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REGENERATIVE AGRICULTURE AND ECOLOGICAL RESTORATION IN THE MEDITERRANEAN

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EXECUTIVE SUMMARY

The Mediterranean basin stands at the crossroads of intertwined environmental and socioeconomic crises. The region is warming 20% faster than the global average, facing accelerating desertification, recurrent droughts, and alarming biodiversity loss. These pressures threaten food security, livelihoods and social stability across all shores, demanding a coordinated response that integrates ecological, social and policy innovation.

Against this backdrop, regenerative agriculture and ecological restoration are emerging as transformative approaches capable of addressing the root causes of degradation while strengthening resilience and equity. Regenerative agriculture rebuilds soil health, enhances biodiversity, and improves water retention, sustaining production and rural livelihoods. Key regenerative practices include reduced or no tillage, permanent soil cover, fostering crop diversity in space and time, agroforestry, integration of livestock, application of compost and organic amendments, application of sustainable irrigation techniques, and avoiding the use of pesticides and chemical fertilisers. Ecological restoration, meanwhile, goes beyond the agricultural sphere to rehabilitate degraded landscapes and restore ecological integrity, and is evolving from traditional silvicultural approaches to more holistic restoration strategies that may include reforestation with native species, erosion control, water harvesting, removal of invasive species, organic amendments, and restoration of wetlands. Together, these approaches connect global frameworks such as the UN Decade on Ecosystem Restoration (2021-2030) and the Kunming-Montreal Global Biodiversity Framework with regional efforts including the EU Green Deal, the EU Soil and Biodiversity Strategies for 2030, and the Union for the Mediterranean's GreenerMed Agenda.

In June 2025, the Spanish Agency for International Development Cooperation (AECID), the European Institute of the Mediterranean (IEMed), and the Centre for Ecological Research and Forestry Applications (CREAF) convened 35 experts from 10 Mediterranean countries in Barcelona to explore the potential of these approaches to drive systemic change. The workshop - under the Masar al'an programme - brought together representatives from governments, research institutions, international organisations, civil society, and the private sector to exchange knowledge, identify shared challenges, and co-define priorities for regional collaboration.

The discussions highlighted that degradation in the Mediterranean results from both environmental and societal drivers. Climate change, soil erosion, water scarcity, and biodiversity decline are compounded by unsustainable land use, rural depopulation, and governance gaps. Participants agreed that these challenges cannot be tackled in isolation: they are deeply interlinked across the Water-Energy-Food-Ecosystems (WEFE) Nexus, requiring integrated, multi-scale responses.

Examples of existing solutions were shared from both northern and southern shores - ranging from soil regeneration and agroforestry initiatives to participatory rangeland

management, nature-based restoration, and community-driven projects that combine traditional knowledge with scientific innovation. Despite this progress, participants identified persistent barriers to scaling up: fragmented governance and insufficient coordination across sectors; financial and market constraints; limited technical capacity and knowledge exchange; and cultural or behavioural obstacles that slow social acceptance and policy uptake.

The workshop also underscored key knowledge needs to accelerate transitions. These include strengthening data on soil and ecosystem health, improving access to open-source tools for land monitoring and irrigation management, and fostering learning networks among farmers, researchers, and policy-makers. Participants emphasised the value of regional platforms that bridge science, policy and practice, helping to translate research into actionable policy instruments and financing mechanisms.

Building on these insights, the report calls for a shift from fragmented pilot projects to coherent regional strategies. It recommends:

- Embedding regenerative and restorative approaches in national and local development plans, supported by enabling legislation and cross-sectoral coordination.
- Mobilising public and private investment through incentives and blended-finance mechanisms that reward measurable environmental and social practices.
- Expanding Mediterranean cooperation and peer-learning among countries, institutions, and local communities, focusing on shared monitoring systems and common indicators of soil and ecosystem health.
- Empowering farmers, practitioners and local actors as central agents of change through capacity-building and inclusive governance frameworks.

The Barcelona workshop marks an important milestone in shaping a Mediterranean partnership for regenerative and restorative practices. It laid the foundation for a second workshop to be held in a Southern Mediterranean country, focusing on implementation, replication, and scaling-up of solutions. Together, these efforts aim to contribute to a common Mediterranean vision: a resilient, cooperative region where restored ecosystems and regenerative food systems underpin prosperity, peace and sustainability for future generations.

02

INTRODUCTION

The Mediterranean basin is widely recognised as one of the global hotspots of climate and environmental vulnerability. The region is experiencing faster warming than the global average, more frequent and severe droughts, advancing desertification, and an alarming decline in biodiversity.[1,2] These environmental trends are inseparably linked with socioeconomic pressures: water scarcity is threatening agricultural productivity, soil degradation is undermining long-term food security, while rural depopulation and land abandonment are reshaping landscapes and communities.[3] On the southern shore, overgrazing and desertification frameworks exacerbate risks of poverty and marginalisation potentially leading to internal and international migrations, while on the northern shore, land abandonment, intensive agriculture, and unsustainable consumption patterns create a different but connected set of challenges.[4,5]

In this context, regenerative agriculture and ecological restoration have gained prominence as innovative approaches to address the root causes of these intertwined crises. Unlike conventional approaches, regenerative agriculture seeks to rebuild soil fertility, increase water retention, and enhance biodiversity, while maintaining agricultural productivity and rural livelihoods. Ecological restoration complements this by rehabilitating degraded ecosystems, restoring natural functions, and increasing the resilience of landscapes. Together, these approaches align closely with international agendas such as the Kunming-Montreal Global Biodiversity Framework (GBF), the UN Decade on Ecosystem Restoration (2021-2030), and the Sustainable Development Goals (notably SDGs 2, 6, 13, and 15). They also contribute to regional and European frameworks including the EU Green Deal, the EU Biodiversity Strategy for 2030, the EU Soil Strategy, and the Farm to Fork Strategy, and are also aligned with other regional concerted efforts developed by stakeholders, such as the Food and Agriculture Organization of the United Nations (FAO), the International Centre for Advanced Mediterranean Agronomic Studies (CIHEAM) and the Union for the Mediterranean (UfM).

Recognising both the urgency and the potential, the Spanish Agency for International Development Cooperation (AECID), the Centre for Ecological Research and Forestry Applications (CREAF), and the European Institute of the Mediterranean (IEMed) launched a collaboration under the Masar al'an programme, beginning with an international workshop held in Barcelona in June 2025. The workshop brought together 35 experts from 10 Mediterranean countries - representing government administrations, research institutions, international organisations, civil society, and the

[1] IPCC (2023).

[2] MedECC (2020). SPM: Climate and environmental change in the Mediterranean Basin. Current situation and risks for the future. MAR1

[3] MedECC (2020). Climate and Environmental Change in the Mediterranean Basin – Current Situation and Risks for the Future. MAR1

[4] Zeng, H., Wu, B., Elnashar, A. & Fu, Z. (2024)

[5] Pawlewicz, A., & Pawlewicz, K. (2023)

private sector - to provide an overview of the state of play in regenerative agriculture and ecological restoration, and to map common challenges and shared priorities across the basin. This included identifying recurrent drivers of degradation (such as climate change, overgrazing, water mismanagement, and the erosion of traditional knowledge), recognising promising practices already being applied in different contexts, and discussing institutional, economic and cultural barriers that limit their wider adoption.

