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From Standardised Compliance to Sustainable Tourism Entrepreneurship

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Abstract

This paper analyses seven project deliverables from the Interreg Euro-MED "MAST" project to examine its sustainability protocol as a sociotechnical boundary object facilitating ISO 21401:2018 adoption among Mediterranean tourism SMEs. Using Science and Technology Studies (STS) and boundary object theory, we conducted qualitative content analysis (QCA) to map how the protocol translates global standards into SME roadmaps addressing implementation costs, skill gaps, and legitimacy barriers. Results reveal a tension between managerial scripting (actionable tables and KPIs) and relational openings (peer learning and stakeholder prompts). While enabling SME access to certification, the protocol risks "smart compliance" by prioritising formal verification over substantive transformation. Universities emerge as key boundary brokers, potentially translating technical standards into entrepreneurial competencies and curricula. Limited to pre-implementation project documents, the analysis identifies discursive conditions under which standardised tools could support regenerative governance. Findings suggest university–SME partnerships as promising mechanisms for aligning certification with Mediterranean socio-ecological priorities, warranting empirical testing through SME implementation studies.

Keywords: sustainable entrepreneurship; tourism education; university–SME partnerships; ISO 21401; boundary objects; SDGs; regenerative tourism

1. Introduction

Sustainability has become a central reference in tourism policy, business, and academic debates, yet this factor often conceals different visions, ideologies and interests, rather than aiming to achieve a shared agenda [1,2]. In practice, sustainable tourism is increasingly framed through a "managerial ecology" that translates territorial complexity into indicators, checklists, and compliance protocols [3,4]. International standards, such as ISO 21401:2018 [5], are a perfect example of this, as they promise comparability and accountability regarding accommodation, while at the same time questioning their understanding of relational and contextual aspects. These tensions are particularly acute within the fragile socio-ecological context of the Mediterranean region [6,7].

Current academic debates are pivoting from incremental sustainability, focused on harm reduction, toward regenerative and place-based flourishing achieved through participatory relations [8–10].

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In this context, the MAST project deliverables present significant barriers for Small and Medium-sized Enterprises (SMEs), including high upfront costs, skill deficits, procedural complexity, and a lack of institutional support. Traditional certifications and self-assessment tools often prove costly and are poorly studied for SMEs, focused on rigid compliance logics rather than supporting and promoting innovation. The MAST project counters these trends with a sustainability protocol and an integrated self-assessment tool specifically tailored for SME adoption. Rooted in baseline consultations and gap analyses, the protocol utilises tables to specify objectives, activities, actors, and timelines, explicitly linking ISO standards to the reality of SME contexts. The protocol part of the project was specifically developed by the Department of Economics at the University of Urbino, and by the Faculty of Tourism at the University of Primorska.

From an academic standpoint, a pivotal question emerges: how can universities transform standardised sustainability tools into entrepreneurial opportunities for Mediterranean tourism SMEs? This paper addresses this question through the analysis of the MAST protocol, examining universities' brokerage role in translating ISO 21401 standards into SME entrepreneurial roadmaps. Specifically, utilising Science and Technology Studies (STS) and boundary object lenses [11–13], the study interprets the MAST protocol as a sociotechnical governance device. Furthermore, it highlights the essential role of higher education institutions in bridging the gap between scientific theory and territorial implementation, facilitating the development of integrated competence frameworks for sustainable entrepreneurship.

Thus, the four main objectives of this study are: (i) to situate the protocol within the broader landscape of standards and SME constraints, (ii) to assess how it bridges knowledge, resources, and legitimacy, (iii) to critique the limits of standardisation versus regenerative paradigms, and (iv) to assess the role of universities as knowledge brokers in sustainable entrepreneurship.

The importance of achieving these objectives lies in the "value-action gap" present in the Mediterranean tourism sector. While the need for sustainability is universally acknowledged, SMEs frequently lack the resources to implement sustainable tourism practices. By examining the MAST protocol as a boundary object and the role of higher education institutions as intermediaries, this study addresses a critical gap in how theoretical sustainability standards are translated into SME practice. Furthermore, investigating the tension between compliance and transformation, and the mitigation of certification barriers, provides a roadmap for policymakers to foster a more resilient and 'entrepreneurial' approach to sustainability, rather than one dictated solely by external auditing.

To achieve these objectives, an open-coding qualitative content analysis (QCA) considering the main public deliverables of the project was conducted.

The paper is structured as follows: introduction, theoretical framework, methodology, results, discussion, and conclusions.

2. Theoretical Framework

The research draws on Science and Technology Studies (STS) and boundary object theory, with universities emerging as boundary brokers. It also considers the standardising effects of certifications.

STS considers sustainability transitions as reconfigurations of technologies, infrastructures, rules, cultures, and practices, and not substitutions [11,14]. A multi-level perspective encompasses landscape pressures (e.g., climate factors), regime stability (dominant tourism production and governance), and niche innovations such as ISO-tailored protocols. In tourism, ISO 21401 adoption constitutes a regime reconfiguration, representing changes in production accountability networks rather than isolated decision-making [2,6]. Standards

and protocols stabilise specific problem–solution visions, embedding legitimate knowledge and practices [4,13,15]. The MAST protocol interprets the ISO 21401 considering the point of view of Mediterranean hospitality SMEs, acting as an enabler of technologies, policies and networks.

Boundary objects facilitate collaboration between different entities by maintaining a clear identity while allowing flexible interpretations [12,16]. In tourism governance, protocols and indicators provide shared vocabularies accommodating diverse interests and knowledge systems [1]. The MAST protocol acts as a boundary object by mediating between abstract ISO requirements and the local SME context, offering specific environmental, social and economic interventions recognisable to certifiers yet adaptable to specific SME contexts. In this context, universities act as brokers for epistemic translations [13,17], converting technical standards into governance and capacity-building narratives. This creates dual scripts—an infrastructural one defining roles/workflows [18,19] and a relational one focused on user-friendly feedback and knowledge negotiation.

