Beyond Sustainability: Developing Regenerative Tourism Through a Multi-Dimensional Maturity Index for Turkish Destination

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Abstract

Purpose: Regenerative tourism represents a paradigmatic shift beyond sustainable tourism, aiming to create net-positive impacts that restore and revitalise destination ecosystems and communities rather than merely conserving them. Despite growing academic interest, significant gaps remain in conceptual clarity, operationalisation, and context-specific measurement frameworks, particularly for emerging destinations. This study addresses these gaps by developing a comprehensive Regenerative Tourism Maturity Index (RTMI) specifically designed for Turkish destinations, advancing both theoretical understanding and practical application in the field.

Method: The study employed a systematic literature review combined with expert consultation and multi-dimensional analytical synthesis to construct the index framework. The Analytic Hierarchy Process (AHP) was utilised for criterion weighting and validation, ensuring methodological rigour. The proposed four-dimensional framework integrates ecological regeneration (30%), social regeneration (25%), cultural regeneration (25%), and economic regeneration (20%), offering context-specific adaptations that account for Türkiye's exceptional biodiversity richness, deep cultural heritage layers, and diverse community structures. Five pilot destinations—Kaş-Kekova, Cappadocia, Datça-Bozburun, Macahel, and Ephesus-Bergama—were selected for empirical validation based on representative ecological and cultural diversity.

Findings: The RTMI provides a robust strategic assessment tool for policymakers, destination management organisations, and tourism stakeholders. The weighting distribution reflects the primacy of ecological restoration in regenerative paradigms whilst maintaining balanced attention to socio-cultural and economic dimensions. Context-specific indicators were developed for each dimension, accommodating Türkiye's unique geographical position bridging Europe and Asia, its UNESCO World Heritage sites, and its community-based tourism traditions. The phased implementation roadmap comprises baseline assessment, stakeholder engagement, indicator calibration, and continuous monitoring mechanisms.

Conclusion: This index contributes to regenerative tourism scholarship by advancing operational frameworks applicable to comparable Mediterranean and culturally rich destinations. The study challenges existing sustainability metrics that focus on damage limitation, proposing instead a maturity model that measures net-positive contribution. Limitations include the need for longitudinal empirical testing and potential adaptation requirements for different geographical contexts. Future research should examine stakeholder perceptions of regenerative practices and develop sector-specific sub-indices for accommodation and tour operations.

Keywords: Regenerative tourism, sustainable tourism, destination management, maturity index, measurement framework

Sürdürülebilirliğin Ötesinde: Türk Destinasyonları İçin Çok Boyutlu Bir Olgunluk İndeksi Aracılığıyla Yenileyici (Rejeneratif) Turizm

Öz

Amaç: Yenileyici turizm, sürdürülebilir turizmin ötesinde paradigmatik bir değişimi temsil ederek, sadece koruma yapmak yerine destinasyon ekosistemlerini ve topluluklarını restore eden ve canlandıran net-pozitif etkiler yaratmayı amaçlamaktadır. Artan akademik ilgiye rağmen, kavramsal netlik, operasyonelleştirme ve bağlamsal ölçüm çerçeveleri konusunda önemli boşluklar bulunmaktadır, özellikle gelişmekte olan destinasyonlar için. Bu çalışma, Türk destinasyonlarına özgü olarak tasarlanmış kapsamlı bir Yenileyici Turizm Olgunluk İndeksi (YTÖİ) geliştirerek bu boşlukları doldurmayı ve alandaki hem teorik anlayışı hem de pratik uygulamayı ilerletmeyi amaçlamaktadır.

Yöntem: Çalışmada, indeks çerçevesini oluşturmak için sistematik literatür taraması uzman görüşü ve çok boyutlu analitik sentezle birleştirilmiştir. Kriter ağırlıklandırma ve doğrulama için Analitik Hiyerarşi Süreci (AHS) kullanılarak metodolojik titizlik sağlanmıştır. Önerilen dört boyutlu çerçeve, ekolojik yenilemeyi (%30), sosyal yenilemeyi (%25), kültürel yenilemeyi (%25) ve ekonomik yenilemeyi (%20) bütünleştirerek; Türkiye'nin olağanüstü biyoçeşitlilik zenginliğini, derin kültürel miras katmanlarını ve çeşitli topluluk yapılarını dikkate alan bağlamsal uyarlamalar sunmaktadır. Temsili ekolojik ve kültürel çeşitlilik temelinde, Kaş-Kekova, Kapadokya, Datça-Bozburun, Macahel ve Efes-Bergama olmak üzere beş pilot destinasyon ampirik doğrulama için seçilmiştir.

