GREEN COMPETENCES & SUSTAINABLE PRACTICES FOR WINE SECTOR

ANNEX I

NATIONAL REPORTS

Green Vineyards

Co-funded by the European Union

unir ITED

Co-funded by the European Union

Green Vineyards

SURVEY REPORT FRANCE

PROJECT RESULT 1

WINERIES STAFF ENVIRONMENTAL COMPETENCE FRAMEWORK & BEST PRACTICES GUIDE

GREEN VINEYARDS PROJECT

2021-1-ES01-KA220-VET-33311

unir UNIVERSIDAD INTERNACIONAL DE LA RIOJA

IFV

CESAR CENTRO PER LO SVILUPPO AGRICOLO E RURALE

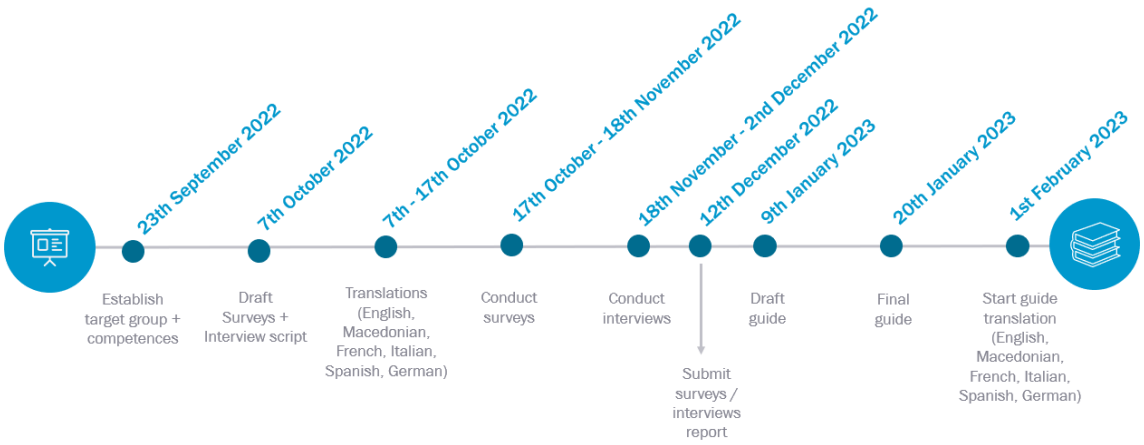
IECE INSTITUTE FOR RESEARCH IN ENVIRONMENT CIVIL ENGINEERING AND ENERGY

FEV FEDERACIÓN ESPAÑOLA DEL VINO

Bodensee Stiftung

INDEX

Proposed deadlines



1. Surveys

1.1. Introduction

French Partner, IFV, distributed the questionnaires to a number of selected stakeholders related to the wine sector, sending them the link to the survey (https://ec.europa.eu/eusurvey/runner/GreenVineyardsSurvey). All of them who answered in the affirmative gave their consent to the questions concerning data processing and confidentiality of the results.

A process of debugging has been carried out, eliminating invalid, incomplete, or unidentified answers. After this process, 20 valid responses have been obtained, coming from 20 diferent stakeholders.

All of them received the invitation to answer the survey, with detailed instructions. The survey questions were available, and were answered, in French. Other languages as English, Spanish, German and Italian were also available but not used by French stakeholders.

General information on the answers is:

- As regards the place of work of the respondents, the 30 % of them work in a *winery* while the 20% work directly in *vineyards*. Another 20 % work in *trade unions*. 15% of the respondants work for public sector. The 5% of the answers correspond to the category *"other"* (Consultancies, winegrowers associations).
- Respondents have an average of 13.4 years of experience in the sector.

The importance of climate change in the wine sector is rated 8.7/10 by survey respondents.

After a phase of desk research and identification of additional research results, the consortium partners selected 15 competencies that they considered to be the most appropriate for the sector.

The respondents to the survey had to evaluate and validate the importance of each of the competences.

In the event that a respondent missed a competence that was not included in the initial list and was deemed necessary because of its relevance, they were given the opportunity to include it at the end of the survey.

Finally, responders were asked to provide best practices in the implementation of green competences.

1.2. Survey results

Competence 1 **Climate Change Awareness**

On a scale between 1 and 5, where 1 is 'Not important' and 5 is 'Critical', Average score is **4.45**.

Competence 2 **Climate Change Adaptation**

Average score is **4.40**.

Competence 3 **Valuing sustainability**

The average score is **3.90.**

Competence 4 **Water management**

The average score is **4.40**.

Competence 5 **Soil Management**

The average score is **4.30**.

Competence 6 **Energy efficiency**

The average score is **4.10**.

Competence 7 **Waste Management**

Average score is **4.00**.

Competence 8 **Emissions Reduction**

Average score is **4.10**.

Competence 9 **Biodiversity**

The average score is **4.20**.

Competence 10 **Local & historical knowledge**

The average final score is **3.60**.

Competence 11 **Sustainable wine production**

The average score is **4.05**.

Competence 12 **Critical thinking**

The average score is **3.95**.

Competence 13 **Futures literacy**

The average score is **3.79**.

Competence 14 **Systems thinking**

The average score is **3.90**.

Competence 15 **Problem framing**

Average final score is **3.90**.

Summary

Using a scale between 1 and 5, where 1 was 'Not important' and 5, 'Critical' the average score of each competence was the following:

Titles	France
1. Climate Change Awarness	4,45
2. Climate Change Adaptation	4,40
3. Valuing sustainability	3,90
4. Water management	4,40
5. Soil Management	4,30
6. Energy efficiency	4,10
7. Waste Management	4,00
8. Emissions Reduction	4,10
9. Biodiversity	4,20
10. Local & Historical Knowledge	3,60
11. Sustainable wine production	4,05
12. Critical Thinking	3,95
13. Future Literacy	3,79
14. System Thinking	3,90
15. Problem Farming	3,90
Average	**4,07**

2. Comments and suggestions

Respondents have had the opportunity to provide their views on the competences included in the survey. The main contributions identified are:

- *"Various social skills (altruism, sense of sharing, benevolence, etc.) will also be necessary to achieve multi-performance, synonymous with potential for sustainability: do not forget to take them into account, but also to work on them!"*
- *"self-criticism"*
- *"Changing consumer habits and expectations (taste, environment...) adaptation to new grape varieties"*
- *"Changing implantation of the vines (no longer plant just anywhere! Avoid frost-prone or drought-prone areas)"*
- *"Wine is not vital, irrigation in some areas should not be necessary. "*
- *"Plant grape varieties better adapted to current issues"*

- *Put an end to mono-culture and uniform landscapes."*
- *" Sensitivity to the living".*
- *"Fair recruitment and wages (job precarity), continuity of know how, preservation of local ownership "*
- *"Eco-design packaging "*
- *"Sharing knowledge and best practices – "*
- *"Working collectively "*
- *"Link to nature, cultivated or "wild", important to feel concerned "Knowledge of the plant. It is imperative to master the plant and its soil. The level of the students must increase. I teach in BTS and the level is too low for today's challenges. The trellising needs to be reviewed. "*
- *"Economic sustainability of systems"*
- *"self-criticism Economic consequences"*
- *"Common sense – pragmatism"*
- *Going into the concrete instead of flying over with big theories*

3. Proposed Best practices

List of individual and evaluable good practices suggested by potential stakeholders to be analysed and proposed for inclusion in the catalogue to be compiled by all partners.