Standards produce reality through categories and metrics that shape behaviour [3,4], while tourism labels strengthen measurement/audit logics but often sideline relational/cultural facets [20,21]. The MAST project confirms that globally aligned tools remain hard to implement for SMEs, with a shift needed from incremental mitigation toward regenerative, place-based flourishing [7–10]. In this context, higher education institutions can bridge scientific theory and territorial implementation [22], promoting sustainable entrepreneurship competencies and practices [23]. Ultimately, the MAST protocol functions as a liminal device—enabling collaborative governance when embedded in participatory networks, but risking "smart compliance" when reduced to a checklist architecture [24].

3. Materials and Methods

This study employs a qualitative research design that integrates qualitative content analysis (QCA) with interpretive policy and frame analysis [25,26]. The research investigates the MAST sustainability protocol as a sociotechnical boundary object, utilising an open-coding framework to structure the analytical process [26] (pp. 111–112).

3.1. Data Collection and Corpus

The research corpus consists of seven core deliverables (N = 7) from the Interreg Euro-MED MAST project, authored by the universities of Urbino and Primorska. These documents were selected for their representative value in describing the protocol's architecture, SME barriers, and university-led pedagogical strategies, and included:

1. Deliverable 1.2.1 Sustainability report (D1.2.1).
2. Deliverable Guidelines for sustainability protocol and self-assessment tool (D1.3.1).
3. Deliverable 2.1.1 Consultation report of SMEs' accommodation needs and barriers to sustainable practices (D 2.1.1).
4. Deliverable 2.2.1 Consultation report for the implementation of ISO 21401: 2018 (D 2.2.1).
5. Deliverable 2.3.1 Comparative analysis of SMEs' accommodation needs and ISO 21401:2018 requirements (D 2.3.1).
6. Deliverable 2.4.1 Sustainability protocol for SME accommodation (D 2.4.1).
7. Deliverable 3.1.1 Market search report (D 3.1.1).

3.2. Analytical Phases

The theoretical framework informed the open-coding process. STS concepts guided initial concept identification in Phase 1, while boundary object theory supported category grouping in Phase 2. This ensured the analysis remained connected to the study's theoretical foundations throughout all phases.

The coding procedure was executed in three distinct phases as prescribed by the open-coding framework [26]:

Phase 1: Conceptualisation. This stage involved iterative readings (three times per author) of the core texts guided by the Science and Technology Studies (STS) research questions: "How does the protocol construct sustainability governance problems? What are the roles of actors, scripts, and standards?" [26] (p. 112). Verbatim notes and initial labelling yielded 147 unique concepts, ranging from the technical organisation of roles in operational tables to qualitative aspects such as user-friendliness and feedback mechanisms.

Phase 2: Defining categories. The initial concepts were grouped based on descriptive commonalities without the imposition of explanatory theory. This led to the emergence of four provisional categories: (i) Sociotechnical Scripting (42 instances, procedural tables); (ii) Boundary Mediation (31 instances, actor translations); (iii) Standardisation Performativity (38 instances, KPIs/checklists); (iv) Regenerative Openings (36 instances, relational and learning hints).

Phase 3: Developing categories. In the final phase, the provisional categories were hierarchically refined based on frequency, cross-document linkage, and thematic salience. This refinement was supported by the theoretical lenses of strategic niche management [11] and boundary object theory [12]. The final categories can be found in full in Appendix A.

During Phase 2, initial concepts such as "LED installation timelines" (D2.4.1, p.17), "energy audit protocols" (D2.4.1, p.15), and "staff training schedules" (D1.3.1, p.22) were grouped into categories such as "Sociotechnical Scripting" based on their shared procedural character. Similarly, "university workshop feedback" (D2.1.1, p.34) and "SME-consultant translation" (D1.3.1, p.8) formed the category "Boundary Mediation" as epistemic bridging instances. These examples demonstrate how descriptive commonalities drove category formation prior to theoretical refinement in Phase 3.

3.3. Reliability and Validity

To ensure reliability and validity, the two main authors coded the full corpus independently. Disagreements were identified through side-by-side comparison of coded segments using a shared Excel matrix. For instance, Coder A classified "peer learning workshops" as Regenerative Openings, while Coder B coded it as Boundary Mediation.

A group discussion, together with the third author, was held to resolve the differences that emerged until 100% agreement was reached. This level of agreement was reached purely through discussion.

While one author participated in the MAST project, two external authors independently reviewed and resolved interpretive discrepancies. This ensured objectivity despite reliance on project internal documents.

4. Results

The qualitative content analysis conducted on the MAST project deliverables allowed for the mapping of the dynamics through which the sustainability protocol is configured and interpreted. The coding results (Table 1) reveal a multidimensional structure where technical standardisation coexists with significant potential for relational and territorial transformation. The instance frequencies used in the table indicate relative prominence in the coded corpus.

Table 1. Coding matrix of the MAST sustainability protocol.

Category	Instances (Freq. %)	Primary Reports	Key Quote	Theory
Sociotechnical Scripting	42 (28%)	D2.4.1/2.3.1	"Objectives, activities, responsible actors, timelines"	[11]
Boundary Mediation	31 (21%)	D1.3.1/2.1.1	"Universities translating for SME capacity"	[12]
Standardisation Performativity	38 (26%)	D3.1.1/1.2.1	"Audit-ready KPIs, compliance roadmaps"	[3]
Regenerative Openings	36 (25%)	D2.1.1/1.3.1	"Iterative feedback, peer learning"	[8]

4.1. Sociotechnical Scripting

In the fragmented institutional landscape of the Mediterranean, where tourism standards often struggle to translate across diverse national borders, the MAST protocol acts as a sociotechnical boundary object designed to create a shared language between international sustainability requirements and local SME practices.

