



MULTIFUNCTIONALITY IN FARMING

2023-PI-ALL-INNO-EDU-ENTERP-101140288

MILESTONE 3, Regional analysis of agricultural multifunctionality Western Greece, Greece (NUTS code: EL63)

Work Package 2, Activity 2.1

Responsible Partners:

- *Eurotraining*
- *Rezos brands*

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FIRST PART, general assessment of Regional Agriculture



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EL63	Western Greece, Greece
INTRODUCTION:	
<p>Geography and Climate:</p>	<p>NUTS region 63 in Greece, designated as EL63, corresponds to the regional unit of Western Greece as part of the NUTS 2 code [1]. The Region of Western Greece is one of the 13 administrative regions of Greece. It comprises the western part of continental Greece and the northwestern part of the Peloponnese peninsula. According to the 2021 census, Western Greece covers an area of approximately 11,336 square kilometers and has a population of about 679.796 people, indicating the significant role of agriculture in sustaining the local economy and livelihoods.</p> <p>Western Greece consists of 3 regional units:</p> <ul style="list-style-type: none"> - Regional Unit of Aitolokarnania, - Regional Unit of Achaia, - Regional Unit of Elis, <p>These Regional Unit are further subdivided into 19 municipalities [2].</p> <p>Western Greece is characterized by a diverse geography that includes mountainous regions, fertile plains, and coastal areas. The terrain is primarily rugged and mountainous, especially in the central and northern parts of the region, with prominent ranges such as Panachaiko, Erymanthos, and Aroania. These mountains influence local weather patterns, creating microclimates that support a variety of agricultural practices. The region benefits from a Mediterranean climate, featuring hot, dry summers and mild, wet winters. Its's capital city is Patras, which is the largest city in the region [3]. The coastal areas experience sunny summers, while the mountainous regions tend to be rainier and cloudier. Snow is common in the higher elevations of Erymanthos, Panachaiko, and Aroania during winter, with temperatures in the plains typically ranging from 10 to 15°C [4].</p>
<p>Crop Diversity</p>	<p>Western Greece boasts a rich diversity of crops. The total agricultural land in Western Greece amounts to approximately 239.080,13 hectares. Of this, 37.9% is arable land (90.621,56 hectares), 3.9% is vineyards (9.336,75 hectares), 37.7% is tree crops (90.212,63 hectares), 0.7% is greenhouses (1.562,72 hectares), and 19.8% is other types of land (47.346,47 hectares). This extensive agricultural area supports a variety of crops. Among these, olives are particularly prominent, cultivated extensively for olive oil production. The region produces a significant amount of olives annually, contributing to its reputation as a major olive oil producer. Grapes, covering around 9.336,75 hectares, are another important crop, particularly for wine production, with varieties like Mavrodaphne being well-known. Citrus fruits, such as oranges and lemons, also benefit from the regions favorable climate, with substantial production annually.</p>

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	<p>Additionally, vegetables, including tomatoes, peppers, and cucumbers, are cultivated in both open fields and greenhouses. The region is also known for specialty crops such as currants and herbs, which contribute significantly to both local consumption and exports. The cultivation of currants, particularly in areas like Aigialeia, is notable.</p> <p>The most prominent organic crops include table olives, olives for oil, citrus fruits, vineyards, walnut trees, vegetables, chestnut trees, and aromatic plants. This diversity reflects the regions adaptation to the Mediterranean climate and its varied terrain, which supports both traditional and modern agricultural practices [5].</p>
Livestock and Animal Husbandry	<p>Livestock farming in Western Greece is a significant agricultural activity. Detailed statistics from 2021 show that the region has 1.299 cattle farms with 71.695 cattle, 11.269 sheep farms with 1.287.733 sheep, 5.443 goat farms with 382.132 goats, 1.178 pig farms with 101.733 pigs, and 14.164 poultry farms with 675.156 birds. Sheep and goats are particularly significant, with a total of approximately 1.669.865 animals raised for meat, milk, and cheese. Traditional husbandry methods like transhumance, where herds are moved seasonally to different pastures, are still practiced, helping maintain pasture quality and supporting sustainable livestock farming.</p> <p>Cattle farming, with about 71,695 animals, is primarily focused on dairy and beef production, contributing substantial quantities of milk and meat to local markets. Poultry farming is also significant, with an estimated production of millions of eggs and tons of poultry meat annually. Pig farming, with approximately 101.733 pigs, contributes to the production of thousands of tons of pork each year. Organic livestock farming is also notable in the region, with 146.033 farms engaged in organic practices, reflecting a growing trend towards sustainable and environmentally friendly farming methods.</p> <p>However, the livestock sector faces challenges such as the dependency on state subsidies which have incentivized increasing the number of animals without a corresponding increase in productivity. Furthermore, the peculiar conditions in the supply and distribution of feed, milk, and meat between producers and traders create a dependency that hampers the ability to set production costs and market prices based on the quality of livestock products.</p>
Agricultural Economy	<p>Agriculture plays a vital role in the economy of Western Greece, contributing significantly to regional GDP and providing substantial employment. The sector supports around 20% of the regions workforce, with approximately 60.000 people employed directly in agricultural activities. The agricultural economy generates an estimated 1,2 billion € annually, with key contributions from olive oil, wine, citrus fruits, and livestock products.</p>

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	<p>Detailed economic data from ELSTAT for 2021 highlights the following contributions: cereals (36,55 million €), fodder plants (117,44 million €), vegetables and row crops (219,68 million €), vineyards and wine (42,12 million €), olives and olive oil (153,32 million €), and animal production (230,28 million €). The total agricultural production of goods is valued at 1,22 billion € , with agricultural services adding 28,66 million €.</p> <p>Farmers face several challenges, including market volatility, competition from imports, and the impacts of climate change [6]. Despite these challenges, initiatives to promote organic farming and agrotourism are helping to stabilize the agricultural economy and create new opportunities. Organic farming has seen a steady increase, with about 5% of the total agricultural land now under organic cultivation. Agrotourism has also grown, with more than 200 establishments across the region, providing additional income for farmers and promoting sustainable tourism.</p> <p>The processing of agricultural products plays a crucial role in the development of the region, encompassing sub-sectors such as slaughterhouses, meat processing units, cheese factories, olive mills, packaging units, fish processing, cold storage facilities, and animal feed production units. These industries add significant value to primary agricultural products and offer substantial growth potential [7].</p>
Cultural and Social Aspects	<p>Agriculture is deeply woven into the cultural and social fabric of Western Greece. The regions agricultural traditions and practices are celebrated through various festivals and events, fostering a strong sense of community.</p> <p>Agrotourism has emerged as a vital part of the local economy, allowing visitors to experience farming life, participate in harvests, and learn about traditional agricultural methods. This not only supports economic diversification but also helps preserve the cultural heritage and promotes sustainable rural development. The increasing interest in agrotourism is reflected in the growing number of visitors, with more than 50.000 agrotourists recorded annually, contributing significantly to the local economy [8].</p> <p>These detailed insights into the geography, crop diversity, livestock farming, agricultural economy, and cultural aspects of Western Greece illustrate the integral role of agriculture in the regions</p>

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	<p>development and cultural identity. The data highlights both the challenges and opportunities faced by the agricultural sector, emphasizing the importance of sustainable practices and innovative approaches to ensure its continued growth and resilience [9].</p> <p>Moreover, the Region of Western Greece in the context of its development policy supports initiatives that contribute to extroversion, interconnection and networking with institutional and non-institutional bodies, both at national and European level. For the coordination and monitoring of project proposals submitted under European Programmes, a Project Management Team (PMT) has been established [10].</p>

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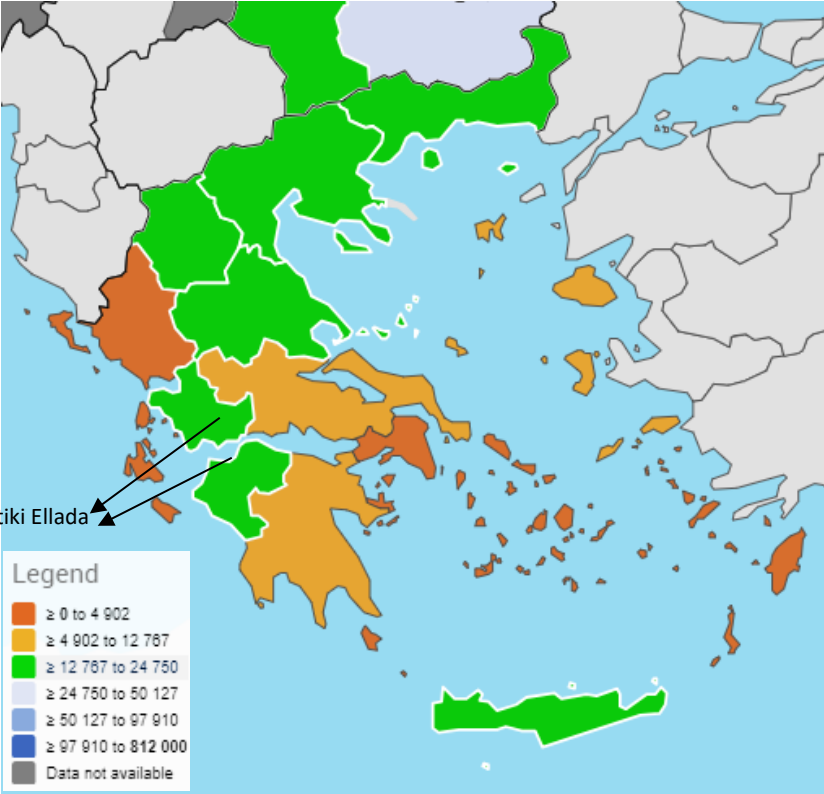
SECOND PART – Deepening, broadening, regrounding: Western Greece case study



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Organic Farming	
EL63	Western Greece (Dytiki Ellada), Greece
Technical information	
Quantification: quantitative data of the activity	<p>Organic farming in Western Greece has seen significant growth, benefiting from the emphasis on sustainable agricultural practices and supported by European subsidies. As of 2020, the area of land dedicated to organic farming significantly encompasses several key agricultural products, underlining the region's pivotal role in Greece's organic sector.</p> <p>Regional Statistics and Crops based on Eurostat: In 2013, the number of holdings with organic farming fully converted and under conversion in Western Greece was 2950. However, due to the rapid shift of conventional farmings to biological-organic farmings in Greece, the number of holdings decreased and reached the value of 1560 in 2020 [1].</p> <p>Similarly, in 2020, Dytiki Ellada accounted for 14,100 hectares (ha) of organic crops that were fully converted and under conversion to organic farming utilized agricultural area, compared to 15,730 ha in 2010 [2].</p> 

	<p>Dytiki Ellada ranks among the top regions in Greece for organic production, notable for its cultivation of diverse crops [3].</p> <ul style="list-style-type: none"> • <i>Citrus fruits</i>: 360 ha • <i>Potatoes</i>: 40 ha • <i>Fresh vegetables, melons, and strawberries</i>: 130 ha • <i>Vineyards</i>: 420 ha • <i>Olives</i>: 4,840 ha • <i>Cereals</i>: 2,730 ha <p>This region not only leads in the production of citrus fruits but also plays a critical role in the organic cultivation of olives and cereals, reflecting its agricultural diversity and commitment to organic principles.</p> <p>Sustainable Practices: Agricultural practices in Dytiki Ellada blend traditional methods with modern ecological knowledge, focusing on sustainability and minimal environmental impact. These practices include [4]:</p> <ul style="list-style-type: none"> • Zero chemical use, avoiding all forms of pollution. • Utilization of 100% crop residues and animal organic waste for compost production. • Implementation of crop rotation, green manure, and joint plant cultivation to optimize natural ecological balances and minimize external inputs. • Adoption of renewable energy sources such as photovoltaic systems and wind turbines to meet energy needs. • Ensuring animal welfare that allows for the expression of natural behaviors. <p>Western Greece exemplifies successful integration of organic farming practices with a focus on environmental stewardship and sustainable development. The region's commitment to organic agriculture not only supports Greece's position in the European organic market but also contributes significantly to the local economy and ecological health.</p>
<p>Economic Aspect: the economic impact of the activity</p>	<p>The economic impact of organic farming in Western Greece is significant and multifaceted, reflecting its growing integration into the region's agricultural economy. The shift towards organic agriculture has been supported by European subsidies, which have been instrumental in both expanding the area under organic</p>

	<p>cultivation and enhancing the viability and sustainability of agricultural practices.</p> <p>As of 2010, Western Greece had significantly increased its organic farming areas underlying its economical relevance [1], [2]. This is not just a testament to the region's commitment to sustainable farming but also serves as a critical economic catalyst.</p> <p>Organic farming typically requires more labor than conventional farming due to its stringent practices such as manual weed control and the application of natural fertilizers. This has led to job creation, particularly beneficial in rural areas where economic opportunities can be limited.</p> <p>The increase in organic acreage has also led to higher income potential for farmers due to the premium prices that organic products command in the market. This price premium arises from consumer perception of organic products being healthier and more environmentally friendly. The robust demand for organic products, both domestically and internationally, has opened up new markets for farmers in Western Greece, enhancing their economic resilience.</p> <p>Moreover, the region's focus on diverse organic crops—including citrus fruits, olives, and cereals—has not only stabilized the agricultural sector but also contributed to a more diversified economic base, reducing vulnerability to market fluctuations and enhancing food security [3].</p> <p>Additionally, organic farming in Western Greece supports ancillary industries such as organic food processing, marketing, and distribution, further boosting the local economy. The sector's growth aligns with global trends towards sustainable consumption and production, positioning Greece favorably in the international organic market.</p> <p>In conclusion, the economic impact of organic farming in Western Greece extends beyond mere agricultural productivity. It contributes to sustainable development by supporting local economies, increasing employment opportunities, and meeting the rising global demand for organic products. This holistic approach to agriculture ensures that the region not only maintains but also enhances its economic viability in a competitive global market.</p>
Main challenges of the activity in the region	<p>1. Transition Period and Productivity Loss: As farms transition from conventional to organic practices, there is often a significant reduction in productivity. This is due to the time it takes for the soil to restore its natural fertility without synthetic inputs. Although oliviculture in Western Greece might not suffer a significant drop, other crops typically experience reduced</p>

yields during the conversion and early stages of organic certification.

