were asked to consider what would motivate them to join a scheme and what would concern them.

Motivation	% of responses	No of Responses
Environment	55%	12
Marketing Benefit / Customer Perception	36%	8
Meaningful	27%	6
Practical (Economically and Resource)	27%	6
Commercial Benefit	18%	4
Uptake of Producers in the Scheme	5%	1

Table 14 – Motivation for joining a sustainability scheme, asked as open question (ranked in order of the most common responses)

The most common answers regarding producers’ motivation to join a sustainability scheme were for environmental reasons (12). This included all five producers who already held an environmental certification. This was followed by the marketing benefit or customer perception (8) of the scheme. Potential commercial benefit was

highlighted by just four respondents. The producers interviewed appeared to see sustainability as primarily important for their general brand image, rather than believing it will directly positively affect their sales.

Concern	% of Responses	No. of Responses
Cost	64%	14
Quality of audit / programme	45%	10
Administration	41%	9
Ability to implement / restrictions	18%	4

Table 15 - Concerns regarding joining a sustainability scheme, asked as open question (ranked in order of the most common responses)

The main concern amongst producers, especially the smaller ones, was the assumed cost of the scheme (14), with many producers pointing to their low incomes and profit levels. Fears over the quality of the audit (10) and ‘greenwashing’ were notable, though this was not a worry shared by producers that had already gone through an environmental audit. Producers were worried that the scheme would be a chance for some producers to make themselves look sustainable without changing behaviours. This concern is found elsewhere; in New Zealand, Lime Rock stated that “producers get bogged down in irrelevant detail and achieving certification rather concentrating on cultivation impact, soil micro fauna and flora, and implementing changes”²⁰⁰. Those that held another environmental certification were concerned about additional costs and paperwork on top of their current certification. The administration burden worried many (9), mirroring feedback from producers in New Zealand and Long Island.

²⁰⁰ Tynan, 2019

5.4.3 What Should a Scheme Consist Of?

The two most common areas producers believed should be included in a UK sustainability scheme were the use of chemicals in the vineyards (11) and a reduction in producers' carbon footprint (9). The range of responses and on what could be covered could suggest that guidelines could be of use to widen producer's sustainable understanding.

Factor	% of Responses	No. of Responses
Spraying /chemicals	50%	11
Carbon Footprint	41%	9
Economics	32%	7
Recycling	18%	4
Water Management	18%	4
Labour	14%	3
Waste Management	14%	3
IPM	9%	2
Soil Management	9%	2
Benchmarking	5%	1
Education	5%	1

Table 16 – Factors UK producers would like to see in a sustainability scheme, asked as an open question (ranked in order of the most common responses)

When considering what should be excluded, most respondents (19), felt that nothing should be excluded from a sustainability scheme. Three respondents, one of whom was organically certified, felt there probably did not need to be a social aspect to the scheme, as this is covered under UK law.

As there were few limitations imposed on the scheme by producers, this suggests that an array of options with supporting information could be put forward to the industry for a period of consultation and feedback.

5.4.4 Cost and Certification

To establish how much producers would be willing to spend on the scheme they were asked to give a range: the cost they thought would be reasonable and the cost that would be prohibitive.

Reasonable Cost	% of Responses	No. of Responses		Prohibitive Cost	% of Responses	No. of Responses
0	23%	5		100	23%	5
100	9%	2		300	5%	1
200	14%	3		500	14%	3
300	5%	1		600	5%	1
500	9%	2		1000	27%	6
1000	27%	6		2000	9%	2
1000+	0%	0		3000	5%	1
not sure	14%	3		not sure	14%	3

Table 17 - Reasonable and prohibitive costs of joining a sustainability scheme in GBP (in ascending cost order)

Table 17 shows there is no consensus on what would be reasonable or prohibitive for scheme membership costs. Of the respondents, 23% (5) would not pay anything and stated £100 was prohibitive (two environmentally certified producers argued that they faced enough audits and therefore cost). Four of these had vineyard sizes of 2 ha or less and sold mostly via cellar door. Six of the larger producers thought higher fees were more reasonable (£1000), if certification was included. Therefore, tiered fees based on size or production could perhaps be introduced so that the smaller producers are able to participate in the scheme.

The organic producers felt that the term 'organic' was more widely recognised than 'sustainable', a view supported by CBI research²⁰¹, and therefore did not see the benefit of joining an additional scheme if there was an associated additional cost.

As a lack of funding and reliance on voluntary efforts contributed to the failed launch of a UK sustainability scheme in the past, it is essential that a business case is put together to ensure appropriate membership fees are charged for any future UK scheme to be viable.

When questioned regarding certification, 64% (14) of producers felt this was essential to give credibility to the scheme. Six producers were against it (including one organic and one biodynamic producer), due to the assumed cost; the remaining two were unsure.

It is likely that producers who already hold an environmental certification will be sustainably minded and any potential scheme should find a way to include them. One way to do this is waiving the audit requirements and reducing the cost of membership accordingly. SWNZ runs a similar option. Millton Vineyards²⁰² is a member of SWNZ organic membership and as such does not complete any of the sustainable audits. As the organic certification and LEAF audits will only cover the vineyard, producers could

²⁰¹ CBI, 2016

²⁰² Millton, 2019

be asked to complete the winery audits, reducing costs but ensuring their winery is certified.

Those producers who wanted certification felt that it should be covered by membership cost, as LISW's fees are. This would help producers spread the cost of the audit over several years.

5.4.5 Levels of Membership

Producers were asked whether all members of a sustainability scheme should have the same level of membership or whether there should be individual recognition for producers operating in a more sustainable way.

Of the respondents, 41% (9), felt there should be levels of recognition. Four of these producers felt that there could be bronze, silver and gold levels; whereas other producers thought it might be better to have an awards system that ran alongside the scheme, to award outstanding efforts or innovative thinking. Other schemes do not run tiered systems, though SWNZ runs a continuous improvement programme for producers who want to be recognised for additional achievements.

Conversely 55% (12), felt it would be better for everyone to have the same level of membership. This included three producers who already held another environmental certification (perhaps as their other certification does not include membership tiering).

The concerns they raised included:

- Some producers would think it was not worth participating unless they were in the top group of a tiered scheme.
- Having a vineyard with only bronze level of sustainability might be poorly regarded through a consumer lens.
- Sustainability can be difficult enough to explain to consumers and adding levels would complicate the message further.

As none of the international schemes run tiered membership, a UK-based scheme should probably look to implement a single level scheme and then evaluate whether tiers/awards have more merit once the scheme is well-established.

5.4.6 Benchmarking

All respondents were in favour of including benchmarking. This would allow producers the chance to see where they lie relative to others within the industry and focus on improvements they could make. One producer felt the scheme should prioritise benchmarking over an audit system. However, without auditing it would be difficult to assess the quality of data provided by producers. The results of the benchmarking could be used to show how the industry is making progress, as is done in California and New Zealand, and help to generate positive PR.