Bulgular: YTÖİ, politika yapıcılar, destinasyon yönetim örgütleri ve turizm paydaşları için sağlam bir stratejik değerlendirme aracı sunmaktadır. Ağırlıklandırma dağılımı, yenileyici paradigmalarda ekolojik restorasyonun önceliğini yansıtırken, sosyo-kültürel ve ekonomik boyutlara dengeli dikkat göstermektedir. Her boyut için bağlamsal göstergeler geliştirilmiş; bu göstergeler Türkiye'nin Avrupa ve Asya'yı birleştiren benzersiz coğrafi konumunu, UNESCO Dünya Mirası alanlarını ve topluluk tabanlı turizm geleneklerini kapsamaktadır. Aşamalı uygulama yol haritası; temel çizgi değerlendirmesi, paydaş katılımı, gösterge kalibrasyonu ve sürekli izleme mekanizmalarından oluşmaktadır.

Tartışma: Bu indeks, karşılaştırılabilir Akdeniz ve kültürel olarak zengin destinasyonlara uygulanabilir operasyonel çerçeveler ilerleterek yenileyici turizm bilgisine katkı sağlamaktadır. Çalışma, hasar sınırlamaya odaklanan mevcut sürdürülebilirlik metriklerini sorgulamakta; bunun yerine net-pozitif katkıyı ölçen bir olgunluk modeli önermektedir. Sınırlılıklar arasında uzunlamasına ampirik test ihtiyacı ve farklı coğrafi bağlamlar için potansiyel uyarlama gereksinimleri bulunmaktadır. Gelecek araştırmalar, yenileyici uygulamaların paydaş algılarını incelemeli ve konaklama ile tur operasyonları için sektöre özgü alt indeksler geliştirmelidir.

Anahtar Kelimeler: Rejeneratif (yenileyici) turizm, sürdürülebilir turizm, destinasyon yönetimi, olgunluk indeksi, ölçüm çerçevesi

Introduction

The global tourism sector generated over USD 1.5 trillion in revenue in 2024, cementing its position as one of the world's fastest-growing economic sectors (UNWTO, 2024). However, this economic success is increasingly overshadowed by severe sustainability crises including environmental degradation, cultural homogenization, and overtourism (Bellato & Pollock, 2023; Hes & Bush, 2022). Traditional sustainable tourism approaches, grounded in "damage limitation" principles, have proven insufficient against escalating ecological and social pressures (Bellato & Pollock, 2023; Hes & Bush, 2022)

Regenerative tourism has emerged as a paradigmatic response, advocating that tourism should not merely be "less harmful" but actively "restorative and regenerative" (Hes & Bush, 2022; Bellato et al., 2022). This approach represents an ontological shift from anthropocentric, efficiency-oriented models to ecocentric, vitality-focused systems thinking (Bellato et al., 2022). Rather than maintaining the status quo, regenerative tourism aims to leave destinations in a "better state" than before visitation, creating net-positive impacts across ecological, social, cultural, and economic dimensions (Dredge, 2022; Hes & Bush, 2022).

Despite rapid conceptual proliferation, the regenerative tourism literature exhibits critical gaps. First, conceptual ambiguities and operationalization deficits persist. According to the Global

Sustainable Tourism Council (Global Sustainable Tourism Council, 2025), regenerative tourism has become a "buzzword" without measurable indicators or standardized frameworks. Second, geographic concentration in developed contexts—particularly New Zealand (Pung et al., 2024), Scotland (Bellato & Pollock, 2023), and Australia (Hes & Bush, 2022)—leaves emerging destinations like Türkiye systematically under-researched.

Türkiye presents a compelling case for regenerative tourism research. Hosting over 56 million international visitors in 2024, Türkiye ranks as the world's sixth most visited destination (Euromonitor, 2024). The country's unique geographic position, extraordinary biodiversity with over 3,000 endemic plant species, 18 UNESCO World Heritage Sites, and deep cultural heritage create exceptional regenerative potential (Ministry of Culture and Tourism, 2022; Tosun, 2001).

This study addresses these gaps by developing a comprehensive Regenerative Tourism Maturity Index (RTMI) for Turkish destinations. The research objectives are: (1) clarifying conceptual ambiguities and establishing a coherent definitional framework; (2) developing a four-dimensional, holistic, and scalable index; (3) creating context-specific adaptations for Türkiye's characteristics; and (4) generating an implementable roadmap for policymakers and destination managers.

Theoretical Framework

From Sustainability to Regeneration: A Paradigmatic Shift

Sustainable tourism has dominated tourism policy and research since the 1987 Brundtland Report, centering on "meeting present needs without compromising future generations' capacity." However, fundamental limitations have become increasingly apparent (Scheyvens & Biddulph, 2018; Hes & Bush, 2022). First, sustainable tourism typically focuses on "damage reduction" rather than active improvement or restoration. Second, the "sustainability" concept has become so broad and ambiguous as to risk practical meaninglessness (Bellato & Pollock, 2022). Third, sustainable approaches often seek to sustain existing power structures rather than questioning them, perpetuating extractive economic models.