- Viticulture agroforestry will become essential (https://rmt-agroforesteries.fr/)
- Find out about the importance (or even the essential nature) of hedges from Afac-Agroforesteries : https://afac-agroforesteries.fr/
- Climenvi https://centre-valdeloire.chambres-agriculture.fr/chambre-dagriculture-de-loir-et-cher/pages-hors-menu/climenvi-un-projet-qui-avance-et-les-1ers-livrables-finalises/
- ClimatVeg project https://www.vegepolys-valley.eu/projet-climatveg/
- Resistant grape varieties
- New grape varieties
- Tools to aid decision
- Timing of copper at low doses
- Valorization of products and by-products
- Use of plant cover
- https://agriculturedeuvivant.org/
- https://fermesdavenir.org/
- https://campuscirculaire.adelphe.fr/
- See the master thesis ""Le Vin au Vert"" by Anne-Laure Ferroir (2018)

- See the website of one of the pioneer winegrowers association, committed into a sustainable wine growing: www.terravitis.com
- Consolidated estates with coherent and close vineyards
- Pooling of equipment
- Elimination of waste
- Institut Francais de la Vigne et du Vin - IFV (vignevin.com) https://www.vignevin.com/
- Agroscope https://www.agroscope.admin.ch/agroscope/fr/home.html/
- Glass deposit
- https://www.verdeterreprod.fr/

4. Conclusions

The assessment of the competencies does not allow any of them to be ruled out. However, six of them are rated below 4, which means that their impact on the sector is intermediate. These competencies should be re-evaluated jointly by the consortium, taking into account the scores obtained in other countries.

France's highest-rated competence was "Climate change awareness"which is totally in line with the training purpose of the greenvineyards project. this is also understandable from the French point of view given a certain acculturation over the past 10 years with the Laccave (Laccave - LACCAVE (inrae.fr) metaprogramme research project, now extended by the Climae project (https://www6.inrae.fr/climae).

The second competence chosen is "Adaptation to climate change", in line with the timing of the orientations of professional bodies with the sector's strategy in the face of climate change in 2021. after "Climate change awareness", this second point intervenes in a logic of action planning.

Logically the following choices were made on the major agro-ecological themes of water, soil, biodiversity, then energy and emission reduction, then production of sustainable wines, and waste.

Below the score of 4, comes the group of 6 competencies, 5 of which supposed o be more abstract: Critical Thinking, Valuing sustainability, System Thinking, Problem Farming, Future Literacy.

At the end of the ranking, the competence "local & historical knowledge" picks up.

The ultimate question is to know if this competence is rejected and if this already prefigures the notion of a system in rupture.

In relation to the missing competencies suggested by the stakeholders, they are real competences and which could feed the framework of competences to be proposed.

Finally, the following five best practices could be in the final list.

- https://www.vignevin.com/wp-content/uploads/2022/02/2-24-02-2022-GuideTAECC-web.pdf
- https://www.vignevin.com/wp-content/uploads/2021/09/Strategie-de-la-filiere-viticole-face-au-changement-climatique_web.pdf
- https://centre-valdeloire.chambres-agriculture.fr/chambre-dagriculture-de-loir-et-cher/pages-hors-menu/climenvi-un-projet-qui-avance-et-les-1ers-livrables-finalises/
- Certification environnementale, mode d'emploi pour les exploitations | Ministère de l'Agriculture et de la Souveraineté alimentaire
- https://rmt-agroforesteries.fr/

unir ITED

Co-funded by the European Union

Green Vineyards

SURVEY REPORT GERMANY

PROJECT RESULT 1

WINERIES STAFF ENVIRONMENTAL COMPETENCE FRAMEWORK & BEST PRACTICES GUIDE

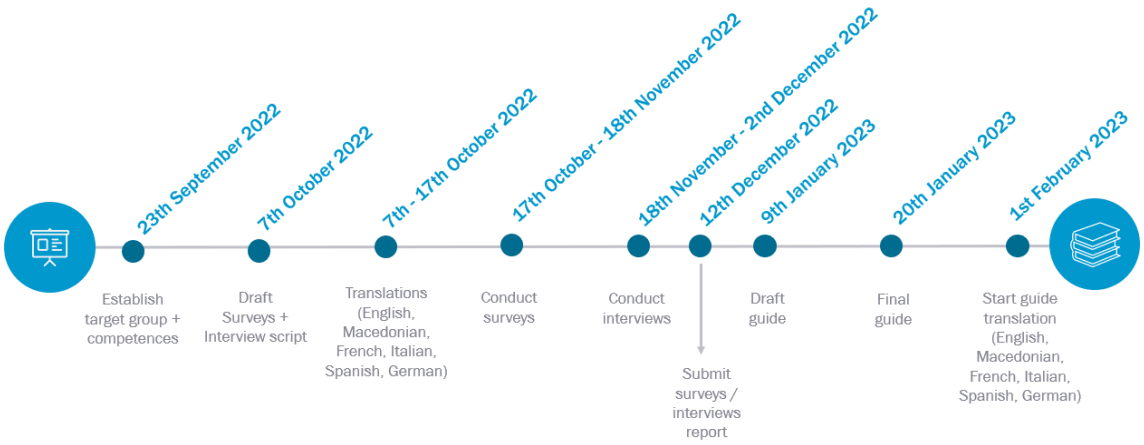
GREEN VINEYARDS PROJECT

2021-1-ES01-KA220-VET-33311

unir UNIVERSIDAD INTERNACIONAL DE LA RIOJA · IFV · CESAR CENTRO PER LO SVILUPPO AGRICOLO E RURALE · IECE INSTITUTE FOR RESEARCH IN ENVIRONMENT CIVIL ENGINEERING AND ENERGY · FEV FEDERACIÓN ESPAÑOLA DEL VINO · Bodensee Stiftung

INDEX

Proposed deadlines



1. Surveys

1.1. Introduction

The German partner LCF distributed the questionnaires to a numeros selected stakeholders related to the wine sector, sending them the link to the survey (https://ec.europa.eu/eusurvey/runner/GreenVineyardsSurvey). 154 stakeholders have been from Germany, 10 from Switzerland and the remaining 11 from Austria.

34 valid responses have been obtained (28 Gemany, 2 Switzerland, 4 Austria). All of them answered in the affirmative and gave their consent to the questions concerning data processing and confidentiality of the results.

The survey questions were available, and were answered, in both English and German. Other languages as French, Spanish and Italian were also available but not used by German speaking stakeholders.

