



# Ecological Vineyards Governance Activities for Landscape's Strategies

Deliverable T2.3.3

## Transnational guidelines for enhancement of traditional landscape and habitat in wine-growing areas of ADRION regions

Responsible Partner

ZRC SAZU

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## Project Summary

ECOVINEGOALS promotes sustainability and resilience in the winemaking industry by encouraging the transition of intensive viticulture towards agroecological management systems that protect natural habitats and landscapes, while reducing chemical and fossil fuel inputs and harmful emissions. The project aims to enhance stakeholders' skills in participatory local governance, to strengthen transnational cooperation and provide specific transnational instruments to promote, support and manage the agroecological transition.

### **Expected results**

- Sharing between partners in the ADRION countries of fundamental concepts and practices necessary for the transition from intensive viticulture management systems, towards agroecological management methods.
- Improvement of the participatory local governance skills of decision makers and all other viticulture stakeholders, both public and private, to jointly develop and define strategies and plans aiming to protect natural habitats and rural landscapes.
- Transnational communication, cooperation, and exchange between regional authorities and civil society organizations concerning common objectives to protect vulnerable environments, to promote ecosystem services, to prevent or mitigate climate change, and to avoid social conflicts in land use.
- An increase in the number and quality of tools and strategies available to support the planning and management of the agroecological transition of viticulture systems in the region.

### **Partnership:**

<b>PP1- LP</b>	<b>LAG EASTERN VENICE, VEGAL (IT)</b>
PP2	Autonomous Province of Trento, PAT (IT)
PP3	Chamber of Agriculture and Forestry of Slovenia, KGZS-Zavod GO (SI)
PP4	Research Centre of the Slovenian Academy of Sciences and Arts, ZRC SAZU (SI)
PP5	Agency for rural development of Istria Ltd. Pazin, AZRRI (HR)
PP6	Association for the promotion of employment, vocational training and education, INFORMO (HR)
PP7	Business Development Center Kragujevac, BDCKG (RS)
PP8	Foundation Business Start-up Center Bar, BSC BAR (ME)
PP9	Municipality of Bar, BAR (ME)
PP10	Mediterranean Agronomic Institute of Chania, CIHEAM MAICh (EL)

### **Associated Partners (APs):**

General Union CISL Cultivators Venice (IT)
Bio district of production and biological community of central-eastern Venice - BIO VENICE (IT)
IAL - Innovation Learning Work S.r.l. - Social enterprise (IT)
AIAB-Italian Organic Agriculture Association (IT)
Agroecologiki SP (EL)
Municipality of Topola (RS)
Šumadija winemakers association (RS)
Ministry of Agriculture and Rural Development (HR)
Agroecology Europe (BL)

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## 1. INTRODUCTION

The document on the improvement of the landscape and habitat in fragile areas with intensive viticulture prefigures the conditions necessary for their conservation, as a task that requires adequate cooperation between the different actors involved in their management. This document prefigures a landscape and habitat policy that dialogues with all relevant national, regional and municipal policies, plans and programmes. It also indicates which instruments are appropriate, including the territorial development of economic activities, and of wine-growing in particular. The transnational strategic document traces the guidelines for a policy that can pursue the long-term objectives in the ADRION countries, thanks to the fact that they are jointly developed.

The purpose of these guidelines is **to accelerate the transition from intensive to agroecological grape production** and the proper **management of the wine-growing areas** (viticultural landscapes) of the Adriatic-Ionian region. Agricultural production models that respect the principles of agroecology are increasingly mentioned in the documents and programmes of national, European and international institutions (References).

The reasons for concern about the persistence of **conventional farming** are the decline of biodiversity, climate change, increasing pollution, threats to ecosystems and ecosystem services, food resources, careless management of resources (air, water, soil, energy), and unjust social relations, especially between the primary sector (especially small producers) and market actors. Agroecology combines the knowledge of different disciplines - geography, agronomy, landscape planning, ecology and economics - and tries to solve these problems.