Concerning the Sociotechnical Scripting of the protocol (28%), the analysis reveals that it functions as a roadmap specifically designed to reduce the complexity of the ISO 21401 standard for Mediterranean SMEs. The findings show that the protocol's tripartite structure, organised into environmental, social, and economic tables, creates a comprehensive script that defines specific roles, sequential actions, and accountability mechanisms (D1.3.1). By directly addressing SME barriers such as high implementation costs, lack of specialised technical skills, and procedural uncertainty in Deliverable 2.1.1, the protocol "scripts" a simplified and clear path to sustainability, transforming abstract global certification requirements into concrete, actionable management tasks tailored to operational realities.

This scripting is necessitated by the structural divergence between large-scale corporations and Mediterranean SMEs. While the former possesses the liquidity and dedicated CSR departments to manage the abstract complexities of global ISO standards, SMEs often face resource limitation and technical staff shortages. By decomposing high-level requirements into modular, seasonal-aligned micro-tasks, the MAST protocol acts as a 'translator' that replaces heavy administrative burdens with operational roadmaps.

This structure both eases access to international standards and creates a sustainable sociotechnical management system by equipping SMEs with legitimate, replicable frameworks for continuous operational improvement and market positioning.

Progressing from diagnostic audits through infrastructural changes establishes clear milestones that can help mitigate paralysis and delays during the implementation phase, while building cumulative competence over time. Specific examples include energy efficiency roadmaps that start with initial audits (1–3 months), LED installations and basic retrofits (3–6 months), and advanced system optimisations (6–12 months), creating momentum through achievable, simple actions that sustain long-term engagement. This temporal structure addresses the seasonality of Mediterranean tourism operations, allowing SMEs to align sustainability interventions with low-occupancy periods for minimal business disruption. Moreover, the explicit actor role assignments—distinguishing accommodation managers, external consultants, and staff teams—clarify the different diffusion of responsibilities and promote internal capacity development. Table 2 exemplifies this protocol scripting.

Table 2. Example of MAST sustainability protocol scripting. Source: Deliverable 2.4.1, p.17.

Area of Intervention	Specific Objective	Key Activities	Responsible Actors	Indicative Timeline
Energy Efficiency	Reduce energy consumption by 20%	- Conduct energy audit - Install LED lighting	Accommodation Manager, External Consultant	1–3 months (audit), 3–6 months (retrofit)

4.2. Performativity and the Risk of Smart Compliance

Concerning the performativity of standardisation (26%), the results show a significant emphasis on measurability, manifesting through checklists, KPIs, and self-assessment simulations that serve as a legitimisation mechanism. In the Mediterranean area, where sustainability is frequently perceived as an external bureaucratic burden imposed by distant regulatory bodies, this performative grammar scripts a reality where sustainability is considered mostly as 'compliance'—quantifiable, auditable, and verifiable—rather than as a holistic 'transformation' considering relational, cultural, and regenerative dimensions.

Coding instances show how environmental metrics (e.g., kWh reductions), social indicators (e.g., staff training hours), and economic benchmarks (e.g., procurement cost savings) merge into a self-referential system of verifiability.

This dimension reflects the risk of "smart compliance" [24] where the protocol risks becoming a bureaucratic instrument—a badge of green credentials deployed to appease market intermediaries, certification bodies, and eco-conscious consumers—without actually bringing substantial practices in operational practices. The market search report underscores this risk: SMEs may strategically prioritise "audit-ready" documentation and superficial KPI fulfilment—such as energy dashboards—over actual transformative practices. The performative structure thus incentivises symbolic adoption. It may also create temporal and power asymmetries: checklists impose standardised timelines that ill-fit Mediterranean SMEs' seasonality, potentially imposing context-specific adaptations during the peak season. The coding thus exposes how standardisation's performative nature, promising universal comparability, may end up eroding the interpretive flexibility necessary for place-based sustainability.

4.3. University Brokerage and Competence Translation

Concerning the Mediation roles (21%), the findings show that universities, within the project ecosystem, acted as boundary brokers by mediating and translating knowledge between the different sources and actors.

This brokerage role proves necessary in the Mediterranean context, which is characterised by institutional fragmentation and power asymmetries between micro-entrepreneurs and distant certification authorities.

Specifically, universities translated technical texts and procedures, such as the one from ISO 21401, using practical terms and expressions that could be understood by SME employees and owners. This brokerage specifically happened both during the creation of the protocol, and during the workshops held to validate it with SMEs, businesses, support organisations and consultants operating in the certification sector. These interventions aimed to translate abstract scientific knowledge, rooted in global standardisation logic, and granular local implementation challenges, such as adapting energy audits to seasonal occupancy patterns or aligning waste protocols, with regional supply realities.

This mediation function tried to transform the protocol's ontology from a rigid, top-down assessment checklist into a flexible pedagogical instrument that cultivates an integrated competence framework for sustainable entrepreneurship, and attempted to balance the "smart compliance" risk.

Universities create hybrid spaces where SME practitioners, academic researchers, and regional stakeholders co-negotiate protocol interpretations, considering local knowledge (e.g., heritage preservation priorities, community sourcing networks), into ostensibly universal frameworks [12]. This mediation democratises access to sustainability expertise and positions universities as ecosystem architects, capable of evolving the protocol from static deliverables to a living infrastructure that sustains ongoing learning and adaptation [27]. Through such brokerage, academia emerges not merely as a knowledge transmitter but as a catalyst for the relational competencies essential to the implementation of sustainable tourism practices and sustainable tourism governance.

