

Towards Sustainable Tourism in Crete: A Delphi-Based Roadmap for Agri-Food Synergies and Regional Resilience

Antonis Kritikos¹, Anastasios Magoutas^{1*}, Panos T. Chountalas², Antonis Livieratos¹

¹National and Kapodistrian University of Athens, Athens, Greece

²University of Piraeus, Piraeus, Greece

*to whom all correspondence should be addressed: e-mail: amagoutas@ba.uoa.gr

1. Introduction

Tourism continues to be a key pillar of the Greek economy, accounting for almost one-fifth (approximately 20%) of Greece's GDP and total employment based on recent travel and tourism economic impact estimations (WTTC, 2025). The island of Crete, the largest in Greece, encapsulates this mixture of activities: it ranks among the world's primary destinations for tourism, while simultaneously having a powerful agri-food sector, as well as history and culture (Hellenic Statistical Authority, 2024). However, tourism-led development in Crete is associated with persistent structural asymmetries, including high seasonality, environmental pressures like water stress, uneven regional involvement, and weak institutional coordination.

These factors are mainly identified within the framework of sustainability evaluations in Greek island destinations (Vourdoubas, 2025). Research conducted recently by Kritikos, Magoutas & Poulaki (2025) indicates that the long term vulnerabilities of island tourism economies – seasonality, reliance on mass tourism and low innovation uptake – necessitate movement towards diversification of tourism products into digital transformation and alternative tourism models, thus demonstrating the importance of robust, innovation-driven and place-based sustainable tourism strategies (Kritikos et al., 2025). Concurrently, European and national policy frameworks such as the EU Green Deal, Digital Europe Program or Sustainable Tourism Development Agenda (STDA) 2030 underscore the need for an integrated regionally grounded approach that would combine sustainability, digitalization, cultural heritage and inclusive governance (European Commission, 2019; Ministry of Tourism, 2022), also raising territorial cohesion, stakeholder participation and aligning environmental and digital transition as principles of regional development policy. In this frame, agri-food and tourism synergies are moving from a peripheral position to be considered as strategic factors in territorial continuity or resilience (Briedenhann & Wickens, 2004; Petroman et al., 2016).

A Strategic Roadmap for Sustainable Tourism Development in Crete, was developed based on a three-round Delphi analysis with experts from both the public and private sectors. The research objectives are to assess expert opinion on selected sustainability challenges and opportunities at the agri-food–tourism nexus; Co-design an implementable strategic framework consistent with national and EU-level sustainable tourism targets. The study is participatory and mixed-method, reflecting the complexity of regional transformation with a combination of quantitative indicators and story-based analysis to provide approachable, locally tailored strategy. It also helps to frame Crete as a candidate Mediterranean pilot region for planning sustainable tourism via agro-cultural symbiosis. Based on four research questions and six hypotheses

grounded in the sustainability literature, the study adopts an institutional/cultural/environmental/digital/governance approach toward agri-food and tourism integration in Crete. Notwithstanding the increasing research on indicators for sustainable tourism and agritourism, less attention has been devoted to Mediterranean island territories also in terms of where tourism, agri-food systems, and climate vulnerability may converge. Few previous studies integrate expert-driven consensus building with a policy-oriented roadmap which explicitly integrates governance, cultural identity, digital innovation and environmental resilience. While in Crete this gap can be filled with a structured Delphi approach which provides an integrated, place-based and implementable strategic framework.

The remainder of this paper is organized as follows. Section 2 presents the theoretical framework and reviews the relevant literature on sustainable tourism, agri-food synergies, regional resilience, and the Delphi method. Section 3 describes the research methodology, including the Delphi design, expert panel, and data analysis procedures. Section 4 introduces the case study of Crete, while Section 5 presents and discusses the empirical findings. Section 6 develops the Delphi-based strategic roadmap for sustainable tourism, and Section 7 outlines the proposed governance framework, key performance indicators, funding mechanisms, and evaluation system. Finally, Section 8 concludes the paper by summarizing the main findings, discussing policy implications, acknowledging limitations, and suggesting directions for future research.

2. Theoretical Framework and Literature Review

This study is grounded in a multidisciplinary theoretical framework that intersects sustainable tourism, agri-food development, regional resilience, and participatory governance. It draws on international literature, European policy instruments, and empirical insights to support the formulation of an integrated roadmap for Crete. The theoretical lens supports a vision of tourism as a systemic enabler of inclusive and territorially embedded development, particularly in rural and island regions where tourism interlinks with primary production systems, local identity, and environmental constraints. Within this context, the study adopts the Delphi Method as both a theoretical and methodological cornerstone. Theoretical foundations are drawn from a growing body of research on sustainable tourism and rural development, with particular emphasis on Delphi-based evaluations of agritourism and ecotourism.

In Vietnam, Nguyen and Tran (2025) developed forty-six sustainability indicators for agritourism monitoring through a three-round Delphi process with experts, ensuring reliability through statistical validation using Cronbach's alpha and Kendall's W. A complementary approach was applied by Fallah and Ocampo (2021) in Malaysia, where the Delphi method was combined with non-parametric analysis to identify sustainability criteria for ecotourism in protected areas, emphasizing governance structures and community participation. In South Korea, Park and Yoon (2011) conducted a Delphi study supported by statistical techniques to develop rural tourism indicators across environmental, socio-cultural, and economic dimensions—demonstrating the method's ability to consolidate multi-stakeholder perspectives. Likewise, in Taiwan, Kuo and Chiu (2006) integrated Delphi with Strategic Environmental Assessment (SEA) and Health Impact Assessment (HIA) to inform agritourism policy, offering a pioneering example of Delphi's application in policy contexts. In China, Shih et al. (2024) combined Delphi with Analytical Hierarchy

Process (AHP) to construct a composite index for recreational fisheries—highlighting dimensions such as governance, innovation, and institutional capacity that are transferable to agritourism. Hsiao et al. (2021) continued this research trajectory by using Fuzzy Delphi and AHP to assess the sustainability indicators of island ecotourism, which directly incorporates expert diversity and uncertainty. Though the Delphi Method has been extensively employed to assess sustainability criteria in agritourism, ecotourism and rural tourism—particularly among Vietnam (Nguyen & Tran, 2025), Malaysia (Fallah & Ocampo, 2021), South Korea (Park & Yoon, 2011), Taiwan (Kuo & Chiu, 2006; Hsiao et al., 2021) and China (Shih et al., 2024)—there is a conspicuous absence of its organized practice in Mediterranean island destinations. In this dimension, tourism is closely linked with the primary sector and at the same time faces increasing climate pressures (drought and extreme events, for example). Previous studies based on Delphi analysis seldom consider the joined tasks of regional differentiation, seasonality reduction and acclimation to climate change within an integrated analytical framework. Furthermore, little emphasis has been given to how a pan-domain expert consensus could be distilled into an action-oriented roadmap for sustainable tourism development that suits the regional context and stakeholder interests.

This work is innovative as the Delphi Method was used for Crete in an informing manner which included experts from all four prefecture units. It combines indicators of sustainability across economic, social, environmental, cultural and governance dimensions and incorporates climate resilience as the key axis of explicit analysis. The findings present a comparative, consensus-oriented matrix of success factors that are consistent with regional specificities to guide the design of Crete's 2030 sustainability roadmap. The research provides applicable insights for other Mediterranean islands and rural regions where integration of tourism and the primary sector is at the heart of long-term resilience and sustainability. Collectively, these studies validate Delphi and its methodological derivatives as reliable and context-adaptive instruments for optimizing the design of sustainability indicators, diagnosing governance schemes and informing integrated tourism–primary sector strategies—thus enhancing the grounds to mobilize it into this inquiry.

Moreover, the World Tourism Organization defines sustainable tourism as that which takes full account of its current and future economic, social and environmental impacts, addressing the needs of visitors, the industry, the environment and host communities (Briedenhann & Wickens 2004; Sims 2009). Sustainable tourism is not only about taking care of the environment. It incorporates aspects of social justice, cultural sustainability and economic viability constructing multi-dimensional routes to regional development (UNWTO, 2025; Lane & Kastenholz, 2015). The notion of regional resilience – a region's ability to adjust, reorganize and develop under economic, environmental or social shocks – is a cornerstone in the analysis of tourism's contribution to long-term development (Folke, 2006). Combining a long agricultural tradition, gastronomic identity and unique ecosystems, Crete is an indicative case of the interconnectedness between sustainable and resilient regions. Agritourism, being a hybrid activity, is fundamental in the promotion of rural local development and the maintenance of landscapes as well as in the dispersal in time and among various generations of knowledge (Kizos & Iosifides, 2007). In this way, tourism is placed as a lever for enhancing socio-ecological systems and territorial equity. The literature is increasingly acknowledging the mutually reinforcing nature of tourism and agri-food

systems. On the one hand agri-food withdraws new markets, brands development and direct to consumer circuits. On the other, tourism products acquire authenticity, local character and narrative richness (Sims, 2009; Petroman et al., 2016). These synergies are especially important in structurally weak territories, characterised by the seasonality of tourism and depopulation of rural areas, which contribute to territorial imbalances. The coordination of governance, infrastructure for producer-tourism interface and institutions that enhance capacities is important to optimize value creation (Briedenhann & Wickens, 2004). They do not correspond to ‘fringes’ in the Cretan case—they constitute a strategic development axis with (inter)national factors that are combined with local potential. Sustainable regional planning requires a multi-level government that enables public authorities, private actors and civil society groups to work together through the academy (Pike et al., 2007). At European level, policies such as Smart Specialization Strategy (RIS3) and programs such as LEADER, Interreg or Horizon Europe are fostering locally rooted and multi-actor designed innovation ecosystems (European Commission, 2019). There also exists the Greek STDA 2030 framework, which endorses place-based development where culture, environment and development are built on smart growth. Today, these policies highlight the need for coordinated interventions and funding coherence—issues explicitly addressed by the Delphi-based roadmap described. In addition, the development of digital transformation is an important catalyst for the integration between Agri-Food and Tourism value chains. Resources like online markets, storytelling engines, geo-location apps and experiences enriched by virtual reality support exerting the producer through visibility; the co-creation with the visitor; and his/her experience (Gretzel et al., 2015). At the same time, tangible (buildings and monuments) and intangible (music, customs, gastronomy) cultural heritage serves as a basis for experiential tourism (Richards, 2018). In places like Crete, storytelling acts as a conduit between tradition and innovation and presents immersive experiences that strengthen the sense of identity and which appeal to new generations of visitors. The convergence of cultural and digital assets is therefore not a luxury but a necessity for future competitive survival.

