CIHEAM

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Mediterranean approach to food sovereignty: concerns and impacts on sustainable food systems

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1. Introduction

The Mediterranean region, located at the crossroads of Europe, sub-Saharan Africa, and Asia, has historically been a melting pot of civilizations and the cradle of many iconic agricultural crops such as wheat, vines, legumes, *Brassica spp.* and olive trees. For centuries, Mediterranean agriculture has thrived thanks to its ability to acclimatize new species of plants, fruits, vegetables, and legumes from around the world.

Today, the Mediterranean faces many simultaneous challenges; this “perfect storm” is both natural, linked to climate change introducing uncertainty on agricultural production, and political, with restrictions for production and commerce linked to armed conflicts affecting the Region. In terms of production, the Mediterranean region is highly dependent on food imports and many counties today are suffering malnutrition[1]. Agriculture and fisheries sectors are particularly affected by climate change, showing rising average temperatures with unknown effects on water availability. Pressure on natural resources is increasing; in the last fifty years, the population of the countries of North Africa and the Middle East has more than tripled. There is still great potential for agricultural and forestry activities to produce significant climate change mitigation through carbon sequestration, as shown in studies on sustainable soil conservation practices and integrated land management.

Pressure on natural resources in the last fifty years, the population of the countries of North Africa and the Middle East has multiplied by 3.5. Despite a significant proportion of inhabitants in rural areas and a significant agricultural workforce, food production fails to meet all national needs, making several countries highly dependent on imports and particularly sensitive to market tensions (cereals, agricultural inputs, livestock feed, seeds, etc.) leading to a spiral of rising food prices.

Finally, the consequences of this situation, it has become urgent to accelerate transitions towards more resilient and sustainable agri-food systems in the Mediterranean region. Particular attention must be paid to societal challenges in a region with high youth and female unemployment, demographic shifts towards increased urbanization, changing food choices and demands, vulnerability of rural livelihoods, and to conflicts and distress migrations which require urgent actions. More than ever, innovative multi-stakeholder

[1] https://www.who.int/news-room/fact-sheets/detail/malnutrition

strategies and transdisciplinary knowledge sharing are needed between the northern, southern, and eastern shores of the Mediterranean region. Public policies and incentives likely to strengthen innovative strategies need data and scientific methods to evaluate their impact and help public authorities make their choices, in order to promote an institutional, social, and technological context favorable to innovation. Businesses, finance, and civil society actors must also be key stakeholders in defining this food environment.

In a convulsed region, attained by so many difficulties, CIHEAM represented for more than 60 years the reference organization in academic excellence in the primary sector of the Mediterranean and as a stream of Interregional cooperation between shores. CIHEAM is today up to the height of the challenges listed, ready to serve its Member Countries as a lever to stir the needed changes in the sector for a more prosperous common future.

2. Main challenges and impacts on Mediterranean agricultural and food systems

2.1 The Mediterranean, a global climate change hotspot

The Mediterranean basin is hard-hit by global warming, with the region warming expected to rise 20% faster than the rest of the planet. Projections expect an increase of +2.2°C (on average) by 2050, compared to 1.5°C globally. The effects of climate change are already impacting populations, notably affecting their incomes, nutrition, health, and access to water resources. They also contribute to increasing inequalities and enhanced migratory flows throughout the Region.

2.2 A Region with natural resource's overexploitation

Food systems, along with agricultural and aquatic production, increasingly depend on the availability and quality of natural resources. These systems, which are essential to life on Earth, are threatened by various factors today: continued exploitation, urban expansion, industrial relocation, geopolitical conflicts, and the impacts of climate change are diminishing their extent, quality, and resilience. Furthermore, a growing global population demands more food production, broader availability of processed products, and longer food storage, directly influencing production value chains.

In 2020, the Mediterranean's population was estimated at 542 million, projected to rise to 657 million by 2050. It is therefore crucial to pay particular attention to the management of natural resources such as soil, water, and biodiversity. These elements are interconnected within a dynamic and complex network. Water scarcity, exacerbated by the high volumes needed for growing population, agricultural and industrial production and uneven distribution, has become a significant issue in the Mediterranean.