4.4. Regenerative Openings and Relational Governance

Concerning the Regenerative Openings identified in the analysis (25%), the results evidence a latent yet compelling potential for the protocol to promote "collective care" and territorial resilience, disrupting its predominant checklist orientation. These openings materialise as discursive parts, such as iterative feedback mechanisms, peer-learning invitations, and stakeholder co-creation prompts, that elevate the protocol beyond mechanistic compliance to a platform for policy advocacy and mutual accountability. Specific instances include consultation reports advocating for "territorial resilience networks" and market analyses calling for DMO–SME collaborations on heritage-aligned sustainability, where the protocol tables serve not as endpoints but as provocations for collective deliberation.

In Mediterranean contexts defined by high cultural density and ecological precarity, these 'openings' allow the protocol to move beyond universal technicalities to address territorially rooted issues such as seasonal resource scarcity and patrimonial preservation.

The findings suggest that when embedded in participatory processes, such as university-led living labs or regional validation workshops, the protocol facilitates the emergence of "regenerative tourism", explicitly moving beyond harm reduction ("doing less bad") toward the proactive enhancement of local socio-ecological systems through reciprocal care practices [8]. This manifests in subtle yet transformative shifts: waste management KPIs evolve into community composting initiatives; energy roadmaps incorporate local renewable cooperatives; social metrics expand to encompass cultural continuity indicators. These moments recast SMEs not as isolated compliance actors but as nodes in a resilience network, promoting interdependence with DMOs, civil society, and indigenous knowledge holders.

Though less dominant than Managerial scripting (28%), this dimension constitutes the protocol's "liminal space", a threshold where managerial grammars yield to relational ontologies, aligning the MAST project with SDG 4 (quality education via peer pedagogies), SDG 8 (decent work through dignified entrepreneurship), and SDG 11 (resilient communities via place-based governance). In Mediterranean contexts of ecological precarity and cultural density, such openings have disproportionate transformative potential: they invite protocols to metabolise local specificities—seasonal rhythms, patrimonial landscapes, migratory patterns—into globally legible yet territorially rooted sustainability narratives [28].

5. Discussion

This study interprets the MAST sustainability protocol as a sociotechnical governance device that actively scripts how sustainability is problematised and operationalised in Mediterranean tourism SMEs [3,29]. The findings show that the protocol is not a neutral aid, as it organises roles and knowledge hierarchies to stabilise a specific vision of "sustainable tourism" amid coastal ecosystem challenges [2,28]. In doing so, it adds micropolitical granularity to tourism governance scholarship [1], revealing standardisation as a configuration of actor–infrastructure–territory relations via classification systems [30].

The protocol inscribes a "recipe for reality" [4] tailored to the fragmented Mediterranean market [31]. However, from the findings it clearly emerges how, while decomposing ISO 21401 into SME-governable micro-interventions helps overcome resource barriers such as costs and skills shortages [32], the protocol privileges practices that are easily tabulated and audited—thus bridging empathy gaps between firms' sustainability motives and their real-world impacts [29,33]. This could promote "smart compliance"—performative certification of conformity over change [20,29].

Overall, in this context universities (as authors of the protocol) emerge as boundary brokers [34] enacting Mode 2 knowledge production [35] and Triple Helix dynamics [36,37]. By translating standards into tools that foster entrepreneurial competencies—such as opportunity recognition and stakeholder engagement—they configure the protocol as an entrepreneurial infrastructure [38,39]. This brokerage directly answers the paper's question: universities transform compliance checklists into scaffolds for sustainable business innovation, turning governance devices into entrepreneurial opportunities for SMEs [29].

The protocol mediates sustainability transitions through strategic niche management: it stabilises dominant regimes while nurturing protective niches to counter low-carbon pressures [40–42]. However, these claims remain discursively bounded, capturing reflexive design intentions rather than actual implementation outcomes [29,43].

Findings urge configurational analyses that consider and examine how protocols script entrepreneurial possibilities, over efficacy debates, while emphasising university–SME–DMO ecologies to enable territorial experimentation [29].

6. Conclusions

This study shows how universities support sustainable entrepreneurship and local economic resilience by translating, via the MAST protocol, environmental certification requirements into specific and practical actions that SMEs can implement. Their brokerage role creates resilient local economies by linking compliance roadmaps to market opportunities and community needs, protecting tourism regions from climate shocks and overtourism [22]. The analysis of the MAST sustainability protocol shows that standardisation tools in tourism SMEs go beyond simple technical guides. They actively shape how people work together, what knowledge matters, and how decisions get made in the complex social and environmental context of the Mediterranean. The protocol analysed carefully combined ISO 21401:2018 requirements with real SME challenges, like high costs, lack of skills, and difficulty gaining trust in the market, along with practical market information. This makes it a strong "boundary object" that turns sustainability into clear, step-by-step actions [12]. Its three-part structure (environment, social, economic) gives Mediterranean SMEs a practical guide to handle global standards while creating new ideas that push against traditional tourism patterns, especially with growing problems like climate change and changing customer expectations [11,37]. However, this helpful structure has a downside: the strong focus on scripting (28%) and standardisation performance (26%, seen in KPI checklists and fixed timelines) creates a real risk of "smart compliance". This is when companies focus on formal checks rather than real change, choosing surface-level credibility over deep environmental and social improvements [3,20,24]. This in-between quality reflects bigger challenges in Mediterranean governance, where trusted global standards need to work alongside local practices that respect culture, community connections, and hopes for regeneration [8,32].

This tension leads to clear practical recommendations. SMEs can treat the protocol's tables not as strict lists but as flexible starting points for testing new business ideas. They can begin with simple steps like energy upgrades, then build toward bigger changes in suppliers and customer relationships. Universities play a key role as knowledge brokers:

by turning technical standards into hands-on courses, mentoring, and peer workshops, they change compliance tools into systems that build sustainable business skills [22,37]. Policymakers and tourism organisations (DMOs) should place these tools in collaborative settings—using EU-style funding for joint design projects, mixed measures that combine numbers with stories, and ongoing support for university–business partnerships—that favour regenerative ideas (25%) over narrow management approaches [1,41]. This could transform the protocol from a small-scale helper into a major force for change, connecting Mediterranean tourism to UN goals like quality education (SDG 4), good jobs (SDG 8), and strong communities (SDG 11).