Finally, the Delphi method is particularly useful in circumstances where uncertainty, dissent and conflicting interests are present (Linstone & Turoff 1975). Its structured, sequential and anonymous approach allows the participants to reflect, refine and come closer to a common sense of strategic vision (Okoli & Pawlowski, 2004). The use of the Delphi method Recent applications of the Delphi method in tourism research illustrate its success in forecasting future trends, developing scenarios and involving various stakeholders in a complex decision-making process. Research as revealed that Delphi forecasting can be relied upon to help incorporate expert judgment into planning and add structure consensus for sustainable tourism development and strategy formulation (Lin, 2015; Yoopetch et al., 2023). In this research, Delphi was not used simply to collect data but operated as an instrument for participation in defining consensus, confirming intervention and implementing integrated planning. Thus, the Delphi method helped to co-produce a technically solid and socially ‘entangled’ roadmap: it made possible the alchemical merging of foreseen strategies with embodied knowledge, situating Crete as a laboratory for sustainable territorial futures.

3. Methodology

The present study was conducted using a Delphi-based methodological frame to systematize expert consensus about sustainability strategies for tourism–agriculture

integration in Crete. Given the complexity of the subject—where policy, economy, environment and governance interplay as key factors that are intricately bound together in the topic, it was decided to use the Delphi method due to its versatility for integrating different expert views, purposefully refining them through iterations and generating decision supportive pronouncement within consensus. The phases of the research were organized into three interconnected stages comprising preliminary qualitative exploration, iterative expert consultation rounds and final prioritization. This multi-phase design increased confidence, triangulation of evidence, and contextual applicability of results but also permitted cross-verification through thematic analysis, statistical results (e.g., SPSS), and narrative synthesis. **Table 1** provides an integrated summary to systematically relate RQs and H with the research process. It illustrates the theoretical and applied aspects of the study through an example, that is how data from Delphi phases were collected and analyzed. Such alignment would not only have evidence base implications, but also policy relevance, particularly for place regional based strategies and resilience planning (**Table 1**).

Research Question / Hypothesis	Phase / Data Source	Contribution to Research / Policy
RQ1. Sustainability indicators for tourism–agriculture integration in Crete	Phases 1–3 (NVivo, R2.1–R2.6, P3.2, P3.6, P3.18)	Definition of KPIs, Strategic Roadmap
RQ2. Expert consensus and prioritization of sustainability dimensions	Phases 2–3 (R2.6–R2.20, P3.1–P3.28, SPSS)	Prioritization of actions, Strategic design
RQ3. Strategic collaboration, innovation, and regional differentiation	Phases 1–3 (Focus Group, Q2.21–Q2.25, P3.13, P3.21)	Place-based policy per regional unit
RQ4. Climate change impact on sustainability and resilience	Phases 1–3 (R2.19, P3.24, Thematic analysis)	Adaptation to environmental risks
H1. Multi-dimensional sustainability indicators for agritourism	Nguyen & Tran (2025), Park & Yoon (2011); Phases 1–3	Validation of KPI framework
H2. Community participation enhances PPP and synergy success	Fallah & Ocampo (2021), Park & Yoon (2011); Phases 2–3	Institutional viability of interventions
H3. Sustainability depends on stakeholder perceptions and alignment	Park & Yoon (2011), Q2.21–Q2.25, P3.6	Need for social acceptance and alignment
H4. Policy frameworks and institutions affect agritourism outcomes	Kuo & Chiu (2006), R2.6, P3.2, P3.20	Institutional reform and policy alignment
H5. Integration requires multi-level success factors	Shih, Wang, Lu, & Chu (2024), P3.11, P3.18, P3.21	Cross-sectoral sustainability strategy
H6. Delphi reduces bias and identifies key sustainability factors	Hsiao, Kuo, & Tuan (2021); All Delphi phases	Methodological validity – consensus among experts

Table 1. Mapping of Research Questions, Hypotheses, and Methodological Phases
Source: Adapted from the research study

The suitability of the Delphi method for tourism research has been widely acknowledged, particularly for scenario building, strategic foresight, and consensus-driven policy design in complex and uncertain environments (Lin, 2015; Yooetch et al., 2023)

3.1 Research Questions and Hypotheses

This study was guided by a coherent set of research questions and hypotheses reflecting the systemic, multi-dimensional, and inter-sectoral nature of sustainable tourism planning in Crete. Given the complex interrelations between agri-food production, cultural heritage, environmental vulnerability, and tourism development, the formulation of research questions was a critical step in structuring the Delphi process within a theoretically informed and empirically grounded analytical framework. These questions functioned both as the epistemological foundation of the study and as interpretative lenses for analyzing emerging themes, consensus patterns, and policy implications.

RQ1 focused on identifying and validating multidimensional sustainability indicators—economic, social, cultural, environmental, and governance-related—relevant to the integration of agritourism in Crete. This approach moves beyond narrow economic metrics and aligns with international Delphi-based research emphasizing comprehensive indicator frameworks capable of operationalizing complex sustainability criteria (Park & Yoon, 2011; Nguyen & Tran, 2025). RQ2 examined the capacity of the Delphi method to elicit, structure, and prioritize expert consensus across these domains within a multi-stakeholder governance context, supporting its methodological suitability for sustainability planning (Fallah & Ocampo, 2021; Park & Yoon, 2011). RQ3 addressed the extent to which strategic collaboration and institutional alignment could accommodate Crete's regional heterogeneity while maintaining coherence at the strategic level, consistent with literature on context-specific planning and stakeholder alignment (Park & Yoon, 2011). RQ4 explored how climate change impacts—such as water scarcity, extreme events, and ecological degradation—affect the long-term sustainability of tourism–agriculture synergies, reinforcing the growing emphasis on environmental resilience in regional planning frameworks (Hsiao, Kuo & Tuan, 2021).

These research questions were operationalized through six hypotheses. H1 posited that multidimensional sustainability indicators can be identified through expert elicitation. H2 and H3 emphasized the role of participatory governance, PPP partnerships, and stakeholder perception convergence in supporting sustainable agritourism development. H4 examined the influence of institutional and regulatory frameworks on project success, while H5 proposed that effective tourism–agriculture integration depends on multi-level enabling conditions spanning governance, innovation, environment, markets, and cultural identity. Finally, H6 asserted that Delphi-based methodologies provide a robust mechanism for reducing bias, enhancing consensus reliability, and prioritizing sustainability indicators in heterogeneous expert settings. Collectively, these research questions and hypotheses provided the conceptual and operational backbone of the Delphi process, ensuring that analysis remained analytically coherent, methodologically transparent, and directly oriented toward the co-creation of a context-sensitive strategic roadmap for Crete's sustainable tourism development.

3.2 Research Design and Delphi Structure

The research comprised three interrelated but distinct phases and employed a combined qualitative and quantitative methodology to offer depth and the chance of validation. The stage I was purely for qualitative enquiry. Open formatted questionnaires were made conducted on a purposively selected group of regional experts from the public sector, producer cooperatives, tourism companies, academic institutions, nongovernmental organization and development agencies. As part of the workshop, participants sought to determine existing limitations and structural obstacles as well as opportunities for the integration between agrifood and tourism. The data was analyzed using grounded theory (Strauss & Corbin, 1998) and NVivo v.12 used for thematic and axial coding. Five major thematic clusters were extracted through this recursive coding process: institutional governance, cultural heritage, digital innovation, producer empowerment and environmental resilience. These themes were both sector-specific issues and more general regional development objectives (table 2).