It is important to note that this region holds only 3% of the world's water resources, yet it is home to over 50% of the populations considered "water poor". Overexploitation of water resources, salinization, and soil degradation are worsened by climate change, reducing available arable land and threatening agriculture, a significant water consumer. Soil fertility is decreasing progressively, reducing available cultivated land.

Since 1961, 8.3 million hectares of arable land have been lost, mainly due to urbanization. In Egypt, rising sea levels threaten to submerge between 10% and 20% of the fertile areas of the Nile Delta by the end of the century. Additionally, the MENA region lost between 2.1% and 7.4% of its GDP due to environmental degradation.

Furthermore, the problems of access to water resources in the Mediterranean also reflect the inequalities between the northern and southern shores. While 75% of the water resources are in the north, 180 million people in the south and east face water shortages, with less than 1,000 m³ per capita.

Regarding water pressure, an exacerbating factor is the increase in mass tourism. For example, on the island of Kos (Greece), there are 20 tourists for every inhabitant. On average, a tourist consumes twice as much water as a local for drinking, hygiene, and bathing, at the expense of agricultural needs.

At last, despite recent positive developments, the fishery sector remains under pressure with fishing pressure in the Mediterranean and Black Sea increasing above 20% the level considered sustainable[2].

2.3 Hunger, food insecurity and malnutrition in the Mediterranean basin

Food Security (according to the 1996 World Food Summit): "*When all people, at all times, have physical and economic access to sufficient, safe, and nutritious food that meets their dietary needs and food preferences for an active and healthy life"*. In the Mediterranean, agri-food systems are facing significant challenges such as the nutritional and health quality of food, compounded by increasing pressures from climate change and demographic shifts.

The main factors putting pressure on food security in the region include climate change and geopolitical tensions. For example, the water shortage exacerbated by the war between Russia and Ukraine has seriously disrupted the availability of wheat. Countries in the South and East Mediterranean, which are major consumers of cereals, could see their import needs reach 114 million tonnes by 2050. Corn imports increased to 23 million tonnes in 2021, up from 300,000 tonnes in 1961. Over 50 years, the net dependence on agricultural imports has quadrupled, from 10 to 40%. The rise in the price of agricultural inputs

[2] As from recent data from the General Fisheries Commission for the Mediterranean (FAO).

significantly amplifies these countries' difficulties, as producers have shrinking added value margins though risking the perennity of their production.

Food insecurity in Mediterranean countries also manifests at other levels. Firstly, there is a public health concern, partly due to a lack of traceability and control over the hygienic quality of food products. Technically, this insecurity is also due to the difficulty of sustaining local agricultural and agri-food production, compounded by the scarcity of resources or inappropriate methods.

With the exception of Palestine, where hunger is affecting great shares of the population, high food prices do not always translate into undernutrition, except for the most impoverished areas; its impact varies from 3% in most Southern and Eastern Mediterranean Countries to 7% in Egypt. Nevertheless, it adversely affects diet quality and leads to public health issues. Despite the recognized benefits of the Mediterranean diet, rich in plant-based and locally sourced foods, obesity, diabetes, and cardiovascular diseases are increasing. This diet is in decline, affected by lifestyle changes, the globalization of consumption patterns, and the abandonment of traditional recipes. Many Mediterranean countries are experiencing food-related health issues, sometimes reaching near-epidemic proportions. The prevalence of obesity among adults has risen, with high rates in countries like Jordan (35.5%), Egypt (32%), Turkey (32%), and Malta (28.9%). The situation is also alarming for children, with high rates in Lebanon (19.7%), Tunisia (16.5%), and Greece (13.9%). By comparison, the global average for obesity among adults is 13.1%, and that for overweight among children is 5.7%.

Amid these challenges, significant amounts of food are wasted by retailers, food services, and consumers, undermining efforts to produce and supply food efficiently. Moving from a linear 'extract-make-dispose' approach to a circular economy is imperative. Combating food waste and embracing social and technological innovations are crucial for creating new jobs and fostering the emergence of new spaces for dialogue and co-construction involving all stakeholders in agri-food systems.