The workshop was conceived as the first step in a broader process of dialogue, knowledge co-production, and capacity-building across the Mediterranean, aimed at creating common ground for cooperation and identifying opportunities for policy innovation to accelerate the adoption of regenerative and restorative practices in the region. To consolidate this process, a second workshop was planned in a Southern Mediterranean country, building on the results of the first by focusing on solutions, showcasing best practices, and discussing options for implementation, potential replicability, and scaling-up.

The document that follows therefore does not aim to provide an exhaustive scientific analysis. Instead, it seeks to synthesise the collective intelligence of a diverse group of Mediterranean stakeholders into actionable insights. It presents, in turn: (1) the main environmental and socioeconomic challenges identified; (2) the range of existing practices and solutions; (3) the institutional, economic, environmental, cultural, and knowledge barriers that hinder progress; (4) the knowledge needs necessary to advance the transition; and (5) the opportunities for multilevel cooperation.

By connecting scientific insights, practical experiences, and policy priorities, this report aims to inform the design of future cooperation projects, national and regional strategies, and international policy processes. Ultimately, this initiative aspires to contribute to a common Mediterranean vision for regenerative agriculture and ecological restoration: one that bridges North and South, integrates traditional and scientific knowledge, and places farmers, practitioners and local communities at the centre of transformative change. By situating these efforts within regional and global frameworks - from the GBF to the EU Green Deal, from PRIMA to the UfM climate agenda -, AECID, CREAF and the IEMed aim to catalyse a shift from fragmented approaches to a coordinated and resilient regional strategy. Such a strategy can support the ecological transition, enhance food system resilience, improve food security in the region, and strengthen social cohesion across the Mediterranean, while contributing to global sustainability goals.

03

CHALLENGES AND DRIVERS OF CHANGE

The Mediterranean basin is a well-recognised climate and biodiversity hotspot, exposed to multiple and interconnected pressures that weaken ecosystems, agricultural systems, and socioeconomic stability. Scientific assessments, including the IPCC AR6 WGII and MedECC reports, underline how climate, demographic, and land-use drivers converge to form the basis of the region's environmental crisis. These drivers do not act in isolation: they interact across the Water-Energy-Food-Ecosystems (WEFE) Nexus, generating cascading risks for societies across the basin.

The challenges to soil health and land sustainability in the Mediterranean are, therefore, both environmental and socioeconomic. They arise from natural processes such as drought, erosion, and biodiversity loss, and are closely linked to human pressures, including land-use change, unsustainable agricultural practices, and governance gaps. For clarity, they can be grouped into two broad categories: environmental drivers and socioeconomic drivers.

Environmental pressures and climate risks

Desertification and soil degradation are closely interlinked processes that have been intensified by both climate change and human activities. Unsustainable agricultural practices, overgrazing, and deforestation are major drivers of the loss of soil fertility, structure and organic matter, leading to reduced land productivity and increased vulnerability to erosion and drought. These pressures are further exacerbated by climate change, which raises temperatures and alters precipitation patterns across the region, resulting in longer and more severe drought cycles and floods. Beyond its impact on biodiversity, desertification also entails significant socioeconomic consequences, undermining agricultural capacity and threatening rural livelihoods.

Water scarcity is an escalating threat in the Mediterranean region, especially because of climate change, which exacerbates drought intensity and disrupts natural hydrological cycles. Over-extraction of groundwater, inefficient irrigation practices, and poor governance at different levels also contribute to this issue. Arid and semi-arid zones, which are already vulnerable, face increasing difficulties, as water resources are being strained not only for agriculture but also for natural ecosystems. Beyond quantitative scarcity, water quality degradation is intensifying water stress across the Mediterranean basin. Pollution from agricultural runoff, untreated or insufficiently treated wastewater, industrial discharges and saline intrusion reduce the volume or safe water to be used for agriculture, ecosystems, and domestic supply.

Water scarcity and degraded water quality are intensified by climate change effects, such as desertification, extreme droughts, unpredictable weather patterns, and the spread of invasive species, which are becoming increasingly evident in the Mediterranean region. These phenomena not only affect agriculture but also disrupt natural ecosystems, reducing

their adaptive capacity and creating a negative feedback loop that amplifies the impacts of climate change. Climate variability, combined with unsustainable resource management, generates a cycle of degradation that harms both the environment and human societies.

The loss of soil fertility and organic matter is one of the primary drivers of soil degradation. Intensive agricultural practices, such as excessive tillage, monoculture cropping and the overuse of synthetic inputs like fertilisers and pesticides, reduce microbial activity and deplete organic carbon stocks in the soil. This not only reduces soil health but also weakens the ability of crops to adapt to adverse conditions, such as droughts or pest outbreaks, threatening food security and the resilience of agroecosystems.[6,7]

Agricultural intensification, habitat fragmentation, and the loss of landscape heterogeneity have led to a significant decline in biodiversity within both farming systems and surrounding natural areas. This biodiversity loss weakens ecosystem resilience, reducing the ability of ecosystems to provide vital services such as natural pest control and pollination. The loss of species in both agroecosystems and natural environments diminishes the ability of the environment to self-regulate and exacerbates soil degradation and the decline of agricultural productivity. This loss of biodiversity undermines the capacity of ecosystems to adapt to climate change and human pressures.

Overgrazing is one of the leading causes of vegetation loss and land degradation, particularly in the drylands of Southern Mediterranean areas. Unmanaged excessive grazing accelerates erosion, compacts soils, and reduces natural regeneration capacity, leading to desertification and rural impoverishment.

Poor grazing practices, combined with climate change pressures, are responsible for the degradation of large areas of productive land, further exacerbating poverty in rural communities, and increasing vulnerability to the effects of climate change. On the other hand, appropriate planned grazing is proving to have significantly positive regenerative effects on soil and agroecosystem health, particularly on degraded and vulnerable landscapes, as well as on the health of local economies and diets, offering hope and underscoring the urgent need to extend such practices throughout the region.

Inadequate waste management, such as improper disposal of agricultural residues, untreated wastewater and industrial effluents, results in soil pollution and water contamination, posing significant risks to public health and food safety. In addition, the excessive use of fertilisers and pesticides leads to the accumulation of nitrates and toxic chemicals in soils and underground water, endangering both natural ecosystems and

[6] Lal, R. (2020)

[7] Gattinger, A., Muller, A., et al. (2012)

agroecosystems. The lack of effective organic waste management and the failure to valorise organic residues further perpetuate environmental pollution and soil degradation. Land-use dynamics, such as the expansion of large-scale monoculture farming and the loss of traditional grazing systems, have devastating effects on biodiversity and ecosystem sustainability. Fertile and rich soils such as river basins are being lost due to unplanned urbanisation or competing uses, while in the South, agriculture expands into barren land. The lack of effective ecological restoration policies and an integrated landscape management approach further exacerbate the situation. The increasing competition for land use in the region, particularly in dryland areas, presents a significant challenge in finding a balance between agriculture, ecological restoration, and ecosystem conservation.

Socioeconomic dynamics and vulnerabilities

Agriculture is under pressure from water scarcity, along with prolonged droughts and reduced rainfall. This places Mediterranean agriculture at high risk. Growing seasons are shortened, harvests become more uncertain, and crop yields decline. In many areas where agriculture is the primary source of income and employment, this threatens livelihoods. Small-scale farms, in particular, are the most vulnerable, as they lack the resources to adapt to changes, increasing rural poverty and food insecurity. The lack of awareness of the need for sustainable land management is another factor to be addressed by these small-scale farmers.