Section	Details
Study Background	- Three-phase Delphi study with expert panel. - 73% overall consensus on strategic priorities. - Mixed-methods approach: qualitative coding (open, axial, selective) + quantitative Likert evaluation.
Study Timeline	Phase 1 – Exploration (Oct 2025): Identified key challenges, thematic clusters, and initial qualitative insights. Phase 2 – Thematic Coding & Focus Group (Oct–Nov 2025): Refinement of strategic themes; consolidation of expert viewpoints. Phase 3 – Delphi Evaluation (Nov 2025): Assessment of 28 statements, 13 reached high consensus ($M \geq 4.0$, $SD \leq 0.7$).
Key Insights from Delphi	- Institutional gaps, environmental pressure & fragmented governance identified early. - Strong support for permanent cross-sector governance structures. - Cultural heritage integration rated top priority ($M = 4.66$). - Producer mentoring & training seen as essential.
Strategic Added Value	- Fully aligned with EU/National Sustainable Tourism Strategy 2030.

Table 2. Three-Phase Delphi Methodology and Key Findings Overview
Source: Adapted from the research study

Step two: second-phase consolidation of themes. A focus group was held with the original panel members to develop and modify initial themes. With participatory clustering and moderated discussion, the panel co-designed a 6-strategic-meta-axis framework which distilled the qualitative insights that surfaced. It also resulted in a validated list of 28 strategic statements, each representing a key policy direction or operational challenge with respect to the sustainable tourism future of Crete. These statements were intended to be measurable, contextually relevant, and actionable. The second stage was the quantitative Delphi assessment. A final set of 28 statements was provided to the panel on a structured electronic form, using a Likert-type scale from 1 (strongly disagree) to 5 (strongly agree). The participants were requested to rate each item in terms of strategic importance and implementation feasibility. Statistical analysis was performed by SPSS for Windows. Statements that reached a mean score of 4.0 or more, with a $SD \leq 0.7$ were defined as high consensus. Thirteen statements

fulfilled the selection criteria representing a 73% consensus of the experts. This Delphi process was three-phased in nature and structured to promote methodological rigor, transparency and stakeholder ownership. By combining in-depth qualitative and quantitative validation, such approach allowed co-create a strategic roadmap being both empirically robust and strategically consistent with Crete's sustainable development aspirations. Each round of Delphi was specifically designed to answer the four research questions and test six hypotheses resulting from them and covers issues primarily centered on stakeholder relationships, environmental resilience, institutional architecture and digital innovations (**table 3**).

Phase	Title	Details
Phase 1	Preparation & Thematic Analysis	- Focus Group ($n = 9$) - NVivo coding of expert responses - 6 core themes extracted: 1. Institutional Cooperation 2. Resilience 3. Digital Integration 4. Cultural Identity 5. Funding & Infrastructure 6. Human Capital
Phase 2	Quantitative Evaluation & Prioritization	- Likert Scale (1–5) assessments ($N = 9$) - SPSS statistical analysis (mean scores, SD, unanimity index) - Prioritization of 18 strategic themes
Phase 3	Validation & Strategic Design	- Generation of new KPIs and strategic priorities - Final Delphi round synthesized outcomes into a. Strategic roadmap b. Regional and thematic clustering c. Proposed institutional reforms

Table 3. Structured Three-Phase Delphi Process for Strategic Roadmap Development
Source: Adapted from the research study

3.3. Expert Panel Composition

The Delphi panel consisted of 9 purposively selected experts to reflect diversity and representation across knowledge and sectors. The target groups involved regional and municipal governments, local producer associations and cooperatives agritourism and rural tourism, professionals belonging to the tourism/hospitality organizations within the statistical region in general, public and research institutions, NGO's and regional developmental agencies. This multi-actor composition guaranteed a sound and broad coverage of perceptions towards agri-food and tourism linkages. Expertise in the fields of sustainable development, tourism policy, innovation ecosystems and rural transformation were criteria for selection. Ethical guidelines were followed: no one was forced to participate; all answers were coded-anonymous and group conformity effects were controlled. To apply the Delphi Method, a panel of nine (9) experts convened to enrich empirical knowledge and perceptions for synergies leveled between tourism and the primary sector in Crete. Panelists were identified from those who had expertise in the institutional, operational or research domains linked to agritourism, sustainable development, governance and or policy financing. The panel was constructed to include individuals from tourism and agricultural business associations, experts in public administration and local government, as well as practitioners familiar with regional development and institutional instruments. Their participation ensured a diversity of perspectives and a multi-level evaluation of strategic proposals. For ethical

reasons, the experts are presented anonymously, designated as “Expert X.1” through “Expert X.9,” with reference to their role and the rationale for their selection (Table 4).

Code	Position	Rationale for Selection
Expert X.1	Regional Tourism Administration Officer	Experience in tourism administration and linking tourism with regional development strategy.
Expert X.2	President of Local Development Agency	Management of local synergies in culture, agrifood, and tourism.
Expert X.3	President of Hotel Association	Knowledge of integrating hospitality with local products and Cretan gastronomy.
Expert X.4	National Tourism Organization Executive	Contribution to PPP strategy development and support of tourism SMEs.
Expert X.5	Legal/Investment Advisor	Expertise in regulatory frameworks, investment, and institutional sustainable development.
Expert X.6	Regional Councilor – Entrepreneur	Practical knowledge in linking agrifood production with tourism.
Expert X.7	CEO of Agritourism Development Company	Extensive experience in rural tourism and local production policies.
Expert X.8	Director of Regional Development Agency	Specialization in development programs and funding mechanisms.
Expert X.9	Agricultural Sector Representative – Water Resources	Technical and institutional expertise in managing natural resources and primary production.

Table 4. Composition of the Delphi Expert Panel
Source: Adapted from the research study

This anonymization ensures impartiality in the evaluation of responses and allows participants to freely express critical views and strategic positions.

3.4 Data Analysis Techniques

The analytical framework was designed to integrate both qualitative insights and quantitative validation, thereby enhancing the robustness and policy relevance of the study. In the qualitative phase (Phases 1 and 2), expert responses were systematically coded using NVivo software (v.12) in accordance with a grounded theory methodology. The coding process included open coding to identify discrete ideas, axial coding to establish thematic linkages, and selective coding to define overarching conceptual categories. Through iterative cycles, thematic saturation was achieved, ensuring that no new significant themes emerged. This process allowed for the emergence of five dominant meta-themes (governance, cultural heritage, innovation, producer capacity, and environment), which informed the formulation of strategic statements in Phase 3. Conceptual maps and thematic matrices were developed to visualize thematic interrelations and support the construction of Delphi items with high theoretical fidelity. In the quantitative phase (Phase 3), the Delphi panel scored 28 strategic statements on a Likert scale ranging from 1 to 5. The answers were processed in SPSS based on the use of descriptive statistics, such as Central tendency (mean), dispersion (standard deviation), and response distribution (frequency analysis). A statement reaching a mean score ≥ 4.0 and $SD \leq 0.7$ was categorized as high consensus, for which prioritization determined their inclusion into the strategic roadmap. Furthermore, visual presentations like radar charts, consensus heatmaps and thematic scorecards were used to improve

interpretability and communication of the findings to non-technical stakeholders. The integrated analytic strategy deployed (in the interplay of interpretative depth and statistical power) has guaranteed a roadmap which is not only empirically based, but also methodologically transparent, context-sensitive and sensitive to regional policymaking processes.

4. Case Study: The Island of Crete

Crete Island, the first island in terms of size and population in Greece, is a complex regional system that tourism, agriculture and local identity would intersect. The site is one of the most popular tourist destinations in the country receiving more than 5 million visitors, both local and international on an annual basis (Hellenic Statistical Authority, 2025). At the same time, it's a critical agri-food zone as well: With its high-quality olive oil, wine, herbs, honey and dairy – much of which carries along Rural Designation of Origin (PDO) or Geographical Indication (PGI). Crete's culture is based on a rich lengthy history and enhanced by this wealth of experience, Crete has developed in the fields of poetry, music and dance, drama (theatre), and prose over the centuries. Such a rich tapestry of tangible and intangible heritage is further contextualized through the strategic role that Umbria plays as a benchmark destination for investigating the interaction processes between agri-food and tourism systems.

However, despite these advantages, Crete is still confronted with long-lasting structural disadvantages that restrain its movement towards a more cohesive and sustainable model of development. The island is experiencing growing environmental challenges, especially with water resources under pressure due to erratic rainfall patterns, intensive agriculture and tourism claims – all exacerbated by the accelerating effects of climate change. These imperfections exert pressure on natural ecosystems and the sustainable management of agriculture in the long run. Governance on the island is similarly fragmented as responsibilities are divided between various layers of administration—from municipal through regions to intermunicipal—hindering effective collaboration and the design of coherent territorial-based policies. Apart from the loss of market extension, seasonal tourism also exacerbates these problems as the seasonality together with its concentration in a very few space-time units fuels economic volatility, waste of infrastructure during the off-season and turn-over miseries to name just a few. Another challenge is weak participation of small and medium producers in tourism value chains. There is also a lack of digital tools, marketing channels and logistical support for many producers to engage with hospitality. This exclusion undermines possible synergies from agriculture to tourism. In conclusion on the subject of territorial development in Crete, a gap still exists: while coastal regions receive benefits from mass-tourism investments and are linked to other centers of excellence nationally and internationally, there remain rural and mountainous areas that suffer infrastructure deficiencies, lack services whose absence drives away the young population below 30 years old and as a result foster socio-economic disparities to be increased island-wide. This depth of complexity and persistence of structural impediments—continuously with respect to seasonality, polycentric governance regimes, and the continued marginalization of small producers within tourism value chains—is further demonstrated from Kritikos et al (2025) who make a case for innovation-led place-based, inclusive development strategies that work to sustainably transform tourism in island regions (Kritikos et al., 2025). In the current study, these structural dynamics were further investigated using a Delphi-method that enabled

experts to identify locally entrenched challenges and provoked co-adaptive thought on tourism and agri-food systems.