2.4 Strong inequalities and increased disparities

The Mediterranean region, with a median age of around 35 years, exhibits significant disparities; for instance, Italy's median age is 47.8 compared to Palestine's 19.9. It is estimated that young people constitute over half of the population on the southern and eastern shores of the Mediterranean. While this youth represents a vital asset, it continues to face significant social and economic integration challenges, including unemployment, mobility barriers, access to culture, and representation in public dialogue and decision-making spaces. In some southern European countries, the Maghreb, and the Middle East, youth unemployment rates are among the highest globally. Post-Arab Spring,

the region's youth unemployment rate stood at around 30%, against a global average of 13%. For instance, in Egypt, 26.9% of young people are neither in school nor employed nor in training, with the rate for women at 40.1% and for men at 15.8%; in Albania, the rate is 23.7%, and in Tunisia, it is 22.6% (33.2% for women).

Women and girls continue to be marginalized due to structural barriers and deep-rooted gender inequalities. According to a recent FAO report titled "The Situation of Women in Agri-Food Systems," 36% of working women worldwide are employed in agri-food systems. This varies significantly from country to country due to different socio-economic or political contexts. For example, in Morocco, women make up 40% of the agricultural workforce, and in rural areas, their activity rate reaches 71.4%, highlighting their critical role in the economic fabric of rural areas.

Despite their substantial contributions to food security and the economy, women's roles remain underestimated, and their activities are often invisible. They are predominantly engaged in informal and unpaid work, have limited access to property (only 13% of agricultural landowners are women), and are more likely to work for free on family land, with limited access to markets, inputs, agricultural and financial services, new technologies, and even training. Due to these inequalities, women's resilience and adaptive capacities to Mediterranean challenges are lower.

Inequalities in the region are not limited to gender or age but are also geographical. The gap between urban and rural areas is widening, with the majority of those in poverty residing in rural zones. Basic services such as health, education, and communication are less accessible in these areas, and opportunities for exposure to and engagement with innovation are limited. In Tunisia, the rate of the rural poor is estimated at 75%. In Egypt, rural poverty is three times higher than in urban areas, and 80% of the extremely poor live in Upper Egypt, home to half of the country's population.

Furthermore, most jobs in agriculture are associated with low and unstable incomes, poor safety and health conditions, greater drudgery, and limited social protection. Jobs in the sector are not socially valued and do not appeal to new generations. Rural and agricultural areas lack attractiveness.

These factors, compounded by the effects of climate change and pressure on available resources or their degradation, are driving forces in rural and agricultural areas to seek better living conditions elsewhere, initially in urban areas within the country and then in neighboring countries. Internal migrations (from the countryside to cities) constitute the largest part of human population movements, with a ratio of 4 to 1, meaning that for every four migrants within the country, there is one international migrant. These migrations fuel urbanization, creating opportunities but also posing challenges. It is estimated that about 15% of international migrants are young people, with a high proportion of women. The

proportion of women appears higher on the Eastern Mediterranean route (22% women and 37% children) than on the Western route (8% women and 9% children). These populations are more vulnerable than men before, during, and after their migration, both in terms of security, psychological needs, and access to services and rights. Specifically, they are more often victims of various forms of mistreatment (physical and sexual, emotional, psychological, verbal violence, abuse, and exploitation)

2.5 A Mediterranean institutional framework to be strengthened

Agriculture and food security are central to the Mediterranean identity and play a crucial role in maintaining the balance of the region's territories. In 1995, Mediterranean countries pledged to transform the region into a zone of peace, stability, and prosperity through the Barcelona Declaration. As we near the 30th anniversary of this declaration in 2025, it is crucial to reiterate this commitment to strengthening economic cooperation, promoting trade and investment, facilitating technology transfers, and fostering peaceful coexistence.

Today, the region is experiencing a political, economic, and social crisis that underscores the pivotal role of food security in its stability. Although many coastal economies have seen growth rates at or above the global average in recent years, the disparity between the northern and southern shores is widening. Challenges such as population growth, food supply insecurity, agricultural trade imbalances, environmental vulnerabilities and increased poverty levels among the poor, demand that agriculture adapts to support ongoing transformations. The socio-economic and environmental landscape of the Mediterranean has significantly evolved in recent years, challenging the vision of regional integration and necessitating a reassessment of associated policies. Numerous unresolved issues persist: political and economic barriers have hindered regional integration; trade alone has proven insufficient for achieving socio-economic integration objectives; and sectoral reforms aimed at inclusive growth, particularly for vulnerable groups such as women and youth, are still lacking.