The way in which grapes are produced at farm and landscape level must **ensure the conservation of natural habitats, biodiversity and ecosystems**. This is the only way to improve the range of **ecosystem services** or to maximise the vital benefits of the vineyard. The aim of the ECOVINEGOALS project was therefore to raise the level of **local culture** and the quality of the **traditional vineyard landscape**, to support the accompanying social and economic activities in rural areas – i.e. tourism and outdoor recreation, crafts and trade in local products –, to preserve traditional food and culinary skills and to take steps in the areas where **viticulture competes with other land uses** and environmental or biodiversity goals.

The guidelines show how agroecological transition can be integrated into the **European context** and identify the EU support **tools and programmes** that facilitate it. The project promotes the creation and use of internal and external **networks** (such as the **AVINE network**, planned under the ECOVINEGOALS project) that will serve to implement and promote agroecology and further mutual exchange of formal and non-formal knowledge and experience. It responds to the demands of **citizens, consumers and farmers** for **landscape and habitat conservation** and provides a basis for the monitoring of the progress toward sustainability objectives, **sustainable food and agricultural systems**. The evidence base is derived from the **analysis of the eight pilot areas** and **participatory workshops**. The project partnership has resulted in a strategy that links the best practices identified so far with agroecological principles and ecosystem benefits.



## 2. ON AGROECOLOGICAL TRANSITION

Agroecological transition is a journey, a process, not an end result. A transition is the change from one state or circumstance to another. It is characterised by a series of steps or phases. Four typical phases are: predevelopment, take-off, acceleration, and stabilisation. Transition can take place in the short, medium or long term and depends on the characteristics or potential of social and ecological drivers. The transition process is the result of the relationship between drivers and barriers to change. It is important to integrate all three pillars of transition: socio-economic, ecological, and technical.