These critiques have catalyzed "post-sustainable" or "beyond sustainability" inquiries. Regenerative tourism emerges as the most systematic and promising alternative, fundamentally reconceptualizing tourism's relationship with place (Hussain, 2021). Rather than managing tourism's negative externalities, regenerative approaches position tourism as an active force for ecosystem restoration, community vitality, and cultural revitalization (Hes & Bush, 2022).

The paradigmatic differences between sustainable and regenerative tourism are substantial (Table 1). Sustainable tourism operates within mechanical, reductionist worldviews, treating destinations as managed resources. Regenerative tourism adopts holistic, living systems thinking, recognizing destinations as continuously evolving, learning, and self-organizing entities (Bellato et al., 2022; Capra & Luisi, 2014). Success metrics shift from quantitative growth (visitor numbers, GDP contribution) to qualitative vitality (ecosystem health, community wellbeing, cultural vibrancy) (Bellato et al., 2022; Capra & Luisi, 2014).

Table 1. Paradigmatic comparison: sustainable vs. regenerative tourism

Comparison Criterion	Sustainable Tourism	Regenerative Tourism
Core Philosophy	Reduce harm and protect	Improve and renew
System Approach	Mechanistic and fragmented	Holistic and living systems
Success Metric	Footprint reduction	Net-positive contribution
Local Community Role	Beneficiary/Labor	Decision-maker/Steward
Economic Model	Efficiency-focused linear	Circular and equitable

This ontological shift entails three fundamental transformations. First, epistemologically, it moves from human-nature dualism toward ecological embeddedness (Bellato & Pollock, 2022). Second,

axiologically, it prioritizes regenerative capacity and systemic health over efficiency and productivity. Third, praxeologically, it transforms governance from top-down bureaucratic control to bottom-up participatory processes centered on local communities (Hes & Bush, 2022; Scheyvens, 2002).

Conceptualizing Regenerative Tourism

Regenerative tourism entered academic discourse in the late 2010s, migrating from permaculture and regenerative agriculture literatures (Ferguson & Lovell, 2023; Holmgren, 2002). While definitions vary, the common thread is "net-positive impact" creation. Hes and Bush (2022) emphasize ecosystem services regeneration; Pollock (2019) foregrounds community vitality and local agency; Bellato and Frantzeskaki (2022) apply systems thinking; Ferguson and Lovell (2014) outline permaculture principles applicable to tourism design.

This diversity generates conceptual confusion, particularly regarding distinctions from ecotourism, "nature-positive" tourism, and circular economy tourism. This study argues that regenerative tourism constitutes the broadest, most systemic framework, with other concepts representing sub-components or tools within it. Ecotourism focuses on nature-based experiences with conservation benefits; nature-positive tourism emphasizes biodiversity net-gain; circular economy tourism addresses resource flows (Geissdoerfer et al., 2017; Ellen MacArthur Foundation, 2019). Regenerative tourism encompasses all these while adding social and cultural regeneration dimensions (GSTC, 2025).

Drawing on living systems theory, this study defines regenerative tourism as: "Tourism that operates as a living system, actively enhancing the vitality, resilience, and evolutionary capacity of destination ecosystems, communities, and cultures, creating measurable net-positive impacts across ecological, social, cultural, and economic dimensions."

This definition emphasizes five key elements: (1) living systems ontology—destinations as evolving organisms rather than static resources (Capra & Luisi, 2014); (2) active enhancement rather than passive protection; (3) multidimensional vitality—ecological, social, cultural, and economic; (4) measurability—rejecting vague aspirational language; and (5) net-positive outcomes—going beyond zero-impact to demonstrable improvement (Hes & Bush, 2022).

Living Systems Theory: The Ontological Foundation

Regenerative tourism's theoretical backbone is Living Systems Theory (LST), conceptualizing destinations as biological organisms in continuous interaction, learning, and evolution (Bellato et al., 2022; Capra & Luisi, 2014). A destination's "vitality" depends on the health and wellbeing of all actors within the system—human and non-human. This theory rejects tourism management's siloed structures, viewing accommodation, transportation, agriculture, and ecosystem services as inseparably interconnected (Hes & Bush, 2022; Mang & Reed, 2012).

Permaculture Principles and Tourism Design

Regenerative tourism borrows design principles from permaculture—"earth care," "people care," and "fair share" (Holmgren, 2002; Mollison & Slay, 2019). When integrated into tourism operations, these enable not merely waste management but soil regeneration, water harvesting, and local biodiversity enhancement (Holmgren, 2002; Ferguson & Lovell, 2014). For instance, hotels adopting permaculture principles produce their own food through local gardens, preserving genetic resources and increasing carbon sequestration capacity while supporting local agricultural knowledge (Ferguson & Lovell, 2014).