From a theoretical point of view, this study advances research on sustainability changes by applying Science and Technology Studies (STS) and boundary object ideas to tourism policy [11,12]. It rethinks the protocol as an active tool that shapes roles, processes, and what people see as real, sometimes locking in compliance patterns or sparking new experiments when enriched by collaboration (21%) [3,15]. This approach connects standardisation research with regenerative ideas, showing how language patterns lead to business innovation and emphasising universities' role as key connectors in unequal power situations [8,33,34]. The paper challenges simple ideas about tool use, seeing governance tools as spaces where management control meets relational possibilities [2,27].

The study has built-in limits from its forward-looking design: based on project documents from the pilot stage, it focuses on language and tool analysis rather than long-term results in real companies, so it does not show how the scripting plays out in practice [44]. As MAST was a "study" project, set to enter the "test" phase in 2026 with MAST Plus, the early pilot stage did not allow the gathering of meaningful data for triangulation.

Future research should focus on real-world testing after implementation, using detailed studies and mixed methods to follow how SMEs move from compliance routines to regenerative business, measuring changes like mixed KPIs or active peer networks, for example. Early pilots need a quick review: feedback from SMEs using the protocol could show gaps and suggest improvements. Broader comparisons could pit MAST against non-ISO tools across European and Mediterranean areas to find what drives regeneration [40]. Collaborative action research—jointly creating "living protocols" with universities, DMOs, and business owners—would test different brokerage approaches and conditions for growing innovation toward sustainable tourism futures [30,38].

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3.1_comparative_report.pdf, accessed on 15 February 2026. D 2.4.1 SUSTAINABILITY PROTOCOL FOR SMES ACCOMMODATION. https://mast.interreg-euro-med.eu/wp-content/uploads/sites/38/d.2.4.1_sustainability_protocol.pdf, accessed on 15 February 2026. D 3.1.1 MARKET SEARCH REPORT. https://mast.interreg-euro-med.eu/wp-content/uploads/sites/38/mast_d.3.1.1_-marketsearchreport.pdf, accessed on 15 February 2026.

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Abbreviations

The following abbreviations are used in this manuscript:

MAST	Making Sustainable Tourism Possible
ISO	International Standardisation Organisation
STS	Science and Technology Studies
SME	Small and Medium Enterprise
DMO	Destination Management Organisation
SDG	Sustainable Development Goal

Appendix A

Table A1. Category 1 coding instances. Source: author's elaboration.

CATEGORY I: SOCIOTECHNICAL SCRIPTING (42 Instances, 28%)			
#	Coding Instance	Document	Description
1	Tripartite table structure	D2.4.1	Environmental, social, and economic divided scripting
2	Objectives specification	D2.4.1	Quantifiable targets for sustainability domains
3	Activities prescription	D2.4.1	Detailed operational steps for implementation
4	Actor role assignment	D2.4.1	Clear designation of responsible actors
5	Timeline establishment	D2.4.1	Sequential phasing of interventions
6	Energy efficiency scripting	D2.4.1	LED installation, audit protocols, retrofit sequencing
7	Water conservation scripting	D2.4.1	Rainwater harvesting, leak detection sequences
8	Waste management procedures	D2.4.1	Classification, segregation, disposal timelines
9	Supply chain standardisation	D2.3.1	Vendor selection, procurement rules
10	Training protocol design	D2.4.1	Staff skill-building roadmaps
11	Certification alignment	D2.4.1	ISO 21401 requirement mapping
12	Document template provision	D2.4.1	Standardised forms for record-keeping
13	Internal audit schedule	D2.4.1	Periodic compliance checking
14	Communication protocol	D2.4.1	Staff notification, stakeholder engagement sequences
15	Infrastructure upgrading script	D2.4.1	Building systems modification roadmaps
16	Monitoring mechanisms	D2.4.1	Data collection procedures, indicator tracking
17	Guest communication script	D2.1.1	Sustainability messaging to customers
18	Reporting requirements	D2.4.1	Quarterly/annual documentation
19	Non-conformance procedures	D2.4.1	Corrective action protocols

Table A1. *Cont.*

	CATEGORY I: SOCIOTECHNICAL SCRIPTING (42 Instances, 28%)		
20	Supplier engagement script	D2.3.1	Vendor sustainability alignment
21	Purchasing guidelines	D2.4.1	Sustainable procurement criteria
22	Quality assurance procedures	D2.4.1	Testing, verification steps
23	Risk assessment scripting	D2.3.1	Hazard identification and mitigation
24	Resource allocation table	D2.4.1	Budget assignment by activity
25	Technology integration script	D2.4.1	Software implementation, digital monitoring
26	Stakeholder coordination	D2.3.1	DMO, certification bodies, authority roles
27	Emergency response procedures	D2.4.1	Crisis management protocols
28	Maintenance schedules	D2.4.1	Equipment, infrastructure upkeep timing
29	Product/service modification script	D2.4.1	Sustainability-aligned design
30	Employee incentive structure	D2.1.1	Performance reward mechanisms
31	Data storage protocols	D2.4.1	Record archiving and retrieval
32	Benchmark comparison	D2.3.1	Industry standard positioning
33	Constraint adaptation	D2.3.1	SME-specific modification sequences
34	Cost estimation table	D2.4.1	Financial planning by intervention
35	Compliance checklist	D2.4.1	Operational verification items
36	Local context integration	D2.3.1	Embedded Mediterranean specificities
37	Authority liaison script	D2.4.1	Regulatory approval pathways
38	Third-party verification	D2.4.1	External auditing arrangements
39	Continuous improvement loop	D2.4.1	Iterative enhancement procedures
40	Seasonal adjustment protocols	D2.3.1	Tourism-specific timing adaptations
41	Knowledge documentation	D2.4.1	Best practice recording
42	Stakeholder feedback integration	D2.4.1	Input collection and incorporation

Table A2. Category 2 coding instances. Source: author's elaboration.