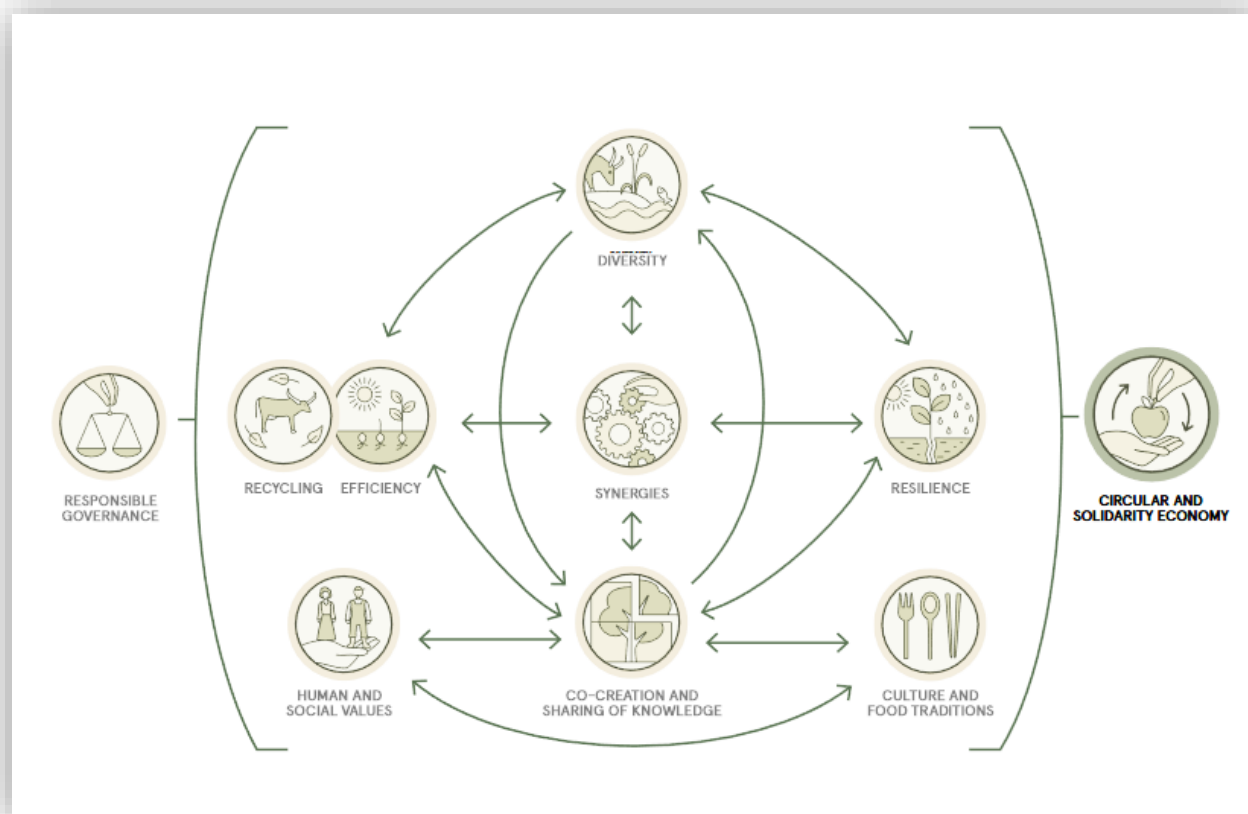


Figure 1: FAO, UN: **The 10 elements of agroecology** (1. Diversity, 2. Co-creation and sharing of knowledge, 3. Synergy, 4. Efficiency, 5. Recycling, 6. Resilience, 7. Human and social values, 8. Culture and food traditions, 9. Responsible governance, 10. Circular and solidarity economy)

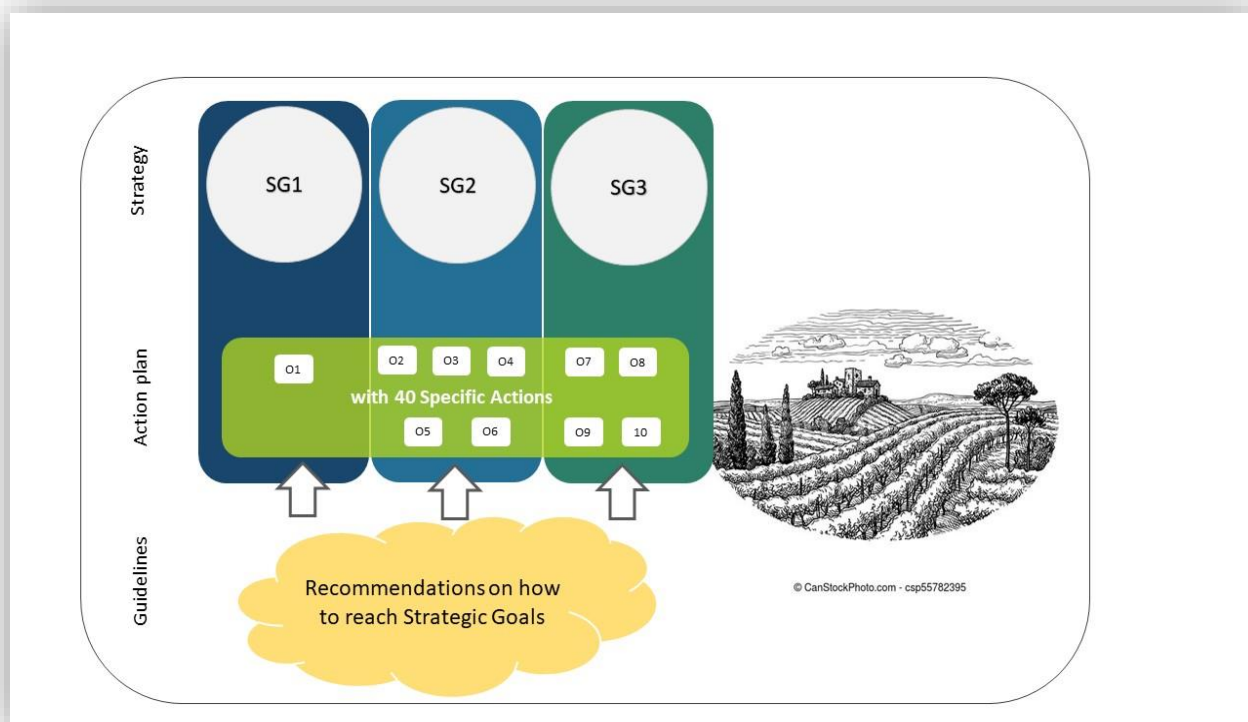
For a truly comprehensive change to take place in the wine sector, it is not enough to make partial, e.g. technical adjustments. The transition process must include three strategic dimensions: **progress** (by identifying agents of change, drivers of change and barriers to change), **stability** (by resolving conflicts and reconciling different interests in a participatory process), and **adaptability of strategies**. The result is the building of effective networks (internal and external), creating alliances, facilitating knowledge and experience sharing, and anticipating change. And the end result is a better preserved and well-structured viticultural landscape.