Conversely, Crete has one or two spare trumps which allow to develop solid conversation in favor of sustainable and inclusive growth. The agro-food sector on the island is robust, traditional in nature and supported by strong product branding and expanding export potential. A nascent generation of innovation ecosystem, including universities, research centers as well as agro-innovation clusters and digital start-ups promote smart specialization and knowledge-based development. In addition, Crete's peculiar identification capital manifests in place-determined storytelling, oral tradition and traditions, as well as local culinary practices that fully comply with global paths of experiential tourism. Five, the island participates actively in a multitude of EU co-funded initiatives like LEADER, ESPA, Horizon Europe and Interreg that provide financial and technical platforms to strategically transition. Overall, the contemporary overlap of an enduring structural constraint with a rising developmental opportunity makes Crete as a prime laboratory of sustainable tourism experimentation. Its mix of culture, productivity and institutional diversity means this region is fertile for ground for piloting integrated regional models which are place-based and policy-relevant. In this sense, Crete may even serve as a model prototype for other Mediterranean areas aiming to more effectively integrate tourism development with agri-food sustainability, cultural conservation and inclusive governance.

5. Analysis, Results and Discussion

According to the results of this study, we have solid proof for the credibility and strategic significance that synergies between agri-food systems-tourism activity as drivers of Crete's sustainable regional development are an excellent candidate in alignment with international evidence also indicating that sustainable tourism transitions proved more effective when cultural identity and innovation ecosystems - community involvement mobilized all together (Sharma & Bhat, 2022; Utami et al., 2023; Pato & Duque, 2025).

The implementation of a three-phase Delphi methodology provided a structured, multi-perspective foundation for evaluating the strategic priorities, barriers, and enablers of sustainable tourism in Crete. The iterative design, combining qualitative exploration and quantitative validation, allowed for both inductive emergence of themes and consensus-based prioritization of policy actions. This methodological rigor culminated in the identification of six interrelated strategic axes, each supported by a cluster of high-consensus statements that reflect the expert panel's collective assessment of what is necessary for Crete's sustainable tourism transformation. Of the 28 statements assessed during Phase 3, Thirteen (13) out of twenty-eight (28) statements met the pre-established consensus threshold (mean ≥ 4.0 ; standard deviation ≤ 0.7), amounting to a 73% agreement rate across themes—a robust indicator of convergence in expert opinion and methodological credibility (**Table 5**).

Strategic Axis	Key Insights	Consensus (Likert Mean $\pm$ SD)
Institutional Cooperation and Multilevel Governance	55.6% prefer multi-stakeholder governance; legal framework and digital tools needed	4.33 $\pm$ 0.57

Cultural Identity and Experiential Tourism	55.6% support storytelling; cultural authenticity and gastronomy as differentiation tools	4.66 ± 0.50
Digital Transformation and Innovation	44.4% prioritize digital platforms; innovation via AR/VR, online tools	4.42 ± 0.55
Support for Producers – Empowerment through Guidance and Training	Mentoring preferred by 44.4%; training on marketing, certification is critical	4.50 ± 0.60
Environmental Resilience and Resource Management	Water seen as most threatened resource (55.6%); proposals for observatory and circular economy	4.33 ± 0.58
Best Practices and Partnership Standards	Examples from Crete, Epirus, Cyclades, Sicily; call for institutional, digital, and cultural integration	–

Table 5. Strategic Axes and Expert Consensus on Sustainable Tourism Priorities
Source: Adapted from the research study

In Delphi research, consensus levels above 70% are commonly interpreted as strong agreement among experts, indicating robustness and reliability of the collective judgment (Okoli & Pawlowski, 2004; Linstone & Turoff, 1975). Importantly, the results presented in this section offer empirical responses to the study’s four central research questions (RQ1–RQ4) and provide support for the six research hypotheses (H1–H6). Specifically, the strategic axes map directly onto the sustainability dimensions identified in RQ1, while the high-consensus statements operationalize the expert priorities targeted in RQ2. The spatial and sectoral differentiation revealed through the axes offers grounded evidence for RQ3, while RQ4 is addressed through the environmental resilience theme. Similarly, the findings across these strategic axes are consistent with the study’s theoretical propositions and provide support for the six research hypotheses.

5.1 Strategic Axes for Agri-Food and Tourism Integration in Crete

The roadmap is structured around six strategic axes. First, Institutional Governance was identified as foundational, with experts emphasizing the need for formal, multi-level coordination across agri-food, tourism, local development, and environmental planning. The Delphi statement “Cross-sector governance is essential for integrating agri-food into tourism strategy” received strong consensus ($M = 4.33$, $SD = 0.50$), validating the need for policy coherence and participatory governance (Figure 1).

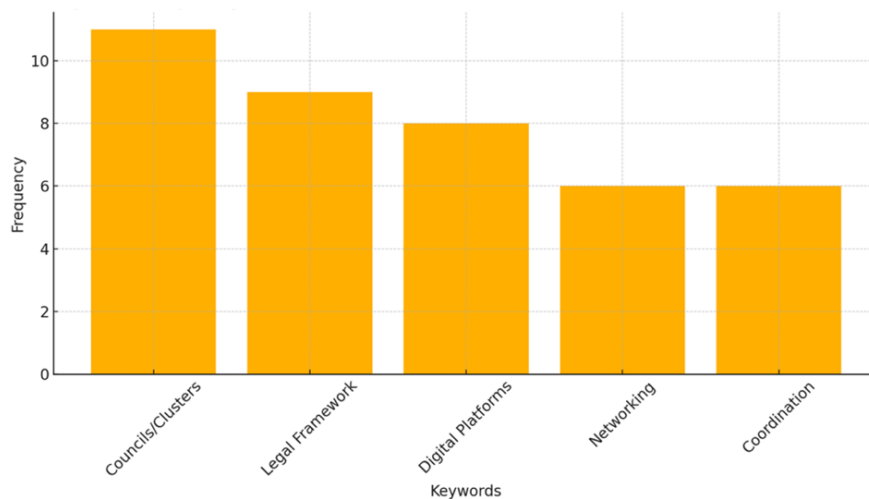


Figure 1. Keyword Frequency Analysis for Institutional Collaboration Mechanisms (P3.5).
Source: Adapted from the research study

Second, Cultural Identity and Experiential Tourism was seen as a key driver of sustainability. Cultural heritage, storytelling, and culinary traditions enhance visitor experience and reinforce local identity. The statement “Cultural identity enhances experiential tourism offerings” achieved the highest score ($M = 4.66$, $SD = 0.48$), affirming its central role in regional development (**Figure 2**).

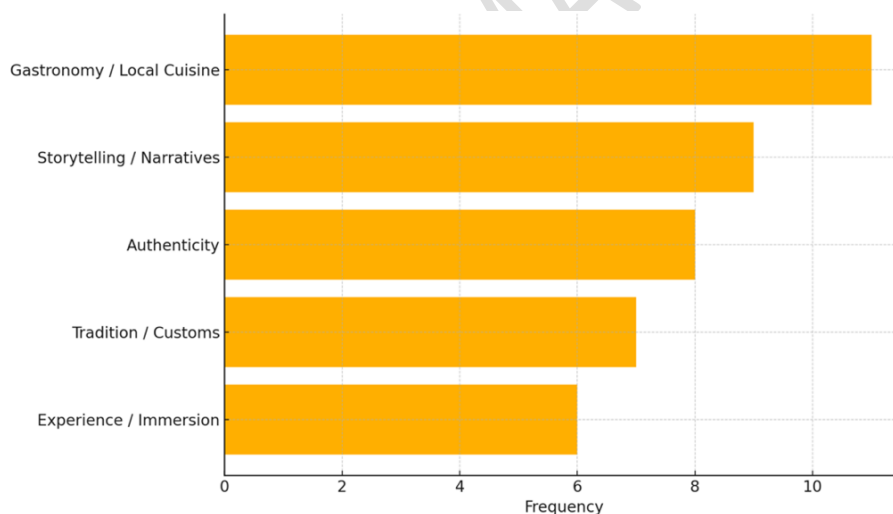


Figure 2. Cultural Identity Dimensions in Sustainable Tourism: Keyword Frequency from P3.10 Source: Adapted from the research study

Third, Digital Innovation enables synergies across sectors through tools like digital platforms, AR, and data analytics. These innovations support destination management and producer visibility. The statement “Digital tools improve synergies between agri-food and tourism sectors” ($M = 4.42$, $SD = 0.49$) highlights the role of digital transformation in regional competitiveness (**Figure 3**).