General information on the answers is:

- As regards the place of work of the respondents, the 47% of them work in *Academia,* mainly Research Institute, State Teaching and Vocational Training. Another 21 % work in *Winery.* 15% in *Public Sector*, mainly Municipalities and another 3% in *Tade Union*. The 15% of the answers correspond to the category *"other"* (NGOs, Organic Farmers Association).
- Respondents have an average of 18.4 years of experience in the sector.

After a phase of desk research and identification of additional research results, the consortium partners selected 15 competencies that they considered to be the most appropriate for the sector.

The respondents to the survey had to evaluate and validate the importance of each of the competences.

In the event that a respondent missed a competence that was not included in the initial list and was deemed necessary because of its relevance, they were given the opportunity to include it at the end of the survey.

Finally, responders were asked to provide best practices in the implementation of green competences.

1.2. Survey results

On a scale between 1 and 5, where 1 is 'Not important' and 5 is 'Critical'

Competence	Total (Average score)	Germany, Switzerland, Austria (Average score)
1. Climate Change Awareness	4.41	4.59
2. Climate Change Adapation	4.41	4.44
3. Valuing sustainability	4.14	4.19
4. Water management	4.53	4.47
5. Soil Management	4.35	4.47
6. Energy efficiency	4.27	4.32
7. Waste Management	4.17	4.03
8. Emissions Reduction	4.18	4.09
9. Biodiversity	4.22	4.29
10. Local & historical knowledge	3.90	3.59
11. Sustainable wine production	4.21	4.38
12. Critical thinking	4.02	4.09
13. Futures literacy	3.98	3.94
14. Systems thinking	3.98	3.91
15. Problem framing	4.01	4.00

2. Comments and suggestions

Respondents have had the opportunity to provide their views on the competences included in the survey or propose other green competences not included so far and considered as necessary.

The following feedback came up:

- *“Soil microbiome”*
- *“Awareness of the Location”*
- *“Communication“*
- *“Strategies and competences for sustainable grape production”*
- *“Communication of sustainability and biodiversity in the market”*
- *“Economic competence to achieve set goals, including feasibility in society”*
- *“Linking the different information for decision-making”*
- *“Understand vine as part of the ecosystem with its individual dependencies”*
- *“Unconventional thinking to make new approaches/paths possible”*
- *“Agricultural practices are missing in the list; this includes the choice of the grape varity, the production system (IP, organic), adaptations like distance between rows, changes in plant deseases etc.”*
- *“Basic biological knowledge”*
- *“Plant protection - measures taken to protect vines from abiotic and biotic damage. This includes, among other things, the strengthening of biodiversity.”*
- *"Science Competence (average improtance) Reason: Many people, even with university degrees in arts or social subjects, have no idea how scientific work is conducted. They mistake oppinions by facts. What a scientist publishes is taken as his oppinion, ""why else would they discuss about it and allow different oppinions on a matter?"" or ""they all cite each other to back them up...""*

  To know how scientific work is done, to know that personal oppinions are (should be) excluded and in a second step to know roughly how the scientific trials analysing climate change are conducted, is the necessary base to believe in the results and in the importance coming with it. I realised loads of people still think, these are just szenarios someone claims will come to make a profit with some business model somehow."

- *“Communication: to pass on my knowledge, my ideas, my ideals, my experiences and to be able to do so in a clear, understandable and convincing way.”*

- *"Understanding how plant protection products can be used as sparingly and effectively as possible and where they can be dispensed with.*

  Reason: The heavy use of pesticides in conventional viticulture is a major problem for biodiversity and sustainability in the vineyard, even and especially in organic viticulture where copper (which cannot be chemically degraded in the soil!) is one of the few available means."

- *"Energymanagement, to find potential for improvement"*
- *"Networking with other actors, so you can use synergies and achieve more together"*
- *"Communication of sustainable values in the regional environment to strengthen a regional circular economy - regional production and regional marketing."*
- *"Interaction with other southern wine regions regarding knowledge exchange"*
- *"Conservation of the cultural landscape"*
- *"Biodynamic agriculture. - A sustainable concept for almost 100 years"*
- *"Adaptation of farming systems to climate change"*
- *"General environmental awareness with regard to actions taken and their consequences!"*
- *"SDGs Interaction of goals"*
- *"new robust and/or resistant grape varieties"*
- *"to find reasonable solutions considering economy and sustainability*

3. Proposed Best practices

List of individual and evaluable good practices suggested by potential stakeholders to be analysed and proposed for inclusion in the catalogue to be compiled by all partners.

- Planting of piwis https://piwi-international.de/en/
- Use of a cooling tower, refrigeration machines with 4-way valve (heat pump)
- PV systems in operation, "Sustainable Austria" certification
- co2 footprint concept, ecosystemservices et.
- low residue plant protection strategy from Agroscope: only "bio" products after flowering to reduce residues on grapes and in wine.
- a vinery with 100% of resistent variety https://www.weingut-lenz.ch/

- Weingut Rummel in Landau (Germany) is one of the earliest leaders in organic viticulture: https://rummel-biowein.de/
- Weingut Randolf Kauer – Bacharach https://www.weingut-dr-kauer.de/ - regional circular economy

The following are rather links to associations with focus on organic or sustainability, to special wineries or institutes where best practices can be found.

- See: organic viticulture https://www.ecovin.de/
- See: https://www.lwg.bayern.de
- Soil management
- See: https://www.bayweintek.de/
- See: Fair and Green: www.fairandgreen.de
- See: Delinat https://www.delinat.com/
- See: Biodynamic farming
- See: Demeter e.V. https://www.demeter.de/

4. Conclusions

The assessment of the competencies does not allow any of them to be ruled out. However, three of them are rated below 4, which means that their impact on the sector is intermediate. These competencies should be re-evaluated jointly by the consortium, taking into account the scores obtained in other countries.

Germany highest-rated competence was “climate change awarness”, which was also high scored at the global results. It shows that the stakeholders still see a need that the vine sector needs to understand better the causes of climate change and reflect on its impacts in order to face the challenges of climate change. The lowest-rated competence was “local & historical knowledge”. As mentioned above it should be re-evaluated by the consortium.

The stakeholders most frequently named communication and networking as missing competences. This refers to external communication, for example with customers or on the market. But also the establishment of a network to generate an exchange of experience/knowledge between the winegrowers (or other actors) is seen as very important.

The following two statements were interesting: Unconventional thinking to make new approaches/paths possible; Linking the many different info for decision making.

Finally, the following best practices could be in the final list.