Figure 2: If we ensure adequate mosaic land use and biodiversity, the introduction of agroecological viticulture will require less effort. Sooner or later, this will be reflected in the balance sheet in all respects.

### 3. GUIDELINES

The situation regarding the adoption and knowledge of **agroecological practices** in agriculture, especially in vineyard landscapes, is very diverse in the Adriatic-Ionian region. Consequently, the ways and focuses of the transition also vary from case to case. However, some problems are common to **all the pilot areas** studied. For example, the problem of an **ageing population** and the **exodus of young people** from agriculture, including their **lack of interest in working in the wine sector**, can be observed everywhere. In fact, **employment in agriculture** is unattractive because it is **not adequately valued**. Farmers and winegrowers are **poorly connected to local authorities**. They also **lack knowledge** in various areas, especially regarding **soil characteristics and fertility**, fertiliser use, **autochthonous grape varieties**, **climatic laws** in the different altitudinal zones/different levels or strata, **microsite characteristics**, **networking methods**, **marketing methods**, **communication with consumers**, use of **cultural and historical advantages**, use of **traditional and autochthonous knowledge**, and **links with the tourism sector**. In other areas, the problem is the **excessive cultivation of monocultures**, which leads to an **impoverishment of biodiversity** while increasing the **vulnerability of crops** to diseases and pests. As a result, the need for **protection products** increases, and with it **soil pollution** with substances harmful to the environment and human health. We cannot generalise the local findings to the entire **ADRION region**, but we can derive **general development guidelines** for the enhancement of **traditional landscapes and habitats** in the wine-growing areas of the ADRION regions or necessary measures that will benefit all affected areas. The **measures** taken at the **farm level** also have an **impact at the landscape level**.



**Figure 3:** Guidelines are recommendations that can be used by decision makers, contractors, or funders in planning or implementing their activities, policies, or decisions. They will help implement the action plan and strategies for the enhancement of viticultural landscapes and habitats.



The **guidelines for the enhancement of viticultural landscapes and habitats** are divided into the following **subunits**:

- Education and awareness-raising,
- Technology,
- Ecology,
- Spatial planning,
- Responsible governance and management of areas with limited opportunities or complex property relations,
- Socio-economic field,
- Stakeholder connectivity and networking,
- Monitoring the process of transition to agroecology.

#### • EDUCATION AND AWARENESS-RAISING

In order to be **competitive**, the wine industry, farmers – wine-growers, wineries, retailers – must acquire new, **more versatile knowledge** – both in the **natural** and **social sciences**. They should transfer it to the agricultural sector. More agricultural technicians, researchers and scientists should be involved in sharing knowledge and initiatives. Learning from unanticipated interactions and revision require constant adaptation where new knowledge is gained. **Agroecological knowledge** should be **included at all levels**, from kindergarten on, improved and shared through schools, scientific institutions, agricultural advisory services, and thematic networks such as AVINE. The **higher level of knowledge** will improve **the resilience of people, communities, and ecosystems** in the face of **climate change, erosion resistance**, and the **economic and environmental viability of farms**. It will lead to sustainable food and agricultural systems.