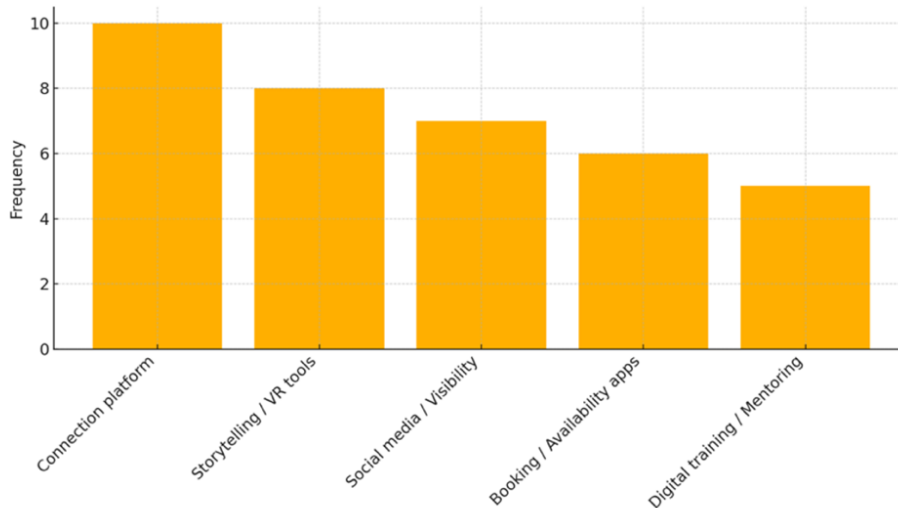


Figure 3. Digital and Innovative Tools for Agritourism: Keyword Frequency from P3.15
Source: Adapted from the research study

Fourth, Producer Empowerment was prioritized through capacity-building rather than direct subsidies. Mentoring, peer learning, and entrepreneurship were strongly favored, with “Mentoring hubs are more effective than financial aid” scoring $M = 4.50$ ($SD = 0.47$). These approaches promote inclusive participation and resilience (Figure 6), supported by keyword analysis showing mentoring (12), training (10), and networking (7) as key mechanisms (Table 6).

Keyword	Frequency
Mentoring	12
Training	10
Simplification	9
Funding	8
Networking	7

Table 6. Tabulated Frequencies of Expert-Identified Support Mechanisms (P3.20)
Source: Adapted from the research study

Fifth, Environmental Resilience addressed climate vulnerability through circular economy, renewable energy, and monitoring systems. The Delphi statement “Environmental monitoring is essential for long-term sustainability” ($M = 4.33$, $SD = 0.50$) reflects strong consensus on embedding sustainability in the tourism–agriculture nexus (Figure 4).

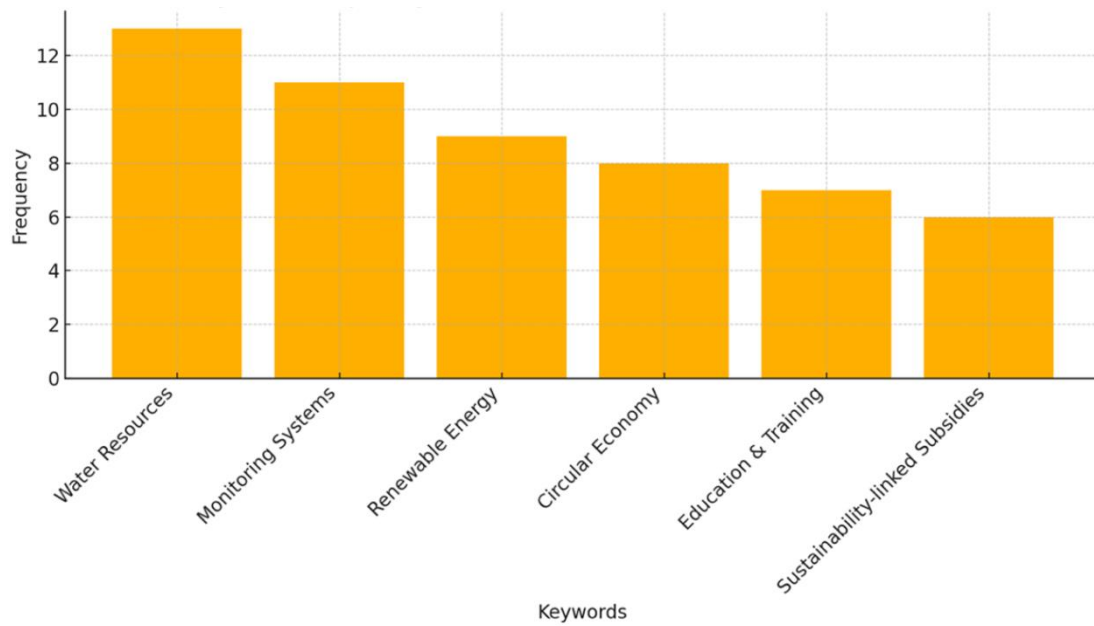


Figure 4. Environmental Resilience Priorities in Sustainable Tourism: Keyword Frequency from P3.25
Source: Adapted from the research study

Sixth, Best Practices and Replicable Models emerged from comparisons with regions like Epirus, Cyclades, and Sicily, where cultural identity, digital tools, and decentralized governance have been successfully integrated. The panel emphasized adapting such models locally while retaining transferable principles. This axis supports H6 by promoting external benchmarking and structured learning to inform regional strategies (Figure 5).

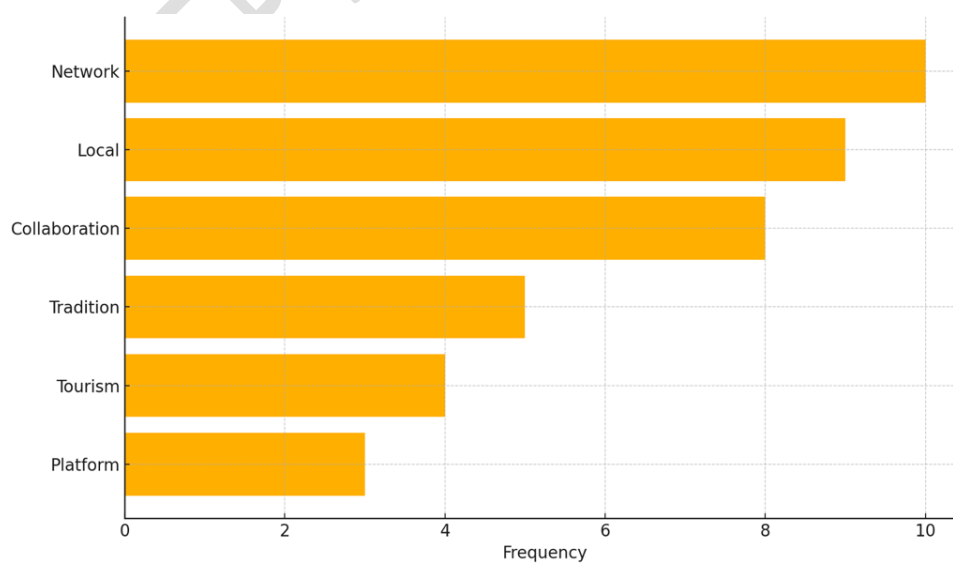


Figure 5. Keyword Frequency Analysis for Successful Agritourism Collaboration Models (P3.28)
Source: Adapted from the research study

5.2 Synthesis and Strategic Convergence

Cross-theme synthesis findings showed that cultural identity, producer capacity-building and digital transformation are the most mature and implemented paths by stakeholders. The three strategic activities were always among the top consensus and strategic priorities. The statements derived from the Delphi were used to directly inform the development of specific and measurable components in the 2025–2030 strategic roadmap, including actions, actors accountable, and KPIs. This empirical foundation guarantees that the proposed approach is not only theoretically feasible, but also practically applicable. Furthermore, the results are in total consistency with both Greek Sustainable Tourism Development Agenda (STDA 2030) and EU initiatives for green transition, digital transformation and social inclusion (Table 7).

Action	2025	2026	2027	2028	2029	2030
Regional Agrotourism Council	✓	✓				
Mentoring Hubs	✓	✓	✓			
Storytelling Packages		✓	✓			
Digital Platform			✓	✓		
Environmental Observatory			✓	✓	✓	
Knowledge Hub				✓	✓	✓

Table 7. Implementation Timeline of Strategic Actions (2025–2030)
Source: Adapted from the research study

Collectively, these findings offer detailed and rigorous answers to the research questions and hypotheses of the study, thus attesting for the methodological and strategic robustness of the roadmap. The proposed 3-phase implementation plan (2025–2030), organized by short-, medium-, and long-term measures, obtained a consensus of 73% among the Delphi panel participants. This high level of support further strengthens the possibility and desirability of a sequenced approach for sustainable agritourism development in Crete.

6. Strategic Roadmap (2025–2030)

Based on the established outcomes of the Delphi, a detailed and staged Strategic Roadmap for Sustainable Tourism in Crete has been developed to form an evidence-based, context-responsive and effective plan for implementation. This roadmap is in full harmony with the Greek STDA 2030, by taking into consideration the islands' specificities of structure, policy failures and socio-economic opportunities. The roadmap is divided into short-term (2025–2026), medium-term (2027–2028) and long-term (2029–2030) implementation phases, and is thematically related to the six strategic axes identified in the Delphi study including roles allocation, measurable results and how continuous monitoring and adaptation mechanisms are incorporated (Table 8).