Environmental resilience remains an elusive goal. Prevention and adaptation policies are inadequate. However, the region holds substantial potential to reduce its dependence on fossil fuels and meet both its own and its neighbors' energy needs through green energy solutions.

Despite these challenges, the potential for regional integration in the Mediterranean remains largely untapped and requires a new impetus. Multilateral cooperation is crucial for enhanced regional integration. Countries should reinforce programs that finance smart agricultural development projects tailored to local conditions and integrate water management, climate change adaptation, and inclusive growth. Clear and visible evaluations of these programs, using quantifiable criteria and involving civil society, are essential. Trade

relations across the Mediterranean should be promoted on the basis of balanced and transparent trade rules. New partnerships must be established to improve the agricultural situation in the region by financing training, facilitating mobility for students and workers, and developing collective purchasing and common storage policies.

3. What answers should be provided and what priorities should be set?

As the Mediterranean Region is facing the challenges listed before, the United Nations' global initiative for more sustainable food systems in the Mediterranean region of which CIHEAM is a key stakeholder, has identified several priorities essential for transforming Mediterranean food systems:

3.1 Green and circular economy

Current agrifood systems need transitioning towards more environmentally-friendly practices. This shift includes advocating for agricultural practices and food production processes that promote climate neutrality, environmentally respectful, and that take care of preserving soil fertility and ecosystems. The transition involves transformation to enhance smarter use of chemicals, recycling and reuse of energy, fertility and water in agriculture and agro-industrial processes and shortening of commercial circuits. Since last year the new Common Agricultural Policy 2023-2027 of the European Union is already addressing the agro-ecological transition in the case of EU countries; the results obtained in the implementation of these measures should be studied in the medium term. The goal is to produce sufficient, healthy, and affordable food for all, aligning with the principles of the circular economy.

3.2 Blue economy

Marine products, integral to the Mediterranean diet, present a unique opportunity to promote healthy and sustainable local diets, enhancing food security and nutrition in the region. These 'blue foods' are viewed as potential catalysts for rejuvenating the Mediterranean diet and are crucial in fostering sustainable growth. They also add significant socio-economic value to coastal communities, which are often among the most vulnerable, by bolstering their economies through responsible and sustainable fishing and aquaculture practices. Investing in research may contribute significantly to the understanding and the application of adaptation measures related to water warming, acidification and pollution.

3.3 Sustainable soil and water management in the context of climate change

Water scarcity is a significant obstacle for sustainable food production in the Mediterranean region. Exacerbated by climate change, this challenge is intensified by shifting precipitation and temperature patterns, along with an increase in extreme weather events. Factors such as population growth, urbanization, changes towards diets richer in animal proteins, and geopolitical tensions further strain the already limited water resources. These pressures underscore the critical need for developing sustainable strategies for soil and water management.

3.4 The Mediterranean diet as a lever for healthy and sustainable production, consumption and nutrition

The Mediterranean diet is recognized as a pivotal tool for advancing sustainable food systems that promote healthy eating while integrating the cultural dimension of food, which includes national and regional traditions and identities. This diet is connected not only to sustainable consumption and production practices but is also appreciated for its nutritional and nutraceutical benefits, particularly from products like legumes. These traditional food systems are esteemed for their sustainability and positive impact on biodiversity and ecosystems, underscoring their vital role in fostering health and environmental sustainability.

3.5 Cities and rural-urban food systems: catalysts for change

In the Mediterranean region, the involvement of cities and local authorities in food-related issues is becoming more pronounced, reflecting a heightened interest in urban food systems. To address this trend, an increasing number of cities are establishing local multi-stakeholder governance structures for food, such as food policy councils and food alliances. These initiatives foster inclusive decision-making at the local level, which is crucial for shaping the future of food systems both locally and nationally, and for influencing regional and global policies in this area.