	CATEGORY II: BOUNDARY MEDIATION (31 Instances, 21%)		
#	Coding Instance	Document	Description
43	University as broker	D1.3.1	Academic mediation role
44	Curriculum integration	D1.3.1	Protocol translation into pedagogy
45	Self-assessment tool development	D1.3.1	User-friendly assessment design
46	Language simplification	D1.3.1	Technical jargon reduction
47	Experiential workshops	D2.4.1	Hands-on training delivery
48	Mentorship programmes	D2.1.1	SME guidance relationships
49	Competence framework design	D1.3.1	Sustainable entrepreneurship skills
50	Knowledge negotiation space	D1.3.1	Dialogue between actors
51	Case study development	D1.3.1	Contextual learning materials
52	Capacity-building narratives	D2.1.1	Support messaging to SMEs
53	Student–SME pairing	D1.3.1	Peer learning arrangements
54	Technical support provision	D2.4.1	University consulting services
55	Resource sharing mechanism	D2.1.1	Lab access, equipment lending
56	Network facilitation	D2.1.1	Inter-SME connection brokering
57	Epistemological translation	D1.3.1	Converting standards to practical knowledge
58	Feedback mechanism design	D1.3.1	Iterative improvement channels

Table A2. *Cont.*

	CATEGORY II: BOUNDARY MEDIATION (31 Instances, 21%)		
59	Policy advocacy	D2.1.1	University representation for SMEs
60	Research–practice linkage	D1.3.1	Academic knowledge application
61	Soft-skill development	D1.3.1	Communication, leadership training
62	Trust-building activities	D2.1.1	Relationship establishment
63	Innovation co-creation	D2.4.1	Collaborative problem-solving
64	Institutional legitimacy	D1.3.1	Lending academic credibility
65	Local DMO liaison	D2.1.1	Destination management coordination
66	Accessibility enhancement	D1.3.1	Removing barriers to learning
67	Certification support	D2.1.1	Audit preparation assistance
68	Documentation support	D1.3.1	Record-keeping guideline provisions
69	Cross-sector dialogue	D2.1.1	Multi-stakeholder engagement
70	Experiential curriculum	D1.3.1	Learning-by-doing pedagogies
71	Epistemic community building	D2.1.1	Shared knowledge creation
72	Monitoring support	D2.4.1	Academic-led data analysis
73	Adaptive co-design	D1.3.1	Joint tool refinement with SMEs

Table A3. Category 3 coding instances. Source: author's elaboration.

	CATEGORY III: STANDARDISATION PERFORMATIVITY (38 Instances, 26%)		
#	Coding Instance	Document	Description
74	KPI definition	D3.1.1	Measurable performance indicators
75	Metric standardisation	D1.2.1	Consistent measurement units
76	Checklist architecture	D3.1.1	Compliance verification items
77	Audit readiness	D3.1.1	Preparation for external review
78	Data quantification	D1.2.1	Converting qualitative to numeric
79	Compliance roadmap	D3.1.1	Step-by-step certification path
80	Evidence collection	D1.2.1	Documentation for verification
81	Performance benchmarking	D3.1.1	Industry comparison standards
82	Verification procedure	D3.1.1	Third-party confirmation process
83	Measurable targets	D1.2.1	Quantified improvement goals
84	Legitimacy signalling	D3.1.1	Market credibility through certification
85	Compliance simulation	D1.2.1	Mock audits and testing
86	Standard conformity	D3.1.1	ISO 21401 alignment verification
87	Gap identification	D1.2.1	Baseline assessment procedures
88	Compliance tracking	D3.1.1	Ongoing monitoring
89	Smart compliance risk	D3.1.1	Aesthetic KPI satisfaction without transformation
90	Indicator interpretation	D1.2.1	Metric meaning standardisation
91	Audit documentation	D3.1.1	Evidence archiving for review
92	Performance visibility	D1.2.1	Public reporting and display
93	Standardised language	D1.2.1	Common terminology adoption
94	Formal verification	D3.1.1	Official compliance confirmation
95	Measurability emphasis	D3.1.1	Quantifiable over qualitative focus
96	Compliance preference	D1.2.1	Regulatory adherence priority
97	Certification pathway	D3.1.1	Structured route to ISO approval
98	Market legitimacy	D1.2.1	Stakeholder credibility gain

Table A3. *Cont.*

	CATEGORY III: STANDARDISATION PERFORMATIVITY (38 Instances, 26%)		
99	Reporting standardisation	D3.1.1	Uniform documentation format
100	Audit frequency	D1.2.1	Regular verification scheduling
101	Measurement protocol	D3.1.1	Standardised data collection procedure
102	Compliance cost	D1.2.1	Resource allocation for verification
103	Certification premium	D3.1.1	Market value of certified status
104	Performance narrative	D1.2.1	Quantified success story construction
105	Standardised evidence	D3.1.1	Approved documentation types
106	Verification cost	D1.2.1	External audit expenses
107	Compliance documentation	D3.1.1	Records of adherence
108	Indicator proliferation	D1.2.1	Multiple metric usage
109	Standardisation pressure	D3.1.1	Conformity expectation
110	Performance measurement culture	D1.2.1	Metrics-driven management mindset
111	Compliance threshold	D3.1.1	Minimum acceptable standards

Table A4. Category 4 coding instances. Source: author's elaboration.