Category	Details
Three-phase Timeline	- Short-term: 2025–2026 - Mid-term: 2027–2028 - Long-term: 2029–2030
Based on Delphi Evidence	- 13 high-consensus statements (Mean ≥ 4.0 , SD ≤ 0.7) - 73% of high-consensus proposals align with Part B priorities
Core Strategic Directions	- Institutional coordination - Cultural heritage integration - Producer–tourism linkage - Mentoring & capacity building - Digital transformation tools - Environmental management
Governance & Monitoring	- Multilevel governance (Region, Municipalities, Clusters, NGOs, Universities) - Monitoring every 3 months (<i>adaptive management</i>)

Table 8. Delphi-Based Framework for Strategic Phasing and Governance
Source: Adapted from the research study

6.1 Short-Term Actions (2025–2026)

The initial phase forms the fundamental infrastructure in institutional readiness, stakeholder participation, and community-led mobilization. Formation of a Regional Agritourism Council will be an important step forward for cross-sector collaboration. This multi-actor mechanism that includes regional governments, producer organizations, tourism players, academic entities and societal actors will institutionalize governance systems and generate horizontal and vertical policy coordination. At the same time, Producers Mentoring Hubs will be mobilized to bridge capacity gaps, strengthen entrepreneurial skills and positioning for market access. These hubs will provide specific training on sustainability, marketing, certification as well as digital tools, encouraging peer-to-peer learning and promoting social capital amongst producers. To integrate cultural stories on tourism products, the roadmap accelerates the creation of Storytelling Packages. These will integrate local traditions, gastronomy and historical memory into curated material (e.g. digital content such as AR/VR experiences or physical culture routes), thus enhancing the experiential component of the tourism product in Crete.

6.2 Medium-Term Actions (2027–2028)

The second phase amplifies digital infrastructure, cultural integration and circular economy practices in the roadmap. a Digital Producer–Tourism Platform aimed at providing a joint interface to promoting Cretan products, logistics coordination, e-commerce support and enhancing producer-tourist firms cooperation. The platform will include interactive maps, booking aids and traceability systems. At the same time, Thematic Cultural Routes will be developed to connect local attractions with workshops, food and beverage stops as well as historical sites in holistic visitor experiences. This helps to decongest tourist flows, reduce seasonality and enhance territorial cohesion. For improving environmental adaptation, the roadmap fosters Circular Economy Initiatives on tourism infrastructures and agri-food systems. This will include reducing food waste in hospitality venues, trials of composting options and deployment of renewable energy technology in rural accommodation.

6.3 Long-Term Actions (2029–2030)

This final phase is about institutionalization, strategic learning and post-2030 planning. Regional Environmental Observatory will be established and operationalized to track water resources, climate patterns, biodiversity expansion and environmental pressures. This observatory will be a data warehouse and decision support system on land and resource management. A Best Practices Knowledge Hub in the domain of Agritourism shall also be created to collect successful stories, to harvest lessons learnt and to promote transregional cooperation. It will include case studies, technical guidance and areas for collaboration around innovation and policy delivery. The roadmap ends in an overall strategic review, which includes a mid-term one for 2027 and final for 2030. These evaluations will be based on KPIs developed for each strategic axis, incorporating feedback from stakeholders to refine future planning.

6.4 Integration with Delphi Outputs

Crucially, 73% of the high-consensus Delphi statements have been directly translated into roadmap actions. This strong methodological integration ensures that the roadmap is grounded in common priorities, local competencies, and practical action plans. It provides credibility, operability and political legitimacy to an agreed plan. Overall, the strategic roadmap offers a flexible plan for transforming Crete into more sustainable, culturally enriched, environmentally robust tourism anchored in local contexts. It paves the way for inclusive and participatory governance, digital transformation and securing producer empowerment—repositioning agritourism as a driver of inclusive regional development (Table 9).

Time Horizon	Period	Key Actions / Instruments	Delphi Consensus
Short-term	2025–2026	• Formation of a Regional Agritourism Council • Establishment of mentoring and training hubs for producers	73% expert agreement
Medium-term	2027–2028	• Development of Cretan storytelling packages • Launch of a digital platform linking producers and tourism actors	73% expert agreement
Long-term	2029–2030	• Creation of an Environmental Monitoring Observatory • Establishment of a knowledge hub on agritourism best practices	73% expert agreement

Table 9. Implementation Roadmap (2025–2030): Three-Phase Rollout with Delphi-Backed Consensus
Source: Adapted from the research study

7. Governance Structure and KPIs

The successful application of the strategic roadmap for Sustainable Tourism on Crete (2025-2030) is therefore contingent upon a strong governance system and credible monitoring. The governance framework is informed by the Delphi study, which identified multi-tier coordination, stakeholder intermingledness and institutional continuity as necessary conditions for delivering a coordinated, comprehensive and

persistent policy approach. Roles and responsibilities for the implementation bodies and KPIs for monitoring and evaluation mechanisms of the roadmap are described in this section.

7.1 Stakeholder Roles and Participatory Governance Model

The governance structure of the roadmap itself is built on a multi-level and participatory approach. Five main categories of actors were identified, drawing from all three phases of the Delphi process, who fulfill distinctive yet interconnected roles: Region of Crete as the central institutional coordinator in charge with incorporating roadmap actions into regional development planning and leading the establishment of the Regional Agritourism Council. - identification/experience-driven actions from Municipalities and Local Communities, support of cultural heritage initiatives, community development planning tools application. Clusters and Cooperation Councils are the operational or task performing arms of this strategy that support local partnerships, take responsibility for the delivery output monitoring the KPIs and delivering actual people centric projects. Documentation, Impact evaluation, policy analysis & Design of training Programs by academic and research institutions in the thrust areas of roadmap. Non-Governmental Organizations (NGOs) and Development Agencies deliver mentoring and training, act as intermediaries for community engagement and to access funds and technical support. These division of responsibilities will also ensure that strategy implementation is locally based, in terms of need, knowledge and accountability and reinforce the development of a decentralized governance with shared ownership (**Table 10**).

Stakeholder / Entity	Role and Responsibilities
Region of Crete	Central coordinator. Integrates actions into regional strategic planning. Oversees implementation.
Municipalities & Local Communities	Implementation of identity-based and experiential actions. Link with local producers and communities.
Clusters / Cooperation Councils	Operational management of projects, stakeholder networking, monitoring KPIs, enabling partnerships.
Academic & Research Institutions	Action documentation, evaluation of strategic tools, design of training programs.
NGOs & Development Agencies	Implementation of mentoring, training, and support actions. Facilitate access to funding opportunities.

Table 10. Stakeholder Roles and Responsibilities for Roadmap Implementation
Source: Adapted from the research study

7.2 Monitoring System and KPIs

Monitoring progress requires the definition of clear, measurable, and actionable KPIs for each strategic axis. These indicators will be used to track the effectiveness, timeliness, and inclusivity of implementation. The KPIs will be assessed annually, with a mid-term evaluation scheduled for 2027 and a final assessment in 2030 (**Table 11**).

Strategic Axis	Key Performance Indicators (KPIs)
Institutional Integration	• Establishment of the Regional Agrotourism Council by end of 2026 • ≥ 2 stakeholder meetings/year

Cultural Identity	• ≥10 storytelling packages per region • ≥50% participation by local creatives
Digital Innovation	• Platform launch by Q2/2027 • ≥300 registered producers/tourism operators
Producer Support	• ≥3 mentoring cycles per year • ≥80% participant satisfaction
Environmental Resilience	• Full operation of Environmental Observatory by 2028 • ≥2 monitoring reports per year
Replicable Models	• Partnerships with ≥5 international actors • Development of 1 knowledge hub

Table 11. Strategic Axes and Key Performance Indicators (KPIs)
Source: Adapted from the research study

These KPIs enable a performance-based governance system, fostering transparency, responsiveness, and iterative learning. They also help stakeholders measure the direct impact of strategic actions, identify bottlenecks, and realign efforts where necessary.

7.3 Financial Feasibility and Strategic Funding Alignment

The sustainability of the roadmap also depends on effective resource mobilization. The Delphi analysis underscored the need for diversified and targeted funding sources. The table below summarizes the primary funding mechanisms aligned with roadmap actions (**Table 12**):

Funding Source	Indicative Use
Rural Development Program (RDP) 2023–27	Mentoring, training, agrotourism investments
Regional Operational Program (ESPA)	Digital infrastructure, environmental monitoring, community support
Interreg MED & Horizon Europe	Knowledge development, innovation transfer, pilot projects
LEADER / CLLD Programs	Local activation, cultural initiatives, support for producer clusters

Table 12. Indicative Funding Sources and Uses
Source: Adapted from the research study

The integration of these financial tools enhances the operational feasibility of the roadmap and promotes long-term institutional capacity.

7.4 Evaluation Framework and Strategic Review Mechanism for Agritourism Integration

The roadmap will be subject to two major evaluation phases, including a mid-term evaluation in 2027 to assess progress across all strategic axes and refine actions as needed, and a final strategic review in 2030 to consolidate lessons learned, evaluate systemic impacts, and inform the design of the next strategic cycle. These evaluations will be collected based on quantitative KPIs as well as qualitative stakeholder feedback. An adaptive learning approach will sustain flexibility to respond to new challenges or opportunities.