Producers were also asked how public they wanted benchmarking results to be:

Response	% of Responses	No. of Responses
Anonymous and known only to the winery	64%	14
Published and visible to members of the scheme only	22%	5
Published online and visible to members of the public	14%	3

Table 18 – Producers’ opinions on anonymity of benchmarking (ranked in order of the most common responses)

Most respondents 64% (14) wanted results to be anonymous. One, who felt they were already set up sustainably, wondered what the impact of a wet vintage²⁰³ would have on their score if customers could see the results. Another producer pointed to the fact that this could publicly shame some producers and wouldn’t help recruitment.

It is understandable that producers would want the results to remain anonymous, but if the public were able to access the results, the competitive pressure on producers might cause them to rethink how they undertook different elements of work.

5.4.7 Analysing the Receptiveness of Current UK Wine Producers to the Idea of a Sustainability Scheme

Finally, producers were asked how likely they would be to join a scheme. The results were generally favourable with 64% (14) of respondents saying that it was ‘very likely’ or ‘definite’ that they would join a scheme.

²⁰³ That might require extra spraying.

Response	% of Responses	No of responses
Definitely	32%	7
Very Likely	32%	7
Possibly	23%	5
Not Likely	9%	2
Definitely Not	5%	1

Table 19 – UK producers’ willingness to join a sustainability scheme

Of the five producers that held another environmental certification, two were not interested in joining a UK wine-specific sustainability programme as they felt their current certification was enough and they did not want to absorb the extra cost; the other three responded ‘very likely’ or ‘definitely’.

Producers in favour of the scheme commented that they were getting more questions on the environment and farming methods from customers, especially those that focussed on their cellar door.

Of the producers who responded ‘possibly’, ‘not likely’ or ‘definitely not’ the response was generally due to assumed cost burdens. The producers less keen to join a scheme typically came from smaller holdings, less than 2 ha, or already had another certification (2).

Of the producers that export (9), seven responded that they ‘very likely’ or ‘definitely’ would join a scheme, with the other two responding that they would ‘possibly’ join. Making scheme membership an essential requirement for those (generally larger)

producers who export, may be a sensible consideration; as it would ensure a unified marketing message and help with overall scheme recruitment.

Overall, the response of the UK producers interviewed to a potential scheme was often positive. Although a majority are receptive to joining a scheme, careful consultation will be required for any scheme to be successful, and that it will also need to address the highlighted producer concerns around cost, credibility, impact and appropriateness.

6. Conclusions and Recommendations

The aim of this Research Paper was to establish whether there was a desire for a sustainability scheme for the UK wine production industry, and, if so, what it should consist of.

6.1 Wine Sustainability Scheme Comparison

6.1.1 Research Question 1, part 1: How are Existing Sustainability Schemes set up in Terms of Auditing, Viticulture, Production and Social/Economic Components?

All wine sustainability schemes currently have audits or are introducing this requirement. This is consistent with how food assurance schemes, such as MSC²⁰⁴, operate. Auditing is an essential component to give any scheme credibility. Some schemes have the audit payment included in the membership fees, allowing producers to spread the cost over several years.

All schemes cover vineyard (farm) practices, and all but two also include the winery. LISW are looking at adding winery standards now that their vineyard scheme has been implemented. LEAF²⁰⁵, as an agricultural scheme, is not looking to add any winery components. Any potential UK wine sustainability scheme should also offer full winery accreditation to provide broader appeal for UK producers.

²⁰⁴ MSC, 2019
²⁰⁵ LEAF, 2016

Many wine schemes also cover socio-economic factors, and this corresponds to how the food schemes work, with Fairtrade, MSC and Rainforest Alliance, all covering these aspects. Sustainable tourism (SWBC, LEAF, SCC) is less well covered. However, this should be considered for any new scheme being created in the UK where 32% of UK producer income comes from cellar door sales²⁰⁶.

6.1.2 Research Question 1, part 2: What Elements of the International Schemes Do Plumpton College and WineGB See as Essential for a UK Scheme in the Future?

WineGB's Sustainability Workgroup has used Plumpton College's WineSkills workbook as the basis for their scheme. Worked on by Chris Foss in 2010, this is seen by the WineGB²⁰⁷ Sustainability Workgroup as essential for the basis of a UK scheme. It meets many of the OIV's standards and has additional values, such as measuring the amount of energy used (fossil and reusable), as well as including standards related to biodiversity. The group should revisit their guidelines to ensure that it covers all the relevant OIV recommendations, and key components of other schemes, including vineyard establishment and waste management.

6.2 Research Question 2: What do Established Schemes Think the Benefits of a Sustainability Scheme Are?

One of the key benefits of a sustainability scheme should always be the beneficial impacts it has on the participant and the environment. SWNZ, LEAF and CCSW all

²⁰⁶ WineGB, 2019a

²⁰⁷ Foss, 2019

have data on improvements that have been made, with SWNZ and LEAF producers showing substantial biodiversity results. Information can be generated during benchmarking and should be used by the UK wine industry to show their relative progress. Marketing is seen as an important aspect of membership and the logo on the bottle forms one part of this. For producers with an active cellar door this also gives them another point of difference with consumers.

6.3 Research Question 3: What Do Established Schemes See as The Main Obstacles/Challenges to Establishing A Sustainability Scheme?

One of the key challenges established schemes have is ensuring relevance both to the consumer and different types of producers. Schemes should work with their membership base, allowing feedback for improvement, whilst maintaining a management concern that rules should not be watered down or become meaningless.

Member recruitment can be difficult due to the cost and administration burden. The SWNZ solution is tying marketing support from the generic body to membership, which resulted in a 98% uptake in membership from vineyards²⁰⁸. In the UK this approach may punish small producers who may not be able to afford the fees, though a tiered-fee system could help alleviate this. Tiered fees are often unpopular with large producers who are asked to pay more²⁰⁹. Another alternative to this could be a requirement that all producers looking to export would need certification, an approach which would only affect the larger producers.

²⁰⁸ Tate, 2018

²⁰⁹ Cowderoy, 2019

Funding can also be a reason for scheme failure. Therefore, any scheme should try to be as self-sufficient as possible. External funding should be sought from the beginning to cover setup until enough producers are members. This should at least cover the cost of a part-time manager to the scheme (assumed cost £15,000²¹⁰). Even if producers do not wish for tiered membership fees, the larger producers who were happy to spend more on a sustainability scheme could be asked to contribute. The UK's large retailers should also be approached for support, as this initiative may align with their own sourcing, community support and marketing priorities. Care should be taken that there is no conflict of interest if this path is followed, and that they are not given extra influence as a result. Any additional funding received could be used to establish the (potentially costly) benchmarking system.

6.4 Research Question 4: What is the Receptiveness of Current UK Wine Producers to the Idea of a Sustainability Scheme?

Producers were generally in favour of a sustainability scheme, with 64% (14) of the producers interviewed saying they would 'very likely' or 'definitely' join out of 22 interviewed (who were chosen to represent the approximately 473 producers in the UK²¹¹), This suggests there is a desire amongst some producers to start investigating its implementation.