- Planting of piwis https://piwi-international.de/en/
- Organic/biodynamic viticulture:
  - www.ecovin.de
  - www.Demeter.de
- Sustainable viticulture:
  - www.delinat.com
  - www.fairandgreen.de

Co-funded by the European Union

Green Vineyards

SURVEY REPORT ITALY

PROJECT RESULT 1

WINERIES STAFF ENVIRONMENTAL COMPETENCE FRAMEWORK & BEST PRACTICES GUIDE

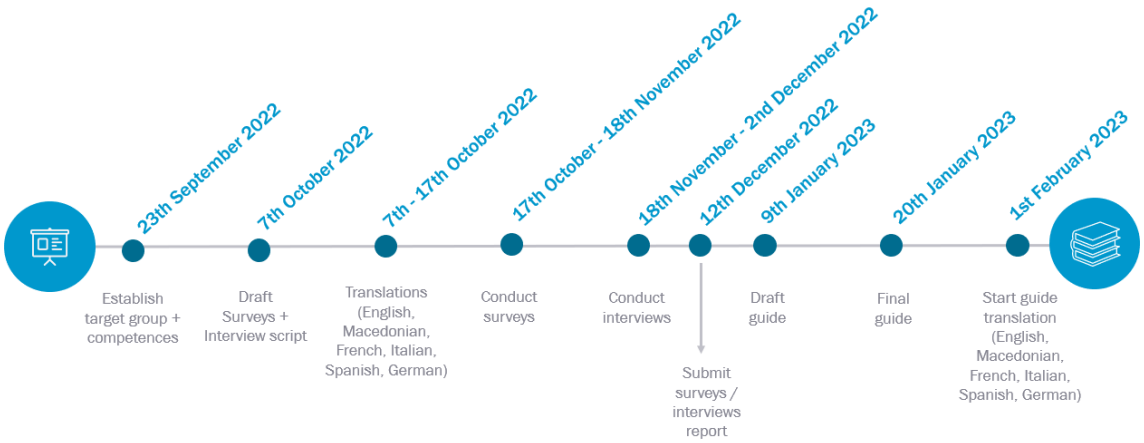
GREEN VINEYARDS PROJECT

2021-1-ES01-KA220-VET-33311

Green Vineyards

Table of Contents

Proposed deadlines



Co-funded by the European Union

1. Surveys

1.1. Introduction and methodology

During the initial phase of the Project, based on desk research and individual contacts with various stakeholders, the consortium partners have selected 15 competencies considered to be the most appropriate for the sector.

These competences had then to be evaluated and validated by a group of stakeholders, through an on-line questionnaire, with a scale from 1 to 5, where the value 1 was 'Not important' and 5 was 'Critical'. The individual responses were then elaborated into a group average.

In the questionnaire, there was also two open questions, where responders were invited to indicate their comments and suggestions about the 15 areas of competence, and finally if they had suggestions about best practices in the implementation of green competences.

The Italian partner CESAR – Center for Agricultural and Rural Development has initially contacted, by e-mail and telephone, more than 40 potential participants in the survey, to verify their willingness to cooperate. After this initial screening, CESAR has sent the questionnaires, in Italian, to 30 selected stakeholders involved in the wine sector, sending an introductory letter and the link to the survey (https://ec.europa.eu/eusurvey/runner/GreenVineyardsSurvey). In a second time, the non-respondents have been contacted again, to stimulate their reply.

By the end of the survey, on 30th of November 2022, CESAR has received 26 answers, one above the target of 25 respondents set by UNIR, the Partner responsible for this phase of the Project.

General information on the answers is:

Concerning the place of work of the respondents, there are several of them who are active in two or three components of the value chain. For this reason, the total of the various percentages exceeds 100. 58% of them is active in a *winery*), while 46% are engaged in the *vineyards*. Another 23 % work in *Academia*, mainly universities and vocational training centers. 3% of the respondents belong to the category *"other"* (Farm manager, Sales Agent, President of Cooperative).

The respondents have an average of 23,6 years of experience in the sector, ranging from one year to fifty.

Co-funded by the European Union

1.2. Results

Table 1 contains the results of the survey, with the final average score obtained by each one of the 15 areas of competence individuated by the project.

Table 1 – Survey results (n=26)

1. Climate Change Awareness: To understand the causes of climate change and reflect on its impacts in the vine sector and viceversa.	4,346
2. Climate change adaptation: To take action to prepare for and adapt to a changing climate.	4,423
3. Valuing sustainability: To reflect on personal values; identify and explain how values vary among people and over time, while critically evaluating how they align with sustainability values.	4,308
4. Water management: To make efficient use of the resource, by reducing the water footprint and protecting its quality.	4,654
5. Soil Management: To support the proper use and management of agricultural soils and implement measures to prevent their loss.	4,577
6. Energy efficiency: To have a broad understanding of the efficient use of energy, different energy sources and their impact on the climate.	4,250
7. Waste Management: To understand the circular economy process and to apply the waste hierarchy: reduce, reuse, recycle, recover and dispose of waste.	4,385
8. Emissions Reduction: To understand the sources and impact of emissions, while implementing energy-efficient solutions to reduce the carbon footprint.	4,346
9. Biodiversity: To have a broad understanding of agricultural ecosystems in order to protect them and build resilience to current and future threats.	4,462
10. Local & historical knowledge: To acknowledge the historical importance of wine culture and its benefits for the local environment, society, and the economy.	4,346
11. Sustainable wine production: To identify sustainable wine production practices and implement strategies to achieve it.	4,360
12. Critical thinking: To assess information and arguments, identify assumptions, challenge the status quo, and reflect on how personal, social and cultural backgrounds influence thinking and conclusions.	4,077
13. Futures literacy: To envision alternative sustainable futures by imagining and developing alternative scenarios and identifying the steps needed to achieve a preferred sustainable future.	4,154
14. Systems thinking: To approach a sustainability problem from all sides; to consider time, space and context in order to understand how elements interact within and between systems.	3,962
15. Problem framing: To formulate current or potential challenges as a sustainability problem in terms of difficulty, people involved, time and geographical scope, in order to identify suitable approaches to anticipating and preventing problems, and to mitigating and adapting to already existing problems.	4,154

It can be observed that all areas of competence receive very high values, with only competence 14 “System thinking” receiving an average score of 3.962. “Water management” and “Soil management” receive the highest scores, respectively 4.654 and 4.577.

The respondents also had the opportunity to provide their views on the competences included in the survey. Five respondents did not indicate anything, while the other comments have been as follows:

- Networking,
- Change the mentality of the consumers,
- Being able to modify own behaviour, better understanding of the historical and territorial context,
- Energy management,
- Knowledge about biodynamic agriculture,
- More training,
- More advice about agronomic management of the vineyards,
- Grouping with other firms to be more competitive,
- Capacity to analyse what is happening to take appropriate counter measures,
- Adequate education,
- Evaluate sustainability also from the economic and social point of view,
- Microbiological life in the soils,
- Vocational training,
- Better knowledge of ecological indicators for a better evaluation of climate change,
- Better education, with a focus on climatology,
- Skills to use high tech machines and tools,
- Better communication toward the consumers, to get their support for solving environmental problems,
- Winemaking should consider two major commercial aspects that allow the various wineries to operate according to the needs of the wine loving people: produce local traditional wines to keep the roots alive, do not copy and paste wine types, remain authentical and clearly identifiable. 2 - produce wines for the market, explore your capabilities of penetrating markets before challenging yourself and all your structure without any guarantee of success. Planning is paramount when it comes to winemaking - the time for trials and exploring is over.