Biodiversity loss, combined with rural depopulation and land fragmentation, creates a cycle of vulnerability that weakens communities' ability to care for and maintain their lands. Urbanization and the abandonment of agricultural land leave large areas of land uncultivated, which contributes to soil degradation and reduces economic opportunities for rural communities. Additionally, poverty and lack of education further aggravate the situation, as communities lack the tools and knowledge to address the environmental crisis.

The increasing irregularity of climate in the Mediterranean area exacerbates the volatility of Mediterranean harvests. Climate change and its effects on natural resources have therefore led to an increase in climate migration in the Mediterranean region, with both internal and cross-border movements rising due to the lack of access to water and arable land. This puts additional pressure on infrastructure and resources in receiving areas. The economy, particularly in rural areas dependent on agriculture, is severely affected by food insecurity, loss of employment, lack of services, and economic opportunities.

Poor natural resource management, lack of preparedness for climate extremes, disregard for market forces in policy-making, land grabbing by foreign investors, and

the overuse of synthetic fertilisers are recurring issues that contribute to increasing economic and social inequality in the region. Limited access to finance, entrepreneurship support mechanisms, climate-smart technologies and inclusive value chains continues to hinder the ability of farmers and early-stage agri-innovators to adopt and scale regenerative solutions, especially in fragile or resource-constrained contexts. This and the increasing concentration of landownership in the hands of a few, the lack of effective public policies and ongoing soil degradation are factors that not only threaten environmental sustainability but also undermine social justice in affected communities. Instead, local and indigenous knowledge systems should be systematically documented, validated and embedded into formal innovation and extension systems. This supports the development of context-specific, low-cost regenerative approaches that are socially and culturally grounded.

04

POLICY PERSPECTIVES FOR MEDITERRANEAN RESILIENCE

Environmental and socioeconomic challenges in the Mediterranean cannot be addressed in isolation. Soil degradation, water scarcity, biodiversity loss, and climate impacts are deeply intertwined with rural poverty, migration pressures, and social inequalities. Environmental stressors reduce agricultural productivity, undermine food security, and weaken rural economies, while socioeconomic dynamics - such as land abandonment, overexploitation, or poor governance - in turn accelerate environmental degradation. This cycle of vulnerability makes it clear that solutions must be integrated and systemic, linking ecological restoration with social and economic resilience. Addressing the Mediterranean's challenges therefore requires policies that operate across sectors and scales, ensuring that environmental sustainability and human well-being are pursued together.

Regional frameworks

At the regional level, the Union for the Mediterranean's GreenerMed Agenda (2030) offers a shared political platform for integrating environmental and socioeconomic responses. It prioritises land degradation neutrality, sustainable food systems, and ecosystem restoration as Mediterranean-wide goals, explicitly recognising the link between environmental pressures and social well-being. Complementing this, the PRIMA (Partnership for Research and Innovation in the Mediterranean Area) programme funds transnational projects that address the water-energy-food-ecosystem nexus, helping to generate practical innovations and policy-relevant knowledge. Regional science-policy initiatives such as MedECC (Mediterranean Experts on Climate and Environmental Change) have also provided a robust evidence base, endorsed by the UfM and Barcelona Convention, which supports policy-makers across the basin in aligning strategies with scientific consensus.

The existence of regional intergovernmental organisations with an explicit focus on sustainable agriculture research and development – such as, for example, the International Centre for Advanced Mediterranean Agronomic Studies (CIHEAM), the National Research Institute for Rural Engineering, Water, and Forestry (INRGREF), the International Water Management Institute (IWMI), the International Center for Agricultural Research in the Dry Areas (ICARDA), the International Union for Conservation of Nature (IUCN), and the Centre for Mediterranean Cooperation – adds resources, knowledge and regional institutional coverage to this key transversal topic.

Global frameworks

Mediterranean countries are also engaged in broader global frameworks that provide guiding targets. The UN Decade on Ecosystem Restoration (2021-2030) calls for large-scale restoration of degraded land and ecosystems, with Mediterranean drylands and coastal zones identified as priority ecosystems. The UNCCD Land Degradation Neutrality framework requires countries to set and pursue restoration targets that are directly relevant to desertification and soil loss in the region. The Kunming-Montreal

Global Biodiversity Framework (GBF), adopted in 2022, sets a global commitment to halt and reverse biodiversity loss, including restoring at least 30% of degraded ecosystems by 2030. These objectives are closely aligned with the Sustainable Development Goals (SDGs), especially SDG 2 (Zero hunger), SDG 6 (Clean water and sanitation), SDG 13 (Climate action), and SDG 15 (Life on land). Taken together, these frameworks underline that the Mediterranean's environmental and socioeconomic challenges are part of the global sustainability agenda.

European frameworks as northern shore contributions

On the northern shore, the European Green Deal provides an integrated policy package that explicitly connects environmental and socioeconomic dimensions. Several EU strategies are directly relevant to the Mediterranean: the EU Soil Strategy for 2030, which calls for all soils to be in healthy condition by mid-century; the Farm to Fork Strategy, which promotes sustainable food systems and reduces reliance on pesticides and fertilisers; the EU Biodiversity Strategy for 2030, which sets targets for halting biodiversity loss; and the EU Nature Restoration Law, which establishes binding restoration objectives for farmland, wetlands, peatlands and forests. These initiatives should be seen not as prescriptive for the whole Mediterranean, but as contributions from the EU's northern shore that can inspire cooperation and knowledge exchange with neighbouring countries.

Southern and Eastern Mediterranean initiatives

Mediterranean cooperation must also highlight efforts from the southern and eastern shores. Countries such as Morocco and Lebanon are advancing forest and landscape restoration (FLR) programmes with support from the FAO and the UfM, addressing overgrazing, soil erosion, and rural development simultaneously. Other countries are implementing national adaptation plans and biodiversity strategies, often with support from UN agencies, which link climate resilience with poverty reduction and sustainable land management. These initiatives underline that regenerative agriculture and ecological restoration are not concepts confined to Europe but are already being tested and adapted across diverse Mediterranean contexts.

Importantly, this shift is now reinforced at the regional policy level: the EU's new DG MENA has recently acknowledged the critical role of forest genetic resources for climate adapted restoration, supporting this vision through the EU-funded MEDFORGEN initiative. This helps Southern and Eastern Mediterranean partner countries conserve and strategically use local forest genetic resources in restoration efforts.

Synthesis: towards integrated action

The policy landscape shows that environmental and socioeconomic challenges are inseparable and require integrated solutions. Global frameworks (UN Decade, GBF, SDGs), regional agendas (UfM GreenerMed, PRIMA, MedECC, CIHEAM, ICARDA,

IWMI or IUCN Center for the Mediterranean), and national strategies across the basin provide complementary entry points for action. What is needed is stronger coordination across scales - linking local practices (such as regenerative agriculture and community-based restoration) with national policies and regional cooperation platforms, while aligning them with global targets.

Regenerative agriculture and ecosystem restoration offer particularly powerful bridge solutions: they simultaneously enhance soil fertility, water retention, biodiversity and climate resilience, while also supporting livelihoods, food security, and rural development. By situating Mediterranean action within these interconnected policy frameworks, countries can move beyond fragmented approaches and accelerate a just ecological transition that benefits both people and nature across the entire basin.