However, there are caveats to this, with producers worried about cost, quality of benchmarking, and auditing. For the smaller producers the £100 cost of membership suggested by the WineGB sustainability group would be prohibitive, but some costs

²¹⁰ Payscale, 2019b – based on a part time office manager fee

²¹¹ Skelton, 2019

need to be introduced to at least cover the auditing fees. A few of the producers were willing to pay more (up to £2,000). Many schemes have a variable rate they charge based on producer size which could be replicated. A full business plan covering all the set up and running costs would need to be produced, which is beyond the scope of this research. Although any initial marketing budget would likely be limited, the scheme could save money by making use of WineGB's resources, for instance their website, marketing team, and trade tastings.

All producers surveyed would like to see a benchmarking scheme introduced (with 64% (14) preferring the results to be anonymous), so this seems an essential component of any future UK wine sustainability scheme. Of the international schemes interviewed over half included anonymous benchmarking, allowing producers to assess their progress both against their own previous data and against other members. ISEAL²¹² recommends the use of 'output-based metrics' to support benchmarking.

Concerns over scheme quality and certification stringency also need to be considered carefully, in consultation with producers, to counter any industry perceptions that the scheme is simply a corporate 'greenwashing' initiative. Certification should be considered to support this. Holders of alternative environmental certifications were less inclined to join a UK wine sustainability scheme. They should be encouraged to join, perhaps by a reduction in membership fees with their external certification used as the accreditation for any wine specific scheme, though the UK Sustainability

²¹² ISEAL, 2019a

Workgroup should review any external accreditation allowed to ensure it meets the scheme's requirements.

6.5 Where Should a UK Sustainability Scheme go in the Future?

The first step needed for setting up the scheme is deciding who will own and manage it. There are several potential owners, each with pros and cons. WineGB could be the logical holders as they have the wine-specific expertise to set up such a scheme, the industry contacts and have also previously instigated a workgroup to investigate it. If WineGB runs the scheme, there are potential downsides. It is likely that any producers and vineyards would need to be a member of WineGB²¹³ as well as the sustainability scheme. If producers are not already members then this would increase the cost of membership to the sustainability scheme. The SCC allows non-members of the generic body to become members of their sustainability scheme but at an additional cost. This could be considered for non WineGB members in the UK. LEAF²¹⁴ and Red Tractor are both already set up to complete audits and have a set certification, although Red Tractor is currently only a quality assurance certification rather than a sustainability one. LEAF is an accepted sustainability accreditation by UK supermarkets such as Waitrose and M&S, even if it is not as well-recognised by consumers. LEAF would be able to certify a vineyard but would not look at the winery. The final avenue to consider would be if the group was run by the producers, in a similar way to LISW. The commitment needed from producers to set this up themselves could result in a slower set up process or may result in a less rigorous

²¹³ WineGB were unable to provide a breakdown of the % of UK vineyards who are currently members of WineGB.

²¹⁴ Redmore, 2019

scheme. LISW is also a relatively small scheme with just 21 members. If a UK producer-run scheme were to engage with a much larger number of vineyards and producers, this would require a higher level of resourcing and could not reasonably be run on a voluntary basis by the producers themselves.

If WineGB were to manage the sustainability scheme then they should consider integrating the cost for this scheme into their membership fee, to simplify costs. They could also then consider how best to encourage producers to increase their sustainable credentials without creating extra cost for smaller producers. One possible way to do this could be to insist that all producers that exhibit at international shows would need to hold the certification.

Any scheme that is created should ensure it covers all the OIV recommendations. Current consumer concerns (e.g. carbon footprint and the use of single-use plastics), should be addressed to help gain traction. The supply chain should also be reviewed to protect against the type of criticism other food schemes have received, for low amounts of certified ingredients in labelled products. One potential issue with introducing a minimum grape percentage is that big producers buying-in grapes will need to source them from certified producers, who might not join if there is a WineGB membership requirement. In New Zealand the insistence of 100% sustainably grown grapes in a bottle has meant that producers put pressure on vineyards to join the scheme, encouraging a higher uptake. Producers should be encouraging the entire supply chain to be sustainable and thus encouraging their suppliers to join a UK wine sustainability scheme.

6.6 Summary

The UK wine industry has successfully increased production and sales over the last 20 years. With climate change prominent in the news and the UK government pledging to become carbon neutral by 2050, the industry needs to consider its future. Many countries and regions around the world have specific sustainability schemes to meet their local needs and requirements. Many producers in the UK are already implementing sustainable practices and require guidance on how to make further changes. A sustainability scheme is therefore timely. Increased pressure from environmental groups²¹⁵, youth protests²¹⁶, UN reports on climate change²¹⁷, and the reduction in biodiversity²¹⁸ signals the likelihood of increased pressure from consumers over the coming years to provide a more environmentally-sound product. Adhering to the original pillars of sustainability, ensuring a robust economic future whilst maintaining good environmental and social conditions, regardless of global issues, is a solid foundation for all companies to aim for, and it should be that to which the UK wine industry also strives.

²¹⁵ Extinction Rebellion, 2019

²¹⁶ Barr, 2019

²¹⁷ IPCC, 2019

²¹⁸ United Nations, 2019

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Appendix 1 IMW Research Paper Proposal Submission Form

IMW Research Paper Proposal Submission Form			
Student ID	24490	Date of submission	24 th December 2018
RPP Version No	6	Name of Advisor	Ken Mackay
Note: RPPs must be submitted via your Advisor to the IMW			
Proposed Title			
A sustainability scheme for the UK wine production industry.			
Research Questions: Define the subject of your Research Paper and specify the specific research questions you plan to pursue. (No more than 200 words)			
<p>Sustainability in wine production has gained traction globally, with a number of schemes established over the last 30 years and the OIV (International Organisation of Vine and Wine) introducing a Sustainable Vitiviniculture Award for 2019. Whilst each sustainability scheme is slightly different, the general principles behind them all are similar. They all involve encouraging a more balanced approach to viticulture, protecting the land and local environment, reducing wastefulness during wine production, and encouraging a positive social/economic impact on the local area.</p> <p>This research paper will examine whether there is a desire for a sustainability scheme to support the UK wine production industry and if so, what it should consist of. The research will focus on sustainability more broadly, rather than solely on organics or biodynamics.</p> <p>In 2012, Plumpton College and the UKVA attempted to establish a sustainability scheme for the UK wine industry. Despite this work, a scheme was not successfully established. A survey by the Laurence Gould Partnership, a consultancy firm, established there was no appetite for this at the time. Industry expert Alistair Nesbit, who was brought into Plumpton College to train producers on sustainability issues when they were originally looking at establishing a scheme, feels there was more of a desire for a scheme than this survey showed, but due to lack of funding was not able to continue with the work. In December 2018, Chris Foss of Plumpton College, was appointed to manage a UK sustainability project for WineGB, as this is still in its infancy this RP aims to provide guidance towards that purpose.</p> <p>The main questions that this paper will investigate are:</p> <ol style="list-style-type: none"> 1. How are existing sustainability schemes set up in terms of auditing, viticultural, production and social/economic components? What elements of these schemes do Plumpton College and WineGB see as essential for a UK scheme in the future. 2. What do established schemes think the benefits of a sustainability scheme are? 3. What do established schemes see as the main obstacles / challenges to establishing a sustainability scheme? 4. What is the receptiveness of current UK wine producers to the idea of a sustainability scheme? 			