It can be observed that the quality of human resources has been mentioned several times, under different names and points of view: better education, better training, more advice, etc. whereas a second group of respondents indicates the need for better communication towards the consumers, whose support is necessary for a sustainable system.

2. Proposed Best practices

The participants in the survey were also asked to indicate if they had knowledge of good practices suggested by potential stakeholders to be analysed and proposed for inclusion in the catalogue to be compiled by all partners. Six respondents replied they had no suggestions, while other ones indicated Field experiences, Practical training, Webinars, Learning days on the field, Journals and You Tube as best methods to have a continuing learning. Only four have indicated the following websites

- https://farinadibasalto.it/
- https://vinra.it,
- https://viticolturasostenibile.org/
- https://vignaiolietici.it/

3. Conclusions

The outcome of the survey confirms that all areas of competence, in the winery sector (field and winery alike) are perceived as very relevant by our respondents. Water and soil management lead the ranking, but with only a minor distance from the other competences. Furthermore, training, education and advice are considered as important factors by many respondents. This means that whatsoever curriculum developed for training and updating the human resources of the winery sector should have a holistic approach and consider technical, economic, and social aspects. Finally, some respondents indicate the need for practical education in the field and wineries, pointing probably at some types of blended educational approach.

Finally, we have only the following four best practices for the final list:

- https://farinadibasalto.it/
- https://vinra.it,
- https://viticolturasostenibile.org/
- https://vignaiolietici.it/

Co-funded by the European Union

unir ITED

Co-funded by the European Union

Green Vineyards

SURVEY & INTERVIEWS REPORT SPAIN

PROJECT RESULT 1

WINERIES STAFF ENVIRONMENTAL COMPETENCE FRAMEWORK & BEST PRACTICES GUIDE

GREEN VINEYARDS PROJECT

2021-1-ES01-KA220-VET-33311

UNIVERSIDAD INTERNACIONAL DE LA RIOJA

IFV

CESAR CENTRO PER LO SVILUPPO AGRICOLO E RURALE

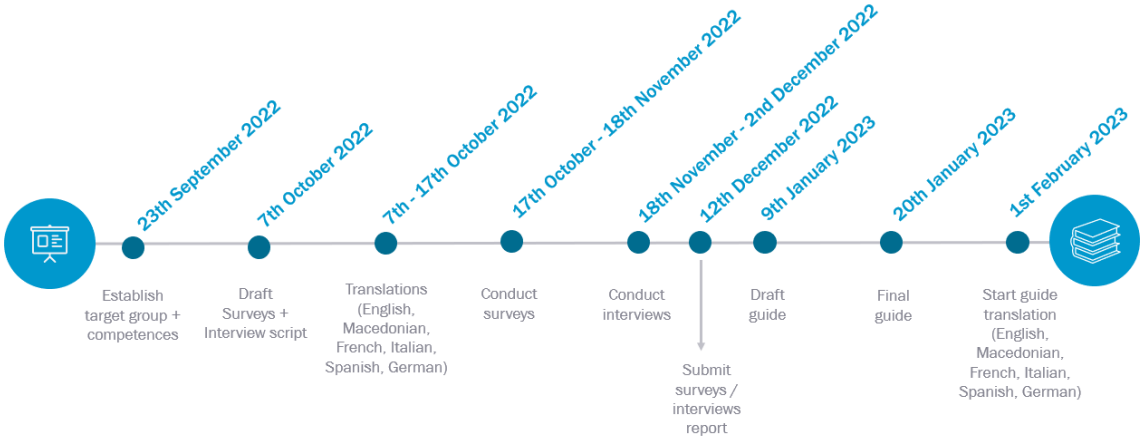
IECE INSTITUTE FOR RESEARCH IN ENVIRONMENT CIVIL ENGINEERING AND ENERGY

FEV FEDERACIÓN ESPAÑOLA DEL VINO

Bodensee Stiftung

INDEX

Proposed deadlines



Co-funded by the European Union

1. Surveys

1.1. Introduction

During the initial phase of the Project, based on desk research and individual contacts with various stakeholders, the consortium partners have selected 15 competencies considered to be the most appropriate for the sector.

These competences had then to be evaluated and validated by a group of stakeholders, through an on-line questionnaire, with a scale from 1 to 5, where the value 1 was 'Not important' and 5 was 'Critical'. The individual responses were then elaborated into a group average.

In the questionnaire, there was also two open questions, where responders were invited to indicate their comments and suggestions about the 15 areas of competence, and finally if they had suggestions about best practices in the implementation of green competences.

Both Spanish Partners, UNIR and FEV, distributed the questionnaires to a number of selected stakeholders related to the wine sector, sending them the link to the survey (https://ec.europa.eu/eusurvey/runner/GreenVineyardsSurvey). All of them answered in the affirmative and gave their consent to the questions concerning data processing and confidentiality of the results.

A process of debugging has been carried out, eliminating invalid, incomplete, or unidentified answers. After this process, 80 valid responses have been obtained, coming from 80 diferent stakeholders.

All of them received the invitation to answer the survey, with detailed instructions. The survey questions were available, and were answered, in both English and Spanish. Other languages as French, German and Italian were also available but not used by Spanish stakeholders.

General information on the answers is:

- As regards the place of work of the respondents, the 61% of them work in a *winery* while the 15% work directly in *vineyards*. Another 14 % work in *Academia*, mainly universities and vocational training centres. The 10% of the answers correspond to the category *"other"* (NGOs, Consultancies, other SMEs, local authorities).

- Respondents have an average of 19.5 years of experience in the sector.

After a phase of desk research and identification of additional research results, the consortium partners selected 15 competencies that they considered to be the most appropriate for the sector.

The respondents to the survey had to evaluate and validate the importance of each of the competences.

In the event that a respondent missed a competence that was not included in the initial list and was deemed necessary because of its relevance, they were given the opportunity to include it at the end of the survey.

Responders were asked to provide best practices in the implementation of green competences.

Finally, five out of the 80 responders have been interviewed. The main objective of this phase was to validate the information collected through the survey, obtaining more data about specific answers. Interviewees were also asked to elaborate about the proposed best practices. A script of the interviews is available at the Green Vineyards WP1 Instructions.