05

EXISTING RESPONSES AND PRACTICES

To reverse the challenges mentioned above, restore ecosystem functions and improve agricultural sustainability, science-based strategies such as regenerative agriculture and ecological restoration are increasingly recognised as transformative solutions. These approaches address the root causes of environmental decline while supporting socioeconomic resilience.

Regenerative agriculture

The Green Revolution, which began in the 1960s, greatly increased agricultural productivity but with a significant environmental and social impact. Since then, conventional farming systems - which rely heavily on large-scale mechanisation, synthetic fertilisers, pesticides, fossil fuel inputs, and intensive livestock production - have significantly contributed to environmental degradation and rural abandonment. These systems are associated with soil compaction and erosion, a decline in organic matter, greenhouse gas emissions, aquifer contamination, and the overexploitation of freshwater resources. Moreover, their dependence on external chemical inputs often leads to nutrient imbalances, biodiversity loss, long-term declines in productivity and ecosystem health and abandonment of many unprofitable farms in the new scenario (FAO, 2015; IPCC, 2022).

In contrast, regenerative agriculture is a nature-based production system that encompasses a suite of farming practices that aim to rebuild soil health, increase biodiversity, and strengthen ecosystem processes by working with, rather than against, nature. This model balances sustainable food production with minimal and even beneficial environmental impact. Ecological benefits of this agrifood model include improvement of soil structure, enhancement of soil microbial diversity, boosted water retention, and increase of carbon sequestration -contributing to climate change mitigation and adaptation (see UNEP, 2021-23; see FAO, 2021-24, and see Giller 2021-25). Beyond ecological benefits, regenerative systems can also enhance economic viability, mainly by reducing input costs and reliance on external inputs and increasing resilience to climate shocks, and also by increasing yields (see Wieme et al., 2020-26; and see Fenster et al., 2021-27) and, thus, increasing farm profitability. In Mediterranean conditions, where soils are often fragile and water is limited, these benefits are particularly relevant.

In this context of regenerative agriculture, the following practices are reported to have positive effects on the environment and on the viability of the farms that apply them: reduced or no-tillage, permanent soil cover, avoiding the use of pesticides and chemical fertilisers, fostering crop diversification (native/non-native resistant varieties) in space and time, intercropping, agroforestry, integration of livestock and planned grazing, application of compost and organic amendments, sustainable irrigation (addressing water scarcity and degraded water quality, which are intensified by climate change effects), creating terraces, ponds and other elements for capturing water, mulching, and dedicated plant nurseries, among others.

Moreover, the following tools and approaches are reported as useful to expand and improve regenerative and sustainable agricultural practices: participatory methods such as living labs share and pool good practices; replication labs in more locations distributed throughout the Mediterranean, and with different methodologies and crops; peer-to-peer learning guided by advisors/trainers as a neutral actor; use of technology (e.g., AI, remote sensing, smart monitoring) and traditional systems (e.g., rotation systems); multistakeholder Self-evaluation and Holistic Assessment of Climate Resilience of farmers and Pastoralists tool (SHARP) for farmers tool assessing; and LADA as a complementary tool/approach for land degradation assessment and decision support, among others.

Finally, the following institutional support systems may also have positive effects on the development of sustainable initiatives: sustainability incentives for systems that develop sustainable practices (e.g., providing free trees or irrigation); increasingly relevant carbon credits (e.g., FAO's EX-ACT tool, designed to estimate and track GHG agriculture outcomes; AFOLU is explicitly positioned to support access to climate finance and alignment with NDC/NAP processes); national programmes expanding these practices (e.g., Morocco's Green Generation and Conservation Agriculture plans); international networks of regenerative agriculture initiatives; free databases of good agricultural practices; major international soil improvement strategies (e.g., the 4x1000 soil carbon enhancement initiative; Global Soil Partnership, a platform to support coordination and synergies), among others.

Ecological restoration

Ecological restoration goes beyond the agricultural sphere to rehabilitate degraded landscapes and restore ecological integrity. It is defined as the process of assisting the recovery of a native ecosystem that has been degraded, damaged or destroyed.[8] In Mediterranean ecosystems, ecological restoration is evolving from conventional silvicultural approaches to more holistic restoration strategies that may include reforestation with native species, erosion control, water harvesting, removal of invasive species, organic amendments, and restoration of wetlands, grasslands or agro-silvopastoral mosaics.[9] These interventions aim to recover ecosystem structure, functions – such as water purification, soil stabilisation and carbon sequestration – and biodiversity, while strengthening the adaptive capacity of landscapes to climate variability.[10] Ultimately, ecological restoration fosters healthier, and more resilient habitats that benefit both wildlife and human communities.

In the Mediterranean basin, positive experiences have been documented in both intensive and extensive restoration interventions. Tree and shrub planting in arid zones has yielded promising outcomes, particularly when new techniques have been tested and scaled through innovative restoration projects, such as LIFE The Green Link and

[8] Gann, G. D., McDonald, T., et al. (2019)

[9] Nunes, A., Oliveira, G., et al. (2016)

[10] IPBES (2018). Assessment report on land degradation and restoration

LIFE DESERT-ADAPT. In parallel, managed grazing has emerged as a critical tool for addressing the pervasive challenge of overgrazing across vast Mediterranean landscapes, especially in mountainous regions. By carefully regulating livestock density, timing, and grazing intensity, this approach contrasts with conventional practices and contributes to enhanced soil health, improved vegetation cover, and increased carbon sequestration in grasslands. Complementary to field-based actions, gene banks conserving wild relatives of crops and native species have provided essential reservoirs of adaptive genetic traits, such as drought tolerance and pest resistance, which can be mobilised to strengthen ecological resilience under climate change. Furthermore, the integration of restoration activities with renewable energy deployment - through agrivoltaics or biodiversity-friendly wind farm buffer zones - has shown potential for reducing land-use conflicts and creating multifunctional landscapes that simultaneously deliver biodiversity enhancement, soil and carbon benefits, and clean energy generation. However, it is also true that this type of project could pose a risk to healthy soils if only criteria for maximising the economic return of energy facilities are prioritised, and thus the potential positive and negative ecological effects must also be considered.

In addition to field-based interventions, ecological restoration in the Mediterranean can be reinforced by leveraging international best-practice databases, such as those provided by the FAO and the Society for Ecological Restoration that offer scientifically validated protocols, standardised monitoring frameworks, and case studies that facilitate the transfer of knowledge and ensure alignment with global restoration targets. The reference database for UNCCD and LDN achievement is the World Overview of Conservation Approaches and Techniques (WOCAT), in which FAO takes part and is one of the founders. WOCAT is the only database acknowledged by the UNCCD convention. The adoption of circular bioeconomy principles promotes the valorisation of local biomass and organic residues - through composting, biochar production, or biogas generation - thereby closing nutrient cycles, reducing waste, and providing sustainable inputs for soil fertility and vegetation establishment.