2. **Labor Intensity and Costs:** Organic farming is more labor-intensive than conventional farming, primarily because it prohibits chemical weed killers and pesticides. Instead, more laborious methods such as manual weeding and the use of natural pest control methods are employed. This increase in labor demands results in higher operational costs.
3. **Managerial and Technical Challenges:** The success of organic farming heavily relies on the farmer's ability to manage the farm using organic principles effectively. This includes a deep understanding of local ecosystems, crop rotations, and organic pest control methods. Farmers often require additional training and continuous learning to update their practices, which can be a significant challenge in terms of both time and money.
4. **Economic Investment:** Shifting to organic farming requires upfront investments in new tools, machinery suited for organic cultivation, and possibly infrastructure changes to support organic processes. These investments increase the fixed costs of the farm operations.
5. **Market Access and Price Volatility:** Access to markets that offer premium prices for organic products is critical for the economic viability of organic farms. However, these markets are often highly competitive and subject to fluctuations in consumer demand and global supply chains, which can lead to price volatility affecting the farmers' income stability.
6. **Certification and Compliance:** Achieving and maintaining organic certification is another significant challenge. The process involves rigorous standards and regular inspections to ensure compliance with organic farming regulations. The administrative burden and the cost of certification can be substantial for some farmers.
7. **Dependence on Off-Farm Inputs:** Although organic farming reduces dependency on chemical inputs, it often increases reliance on other off-farm inputs like certified organic seeds and natural pest control solutions. These inputs can be expensive and sometimes hard to obtain, affecting the overall cost-efficiency of the farm [5].

These challenges highlight the complexities and difficulties associated with transitioning to and maintaining organic farming practices in Western Greece. Addressing these issues requires not only individual farmer resilience and adaptability but also structured support from government, educational institutions, and

	industry associations to provide the necessary resources, training, and market access to sustain organic farming as a profitable and sustainable venture.
Policies and institutions	
What are the main national and local policies that influence the activity?	<p>Organic farming in Western Greece is supported and regulated by a combination of national and European Union policies designed to promote sustainable agricultural practices and enhance the viability and productivity of organic farms.</p> <ol style="list-style-type: none"> 1. European Union Regulation (EU) 2018/848: Governs organic production and labeling in Europe, ensuring that all organic goods sold within the EU meet consistent standards. This legislation provides a unified framework that supports organic farmers in Western Greece and across the continent [6]. 2. Common Agricultural Policy (CAP): Provides crucial financial support to farmers, including those in organic farming, through direct payments and rural development programs. These funds help manage the higher costs associated with organic farming and promote environmentally friendly practices [7]. 3. Greece's National Strategic Plan for Organic Farming: Developed under the CAP, this plan aims to increase the area under organic cultivation, enhance the competitiveness of organic products, and support young farmers in organic agriculture [8]. 4. Agri-environmental Measures: Part of the Rural Development Program, these measures provide financial incentives for adopting farming practices that minimize environmental impact, supporting methods that promote biodiversity and soil health. 5. Organic Farming Certification Subsidies: Administered by "Agricultural Products Certification and Supervision Organization" (AGROCERT), established under the Ministry of Rural Development and Food (MRDF) in 1998, these subsidies help ensure the quality and safety of organic products, facilitating farmers' access to markets that value certified organic products [9]. 6. Research and Development Initiatives: National and EU-level initiatives fund research aimed at developing more effective natural pest control, improving soil fertility, and enhancing the viability of organic seeds, thus reducing costs and increasing the yield of organic farms.

<p>What are the bodies and institutions working in the field related to the activity in the region?</p>	<ul style="list-style-type: none"> ● Panhellenic Association “Hellas Bio Net” ● University Of Patras, School of Agricultural Sciences- Department of Agriculture ● Panhellenic Union of Organic Products S.A. ● Agricultural Cooperative of Organic producers of Western Greece ● A. S. Organic Products Bioagros Kria Vrissis ● S. Hypertrophon Zevgolatiou ● GERM SEEDS S.A. (seed production & trading company) ● The Panhellenic Association of Organic Products AEP SA ● The A. S. Bioproducers of Western Greece ● The A. S. Organic Olive Farmers of Neochori ● The A. S. Zevgolatio Superfoods ● AGRIFOOD PARTNERSHIP OF THE REGION OF WEST GREECE (Non-profit organization) ● Greek Ministry of Rural Development and Food
<p>Are there specific incentives or programs to promote the activity? (list any national, regional funding)</p>	<ol style="list-style-type: none"> 1. “EU Organic” project [10]: Assigned by the European Union to the consortium led by the Agricultural Cooperative of Organic Producers of Western Greece “Bio Net West Hellas” and the Bulgarian Association of Organic Products. This program supports European organic farming methods using natural substances and processes. <ul style="list-style-type: none"> ● Project Number: 101046092 ● Granting Authority: European Research Executive Agency ● Start Date: 1st July 2022 ● Duration: 36 months 2. “BIO West Greece” national program [11]: Supported by the “Operational Programme of Western Greece 2014-2020 ESA OP of Western Greece” action “Extroversion – Internationalization of SMEs of the Region of Western Greece”. This program is implemented by the Organic Producers Association of Western Greece and geared towards the promotion and placement of organic fruits in major European markets. <ul style="list-style-type: none"> ● Project code: ΔΕΕΕ10-0050006 3. The "MONOPATI" project is implemented within the framework of Action 2 of the RDP MEASURE 16 "COOPERATION": Sub-measure 16.1 & 16.2 Establishment and operation of Operational Groups of the European Innovation Partnership (EIP) for the productivity and sustainability of agriculture [12]. This project aims to develop and use a sustainable, low-cost precision spraying system and improve the quality of the fruits.

	<ul style="list-style-type: none"> ● Funded by: Europe ● Start Date: December 2022 ● Duration: 36 months
Education and training opportunities	
<p>What training opportunity is available?</p>	<ul style="list-style-type: none"> ● Undergraduate Studies: Individuals interested in a formal education in organic farming can pursue a Bachelor of Science (BSc) at the Department of Sustainable Agriculture Sciences, University of Patras. This program provides a thorough grounding in sustainable agriculture practices. More details are available on their website (http://susagri.upatras.gr/en). ● Professional Development: For professionals already working in the agriculture sector, such as farmers, institutions, and businesses, the AGRIFOOD PARTNERSHIP OF THE REGION OF WEST GREECE offers training in sustainable and environmentally friendly practices throughout the production and processing stages of agri-food products. This partnership also provides technical and consulting support to the primary and manufacturing industries, and initiatives to boost local product demand among residents and visitors of the region. Learn more about their offerings here: https://www.agrifoodwest.gr/en/purpose/ ● Advanced Organic Farming Practices: Professional farmers can join Bio Net West Hellas, the largest network of organic producers in Greece. This group focuses on developing a comprehensive system of agricultural production, including both plant and animal products, aimed at creating high-value biological products without the use of agrochemicals, genetically modified organisms, hormones, and antibiotics. Their goal is to restore and maintain biological balances on farms and in the wider environment. For more information, visit https://bionetwesthellas.gr/en/our-vision/
<p>What is the role of the university and research in the development of this specific activity?</p>	<p>The School of Agricultural Sciences at the University of Patras, located in the Achaia region, plays a pivotal role in the development of sustainable agriculture through its comprehensive educational and research programs. The school offers a Bachelor of Science (BSc) degree in Sustainable Agriculture Sciences and provides opportunities for doctoral research in specific objectives related to this field. Research conducted at the University is often published in prestigious scientific journals, contributing to the global knowledge base in sustainable practices.</p>

	<p>Additionally, the University is actively involved in various European and national projects that further research in sustainable agriculture. These projects not only involve the School of Agricultural Sciences but also engage other organizations throughout Western Greece, enhancing the collaborative impact on the region's agricultural development. For more detailed information about their programs and research initiatives, visit http://susagri.upatras.gr/en</p>
SWOT analysis	
Strengths:	<ul style="list-style-type: none"> ● Robust Subsidies and Support: Organic farming in Western Greece benefits significantly from European subsidies and national support programs that enhance its viability and sustainability. ● Diverse Agricultural Production: The region is noted for its wide range of organic crops, including citrus, olives, cereals, fruits and vegetables, which are integral to its agricultural output and economic stability. ● Advanced Sustainable Practices: Western Greece utilizes advanced sustainable agricultural practices like zero chemical use, crop rotation, and the use of renewable energy sources, positioning it as a leader in environmentally friendly farming.
Weaknesses:	<ul style="list-style-type: none"> ● High Labor Intensity and Costs: Organic farming requires more labor than conventional farming, which can lead to higher operational costs and potentially limit scaling opportunities. ● Transition Challenges: The transition from conventional to organic farming often results in initial productivity loss, which can discourage farmers from switching practices. ● Managerial and Technical Gaps: There is a heavy reliance on the farmer's ability to effectively manage and adapt to organic farming principles, which can be a barrier for those without sufficient training or resources.
Opportunities:	<ul style="list-style-type: none"> ● High Labor Intensity and Costs: Organic farming requires more labor than conventional farming, which can lead to higher operational costs and potentially limit scaling opportunities. ● Transition Challenges: The transition from conventional to organic farming often results in initial productivity loss, which can discourage farmers from switching practices. ● Managerial and Technical Gaps: There is a heavy reliance on the farmer's ability to effectively manage and adapt to organic farming principles, which can be a barrier for those without sufficient training or resources.

Threats:	<ul style="list-style-type: none"> ● Market Access and Price Volatility: Dependence on markets that offer premium prices for organic products can be risky, especially with fluctuating consumer demand and global competition. ● Certification and Compliance Costs: The rigorous standards and regular inspections required for maintaining organic certification can be costly and administratively burdensome for farmers. ● Dependence on External Inputs: Despite reducing reliance on chemical inputs, organic farming often requires other off-farm inputs like certified seeds and natural pest control solutions, which can be expensive and difficult to secure consistently.
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High Quality Products Production	
EL63	Western Greece (Dyiki Ellada), Greece
Technical information	
<p>Quantification: quantitative data of the activity (es. how many agritourism in the region, how much organic production etc etc)</p>	<p>Western Greece is renowned for its diverse and high-quality agricultural products, benefiting from the region's favorable climate, fertile soils, and traditional farming practices. Detailed production tables from 2022, available on the Greek Statistical Authority (ELSTAT) website, highlight the region's significant contributions to Greece's agriculture sector [13]:</p> <ul style="list-style-type: none"> ● Olives and Olive Oil: The region manages 97,946.4 hectares of olive tree orchards, ranking third in Greece for olive oil

production with 35,647 tons produced. Known for their purity, unique flavor profiles, and high nutritional value, the region's olive oils consistently win international awards for quality. The "Koroneiki" variety, in particular, is highly prized for its superior oil.

- **Citrus Fruits:** Western Greece, with 9,741.9 hectares dedicated to citrus orchards, ranks second in Greece for citrus production. The region produces 148,094 tons of oranges, 16,845 tons of lemons, and 31,474 tons of mandarins. These fruits are renowned for their enhanced sweetness and juiciness, attributes that are amplified by the region's mild climate.
- **Wines:** Dytiki Ellada boasts a long history of viticulture and is renowned for producing exceptional wines. The region encompasses 4,781.2 hectares of vineyards, making it the second-largest wine producer in the NUTs 2 area of Greece, with a total production of 62,867 tons of grapes for wine in 2022. Local varieties such as Roditis, Mavrodaphne and Muscat of Patra (Protected Designation of Origin - PDO - products) are highly esteemed, garnering recognition both within Greece and on the international level.
- **Table Grapes:** Known for their sweetness and firmness, the table grapes from the region are popular for both domestic consumption and export, with a production of 704 tons in 2022.
- **Feta Cheese:** While not exclusive to Western Greece, the region contributes significantly to the production of Feta, which is a PDO made according to traditional methods [14]. This cheese is integral to Greek cuisine and is highly valued for its flavor.
- **Honey:** The diverse local flora supports the production of various honeys, including thyme, pine, and wildflower, each celebrated for its unique flavors and health benefits.
- **Aromatic and Medicinal Plants:** The cultivation of plants like oregano, thyme, and sage for culinary and essential oil uses underscores the region's rich botanical heritage.

These products are not only significant for their economic value but also for their cultural importance in the region. They are often produced using traditional methods that have been passed down through generations, contributing to the maintenance of biodiversity and the sustainability of agricultural practices in Western Greece.

<p>Economic Aspect: the economic impact of the activity</p>	<ol style="list-style-type: none"> 1. Value-Added Production: The production of high-quality agricultural products such as olive oil, citrus fruits, and wines allows for a significant value-add in terms of pricing and market positioning. For example, the premium quality of "Koroneiki" olive oil and PDO-certified wines such as Roditis and Mavrodaphne enables producers to command higher prices on both national and international markets, enhancing profitability. 2. Job Creation and Economic Stability: The labor-intensive nature of traditional farming practices used in producing high-quality products like handpicked citrus fruits and manually harvested olives leads to substantial job creation in rural areas. This not only helps in reducing rural unemployment but also supports community stability and preserves local farming knowledge. 3. Export Earnings and Market Diversification: With products that meet international quality standards, Western Greece taps into lucrative export markets, increasing foreign earnings. This diversification into various markets helps buffer the local economy against fluctuations in domestic demand and global market changes. 4. Brand and Region Promotion: Winning international awards for products like olive oil (e.g. Olympia) [15] and wine (e.g. Mavrodaphne of Patras) [16] raises the profile of the region as a hub for high-quality produce. This recognition not only boosts sales but also enhances tourism prospects as gastronomy tourists are drawn to regions known for their exceptional food products. 5. Sustainability and Long-Term Viability: The emphasis on sustainable and traditional agricultural practices promotes environmental health, which is crucial for the long-term viability of farming in the region. Practices that enhance soil fertility and biodiversity ensure that farming remains productive for future generations, contributing to food security. 6. Innovation and Investment in Agriculture: The success of high-quality products encourages investment in agricultural technology and infrastructure, such as advanced irrigation systems, organic farming methods, and research into plant health. This investment not only improves the quality and
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	<p>yield of current crops but also paves the way for innovation in agricultural practices.</p> <p>7. Community Engagement and Development: The agricultural sector's success contributes to local development by funding community projects through taxes and fostering a sense of pride and ownership among local residents. Agricultural success stories often inspire community initiatives and engagement, further enhancing regional cohesion and development.</p> <p>8. Educational and Training Opportunities: The need for skilled labor in areas such as viticulture, organic farming, and artisan cheese-making leads to more educational programs aimed at training individuals in these specialized fields. This not only provides local residents with valuable skills but also helps maintain the high standards required for premium products.</p>
Main challenges of the activity in the region	<p>The production of high-quality agricultural products in Western Greece, while beneficial, faces several challenges that can impact its sustainability and growth. Here's a detailed examination of the main challenges:</p> <ol style="list-style-type: none"> 1. High Production Costs: The methods required to produce high-quality products, such as handpicking fruits or traditional cheese-making, are labor-intensive and costly compared to more industrialized methods. This can make the products less competitive price-wise on the global market where cheaper alternatives are available. 2. Labor Availability: The demand for skilled labor is high in regions focusing on quality products, but there is often a shortage of young workers willing to engage in agriculture. This labor shortage is exacerbated by urban migration and the aging farmer population, posing a significant challenge for maintaining production levels. 3. Market Access and Competition: Accessing international markets can be challenging due to stringent quality standards and certification requirements, which are costly and time-consuming. Additionally, competition from other regions both within Greece and internationally that

produce similar high-quality products can limit market share and growth opportunities.