1.2. Results

Using a scale between 1 and 5, where 1 was 'Not important' and 5, 'Critical' the average score of each competence was the following:

Titulo	Total	Spain
1. Climate Change Awareness	4,41	4,33
2. Climate change adaptation	4,41	4,38
3. Valuing sustainability	4,14	4,08
4. Water management	4,53	4,50
5. Soil Management	4,35	4,24
6. Energy efficiency	4,27	4,28
7. Waste Management	4,17	4,18
8. Emissions Reduction	4,18	4,25
9. Biodiversity	4,22	4,10
10. Local & historical knowledge	3,90	3,88
11. Sustainable wine production	4,21	4,10
12. Critical thinking	4,02	3,95
13. Futures literacy	3,98	3,99
14. Systems thinking	3,98	4,01
15. Problem framing	4,01	3,99
Average	4,18	4,15

2. Comments and suggestions

Respondents have had the opportunity to provide their views on the competences included in the survey. The main contributions identified are:

- *"transversal knowledge of the whole winery process that can help to see the process as a "whole" which can help to find solutions when it comes to the treatment of by-products... circular economy"*
- *"Making to know the life circle of some of our products."*
- *"Training, Culture, Wine tourism, Health, Ecodesign, Ecotourism, Ecodesign"*
- *"Responsible use of phytosanitary products. Removal of residues to avoid contamination"*
- *"Knowledge of alternative techniques to the application of phytosanitary products. This would help to avoid over-applications and would not leave residues in wine. Knowledge of the characteristics of auxiliary materials. It would help to evaluate more sustainable alternatives with the same characteristics."*
- *"Knowledge of technology in climate management, necessary for its study and decision making."*
- *"How to implement a green culture in organisation"*

- *"To take in consideration temperatures (low and heat waves) because affected fruit and consequently productivity.In mediterranean basin there are a lot ha of vienyards withut water, it's important to think in this landscape and the people that is living."*
- *"Economic competences of what sustainability means and what not accepting climate change means."*
- *"Impact of phytosanitary control on the environmental sustainability of wine production."*
- *"Applicability of innovation in sustainable management"*
- *"knowledge of the rural environment, uses and customs"*
- *"interpersonal critical habilities to above climate change problematics, act as sustainable with common sens, not "only" because climate."*
- *"Knowledge about the evolution of other ecosystems and what the solutions have been to solve the problems."*
- *"Knowledge of traditional techniques and cultures to solve problems that remain the same or similar."*

3. Interviews summary

- Introduction to the interviews phase: objectives, interviewees, timeframe.
  Three persons have been interviewed, two of them working at winery (Bodegas Faustino y Alma Carraovejas), and the other in a Spanish agricultural professional organisation (UPA). The interviews were carried out during the month of December 2022.

  The main objective of this phase has been to validate the information collected through the survey about the competences framework, obtaining more information about specific answers. Interviewees have been also asked to elaborate about the proposed best practices. A script of the interviews is available at the Green Vineyards WP1 Instructions

- Conclusions extracted from the interviews:
  - New info about competences
    - know the new technologies that exist
    - soil health, avoiding soil erosion, avoiding tilling to avoid nitrous oxide emissions, rational water management
    - training on digitalisation
    - awareness of climate change and the fact that it is not a one-off effect

- the demographic challenge (from the point of view that it is important for this productive activity to be maintained)
- rational and efficient use of fertilisers and plant protection products
- knowledge about legislation
- Training on the ecosystems of each region. Understanding the environment.

- New best practices identified.
  - use of new yeasts to correct the effects of climate change (alcoholic strength, acidity...)
  - in Spain there is the Adaptation to Climate Change Plan *(PNACC)* and the National Integrated Energy and Climate Plan (***PINIEC***)
  - *InfoAdapta-Agri* project
  - CO2 capture for reuse and the use of vine shoots for other winery tasks.

- Additional information
  - to take into account of the demographic challenge
  - to take into account fertilisation management and the rational use of plant protection products
  - in viticulture it is more from an adaptation point of view, but in wineries it may be more from a mitigation point of view
  - the maintenance of the territory, not only from a physical but also from a social point of view.

4. Proposed Best practices

List of individual and evaluable good practices suggested by potential stakeholders to be analysed and proposed for inclusion in the catalogue to be compiled by all partners.

Name	Description	Link
Sustainable Wineries for Climate Protection	Wineries for Climate Protection (WfCP) is the first and only specific certification of environmental sustainability for the wine sector and aims to become the international benchmark in winemaking and the environment, seeking out solutions and best practices for wineries.	http://www.fev.es/certificacion/english/home_234_1_ap.html http://www.fev.es/fev/sustainable-wineries-for-climate-protection/que-es-swfcp_319_1_ap.html
VITISAD Project	Development of agronomic practices that allow vineyards in the western part of the POCTEFA territory to adapt to climate change.	Project website: https://www.vitisad.eu/ News article: https://www.icvv.es/avanzando-en-el-estudio-e-implementacion-de-practicas-vitivinicolas-sostenibles-de-adaptacion-al
CLIMAVIN Project (Príncipe de Viana Winery)	Efficient and sustainable adaptation of viticulture and winemaking to climate change.	http://www.principedeviana.com/proyectos/climavin/
BIGSOSTBIOMA Project (Príncipe de Viana Winery)	Development project for a more sustainable and efficient vineyard management.	http://www.principedeviana.com/en/projects/bigsostbioma/
SHIP2FAIR Project	SHIP2FAIR (Solar Heat for Industrial Process towards Food and Agro Industries commitment in Renewables) aims to foster the integration of solar heat in industrial processes of the agro–food industry. Demonstration and validation will take place at four real	http://ship2fair-h2020.eu/

