



VITISKILLS

GREEN AND DIGITAL SKILLS FOR
SUSTAINABLE VITICULTURE

Work Package 4: POSITION PAPER

Policy recommendations for improved labour conditions, digital literacy & Environmental awareness in rural communities





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Bodies responsible for agriculture and viticulture development, policies and measures, including ministries as well as regional and local actors (i.e. regions/prefectures, municipalities).





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ACRONYMS AND DEFINITIONS

Definitions	
CAP	Common Agricultural Policy
CEDEFOP	European Centre for the Development of Vocational Training
ECVET	European Credit system for Vocational Education and Training
EQF	European Qualification Framework
EU	European Union
VET	Vocational Education and Training
C-VET	Continuing Vocational Education and Training

VITISKILLS Consortium	
ARIS	ARIS Formazione e Ricerca Societa Cooperativa, ITALY
La Unio	La Unio de Llauradors i Ramaders del Pais Valencia, SPAIN
QUERCUS	Quercus – Associação nacional de Conservação da natureza, PORTUGAL
EXELIA	EXELIA E.E., GREECE
ARID	Stowarzyszenie ARID, POLAND
INNOVELA	INNOVELA sprl, BELGIUM



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VITISKILLS motivations and goals

With 3.2 million hectares, or 45% of all vineyards worldwide, and 64% of wine produced, the EU is the world's largest producer of wine ([Eurostat, 2020](#)). Nevertheless, the EU Agricultural Outlook (2021–2031) projects a 0.3% annual reduction in wine output in the EU. The production of wine decreased by 13% in 2021 compared to 2020, primarily because of unfavorable weather patterns and the ensuing illnesses of the vine. This instability results from significant climate hazards that are becoming more frequent and unpredictable; in other words, the evolution of EU viticulture is intrinsically tied to climate change, both influencing and contributing to it (EEA, 2015).

In response, the European Union has made the promotion of sustainable agriculture a top priority and has ratified pertinent international climate change agreements. Precise and intelligent farming is essential to the development of resource-efficient, sustainable viticulture. Sustainable winegrowing techniques actually help to conserve the environment, avoid soil and air pollution, and lower production costs through the use of less energy and water. Sustainable farming methods will also improve EU viticulture, since protecting and improving the crop's environment can directly affect the crop's yield.

The diversified, transient, and mobile population that works in vineyards during harvest season is another concern that relates to the social side of sustainability; this seasonal workforce is frequently more susceptible to precarious working circumstances (EUROPARL, 2021).



The necessary workforce upskilling is not yet in place to facilitate the transition to sustainable and intelligent viticulture. Like all other segments of the broader agriculture sector, the viticulture industry typically faces poor participation in educational initiatives and a shortage of personnel with the necessary training (Eurostat "Agricultural Labour Force Statistics", 2018).

Furthermore, as seen by present curricula in the majority of EU nations, there is insufficient emphasis on green and digital skills in post-secondary and VET viticulture training courses (Europass).

The VITISKILLS Project will address those needs by implementing the following aspects:

- VITISKILLS, to support workforce adaptation to new viticulture practices and drive innovation and growth in the sector, will:
- Promote the upskilling of vineyard workers (incl. supervisors who act as on-site mentors/trainers) on sustainable and smart viticulture practices/processes.
- Provide flexible, non-formal training options for those employed in viticulture and are excluded from VET and lifelong learning opportunities for either geographical or socioeconomic reasons.
- Act as an awareness hub for VET institutions to adapt their offerings to the realm of the viticulture field via cooperation, exchanges of good practices & networking.
- Improve labour conditions for vineyard workforce, and bridge the skills divide in rural communities.





Vitiskills, an Erasmus+ KA202 project conducted by a partnership of six EU countries, has been motivated by these premises. Vitiskills aims at adapting VET to existing and emerging occupational needs in the agricultural sector, specifically in viticulture, with the overarching goal of strengthening the climate-smart and digital skills of vineyard workers and supervisors, as well as to support growing awareness and stronger competences on sustainable agricultural management practices that can, and need to, be adopted in line with the EU CAP.

The specific objectives of Vitiskills are to:

- Design, pilot-test and roll-out a comprehensive and up-to-date curriculum on green & digital skills for sustainable viticulture.
- Introduce flexible training delivery methods & innovative open access educational resources to support self-paced skills acquisition and inclusiveness in training opportunities.
- Foster the capitalisation of project results in VET practice, through the validation, recognition & integration of relevant occupational requirements into competence frameworks & certification schemes.
- Deliver best practices & recommendations to a) address structural vulnerabilities concerning the professional development & training of vineyard workers, and b) promote digital literacy & environmental awareness in rural communities.