	CATEGORY IV: REGENERATIVE OPENINGS (36 Instances, 25%)		
#	Coding Instance	Document	Description
112	Collective care potential	D2.1.1	Community wellbeing orientation
113	Peer learning platform	D1.3.1	SME-to-SME knowledge exchange
114	Participatory design	D2.1.1	Co-creation with stakeholders
115	Place-based innovation	D2.1.1	Context-specific solution development
116	Iterative feedback loop	D1.3.1	Continuous dialogue improvement
117	Community engagement	D2.1.1	Local stakeholder involvement
118	Social capital building	D1.3.1	Relationship and trust development
119	Territorial resilience	D2.1.1	Local adaptability and thriving
120	Regenerative tourism vision	D2.1.1	Beyond-harm reduction ambition
121	SDG alignment	D2.1.1	UN 2030 Agenda integration
122	Learning ecosystem	D1.3.1	Integrated knowledge networks
123	Co-benefit generation	D2.1.1	Multi-stakeholder value creation
124	Adaptive management	D1.3.1	Flexible, responsive implementation
125	Policy co-design	D2.1.1	SME input in governance
126	Ecological knowledge integration	D2.1.1	Local environmental wisdom
127	Cultural heritage preservation	D2.1.1	Local identity retention
128	Socio-ecological flourishing	D2.1.1	Integrated human–nature wellbeing
129	Inclusive governance	D1.3.1	Representation of diverse voices
130	Transformation potential	D2.1.1	Beyond incremental improvement
131	Territorial interdependence	D2.1.1	Interconnected community flourishing
132	Dialogical openness	D1.3.1	Humble, relational engagement
133	Place-identity alignment	D2.1.1	Sustainability respecting local values
134	Regenerative business model	D2.1.1	Value creation beyond extraction
135	Multi-actor collaboration	D1.3.1	Cross-sector partnership
136	Experiential wisdom	D1.3.1	Practitioner knowledge legitimacy

Table A4. *Cont.*

CATEGORY IV: REGENERATIVE OPENINGS (36 Instances, 25%)			
137	Local governance empowerment	D2.1.1	Community decision-making capacity
138	Liminal space potential	D2.1.1	Transition zone for innovation
139	Decent work alignment	D2.1.1	SDG 8 integration
140	Quality education integration	D1.3.1	SDG 4 enactment
141	Resilient communities focus	D2.1.1	SDG 11 operationalisation
142	Relational accountability	D1.3.1	Responsibility beyond metrics
143	Care-centred approach	D2.1.1	Human-centred governance
144	Temporal flexibility	D1.3.1	Space for experimentation
145	Epistemological pluralism	D2.1.1	Multiple valid knowledge systems
146	Flourishing framework	D2.1.1	Wellbeing-based success metrics
147	Boundary work as catalysis	D1.3.1	Transformation through mediation

References

1. Bramwell, B.; Lane, B. Critical research on the governance of tourism and sustainability. *J. Sustain. Tour.* **2011**, *19*, 411–421. [CrossRef]
2. Hall, C.M. Constructing sustainable tourism development: The 2030 agenda and the managerial ecology of sustainable tourism. *J. Sustain. Tour.* **2019**, *27*, 1044–1060. [CrossRef]
3. Timmermans, S.; Epstein, S. A world of standards but not a standard world: Toward a sociology of standards and standardization. *Annu. Rev. Sociol.* **2010**, *36*, 69–89. [CrossRef]
4. Busch, L. *Standards: Recipes for Reality*; Mit Press: Cambridge, MA, USA, 2013.
5. *ISO 21401:2018*; Tourism and related services—Sustainability management system for accommodation establishments—Requirements. International Organization for Standardization: Geneva, Switzerland, 2018.
6. Saarinen, J. Critical sustainability: Setting the limits to growth and responsibility in tourism. *Sustainability* **2013**, *6*, 1–17. [CrossRef]
7. Folke, C.; Polasky, S.; Rockström, J.; Galaz, V.; Westley, F.; Lamont, M.; Scheffer, M.; Österblom, H.; Carpenter, S.R.; Chapin FS3rd Seto, K.C.; et al. Our future in the Anthropocene biosphere. *Ambio* **2021**, *50*, 834–869. [CrossRef]
8. Bellato, L.; Pollock, A. Regenerative tourism: A state-of-the-art review. *Tour. Geogr.* **2025**, *27*, 558–567. [CrossRef]
9. Dredge, D. Regenerative tourism: Transforming mindsets, systems and practices. *J. Tour. Futures* **2022**, *8*, 269–281. [CrossRef]
10. Horlings, L.G. The inner dimension of sustainability: Personal and cultural values. *Curr. Opin. Environ. Sustain.* **2015**, *14*, 163–169. [CrossRef]
11. Geels, F.W. Technological transitions as evolutionary reconfiguration processes: A multi-level perspective and a case-study. *Res. Policy* **2002**, *31*, 1257–1274. [CrossRef]
12. Star, S.L.; Griesemer, J.R. Institutional ecology, translations and boundary objects: Amateurs and professionals in Berkeley's Museum of Vertebrate Zoology, 1907–1939. *Soc. Stud. Sci.* **1989**, *19*, 387–420. [CrossRef]
13. Jasanoff, S. The idiom of co-production. In *States of Knowledge*; Routledge: Oxfordshire, UK, 2004; pp. 1–12.
14. Geels, F.W.; Schot, J. *The Dynamics of Transitions: A Socio-Technical Perspective*; Routledge: Oxfordshire, UK, 2010; pp. 11–104.
15. Akrich, M. The de-scription of technical objects. In *Shaping Technology/Building Society. Studies in Sociotechnical Change*; MIT Press: Cambridge, MA, USA, 1992; pp. 205–224.
16. Carlile, P.R. A pragmatic view of knowledge and boundaries: Boundary objects in new product development. *Organ. Sci.* **2002**, *13*, 442–455. [CrossRef]
17. Nowotny, H.; Scott, P.; Gibbons, M. *Re-Thinking Science: Knowledge and the Public in an Age of Uncertainty*; Polity Press: Cambridge, UK, 2001. [CrossRef]
18. Callon, M. Some elements of a sociology of translation: Domestication of the scallops and the fishermen of St Brieuc Bay. *Sociol. Rev.* **1984**, *32*, 196–233. [CrossRef]
19. Law, J.; Urry, J. Enacting the social. *Econ. Soc.* **2004**, *33*, 390–410. [CrossRef]
20. Power, M. *The Audit Society: Rituals of Verification*; OUP Oxford: Oxford, UK, 1997.
21. Font, X.; Buckley, R. (Eds.) *Tourism Ecolabelling: Certification and Promotion of Sustainable Management*; CaBI: Wallingford, OX, USA, 2001.
22. Findler, F.; Schönherr, N.; Lozano, R.; Reider, D.; Martinuzzi, A. The impacts of higher education institutions on sustainable development: A review and conceptualization. *Int. J. Sustain. High. Educ.* **2019**, *20*, 23–38. [CrossRef]
23. Lans, T.; Blok, V.; Wesselink, R. Learning apart and together: Towards an integrated competence framework for sustainable entrepreneurship in higher education. *J. Clean. Prod.* **2014**, *62*, 37–47. [CrossRef]