4. **Climate Vulnerability:**

Agricultural production is highly dependent on specific climatic conditions. Changes in climate, including increased variability in weather patterns and extreme events like droughts or floods, can severely affect crop yields, especially for products that rely on particular terroir characteristics.

5. **Regulatory and Certification Challenges:**

Obtaining and maintaining certifications such as PDO (Protected Designation of Origin) and PGI (Protected Geographical Indication) involves rigorous and ongoing compliance with specific standards. The bureaucratic process can be cumbersome and expensive for producers.

6. **Financial Constraints:**

The initial investment for starting or transitioning to high-quality product production can be substantial. Additionally, the return on investment can be slow, deterring new entrants and making it difficult for established producers to sustain operations without external financial support.

7. **Technological Adaptation:**

Keeping up with technological advancements in agriculture can be challenging for small-scale producers. The cost of new technologies and the training required to implement them effectively can be prohibitive, yet they are often necessary to improve efficiency and product quality.

8. **Intellectual Property and Branding Issues:**

Protecting the uniqueness of regional products through trademarks and geographical indications is crucial but challenging. There is a risk of imitation products, which can dilute the brand and reduce the premium that genuine products can command.

9. **Supply Chain and Logistics:**

Efficiently getting products from farm to table, especially in international markets, requires a robust logistics network. The perishable nature of many high-quality products demands rapid and controlled logistics, which can be a significant hurdle, particularly for smaller producers.

	<p>Addressing these challenges requires coordinated efforts between producers, government bodies, educational institutions, and international trade partners. Strategies could include financial aid, investment in agricultural education, improved market access strategies, and enhanced support for obtaining necessary certifications. Addressing these challenges effectively will ensure the sustainable growth of the high-quality product sector in Western Greece, maintaining its reputation and economic contribution.</p>
Policies and institutions	
<p>What are the main national and local policies that influence the activity?</p>	<ol style="list-style-type: none"> 1. Common Agricultural Policy (CAP): Provides crucial financial support and frameworks for agricultural practices across Europe, including Western Greece. It offers direct payments to support farmers' incomes, funding for rural development programs that encourage sustainable agricultural practices, and specific measures to boost the production and marketing of PDO, PGI, and organic products [7]. 2. Greek's National Strategic Plan for Agriculture: Under the CAP, Greece has developed a strategic plan tailored to enhance the competitiveness of its agricultural products, including those from Western Greece. This plan includes subsidies for modernization, the adoption of sustainable practices, and the promotion of organic and PDO/PGI-certified products [8]. 3. PDO and PGI Certifications: These are critical for protecting the unique characteristics of regional products, enhancing their marketability, and ensuring premium pricing. National and EU regulations provide the framework for certifying and protecting these designations, which is essential for marketing high-quality products from specific regions [17]. 4. Organic Farming Regulations: EU and national regulations define and enforce standards for organic farming, which are crucial for producers in Western Greece who market their products as organic. These standards ensure the environmental sustainability of production processes and the absence of genetically modified organisms or chemical pesticides and fertilizers [6]. 5. Agri-environmental Measures:

	<p>Part of the broader CAP, these measures offer incentives for adopting agricultural practices that reduce environmental impacts. In Western Greece, this includes practices such as reduced pesticide use, soil erosion control, and water management, which are essential for sustaining the natural quality of the region's agricultural products.</p> <p>6. Innovation and Research Funding: Both the EU and the Greek government fund research and development in agriculture, focusing on innovations that can improve the quality and sustainability of agricultural production. This includes funding for new agricultural technologies, pest management techniques, and practices that enhance product quality [12].</p> <p>7. Rural Development Programs: These programs focus on enhancing the economic viability of rural areas, including investments in infrastructure, technology, and direct support to start-ups and small enterprises in the agricultural sector. This is crucial for maintaining the vitality of rural communities in Western Greece, where high-quality agriculture is a key industry.</p> <p>8. Marketing and Export Support Programs: National and EU programs that assist producers in marketing and exporting their products are vital for reaching broader markets. These programs often include support for participation in international food fairs, trade shows, and other venues where producers can showcase their high-quality products.</p> <p>10. Education and Training Initiatives: Policies that support vocational and continuing education in agriculture help ensure that farmers in Western Greece are well-equipped with the latest agricultural knowledge and skills. This includes training on sustainable farming practices, quality control, and compliance with regulatory standards [18].</p>
<p>What are the bodies and institutions working in the field related to the activity in the region?</p>	<ul style="list-style-type: none"> ● University Of Patras, School of Agricultural Sciences-Department of Agriculture ● Hellenic Agricultural Organisation "DEMETER" (ELGO) ● AGROCERT ● Panhellenic Association "Hellas Bio Net" ● The Farming Cooperative "Bio Net West Hellas" ● The A. S. Organic Olive Farmers of Neochori ● The A. S. Zevgolatio Superfoods

<p>Are there specific incentives or programs to promote the activity? (list any national, regional funding)</p>	<p>4. The "ARCHAIA OLENEIA" project is implemented within the framework of Action 2 of the RDP MEASURE 16 "COOPERATION": Sub-measure 16.1 & 16.2 Establishment and operation of Operational Groups of the European Innovation Partnership (EIP) for the productivity and sustainability of agriculture [19]. The purpose of the ARCHAIA OLENEIA project is to create a comprehensive low-cost production protocol for table olives, enhancing product standardization and distribution.</p> <ul style="list-style-type: none"> ● Funded by: Europe ● Start Date: December 2022 ● Duration: 36 months <p>5. The "OLEAS" project is implemented within the framework of Action 2 of the RDP MEASURE 16 "COOPERATION": Sub-measure 16.1 & 16.2 Establishment and operation of Operational Groups of the European Innovation Partnership (EIP) for the productivity and sustainability of agriculture [20]. This project seeks to establish a new standard in precision agriculture for olive cultivation, using satellite data to improve the performance and quality of table olives and olive oil.</p> <ul style="list-style-type: none"> ● Funded by: Europe ● Start Date: December 2022 ● Duration: 36 months
<p>Education and training opportunities</p>	
<p>What training opportunity is available?</p>	<ul style="list-style-type: none"> ● Undergraduate Studies: Individuals interested in a formal education in organic farming can pursue a Bachelor of Science (BSc) at the Department of Sustainable Agriculture Sciences, University of Patras. This program provides a thorough grounding in sustainable agriculture practices and the production of high-quality products. More details are available on their website (http://susagri.upatras.gr/en). ● Advanced Organic Farming Practices: Professional farmers can join Bio Net West Hellas, the largest network of organic producers in Greece. This group focuses on developing a comprehensive system of agricultural production, including both plant and animal products, aimed at creating high-value biological products without the use of agrochemicals, genetically modified organisms, hormones, and antibiotics. Their goal is to restore and maintain biological balances on farms and in the wider environment. For more information, visit https://bionetwesthellas.gr/en/our-vision/

<p>What is the role of the university and research in the development of this specific activity?</p>	<p>The School of Agricultural Sciences at the University of Patras, located in the Achaia region, plays a pivotal role in the development of sustainable agriculture through its comprehensive educational and research programs. The school offers a Bachelor of Science (BSc) degree in Sustainable Agriculture Sciences and provides opportunities for doctoral research in specific objectives related to this field. Research conducted at the University is often published in prestigious scientific journals, contributing to the global knowledge base in sustainable practices.</p> <p>Additionally, the University is actively involved in various European and national projects that further research in sustainable agriculture. These projects not only involve the School of Agricultural Sciences but also engage other organizations throughout Western Greece, enhancing the collaborative impact on the region's agricultural development. For more detailed information about their programs and research initiatives, visit http://susagri.upatras.gr/en</p>
<h3>SWOT analysis</h3>	
<p>Strengths:</p>	<ul style="list-style-type: none"> ● Rich Natural Resources: The region benefits from a favorable climate and fertile soils, ideal for the cultivation of a variety of agricultural products like olives, citrus fruits, and grapes. ● Established Reputation for Quality: Western Greece is known for the high quality of its agricultural products, which frequently win international awards and are protected by PDO and PGI certifications. ● Diverse Product Range: The area produces a wide array of products, from olive oil and wines to citrus fruits and medicinal plants, providing multiple streams of revenue. ● Traditional Practices and Local Knowledge: The use of traditional farming methods and local knowledge passed down through generations enhances the uniqueness and appeal of the products.
<p>Weaknesses:</p>	<ul style="list-style-type: none"> ● High Production Costs: Traditional and manual farming practices, while beneficial for quality, are labor-intensive and costly. ● Labor Shortages: There is a significant challenge in attracting young workers to agriculture, compounded by urban migration and an aging farming population. ● Vulnerability to Climate Change: Agricultural production is highly susceptible to changes in climate, which can unpredictably affect yields.

	<ul style="list-style-type: none"> ● Regulatory and Bureaucratic Challenges: Compliance with PDO, PGI, and organic certifications involves complex and sometimes cumbersome bureaucratic processes.
Opportunities:	<ul style="list-style-type: none"> ● Growing Demand for Organic and PDO/PGI Products: There is increasing global demand for products that are certified organic and those with PDO/PGI status, presenting a significant opportunity for expansion. ● Technological Advancements: Incorporating new technologies in agriculture could improve efficiency and yields, reducing costs and enhancing product quality. ● Tourism Integration: The region's reputation for high-quality products can be leveraged to boost agritourism, connecting farms with tourism and hospitality industries. ● Export Potential: Expanding into new international markets can increase sales and diversify income sources, especially for products with a high degree of recognition like the region's olive oil and wine.
Threats:	<ul style="list-style-type: none"> ● International Competition: Competition from other regions and countries that produce similar high-quality products can pressure market share and pricing. ● Economic Instability: Fluctuations in the global economy can affect export earnings, investment in agriculture, and overall demand for luxury and high-quality products. ● Supply Chain and Logistics Challenges: Ensuring that perishable products reach markets in optimal condition requires robust logistics solutions, which can be costly and complex to manage. ● Intellectual Property Risks: There is a risk of imitation products, which can undermine the authentic products' market and dilute brand value.

Short Linkages between Production and Consumption	
EL63	Western Greece (Dytiki Ellada), Greece
Technical information	
Quantification: quantitative data of the activity	<p>Recent concerns about food safety, public health, and environmental impacts of industrial agriculture in Greece have increased the demand for safe food and sustainable agricultural practices. Consumers now seek information about the origins and production methods of their food, leading to a shift towards local foods and alternative food networks. These networks prioritize local products, organic production, fair trade, and short food supply chains, establishing alternative and local agro-food systems. Notable examples include Community Supported Agriculture (CSA), Farmers' Markets, and Urban Community Gardens.</p> <p>In Greece, Community Supported Agriculture (CSA) and other Alternative Food Networks (AFNs), such as urban gardens, seed banks, and direct food distributions without intermediaries, have recently emerged, organized systematically in city neighborhoods under the pressure of the economic crisis. CSA began in Greece in 2010-11 with the volunteer initiative "Agronauts," the first network of organic farmers in Attica and consumer groups in the Athens metropolitan area. By early 2015, four stable consumer groups were established in Chalandri, Agia Paraskevi, Pangrati, and Thisio, with deliveries in other neighborhoods. Main suppliers are organic farmers from Attica, Laconia, and Argolida. Approximately 300 consumers receive weekly baskets, with deliveries confirmed via SMS or email.</p>

Research (Kechaya 2014) on Agronauts' consumers in ten CSA areas revealed the following characteristics among 75 respondents:

- Mostly young, active consumers (36-45 years old: 46.7%, 46-55 years old: 25.3%).
- Highly educated individuals (73.3% with higher education degrees, 10.7% with postgraduate or doctoral degrees).
- Middle and low-income households (56% with monthly family income of €1,000-2,000, 33.3% less than €1,000).
- Environmentally conscious and familiar with organic products (84% previously chose organic food) [21].

Greek farmers are increasingly adopting new technologies and using social media, particularly Facebook, due to its user-friendly nature on smartphones and tablets. This trend enables farmers to promote their products more effectively both locally and internationally. Agricultural businesses have also integrated social media into their communication strategies, leading to numerous strategies for promoting agricultural and livestock products and services [21].

E-commerce is playing a crucial role in the agricultural sector by providing an alternative communication channel and helping businesses expand their online activities. According to an eRetail Audit survey, online sales in the food retail sector were estimated at 37 million euros in 2017. Data of online supermarkets shows that over 20% of orders in 2017 were made via mobile phones, and 18% of consumers are potential regular online food shoppers. The eRetail Audit service of Convert Group reveals that 67% of sales are related to food and beverages [22].

In Western Greece, no direct marketing initiatives, CSA programs, or AFNs have been established yet. This may be due to producers avoiding cooperatives and partnerships, leading to minimal networking, standardization, and small-scale processing of locally produced products. Consequently, there is an inability to organize promotion and marketing, reducing income and deteriorating the agricultural sector's development prospects (Pissarides Committee, 2020) [23]. Currently, no online platforms or farmers' markets supply agricultural products directly from producers to consumers in Western Greece. However, roadside stands by farmers, occurring once or twice a week, are a form of direct marketing initiative.