Society-wide approaches and innovations

Positive experiences in Mediterranean ecological restoration and regenerative agriculture increasingly highlight the effectiveness of whole-of-society approaches that combine environmental, social and economic dimensions. Integrated water and waste management systems have proven successful in reducing pollution loads, recovering valuable resources, and enhancing water availability for restoration sites. Engaging market actors through the creation of ecological certification labels and active public and private value chain participation has generated economic incentives for sustainable practices while strengthening consumer awareness. The use of traditional knowledge - particularly in agro-silvopastoral systems - has demonstrated

resilience to drought and fire regimes, especially when coupled with gender-inclusive approaches that recognise the role of women in resource stewardship and knowledge transfer. Centring restoration on nature-based solutions (NbS) has facilitated multifunctional outcomes, from carbon sequestration to soil fertility improvement, while prioritising education and awareness has expanded community ownership and intergenerational engagement. Experiences also show that capitalising on rural value chain opportunities, such as eco-tourism and non-timber forest products, creates livelihood benefits that reinforce restoration efforts. Participatory spaces for public, private and civil society co-creation have fostered social cohesion and enabled the co-design of locally adapted interventions, while national and multinational collaboration - including North-South knowledge exchange - has ensured the scalability and transferability of solutions across climatic and cultural contexts. Together, these experiences underline that restoration success in the Mediterranean depends not only on ecological techniques but also on inclusive governance, market innovation, and equitable partnerships.

Despite this long list of techniques and positive experiences, applied experimentation with the direct participation of practitioners is still needed. In this context, the formula of Living Labs that is being promoted at the European level seems to be an effective way to face this type of research. Living Labs are user-centred, place-based and transdisciplinary research and innovation ecosystems that involve multiple partners (e.g., land managers, scientists, citizens, businesses, and local authorities) to co-design, test, monitor and evaluate solutions in real-life settings. These Living Labs could play a crucial role in accelerating the adoption of sustainable practices by users and in fostering the development of solutions tailored to specific local conditions.[11]

Field-level validation and wider dissemination of drought-resilient and climate-adapted plant varieties, including native and improved foreign species, are needed. Demonstration plots, pilot projects, and applied innovation partnerships can play a critical role here. Local and indigenous knowledge systems should be systematically documented, validated, and embedded into formal innovation and extension systems. This supports the development of context-specific, low-cost regenerative approaches that are socially and culturally grounded.

[11] European Union. (2025)

Table 1. Existing initiatives regarding ecological restoration and regenerative agriculture in North Africa, Spain and the Mediterranean

INITIATIVE	ACTOR(S)	SCOPE	LINK
Agricultura Regenerativa platform for regenerative agriculture knowledge-sharing and mapping	Asociación de Agricultura Regenerativa	Spain & Portugal	www.agricultura regenerativa.es
Agrytech supporting innovative Lebanese start-ups with tech solutions for the agrifood sector	Berytech	Lebanon	berytech.org/programs/agrytech/
AU Soil Observatory platform for soil health monitoring	Berytech	Africa	cordis.europa.eu/project/id/101218840
Circular Bioeconomy Alliance funding, expertise, and know-how to facilitate projects designed to accelerate the transition to circular bioeconomy	Multi-stakeholder	Global	circularbioeconomy alliance.org/
EU PRIMA joint programme to support food systems and water resources	EU, member states, partner countries	Mediterranean	research-and-innovation.ec.europa.eu/research-area/environment/prima_en
EU FarmBook platform, gathering and sharing agriculture and forestry knowledge	EU, multi-stakeholder	Europe	welcome.eufarmbook.eu
Generation Green 2020-2030 strategy for conservation agriculture, complemented by 'Forests of Morocco'	Moroccan Government	Morocco	www.ada.gov.ma/en/news/his-majesty-king-mohammed-vi-launches-new-agricultural-strategy-generation-green-2020-2030
Global Soil Partnership	FAO, Food and Agriculture Organization of the United Nations	Global	www.fao.org/global-soil-partnership
Hub del Norte organisation helping communities with regenerative practices to be more resilient	Savory Institute	North Spain	www.hubdelnorte.com
International Compost Awareness Week	Compost Foundation	Global	www.compostfoundation.org/ICAW/ICAW-Home
Massire strengthening agricultural and rural innovation systems in oases and arid regions	Multi-stakeholder	Maghreb	en.massire.net

NATAE foster agroecological transition	EU, multi-stakeholder	North Africa	www.natae-agroecology.eu
Regenera.cat project to expand regenerative agriculture and viticulture in Catalonia	CREAF	Catalonia	regenera.creaf.cat
ResAlliance project to engage with farmers and foresters to share knowledge and increase landscape resilience	EU (EFI), multi-stakeholder	Mediterranean	www.resalliance.eu
Framework for Ecosystem Restoration Monitoring platform FERM geospatial platform and registry of restoration initiatives	FAO-hosted under the UN Decade	Global	ferm.fao.org
Self-evaluation and Holistic Assessment of Climate Resilience of farmers and Pastoralists SHARP self-evaluation tool for smallholder farmers and pastoralists to assess own climate resilience	UN (FAO)	Global	www.fao.org/land-water/land/land-governance/land-resources-planning-toolbox/category/details/fr/c/1043149
Re-water project. Water re-use in agriculture, forests, general consumption.	Governments, IWMI	MENA	https://interreg-sudoe.eu/proyecto-interreg/i-rewater/
WOCAT global network on sustainable land management promoting documentation and knowledge sharing for adaptation, innovation and decision-making	Multi-stakeholder	Global	wocat.net/en

06

BARRIERS TO REGENERATIVE AND RESTORATIVE TRANSITIONS

Despite the positive projects and actions mentioned, significant barriers remain to the implementation of ecological restoration and regenerative agriculture at both national and regional levels. These barriers are divided into five types relating to the nature of the obstruction: institutional, economic, environmental, custom, and knowledge/awareness.

Governance and institutional barriers

Decision-making is frequently experienced as top-down in most countries of the region, with limited involvement of farmers, local communities, and land managers. Conventional agricultural lobbies often exert disproportionate influence on policy agendas, creating political reluctance to engage with critical environmental issues such as pollution, unsustainable land management, and biodiversity loss. This imbalance reduces the effectiveness of restoration strategies and constrains the adoption of more sustainable practices.

Coordination and consistency across governance levels also represent major barriers. Stakeholders often face weak, fragmented, or unpredictable policies, which tend to be poorly enforced, especially in regions characterised by political fragility. A lack of coherence among national frameworks across Mediterranean countries, combined with limited institutional awareness of the full complexity, relevance, and multiple impacts of these issues, as well as weak governance structures, further undermines regional cooperation and the scalability of restoration efforts. These inconsistencies hinder the development of integrated strategies necessary to address the basin's shared ecological challenges.

In addition, regulatory hurdles and bureaucratic inefficiencies significantly limit action and innovation. This is particularly evident in the domains of organic waste management, resource recovery and re-use, support for start-ups, and international trade. Inadequate governance and the unwillingness of institutions to share knowledge and data or provide support in key areas - such as resolving land fragmentation and regulating carbon markets - have sometimes stimulated unsustainable practices. As a result, trust in authorities and policies remains weak, creating further resistance to restoration initiatives and slowing the transition toward resilient, nature-based economies. Regarding land fragmentation or land abandonment, there is a tenure dimension underlying the cause of both.