Background and Context: Explain what is currently known about the topic and address why this topic requires/offers opportunities for further research. (No more than 200 words)

According to WineGB, the UK wine industry has increased significantly in size with the area under vine increasing from 196ha in 1975, to 2554ha in 2017 (including doubling in size since 2008). With further plantings (including over 1 million vines in 2017), production will continue to increase.

Many countries (New Zealand, Australia, South Africa, Chile) or regions (California, Long Island, British Columbia) have established sustainability schemes over the last 20-25 years. In the food industry a study by Unilever International (2016 - 20,000 consumers) found 1/3 consumers are now choosing to buy from brands they believe are doing social or environmental good. Meanwhile organic foods have seen a boom in recent years including a 6% rise in the UK in the last year, increasing sales revenue to £2.2bn, according to the Soil Association. This interest regarding the environmental impact on the food chain hasn't necessarily followed through to wine sales counting for just £50.6m (total wine sales for 2017 were £10.9bn – WSTA) of the organic spend. According to Wine Intelligence only 18% of consumers (survey size 1000 people) have heard of sustainability schemes for wine, and there was only a 2% intent to purchase score in the UK, whilst this is out of the scope of the current essay it is likely to be of interest for producers.

Sources: Identify the nature of your source materials (official documents, books, articles, other studies, etc.) and give principle sources if appropriate. (No more than 150 words)

International sustainability schemes websites

- https://www.awri.com.au/industry_support/entwine/
- <https://www.wosa.co.za/Sustainability/Environmentally-Sustainable/Sustainable-wine-South-Africa/>
- <http://www.lisustainablewine.org/>
- <https://www.nzwine.com/en/sustainability/sustainable-winegrowing-nz>
- <http://www.winesofchile.org/en/sustainability>
- [http://www.lisustainablewine.org/Sustainable Winegrowing Program California](http://www.lisustainablewine.org/Sustainable_Winegrowing_Program_California)
- <https://www.bcwgc.org/sustainable-winegrowing-british-columbia>
- <https://leafuk.org/>
- <https://www.sustainablewinegrowing.org/>
- <https://livecertified.org/>
- <http://www.ecoprowine.eu/>
- <http://www.v-dd.com/en/>
- <http://terravitis.com/?lang=en>

Secondary sources:

- Fair'N Green (Germany)
- Haute Valeur Environnementale (France)
- Viticulture Durable en Champagne (France)
- Equalitas (Italy)

Trade and national media (*Drinks Business*, *Decanter*, *Jancisrobinson.com*, *Wine Business International*) for articles on sustainability schemes.

World Farmers Organization Magazine – F@rmletter Issue 59, January 2017 - Enhancing linkages between tourism and the sustainable agriculture (world farmers organization).

Reports:

- Wine Intelligence (2018), *Global Wine SOLA Report: Sustainable, organic & lower alcohol wine opportunities*. London
- Gergely Szolnoki (2013), *A cross-national comparison of sustainability in the wine industry*, Journal of Cleaner Production – volume 53. [Preprint] Available at: <https://www.deepdyve.com/lp/elsevier/a-cross-national-comparison-of-sustainability-in-the-wine-industry-c3U0rdw3bT?key=elsevier>
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Research Methodology: Please detail how you will identify and gather the material or information necessary to answer the research question(s) and discuss what techniques you will use to analyse this information. (No more than 500 words)

To answer question 1:

1. A comparative analysis of wine sustainability schemes from around the world will be undertaken, using website sources and also interviews with those involved in the schemes:
 - Entwine (Australia)
 - Sustainable Wine Growing New Zealand
 - Sustainable Wine South Africa
 - Sustainability Chile
 - Long Island sustainable winegrowing program
 - Sustainable Winegrowing Program California
 - British Columbia Sustainable Wine Growing Program
 - LEAF (UK agricultural sustainability scheme)
 - Terra Vitis (France)
 - VDD (France)
 - Eco Prowine (Europe wide)

Analysis of these schemes will focus on:

- The key components of each scheme (e.g. what is included from a viticultural, winemaking and socio-economic perspective); how producers become certified; the costs of the certification (including assessing external auditing and accountability systems)
- Follow up interviews (via Skype or in person) with a representative of each of the schemes to investigate barriers to establishment, perceived producer benefits and challenges, overall uptake rates, key learnings etc.

To answer questions 2-3:

2. Interviews with producers (Via Skype with follow up emails) involved in established sustainability schemes. To limit the scope, interviews will be with producers in: a) New Zealand (an early established scheme which sees a 98% uptake) and b) Long Island (a more recently established scheme: 2012, with production size similar to the UK - approximately 6 million bottles per year).
 - Long Island – Interview 5 out of the 21 producers involved in the scheme (via Skype and email) and 1 producer not involved in the scheme

- New Zealand – Interview 10-15 producers – a mix of those that have been in the scheme long term as well as more recent adopters of the scheme.

3. Trade Interviews

UK - To offer a commercial perspective, interviews with three of the largest UK wine agencies – *Bibendum*, *Liberty Wines* and *Enotria*; on how important sustainability schemes are to their on- and off-trade customers (from Buyer and Account Manager perspectives). There will also be an interview with one UK supermarket (*Marks & Spencer*) regarding their policy on sustainability schemes, due to their focus on ethical issues with their Plan A program.

To answer question 4:

4. Critical Analysis of the 2012 Plumpton & UKVA Sustainability Project to establish why producers in the past did not join the scheme, to establish some of the obstacles to establishing a scheme:

- Investigating the detail behind the original proposal, including the reasons the scheme did not become established as any lessons that can be brought forward to the present day.
- Interviews with Plumpton lead on this initiative (Chris Foss), WineGB (formally UKVA), and three UK producers (Davenport Wines, Oatley Vineyards, Bothy Vineyard) involved in the set-up group in 2010-2012

5. Qualitative Interviews with 20-25 UK Producers:

- Whilst there are around 750 vineyards in the UK, 340 of these are small holdings of under 1ha, the maximum vineyard size is 80ha (Denbies). Due to the variance in size and scale of the UK production industry the knowledge on sustainability is likely to be mixed, as such qualitative interviews will be conducted with a representative cross section of the industry. The interviews will be conducted with producers as well as vineyard owners (whose vineyard size should exceed 1ha). taking in:
 - i. Small Vineyard but no production (vineyard size 1-5ha)
 - ii. Vineyard and production (under 5ha)
 - iii. Vineyard and production (over 5ha)
 - iv. Production only

This cross section will provide an opportunity to analyse the different requirements and desire for a sustainability scheme, based on the activities of each producer.

Potential to Contribute to the Body of Knowledge on Wine: Explain how this Research Paper will add to the current body of knowledge on this subject. (No more than 150 words)

With limited research on sustainability schemes around the world, there are no guidelines showing the pros and cons of each scheme. The rapid increase in the size of the UK wine industry, as well as increasing consumer interest in the area, suggests this could become an increasingly important area for the UK agricultural sector in years to come.