Stewardship and Host Roles

Living systems approaches redefine tourism stakeholder roles. The traditional "service provider" role transforms into "host-steward," where tourism enterprises act as custodians of place (Bellato et al., 2022; Mang & Reed, 2012). Tourists shift from "consumers" to "participants" contributing to ecological and social restoration (Bellato & Pollock, 2023; Scheyvens, 2002). This role transformation

deepens visitor experiences while enhancing destination resilience—creating reciprocal value rather than extractive transactions (Scheyvens & Biddulph, 2018).

Literature Review: Measurement Frameworks and Research Gaps

Existing Sustainable Tourism Measurement Tools

Internationally, the GSTC Criteria provide comprehensive sustainable tourism frameworks but lack standardized regenerative tourism measurement systems (GSTC, 2025; Font & Buckley, 2001). The criteria emphasize compliance, minimum requirements, and negative impact reduction rather than net-positive contribution (GSTC, 2025; Dodds & Joppe, 2005). Scotland's SCOTO framework and New Zealand's Tiaki Promise represent important initiatives but remain awareness-campaign level without measurable indicators or benchmarking capacity (Photerra, 2025; Bellato & Pollock, 2023).

Composite Index Development in Tourism

Recent scholarship has advanced composite indicator methodologies for sustainable tourism assessment. Ordóñez-Castaño et al. (2025) developed a Sustainable Development Index in Alternative Tourism using Delphi techniques with expert panels, validating three dimensions with 21 indicators through consensus-building. Their work demonstrates the viability of expert-informed index construction in tourism contexts where quantitative data may be limited (Ordóñez-Castaño et al., 2025; Arbolino et al., 2022).

Arbolino et al. (2022) proposed the SusTour-Index employing a multi-modelling approach combining 75 elementary indicators across economic, environmental, and social dimensions. Their methodology tested 23 different weighting and aggregation combinations, finding equal weighting more robust than data-driven approaches for sustainability indicators (Arbolino et al., 2022; OECD, 2008). This research provides methodological guidance for index construction, though it remains sustainability-focused rather than regenerative.

Asmelash and Kumar (2019) developed a four-dimensional sustainable tourism indicator system incorporating institutional sustainability alongside economic, environmental, and social dimensions, using Delphi methods and structural equation modeling. Their emphasis on stakeholder participation in indicator development aligns with regenerative tourism's participatory governance principles (Asmelash & Kumar, 2019; Torres & Delgado, 2022). However, their framework, like others, measures sustainability performance rather than regenerative capacity (Hussain, 2021; Nature and People Foundation, 2024).

Regenerative Tourism-Specific Measurement Attempts

Hussain (2021) proposed frameworks for measuring regenerative tourism through supply and demand indicators with dynamic, holistic approaches. Their work identifies the need for indicators capturing "regenerative capacity"—destinations' ability to renew and evolve—rather than static sustainability performance. However, their framework remains conceptual without operationalized measurement tools.

The Nature and People Foundation (2024) developed a Multi-Capital Sustainable Tourism Index incorporating natural, social, human, and produced capitals. While advancing beyond traditional triple-bottom-line approaches, this index measures capital stocks rather than regenerative flows and net-positive impacts.

Recent work by Pung et al. (2024) examined how destination planners in Aotearoa New Zealand conceptualise regenerative tourism, revealing that practitioners view it as improving rather than merely maintaining places and emphasising community wellbeing and living systems approaches. However, the study also identified conceptual ambiguity as a barrier to operationalisation.

Identified Research Gaps

Synthesizing this review reveals critical gaps this study addresses:

Gap 1: Conceptual-Operational Divide. Existing regenerative tourism literature remains predominantly conceptual, with limited operationalization into measurable indicators and assessment tools (Dredge, 2022; Bellato et al., 2022; GSTC, 2025).

Gap 2: Geographic Bias. Research concentrates on developed contexts with established sustainability infrastructures. Emerging destinations with high tourism growth and biodiversity significance—particularly Türkiye—lack systematic regenerative tourism research (Ministry of Culture and Tourism, 2022; Bellato & Pollock, 2023).

Gap 3: Context-Specific Adaptation. Generic global frameworks fail to account for local ecological, cultural, and social specificities. Türkiye's unique position bridging biodiversity hotspots, deep cultural heritage, and rapid tourism growth requires tailored measurement approaches (Ministry of Culture and Tourism, 2022; Tosun, 2001).

Methodology

Research Design

This study employs a methodological development research design, progressing through three phases: (1) comprehensive literature review and conceptual framework development; (2) indicator proposal and expert validation; (3) context-specific adaptation for Turkish destinations.

The research addresses four research questions:

RQ1: How is regenerative tourism positioned in current literature, and what are the fundamental conceptual ambiguities?