3.6 Equitable and inclusive development of rural livelihoods

There is a necessity of supporting the livelihoods of rural populations as sustainable food systems need local populations to ensure their perennity. Lack of access to basic services such as health, education or transport put rural communities in the most vulnerable shares of the population. Rural development programs and advocacy for the improvement of the rural living conditions of those more suffering from lack of resources such as women, youth, smallholders, and Small and Medium Enterprises, to promote equality in the access to basic services in rural areas, to create economic opportunities and to guarantee their access to markets. Critical components like securing land rights, ensuring access to financing, training,

digitalization technologies and promoting innovation are essential to ensure equitable and sustainable livelihoods, as well as promoting women's associations, and leadership that can improve the attractiveness of rural areas.

4. How does CIHEAM implement these solutions?

CIHEAM's activities, in line with these identified priorities, encompass training, research, and cooperation, primarily targeting healthy eating initiatives. These efforts address immediate challenges like natural disasters and infectious diseases by setting up detection and early warning systems for fires, droughts, transboundary animal diseases, and plant pests. Long-term goals include reducing greenhouse gas emissions, preserving biodiversity, and diversifying supply chains.

CIHEAM focuses on local and regional food systems through the training of experts capable of helping production systems to adapt to emerging challenges, developing the Mediterranean primary sector of tomorrow. The organization champions the sustainability of agriculture and food systems by integrating innovations and advocating for sustainable farming practices, especially under the 'One Health' framework. Additional objectives involve minimizing food loss and waste, encouraging healthy dietary habits, and boosting consumer knowledge about agricultural and food products.

Supporting rural revitalization, CIHEAM encourages diversifying income sources through sustainable forest management, rural crafts, and agritourism. It emphasizes collaborative research and development, utilizing new and existing technologies and practices, and prioritizes knowledge sharing, especially among youth and women.

Through institutional dialogue and partnerships, CIHEAM fosters stronger cooperation among diverse stakeholders including governments, the private sector, academia, agricultural communities, and civil society.

To respond more effectively to these challenges, CIHEAM intends to increase its efforts in specific areas in the coming years:

4.1 Adapt the training and strengthening scientific diplomacy in the Mediterranean

Investing in youth entrepreneurship and innovative professions is a priority for CIHEAM, which responds to a strong demand for education by offering adapted theoretical and practical training. These training courses target emerging professional profiles such as

innovation managers, promoting a pedagogy oriented towards practice and engagement in collaborative projects.

Furthermore, the development of scientific and technical diplomacy is crucial to strengthening cooperation between Mediterranean countries around food sovereignty and sustainable food systems. CIHEAM plays an essential role in this process, supporting scientific and political exchanges to achieve these objectives. CIHEAM manages different international scientific and technical networks such as SFS Med Platform, Medamin (Montpellier), Genmeda (Chania), Mediterranean Organic Agriculture Network and Mediterranean Innovation Partnership (Bari) the Network on Greenhouse Gasses in Agriculture (Zaragoza) and the new one on Legumes (LeguMed).

The educational model adopted by CIHEAM also integrates interactions between the public and private sectors, with co-planning and co-design of educational pathways to better respond to current challenges. This multidisciplinary approach is enriched by the diversity of participants, which allows for a more complete understanding of contemporary issues and potential solutions.

The interconnection of public and private entities is strengthened by the adoption of the quintuple helix model, which includes not only universities and businesses but also local communities and the ecosystem, thus facilitating the development of strategies for Mediterranean agri-food systems. This complex structure promotes innovation and multidimensional collaboration, essential for tackling sustainable development challenges.

4.2 Act on the food environment

The need to move towards more sustainable food systems has been highlighted at various UN summits, which have emphasized the importance of changing our eating habits due to their impact on natural resources and human health. In recent years, sectoral policies have sought to influence public food demand by focusing on consumer empowerment. This approach aims to encourage citizens to adopt healthier eating behaviors through increased awareness and education, including information campaigns and educational programs in schools.

However, daily reality shows that food choices are often influenced by economic, political, social, cultural, physical and commercial factors that are largely beyond the individual control. Our food choices are closely linked to the contexts in which they are made. Thus, the most effective way to modify eating behaviors would be to transform the structural factors that guide them. This transformation would enable individuals to make decisions based on correct information while driving demand towards more sustainable systems.