Financial and market barriers

The transition toward more sustainable agricultural and restoration practices in the Mediterranean is significantly constrained by economic and financial barriers. The long-term environmental and socioeconomic benefits of regenerative agriculture are not always adequately supported by short-term financing frameworks and market structures. Profitability remains a major challenge due to the long return on investment associated with high land prices, the insufficient financial support during initial phases, and prevailing market preferences for unsustainable, high-yield crops. Additional

obstacles include the elevated costs of large-scale, high-technology solutions and the limited availability of specialised equipment and skilled labour, challenges that are particularly acute for smallholder farmers and in the Southern Mediterranean. These constraints often discourage innovation and slow the adoption of sustainable practices despite their long-term ecological and socioeconomic benefits.

Beyond farm-level constraints, barriers linked to wider value chain and market mechanisms further undermine sustainability transitions. Weak marketing structures, inadequate certification systems, and the prevalence of greenwashing practices reduce consumer trust and limit market differentiation for genuinely sustainable products. Profit distribution along value chains is often unbalanced, disproportionately benefiting intermediaries over producers. Persistent shortages of both public and private funding - especially in Southern Mediterranean countries - compound these challenges while competition with more profitable sectors, such as tourism, intensive agriculture or energy production, further marginalises restoration-oriented initiatives. Together, these factors highlight the need for robust financial instruments, transparent certification schemes, and equitable value chain governance to enable sustainability at scale. Involving the private sector, public sources and international donors in these funding schemes to develop financial instruments that can reach small farmers on the ground would give strength and financial sustainability to these projects.

A relatively small share of aid and cooperation funding is currently allocated to regenerative and nature-based approaches, while the majority continues to support conventional infrastructure and input-intensive agricultural models.

Environmental and biophysical constraints

Water scarcity and recurrent droughts are growing threats in the Mediterranean, exacerbated by climate change, inefficient irrigation, soil salinisation, and groundwater overexploitation. These dynamics compromise agricultural production and ecosystem functioning and are particularly severe in arid and semi-arid zones.[12] The range of crops, trees, and seeds suitable for regenerative practices is restricted by the basin's challenging climatic conditions.

Many widely promoted solutions, such as cover crops and green covers, require substantial water inputs, which are difficult to sustain in regions characterised by chronic water scarcity and high competition for limited resources. Moreover, regenerative systems depend on soils with sufficient organic matter and structural integrity, but many Mediterranean landscapes are highly degraded, and demand long periods of recovery before regenerative practices can function optimally. These ecological limitations underscore the need for context-specific adaptation, targeted soil improvement strategies, and the development of drought-resilient plant varieties

[12] European Environment Agency. (2020)

to ensure the viability of regenerative agriculture in the region. More coherent and better-coordinated financial and institutional mechanisms are required to support long-term sustainability goals.

Cultural and behavioural barriers

Resistance to regeneration and restoration sometimes comes from generational or cultural practices, which can for example be inherited ways of land use from previous generations, or religious constraints on water re-use. Similarly, complexity to reach community-involved decisions, societal norms that exclude women or youth, land inheritance issues, and long-standing scepticism toward official guidance can obstruct change.

07

BRIDGING SCIENCE, POLICY, AND SOCIETY

A recurrent barrier to advancing regenerative and restorative practices in the Mediterranean lies in the fragmentation of knowledge and narratives. Solutions are often designed within a single domain or sector, without embracing the holistic vision required to address interconnected ecological, social, and economic dimensions. Research frequently remains confined within academic contexts, producing knowledge that is poorly translated into accessible formats for practitioners and policy-makers. Farmers often have limited understanding of sustainable water management and pesticide use, as well as the correct application of livestock for regenerative purposes, while policy-makers themselves frequently lack technical knowledge about soil sustainability. At the same time, consumers demonstrate low awareness of sustainability standards, with certification schemes and product labels not always perceived as credible or well-differentiated. These disconnects create barriers to trust, communication, and adoption at multiple levels of the agrifood system.

Educational and cultural gaps further complicate the transition. Agricultural education systems often remain conservative, insufficiently integrating innovative regenerative methods or practical land management training. Technical education programmes intended to strengthen the agri-workforce frequently fail to deliver, as subsidies attract unskilled labour rather than building specialised capacity. Farmers also face tensions between short-term survival strategies and the long-term benefits of sustainable methods, which makes persuasion and uptake difficult.

Neighbouring farms may perceive regenerative practices - such as altered pest control or land-use patterns - as overspill risks, fostering resistance rather than collaboration. Additionally, insufficient evidence and recognition of the advantages of traditional practices, combined with the lack of context-sensitive approaches that avoid “one-size-fits-all” solutions, weaken the credibility and adaptability of interventions. These gaps reinforce the disconnect between rural and urban populations, making the broader social acceptance of sustainability transitions more challenging.

Identifying knowledge gaps and priorities

This section addresses the critical knowledge required to overcome barriers, implement solutions, and address the challenges outlined in previous sections. These knowledge needs are categorised into two key areas: technical knowledge that needs to be created, and existing knowledge that requires effective transfer. Both are crucial for the transition to sustainable agricultural practices.

Advancing scientific and technical capacities

There is a need for a more integrated and interdisciplinary approach to science. This means fostering research that involves multiple stakeholders - such as farmers, researchers, policy-makers, and local communities - so that the scientific process is both inclusive and applicable to real-world challenges. Holistic research should not only focus on technical solutions but also address the socioeconomic, governance, and cultural aspects of sustainability.

To facilitate the shift toward more sustainable farming practices, it is essential to produce real-time, updated data that helps farmers make informed decisions. This includes data on climate patterns, soil health, crop performance, and market trends. Such data must be accessible, accurate, and easy to interpret, enabling farmers to adapt to practices that are both productive and environmentally friendly.

One of the key areas for the future is the need for research on resistant plant species - both native and foreign. With the increasing threats of pests, diseases, and climate change, knowledge of species that can withstand these challenges is vital. Identifying and promoting resistant crops - whether native varieties or improved foreign ones - can help farmers maintain productivity without relying on harmful chemicals.

A significant gap in knowledge exists regarding the relationship between soil health and water management. Research must focus on understanding how soil quality influences water retention, and vice versa, especially in regions vulnerable to droughts or erratic rainfall. Soil-enriching techniques that promote water retention and reduce the need for irrigation should be a priority. Practices of regenerative agriculture such as permanent soil cover, no-till farming, planned grazing, and water-conserving alternatives should be explored to improve the resilience of farming systems to climate change.

Traditional farming practices, which have been honed over generations, offer valuable insights into sustainable land use and biodiversity management. Documenting these practices is essential for preserving indigenous knowledge and integrating it into modern agricultural systems. There is a need to explore how these methods can be adapted and scaled for contemporary farming while respecting local contexts and traditions.

One of the most pressing needs identified is the ability to scale successful sustainable practices. This includes creating adaptable frameworks, indicators, and methods that can be tailored to diverse farming contexts, from smallholder farms to large-scale operations. Developing flexible yet effective indicators to monitor sustainability will help ensure that practices are not only scalable but also measurable and impactful across different regions. Having evidence of good results from some local champions would work as proof of success to facilitate the interest of both public institutions and financial stakeholders, critically needed for the scalability and replicability of these types of projects.