24. Higgins-Desbiolles, F. Sustainable tourism: Sustaining tourism or something more? *Tour. Manag. Perspect.* **2018**, *25*, 157–160. [CrossRef]
25. Fischer, F.; Forester, J. (Eds.) *The Argumentative Turn in Policy Analysis and Planning*; Duke University Press: Durham, NC, USA, 1993.
26. Schreier, M. *Qualitative Content Analysis in Practice*; SAGE Publications Ltd.: London, UK, 2012.
27. Gibbons, M.; Limoges, C.; Scott, P.; Schwartzman, S.; Nowotny, H. *The New Production of Knowledge: The Dynamics of Science and Research in Contemporary Societies*; SAGE Publications Ltd.: London, UK, 1994.
28. Drius, M.; Bongiorni, L.; Depellegrin, D.; Menegon, S.; Pugnetti, A.; Stifter, S. Tackling challenges for Mediterranean sustainable coastal tourism: An ecosystem service perspective. *Sci. Total Environ.* **2019**, *652*, 1302–1317. [CrossRef] [PubMed]
29. Juvan, E.; Piscè, G.C.; Murmura, F.; Pierli, G.; Travasi, A.; Rumignani, M.; Garancini, G.A.P.; Ligerakis, M.; Čakardžić, J. *Sustaining Accommodation SMEs: Drivers and Pathways of Sustainable Transition in the Mediterranean Tourist Accommodation Sector*; University of Primorska Press: Koper, Slovenia, 2026. [CrossRef]
30. Bowker, G.C.; Star, S.L. *Sorting Things Out: Classification and Its Consequences*; MIT Press: Cambridge, MA, USA, 2000.
31. Farsari, Y.; Butler, R.; Prastacos, P. Sustainable tourism policy for Mediterranean destinations: Issues and interrelationships. *Int. J. Tour. Policy* **2007**, *1*, 58–78. [CrossRef]
32. Garay, L.; Font, X. Doing good to do well? Corporate social responsibility reasons, practices and impacts in small and medium accommodation enterprises. *Int. J. Hosp. Manag.* **2012**, *31*, 329–337. [CrossRef]
33. Font, X.; Garay, L.; Jones, S. A social cognitive theory of sustainability empathy. *Ann. Tour. Res.* **2016**, *58*, 65–80. [CrossRef]
34. Leigh Star, S. This is not a boundary object: Reflections on the origin of a concept. *Sci. Technol. Hum. Values* **2010**, *35*, 601–617. [CrossRef]
35. Walsh, A.; Powell, P. Innovation Through Engaged Learning: Working with Mode 2 Knowledge and Intrapreneurship. In *Creative Business Education: Exploring the Contours of Pedagogical Praxis*; Springer International Publishing: Cham, Switzerland, 2022; pp. 251–271.
36. Supriadi, A.; Permana, I.; Afandi, D.R.; Arisondha, E.; Kusumaningsih, A. The triple helix model: University-industry-government collaboration and its role in smes innovation and development. *Int. J. Financ. Econ.* **2025**, *1*, 75–90.
37. Etzkowitz, H.; Leydesdorff, L. The dynamics of innovation: From National Systems and "Mode 2" to a Triple Helix of university–industry–government relations. *Res. Policy* **2000**, *29*, 109–123. [CrossRef]
38. Wakkee, I.; Van der Sijde, P.; Vaupell, C.; Ghuman, K. The university's role in sustainable development: Activating entrepreneurial scholars as agents of change. *Technol. Forecast. Soc. Change* **2019**, *141*, 195–205. [CrossRef]
39. Wenger, E. *Communities of Practice: Learning, Meaning, and Identity*; Cambridge University Press: Cambridge, UK, 1999.
40. Geels, F.W. The multi-level perspective on sustainability transitions: Responses to seven criticisms. *Environ. Innov. Soc. Transit.* **2011**, *1*, 24–40. [CrossRef]
41. Geels, F.W.; Sovacool, B.K.; Schwanen, T.; Sorrell, S. The socio-technical dynamics of low-carbon transitions. *Joule* **2017**, *1*, 463–479. [CrossRef]
42. Kemp, R.; Schot, J.; Hoogma, R. Regime shifts to sustainability through processes of niche formation: The approach of strategic niche management. *Technol. Anal. Strateg. Manag.* **1998**, *10*, 175–198. [CrossRef]
43. Finlay, L. "Outing" the researcher: The provenance, process, and practice of reflexivity. *Qual. Health Res.* **2002**, *12*, 531–545. [CrossRef]
44. Schaltegger, S.; Wagner, M. Sustainable entrepreneurship and sustainability innovation: Categories and interactions. *Bus. Strategy Environ.* **2011**, *20*, 222–237. [CrossRef]

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