The developed modules line up with EQF 4, and the program as a whole lasts for two semesters. It uses a modular structure that makes it easier to implement in formal and informal C-VET environments. It consists of both theoretical and work-based learning components:

The produced open material, all available on the [Vitiskills MOOC Platform](#), has the ambition to be a valuable source of knowledge and practical tools for a broad range of stakeholders, including agricultural and viticulture training institutions, mentors offering WBL opportunities, apprentices and workers to be upskilled, associations and sector representatives, VET authorities & career guidance bodies and local authorities (i.e., municipalities), among others.

The material includes the following topics:

- Regenerative Viticulture
- Viticulture 4.0
- Viticultural Data Management
- Fostering Fair And Enabling Working Conditions
- New Challenges and Technologies, Business and Vineyard Management

The aim of this position paper is to summarize the most important lessons from the Vitiskills project that are relevant to support public and sectoral stakeholders at a local, national and regional level implementing actions that aim to improve climate smart and sustainable viticulture skills. The paper is addressed to bodies responsible for agriculture development, policies and measures, including ministries as well as regional and local actors.

Lessons learnt from Vitiskills

In the first stage of the project, the consortium has conducted an extensive survey among over 200 stakeholders that work in the field of viticulture across 6 countries of the European Union. The respondents were asked about their needs regarding knowledge, competences and skills in the following topics:

Question 1	Soil Management	MODULE 1 - REGENERATIVE VITICULTURE
Question 2	Water & Energy Management	
Question 3	Pest Management	
Question 4	Organic & Biodynamic Vine Growing	
Question 5	Biodiversity Protection	
Question 6	Introduction to Precision Viticulture	MODULE 2 – VITICULTURE 4.0
Question 7	Vine Growing and Processing Technologies: Smart irrigation, Fertilisers distribution, Dosing/Nutrition solutions	
Question 8	Smart Monitoring Technologies: Geolocation, Remote Sensing, Satellite Imagery	
Question 9	Biosensor Technologies for pathogen detection	
Question 10	Data Management Software	
Question 11	Data collection, analysis, processing and	



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	visualisation	MODULE 3 – VITICULTURAL DATA MANAGEMENT
Question 12	Prediction Models	
Question 13	Decision Support Systems	
Question 14	Labour Law and workers' rights	MODULE 4 – FOSTERING FAIR WORKING CONDITIONS
Question 15	Health & Safety Standards	
Question 16	People Management & Development	
Question 17	Change Management & Communication	
Question 18	Discharges, wastes, emissions and their treatment techniques	MODULE 5 – ENVIRONMENT AND VITICULTURE
Question 19	Efficient use of resources	
Question 20	Environmental management systems	
Question 21	Precision Viticulture	
Question 22	Characterization and detection	MODULE 6 – GRAPEVINE DISEASES
Question 23	Phytosanitary products and application machinery	
Question 24	Intelligent calculation methods for the application of phytosanitary methods	
Question 25	Health and environmental risks	





From this survey you can deduct, that the major concern of the stakeholders was connected to soil, water and energy management, as well as giving high concern to Health and Safety Standards as well as biodiversity protection.

But when it comes to data processing and management as well as satellite imaging, there appears to be some resistance to new technology. This is likely because of the additional difficulties and learning curve that come with sophisticated equipment.

Furthermore, it appears that a paradigm is also present. Further knowledge on grapevine diseases and pest management is obviously needed, but opinions on the use of biosensor technologies for pathogen detection seem to differ widely; whilst some nations view them as potentially useful tools, others don't give this topic much thought.

Even though there are obvious parallels between the nations, the study should be repeated over a longer period of time to allow for more participant feedback.

Through the preservation and more effective use of soil, water, and genetic capital, a broader adoption of digital technologies and climate-smart viticultural management practices is anticipated to increase the long-term productivity of vineyards and strengthen the agricultural sector's resistance to climate extremes. But the development of viticulture and agricultural innovations at all levels—from individual vineyard owners to business and government organizations—needs specific investments in raising awareness and developing capacity. These initiatives must be developed in concert with stakeholders using a bottom-up strategy based on the needs and gaps that actually exist (i.e., their demand). One could think of Vitiskills as an initial step in this approach.