	<p>In general, participation in marketing cooperatives could assist producers in reducing production costs, accessing precision agriculture, and enhancing direct marketing of fresh agricultural products without losses.</p>
<p>Economic aspect: the economic impact of the activity</p>	<p>As mentioned above, in Western Greece, direct marketing initiatives, CSA programs, and AFNs have not been established yet. In addition, there are no online platforms or farmers' markets to supply agricultural products directly from producers to consumers, though roadside stands by farmers occur once or twice a week as a form of direct marketing initiative.</p> <p>Potential Economic Benefits Establishing short linkages between production and consumption could bring significant economic benefits:</p> <ul style="list-style-type: none"> ● Increased Income: Direct marketing and CSA programs eliminate intermediaries, allowing farmers to keep a larger share of the sale price, thus increasing their income. ● Local Economic Development: Promoting local products helps retain money within the community, boosting the local economy. ● Job Creation: Initiatives like farmers' markets and CSA programs create jobs in farming, marketing, logistics, and retail. ● Cost Reduction: Marketing cooperatives and e-commerce strategies can reduce production and marketing costs through shared resources and improved market access. <p>Examples and Evidence</p> <ul style="list-style-type: none"> ● CSA Programs: In Attica, the "Agronauts" initiative has successfully attracted a stable consumer base, providing financial security and working capital to farmers [21]. ● E-commerce and social media: Greek farmers increasingly use social media and e-commerce, significantly impacting the food retail sector, with online sales projected to reach 180-200 million euros in 2020 [21]. <p>Consequently, by implementing short linkages in Western Greece can improve the agricultural sector's economic prospects. Fostering cooperatives, enhancing direct marketing, and leveraging technology can increase farmer income, reduce costs, and contribute to local economic development. The success of similar initiatives in other regions of Greece provides a model for potential economic growth and sustainability in Western Greece.</p>

<p>Main challenges of the activity in the region</p>	<ol style="list-style-type: none"> 1. Lack of Established Networks <ul style="list-style-type: none"> ○ Minimal Networking: Producers often avoid participating in cooperatives and partnerships, leading to weak networking among farmers. ○ Limited Collaboration: The absence of collaborative efforts hinders the development of robust local food networks. 2. Marketing and Promotion Challenges <ul style="list-style-type: none"> ○ Inadequate Marketing: Producers struggle with organizing effective promotion and marketing strategies. ○ Lack of Commercial Identity: Without a unified commercial identity, it is difficult to promote local products effectively. 3. Economic Constraints <ul style="list-style-type: none"> ○ Reduced Income: The inability to organize promotion and marketing leads to reduced income for producers. ○ Financial Instability: The lack of financial support and investment opportunities makes it difficult for farmers to sustain and grow their operations. 4. Infrastructure and Technological Barriers <ul style="list-style-type: none"> ○ Limited Access to Technology: Many producers lack access to modern technology and e-commerce platforms, hindering their ability to reach broader markets. ○ Poor Infrastructure: Inadequate infrastructure for transportation and storage can lead to product loss and reduced quality. 5. Consumer Awareness and Engagement <ul style="list-style-type: none"> ○ Low Consumer Awareness: There is a lack of consumer awareness about the benefits of local foods and short supply chains. ○ Engagement Efforts: Efforts to engage consumers and educate them about local food networks are insufficient. 6. Regulatory and Policy Barriers <ul style="list-style-type: none"> ○ Bureaucratic Hurdles: Complex regulations and bureaucratic processes can impede the establishment and operation of local food networks. ○ Policy Support: There is a need for stronger policy support and incentives to encourage the development of short linkages. 7. Cultural and Social Factors
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	<ul style="list-style-type: none"> ○ Resistance to Change: Some producers and consumers may be resistant to changing traditional practices and adopting new models. ○ Social Cohesion: Building trust and cooperation among producers and between producers and consumers can be challenging. <p>Addressing these challenges requires a coordinated effort involving policy makers, local authorities, producers, and consumers. By improving networking, marketing, infrastructure, and consumer engagement, Western Greece can develop effective short linkages between production and consumption, ultimately leading to a more sustainable and economically viable agricultural sector.</p>
Policies and institutions	
<p>What are the main national and local policies that influence the activity?</p>	<ol style="list-style-type: none"> 1. EU Common Agricultural Policy (CAP) [7]: <ul style="list-style-type: none"> ● Direct Payments: Provides financial support to farmers to ensure a stable income, encourage sustainable farming practices, and support rural development. This policy helps in promoting local agricultural production. ● Rural Development Programs: Aimed at improving the competitiveness of agriculture, ensuring sustainable management of natural resources, and achieving balanced territorial development of rural economies and communities. 2. Greek National Strategy for Agricultural Development [8],[9]: <ul style="list-style-type: none"> ● Promotion of Organic Farming: Encourages the conversion to and maintenance of organic farming practices through subsidies and financial incentives. ● Support for Local Products: Initiatives to promote local products, such as the certification of geographical indications (PGI) and protected designations of origin (PDO), which help in marketing and promoting high-quality local products. 3. Law 4384/2016 on Agricultural Cooperatives [24]: <ul style="list-style-type: none"> ● Encouragement of Cooperative Structures: This law provides a framework for the formation and operation of agricultural cooperatives, aiming to improve the bargaining power of farmers and facilitate collective marketing and processing of agricultural products.

	<p>4. National Strategic Plan for Rural Development (Pillar II of CAP) [7]:</p> <ul style="list-style-type: none"> ● Investment in Rural Infrastructure: Focuses on improving infrastructure in rural areas, which is crucial for the development of short supply chains by enhancing transportation, storage, and market access for local producers. ● Knowledge Transfer and Innovation: Supports training, advisory services, and innovation in agriculture to help farmers adopt sustainable practices and improve their market access. <p>5. Law on the Social Economy and Social Entrepreneurship (Law 4430/2016) [25]:</p> <ul style="list-style-type: none"> ● Support for Social Enterprises: Encourages the formation of social enterprises, including those focused on agricultural production and local food systems, by providing a supportive legal and financial framework.
<p>What are the bodies and institutions working in the field related to the activity in the region?</p>	<p>To our knowledge, there are no bodies or institutions working in the field related to Short Linkages between Production and Consumption in Western Greece. According to the Region of Western Greece, such activities are still absent from the region. However, at the national level, the Agronauts network plays a pivotal role promoting and implementing this activity [26].</p>
<p>Are there specific incentives or programs to promote the activity? (list any national, regional funding)</p>	<p>CSA of the Agronauts network is a subscription program where members prepay for the season to help support the agricultural production operations. They share the risks and benefits of the harvest with the farmers in exchange for weekly deliveries of fresh, local, seasonal, organic vegetables [26].</p>
<p>Education and training opportunities</p>	
<p>What training opportunity is available?</p>	<p>1. Online Courses in the Marketing of Agricultural Products [27]: These courses provide essential skills and knowledge in marketing strategies, digital marketing, and branding specifically tailored for agricultural products. They help farmers and producers improve their market presence and sales efficiency.</p> <p>2. Workshops and Seminars: Periodically, various organizations and agricultural bodies have offered workshops and seminars focusing on sustainable farming practices, direct marketing techniques, and building consumer-producer relationships [28] e.g. Workshop on “Community Supported Agriculture” which aimed to inform the public about community-</p>

	<p>supported agriculture in Oreini – Astras, within the framework of the "Social Synergies of Enterprises" project in Western Greece.</p> <p>3. National Conferences and Symposiums [29]: By participating in these conferences, individuals and organizations can gain valuable insights, network with peers, and stay informed about the latest trends and research in the field. This knowledge and collaboration are essential for fostering successful short linkages between production and consumption in Western Greece and beyond.</p>
<p>What is the role of the university and research in the development of this specific activity?</p>	<ul style="list-style-type: none"> ● Universities offer academic programs in agriculture [30], food [31] and related fields that equip students with the necessary knowledge and skills to support local food systems and sustainable agriculture. ● Universities can participate in workshops and seminars on topics such as community-supported agriculture (CSA), organic farming, and direct marketing, providing valuable knowledge and networking opportunities for local farmers. ● Universities can collaborate with local farmers, cooperatives, and agricultural organizations to implement research findings and promote sustainable practices. These partnerships help bridge the gap between academic research and practical application. ● Through conferences, workshops, and seminars, universities provide networking opportunities that can lead to collaborations and the sharing of knowledge and resources among farmers and other stakeholders.
<p>SWOT analysis</p>	
<p>Strengths:</p>	<ul style="list-style-type: none"> □ High-Quality Local Products: Western Greece has a rich variety of high-quality local agricultural products that can attract consumers looking for fresh and organic options. □ Consumer Interest in Local Foods: There is a growing consumer interest in knowing the origins of their food and supporting local farmers. □ Existing Roadside Stands: The presence of roadside stands indicates some level of direct marketing already exists, which can be expanded. □ Potential for Community Building: Initiatives like CSA can strengthen community ties between producers and consumers.

Weaknesses:	<ul style="list-style-type: none"> <input type="checkbox"/> Lack of Established Networks: Minimal networking and cooperation among producers limit the effectiveness of short linkages. <input type="checkbox"/> Insufficient Infrastructure: Inadequate transportation and storage infrastructure can affect product quality and delivery. <input type="checkbox"/> Limited Marketing and Promotion: There is a lack of organized marketing and promotion strategies for local products. <input type="checkbox"/> Avoidance of Cooperatives: Producers often avoid cooperatives and partnerships, leading to fragmented efforts and reduced economies of scale.
Opportunities:	<ul style="list-style-type: none"> <input type="checkbox"/> Development of CSA Programs and Farmers' Markets: Establishing CSA programs and farmers' markets can enhance direct marketing efforts and consumer access to local foods. <input type="checkbox"/> Integration of Technology: Leveraging e-commerce and social media can improve market access and product visibility for local farmers. <input type="checkbox"/> Support from Educational Institutions: Universities and research institutions can provide training, resources, and research to support sustainable agricultural practices and direct marketing initiatives. <input type="checkbox"/> Policy Support: Potential for new policies and incentives to support local food systems and direct marketing initiatives.
Threats:	<ul style="list-style-type: none"> <input type="checkbox"/> Economic Challenges: Financial instability and economic downturns can affect consumer spending and investment in local food systems. <input type="checkbox"/> Competition from Large Agribusinesses: Large agribusinesses and supermarket chains can dominate the market, making it difficult for local producers to compete. <input type="checkbox"/> Climate and Environmental Risks: Adverse weather conditions and environmental degradation can impact agricultural production and supply. <input type="checkbox"/> Regulatory Hurdles: Complex regulations and bureaucratic processes can hinder the establishment and growth of short linkages between production and consumption.

Agro-tourism	
EL63	Western Greece (Dytiki Ellada), Greece

Technical information

<p>Quantification: quantitative data of the activity</p>	<p>Agrotourism in Western Greece has shown significant growth, with an increasing number of agrotourism establishments throughout the region. As of the latest data, there are over 200 agrotourism enterprises operating in Western Greece [32].</p> <p>These establishments offer a variety of services including accommodation, traditional cuisine, and participation in agricultural activities such as grape and olive harvesting. Organic production is also on the rise, with a notable percentage of agricultural land dedicated to organic farming practices, reflecting the region's commitment to sustainable agriculture. Specifically, the area has around 37,9% of its agricultural land as arable land, 3,9% as vineyards, and 37,7% as tree crops, all of which are integral to the agrotourism experience [33].</p>
<p>Economic aspect: the economic impact of the activity</p>	<p>Agrotourism significantly contributes to the regional economy by providing supplementary income to farmers and creating jobs in rural areas. The economic impact is substantial, with agrotourism activities generating millions of euros annually. This form of tourism supports local economies by promoting the sale of local products and services, thereby enhancing the livelihoods of rural populations. Additionally, the presence of agrotourism boosts the demand for locally produced goods, thereby increasing the market for agricultural products. In 2021, the agricultural production of goods in Western Greece was valued at 1.003,22 million €, with agricultural services adding 28,66 million € to the greek economy [33].</p>
<p>Main challenges of the activity in the region</p>	<p>The agrotourism sector in Western Greece confronts several challenges, including limited marketing and promotion, weak infrastructure, and rivalry from more popular tourist spots. Furthermore, the development of new agrotourism enterprises may be hampered by administrative and regulatory obstacles. Relying exclusively on seasonal tourism presents a problem because many agrotourism activities have highly seasonal demand, which peaks during specific periods of the year and falls during off-peak seasons [34].</p> <ul style="list-style-type: none"> ● Inadequate Infrastructure and Accessibility: The region faces significant challenges related to inadequate infrastructure, including poor road conditions

	<p>and limited public transportation options. This makes rural and agricultural areas less accessible to tourists, hindering the potential growth of agrotourism. Investments in infrastructure are essential to improve connectivity and enhance the visitor experience.</p> <ul style="list-style-type: none"> ● Seasonal Nature of Agrotourism: Agrotourism activities are highly seasonal, leading to fluctuating income levels for operators. It is challenging to attain financial stability all year round when revenue creation is dependent on peak seasons. This problem can be lessened by diversifying tourism offerings to include off-season events and attractions. ● Limited Professional Training and Marketing Efforts: Professional training programs designed with agrotourism in mind are scarce. Operators' management abilities and service quality suffer as a result of this disparity. Furthermore, the visibility and appeal of agrotourism offerings are restricted by a lack of local and worldwide marketing efforts. For the industry to thrive, it is imperative that training programs be improved and that thorough marketing plans be developed.
Policies and institutions	
<p>What are the main national and local policies that influence the activity?</p>	<p>National policies influencing agrotourism include the Common Agricultural Policy (CAP) Strategic Plan 2023-2027, which aims to support rural development and enhance the competitiveness of the agricultural sector [35]. The Ministry of Rural Development and Food implements these policies through various programs, including the Rural Development Programme of Greece 2014-2020 (ΠΑΑ) [36], which supports agrotourism under Measure 19 "CLLD/LEADER" and sub-measure 19,2 [37]. These initiatives aim to support rural development and the enhancement of agrotourism by providing financial assistance and promoting sustainable practices. Local policies also support the development of agrotourism by encouraging the preservation of traditional farming practices and the promotion of local products.</p>
<p>What are the bodies and institutions working in the field related to the activity in the region?</p>	<p>Several bodies and institutions play key roles in the agrotourism sector.</p> <p>The Ministry of Rural Development and Food that promotes</p>