Enhancing knowledge exchange and uptake

There is a clear need for platforms and laboratories where collaborative research between scientists and practitioners can take place. These spaces should serve as meeting points where science meets practice, allowing farmers, researchers, and other stakeholders to share knowledge, test prototypes, and co-develop solutions. These collaboration hubs can provide hands-on experiences that bridge the gap between theory and practice, ensuring that solutions are grounded in real-world conditions. They should also include experts and

experiences from across the Mediterranean to be a platform of knowledge sharing and benchmarking of the region, where all can learn from other's experiences and ideas. It could also work as a space where best practices and results could be presented to convince some reluctant stakeholders, such as funders and other businesses across the value chain, encouraging their active involvement in the development of such projects.

Making scientific knowledge more accessible is crucial for effective knowledge transfer. This includes creating user-friendly formats - such as visual aids, infographics, and simplified reports - that can be easily understood by a wide range of stakeholders, from farmers to policy-makers and consumers. The language used must also be clear and free from jargon, ensuring that all groups can engage with and apply the knowledge effectively.

Education is central to driving change. Farmers must be educated not only about new practices but also about the economic and ecological benefits of sustainability. Consumer education is equally important, as informed consumers can demand more sustainable products and support farmers in adopting sustainable methods. Policy-makers also need to be educated on the importance of regenerative agriculture and ecosystem restoration so that they can develop policies that incentivise these practices and provide necessary support.

Effective knowledge transfer requires that advisors and extension officers be well-trained to communicate scientific knowledge to farmers. These intermediaries must be equipped with both technical expertise and the ability to communicate effectively with farmers. Their role is pivotal in ensuring that research findings are implemented on the ground, particularly in regions where farmers may have limited direct access to academic research.

Extension services remain weak or under-resourced in many Mediterranean countries due to structural, financial, and institutional constraints. Strengthening their footprint - and explicitly integrating regenerative agriculture and ecological restoration into their advisory and knowledge-transfer mandates - is critical to improving knowledge exchange and accelerating uptake among farming communities, particularly those most directly reached by these institutional mechanisms.

A fundamental challenge is the lack of trust in scientific institutions, especially in regions where past experiences with top-down policies or ineffective interventions have created scepticism. There is a critical need for trust-building efforts that engage local communities in the research process and ensure that solutions are both relevant and beneficial. Engaging farmers and communities in participatory research can help restore confidence in science and encourage wider adoption of sustainable practices.

Raising awareness about the importance of sustainable agriculture through public campaigns can help change public perception and influence policy-makers. These campaigns should focus on the environmental, social, and economic benefits of sustainable practices, ultimately encouraging governments to adopt policies that prioritise long-term sustainability.

08

FROM DIALOGUE TO ACTION

This final section outlines proposals for future collaboration aimed at advancing regenerative agriculture and ecological restoration across the Mediterranean. Building on the outcomes of the Barcelona workshop, these proposals identify opportunities for coordinated action at different governance levels - local, national, and international - and highlight pathways to strengthen science-policy-society interfaces for implementation. Collaboration is understood here as both a continuation of the participatory dynamic initiated by the project and a mechanism to scale up effective practices and policies across the region.

Laying the groundwork for implementation

In the immediate term, participants emphasised the need to systematically document and disseminate the knowledge generated through the workshop process. This includes compiling and publishing all results, insights and stakeholder contributions in an accessible format, accompanied by a concise, public-facing summary with concrete policy and practice recommendations. User-friendly versions of these materials should be tailored for farmers, agricultural advisors, and local governments to facilitate uptake at the operational level.

Participants also stressed that the communication strategy must frame regenerative and restorative practices not only as environmentally sound but also as economically viable, socially inclusive, and politically strategic. This involves articulating the cost of inaction, identifying co-benefits such as job creation, improved soil health, water retention, and biodiversity conservation, and integrating Mediterranean cultural values around food, land stewardship, and community resilience into the narrative. The involvement of youth and women was seen as crucial to drive innovation and bridge social and generational perspectives, reinforcing inclusivity and ownership.

To strengthen long-term capacity, investing in the training of trainers - particularly agricultural advisors, extension agents, community facilitators, and regenerative champions - was highlighted as a priority. These intermediaries play a key role in translating science into practice, inspiring peers, and supporting farmers' transitions. As discussed during the Barcelona workshop, empowering local champions who act as connectors between research, practice, and community networks can accelerate cultural change and uptake of regenerative practices. Expanding Living Labs, replication hubs, and peer-to-peer learning networks can promote experiential learning, innovation, and adaptation to diverse local realities. However, scaling up must remain context-sensitive, respecting ecological diversity, farming systems, and socioeconomic conditions across the basin.

Before launching new networks, comprehensive stakeholder mapping is recommended to identify synergies and avoid duplication. Collaboration should build upon existing Mediterranean and global initiatives (e.g., FAO-Global Soil Partnership, FERM, PRIMA, UfM, and the UN Decade on Ecosystem Restoration) and reinforce their capacity and visibility rather than creating parallel structures. Engagement should be inclusive,

involving the private sector, cooperatives, labour unions, water user associations, and local champions, while ensuring co-ownership, trust-building, and equitable participation.

Advancing regenerative agriculture and ecological restoration requires sustained investment in research, development, and innovation grounded in local realities. Field-based investigation and co-designed experimentation with local actors are particularly critical to translating global principles into locally adapted practices. In this sense, RDI is not peripheral but foundational.

International level

At the regional and international levels, cross-border cooperation is essential to foster coherence in policies, standards, and investments across the Mediterranean. Building on successful bilateral and subregional initiatives - such as the AquaMed collaboration between Algeria and Tunisia -, these efforts should evolve into structured multi-country programmes promoting harmonised sustainability criteria, waste reduction, and soil and water management practices. Strengthening or creating a Mediterranean coordination platform could help align strategies, share innovations, and bridge North-South divides in technical capacity and funding access.

The European Union's Agenda for the Mediterranean emphasises the need for a green and resilient recovery, placing sustainable agriculture, food security, and ecosystem restoration at the centre of regional stability. Within this framework, regenerative agriculture and ecological restoration are key vehicles for achieving shared objectives on land restoration, climate adaptation, and social inclusion. The EU Green Deal complements these efforts by integrating climate adaptation strategies with local agricultural innovation, ensuring that policy actions are grounded in science and real-world applications.

Additionally, the Water-Energy-Food-Ecosystems (WEFE) Nexus offers a critical framework to address interlinked challenges in resource management. By aligning policies across sectors, the WEFE approach ensures that solutions for water management, energy efficiency, and food production do not compromise ecosystem integrity. Embedding regenerative and restorative practices within this Nexus can enhance policy coherence and maximise synergies between biodiversity conservation, agricultural productivity, and social resilience.

Synergies should also be sought with EU frameworks such as the Green Deal, the Common Agricultural Policy (CAP), the Nature Restoration Law, and emerging carbon-market mechanisms. Financial instruments must mitigate transition risks for farmers, offering reward schemes for sustainable land management and restoration. Establishing common metrics, indicators, and terminology - for example, a shared definition of "regenerative agriculture" - will facilitate cooperation and comparability of outcomes across countries.

Regional visibility and consumer awareness can be strengthened through Mediterranean-wide communication campaigns that emphasise the cultural identity, sustainability, and quality of regenerative products. Engaging regional financial institutions such as the European Investment Bank (EIB) and the European Bank for Reconstruction and Development (EBRD) will be key to mobilising capital for agriculture and bioeconomy priorities. In parallel, technical cooperation should extend to Arab regional funds and research institutions, ensuring that southern partners are full co-designers and beneficiaries of initiatives.