The Climate Change Act, developed by the UK government in 2008, commits to reducing greenhouse gas emissions by at least 80% of 1990 levels by 2050. This has resulted in work being undertaken by DEFRA (Department for Environment, Food & Rural Affairs), who have already produced a 'National Adaption Programme' (updated in 2018) which looks to minimize the impact of agriculture, improve the ecosystem of the land. Establishing a Sustainability scheme could help to preempt additional Government regulation.

With this in mind, this research paper aims to provide an analysis of the successes and challenges existing schemes face to give evidence in support of creating an UK scheme. This research paper also aims to analyse the appetite for a sustainability scheme in the UK which will support WineGB & Plumpton College as they begin to explore what a UK Sustainability scheme should consist of and how it can benefit both the producers and the environment within which they work.

Proposed Time Schedule/Programme: This section should layout the time schedule for the research, analysis and write-up of the Research Paper and should indicate approximate dates with key deliverables. *Dates of submission to both Advisors and the IMW must be those specified by the IMW.*

December 2018

- Submission of RPP

December 2018

- Finalise literature review

January

- Refine full detail of methodology, ensuring all interviews are booked with producers
- Complete analysis of Sustainability scheme websites
- Interview representatives of International Sustainability schemes and producers involved in Long Island and New Zealand schemes.

February & March

- Interview UK Producers and conduct UK trade interviews

April 15th

- Confirm to IMW intention to submit

May

- 15th – Submit RP to advisor

Late May / June

- Revisions based on advisor feedback

June 28th

- Submit final RP

Appendix 2 Sustainability Programme Interviews

1. When was the programme set up?
2. How many producers have signed up for the programme?
3. What does the programme consist of?
 - a. Viticulture –
 - b. Production –
 - c. Socio-economic –
4. Please share the checklist members work towards.
5. What is the cost of membership?
6. Are there audits? If so how often? Who completes these? How much do they cost?
7. What have been the challenges in setting up the programme?
8. What have been the benefits?
9. Do you try and actively recruit new members, if so how?
10. Are there any future plans for the programme?
11. Do you benchmark against other sustainability programmes?
12. Is there anything else you would like to add?

Appendix 3 International Producer Interviews

1. When were you established?
2. What is your total annual production (hl)? (5 year average)
3. Which markets/countries do you sell your wines in?
4. How do you sell them (direct/via agent etc)?
5. When did you apply to join the sustainability programme?
6. Why did you apply to join the sustainability programme?
7. How long did it take to become certified?
8. What do you see as the most important aspects of the programme?
9. If any, what have been the advantages of joining the programme?
10. If any, what have been the disadvantages of joining the programme?
11. What advice would you give to someone joining a sustainability programme?
12. If any, what do you see as the next steps your sustainability programme should take to stay relevant?
13. Do you have any further thoughts on being a member of a sustainability programme?

Appendix 4 UK Producer Interviews

Producer Overview

1. When was your vineyard / winery established?
2. What is your vineyard size (ha)
3. Do you buy in any additional grapes?
 - 3i. How much of your production is brought in?
 - 3ii. How much input do you have over the vineyard practices for these grapes?
4. What is your total annual production (hl)? (5 year average)
5. Do you have your own winemaking facilities on site?
6. Are you a member of WineGB?
7. Which markets/countries do you sell your wines in?
8. How do you sell them (direct/via agent etc)?

Sustainability Questions

9. What is your understanding of what a wine producer sustainability programme is?
10. Have you already implemented any sustainable practices into your vineyard / winery?
11. If a sustainable production scheme was implemented in the UK what would do you think it should consist of?
12. If a sustainable production scheme was implemented in the UK is there anything that you think should not be included?
13. What would motivate you to take part in a sustainability scheme?
14. What factors would discourage you from joining a sustainability scheme? Or what concerns would you have about such a scheme?
15. What do you see as being a reasonable cost for being a member of this scheme and what cost would be prohibitive to you?

- a. Reasonable –
- b. Prohibitive –

16. If such a scheme was created do you feel everyone should have the same level of membership or should there be a ranking / individual recognition for producers operating in a more sustainable way?

17. As well as the cost of membership would you be happy to pay for an independent certification?

18. Would you like to see a benchmarking system as part of the programme? If so, would you prefer that the results for individual producers or wineries are:

- a. anonymous and known only to the individual producers or wineries
- b. published and visible to members of the scheme only
- c. published online and visible to members of the public

19. If a sustainability scheme was set up for the UK production industry would you be interested in joining it?

- a. Definitely
- b. Very Likely
- c. Possibly
- d. Not likely
- e. Definitely Not

19i. Why?

Appendix 5 Sustainability Scheme Comparison

OIV ²¹⁹	Wine Skills ²²⁰	IPW ²²¹ 222	SW NZ ²²³ 224	SC Chile ²²⁵	LIS W ²²⁶	CCS W ²²⁷	SWBC ²²⁸	LEAF ²²⁹	Terra Vitis ²³⁰	VDD ²³¹
Determine the viticultural aptitude and potential of the site.	no	yes	no	yes	yes	yes	yes	no	no	no
Before any soil preparation/cultivation, carry out a soil study, taking into account pedological issues.	no	yes	yes	yes	yes	yes	yes	no	yes	no
Water availability and water protection requirements.	no	yes	no	yes	no	yes	yes	yes	no	no
Ensure, by appropriate installations: <ul style="list-style-type: none"> • Biodiversity maintenance • Surface water management in order to limit the risks from run-off and erosion • Surface and subsoil drainage 	no	yes	no	yes	yes	yes	yes	no	yes	no
Eliminate vine stumps and other plant remains likely to contaminate the soil with pathogens.	no	yes	no	yes	yes	yes	no	no	no	no
If necessary, leave the soil fallow or establish a cover crop for a certain time before replanting always adapted to the local context.	no	no	no	yes	no	yes	no	no	yes	no
When required (and permitted), limit to a strict minimum any chemical disinfection of the soil and adapt it to local environmental requirements.	no	no	no	yes	no	yes	no	no	yes	no
Establish initial and amended fertilisation methods based on representative soil and sub-soil analyses and carry them out according to regional requirements.	no	yes	no	yes	yes	yes	no	no	yes	no
Use plant material (vine type and rootstock) free from serious viral diseases and suitable for the local conditions and the required type of production.	no	yes	no	yes	yes	yes	no	yes	yes	no
Choose a vine training system for sustainable production, taking into account the following items: <ul style="list-style-type: none"> • water requirement, • grape quality • soil protection, • soil potential • vine vigour, • reducing risks of disease, • application of phytosanitary products, • density and layout of the vines, • protection of landscapes values 	no	yes	no	yes	yes	yes	no	yes	yes	no