There is a need to:

- **Deepen knowledge** of the principles of **agroecological vineyard management** and **viticultural landscape management**. **Agroecological practices** are of great importance for the conservation of **landscapes, natural habitats and ecosystem services as they introduce valuable mosaic structures into viticultural landscapes**. To this end, **traditional practices** that are still alive in many places should be strengthened and co-created through **participatory processes**, for example: mixed planting, hand mowing, mechanical weeding, weeding by burning, permanent greening (partial – every other species greened, complete), screening with various materials, occasional irrigation, intercropping, especially with medicinal and aromatic plants, mulching of prunings, green manuring with various plants, organic fertilization, production and use of compost, including composting of pomace, the presence of beehives and bird nesting boxes and grazing of livestock in the vineyards, etc.) (ECOVINEGOALS Good Practice Description Form 2021).
- Acquire knowledge in the field of **economics** and finding new ways to access differentiated and **new**

markets.

- Raise awareness of **landscape conservation** and **reducing land abandonment**. The abandonment of land means the loss of a **valuable resource** and is a problem of the villages and the owners of the land.
- Raise awareness of the recognition, understanding and benefits of the **Natura 2000 area (high added value agriculture)**.

## • TECHNOLOGY

In the context of technology, we think on the one hand of terms related to **modern information and computer technology** (Big Data, cloud computing, Internet of Things, various software, modeling, drones and remote sensing, GIS tools for analysis and research, and measuring and monitoring the quality of space), and on the other hand of **traditional technologies**. For example, low-tech green solutions in the form of eco-remediation include the judicious introduction of wastewater treatment plants, buffer strips to prevent erosion and landslides, air purification, wind speed and noise reduction, phytoremediation plants to remove pollutants from soil, water, and air, and air wells and mist collectors (networks to extract water from the air) (Williams 2020).

In viticulture landscapes it is recommended to:

- combine **smart technological systems** with **ecologically safe, proven systems** acquired over generations.
- promote the use of **environmentally and nature-friendly technologies** in production and processing. .
- **cultivate soil** and ensure **nutrient supply** to the **deeper layers before planting**, based on **prior soil analysis** (disturbance of the balance between the nutrients present leads to lower fertility and greater susceptibility of vines to diseases and pests).
- **minimise** the addition of **external inputs/resources** and the **accumulation of wastes**.
- **The soil must not be overloaded with nutrients**; only one-third of the nutrients are absorbed, the rest coming from the leaves and prunings that remain in the vineyard.
- In the existing plantations/vineyards, **soil analysis** should be carried out **every 5 years**.
- ensure and increase **the number of measuring points** and strengthen the **plant protection/forecasting service**, which provides **basic data** (air temperature, relative humidity, precipitation, leaf wetness, wind direction and speed if necessary, solar radiation, soil temperature, soil moisture), warns of weather and other events (hail, drought, frost, pests, diseases) and recommends **protective measures** (irrigation, fertilisation, spraying, etc.).

## • ECOLOGY AND NATURE PROTECTION

**Healthy soils** assure a **vibrant ecosystem**. They improve **water infiltration** and **holding capacity**, reduce microbial pathogens, weeds, and herbivory and promote **plant health** in agricultural systems. Vineyards should be part of a larger, **ecologically diverse landscape**. Ecological approaches can reduce pesticide use, enhance wine quality, and sequester carbon. Viticulture that focuses on **landscapes, soil health**, and the **environment** plays an important role in **fighting climate change**. Nothing impacts the vineyard more than **weather and climate**. Climate is a key environmental component for plant suitability and productivity. Some winegrowers combat climate perturbations by adjusting grape selection.

Vineyards become **less vulnerable to climate change** by:

- **Maximising diversity** (crop and livestock systems, ensuring biodiversity, genetic resources, vertical diversity, spatial diversity, temporal diversity (crop rotations) which enrich viticultural landscapes.
- Forming **diversified systems** that combine **annual and perennial crops, livestock, aquatic animals, trees, soils**, water and **other components** in farms and in the agricultural landscape to **enhance synergies** in the fight against climate change.
- Maintain and adopt **mosaic land uses**, particularly **grasslands** and **extensive orchards**, which provide the

greatest diversity of plant species and enhance **ecosystem services**, including **pollination** and **soil health**.