	<p>the policies mentioned above, as well as the Ministry of Tourism which give the “Special Agrotourism Mark” as certification, are of great significance [38].</p> <p>The Institute of Greek Tourism Enterprises (INSETE) also supports agrotourism through strategic planning and promotional activities [32].</p>
<p>Are there specific incentives or programs to promote the activity? (list any national, regional funding)</p>	<p>Various incentives and programs are available to promote agrotourism in Western Greece. These include financial grants and subsidies under the Rural Development Programme, which help farmers and local entrepreneurs develop and enhance agrotourism activities. Additionally, regional funding programs and initiatives by local municipalities provide support for infrastructure development and marketing efforts to attract more visitors to agrotourism destinations. For example, the 2024 programme of “Farmhouse” of the “Welfare Benefits & Social Solidarity Agency” provides to beneficiaries social - spa tourism programmes as well as excursion programmes [39].</p>
<p>Education and training opportunities</p>	
<p>What training opportunity is available?</p>	<p>There are several training opportunities available for individuals interested in agrotourism. These include workshops and seminars organized by agricultural cooperatives and educational institutions. Training programs focus on sustainable farming practices, business management, and hospitality services, equipping participants with the skills needed to run successful agrotourism enterprises.</p> <p>The General Secretariat of Vocational Education and Training, under the Ministry of Education promotes a course for the establishment of a Rural Tourism Technician. A "Technical Agrotourism Specialist" is a professional who operates across the entire spectrum of the agrotourism sector, from agricultural production to the touristic utilization of products [40]. There are also opportunities in terms of higher education as in Greece there are 6 university departments of tourism management and development with agrotourism courses, most of them in Athens and one of them in the University of Patras. Such courses in the University of Patras can also be found in the Department of Agronomy and in the Department of Agri-Food Business Management [30].</p>

<p>What is the role of the university and research in the development of this specific activity?</p>	<p>Universities and research institutions play a crucial role in the development of agrotourism in Western Greece. The University of Patras, for example, conducts research on sustainable agriculture and rural development, providing valuable insights that support the agrotourism sector [42].</p> <p>Additionally, collaboration between universities and local businesses helps promote innovation and the adoption of best practices in agrotourism.</p>
<p>SWOT analysis</p>	
<p>Strengths:</p>	<ul style="list-style-type: none"> ● Historic Agricultural Methods: The rich cultural heritage and traditional farming techniques of Western Greece attract tourists, enhancing the authenticity of the agrotourism experience. ● Diverse Agricultural Products: Agrotourism is made more appealing by the diversity of agricultural products, which provide guests one-of-a-kind experiences, particularly when they come from organic farms. ● Comprehensive Tourism Experience: The region's natural beauty, historical sites, and distinctive cuisine offer a thorough and engaging tourism experience, supported by various financial programs and regulations.
<p>Weaknesses:</p>	<ul style="list-style-type: none"> ● Inadequate Infrastructure: Poor infrastructure and restricted access to rural areas can deter tourists, limiting the potential of agrotourism. ● Seasonal Income Fluctuations: The seasonal nature of agrotourism leads to varying income levels for operators, making financial stability a challenge. ● Regulatory Challenges: Regulations, bureaucracy, a lack of professional training, and continuous marketing efforts all impede the expansion of agrotourism.
<p>Opportunities:</p>	<ul style="list-style-type: none"> ● Global Interest in Ecotourism: Increasing global interest in experiential and ecological travel presents significant growth opportunities for agrotourism in Western Greece. ● Expansion into International Markets: Enhanced marketing efforts targeting international markets could substantially increase visitor numbers and revenue. ● Innovative Agrotourism Products: Developing new products and services, such as sustainable accommodations and farm-to-table experiences, can

	diversify offerings and attract a broader audience.
Threats:	<ul style="list-style-type: none"> ● Competition from Established Destinations: Agrotourism faces stiff competition from more established tourist locations, which could impact visitor numbers. ● Environmental and Climate Challenges: Climate change and environmental issues may affect agricultural productivity, thereby reducing the attractiveness of agrotourism. ● Economic Instability: Economic instability and market volatility could negatively impact both tourism and agriculture, affecting travelers' spending power and farmers' income.

Fiber crops	
EL63	Western Greece (Dytiki Ellada), Greece
Technical information	
Quantification: quantitative data of the activity	<p>Greece is the main cotton producer of the European Union, primarily used to produce cotton lint. According to ELSTAT, in 2022, cotton (<i>Gossypium hirsutum L.</i>) was cultivated in an area of 254,067.3 ha in Greece, divided into 232,063.5 ha of irrigated and 22,003.8 ha of non-irrigated land. Cotton is mainly cultivated in the regions of Thessaly, Central Macedonia, and Eastern Macedonia and Thrace, in decreasing order of area. In Western Greece 2,324.9 ha of cotton crops produced 7,246 tons of cotton for industrial applications in 2022. This production is significantly lower compared to Thessaly, which produced 275,757 tons from 81.537.6 ha., making it the leading area in Greek cotton production [13].</p> <p>Besides cotton, other fiber crops cultivated include sorghum broom, used for producing bio-material, construction material, paper and even bioethanol fuel from the juice of its plant stems. In 2022, the production of sorghum broom in Greece reached 150 ton from 71.8 ha, of which 16.1 were in Western Greece, although without sorghum production [13].</p> <p>Another fiber plant-kenaf (<i>Hibiscus Cannabinus L.</i>)-started to be cultivated in Greece by the University of Thessaly (in Thessaly) during a European project from 2003 to 2006 [42] and continued to be cultivated experimentally in an area of 0.2 ha in Central Macedonia (Thessaloniki) [43].</p> <p>Recently, the legal industrial cultivation of hemp (<i>Cannabis Sativa L.</i>) began in Greece in 2016. The fibers produced from the plant stems are used in the manufacture of ropes, nets, and textiles for bags and sails. Higher-quality fibers are promoted in the textile industry, and a significant portion of the residual fibers can be used by the paper industry to produce special-quality paper.</p> <p>Flax (<i>Linum usitatissimum</i>) is also cultivated, specifically in Messenia, but in small quantities. The climate is not favourable for producing high-quality flax fiber; it is mostly used for flaxseed production.</p>
Economic aspect: the economic impact of the fibactivity	Fiber crops, particularly cotton, play a significant role in Greece's agricultural sector, contributing notably to income and exports. Cotton alone accounts for 85% of the European cotton area and more than 8% of total Greek agricultural output, showcasing its

	<p>national importance [44]. However, the economic impact of these crops varies significantly across different regions. In Western Greece, while cotton is cultivated, it is on a much smaller scale compared to the major cotton-producing areas like Thessaly, Central Macedonia, and Eastern Macedonia and Thrace. This region primarily focuses on other agricultural products such as citrus, olive oil, and wine, which are more economically significant for the local economy. The cultivation of cotton in Western Greece covers a relatively small area and does not contribute significantly to the region's economy, as the local agricultural focus and climatic conditions favor other types of production.</p> <p>Although the current economic impact of fiber crops in Western Greece is limited, exploring the cultivation of other fiber crops, such as hemp or flax, might offer new opportunities for diversification and economic growth, especially with evolving market demands and agricultural technologies.</p>
Main challenges of the activity in the region	<p>The main challenges of fiber crop cultivation in Western Greece, can be categorized into several key areas:</p> <ol style="list-style-type: none"> 1. Limited Scale of Production: Cotton cultivation in Western Greece is significantly smaller in scale compared to major cotton-producing regions such as Thessaly, Central Macedonia, and Eastern Macedonia and Thrace. This smaller scale may limit economies of scale, making cotton cultivation less economically viable in Western Greece. 2. Economic Prioritization of Other Crops: The region prioritizes other agricultural products such as citrus, olive oil, and wine, which are more economically significant. These crops likely provide higher returns or are more suited to the local market demands and climatic conditions, overshadowing the potential for expanding fiber crop production. 3. Climatic Conditions: The climate in Western Greece may not be as favorable for fiber crops like flax, which requires specific conditions to produce high-quality fibers. The adverse climatic conditions can lead to lower yields or inferior quality, which are less marketable and profitable. 4. Lack of Infrastructure and Research Support: The area might lack the necessary agricultural infrastructure or research support to explore and enhance the cultivation of fiber

	<p>crops like kenaf and hemp, which have been cultivated on experimental or very small scales in other regions. Limited research and development can hinder innovation and efficiency in crop production processes.</p> <p>5. Market and Industry Support: The fiber crop industry, including processing and marketing channels in Western Greece, may not be as developed compared to other regions. This lack of supportive industry infrastructure makes it difficult to process and market fiber crops effectively, reducing their profitability and attractiveness to farmers.</p> <p>6. Regulatory and Legal Challenges: Particularly for crops like hemp, there could be regulatory hurdles that complicate cultivation despite its legalization in 2016. Compliance with regulations can require additional resources or lead to delays in scaling production.</p> <p>7. Economic Impact and Return on Investment: Given that fiber crops currently do not contribute significantly to the regional economy, there may be a perceived or real lack of return on investment for farmers considering switching from more lucrative crops like olive oil or citrus to fiber crops.</p> <p>Addressing these challenges would require a multifaceted approach involving government support, research initiatives, market development strategies, and possibly shifting some focus towards crop diversification to include more profitable or suitable fiber crops adapted to the regional conditions of Western Greece.</p>
Policies and institutions	
<p>What are the main national and local policies that influence the activity?</p>	<p>1. Cotton Subsidies: <u>National policies:</u> Special subsidies under the Strategic Plan for CAP 2023-2027 stabilize the cotton market, ensuring fair income and promoting sustainable agricultural practices. These subsidies enhance competitiveness and environmental sustainability of the cotton sector [45].</p> <p><u>EU Policies (CAP):</u> Decoupled and coupled payments under CAP support the economic viability of cotton. Reforms ensure cotton cultivation is sustainable and stable, establishing national base areas and promoting environmentally friendly practices [7].</p>

	<p>2. Research and Development: Initiatives such as experimental cultivation projects for kenaf and hemp are supported by university-led or government-funded research, exploring crop viability across Greek regions and fostering agricultural innovation.</p> <p>3. Regulatory Frameworks: Legal changes like the legalization of hemp in 2016, along with environmental regulations, shape the cultivation landscape, focusing on legal and sustainable use of resources [46].</p> <p>4. Market Development and Infrastructure: Government initiatives enhance the industrial applications of fiber crops such as hemp for textiles and construction, alongside supporting processing facilities and market development programs. Export incentives are crucial in maintaining Greece's significant role as a cotton exporter.</p> <p>5. Climate Adaptation Strategies: Policies encourage sustainable practices and adaptation to climate variability, including crop diversification to incorporate more drought-resistant varieties. This supports the rural economy in Western Greece, enhancing the viability of less common crops.</p>
<p>What are the bodies and institutions working in the field related to the activity in the region?</p>	<ul style="list-style-type: none"> ● University Of Patras, School of Agricultural Sciences-Department of Agriculture ● Hellenic Agricultural Organisation “DEMETER” (ELGO) ● Agricultural Cooperative of Messolonghi-Nafpaktia “The Union” ● The Greek Interprofessional Cotton Association (DOB) ● The Hellenic Cotton Ginners and Exporters Association (HCA) ● The Federation of Greek Textile Manufacturers (SEVK) ● Ministry of Rural Development and Food
<p>Are there specific incentives or programs to promote the activity? (list any national, regional funding)</p>	<p>Project “EUCOTTON” coordinated by EVROPAIKI SYMMAXIA VAMVAKOS EOOS [47]. The objective is to increase the awareness and recognition of the European cotton, adding a very strong focus towards its quality and sustainability properties. Through this action, the beneficiary aims to raise awareness on cotton production in Europe and to increase demand for textiles made of European cotton.</p> <ul style="list-style-type: none"> ● Funded by: Promotion of Agricultural Products (AGRIP) ● Start Date: January 2022 ● Duration: 24 months
<p>Education and training opportunities</p>	

<p>What training opportunity is available?</p>	<ul style="list-style-type: none"> ● University Programs: The School of Agricultural Sciences at the University of Patras offers courses as part of its undergraduate studies in Sustainable Agriculture Sciences. These courses often cover various aspects of fiber crop cultivation, from seed selection and soil preparation to pest management and sustainable farming practices. For more information visit: http://susagri.upatras.gr/en <p><u>Online Courses:</u> Various online platforms offer courses related to agriculture and specific to fiber crops [48], [49]. These can range from introductory courses to advanced training on the latest innovations in fiber crop technology.</p>
<p>What is the role of the university and research in the development of this specific activity?</p>	<p>The University of Patras plays an important role in the development and research of fiber crops through its School of Agricultural Sciences. In their undergraduate courses on Sustainable Agriculture Sciences, students learn about various fiber crops, including the specific cultivation techniques and sustainability practices used both locally in Greece and globally.</p>
<p>SWOT analysis</p>	
<p>Strengths:</p>	<ul style="list-style-type: none"> ● Established Cotton Production: Greece is the main cotton producer in the EU, indicating a strong existing foundation for fiber crop cultivation. ● Technical Expertise and Research: Institutions like the University of Patras contribute significant research and development capabilities, particularly in sustainable agricultural practices. ● Supportive Policies: National and EU policies, including subsidies and strategic plans like the CAP 2023-2027, support the economic viability of cotton, emphasizing sustainability and market stability.
<p>Weaknesses:</p>	<ul style="list-style-type: none"> ● Limited Scale of Production in Western Greece: The cultivation of fiber crops, especially cotton, occurs on a much smaller scale compared to other regions, which may limit economies of scale and profitability. ● Climatic Challenges: The local climate may not be favorable for all types of fiber crops, particularly those requiring specific conditions for high-quality yields. ● Lack of Local Industry Infrastructure: Western Greece may lack the necessary industry infrastructure to process and market fiber crops effectively, potentially hindering the development of this sector.

<p>Opportunities:</p>	<ul style="list-style-type: none"> ● Market Development for Other Fiber Crops: Exploring the cultivation of other fiber crops like hemp and kenaf presents opportunities for diversification and leveraging evolving market demands and agricultural technologies. ● Research and Innovation: Continued investment in research can lead to innovative agricultural practices and crop varieties better suited to local conditions and global market needs. ● Environmental Sustainability Initiatives: There is potential to lead in sustainable agricultural practices, attracting eco-conscious markets and possibly new subsidies or incentives for environmentally friendly farming.
<p>Threats:</p>	<ul style="list-style-type: none"> ● Regulatory and Legal Challenges: For newly legalized crops like hemp, navigating the regulatory landscape can be complex and may deter investment. ● Economic Competitiveness: With the prioritization of other more economically significant crops like citrus and olive oil, fiber crops might struggle to compete for resources and investment. ● Climate Variability: Changing climate conditions pose a risk to the stability and predictability of agricultural outputs, impacting long-term cultivation plans.