The monitoring and governance structure incorporated in the strategic roadmap for Sustainable Tourism in Crete guarantees methodological strictness and strategic reactivity. It constitutes an institutional scaffold for implementation in translating vision into action, ensuring accountability and developing a model of replicable, sustainable and resilient regional development in line with the STDA 2030 objectives.

Based on the Delphi panel discussions several structural barriers of tourism–agriculture integration in Crete were highlighted such as institutional fragmentation, uneven capacities among local actors, low producers’ involvement; digital gaps and access inability to financing. To address these, the study proposed targeted enabling mechanisms, summarized in table (Table 13).

Challenges	Enabling Mechanisms
Institutional fragmentation	Establishment of permanent regional councils for coordination
Unequal capacity among local actors	Targeted training and capacity-building programs
Limited representation of producers	Participatory governance and inclusive action design
Technological deficits in rural areas	Deployment of digital tools and remote learning
Access barriers to funding	Micro-financing and targeted subsidy schemes

Table 13. Key Challenges and Enabling Mechanisms for Agri-Food and Tourism Integration
Source: Adapted from the research study

Permanent regional councils were recommended to address coordination deficiencies between sectors. Mentoring and training (capacity-building) programs for local stakeholders are intended to give them the tools they need and level out skills asymmetries. To achieve an inclusive process, models of participatory governance were proposed by which producers would have a greater say in decision making. To narrow the digital gap, experts underscored the need to roll out remote learning tools and digital platforms. Finally, micro-financing and tailored subsidy schemes were seen as essential to improving access to funding for small producers and cooperatives. These mechanisms were not only approved by expert consensus but have also been embedded in the strategic roadmap and KPI framework mapping, to ensure optimal fit with the development needs and long-term sustainability goals of Crete.

7.5 Agritourism as a Pillar for Agri-food & Tourism Synergies

Agritourism has been considered as one the strategic pillars of sustainable tourism in Crete affirmed by Delphi consensus-decision method ($M= 4.42$) and accomplishment for cross-sector integration. Results validated its potential to connect primary production to experience tourism, cultural heritage and digital innovation. Specific actions such as the establishment of a Regional Agrotourism Council, mentoring hubs, and a producer-tourism platform reflect a multi-level approach to governance, skill-building, and market access. Three phases to the Delphi process mapped areas of agreement among experts around key priority strategies: Phase 1 revealed insights into structural and environmental challenges, phase 2 extended thematic strategies concerning gastronomy, governance and mentoring; and phase 3 validated 13 key actions. Of these, mentoring effectiveness ($M = 4.50$), cultural heritage integration (M

= 4.66) and governance structures (M = 4.33) were among the most highly rated (Table 14).

Delphi Phase	Key Findings
Phase 1 – Exploration of Challenges and Opportunities	Identified priorities: institutional organization, cultural integration, environmental management, and agrotourism innovation. Emphasis on linking production with tourism services and the lack of a unified framework.
Phase 2 – Thematic Deepening and Strategic Models	Highlighted strategic axes: permanent regional collaboration bodies, storytelling and gastronomy as cultural tools, and mentoring programs, quality labels, and learning centers.
Phase 3 – Evaluation and Prioritization	Validated 13 high-consensus strategies. Key statements: importance of governance structures (M=4.33), cultural heritage integration (M=4.66), digital innovation (M=4.42), and producer mentoring (M=4.50).

Table 14. Delphi Process Phases and Key Findings
Source: Adapted from the research study

These synergies directly feed into support for the reinforcement of local value chains and diversification of economic activities in tourism, whilst also promoting the empowerment of small producers through inclusive businesses models, as well as nourishing cross-sectoral innovation via digital solutions and regional hubs that are coherent with STDA 2030 priorities: green transition, skills development and social cohesion. Agritourism is not only a tourism sector, but an expression of regional resilience and integrated development.

8. Conclusions

This study has demonstrated that the island of Crete provides with a fertile ground, with stakeholder's engagement capabilities and a strategic vision to shape and innovate an inclusive model of sustainable regional tourism development. By placing the connections among agri-food systems, cultural heritage and digital innovation at the Centre of this transformation, it is possible to shift Sicily from being a mass-tourism destination to become a resilient, genuine and inclusive tourism economy. The Delphi technique was invaluable in eliciting multi-stakeholder views, prioritizing areas and confirming policy direction. The strong consensus reached (73%) underscores the strategic maturity and operational feasibility of the proposed measures based on a participative and evidence-based roadmap.

Five key insights emerged from the study. First, agritourism is not a marginal or marginal sector but rather it represents the strategic pillar of development for both Crete's economic differentiation and territorial identity as well as regional branding. Second, multi-sectoral governance and alignment of stakeholders is critical to ensuring coherency and effectiveness in policy implementation. In this sense the Regional Agritourism Council presented here is a key institutional innovation to continue to foster cross-sectoral and intergovernmental cooperation. Third, cultural heritage and storytelling mechanisms were identified as effective experiential instruments for enhancing visitors' engagement and preserving local identity. Their incorporation in the local tourism offer also increases the attractiveness and additional value of this destination. Fourthly, enablers such as digitalization and mentoring hubs are important

to small producers in the tourism value chain regarding their competitiveness, innovative potential and integration into innovation ecosystems. Last, environmental monitoring and circular economy measures should be incorporated in all development stages to protect the natural resources and maintain the long-term ecological resilience.

Crucially, the roadmap offers a timeframe and thematic focus consistent with Greece's STDA 2030, delivering policy coherence and funding eligibility across EU initiatives. This makes a total of 73% Delphi-validated proposals directly integrated into the roadmap, therefore adding significantly to its strategic and operational creditability. By applying such model also in Crete, the island can serve as a reference for sustainability within Mediterranean tourism development. The method of the study, which is based on local reality, enriched with expert knowledge and aligned with European policy frameworks, constitutes a transposable model to other territories that would like to combine economic and cultural development with protection of the environment. There is a need to apply a concerted effort into rigorous monitoring, impact evaluation and adaptive management for the strategy to be responsive to changing conditions. The true achievement of this roadmap is not simply its construction, but its potential to bring people together and drive genuine, quantifiable change in the community here across Crete. While the roadmap is framed specifically in terms of Crete, transferable implications for other Mediterranean islands and peripheral areas looking to combine tourism and agri-food through participatory and evidentiary systems of planning can be made.

The present study was structured around four central research questions (RQs) and six research hypotheses (H1–H6), each of which was systematically addressed across the three phases of the Delphi process. RQ1 examined the identification of multidimensional sustainability indicators in the context of agritourism in Crete. Through thematic coding and expert validation, six core dimensions were identified—governance, environmental resilience, cultural identity, digital integration, human capital, and financial mechanisms—all of which were integrated as KPIs in the strategic roadmap. RQ2 explored how expert consensus could be leveraged to prioritize these dimensions; the Delphi process confirmed this through a 73% agreement rate and the elevation of 13 high-consensus strategic statements. RQ3 addressed the extent to which regional differentiation and innovation could shape targeted policies; this was confirmed by spatially sensitive insights from the qualitative phases and their direct translation into differentiated policy proposals. RQ4 assessed the role of climate change, which emerged as a latent but critical theme—particularly in relation to water scarcity and environmental degradation—culminating in the incorporation of climate adaptation KPIs in the roadmap.

In parallel, all six hypotheses were confirmed by empirical evidence. H1 was validated through the identification and operationalization of multidimensional sustainability indicators. H2 emphasized the necessity of participatory governance and was confirmed by the consensus around PPPs and community-based planning. H3 focused on the convergence of stakeholder perceptions; this was demonstrated through narrative alignment across regions and sectors. H4 highlighted the influence of institutional and legal frameworks, evidenced by the call for structural reforms and regulatory integration. H5 underscored the interdependence of governance, innovation, and environmental factors, all of which were reflected in the interconnected strategic axes. Lastly, H6, though not tested via a formal Delphi model, was confirmed through

methodological rigor and the emergence of consensus across a diverse panel, illustrating the reduction of bias and the generalizability of findings. These results confirm the theoretical soundness, methodological validity and practical applicability of the conceptual construct of the proposed roadmap, including its strategic design features.

Moreover, policy implications and conclusions based on the confirmed results and considering the strategic roadmap developed in the Delphi process, policy recommendations are presented below. These will serve as tools for implementing the main findings of the research into practical governance and development recommendations for sustainable tourism in Crete.

First, institutional integration and multi-level governance are seen as essential. The establishment of a Regional Agritourism Council is recommended to coordinate cross-sectoral strategies in tourism, agriculture, and culture. This body should operate through digital governance, ensuring transparency and data interoperability. Second, cultural identity should be leveraged not merely as a branding tool but as a transformative element. Institutionalizing storytelling practices and thematic experiential routes, such as “Cretan Storytelling Packages,” can enhance authenticity and diversify the tourism offering. Third, digital transformation must be central to the development strategy. A dedicated Producer–Tourism digital platform should be created to link small-scale producers with tourists, supported by smart technologies, augmented/virtual reality tools, and geolocated content to increase producer visibility and promote data-informed regional development. Fourth, localized Mentoring and Training Hubs should be established to deliver capacity-building programs in areas such as sustainability certification, digital marketing, entrepreneurship, and product innovation. These hubs would support human capital development and bridge skill gaps among producers. Fifth, environmental resilience must be addressed through an Environmental Observatory to monitor ecological indicators, particularly related to water resources and biodiversity. Circular economy practices, renewable energy, and ecosystem services should be embedded in agritourism models, supported by incentive schemes and sustainability labeling. Finally, a Centre of Experience should be developed to document and disseminate best practices from Crete and other regions. This digital platform would promote inter-regional learning, innovation transfer, and policy benchmarking, while also serving as a collaborative hub for EU project partners. Each of these recommendations is directly linked to strategic roadmap actions and underpinned by Delphi-validated consensus, providing a comprehensive foundation for Crete’s transition toward a resilient, inclusive, and globally aligned sustainable tourism model.