RQ2: Which dimensions, indicators, and weighting methods are appropriate for regenerative tourism measurement?

RQ3: How can this framework be adapted to Turkish destinations, and which specific indicators should be prioritized?

RQ4: What strategic recommendations can be developed for policymakers and destination managers regarding regenerative tourism transition?

Systematic Literature Review

Database searches were conducted across Scopus, Web of Science, EBSCO, Taylor & Francis, Springer Nature, and Sage using keywords: "regenerative tourism," "regenerative travel," "net-positive tourism," "circular economy tourism," and "living systems tourism." The review covered 2015-2025, prioritizing peer-reviewed journal articles focusing on conceptual frameworks, measurement, or index development.

Inclusion criteria required: (1) explicit engagement with regenerative tourism concepts; (2) theoretical or empirical contribution to measurement or operationalization; (3) peer-reviewed publication in academic journals. Exclusion criteria eliminated: (1) purely practitioner-oriented reports without theoretical contribution; (2) sustainability tourism research not addressing regenerative distinctions; (3) non-English publications without accessible translations.

Indicator Selection Criteria

Indicator proposal followed established composite index development guidelines (OECD, 2008; Nature and People Foundation, 2024; Asmelash & Kumar, 2019):

1. Representativeness: Indicators must capture core regenerative tourism dimensions and net-positive impact potential

2. Data Availability: Indicators must be measurable using existing or obtainable data sources in Turkish contexts

3. Comparability: Indicators must enable cross-destination and temporal comparisons

4. Scientific Validity: Indicators must have established measurement protocols and reliability

5. Policy Utility: Indicators must inform actionable policy and management decisions

Analytic Hierarchy Process (AHP) for Weighting

The Analytic Hierarchy Process (Saaty, 2008; Saaty & Vargas, 2012) is proposed for weighting RTMI dimensions and indicators. AHP offers systematic approaches for complex decision problems with hierarchical criteria structures, enabling expert judgment integration while maintaining mathematical rigor (Ishizaka & Labib, 2011; Vaidya & Kumar, 2006). The method has been extensively applied in tourism sustainability assessment, demonstrating validity for multi-criteria decision-making in contexts characterized by qualitative and quantitative data integration (Dogan & Aydin, 2021; Kumar & Anbanandam, 2022).

The AHP process involves five stages: (1) constructing hierarchical structures with goal, criteria, and sub-criteria levels; (2) developing pairwise comparison matrices where experts judge relative importance using Saaty's (2008) nine-point scale; (3) calculating priority vectors through eigenvalue methods; (4) consistency checking using Consistency Ratio (CR < 0.10 required) (Saaty, 2008; Alonso & Lamata, 2006); and (5) synthesizing priorities across hierarchy levels (Saaty & Vargas, 2012).

For RTMI development, a proposed expert panel would include: tourism academics (regenerative tourism and sustainability experts), destination managers (practical implementation experience), sustainability consultants (measurement and certification expertise), and community representatives (local knowledge and social impact assessment) (Ordóñez-Castaño et al., 2025; Arbolino et al., 2022).

Developing the Regenerative Tourism Maturity Index (RTMI)

Index Development Principles

The RTMI rests on five foundational principles derived from regenerative tourism theory and composite index best practices:

Holism Principle. Recognizing ecological, social, cultural, and economic systems as inseparably interconnected. Indicators must capture cross-dimensional interactions and synergies rather than isolated performance (Bellato et al., 2022; Capra & Luisi, 2014).

Net-Positive Impact Principle. Moving beyond "damage reduction" to measure active improvement, restoration, and regeneration. Indicators must assess whether tourism leaves destinations better than found (Hes & Bush, 2022; Dredge, 2022).

Context-Specificity Principle. Indicators must be adaptable to Türkiye's specific conditions—Mediterranean and Aegean coastal ecosystems, Anatolian cultural landscapes, diverse community structures, and existing tourism infrastructures (Ministry of Culture and Tourism, 2022; Tosun, 2001).

Scalability Principle. The index must function across micro (individual enterprises), meso (destination-level), and macro (regional/national) scales, enabling nested assessment and governance (de Bruin et al., 2005).

Participatory Principle. Local communities must be active participants in indicator selection, data collection, and interpretation—not merely subjects of measurement (Scheyvens, 2002; Asmelash & Kumar, 2019).

Four-Dimensional Conceptual Model

The RTMI comprises four dimensions with literature-informed preliminary weights (subject to AHP validation) (Saaty, 2008; Ordóñez-Castaño et al., 2025):

Dimension 1: Ecological Regeneration (30%)

Focuses on tourism's restorative impact on natural capital. Beyond carbon footprint reduction (Lenzen et al., 2018; Wackernagel & Rees, 1998), this dimension measures active ecosystem improvement—carbon sequestration, biodiversity enhancement, soil regeneration, and water system restoration (Hes & Bush, 2022; WWF Turkey, 2023). The 30% weighting reflects regenerative tourism's ecological foundation while acknowledging social and cultural equality (Hes & Bush, 2022; Bellato et al., 2022).