Table 20 – Site Selection Comparison

²¹⁹ OIV, 2008

²²⁰ Plumpton College, 2011

²²¹ South African Wine & Spirit Board, 2015

²²² South African Wine & Spirit Board, 2018

²²³ SWNZ, 2018

²²⁴ SWNZ, 2019

²²⁵ Wines of Chile, 2018

²²⁶ Wise et al., 2015

²²⁷ California Sustainable Winegrowing Alliance, 2012

²²⁸ Sustainable Wine British Columbia, 2016a

²²⁹ LEAF, 2016

²³⁰ Terra Vitis, 2019

²³¹ Vignerons en Développement Durable, 2019

OIV	WS	IPW	SWNZ	SCC	LISW	CCSW	SWBC	LEAF	TV	VDD
All the appropriate measures to protect the soil against erosion should be taken: green covering, cover cropping, ground coverage or mulches (straw, compost), site adaptation, terrace maintenance.	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Green covering must be evaluated on the basis of the following items: - level of precipitation and soil water reserves, - risks of erosion, leaching and soil compaction, - vine training system - age of the vine, - grape quality and output, in particular the nitrogen content of musts, - frost risk	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Preference should be given to plant coverage of the soil in winter in order to fix nitrogen and prevent losses by leaching	yes	yes	yes	yes	yes	yes	yes		yes	yes
The technique and the timing of mechanical cultivation should take into account environmental concerns and the prevailing and forecast weather conditions.	yes	yes	yes	yes	yes	yes	yes	yes	no	no
The introduction of mulch take into account the timely release of nutrients, the risk of fire spreading and the possible presence of potentially toxic elements (trace metals, organic micro-pollutants).	yes	yes	no	yes	yes	yes	yes	no	no	no
The use of herbicides should be limited to the absolute minimum and their implementation optimised, while emphasising foliar weed control.	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Weeding the entire soil surface area should be limited to specific situations (e.g. very low and narrow vines rows, terrace vineyards).	no	yes	yes	yes	yes	yes	yes	no	yes	yes
The weed weeding should be chosen on the basis of effective control, taking into account the energy impact and environmental impact (risk of residue build-up in the soil, soil degradation and contamination of water resources).	no	yes	yes	yes	yes	yes	yes	no	yes	yes

Table 21 - Soil Analysis Comparison

OIV	WS	IPW	SWNZ	SCC	LISW	CCSW	SWBC	LEAF	Terra Vitis	VDD
fertiliser input should be compatible with the production of quality grapes, the health of the vine, the maintenance of balanced soil fertility and be mindful of the extent of soil exploitation by the root system;	no	yes	yes	yes	yes	yes	yes	no	yes	no
the quantity and the nature of input should be minimised where possible and be based in particular on a soil and/or plant tissue analysis (basic analysis and regular fertility controls) and observation of plant vigour	yes	yes	yes	yes	yes	yes	yes	yes	yes	no
Nitrogen input and the times of application should be evaluated in relation to the needs of the vine, the quality of the grapes, the green covering or cover cropping technique, the type of soil and the risks of leaching;	yes	yes	yes	yes	yes	yes	no	yes	yes	no
fertilization should be applied according to regional references if they exist, to vine exports and the risks of deficiencies;	no	no	no	no	yes	no	no	no	yes	no
preference should be given to recycling organic nutrients	yes	no	yes	yes	yes	yes	yes	yes	yes	no
fertilisers or soil conditioners contaminated by substances toxic or dangerous for the environment, such as trace metals, organic micro-pollutants or pathogenic microorganisms, should be fully controlled	yes	yes	no	yes	yes	yes	no	no	yes	no
Foliar top-dressing should be used only to prevent or treat clearly established or clearly anticipated deficiencies.	no	yes	no	no	yes	yes	no	no	no	no

Table 22 - Nutrition Management Comparison

OIV	WS	IPW	SWNZ	SCC	LISW	CCSW	SWBC	LEAF	Terra Vitis	VDD
The best time for winter pruning should be selected according to local climatologic conditions in order to: - limit contamination risk - limit pruning wounds and thus reduce the risk of wood rotting diseases.	yes	yes	no	yes	yes	yes	no	no	no	no
The vine should be pruned, formed and trained, through canopy management, in order to ensure a good balance between plant development and production.	yes	yes	no	yes	yes	yes	no	no	no	no
Canopy management, in particular tying and disbudding operations, should enable satisfactory ventilation of the grapes as well as good penetration of light and phytosanitary products.	yes	yes	no	yes	yes	yes	no	no	no	no

Table 23 - Canopy Management Comparison

OIV	WS	IPW	SWNZ	SCC	LISW	CCSW	SWBC	LEAF	Terra Vitis	VDD
All the techniques for limiting water requirements (tolerance to water stress, farming techniques etc.) should be implemented first and foremost;	no	yes	no	yes	yes	yes	no	no	no	yes
Water input should be based on needs related to production objectives (wine grapes, table grapes, raisins) for the vine at the various stages of its development, the type and specific nature of the grape and the requisite wine, taking into account the water balance of each vineyard;	no	yes	yes	yes	yes	yes	yes	yes	yes	yes
Preference should be given to irrigation techniques designed to optimise water efficiency, such as micro or drip irrigation, and to considering their effects on the distribution of the root system.	no	yes	yes	yes	yes	yes	no	yes	no	no
Similarly, over time evaluation of measures of soil water reserves and vine water status should be prioritised as the basis for determining volume and timing of irrigation water supply	no	yes	yes	yes	yes	yes	no	yes	no	no

Table 24 - Water Management Comparison

WineSkills	IPW	SWNZ	SCC	LISW	CCSW	SWBC	LEAF	Terra Vitis	VDD
Have a long-term plan for both cultivated and non-cultivated land which protects and enhances conservation features.	yes	yes	yes	no	yes	yes	yes	yes	yes
Map wildlife, wildlife habitat, environmental, landscape, archaeological and historical features in the vineyard and in the winery area (if applicable) and identify reasons for their importance.	yes	yes	yes	no	yes	yes	yes	yes	yes
Nesting boxes, nesting habitats and perches for animals that prey on vineyard pests are established around the vineyard property.	no	no	no	no	yes	no	yes	no	no
Maintain hedgerows of native plants and maintain native grasses and shrubs where possible.	yes	yes	yes	no	yes	no	yes	no	no
At least 5% of the estate (excluding forests) should be identified and managed as ecological infrastructure (ecological compensation area) with no input of pesticides and fertilisers in order to enhance botanical and faunistic biodiversity.	yes but % not defined	yes but % not defined	yes	no	yes but % not defined	no	yes	no	no
Allow vegetation, other than noxious weeds, to grow on headlands.	yes	no	no	no	yes	no	yes	yes	no
Relevant conservation organisations are consulted to find out about species at risk and other plants and wildlife, their habitat, and management practices to support them.	yes	no	yes	no	yes	no	yes	no	no

Table 25 - Biodiversity Comparison. The schemes are compared to WineSkills as OIV had no specific breakdown for biodiversity.