Answering demands of Education

The Vitiskills curriculum does not attempt to address every aspect of digital and green skills necessary for sustainable viticulture. Rather, it offers a modular educational framework on a few priority topics that may be further modified, enlarged, and tailored to meet the unique needs of the training that is going to be provided. This also illustrates the various viewpoints and methods that are used in the various nations.

A collection of Open Educational Resources, which includes a [Learners E-Book](#) to assist instructors and students in applying the content, are integrated into the curriculum. Moreover, a [VOOC](#) has included the curriculum. Although the two-semester course is intended for use by instructors and trainers with their students, it can also be followed by individual users (self-learners). It is accessible in seven languages, including English and the other six languages spoken by the consortium's partners.

The partnership has examined all of the Vitiskills content through internal Quality Assurance processes and has held discussions with key informants, industry experts, and stakeholders representing a range of specialties.

Further influence and recommendations

Vitiskills has been carried out with institutional support since the beginning, with the goal of combining practice, education, and policies. Over the duration of the project, the broad and international network of stakeholders has grown, resulting in the organization of multi-stakeholder training sessions in Portugal, Italy, and Spain, as well as info-days and other dissemination events in each partner country (Italy, Portugal, Spain, Poland, Greece and Belgium) aimed at promoting the Vitiskills open material, facilitating its adoption by public and private organizations, and gathering feedback on the curriculum and learning support materials.

Here are the primary recommendations that evolved during the duration of the project and which should be considered by regional, national and EU-wide decision makers:

- To address the demand for digital skilled workers, which may be due to a shortage of particular digital educators capable of creating a strong and EU-focused vision for the digital agricultural sector. Vineyard managers and supervisors are hesitant to adopt new tools and technologies owing to a lack of clarity and accuracy; the development or dissemination of a basic understanding of digital practices is required to effectively spread technical and agricultural and specifically viticultural expertise.
- To reconnect viticulture management practices, scientific innovation, and sustainability targets, companies and farmers must carefully assess the cost-benefit of implementing digital innovation and sustainable viticulture practices. Without clarity and incentives, the shift to digital and sustainable viticulture would be gradual and constrained.
- To introduce legislative changes, which are necessary to retrain people and promote marketable skills. While agricultural development businesses strive to promote green and sustainable solutions, a legislative effort is required to clarify the costs and advantages for vineyard workers and supervisors, as well as quantify the motives for

new agricultural technologies. The EU Department's "employment, social affairs, and inclusion" policy is a first communitarian move in this direction.

- To promote sustainable viticulture practices and policies, it's important to encourage digital skills and competencies through lifelong learning. This includes strengthening basic digital abilities over time. This is a key shortcoming that must be addressed in future efforts to develop curricula and training materials.
- To foster fair and enabling working conditions in viticulture or grape cultivation for wine production, is crucial for the well-being of workers and the sustainability of the industry. Ensuring fair wages, safe working conditions, reasonable working hours and social security is crucial for good relations and safety in the viticultural sector.
- To promote new technologies in order to counteract climate change. This might include a holistic ecosystem management, sustaining regional biodiversity, the use of remote sensing, mechanical harvesting, disease and pest control, drones, autonomous robots, nanobiotechnology and other innovations in viticulture.

Conclusions

The EU Commission has published two suggestions for a Council Recommendation to assist Member States and the education and training sector in providing high-quality, inclusive, and accessible digital education and training to help European citizens enhance their digital skills. The first suggestion focuses on providing the enabling conditions for successful digital education and training through suitable governance structures and investment frameworks, as well as bottom-up approaches to training design that involve diverse stakeholders. The second suggestion focuses on improving access to digital education and training at all levels, including for "hard-to-reach" groups.

VITISKILLS' approach is completely consistent with these recommendations, and the VITISKILLS outcomes and lessons learned may promote their future adoption in EU's viticulture domain. We observed significant fragmentation in the EU in terms of approaches to delivering education and training in the viticulture sector, emphasizing the importance of coordinated governance and legal structures in creating the necessary conditions for effective training and education of vineyard workers and supervisors on basic digital skills in viticulture. We also advocate for technical and practical innovation in training delivery (including digital learning), as well as more adaptable and lifelong learning approaches that link training to the local viticulture context.

Overall, the execution of these suggestions would have a significant impact on modernizing the viticulture sector, beginning with digital education and training in essential digital skills. However, we emphasize that while addressing the digital skills gap for rural vineyard workers and supervisors is vital, it is not sufficient to push the agricultural sector toward more resilient and sustainable paths. In accordance with the EU CAP, digital innovation must be tightly linked to cost-efficient innovation in viticulture techniques, as well as incentive mechanisms for effective implementation.