According to the High-Level Panel of Experts (HLPE, 2017) of the United Nations Committee on World Food Security and Nutrition, the food environment is defined as "*the physical, economic, political, and socio-cultural environment in which consumers interact with the food system to make their choices about acquiring, preparing, and consuming food*." Acting on this dimension of the food system by impacting all its components (institutions, policies, commerce, catering, etc.) is essential to make sustainable food practices accessible to all.

By creating favorable food environments, we encourage consumers to adopt sustainable eating patterns, such as the Mediterranean diet. This creates a "new food demand," which in turn stimulates a change in food production and processing, thereby creating a "new food supply." This process can play a significant role in the transition to more sustainable food systems and diets.

4.3 Revitalize the Mediterranean diet, lever for sustainable production, a local economy, and healthy food

In 2013 UNESCO declared the Mediterranean diet as an intangible heritage of humanity; the declaration reads as follows

"The Mediterranean diet constitutes a set of skills, knowledge, practices and traditions ranging from the landscape to the table, including the crops, harvesting, fishing, conservation, processing, preparation and, particularly, consumption of food. The Mediterranean diet is characterized by a nutritional model that has remained constant over time and space, consisting mainly of olive oil, cereals, fresh or dried fruit and vegetables, a moderate amount of fish, dairy and meat, and many condiments and spices, all accompanied by wine or infusions, always respecting beliefs of each community. However, the Mediterranean diet (from the Greek diaita, or way of life) encompasses more than just food. It promotes social interaction, since communal meals are the cornerstone of social customs and festive events." (UNESCO, 2010).

The agricultural practices promoted by Mediterranean diets are inherently sustainable, including crop diversification, which encourages biodiversity and reduces reliance on monocultures and pesticides. Olive cultivation, which requires less water than other crops, promotes water conservation. Integrated pest management, combining traditional and organic agricultural practices, reduces dependence on chemical pesticides, benefiting the environment and health. Adopting these diets can reduce the environmental footprint associated with food production and consumption. The emphasis on water-efficient foods contributes to the conservation of water resources, essential in arid and semi-arid regions.

They also promote the consumption of local and seasonal produce, supporting local economies and farming communities, reducing transport-related emissions and the overall carbon footprint of food distribution. They guarantee freshness, better nutritional value, and respect natural growth cycles, minimizing the need for artificial growth accelerator products.

The health benefits of Mediterranean diets are well documented, including reduced risks of chronic diseases. Their richness in antioxidants, healthy fats, and fiber helps reduce the risk of heart disease, diabetes, and certain cancers.

Promoting these diets also requires an effort in terms of education and cultural preservation. Raising awareness among the general public can lead to better eating habits. As an integral part of the heritage of Mediterranean countries, preserving traditional food practices is crucial to maintaining cultural identity and diversity. Supportive policies and institutional frameworks are needed to fully exploit these schemes. This includes policies encouraging sustainable agricultural practices, support for local food systems, reintroduction of native species, educational programs in schools and communities, and research and development.

By promoting biodiversity, reducing environmental impacts, supporting local economies, and enhancing public health, Mediterranean diets position themselves as a powerful lever for achieving sustainability goals.

4.4 Adapt agricultural systems and value chains for greater resilience and equitable benefit sharing

Adapting agricultural systems and value chains in the Mediterranean region is essential to build resilience and ensure equitable sharing of benefits, key elements of sustainable development. This adaptation involves several key strategies, tailored to the unique context of the Mediterranean.

Strengthening the resilience of Mediterranean agricultural systems requires the adoption of practices that are resilient to environmental and economic shocks. This includes crop diversification, application of agroecological practices such as terracing, intercropping, and the use of cover crops to improve soil health, water retention, and biodiversity, suitable for hilly landscapes and arid Mediterranean conditions, as well as the use of indigenous livestock breeds that can be better adapted to Mediterranean conditions. Efficient water management is also crucial to address water scarcity, while climate-smart agriculture, including the use of drought-tolerant crop varieties and precision farming technologies, plays a major role in optimizing resource use and increasing resilience to climate change.