Social Services	
EL63	Western Greece (Dytiki Ellada), Greece
Technical information	
Quantification: quantitative data of the activity	<p>Social services in Western Greece play a significant role in supporting vulnerable populations through various initiatives. Vocational training programs are widespread, aiming to improve employability among the unemployed and underemployed.</p> <p>Even though we cannot be sure about the exact numbers, there are several initiatives and support mechanisms within the agricultural sector. Some of the key social services include [50]:</p> <ul style="list-style-type: none"> ● Consulting Support and Business Plans: Establishment of registries for external consultants and support for developing integrated business plans. ● Support for Alternative Marketing Chains: Initiatives focused on green entrepreneurship, academic spin-offs, social entrepreneurship, and ethnic entrepreneurship. ● Social Integration and Training Programs: Advisory support, upgrading qualifications and skills of vulnerable social groups through training, psychological support, and awareness programs, especially for students and young people.
Economic aspect: the economic impact of the activity	The economic impact of social services in the agricultural sector in Western Greece is multifaceted, contributing to both direct and indirect economic benefits:

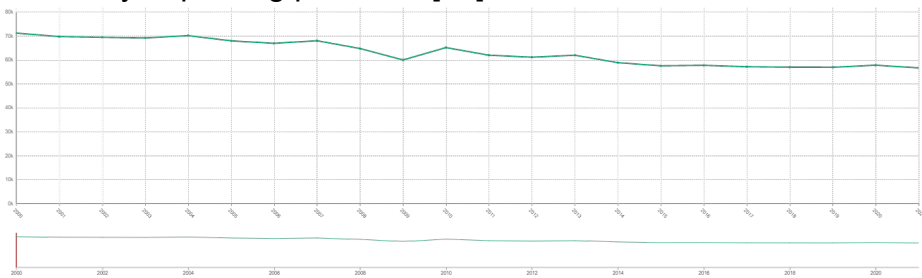
	<ul style="list-style-type: none"> ● Business Support: Initiatives to support business plans and provide loan guarantees help in business expansion and diversification, enhancing economic activity. ● Employment and Poverty Reduction: Targeted programs for vulnerable groups aim to reduce unemployment and poverty, fostering economic stability. ● Training and Integration: Programs provide psychological support and training to help integrate vulnerable groups into the labor market, thus making a larger segment of the population economically active. ● Innovation and Competitiveness: Promotion of alternative marketing chains and social entrepreneurship can lead to innovation and increased competitiveness in the agricultural sector, potentially opening up new markets and increasing productivity [50].
Main challenges of the activity in the region	<ul style="list-style-type: none"> ● Limited Funding: Social services often face financial constraints that hinder their ability to expand and improve their offerings. Securing consistent and adequate funding remains a persistent challenge. ● Inadequate Infrastructure: Many social service programs operate with outdated or insufficient infrastructure, limiting their effectiveness and reach, especially in remote rural areas. ● Bureaucratic Constrains: Administrative processes and regulatory requirements can delay or obstruct service delivery, making it difficult to implement and sustain social services efficiently.
Policies and institutions	
What are the main national and local policies that influence the activity?	<p>The Greek government has implemented several policies to support social services, particularly through the National Strategic Reference Framework (NSRF) and the European Social Fund (ESF) [51]. These policies aim to enhance social inclusion, reduce poverty, and promote employment through various programs. Locally, the Regional Operational Programme (ROP) of Western Greece also allocates funds to support social infrastructure and services, ensuring that they meet the needs of the local population.</p> <p>The Strategic Plan for the Common Agricultural Policy (CAP) 2023-2027 [52], implemented by the Greek government, is a crucial policy framework influencing social services in Western Greece. This plan focuses on enhancing rural</p>

	<p>development, supporting sustainable agriculture, and promoting social inclusion. Key elements include financial support for rural areas, initiatives to improve agricultural productivity, and measures to support vulnerable populations through community-based programs and services. The CAP aims to integrate environmental sustainability with socio-economic development, thereby strengthening the role of agriculture in providing essential social services [35].</p>
<p>What are the bodies and institutions working in the field related to the activity in the region?</p>	<p>Several bodies and institutions are involved in providing social services in Western Greece. These include municipal social services departments, non-governmental organizations (NGOs), and community-based organizations. Key institutions such as the Ministry of Labor and Social Affairs play crucial roles in policy implementation and funding allocation. Local municipalities also collaborate with NGOs to deliver targeted social services effectively [53].</p>
<p>Are there specific incentives or programs to promote the activity? (list any national, regional funding)</p>	<p>There are specific incentives and programs designed to promote social services in Western Greece. These include financial grants and subsidies provided under the NSRF and ESF. Additionally, the "Community-Led Local Development" (CLLD) initiatives under the LEADER program focus on enhancing social cohesion and economic development in rural areas [37]. Regional funding from the ROP also supports various social service projects, including infrastructure development and capacity building for service providers. The Agricultural Hearth initiative also includes special provisions for vulnerable populations, ensuring they receive targeted support to meet their unique needs.</p> <p>The new Regional Development Partnership 2021-2027 (NSRF 2021-2027) largely reflects the new priorities of the European Commission and the new development priorities of Greece for the coming years.</p> <p>The new NSRF 2021-2027 reflects and sets priorities for strengthening the productive potential of the economy, infrastructure, human skills and strengthening social protection.</p> <p>The National Development Programme (NDP) is based on the National Development Strategy and aims to reflect national medium-term development planning through the effective management of national investment resources of the Public Investment Programme (PIP) [54].</p>

Education and training opportunities

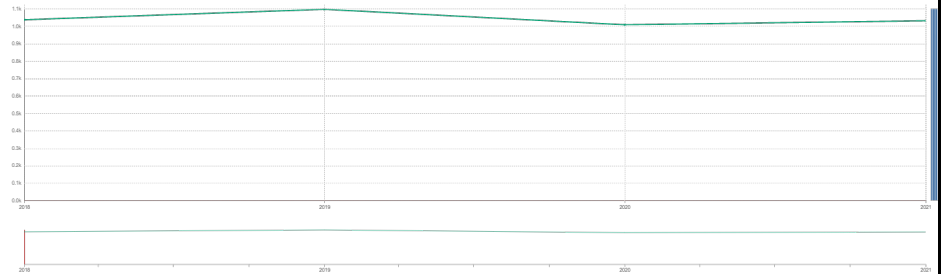
<p>What training opportunity is available?</p>	<p>Training opportunities in social services are available through various vocational training centers and educational institutions. These programs focus on enhancing skills in social work, community development, and healthcare. The Hellenic Agricultural Insurance Organization has established multiple research programmes such as “Qualitative and quantitative assessment of agricultural crop damage using satellite imagery and Geographical Information Systems and “New methods of analysis using 3rd generation satellites and Geographical Information Systems in the assessment of agricultural crop damage” [55].</p>
<p>What is the role of the university and research in the development of this specific activity?</p>	<p>Universities and research institutions in Western Greece play a pivotal role in the development of social services. They conduct research on social issues, develop innovative solutions, and provide training programs for social service professionals. For instance, the University of Patras offers courses and research opportunities in social work, psychology, and public health, contributing to the knowledge base and capacity building in the social services sector.</p>
<h3>SWOT analysis [56]</h3>	
<p>Strengths:</p>	<p>Community Involvement and Support: Social services benefit from robust community involvement, ensuring programs are well-supported and tailored to local needs. This grassroots support enhances the effectiveness and sustainability of social service initiatives.</p> <p>Comprehensive Policies and Programs: At both national and local levels, well-developed policies provide a strong framework for social services. These policies ensure that social services are systematically integrated into broader development strategies, providing consistency and direction.</p> <p>Collaboration Among Stakeholders: Effective collaboration between government bodies, NGOs, and community organizations enhances the reach and impact of social services. Such partnerships allow for resource sharing and coordinated efforts, making services more accessible and comprehensive.</p>
<p>Weaknesses:</p>	<p>Limited Funding and Resources: Despite strong policy</p>

	<p>frameworks, social services often face significant funding constraints, particularly in rural areas. This limits the scope and quality of services that can be provided.</p> <p>Inadequate Infrastructure: The lack of sufficient infrastructure hampers service delivery and restricts accessibility, especially in remote and rural regions. This can prevent vulnerable populations from receiving the support they need.</p> <p>Bureaucracy: Bureaucratic inefficiencies and delays can frustrate beneficiaries and reduce the overall impact of social services. Additionally, a shortage of trained professionals affects the quality and efficiency of service provision.</p>
Opportunities:	<p>Increased Funding from EU Programs: Opportunities exist to secure increased funding and support from EU programs and national policies. This can significantly enhance the capacity and quality of social services.</p> <p>Development of Innovative Programs: The creation of innovative social service programs, such as digital platforms for service delivery and community-based support systems, can improve efficiency and extend the reach of services.</p> <p>Enhanced Training and Capacity Building: Implementing comprehensive training and capacity-building programs for social service professionals can improve service quality. Enhanced skills and knowledge among professionals will lead to more effective and efficient service delivery.</p>
Threats:	<p>Economic Instability and Budget Constraints: Ongoing economic instability and budget constraints pose significant threats to the funding of social services. Reduced budgets can limit the availability and quality of services provided.</p> <p>Potential Cuts in EU Funding Post-2027: The possibility of reduced EU funding after 2027 could impact the financial sustainability of social service programs. This potential loss of support poses a risk to the continuation and effectiveness of these services..</p>

Efficiency improvements																																															
EL63	Western Greece (Dytiki Ellada), Greece																																														
Technical information																																															
<p>Quantification: quantitative data of the activity</p>	<p>Recent years have seen significant changes in the agricultural sector of Greece, reflected in various efficiency-improving practices adopted by farmers. These changes have led to notable reductions in environmental impact and improvements in productivity.</p> <p>As shown in the Figure below, the agricultural sector in Greece has seen a 20.43% reduction in ammonia emissions from 2000 (71,140 tons) to 2021 (56,608 tons), showcasing the impact of efficiency-improving practices [57].</p>  <table border="1"> <caption>Ammonia Emissions in Greece (2000-2021)</caption> <thead> <tr> <th>Year</th> <th>Ammonia Emissions (tons)</th> </tr> </thead> <tbody> <tr> <td>2000</td> <td>71,140</td> </tr> <tr> <td>2001</td> <td>68,000</td> </tr> <tr> <td>2002</td> <td>67,000</td> </tr> <tr> <td>2003</td> <td>67,000</td> </tr> <tr> <td>2004</td> <td>68,000</td> </tr> <tr> <td>2005</td> <td>67,000</td> </tr> <tr> <td>2006</td> <td>67,000</td> </tr> <tr> <td>2007</td> <td>67,000</td> </tr> <tr> <td>2008</td> <td>65,000</td> </tr> <tr> <td>2009</td> <td>62,000</td> </tr> <tr> <td>2010</td> <td>65,000</td> </tr> <tr> <td>2011</td> <td>63,000</td> </tr> <tr> <td>2012</td> <td>62,000</td> </tr> <tr> <td>2013</td> <td>63,000</td> </tr> <tr> <td>2014</td> <td>61,000</td> </tr> <tr> <td>2015</td> <td>60,000</td> </tr> <tr> <td>2016</td> <td>60,000</td> </tr> <tr> <td>2017</td> <td>60,000</td> </tr> <tr> <td>2018</td> <td>60,000</td> </tr> <tr> <td>2019</td> <td>60,000</td> </tr> <tr> <td>2020</td> <td>60,000</td> </tr> <tr> <td>2021</td> <td>56,608</td> </tr> </tbody> </table> <p>The adoption of precision agriculture techniques has contributed to this change. Farmers are now employing production mapping sensors and laser scanners on agricultural tractors for various crops, including cotton, maize, vineyards, apples, olives, pears, and peaches [58].</p> <p>In recent years, Western Greece has also begun transitioning from conventional to precision agriculture. Several notable projects have been initiated to facilitate this transition. For example, precision agriculture methods have been implemented</p>	Year	Ammonia Emissions (tons)	2000	71,140	2001	68,000	2002	67,000	2003	67,000	2004	68,000	2005	67,000	2006	67,000	2007	67,000	2008	65,000	2009	62,000	2010	65,000	2011	63,000	2012	62,000	2013	63,000	2014	61,000	2015	60,000	2016	60,000	2017	60,000	2018	60,000	2019	60,000	2020	60,000	2021	56,608
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	<p>in the cultivation of industrial tomatoes in the dried lake area of Agoulinitza, Iliia. New applications are also planned for vineyard and olive crops in Achaia and Aetolia-Acarmania, encouraging adoption by producer groups and agribusinesses [59]. Another significant project involves research and actions on 600 hectares of olive groves in Iliia and Aetolia-Acarmania, including the use of satellite data, drone flights, and ground sensors for systematic monitoring [60].</p> <p>Between 2010 and 2016, Dytiki Ellada made significant strides in improving soil cover, evident from the Eurostat data [5]. The area of bare soil decreased from 30,300 ha to 20,400 ha, indicating a move towards more sustainable practices. Simultaneously, there was a dramatic increase in areas cultivated with normal winter crops from 47,620 ha to 51,510 ha, and plant-residents from 3,030 ha to 13,620 ha. These changes indicate a commitment to enhancing soil health, conserving moisture, and promoting ecological sustainability in agriculture [61].</p> <p>In addition, the percentage of irrigable and irrigated areas in the utilized agricultural area (UAA) in Western Greece decreased from 45.4% in 2005 to 34.4% in 2016, reflecting efforts to adopt rational water management practices [62]. These efforts aim to optimize water use and improve sustainability [63], [64].</p> <p>Organic farming has seen significant growth in Western Greece. The number of holdings with fully converted and under-conversion organic farming practices was 2,950 in 2013, but this number decreased to 1,560 in 2020 due to the rapid shift from conventional to organic farming methods [65].</p> <p>Western Greece has also experienced a notable shift in biological livestock farming. The number of holdings and animals transitioning to organic production and certification methods has increased significantly, with bovine and sheep sectors showing increases of +185.3% and 71.2% in the number of animals, and +138.2% and +25.7% in the number of holdings, respectively [66].</p>
<p>Economic aspect: the economic impact of the activity</p>	<p>Efficiency improvements in agriculture have a significant economic impact on the region of Western Greece. These improvements encompass a variety of practices and technologies that enhance productivity, reduce costs, and sustain environmental resources, ultimately contributing to the economic stability and growth of the agricultural sector.</p> <p>Agricultural Output Stability</p> <p>Based on Eurostat data, the agricultural output in Dytiki Ellada, measured in terms of basic price, remained stable between 2018 and 2021, with values of 1037.55 million euros and 1031.87</p>

million euros, respectively. This stability in agricultural output suggests that the adoption of efficiency-improving practices has successfully maintained productivity levels despite external challenges, such as the COVID-19 pandemic, which had a broadly negative economic impact on Greece [67].