OIV	WineSkills	IPW	SWNZ	SCC	LISW	CCSW	SWBC	LEAF	Terra Vitis	VDD
All preventative measures are to be implemented in priority before using direct control methods.	yes	yes	yes	yes	yes	yes	yes	yes	yes	no
When direct pest control is required, priority should be given to biological or biotechnical control methods. This control should be based on tolerance thresholds, risk assessment and information provided by regional technical services.	yes	yes	yes	yes	yes	yes	yes	yes	yes	no
Risk assessment should be based on the following items: - Monitoring (records to be kept), - The indications of warning services, - Disease forecasting models and risk assessment, - The biological follow-up of diseases and pests	no	yes	yes	yes	yes	yes	yes	yes	yes	no
The following preventative measures are invaluable in aiding vine protection (these are also identified by Resolution VITI-OENO 1/2005): - The use of suitable vine types and rootstocks - The use of suitable vine training systems - The choice of crop cultivation methods in order to limit the pressure of diseases and pests (balanced top-dressing, irrigation, canopy management, etc.), - Soil maintenance (green covering, soil cultivation period), - Preserving beneficial organisms.	yes	yes	no	yes	yes	yes	no	no	no	no
Annual and updated regional information documents, as well as fungal disease forecasting models, if they exist, should be used as the basis for a protection strategy.	yes	yes	yes	yes	yes	yes	yes	yes	yes	no
Products should be used within the regulatory framework. For the uses mentioned, the licensed dosage and the indicated withholding period (prior to the harvest) should be respected.	no	yes	no	yes	yes	no	no	yes	yes	no
The strategy for use of phytosanitary products should be dependent upon the classification of products on the basis of their toxicity and environmental impacts.	no	no	no	yes	yes	yes	no	no	yes	no
The products and quantities used should be those which are compliant with legal restrictions, label guidance and which ensure effective control of pests and diseases, taking into account the following issues: - The phenological stage and the surface area of the plant to be protected - Unintended effects on beneficial fauna and non-target organisms, - Toxicity in particular for bees and other beneficial organisms, - Risks of developing resistance, - Risks of water or soil pollution, - Risks of residues in the grapes and wines - Possible effects on vinification	no	yes	no	yes	yes	yes	no	yes	yes	no

Table 26 - Pest & Disease Management Comparison

OIV	WineSkills	IPW	SWNZ	SCC	LISW	CCSW	SWBC	LEAF	Terra Vitis	VDD
The application technique, the choice and setting of the appliance and the weather conditions should enable optimum and targeted distribution of the plant protection products.	no	yes	yes	yes	yes	yes	no	yes	yes	no
It is recommended to use spraying equipment that reduces the level remaining in the tank and which is easy to clean.	no	no	no	no	no	no	no	no	no	no
During the handling and application of phytosanitary products, it is specially recommended to: - Have available a filling area with a system which avoids possible network contamination and a system which limits the risk of accidental overflows or spillage; - If topographic conditions so allow, rinse the tanks of the spray onto the parcel, then spray the vine with the diluted rinsing water; - Forbid any handling or washing of the spray equipment near a water-course or sampling site.	no	yes	no	yes	yes	yes	no	yes	yes	no
Maintenance and calibration of the spray plant equipment should be regularly carried out by the user and, if necessary, it should be periodically tested by an approved procedure.	no	no	yes	yes	yes	yes	yes	yes	yes	no
Store products in a clearly identified area specifically reserved for this purpose, aired or ventilated, locked with a key and organised to avoid any contamination or accidents, and in compliance with local regulations.	no	yes	yes	yes	yes	yes	no	no	yes	no
Keep phytosanitary products in their original packaging with the label.	no	yes	no	yes	yes	no	no	no	yes	no
Store non-useable or out-of-date phytosanitary products in their original packaging separate from useable products;	no	yes	no	yes	yes	no	no	no	yes	no
Retain safety factsheets for products used.	no	no	no	yes	no	no	no	no	no	no

Table 27 - Phytosanitary Comparison

OIV	WineSkills	IPW	SWNZ	SCC	LISW	CCSW	SWBC	LEAF	Terra Vitis	VDD
Special effort should be made to efficiently manage packaging materials when they are no longer usable.	no	yes	no	yes	no	yes	yes	no	no	yes
The possibility for recycling of packaging elements should be the first option.	yes	yes	yes	yes	no	yes	yes	yes	no	no
The following material are recyclable and efforts should be made to efficiently manage this waste: - packaging containers made of glass, plastic, or plastic-lined paper or metal products, container seals made of cork, plastic or plastic-coated metal products - outer packaging, such as capsules, labels and cartons made of plastic, metal or paper-based	no	yes	no	yes	no	yes	yes	yes	no	yes
Packaging materials should be minimised while still permitting an optimal conservation and presentation of the product.	yes	yes	no	yes	no	yes	yes	no	no	yes
Cleaning and sterilisation of packaging equipment surfaces which come into contact with product should favour physical treatments, such as hot water or steam, rather than utilising chemical cleaning or sterilising agents while taking into account energy consumption and water availability.	no	yes	no	no	no	yes	yes	no	no	no

Table 28 - Packaging & Warehouse Comparison

OIV	WineSkills	IPW	SWNZ	SCC	LISW	CCSW	SWBC	LEAF	Terra Vitis	VDD
The choice of construction material should take into account thermal inertia and insulation in view of optimal energy management.	yes	no	no	yes	no	yes	yes	yes	no	no
Water and energy required for cultivation, wine production operations and packaging should be limited to the lowest possible through optimisation of infrastructure, equipment and processes with the most water and energy efficiency. In this manner, we limit waste water generation and reduce energy use and chemical inputs.	yes	yes	no	yes	no	yes	yes	no	no	yes
Refrigerants should be selected for their low impact potential on the environment (ozone layer, greenhouse gas).	yes	yes	yes	no	no	yes	no	no	no	no
The picking temperature and the transport timeframe must take into account limiting energy consumption for transport, heating or cooling of the harvest.	no	yes	no	no	no	yes	no	no	no	no

Table 29 - Energy Comparison Part 1

WineSkills	IPW	SWNZ	SCC	LISW	CCSW	SWBC	LEAF	Terra Vitis	VDD
To measure continual improvement of energy use, the following records are regarded as the most important: <ul style="list-style-type: none"> · Electricity usage (kWh) · Diesel usage (Litres) · Petrol usage (Litres) · Liquid Petroleum Gas (LPG) usage (kg) · Any other fuels (e.g. coal, furnace oil, etc.) (kg or Litres) 	yes	yes	yes	no	yes	yes	yes	yes	yes
A. The use of non-renewable energy sources is kept to a minimum. The winery should obtain at least 5% of its energy use from renewable sources such as: <ul style="list-style-type: none"> · Solar thermal and photovoltaics · Ground source heat pump systems · Bio-mass · Anaerobic digestion of winery waster · Other renewables 	yes	yes	yes	no	yes	yes	no	yes	yes
Carbon footprint evaluation	yes	no	no	no	yes	no	yes	no	yes

Table 30 - Energy Comparison Part 2. This takes into account components included in the WineSkills book that are not separate factors under the OIV recommendations.