	industrial sites, representative of the agro-food sector: spirits distillation (Italy), fresh duck products manufacturing (France), sugar boiling (Portugal) and wine fermentation and stabilization (Spain).	
VINYSOST Project	To improve the quality and competitiveness of Spanish wines, through the sustainable management of production in large vineyards.	http://vinysost.com/
VINOVERT Project	Research project that studies the social responsibility of companies and wine consumers in favour of competitiveness.	https://www.vinovert.eu/es/
NOVATERRA Project	Reduce the negative impact of pesticides in Mediterranean olive groves and vineyards	https://www.novaterraproject.eu/
GOBALVITI Project	Improving wine production to face of climate change through the application of new technologies.	http://globalviti.com/
González Byass Winery	They list their sustainable practices on their website.	https://www.gonzalezbyass.com/sostenibilidad
Asociación Viticultura Regenerativa	Regenerative Viticulture Association - Living soils against climate change.	https://www.viticulturaregenerativa.org/
Familia Torres Winery	Pioneering system that captures and reuses CO2 from the fermentation of wine.	https://www.torres.es/noticias/familia-torres-disena-un-sistema-pionero-que-captura-y-reutiliza-el-co2-de-la-fermentacion
Familia Torres Winery	Torres & Earth Awards to distinguish actions against climate emergency.	https://www.torres.es/noticias/sostenibilidad-ambiental/familia-torres-otorga-los-vi-premios-torres-earth-para-distinguir
Familia Torres Winery	Regenerative viticulture to combat climate change.	https://www.torres.es/noticias/familia-torres-se-compromete-con-la-viticultura-regenerativa-para-combatir-el-cambio
SOSTEVIN Project (Bodegas Riojanas Group)	Reduction of energy and water consumption.	https://www.bodegasriojanas.com/proyecto-oive-y-ptv-reduccion-de-consumo-de-energia-y-agua/
VITICULTURA SOSTENIBLE Project (ERASMUS+)	Ecological and digital tools for a more sustainable viticulture.	https://launio.org/post/vitiskills-424046
Abadía Retuerta Winery	News article about their sustainability practices.	https://www.corresponsables.com/entrevistas/abadia-retuerta-conseguir-elaboracion-vino-ecologica
Bodegas Ayuso Winery	News article about their sustainability practices.	https://www.corresponsables.com/entrevistas/bodegas-ayuso-esfuerzo-reducir-residuos-valorizarlos
Juan Gil Winery	News article about their sustainability practices.	https://www.corresponsables.com/entrevistas/juan-gil-bodegas-grandes-europa-energeticamente-sostenibles
Bodegas Campo Viejo	News article about their sustainability practices.	https://www.corresponsables.com/entrevistas/bodegas-campo-viejo-objetivo-cero-emisiones-carbono-2030
Grupo Freixenet	News article about their sustainability practices.	https://www.corresponsables.com/entrevistas/freixenet-economia-circular-descarbonizar-biodiversidad
News article	Wine and sustainability: emissions, corks and growth	https://www.bbva.com/es/sostenibilidad/vino-y-sostenibilidad-de-emisiones-corchos-y-crecimiento/
Vitireg Project (Encore Lab)	Develop a methodology that combines various regenerative agriculture techniques such as SPCH supply, use of plant cover, remineralisation and supply of microbiological preparations. The plots will be monitored using geographic information systems (GIS) and CESENS technology, a crop monitoring system with field sensors integrated in proprietary agro-climatic stations.	https://www.encore-lab.com/en/project/vitireg-project/ http://vitireg.org/
LowpHWine Project	LowpHWine studies the factors (soil, plant and oenological microbiota) that influence the acidity balance, quality assurance and stability of wines in hot climates.	https://www.lowphwine.es/
Cosmetic use of by-products		https://vivancoculturadevino.es/es/
InfoAdapta-Agri Project	Adaptation of vineyards to climate change through certain agricultural practices.	http://www.liferesilience.eu/the-infoadapta-agri-ii-project-concludes-with-8-measures-against-climate-change/
News article	Use the Key line system to install new vineyards.	https://worldpermacultureassociation.com/the-key-to-keyline-design/

News article	The Vergenoegd winery near Cape Town grazes 900 ducks daily in its vineyards to eat the pests that damage the vines. Sudáfrica	http://www.enociencia.com/2016/06/cientos-de-patos-trabajan-para-mejorar.html

5. Conclusions

The assessment of the competencies does not allow any of them to be ruled out. However, four of them are rated below 4, which means that their impact on the sector is intermediate. These competencies should be re-evaluated jointly by the consortium, taking into account the scores obtained in other countries.

Spain's highest-rated competence was "water management", coinciding with the global results. Water scarcity is one of the effects of climate change across many European countries. Therefore, this result is highly significant for the project, as it ratifies the need to train people involved in the wine sector to face the challenges of climate change.

The lowest-rated competence was "local & historical knowledge", which was surprising initially. A deeper inspection of the qualitative answers helped us understand that the wording of the question may have influenced the reply, as several people posed comments related to that topic.

In relation to the missing competencies suggested by the stakeholders, they make more reference to specific skills and knowledge that workers should have. The consortium must therefore ensure that these skills are incorporated into the relevant competence. it is important to remember that a competence is composed of knowledge, skills, and aptitudes.

Finally, the following five best practices could be in the final list.

- https://www.gonzalezbyass.com/sostenibilidad.
- http://www.fev.es/certificacion/english/home_234_1_ap.html
- https://www.novaterraproject.eu/
- http://www.enociencia.com/2016/06/cientos-de-patos-trabajan-para-mejorar.html
- http://www.principedeviana.com/proyectos/climavin/

IECE
INSTITUTE FOR RESEARCH IN ENVIRONMENT CIVIL ENGINEERING AND ENERGY

Co-funded by the European Union

SURVEY REPORT NORTH MACEDONIA

PROJECT RESULT 1

WINERIES STAFF ENVIRONMENTAL COMPETENCE FRAMEWORK & BEST PRACTICES GUIDE

GREEN VINEYARDS PROJECT

2021-1-ES01-KA220-VET-33311

UNIVERSIDAD INTERNACIONAL DE LA RIOJA

IFV

CESAR
CENTRO PER LO SVILUPPO AGRICOLO E RURALE

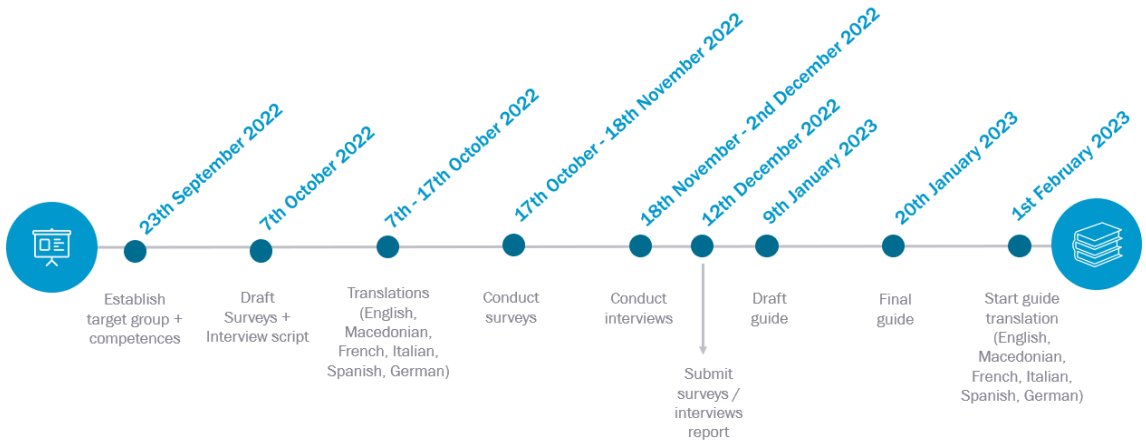
IECE
INSTITUTE FOR RESEARCH IN ENVIRONMENT CIVIL ENGINEERING AND ENERGY

FEV
FEDERACIÓN ESPAÑOLA DEL VINO

Bodensee Stiftung

INDEX

Proposed deadlines



Co-funded by the European Union

1. Surveys

1.1. Introduction

Institute for Research in Environment, Civil Engineering and Energy, distributed the questionnaires to a number of selected stakeholders related to the wine sector, sending them the link to the survey (https://ec.europa.eu/eusurvey/runner/GreenVineyardsSurvey). Around one quarter of the invitet stakeholders answered and gave their consent to the questions concerning data processing and confidentiality of the results.

A process of debugging has been carried out, eliminating invalid, incomplete, or unidentified answers. After this process, 16 valid responses have been obtained, coming from 16 diferent stakeholders.

All of them received the invitation to answer the survey, with detailed instructions. The survey questions were available, and were answered, in both English and Macedonian.