Cost Reduction and Profit Margins

Efficiency-improving practices such as precision agriculture, soil cover (mulching), and rational water management help reduce input costs. For instance, precision agriculture minimizes the use of fertilizers and pesticides by applying them more accurately, leading to cost savings. Similarly, soil cover reduces water evaporation and weed growth, thereby lowering irrigation and herbicide expenses. Rational water management practices, which optimize irrigation, further contribute to reducing water usage and associated costs.

By lowering these input costs, farmers in Western Greece can achieve better profit margins even if the overall agricultural output remains stable. The economic benefits include not only cost savings but also increased resilience to market and environmental fluctuations.

Employment and Investment

The shift towards more efficient agricultural practices also impacts employment and investment in the region. The adoption of advanced technologies requires skilled labor for operation and maintenance, leading to the creation of new job opportunities. Moreover, the economic stability and potential profitability from efficiency improvements attract investments in agricultural infrastructure and technology, fostering further development in the sector.

Environmental and Long-term Economic Benefits

Environmental benefits from efficiency-improving practices translate into long-term economic advantages. Practices such as precision agriculture and organic farming reduce environmental degradation, preserve soil health, and ensure sustainable use of natural resources. These environmental improvements help

	secure the future productivity of agricultural lands, ensuring continued economic benefits for the region.
Main challenges of the activity in the region	<p>In Western Greece, several key challenges need to be addressed to successfully implement and sustain these improvements:</p> <ul style="list-style-type: none"> ● High Initial Investment Costs <ul style="list-style-type: none"> ○ <i>Technology and Equipment:</i> The adoption of precision agriculture and advanced irrigation systems requires significant upfront investment in technology and equipment. Many farmers may find it challenging to afford these costs without financial assistance or subsidies. ○ <i>Infrastructure Development:</i> Developing the necessary infrastructure, such as improved irrigation networks and storage facilities, requires substantial financial resources. ● Limited Access to Funding and Credit: <ul style="list-style-type: none"> ○ <i>Financial Barriers:</i> Farmers in Western Greece often face difficulties accessing credit and financial services. Limited availability of loans and high-interest rates can impede their ability to invest in efficiency-improving technologies. ○ Government Support: Insufficient government support and subsidies can hinder the adoption of new practices. Effective policy frameworks and financial incentives are crucial for encouraging investments in agricultural efficiency. ● Knowledge and Training Gaps <ul style="list-style-type: none"> ○ <i>Technical Expertise:</i> Implementing precision agriculture and other advanced practices requires specialized knowledge and technical skills. Many farmers may lack the necessary training to effectively use these technologies. ○ <i>Extension Services:</i> The availability and effectiveness of agricultural extension services play a crucial role in educating and supporting farmers. Strengthening these services is essential for successful technology adoption. ● Environmental and Climatic Challenges <ul style="list-style-type: none"> ○ <i>Climate Change:</i> Changing climatic conditions pose significant challenges to agriculture. Unpredictable weather patterns, droughts, and extreme temperatures can affect the effectiveness of efficiency-improving practices. ○ <i>Water Scarcity:</i> Water management is a critical issue in Western Greece. Efficient irrigation practices are essential,

	<p>but water scarcity and competition for water resources can limit their implementation.</p> <ul style="list-style-type: none"> ● Market Access and Infrastructure <ul style="list-style-type: none"> ○ <i>Supply Chain Issues</i>: Efficient agricultural production needs robust supply chain infrastructure to transport and market produce. Inadequate transportation and storage facilities can lead to post-harvest losses and reduced profitability. ○ <i>Market Fluctuations</i>: Farmers need stable and accessible markets for their produce. Market volatility and fluctuating prices can impact the economic viability of efficiency improvements. ● Social and Cultural Barriers <ul style="list-style-type: none"> ○ <i>Resistance to Change</i>: Traditional farming practices are deeply ingrained in many rural communities. Overcoming resistance to change and convincing farmers of the benefits of new practices can be challenging. ○ <i>Community Engagement</i>: Successful implementation of efficiency improvements requires the active engagement and cooperation of the farming community. Building trust and fostering a collaborative approach is crucial.
Policies and institutions	
<p>What are the main national and local policies that influence the activity?</p>	<ul style="list-style-type: none"> ● <u>National Policies</u> by the Hellenic Agricultural Organization "DEMETER" (ELGO): <i>Policy Framework</i>: Supports research and development in agriculture to promote efficiency-improving practices. This includes: <ul style="list-style-type: none"> ○ <i>Precision Agriculture</i>: Encourages the use of GPS-guided machinery, sensors, and data analytics to optimize input use and increase productivity. ○ <i>Integrated Pest Management (IPM)</i>: Promotes environmentally friendly pest control methods to reduce chemical usage. ○ <i>Sustainable Water Management</i>: Advocates for efficient irrigation techniques and water conservation practices. <p>European Subsidies and Incentives by the EU Common Agricultural Policy (CAP) [7]: <i>Subsidies and Incentives</i>: Provides financial support to farmers adopting efficiency-improving practices, such as:</p>

	<ul style="list-style-type: none"> ○ <i>Organic Farming</i>: Incentives for converting to organic farming, which reduces the environmental impact of agriculture. ○ <i>Agri-Environmental Measures</i>: Payments for adopting practices that protect the environment and enhance resource efficiency. ○ <i>Rural Development Programs</i>: Grants for modernizing agricultural infrastructure and adopting innovative technologies. ● <u>Local Policies</u> by the Regional Smart Specialization Strategy (RIS3) - Operational Program Western Greece 2014-2020, focusing on innovation: Encourages the development and adoption of innovative agricultural practices, including: <ul style="list-style-type: none"> ○ <i>Precision Agriculture</i>: Development of model services for olive cultivation and other crops using precision farming techniques. ○ <i>Sustainable Soil Management</i>: Promotion of soil health practices, such as cover cropping and reduced tillage, to enhance soil productivity and sustainability.
<p>What are the bodies and institutions working in the field related to the activity in the region?</p>	<ul style="list-style-type: none"> ● University Of Patras, School of Agricultural Sciences-Department of Agriculture ● Hellenic Agricultural Organisation “DEMETER” (ELGO) ● Agricultural Cooperative Agrinio Union ● Company “Eco Development” ● Region of Western Greece
<p>Are there specific incentives or programs to promote the activity? (list any national, regional funding)</p>	<ol style="list-style-type: none"> 1. National farmer school: This full-day farming school aims to transfer knowledge and build skills for the next generation of farmers. The school utilized demonstration plots, greenhouse labs, livestock facilities, and machinery parks to provide an immersive learning environment. Participants are then equipped with strategies and best practices to implement precision agriculture and agroecology approaches on their own farms and smallholdings across Central Macedonia, Greece [68]. 2. Project TAGs - Technological and business innovation services to stimulate the local Agro-Food ecosystems and to support a cross border collaboration among local action Groups, funded by the Interreg V/A Greece-Italy 2014-2020 Program and implemented by the Directorate of Agricultural Economy of the Western Greece Region and the Special Account for Research Funds of the University of Patras [69].

	<p>3. Research project titled "Development of a Model Precision Agriculture Service for Olive Cultivation," implemented within the framework of the Operational Program Western Greece 2014-2020 - RIS3 [70].</p>
<p>Education and training opportunities</p>	
<p>What training opportunity is available?</p>	<ol style="list-style-type: none"> 1. Undergraduate Studies: Individuals interested in a formal education in efficiency improvements in Agriculture can pursue a Bachelor of Science (BSc) at the Department of Sustainable Agriculture Sciences, University of Patras. This program provides a thorough grounding in sustainable agricultural practices and efficiency-improving practices. More details are available on their website: http://susagri.upatras.gr/en. 2. Professional development: For professionals in the agriculture sector, several training opportunities are available to enhance sustainable and environmentally friendly practices such as: <ul style="list-style-type: none"> ○ AGRIFOOD PARTNERSHIP OF THE REGION OF WEST GREECE: This partnership offers training throughout the production and processing stages of agri-food products. They focus on sustainable practices that benefit both farmers and businesses. In addition to training, they provide technical and consulting support to the primary and manufacturing industries and initiatives to boost local product demand among residents and visitors. More details can be found on their website: https://www.agrifoodwest.gr/en/purpose/. ○ Agricultural Cooperative Agrinio Union: This cooperative provides comprehensive education and on-the-job training to its members, including the elected members of the managing board, managers, and employees. These programs are designed to help participants effectively contribute to the cooperative's development. They also offer public education, particularly targeting young people and opinion leaders, about the nature and benefits of cooperation. More information is available here: https://archive.e-ea.gr/en/general/our-philosophy/ 3. Logal Conferences [71] and Seminars [72]: By participating in these conferences, individuals and organizations can gain

	<p>valuable insights, network with peers, and stay informed about the latest trends and research in the field.</p> <p>Online courses such as the Integrated Pest Management (IPM) Training Course – Greece [73].</p>
<p>What is the role of the university and research in the development of this specific activity?</p>	<p>The University of Patras plays a pivotal role in the agricultural development and research through its School of Agricultural Sciences. The undergraduate program in Sustainable Agriculture Sciences educates students on cutting-edge practices such as precision agriculture and sustainable farming, which are applicable both in Greece and internationally [74].</p> <p>Furthermore, the Department actively supports doctoral research focused on specific objectives that enhance agricultural efficiency. These studies often lead to significant advancements in how resources are managed in farming, thereby contributing to both local and global agricultural development. Collaborations with international research institutions and industry partners further amplify the real-world impact of these efforts.</p>
<p>SWOT analysis</p>	
<p>Strengths:</p>	<ul style="list-style-type: none"> ● Rich Natural Resources: Western Greece is endowed with a diverse range of natural resources that are essential for agricultural and industrial activities. ● Established Agricultural Sector: The region has a strong tradition in agriculture, particularly in the production of olives, citrus and vineyards which provides a solid base for introducing efficiency improvements. ● Technological Adoption: Increasing use of technology like precision agriculture and renewable energy sources in agricultural and industrial processes. ● Supportive Regional Policies: Local government and EU funding programs like Interreg promote initiatives aimed at technological and business innovation.
<p>Weaknesses:</p>	<ul style="list-style-type: none"> ● Infrastructure Deficiencies: Limited access to modern infrastructure can hinder efficient logistics and transportation of goods. ● Skill Gaps: There may be a lack of skilled labor in new and emerging technologies, which are crucial for implementing efficiency improvements. ● Fragmented Land Holdings: Small and fragmented agricultural holdings may limit the adoption of large-scale efficient practices.

	<ul style="list-style-type: none"> ● Financial Constraints: Small-scale operators might struggle with the initial investment needed for modern, efficient technologies.
Opportunities:	<ul style="list-style-type: none"> ● EU Funding and Support: Opportunities for funding from EU programs to support innovation and infrastructure improvements. ● Collaboration with Research Institutions: Potential for partnerships with Universities and Research Centers to develop new technologies and improve existing practices. ● Growing Organic and Sustainable Market: Increasing demand for sustainable and organic products could drive innovation and efficiency in local production. ● Tourism Integration: Leveraging the agricultural sector by integrating it with the growing tourism industry to promote agri-tourism and local products.
Threats:	<ul style="list-style-type: none"> ● Economic Instability: Economic fluctuations can impact funding and investment in efficiency projects. ● Climate Change: Increased risk of droughts, floods, and other extreme weather conditions could affect agricultural outputs and resource availability. ● Competition from Other Regions: Other regions might adopt more aggressive efficiency measures, positioning them as more attractive for investment and development. ● Regulatory Changes: Changes in EU agricultural policies or subsidies could impact the feasibility of pursuing certain efficiency improvements.

Risk management Strategies

EL63

Western Greece (Dytiki Ellada), Greece

Technical information

Quantification: quantitative data of the activity

Farmers in Western Greece employ various risk management strategies to mitigate impacts of market volatility and adverse weather. According to the 2021 data from ELSTAT, there are about 70.000 agricultural holdings in the region. The usage of



















	<p>crop insurance is widespread, with approximately 45% of farmers enrolled in insurance programs to protect against weather-related risks [75]. Economic instability and potential funding cuts, especially post-2027 with potential changes in EU funding structures, add to the uncertainty, impacting the sustainability of current risk management strategies [56].</p>
<p>Economic aspect: the economic impact of the activity</p>	<p>Risk management tactics have a substantial economic impact. For example, crop insurance, which pays out an estimated 50 million euros a year to cover losses from unfavorable weather events, helps maintain farm profits. Though less widespread, the use of financial instruments like options and futures contracts is steadily rising, particularly among larger agricultural firms. By guarding against market price swings, these instruments give another degree of financial stability [76].</p>
<p>Main challenges of the activity in the region</p>	<ul style="list-style-type: none"> ● High Insurance Premiums and Complex Administrative Processes: Small-scale farmers struggle with the high cost of insurance premiums and the complex administrative requirements, which limits their access to necessary crop insurance and risk protection mechanisms [56]. ● Limited Awareness and Adoption of Financial Instruments: There is a low level of awareness and adoption of financial tools such as futures contracts and options among farmers. These instruments could help mitigate price fluctuations and provide more stable income but are underutilized due to a lack of knowledge and resources. ● Climate Change and Environmental Risks: The increasing frequency and severity of extreme weather events due to climate change pose unpredictable threats to agricultural productivity. Farmers must continuously invest in resilient practices and technologies to mitigate these risks [77]. ● Regulatory and Bureaucratic Boundaries: Farmers face challenges navigating the regulatory landscape, which is often fraught with bureaucratic delays and complexities. This makes it difficult to access necessary resources and support systems in a timely manner [78]. ● Economic Instability and Potential Funding Cuts: Economic instability and potential cuts in funding, especially with possible changes in EU funding structures post-2027, add to the uncertainty and impact the