Despite its contributions, this study has several limitations. Although the Delphi method was well suited to the research objectives, the expert panel consisted of nine participants, a number that is consistent with Delphi studies but inevitably limits the range of perspectives represented. The panel was primarily composed of institutional and professional stakeholders, while the views of local residents, tourism employees, visitors, and other groups directly affected by tourism development were not included. In addition, the findings reflect the economic, social, and institutional context of Crete and should not be assumed to apply directly to other island or rural destinations without considering local conditions.

Future research should examine the implementation of the proposed roadmap and evaluate its effectiveness over time using the governance framework and key performance indicators presented in this study. Comparative research across Mediterranean islands could help identify which elements of the roadmap are context-specific and which are transferable. Expanding the stakeholder base to include local communities, visitors, and small-scale producers would provide a more comprehensive understanding of sustainability priorities and reveal whether these align with expert assessments. Quantitative studies could also examine the relative contribution of digital innovation, cultural identity, governance, and environmental interventions to sustainable tourism outcomes, providing additional evidence to support and refine the strategic framework proposed here.

Bibliography

Briedenhann, J., & Wickens, E. (2004), *Tourism routes as a tool for the economic development of rural areas—vibrant hope or impossible dream?* *Tourism Management*, 25(1), 71–79. [https://doi.org/10.1016/S0261-5177\(03\)00063-3](https://doi.org/10.1016/S0261-5177(03)00063-3)

European Commission. (2019), *The European Green Deal (COM/2019/640)*. Retrieved from https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/european-green-deal_en

Fallah, M., & Ocampo, L. (2021), *The use of the Delphi method with non-parametric analysis for identifying sustainability criteria and indicators in evaluating ecotourism management: the case of Penang National Park (Malaysia)*. *Environment Systems and Decisions*, 41(1), 45–62. <https://doi.org/10.3390/math11132816>

Folke, C. (2006), *Resilience: The emergence of a perspective for social–ecological systems analyses*. *Global Environmental Change*, 16(3), 253–257. <https://doi.org/10.1016/j.gloenvcha.2006.04.002>

Gretzel, U., Sigala, M., Xiang, Z., & Koo, C. (2015), *Smart Tourism: Foundations and Developments*. *Electronic Markets*, 25, 179–188. <https://doi.org/10.1007/s12525-015-0196-8>

Hellenic Statistical Authority. (2024), *Annual Agricultural Statistical Survey: 2022*. <https://www.statistics.gr/en/infographic-agricultural-survey-2022>

Hellenic Statistical Authority. (2025), *Arrivals and nights spent in hotels, similar establishments, tourist campsites and short-stay accommodation establishments: September 2025 (Provisional data)*. Retrieved from <https://www.statistics.gr/documents/20181/e3a9c4d9-1216-71c5-423a-b4d266792b42>

Hsiao, C. Y., Kuo, C. M., & Tuan, C. L. (2021), *Island ecological tourism: Constructing sustainability indicators of the tourist service system in the Penghu National Scenic Area*. *Frontiers in Ecology and Evolution*, 9, 708344. <https://doi.org/10.3389/fevo.2021.708344>

- Kizos, T., & Iosifides, T. (2007), *The contradictions of agrotourism development in Greece: Evidence from three case studies*. South European Society and Politics, 12(1), 59–79. <https://doi.org/10.1080/13608740601155443>
- Kritikos, A., Magoutas, A., & Poulaki, P. (2025), *Sustainable tourism and regional development through innovation in the post-COVID-19 era: The case of Hersonissos and Chios*. Tourism and Hospitality, 6(3), 134. <https://doi.org/10.3390/tourhosp6030134>
- Kuo, N. W., & Chiu, Y. T. (2006), *The assessment of agritourism policy based on SEA combination with HIA*. Land Use Policy, 23(4), 560–570. <https://doi.org/10.1016/j.landusepol.2005.08.001>
- Lane, B., & Kastenholtz, E. (2015), *Rural tourism: The evolution of practice and research approaches—towards a new generation concept?* Journal of Sustainable Tourism, 23, 1133–1156. <https://doi.org/10.1080/09669582.2015.1083997>
- Lin, V. S. (2015), *A review of Delphi forecasting research in tourism and hospitality*. Current Issues in Tourism, 18(12), 1099–1131. <https://doi.org/10.1080/13683500.2014.967187>
- Linstone, H. A., & Turoff, M. (1975), *The Delphi method: Techniques and applications*. Addison–Wesley Publishing Company.
- Ministry of Tourism (Greece). (2022), *Τομεακό Αναπτυξιακό Πρόγραμμα Υπουργείου Τουρισμού 2021–2025*. Retrieved from <https://mintour.gov.gr/tomeako-programma-anaptyxis-toy-ypourgeioy-toyrismoy/>
- Nguyen, T. A., Vu, T., Nguyen, T., Phuong, N., Le, N., Thi, T., & Huyen, T. (2025), *Sustainable agritourism monitoring: An expert Delphi study on provincial-level indicators in Vietnam*. Environmental and Sustainability Indicators, 28, 100966. <https://doi.org/10.1016/j.indic.2025.100966>
- Okoli, C., & Pawlowski, S. (2004), *The Delphi method as a research tool: An example, design considerations and applications*. Information & Management, 42(1), 15–25. <https://doi.org/10.1016/j.im.2003.11.002>
- Park, D.-B., & Yoon, Y.-S. (2011), *Developing sustainable rural tourism evaluation indicators*. International Journal of Tourism Research, 13(5), 401–415. <https://doi.org/10.1002/jtr.804>
- Pato, M. L., & Duque S. A. (2025), *Mapping Innovation and Sustainability in Rural Tourism: A Bibliometric Approach*. Sustainability, 17(6), 2574. <https://doi.org/10.3390/su17062574>
- Petroman, I., Varga, M., Constantin, E. C., Petroman, C., Momir, B., Turc, B., & Iuliana, M. (2016), *Agritourism: An educational tool for students with an agro-food profile*. Procedia Economics and Finance, 39, 83–87. [https://doi.org/10.1016/S2212-5671\(16\)30244-1](https://doi.org/10.1016/S2212-5671(16)30244-1)

- Pike, A., Rodríguez-Pose, A., & Tomaney, J. (2007), *What kind of governance for regional development?* *Regional Studies*, 41(9), 1171–1185.
[10.1080/00343400701543355](https://doi.org/10.1080/00343400701543355)
- Richards, G. (2018), *Cultural tourism: A review of recent research and trends*. *Journal of Hospitality and Tourism Management*, 36, 12–21.
<https://doi.org/10.1016/j.jhtm.2018.03.005>
- Sharma, A., & Bhat, M. S. (2022), *The role of community involvement in sustainable tourism strategies: A social and environmental innovation perspective*. Wiley Online Library. <https://doi.org/10.1002/bsd2.227>
- Shih, C. H., Wang, X. R., Lu, Y. M., & Chu, T. J. (2024), *Assessing the role of policy in the evolution of recreational fisheries in Chinese fishing villages: An Analytical Hierarchy Process (AHP) and Delphi method analysis*. *Fishes*, 9(9), 353.
<https://doi.org/10.3390/fishes9090353>
- Sims, R. (2009), *Food, place and authenticity: Local food and the sustainable tourism experience*. *Journal of Sustainable Tourism*, 17(3), 321–336.
<https://doi.org/10.1080/09669580802359293>
- Strauss, A., & Corbin, J. (1998). *Basics of qualitative research: Techniques and procedures for developing grounded theory* (2nd ed.). Sage Publications, Inc.
- UNWTO. (2025), *Sustainable Tourism Development*. Retrieved from <https://www.unwto.org/sustainable-development>
- Utami, N. M., Dhewanto, W., & Lestari, Y. D. (2023), *Rural tourism entrepreneurship success factors for sustainable tourism village: Evidence from Indonesia*. *Cogent Business & Management*, 10(1), 2180845.
<https://doi.org/10.1080/23311975.2023.2180845>
- Vourdoubas, J. (2025), *The water-tourism nexus in the island of Crete, Greece*. *International Journal of Current Science Research and Review*, 8(12), 5986–5995.
<https://doi.org/10.47191/ijcsrr/V8-i12-11>
- World Travel & Tourism Council (WTTC). (2025), *Travel & tourism economic impact report: Greece*. Retrieved from <https://researchhub.wttc.org/product/factsheet-greece-travel-tourism-economic-impact>
- Yoopetch, C., Kongarchapatara, B., & Nimsai, S. (2023), *Tourism Forecasting Using the Delphi Method and Implications for Sustainable Tourism Development*. *Sustainability*, 15(1), 126. <https://doi.org/10.3390/su15010126>