OIV	WineSkills	IPW	SWNZ	SCC	LISW	CCSW	SWBC	LEAF	Terra Vitis	VDD
Temperature and nutrient regimes during processing of grapes should be adapted taking into account fermentation control, product quality and energy input.	no	yes	no	no	no	yes	no	no	yes	no
Operations involving physical processes, such as centrifugation, filtration and heating/cooling or oenological processes should be implemented taking into account hygiene, energy use, and management of by-products.	no	no	no	yes	no	yes	no	no	no	no
Solid or liquid residues from clarification or stabilisation operations, such as spent filter aid, fining deposits and tartrates should be re-processed wherever possible to recover useful and active materials. Any residues unable to be re-processed should be disposed of in a manner which minimises impacts on the environment and the local community.	no	yes	yes	yes	no	yes	no	no	no	no
Maturation and aging are generally carried out in either inert containers or wooden vessels. Consideration should be given principally to durability, integrity and possibility of recyclability of material in contact with wine.	no	no	no	no	no	yes	no	no	yes	no
Wooden containers demand particular vigilance with respect to hygiene due to the porous nature of the surfaces in contact with product. Cleaning and sterilisation should favour use of hot water or steam, rather than chemical cleaning or sterilising agents.	no	yes	no	no	no	yes	no	no	no	no
Consideration should be given to ensuring an optimal management of wine conservation materials when their life has ended.	no	yes	no	no	no	yes	no	no	yes	no

Table 31 - Winemaking Factor Comparison

OIV	WS	IPW	SWNZ	SCC	LISW	CCSW	SWBC	LEAF	Terra Vitis	VDD
Management of effluent, by-products and waste is a fundamental consideration in environmentally sustainable winemaking. Emphasis should be placed on initiatives for waste reduction at the source and on recovering useful and active materials from waste products, recycling waste components as part of selective management by appropriate supply channels. In general, the elimination of waste and effluents should minimise its impact on the environment and the local community.	yes	yes	no	yes	no	yes	no	yes	no	no
The end use of effluents should determine the treatment and the choice of chemicals to be used as disinfectants and cleaning agents.	no	yes	no	yes	yes	no	yes	yes	no	no
A regular quantitative and qualitative inventory of by-products and waste facilitates the adaptation of vitivinicultural practices and equipment and the choice of management methods. This inventory is especially important for specific waste (batteries, drainage oil, hydraulic oil).	no	yes	no	yes	no	yes	no	yes	no	no
Emphasis should be placed on limiting the presence of solid matter, separation of by-products of crushing and fermentation such as stalks, skins, seeds and yeast lees, which are important imperatives for sustainability. In order to facilitate waste recovery or purification, and to minimise the quantity of residual waste or pollutants it is important to limit the presence of solid matter and reduce use of chemicals.	yes	yes	yes	yes	no	no	no	no	no	no
Emphasis should be placed on ensuring optimum waste and by-product management or water treatment and notably suspended particles and sludge	no	yes	yes	no	yes	yes	no	yes	yes	no
Areas should be set up downstream for equipment and machine wash-down (tractors, harvesting machines, sprays), as well as fuel separation and water treatment systems in compliance with local environmental regulations.	no	yes	no	no	yes	no	no	no	no	no

Table 32 - Waste Management (Solid & Effluent) Part 1

OIV	WS	IPW	SWN Z	SCC	LIS W	CCSW	SWBC	LEAF	Terra Vitis	VDD
Handling or washing of mobile equipment near a water-course or sampling site should be avoided.	no	yes	no	no	no	no	no	no	yes	no
Storage and treatment of effluent and solid waste should be carried out in dedicated areas which minimise the risk of their alteration or contamination, either of or by other materials. These areas should be located in a manner which also minimises their sensory impact and pollution potential with respect to the community and landscape.	no	yes	yes	yes	yes	yes	yes	yes	no	no
Solid waste should be selectively sorted and stored to facilitate its reprocessing, recycling or adapted, low environmental impact disposal.	yes	yes	yes	yes	no	yes	yes	yes	no	no
Store non-useable or out-of-date phytosanitary products in their original packaging separate from useable products; dispose of them via a supply channel that avoids any risk for the environment.	no	yes	no	yes	yes	no	yes	no	no	no
Store empty phytosanitary and fertiliser packaging, if necessary rinsed and drained, in a sheltered area limiting the risks for the environment. Packaging must be eliminated in accordance with local regulations.	no	yes	no	yes	yes	yes	no	no	no	no
Waste soiled by phytosanitary products must be kept in storage facilities for phytosanitary products or in a sheltered place, limiting the risks for humans and the environment.	no	yes	no	no	no	yes	yes	no	yes	no
Separation of contaminated and uncontaminated liquid waste is an essential consideration at all sites. Ideally, design should be adapted to facilitate liquid waste separation and to minimise potential air-borne contamination.	yes	yes	yes	yes	yes	yes	yes	yes	no	no
Effluent treatment systems should be adapted to the size of the processing plant and its peak effluent generation periods. Treatment systems should favour agronomical or biological processes with an efficient use of energy.	no	yes	yes	no	no	yes	yes	no	yes	no
Application of treated wastes in vineyards, orchards and fields should take into account the characteristics of the soil and crops.	yes	yes	yes	no	yes	yes	no	yes	yes	no

Table 33 - Waste Management (Solid & Effluent) Part 2

Appendix 6 SWA²³² & Eco Prowine²³³ Data Collection

SWA

Vineyard	Winery
Tonnes of grapes produced (% red and white)	Tonnes of grapes produced (% red and white)
Production system (conventional, organic, biodynamic)	Winemaking processing & packaging volumes
Area under vine	Total winery water use
Electricity purchased	Total wastewater generated
Electricity generated	Winery wastewater treatment
Total water use	Total solid waste produced
Total nitrogen applied	Solid waste treatment (recycling/compost)
Total petrol use	Electricity purchased
Total diesel use	Electricity generated
Total LPG use	Total natural gas used
Irrigation type	Total petrol used
Irrigation source	Total diesel used
Use of contractors	Total LPG used
Vineyard floor management	Winemaking CO ₂
Biodiversity area	Synthetic refrigerants
	Biodiversity area

Table 34 - Data collection required by SWA

²³² AWRI, 2019

²³³ Eco Prowine, 2019 – translated from Spanish into English.

Eco Prowine

Plantings

Style of wine breakdown (red, white, rose)

Tractor use during the year

Percentage of vineyard that is harvested mechanically

Percentage of grapes refrigerated before winemaking

Percentage of your wine that is filtered by diatomite

Proportion of your wine ages in wooden barrels

Percentage of your wine is cold stabilized against tartaric instability

Gas / oil consumed

Natural gas consumed

Other Fossil fuel use

Electricity consumed

Mains Water use

Volume of water used for irrigation

Amount of organic fertiliser used

Amount of inorganic fertiliser used

Amount of insecticides used

Amount of herbicides used

Amount of Sulphur used in the vineyard

Amount of Sulphur Dioxide used in the Winery

Amount of Ammonium salts used in the Winery

Amount of bentonite used in the Winery

Amount of protein used in the Winery

Amount of dry yeast used in the Winery

Number of new oak barrels purchased

Total amount of detergent used in the winery

Total weight of glass bottles used

Total amount of plastic closures

Total amount of cork closures

Total amount of metal closures

Total weight of cardboard

Amount of recycled paper

How is paper and glass waste processed?

Amount of recycled plastic