- Use of **biostimulants** - humic acid, algae, bacteria - that accelerate **organic matter decomposition** and **increase productivity** and resource **efficiency** by **optimising biomass** and **water use**.
- Selection of **resistant** and **indigenous vine varieties**.
- Selection of an **appropriate vine form** (16 leaves per young vine, summer pruning, moderate growth, sufficient light and air in the grapes).
- **Proclamation** of an **ecoregion**, extension of the **list of farmers** who practise **organic farming** and are holders of the **organic farming certificate** (AVINE network).
- Promote the use of **specific tools** based on the **SAFA model** (FAO Sustainability Assessment of Food and Farming Systems). **Qualitative environmental criteria**: Pesticide risk, fertiliser pollution, biodiversity loss, carbon footprint, etc.
- Retention of **traditional supports for vines** - wooden stakes.
- **Monitoring soil fertility** and **pollution** (presence of minerals, nutrients, organic matter, concentration of heavy metals, organic pollutants, etc.).

## • SPATIAL PLANNING

Spatial planning is a set of coordinated and concerted **measures to manage space and regulate socio-economic development**, taking into account **natural conditions**, **past economic and social development**, and the **initiatives and aspirations of local communities and citizens**, as well as the goals set by the **general public**. Spatial planning contributes to the implementation of **adopted policies** related to **environmental issues** (air and water pollution, waste management, ecosystem management, biodiversity conservation, natural resources management, wildlife and endangered species,), takes care of the **aesthetic appearance of settlements**, **protection of landscape** elements, mosaic structure, and **natural and cultural heritage**.

Spatial planning is an important means to better coordinate viticulture and minimise conflicts between sectors. Among the fields mentioned, particular attention is paid to:

- Maintaining practices that contribute to **semi-natural** and **low-intensity agricultural lands**.
- **Awareness programmes** and **control mechanisms** to prevent land abandonment (**preventing** cultural landscapes from **becoming overgrown** with shrubs) which would affect the **food supply** and **tourism potential** of the ADRION region.
- **Facilitate approval procedures** for land use changes, **adapt municipal land use plans**.
- Cooperation among **policy makers**, **foresters**, and **conservationists** in **land use planning** and in deciding on applications for **land use change**.
- **Update of cadastral data on land use**, including data on **vineyards** and **cultivation methods**.
- Awareness programmes and control mechanisms to **avoid monocultures**.

## • RESPONSIBLE GOVERNANCE AND MANAGEMENT OF AREAS WITH LIMITED OPPORTUNITIES OR COMPLEX PROPERTY RELATIONS

Areas of constrained opportunity include lands with above-average **slopes**, **elevations**, or **other constraints**, including **demographic constraints** that threaten farmland abandonment. Also at risk are areas with complicated ownership structures (ageing population, joint ownership) that make transfer of ownership difficult. The **consequences** of abandoning agriculture (wind and water erosion, landslides, disappearance of individual plant and animal species, loss of soil potential, overgrowth, migration of population, loss of cultural landscape, disturbed ecological balance, reduction of tourism potential) can be very unpredictable and harmful to the environment. In order **to avoid such cases**, the following measures must be taken:

- **Social foundation** for inclusive and sustainable development.
- In **areas with limited opportunities**, a proposal for workable solutions (e.g., **erosion control**, **terracing** of steep slopes where the use of machinery is very limited, construction of **dry stone walls** in traditional way).

**Converting the cultivation system** from vertically planted to modern terraced vineyards can help reduce further abandonment of viticulture.