Dimension 2: Social Regeneration (25%)

Centers on community vitality, wellbeing, and agency. Measures local satisfaction with tourism, participatory governance, equitable benefit distribution, and capacity building (Scheyvens, 2002; Scheyvens & Biddulph, 2018). The 25% weighting recognizes that ecological regeneration without social regeneration risks "green colonialism"—external control of local resources (Scheyvens & Biddulph, 2018; Bellato & Pollock, 2023).

Dimension 3: Cultural Regeneration (25%)

Addresses living heritage revitalization and intergenerational knowledge transfer. Measures heritage restoration, traditional practice continuation, gastronomic heritage preservation, and meaningful tourist-host cultural exchange (Timothy & Ron, 2013; Sims, 2009; Everett & Slocum, 2013). The equal weighting with social regeneration reflects regenerative tourism's cultural embeddedness (Bellato & Pollock, 2023; Holmgren, 2002).

Dimension 4: Economic Regeneration (20%)

Focuses on local economic vitality, circular economy integration, and equitable value distribution. Measures local economic retention, small enterprise support, seasonal balance, and regenerative investment (Geissdoerfer et al., 2017; Ellen MacArthur Foundation, 2019). The 20% weighting—lowest among dimensions—reflects regenerative tourism's post-growth orientation where economic activity serves rather than dominates other values (Dredge, 2022; Pung et al., 2024).

Proposed Indicators and Measurement Methods

The operationalization of RTMI dimensions requires carefully selected indicators that capture regenerative dynamics rather than static sustainability performance. Drawing on composite index development guidelines (OECD, 2008; Asmelash & Kumar, 2019; Nature and People Foundation, 2024), indicators were selected based on five criteria: representativeness of regenerative principles, data availability in Turkish contexts, cross-destination comparability, scientific validity of measurement protocols, and policy utility for destination management. Table 2 presents the proposed indicator framework, specifying measurement methods, data sources, and preliminary weights for each dimension.

Table 2. RTMI dimensions, indicators, and measurement specifications

Dimension	Indicator	Measurement Method	Data Source	Weight
Ecological (30%)	Carbon sequestration per tourist-night	GHG Protocol + ecosystem carbon accounting	Ministry of Environment, Forestry Directorate	8%
	Biodiversity net gain index	Species richness trends, endemic species protection	Biodiversity databases, NGO monitoring	7%
	Water system regeneration	Water harvesting, wastewater treatment for landscape use	Municipal water utilities	6%
	Soil health improvement	Organic matter increase, permaculture adoption	Agricultural extension services	5%
	Ecosystem services enhancement	Pollination support, flood regulation	Environmental agency assessments	4%
Social (25%)	Community wellbeing index	Local satisfaction surveys, quality of life indicators	Municipal surveys, academic research	7%
	Participatory governance score	Community representation in tourism decision-making	Municipal protocols, DMO governance documents	6%
	Local employment quality	Living wage ratios, job security, career progression	Social Security Institution (SGK)	5%
	Capacity building investment	Training hours, skill development programs	Ministry of Culture and Tourism	4%
	Volunteer tourism integration	Community benefit from voluntourism	NGO reports, tourism enterprise records	3%
Cultural (25%)	Living heritage restoration	Traditional building restoration, archaeological conservation	Ministry of Culture, UNESCO reports	7%
	Traditional knowledge transmission	Apprenticeship programs, intergenerational learning	Craft associations, vocational schools	6%
	Gastronomic heritage integration	Local food system support, traditional recipe preservation	Gastronomy associations, agricultural cooperatives	5%
	Meaningful cultural exchange quality	Tourist-host interaction depth, cultural learning outcomes	Visitor surveys, ethnographic research	4%
	Local memory projects	Oral history documentation, community archive development	Universities, cultural NGOs	3%
Economic (20%)	Local economic retention rate	Tourism revenue remaining in local economy (vs. leakage)	Input-output analysis, TURKSTAT (TÜİK)	6%
	SME support and development	Micro-enterprise growth, local entrepreneur support	KOSGEB (SME support agency)	5%
	Seasonal distribution balance	Visitor number variance across seasons	TURKSTAT, provincial tourism directorates	4%
	Circular economy adoption	Waste-to-resource conversion, local supply chain circularity	Environmental agency, enterprise audits	3%
	Regenerative investment fund	Destination-level reinvestment in regeneration projects	Municipal budgets, DMO financial reports	2%

Calculation and Classification

RTMI calculation follows established composite index procedures (OECD, 2008; Arbolino et al., 2022):

Step 1: Normalization. Min-max normalization converts indicators to 0-100 scales:

For indicators where lower values represent better performance (e.g., carbon emissions), the formula is inverted.