	sustainability of current risk management strategies [75].
Policies and institutions	
What are the main national and local policies that influence the activity?	The main policies influencing risk management in agriculture include the Common Agricultural Policy (CAP) 2023-2027, which provides funding for risk management tools and climate adaptation strategies. The national framework under the Ministry of Rural Development and Food outlines specific measures for agricultural risk management [79].
What are the bodies and institutions working in the field related to the activity in the region?	Key institutions include the Hellenic Agricultural Insurance Organization (ELGA) [80], which oversees crop insurance schemes, and the Ministry of Rural Development and Food, which implements CAP measures at the national and regional level [79].
Are there specific incentives or programs to promote the activity? (list any national, regional funding)	<p>Several programs provide incentives for risk management, such as subsidies for crop insurance premiums under the CAP.</p> <ul style="list-style-type: none"> ● Income Stabilization Tool: Helps farmers stabilize their income by providing financial assistance when their income drops significantly. ● Rural Development Programs: Focuses on enhancing the competitiveness of agriculture, ensuring the sustainable management of natural resources, and achieving balanced territorial development of rural economies and communities [35]. ● Additionally, regional funding from the Operational Programme for Western Greece 2021-2027 supports investments in resilient agricultural practices and infrastructure. ● Greek Agricultural Cooperative Organizations (GAIA EPICHEIREIN) [81]. ● Risk Management Training: Offers training programs for farmers on risk management strategies, including the use of financial instruments like futures and options.
Education and training opportunities	
What training opportunity is available?	Training programs are available through various agricultural universities and institutes. The University of Patras, for instance, offers courses on risk management in agriculture,

	focusing on insurance, financial instruments, and sustainable farming practices [82].
What is the role of the university and research in the development of this specific activity?	Universities play a crucial role in research and development of new risk management strategies. They collaborate with farmers to implement pilot projects and provide training on advanced risk management tools.
SWOT analysis [56]	
Strengths:	Well-established crop insurance programs provide a safety net for farmers against adverse weather events and other risks. A supportive policy framework under the Common Agricultural Policy (CAP) 2023-2027 strengthens risk management efforts [35]. Strong institutional support from the Hellenic Agricultural Insurance Organization (ELGA) and the Ministry of Rural Development and Food ensures robust implementation of risk management strategies. These institutions offer comprehensive insurance schemes and financial assistance to farmers, enhancing resilience against climate-related risks.
Weaknesses:	The high cost of insurance premiums can be a barrier for small-scale farmers, limiting their access to risk management tools. There is limited use of financial instruments like futures and options, which can hedge against price fluctuations. Inconsistent adoption of risk management practices among small-scale farmers, due to lack of awareness or resources, hampers the effectiveness of these strategies. Additionally, the administrative complexity of applying for and managing insurance can deter farmers from fully utilizing these programs.
Opportunities:	Increased funding under CAP 2023-2027 for climate adaptation presents opportunities for enhancing risk management strategies. Growing interest in advanced financial instruments, such as weather derivatives and index-based insurance, can provide additional tools for managing agricultural risks. Technological innovations, including improved weather forecasting and data analytics, can enhance risk prediction and management. The development of cooperative insurance models and community-based risk management programs can increase access and affordability for small-scale farmers.

Threats:	Unpredictable impacts of climate change pose significant threats to agricultural productivity and stability. Market volatility affecting agricultural prices can disrupt income streams for farmers, increasing their financial vulnerability. Economic downturns can reduce the availability of funding for insurance schemes and other risk management initiatives. Additionally, potential policy changes and reductions in government support post-2027 could undermine the sustainability of current risk management frameworks.
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Renewable Energy

EL63	Western Greece (Dytiki Ellada), Greece						
Technical information							
<p>Quantification: quantitative data of the activity (es. how many agritourism in the region, how much organic production etc etc)</p>	<p>Western Greece is rapidly advancing in renewable energy production. The region hosts approximately 11.2% of the national renewable energy stations, contributing around 20% of the country's renewable energy output. Specifically, the region has a 14.32% share in solar energy production, 6.49% in wind energy, and 19.94% in hydroelectric energy [83]. Significant projects include the development of urban energy networks and LNG storage projects in Patras, Pyrgos, and Agrinio, supported by substantial EU funding [83]. Additionally, the region is enhancing its natural gas network, connecting major cities like Agrinio, Patras, and Pyrgos to ensure cheaper energy access and increased competitiveness [84].</p> <p style="text-align: center;">Renewable energy sources, technologies and applications</p> <table border="1" data-bbox="644 999 1513 1473"> <tr> <td style="background-color: #FFD700; text-align: center;"> Solar energy  <i>Source:</i> Sun <i>Technologies:</i> Photovoltaics, Solar thermal <i>Applications:</i> Electricity, Heating and Cooling </td> <td style="background-color: #ADD8E6; text-align: center;"> Wind energy  <i>Source:</i> Wind <i>Technologies:</i> Wind turbines <i>Applications:</i> Electricity </td> <td style="background-color: #87CEEB; text-align: center;"> Marine energy  <i>Source:</i> Waves, tides <i>Technologies:</i> Dams, tidal barrages <i>Applications:</i> Electricity </td> <td style="background-color: #66B3FF; text-align: center;"> Hydropower  <i>Source:</i> Water <i>Technologies:</i> Hydropower plant <i>Applications:</i> Electricity </td> <td style="background-color: #A08060; text-align: center;"> Geothermal energy  <i>Source:</i> Earth <i>Technologies:</i> Geothermal and heat pumps <i>Applications:</i> Electricity, Heating and Cooling </td> <td style="background-color: #9ACD32; text-align: center;"> Bioenergy  <i>Source:</i> Biomass, waste <i>Technologies:</i> Biomass combustion, biogas plants, biofuels <i>Applications:</i> Electricity, Heating and Cooling, Transport </td> </tr> </table> <p><i>Source:</i> ECA [85]</p>	Solar energy  <i>Source:</i> Sun <i>Technologies:</i> Photovoltaics, Solar thermal <i>Applications:</i> Electricity, Heating and Cooling	Wind energy  <i>Source:</i> Wind <i>Technologies:</i> Wind turbines <i>Applications:</i> Electricity	Marine energy  <i>Source:</i> Waves, tides <i>Technologies:</i> Dams, tidal barrages <i>Applications:</i> Electricity	Hydropower  <i>Source:</i> Water <i>Technologies:</i> Hydropower plant <i>Applications:</i> Electricity	Geothermal energy  <i>Source:</i> Earth <i>Technologies:</i> Geothermal and heat pumps <i>Applications:</i> Electricity, Heating and Cooling	Bioenergy  <i>Source:</i> Biomass, waste <i>Technologies:</i> Biomass combustion, biogas plants, biofuels <i>Applications:</i> Electricity, Heating and Cooling, Transport
Solar energy  <i>Source:</i> Sun <i>Technologies:</i> Photovoltaics, Solar thermal <i>Applications:</i> Electricity, Heating and Cooling	Wind energy  <i>Source:</i> Wind <i>Technologies:</i> Wind turbines <i>Applications:</i> Electricity	Marine energy  <i>Source:</i> Waves, tides <i>Technologies:</i> Dams, tidal barrages <i>Applications:</i> Electricity	Hydropower  <i>Source:</i> Water <i>Technologies:</i> Hydropower plant <i>Applications:</i> Electricity	Geothermal energy  <i>Source:</i> Earth <i>Technologies:</i> Geothermal and heat pumps <i>Applications:</i> Electricity, Heating and Cooling	Bioenergy  <i>Source:</i> Biomass, waste <i>Technologies:</i> Biomass combustion, biogas plants, biofuels <i>Applications:</i> Electricity, Heating and Cooling, Transport		
<p>Economic aspect: the economic impact of the activity</p>	<p>Renewable energy production and energy transformation to reduce the environmental footprint are strategic goals for Greece, aligning with the European Green Deal. Western Greece's geomorphological features provide significant potential for renewable energy production. The economic impact of renewable energy in the region is profound [86]. According to the Centre of Planning and Economic Research (KEPE), the GDP multiplier for the sector is 1.37, meaning that for every 1 million € invested, the regional GDP increases by 1.37 million €. Furthermore, the employment multiplier is</p>						

	3, indicating that each 1 million € investment creates three new jobs [86].
Main challenges of the activity in the region	<ul style="list-style-type: none"> ● High Initial Investment Costs: The development of renewable energy projects requires significant upfront capital, which can be a major barrier for investors and developers. This high cost includes expenses for technology, infrastructure, and regulatory compliance, making it difficult for smaller entities to enter the market. ● Regulatory and Bureaucratic Hurdles: Navigating the regulatory landscape for renewable energy projects is complex and time-consuming. Bureaucratic delays and stringent compliance requirements can slow down project implementation and increase costs, discouraging potential investors and developers. ● Public Opposition and Environmental Concerns: Despite the benefits, some renewable energy projects face opposition from local communities due to environmental and aesthetic concerns. Projects like wind farms and large solar installations can disrupt local ecosystems and landscapes, leading to resistance from residents and environmental groups. ● Grid Integration and Technical Challenges: Integrating renewable energy sources into the existing power grid poses significant technical challenges. The intermittent nature of resources like solar and wind energy requires advanced grid management and storage solutions to ensure a stable and reliable energy supply, which can be costly and technologically demanding.
Policies and institutions	
What are the main national and local policies that influence the activity?	The National Framework for Renewable Energy Legislation supports the development and integration of renewable energy sources in Greece. Key policies include the National Renewable Energy Action Plan and various EU directives, emphasizing sustainable development, energy efficiency, and reduced environmental impact. The framework for supporting Renewable Energy Sources (RES) in Greece was established by Law 4414/2016, aligning with the EU's environmental and energy aid guidelines (2014-2020). This law introduced

	<p>significant elements to the domestic RES market, including operational support through a sliding Feed-in Premium and the setting of Reference Prices based on standard project costs [87]. The Strategic Plan for the Common Agricultural Policy (CAP) 2023-2027 also plays a critical role, promoting sustainable rural development and energy transition. Locally, the Regional Operational Programme (ROP) supports renewable energy infrastructure and project development in Western Greece [88].</p>
<p>What are the bodies and institutions working in the field related to the activity in the region?</p>	<p>Key institutions involved include the Center for Renewable Energy Sources and Saving (CRESES), providing technical support and policy recommendations. Local municipalities and regional development agencies actively implement and support renewable energy projects, collaborating with private companies and research institutions to foster innovation and investment in the sector [89].</p>
<p>Are there specific incentives or programs to promote the activity? (list any national, regional funding)</p>	<p>Several incentives and programs promote renewable energy in Western Greece.</p> <p>The Ministry of Energy supports various research and innovation programs aimed at developing new renewable energy technologies and improving existing ones. These programs provide funding for universities, research institutions, and private companies to conduct cutting-edge research and develop innovative energy solutions [90].</p> <p>The EAFRD supports rural development projects, including those focused on renewable energy. This fund provides financial assistance to projects that promote sustainable agriculture, improve energy efficiency, and reduce carbon emissions. EAFRD funding helps rural areas in Western Greece adopt renewable energy solutions, thereby contributing to the region's overall sustainability goals [91].</p> <p>CLLD initiatives, supported by the LEADER program, focus on enhancing social cohesion and economic development in rural areas. These initiatives encourage local communities to take the lead in developing renewable energy projects that meet their specific needs. Funding is provided for projects that promote local energy production, improve energy efficiency, and support sustainable development [37].</p> <p>The Research and Innovation Strategy for Smart Specialization (RIS3) focuses on supporting energy research and innovation. The RIS3 Energy Strategy provides funding</p>

	<p>for research projects, pilot programs, and the development of new renewable energy technologies. This strategy aims to foster innovation, enhance the competitiveness of the renewable energy sector, and support the transition to a low-carbon economy [92], [93].</p> <p>According to the approved development plan by DEDA for 2021-2024, the natural gas network in Western Greece is set to expand significantly. The network will connect major cities like Agrinio, Patras, and Pyrgos, providing businesses and households with access to cheaper and more efficient energy sources. This expansion is expected to boost the competitiveness of local businesses and reduce energy costs for residents [86].</p>
Education and training opportunities	
<p>What training opportunity is available?</p>	<p>Training opportunities in renewable energy are available through various educational and vocational programs. The University of Patras offers specialized courses in energy engineering, focusing on renewable energy technologies, sustainability, and energy management [94]. These programs include practical training, internships, and collaborative projects with industry partners. The Department of Physics at the University of Patras provides comprehensive courses on renewable energy sources, covering topics such as solar, wind, hydroelectric, biomass, and geothermal energy. Students learn about the principles of operation, potential calculations, and efficiency metrics of different renewable energy systems [95].</p>
<p>What is the role of the university and research in the development of this specific activity?</p>	<p>University departments and research institutions in Western Greece play a crucial role in advancing renewable energy. They conduct innovative research, develop new technologies, and offer educational programs to train professionals in the field. Collaboration between universities, industry, and government bodies drives technological advancements and practical applications of research findings in renewable energy projects. The Center for Renewable Energy Sources and Saving (CRES) also provides education and training programs to enhance the skills and knowledge of professionals in the renewable energy sector [96].</p>
SWOT analysis	

Strengths:	<ul style="list-style-type: none"> ● Significant Investments and Policy Support: Substantial investments and robust policy frameworks provide a strong foundation for renewable energy projects, fostering growth and innovation. ● Abundant Natural Resources: The region is rich in geothermal, wind, and solar energy resources, creating a diverse and reliable basis for renewable energy production. ● Active Research and Collaboration: Universities and research organizations actively participate in developing new technologies, enhancing the sector's innovation and efficiency through collaboration with government and businesses.
Weaknesses:	<ul style="list-style-type: none"> ● High Initial Investment Costs: The substantial capital required for renewable energy projects can be a major barrier, particularly for smaller investors and developers. ● Infrastructure Limitations: Inadequate infrastructure in certain areas restricts the seamless integration of renewable energy sources into the existing power grid, complicating project implementation. ● Public Opposition: Environmental and aesthetic concerns from local communities can lead to resistance against renewable energy projects, delaying or halting developments.
Opportunities:	<ul style="list-style-type: none"> ● Increased Funding and Incentives: Enhanced EU funding and national incentives provide significant opportunities for expanding renewable energy projects, driving further investments and technological advancements. ● Rising Demand for Clean Energy: The growing global demand for sustainable and clean energy sources propels investments and innovation in the sector, encouraging new developments. ● Technological Advancements: Innovations in energy storage and efficiency offer improvements in renewable energy systems' viability and performance, enabling more effective and reliable energy solutions.
Threats:	<ul style="list-style-type: none"> ● Economic and Financial Instability: Financial instability and potential reductions in funding could impact the availability of resources for renewable energy projects, hindering their progress.

- **Environmental and Ecological Concerns:** Large-scale installations may negatively affect local ecosystems, posing environmental challenges that need careful management.
- **Technical Challenges:** Maintaining a stable energy supply and integrating diverse energy sources into the grid present significant technological hurdles, impacting the reliability of renewable energy.

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