- Proposing **legal measures** and **incentives** for farmers in **disadvantaged areas**, as they are responsible for **maintaining the cultural landscape** in the countryside.
- **Monitor** the situation of **overgrown and abandoned land**, maintain **inventories** of land available **for the market**.
- In view of climate change, attention should be paid to **water reserves**, especially in the case of low land cover, steep slopes and above-average solar radiation (construction of dams, reservoirs, mist collectors)

## • SOCIO-ECONOMIC ASPECTS

The sphere concerns **social relations** and **economic laws** and **skills** in the **field of viticulture**. The influence of the social sphere is particularly rarely explored, but the interest of **policy makers**, **businesses**, and the **scientific community** in the social aspects linked to agriculture has been growing (Martuci et al. 2019, Pomarici & Seccia 2016).

Important measures in this context are:

- Ensure **adequate compensation** for **labor** invested in grape production and **adequate compensation** for **quality** (organically produced) grapes and wine.
- Ensuring rural **livelihoods**, **equity** and **social well-being**.
- Involving an adequate number of women in the viticulture sector (**gender equality**).
- Involving **young people in viticulture** and promoting a **timely transfer of the activity** to the younger generation (the average age of those who take over viticultural businesses is currently far too high).
- Ensure **adequate tax policies** for labor recruitment that provide incentives and discourage undeclared work.
- **Agroecological diversification** also strengthens **socioeconomic resilience** by reducing the risk of failure in the face of **climate change**.
- **Stabilize household incomes** by introducing a **variety of market products** (grains, fruits, vegetables, livestock products), local food processing, and agritourism.
- Promoting **recycling** of nutrients, biomass, and water **within the production system** ensures efficient resource use and **minimizes waste** and **pollution**. This also means agricultural production with **lower economic** and **environmental costs**.

## • STAKEHOLDERS CONNECTIVITY AND NETWORKING

In today's rapidly changing world, information, connectivity, the ability to react quickly and anticipate the situation are critical. Professional/interest associations and networking within associations and between partners (e.g. AVINE-network) can make an important contribution here.

Cooperation develops at various levels and between different partners:

- Strengthening **cooperation and networking** among **farmers** at **local and regional levels**.
- Strengthening **cooperation** between **winegrowers** and **winemakers** at the **national level**.
- Strengthening **cooperation** between **winegrowers** and **wine producers** at the **international level**.
- Strengthening relations with **society** (**local authorities**, **other economic sectors** - crafts, trade, tourism, transport, **conservationists**, **researchers**).
- Strengthening contacts with **consumers**.
- Creation of a **network of wine routes** as a promotional tool for winegrowers and wine producers.
- Development of a **strategy** for the **promotion of agroecological products**.

- **MONITORING THE PROCESS OF TRANSITION TO AGROECOLOGY**

In order not to ignore **the results of the introduction of agroecology**, FAO has developed a **tool to evaluate** the performance of agroecology (TAPE, reference 28). It measures positive **impacts on the environment, biodiversity, farmer income, resilience, and adaptation to climate change** at both the **household and farm levels** and at the **community and landscape levels**. The tool is simple and requires minimal training and data collection. Progress is measured through a series of **SMART indicators and sub-indicators**.

The concept MAS – **the concept of main agroecological structure** indicates how farming practices are linked to the landscape, landscape ecology, or the design of the farm's internal and external linkages (fences, hedgerows, living fences, or woodlands). **The resilience or adaptability of agricultural systems** to a range of disturbances depends on these linkages. The MAS index includes **five ecosystem or biological indicators** (farm connectivity to landscape ecological structure, extent of external linkages, extent of internal linkages, diversity of external linkages, and diversity of internal linkages) and **five cultural order indicators** (land use, soil conservation, weed control, other organic or conventional management practices, perceptual awareness, and agency).

In the **multicriteria analysis method** (agroecological and economic performance of farms), **socioeconomic indicators** are added to measure the impact of individual farmers on production (quality and quantity of yields and income) and on the social and community dimensions of the territory (**territorial context - TC**). In addition, a reassessment of the main community resources is made (land use, mosaic structure, degree of naturalness, natural values, cultural values, protected areas, thematic routes, traditional characteristics, knowledge and skills of the local community, other economic sectors – agriculture, crafts, tourism, transport).



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