General information on the answers is:

- As regards the place of work of the respondents, the 43,75% of them work in only a *winery, 25% work in winery and vineyards,* while the 12,5% work directly in *vineyards*.
- Another 6,25% work in *Public sector (Municipality, Regional Government, etc.)*, and 12,5% of the answers correspond to the category *"other"* (Marketing and Army).
- Respondents have an average of 11.8 years of experience in the sector.

After a phase of desk research and identification of additional research results, the consortium partners selected 15 competencies that they considered to be the most appropriate for the sector.

The respondents to the survey had to evaluate and validate the importance of each of the competences.

In the event that a respondent missed a competence that was not included in the initial list and was deemed necessary because of its relevance, they were given the opportunity to include it at the end of the survey.

Finally, responders were asked to provide best practices in the implementation of green competences.

1.2. Survey results

Competence 1 **Climate Change Awareness**

On a scale between 1 and 5, where 1 is 'Not important' and 5 is 'Critical', Average score is **4.4.**

Competence 2 **Climate Change Awareness**

On a scale between 1 and 5, where 1 is 'Not important' and 5 is 'Critical', Average score is **4.38**.

Competence 3 **Valuing sustainability**

On a scale between 1 and 5, where 1 is 'Not important' and 5 is 'Critical', The average final score is **4.25**.

Competence 4 **Water management**

On a scale between 1 and 5, where 1 is 'Not important' and 5 is 'Critical', The average final score is **4.50**.

Competence 5 **Soil Management**

On a scale between 1 and 5, where 1 is 'Not important' and 5 is 'Critical', The average final score is **4.13**.

Competence 6 **Energy efficiency**

On a scale between 1 and 5, where 1 is 'Not important' and 5 is 'Critical', The average final score is **4.25**.

Competence 7 **Waste Management**

On a scale between 1 and 5, where 1 is 'Not important' and 5 is 'Critical', the Average final score is **4.36**.

Competence 8 **Emissions Reduction**

On a scale between 1 and 5, where 1 is 'Not important' and 5 is 'Critical', the Average final score is **4.06**.

Competence 9 **Biodiversity**

On a scale between 1 and 5, where 1 is 'Not important' and 5 is 'Critical', The average final score is **4.13**.

Competence 10 **Local & historical knowledge**

On a scale between 1 and 5, where 1 is 'Not important' and 5 is 'Critical', The average final score is **4.00**.

Competence 11 **Sustainable wine production**

On a scale between 1 and 5, where 1 is 'Not important' and 5 is 'Critical', The average final score is **4.25**.

Competence 12 **Critical thinking**

On a scale between 1 and 5, where 1 is 'Not important' and 5 is 'Critical', The average final score is **4.00**.

Competence 13 **Futures literacy**

On a scale between 1 and 5, where 1 is 'Not important' and 5 is 'Critical', The average final score is **3.80**.

Competence 14 **Systems thinking**

On a scale between 1 and 5, where 1 is 'Not important' and 5 is 'Critical', The average final score is **3.75**.

Competence 15 **Problem framing**

On a scale between 1 and 5, where 1 is 'Not important' and 5 is 'Critical', the Average final score is **4.00**.

Summary

Using a scale between 1 and 5, where 1 was 'Not important' and 5, 'Critical' the average score of each competence was the following:

Title	Total	North Macedonia
1. Climate Change Awareness	4,41	4,44
2. Climate change adaptation	4,41	4,38
3. Valuing sustainability	4,14	4,25
4. Water management	4,53	4,50
5. Soil Management	4,35	4,13
6. Energy efficiency	4,27	4,25
7. Waste Management	4,17	4,36
8. Emissions Reduction	4,18	4,06
9. Biodiversity	4,22	4,13
10. Local & historical knowledge	3,90	4,00
11. Sustainable wine production	4,21	4,25
12. Critical thinking	4,02	4,00
13. Futures literacy	3,98	3,80
14. Systems thinking	3,98	3,75
15. Problem framing	4,01	4,00
Average	**4,18**	**4,15**

2. Comments and suggestions

Respondents have had the opportunity to provide their views on the competences included in the survey. The main contributions identified are:

- *"To have bigger awareness about climate change and to have self initiative to implement good practices."*
- *"Green competences in producing grape, such as using bio and organic soil fertilizers are crucial for the quality of the grape. That is why, these competences are highly demanded for producing a wine on a sustainable way."*
- *"Using sustainable materials for producing wine and grape."*
- *"Education of the general public."*
- *"Providing education for the workers who do unsustainable practices".*
- *"Competencies for operating mascinery with low carbon emissions are also necessary for the green vineyards".*

- *"Usage of technology and knowledge to counter the effects of the climate change".*
- *"Elimination of various administrative and legal barriers that stand up against the possibility to take preventive and corrective actions".*

3. Proposed Best practices

List of individual and evaluable good practices suggested by potential stakeholders to be analysed and proposed for inclusion in the catalogue to be compiled by all partners.

- Family small wineries in producing small quantity of wine for local market in North Macedonia. They have high quality of wine, which is produced on sustainable way.
- Small vineries in the village, that use wine for their own purposes
- Sustainable small wineries in the villages in North Macedonia, producing small amount of wine for local purposes. They use organic materials for raising grape and use sustainable way of producing grape and wine.
- Bio-organic pesticide
- Usage of mulchers for rod pruning of grapevines
- Low use of pesticide for the wine farming and Green mascinery with low carbon emissions
- Заокружен процес на производство, од комињето се добива ѓубриво кое се враќа повторно во лозјата, од кроењето на прачките може да се направат пелети за греење, од семките на грозјето се добива масло, сеење во редовите растенија кои во коренот складираат азот а со тоа лозата природно добива азотно ѓубриво без да се додава вештачко ѓубриво... заштита со органски средства...
- A circular economy production process: fertilizer is obtained from the compost which is returned to the vineyards, the rod pruning of grapevines can be made into pellets for heating. The grape seeds can be used for grape oil. Additionally, planting other plants that store nitrogen in the roots can support the vineyards in receiving naturally nitrogen fertilizer without adding artificial fertilizer (protection with organic means).
- https://tikves.com.mk/en/home/

4. Conclusions

The assessment of the competencies does not allow any of them to be ruled out. However, two of them are rated below 4, which means that their impact on the sector is intermediate. These competencies should be re-evaluated jointly by the consortium, taking into account the scores obtained in other countries.

North Macedonia's highest-rated competence was "water management", coinciding with the global results, as well as the results in Spain. Water scarcity is one of the effects of climate change across many European countries. Therefore, this result is highly significant for the project, as it ratifies the need to train people involved in the wine sector to face the challenges of climate change.

The lowest-rated competence was "local & historical knowledge".

In relation to the missing competencies suggested by the stakeholders, they make more reference to specific skills and knowledge that workers should have. The consortium must therefore ensure that these skills are incorporated into the relevant competence. it is important to remember that a competence is composed of knowledge, skills, and aptitudes.

Finally, the following five best practices could be in the final list.