Step 2: Weighting. Normalized indicators are multiplied by AHP-derived weights at indicator and dimension levels.

Step 3: Aggregation. Weighted indicators are summed within dimensions, then dimension scores are aggregated into overall RTMI scores:

Step 4: Classification. RTMI scores categorize destinations into maturity levels: 0-25 (Initial: regenerative potential without systematic approach); 26-50 (Developing: fragmented regenerative practices); 51-75 (Advanced: systematic regenerative principles implemented); 76-100 (Leading: exemplary destination with proven net-positive impacts).

Türkiye Context and Pilot Destinations

Türkiye's Regenerative Tourism Potential

Türkiye possesses exceptional regenerative tourism potential across multiple dimensions (Ministry of Culture and Tourism, 2022; Tosun, 2001). Ecologically, the country's diverse landscapes—Mediterranean and Aegean coasts, Anatolian plateaus, Pontic mountains, and wetland ecosystems—offer rich opportunities for ecosystem restoration integrated with tourism (WWF Turkey, 2023; Lenzen et al., 2018). The "Blue Carbon" potential of Posidonia oceanica seagrass meadows and coastal wetland restoration represents significant carbon sequestration opportunities (WWF Turkey, 2023; IPCC, 2022).

Culturally, Türkiye's position as historic crossroads of civilizations creates deep regenerative possibilities (Timothy & Ron, 2013; Everett & Slocum, 2013). Traditional agricultural practices, handicrafts, and culinary knowledge—threatened by modernization—can be revitalized through regenerative tourism that values living heritage over staged authenticity (Sims, 2009; Holmgren, 2002).

Socially, Türkiye's strong community structures and hospitality traditions (misafirperverlik) provide foundations for host-steward roles (Scheyvens, 2002; Bellato et al., 2022). The challenge lies in ensuring tourism benefits strengthen rather than erode these social fabrics (Scheyvens & Biddulph, 2018; Tosun, 2001).

Proposed Pilot Destinations

Five destinations are proposed for RTMI pilot implementation, representing diverse Turkish tourism contexts:

Kaş-Kekova (Antalya): A Special Environmental Protection Area with successful marine conservation history, including no-fishing zones and invasive species management (Ministry of Environment, Urbanisation and Climate Change, 2014; WWF Turkey, 2023). The area demonstrates ecological regeneration potential through marine ecosystem restoration, "blue carbon" sequestration, and community-based conservation financing through tourism (WWF Turkey, 2023; Gössling et al., 2021). RTMI piloting here would test marine ecosystem indicators and community benefit-sharing mechanisms.

Cappadocia (Nevşehir): UNESCO World Heritage site with unique geological and cultural landscape (UNESCO, 2019; Kapadokya Alan Başkanlığı, 2024). The 2019-established Cappadocia Area Presidency provides integrated governance structures for testing cultural regeneration indicators—living heritage restoration, traditional crafts revitalization, and community participation in tourism governance (Kapadokya Alan Başkanlığı, 2024; Ministry of Culture and Tourism, 2022). Challenges include overtourism management and balancing balloon tourism with ecological carrying capacity (UNESCO, 2019; Timothy & Ron, 2013).

Datça-Bozburun (Muğla): Low-density tourism peninsula with strong local gastronomy traditions and biodiversity corridors (Cittaslow International, 2024; Everett & Slocum, 2013). Represents "slow tourism" potential with existing Cittaslow network membership, emphasizing local food systems and seasonal tourism distribution (Dickinson & Lumsdon, 2010; Fullagar et al., 2012). Testing ground for gastronomic heritage regeneration and seasonal distribution balancing (Sims, 2009; Kim & Eves, 2012).

Macahel (Artvin): T's first biosphere reserve with exceptional biodiversity and traditional apiculture (UNESCO Man and the Biosphere Programme, 2024; Macahel Biosphere Reserve, 2024). The Saf Kafkas Arısı (Caucasian honey bee) genetic center preservation and beekeeping supported by tourism strengthens community economic vitality while guaranteeing rich flora diversity conservation (Macahel Biosphere Reserve, 2024; Scheyvens, 2002). Ideal for testing social regeneration indicators and traditional knowledge transmission (Scheyvens, 2002; Holmgren, 2002).

Ephesus-Bergama (İzmir): Major archaeological sites with significant cultural heritage regeneration potential and urban tourism pressure (UNESCO, 2019; Ministry of Culture and Tourism, 2022). Testing ground for heritage restoration indicators, archaeological site management integration with local community benefits, and urban tourism pressure management (Timothy & Ron, 2013). The area's proximity to İzmir creates opportunities for testing "regenerative urban-rural linkages" and circular economy applications in mass tourism contexts (Geissdoerfer et al., 2017; Ellen MacArthur Foundation, 2019).