Strengthening value chains in the Mediterranean involves creating robust systems that can adapt to changes and ensure sustainability. Enhancing local and regional markets to reduce

dependence on global supply chains, support local economies, and improve food security is crucial. Encouraging the development of agro-industries that add value to primary agricultural products through processing, packaging, and branding is vital, especially for traditional products such as olive oil, wine, and dried fruits. Establishing traceability systems to ensure product quality and safety, and building consumer trust, is essential, particularly for high-value products such as organic products and geographical indications. Improving infrastructure such as cold storage facilities, transportation networks, and market facilities to reduce post-harvest losses and improve market access is also necessary.

Fair and equitable sharing of benefits is essential for the sustainable development of the Mediterranean agricultural sector. Promoting fair trade certifications and ethical sourcing practices to ensure that farmers receive fair prices for their products and that working conditions are improved is crucial. Supporting the training and strengthening of cooperatives and producer organizations to improve bargaining power, access to credit, and capacity for collective action is essential. Developing business models that include smallholders and marginalized groups in decision-making processes and profit-sharing arrangements is fundamental. Establishing social protection programs and safety nets to support vulnerable farmers and communities in times of crisis, ensuring they have access to essential resources and services, is also vital.

The Mediterranean primary sector is very exposed to risks linked to its climatic and biotic changing conditions. As the sector is defined by incertitude, risk reduction strategies are a major lever for increasing investment by farmers and securing their livelihood. Agricultural and livestock insurances have proven to protect farmers from known threats that would otherwise have discouraged certain productions or, that could have driven many producers out of business after a catastrophic event. Insurance programs are being implemented throughout the Mediterranean region and represent an interesting line of work of CIHEAM to bolster productivity and reinforce local economies.

4.5 Strengthening gender focused research in the work of CIHEAM

At the European level, the Gender Equality Strategy 2020-2025 emphasizes the integration of gender-related aspects in Research and Innovation, aiming to address gender stereotypes, achieve gender balance in decision-making and politics, and close the gender gap. In addition, a significant bias affecting women in agriculture is their underrepresentation in research studies. Notably in the Mediterranean region, a major flaw identified in research lies in the tendency to compare female-headed households with male-headed households rather than considering the gender of who was managing farm activities. This oversight has led to various shortcomings, including the failure to acknowledge the heterogeneity of women's status and situations within households, the unique challenges they may encounter compared to men and the prevalent circumstances in

many contexts, where despite their active participation in agriculture work, they are not recognized as farmers.

4.6 Strengthening initiatives for dialogue and cooperation in the Mediterranean

For more than six decades, CIHEAM has played a key role in Mediterranean cooperation. As an intergovernmental organization, it fosters dialogue and serves as a catalyst to promote sustainable agriculture and resilient food systems. Through its training, research, and cooperation programs, CIHEAM facilitates the sharing of knowledge and expertise between its member countries, while strengthening political and academic ties through joint initiatives.

CIHEAM is committed to continuing to play this crucial role in developing agricultural and food policies adapted to the unique challenges of the Mediterranean, such as climate change, water management, and the preservation of biodiversity. It will maintain regular platforms for dialogue between Mediterranean countries to collectively discuss and address regional issues, including food security and water resources management.

Convinced that food sovereignty in Mediterranean countries requires close collaboration and the ability to leverage existing complementarities, CIHEAM will continue to promote cooperation between northern and southern Mediterranean countries to improve the management of shared natural resources, such as water and marine and terrestrial ecosystems. This includes joint research projects and exchanges of good practices. CIHEAM proposes more adapted training and capacity-building programs capable of preparing young professionals and decision-makers to face agricultural and environmental challenges with innovative and sustainable approaches.

It will also encourage the adoption of sustainable agricultural practices and stimulate innovation in agricultural techniques and food systems to meet the challenges posed by climate change and population growth. Finally, CIHEAM plans to actively contribute to the new Pact for the Mediterranean proposed by the European Commission, thus strengthening the partnership in an increasingly contested and unstable global context, and actively participating in the definition of strategies for increased cooperation.

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