Finally, establishing regional observatories and research facilities focused on soil health, water management, and biodiversity indicators would provide long-term support for evidence-based policy-making. Participatory, multi-stakeholder governance mechanisms at this level can reinforce transparency, gender equity, and data sharing, contributing to a collective monitoring framework for Mediterranean resilience.

From policy alignment and spatial planning to on-farm design and investment decisions, the water-land-food nexus approach helps identify trade-offs, optimise synergies, and prioritise interventions that enhance soil health, water efficiency, and ecosystem services. In this sense, it serves not only as a conceptual model, but as a practical platform for integrating science, governance and finance toward resilient territorial transitions.

National level

National governments are central to translating international commitments into effective action. Participants recommended that states support multi-stakeholder platforms linking policy, science, and practice, in line with international frameworks such as the Kunming-Montreal Global Biodiversity Framework and the UN Decade on Ecosystem Restoration. Policy coherence should be strengthened across ministries - particularly those responsible for agriculture, environment, water, and territorial planning - to avoid fragmented implementation.

Concrete measures include harmonising and updating national soil surveys in line with international classification systems, rather than developing separate ones, and creating open-access irrigation and fertigation tools to improve nutrient and water management. Addressing land fragmentation through enabling legislation is equally crucial. Strengthening public agricultural extension services, inspired from regionally adapted models such as France's Chambers of Agriculture or Catalonia's PATT programme, can improve knowledge transfer and territorial coordination.

Capacity-building should be prioritised through blended financing models combining public investment, private-sector partnerships, and development funds. Instruments such as contract farming schemes can provide market stability and incentives for sustainable production. Awareness campaigns targeting all stakeholders - from

farmers to consumers - should highlight the shared benefits of regenerative transitions, while technical training centres and agricultural schools should embed regenerative and restorative approaches in their curricula to build long-term competence and culture.

Integrating regenerative agriculture and ecological restoration into National Adaptation Plans (NAPs) and Nationally Determined Contributions (NDCs) across the Mediterranean offers a practical pathway to accelerate climate action with tangible, near-term results. These approaches strengthen soil health, enhance water retention, reduce erosion, and rebuild ecosystem functions - directly supporting adaptation in a region already facing water scarcity and land degradation. At the same time, they contribute to mitigation through carbon sequestration in soils and biomass, reduced input use, and improved landscape resilience.

Governments should realign subsidies, introduce performance-based schemes, and mobilise blended finance and climate funds to reward measurable outcomes in soil health, water resilience, carbon sequestration, and biodiversity.

Local level

At the local level, action must reflect each area's ecological, cultural, and socioeconomic specificities. Effective collaboration requires empowering farmers, cooperatives, municipalities, and civil society to co-design context-appropriate strategies. Making regenerative agriculture both economically attractive and socially valued - profitable and proud - is key to attracting youth and fostering generational renewal.

Local authorities should promote cooperative schemes for resource sharing, advisory support, and participatory innovation processes. All materials and tools must be translated into locally relevant and accessible languages, ensuring inclusivity and comprehension. Addressing social and gender inequalities at this level is vital to ensure that marginalised groups have an active voice in planning and benefit-sharing.

Finally, trans-local cooperation - linking communities across borders that share similar ecological and social challenges - can foster horizontal learning, accelerate the spread and uptake of good practices, and strengthen a shared Mediterranean identity around regenerative land management.

09

CONCLUSIONS AND RECOMMENDATIONS

The Mediterranean stands at a crossroads, where deeply interconnected environmental and socioeconomic challenges demand integrated responses that address soil health, water management, biodiversity conservation, and rural development. The evidence gathered through the Barcelona workshop and this report underscores that regenerative agriculture and ecological restoration are not isolated practices but essential pillars of a just and resilient ecological transition for the region.

Three overarching messages emerge. First, solutions must operate across scales and sectors. Fragmented interventions - whether scientific, policy, or financial - cannot address the systemic nature of Mediterranean degradation. Regional coordination mechanisms, such as the Union for the Mediterranean's GREENERMED Agenda, PRIMA, and MedECC, provide platforms that should be reinforced to connect local innovation with regional and global frameworks. Cross-border cooperation, grounded in shared scientific knowledge and the WEFE Nexus approach, can transform scattered initiatives into coherent regional strategies.

Second, the transition will depend on strong governance, financing, and knowledge systems. Governments should integrate regenerative and restorative principles into national agricultural, environmental and territorial policies, ensuring coherence among ministries and with international commitments such as the Kunming-Montreal Global Biodiversity Framework and the UN Decade on Ecosystem Restoration. Financial institutions and donors - public and private - must design instruments that de-risk transitions, reward ecosystem services, and reach small and medium producers. Knowledge must flow effectively between research, policy and practice, through Living Labs, training programmes, and participatory platforms that enable co-creation of context-specific solutions.

Third, inclusivity is essential for legitimacy and impact. Youth, women and local communities are not only beneficiaries but key agents of change. Building their capacities and ensuring their participation in decision-making enhances social equity and accelerates innovation. Integrating traditional and scientific knowledge systems strengthens cultural continuity and grounds sustainability in local realities.

Moving forward, collaborative initiatives between Mediterranean and international actors can play a catalytic role by promoting a regional partnership for regenerative and restorative practices that consolidates existing networks, mobilises financial and technical resources, and supports pilot initiatives demonstrating measurable environmental and socioeconomic benefits. Such a partnership would embody the shift from knowledge to action - aligning national and regional priorities with global objectives and positioning the Mediterranean as a model of cooperation and resilience in the face of climate and ecological change.

10

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The Mediterranean is confronting an unprecedented convergence of environmental and socio-economic challenges. Climate change, water scarcity, soil degradation, biodiversity loss and desertification are placing growing pressure on ecosystems, food systems and rural livelihoods, threatening the long-term resilience of communities across both shores of the region. Responding to these interconnected crises requires approaches that restore ecosystems while strengthening agricultural productivity and social resilience.

This publication explores the transformative potential of regenerative agriculture and ecological restoration as complementary pathways towards more resilient Mediterranean landscapes. Drawing on the outcomes of a regional workshop convened by the Spanish Agency for International Development Cooperation (AECID), the European Institute of the Mediterranean (IEMed) and the Centre for Ecological Research and Forestry Applications (CREAF), it brings together the perspectives of policymakers, researchers, practitioners, civil society and international organisations from across the Mediterranean.

The report examines the environmental, institutional and socio-economic conditions needed to scale up regenerative and restorative practices. It showcases innovative experiences from both the northern and southern shores, identifies barriers related to governance, finance, technical capacity and social acceptance, and proposes practical recommendations to strengthen cooperation, policy coherence and investment across the region.

Produced within the framework of the Masar Al'an Programme of the Spanish Agency for International Development Cooperation (AECID), this publication forms part of a broader effort to promote sustainable development and regional cooperation across the Southern Mediterranean. Masar Al'an supports knowledge exchange, policy dialogue and partnerships around shared priorities, including employment, ecological transition, gender equality and youth empowerment. By advancing regenerative agriculture and ecological restoration within this broader agenda, the publication highlights how restoring landscapes can simultaneously enhance food security, climate resilience, biodiversity, rural livelihoods and regional cooperation. It offers a valuable resource for governments, development agencies, researchers, civil society organisations and practitioners committed to building a more resilient, sustainable and prosperous Mediterranean.

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