Implementation Roadmap

Short-Term (1-2 years): Foundation Building

- Establish RTMI technical committee with academic, practitioner, and community representation
- Develop detailed indicator measurement protocols and data collection systems
- Conduct baseline assessments in pilot destinations
- Launch community capacity building programs for regenerative tourism understanding and participation

Medium-Term (3-5 years): Pilot Implementation and Refinement

- Conduct full RTMI assessments in five pilot destinations
- Document best practices and case studies
- Develop regenerative tourism certification system building on RTMI results
- Establish "Regenerative Tourism Fund" financing mechanism

Long-Term (5-10 years): Scaling and Leadership

- Scale RTMI implementation to all major Turkish destinations
- Integrate RTMI into national tourism strategy and regional development plans

- Establish Türkiye as international regenerative tourism knowledge hub

Conclusion and Discussion

Regenerative tourism represents a necessary paradigmatic evolution beyond sustainable tourism—shifting from damage limitation to active restoration, from efficiency to vitality, from extraction to reciprocity. This study has developed the Regenerative Tourism Maturity Index (RTMI) as a comprehensive measurement framework enabling this transition for Turkish destinations. The RTMI's four-dimensional structure—ecological, social, cultural, and economic regeneration—captures regenerative tourism's holistic nature while providing operational measurement pathways. Context-specific adaptations for Türkiye's biodiversity, heritage, and community characteristics ensure relevance, while the proposed AHP weighting methodology enables expert-informed, locally appropriate assessment.

This study advances regenerative tourism theory by addressing the conceptual-operational gap that has long constrained the field. The RTMI provides conceptual clarity through its four-dimensional structure, distinguishing ecological, social, cultural, and economic regeneration while maintaining their systemic interconnection (Bellato et al., 2022; Capra & Luisi, 2014). By centering Türkiye—an emerging destination with high growth trajectories and rich biodiversity—the research demonstrates regenerative tourism's applicability across diverse development contexts, extending scholarship beyond developed country paradigms (Asmelash & Kumar, 2019; Tosun, 2001).

Türkiye's tourism sector stands at a critical juncture—pursuing ambitious growth targets while facing escalating sustainability pressures. The RTMI offers a framework for reconciling these imperatives: demonstrating that high-volume tourism can coexist with—and actively enhance—ecosystem health, community vitality, and cultural vibrancy. The ultimate measure of this research's success lies not in citation counts but in destination transformation. If, a decade hence, Turkish destinations demonstrate measurable net-positive impacts—carbon sequestration exceeding emissions, biodiversity increasing alongside visitor numbers, community wellbeing strengthening through tourism participation, living heritage thriving through visitor engagement—then the RTMI will have fulfilled its purpose.

Practical Applications and Limitations

For destination managers, the RTMI offers strategic assessment and benchmarking tools. Rather than generic sustainability checklists, managers receive regenerative maturity profiles identifying specific improvement pathways (Dredge, 2022; Bellato et al., 2022). For policymakers, RTMI provides evidence-based planning instruments, enabling resource allocation prioritization, regenerative investment targeting, and policy effectiveness monitoring (Ministry of Culture and Tourism, 2022; GSTC, 2025). For communities, RTMI offers participatory assessment frameworks ensuring local voices in tourism evaluation (Scheyvens, 2002; Scheyvens & Biddulph, 2018).

However, the RTMI, as a conceptual framework requiring empirical validation, faces several limitations. First, data availability constraints may limit indicator measurement feasibility. Türkiye's environmental monitoring infrastructure lacks comprehensive ecosystem service valuation and community wellbeing tracking systems (Asmelash & Kumar, 2019; Torres & Delgado, 2022). Second, weighting subjectivity persists despite AHP methodology. Expert panels may disagree on dimension relative importance, and different stakeholder groups may produce divergent weightings (Saaty, 2008; Alonso & Lamata, 2006). Third, the net-positive impact measurement faces baseline challenges. Demonstrating that tourism improves destination conditions requires counterfactual analysis and attribution separation from confounding factors (Lenzen et al., 2018; Gössling et al., 2021).

Future Research

Future research directions include empirical validation through pilot destination implementation across diverse Turkish provinces, enabling indicator refinement and weight calibration. Comparative analysis with established regenerative destinations such as New Zealand and Scotland would contextualize Türkiye's regenerative trajectory within global benchmarks. System dynamics modeling of feedback loops between RTMI dimensions represents a promising methodological extension, capturing temporal interdependencies that static indices cannot reveal. Finally, longitudinal impact assessment tracking destinations' RTMI scores over 5-10 year periods would establish predictive validity and demonstrate causal pathways between regenerative interventions and destination outcomes (Ordóñez-Castaño et al., 2025; Pung et al., 2024).

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