

Original Research

## Cultural Cells: A Circular Economy-Driven Blueprint for Creative Tourism and Regional Revitalization in Greece

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### Abstract

This study proposes a novel creative tourism model integrating artistic creation with circular economy principles to foster regional revitalization in North Euboea, Greece. Employing a case study approach, it develops the concept of “Cultural Cells”—dedicated hubs for artists and art students specializing in painting and sculpture—designed to enhance tourism through immersive engagement. The methodology combines qualitative analysis of regional cultural and environmental assets with theoretical estimates of circular economy indicators, including material reuse and local job creation. Projected indicators based on secondary data were adopted for our case study in North Euboea and indicate that our model can reduce waste through material recycling and foster the generation of socioeconomic benefits via prolonged tourist stays and local collaboration. Overall, the results validate the model’s capacity to establish a regenerative cultural ecosystem that leverages North Euboea’s untapped potential, promoting sustainable tourism and cultural heritage preservation, and is scalable to other regions.



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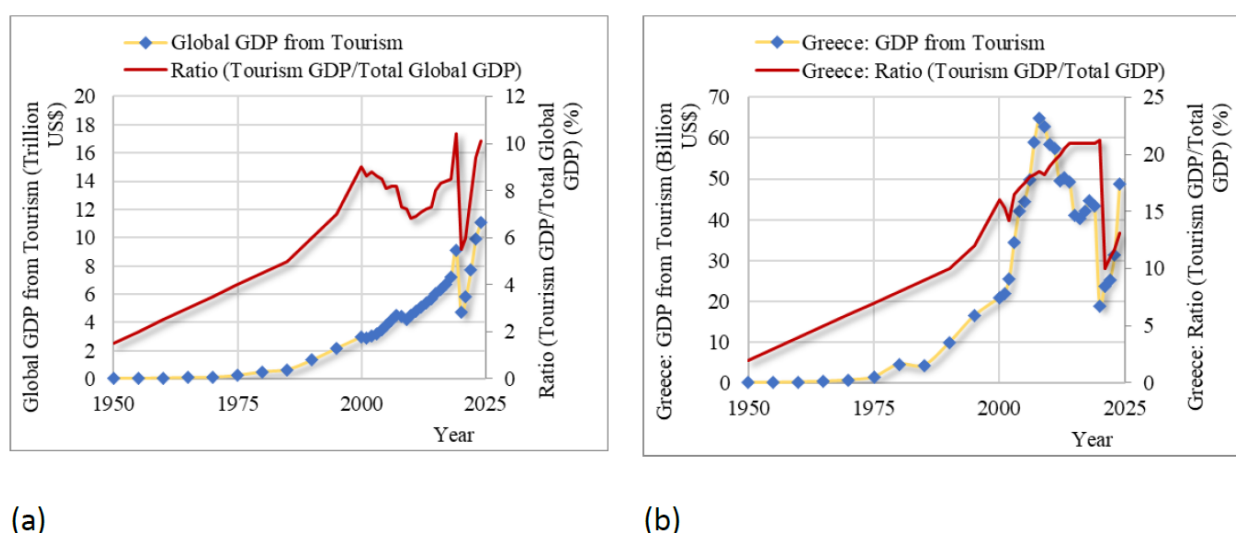
## Keywords

Creative tourism; circular economy; artistic creation; sustainable tourism; regional symbiosis; North Euboea; fine arts tourism; material reuse; regenerative development

## 1. Introduction

### 1.1 Prolegomena

Tourism, a cornerstone of the global economy, significantly shapes the prosperity of nations, contributing substantially to their GDP—as shown by long-term data trends (OECD, [1]; World Bank, n.d. [2]; Hellenic Statistical Authority, n.d. [3]; see Figure 1). In Greece, this impact is particularly pronounced, with tourism accounting for a considerable portion of national revenue due to the country's unparalleled natural beauty, rich history, and vibrant cultural heritage. However, the appeal of a destination lies not solely in its scenic vistas or archaeological treasures but also in the quality of the experience it offers visitors. The time spent in a place—measured by how meaningful, engaging, and memorable it is—ultimately determines its success as a tourism product.



**Figure 1** Timeline of the GPD from tourism and the ratio between GDP from tourism to total GDP (a) Global (b) Greece. Adapted from OECD [1]; World Bank (n.d.) [2]; Hellenic Statistical Authority (n.d.) [3].

For decades, Greek tourism has capitalized on its sun-and-sea model [4], with sun-soaked beaches and lively entertainment that draw millions annually. Yet, as global travel preferences evolve, there is a rising demand for more profound, more participatory experiences that engage visitors with local culture and foster personal growth [5, 6].

Inland regions of Greece, often overshadowed by the iconic islands (Figure 2a), have started to embrace alternative tourism models such as agrotourism, religious pilgrimages, and adventure activities (Figure 2b) [7].



(a)



(b)

**Figure 2** (a) The famous Greek island of Mykonos (b) Adventure activities in the Greek region.

These efforts, frequently supported by European Union initiatives [8], aim to balance development across the country and reduce dependency on saturated coastal markets. Despite these advances, many areas remain underutilized, with their potential constrained by inadequate infrastructure or lack of distinct offerings [9].

By focusing on North Euboea—a region of striking landscapes and historical depth yet marked by underdeveloped tourism possibilities—this study envisions a new paradigm where artistic expression becomes a catalytic force for economic revitalization, cultural enrichment, and sustainable growth [10]. Given the millions of creatives worldwide seeking meaningful travel, this model promises to redefine how tourism fosters connection and inspiration [11].

The target of our research concept is to incorporate circular economy principles [12]. These are defined as an economic system that replaces the traditional linear 'take-make-dispose' model with strategies for reducing, reusing, recycling, and recovering materials across the micro (e.g., products and consumers), meso (e.g., eco-industrial networks), and macro (e.g., regional) levels, aiming to achieve environmental quality, economic prosperity, and social equity for current and future generations [13]. Within this framework, the model emphasizes the reuse and recycling of artistic materials, the adoption of sustainable construction practices, and, ultimately, the promotion of regional symbiosis [14]. Embedding our concept within North Euboea's local ecosystem enables the initiative to foster resource efficiency and community collaboration, thus positioning the region as a model for regenerative tourism.

## 1.2 Literature Review

Recent academic work has examined how both creativity and sustainability reshape tourism practices worldwide. The shift in creative tourism toward a more participatory form of travel focused on co-creation, authentic experiences, and engagement with local communities is clearly documented in the analyses by Richards [15], Duxbury and Richards [16], and Benhaida et al. [17]. Collectively, this body of work traces the evolution of creative tourism from modest artistic workshops to wider community-based practices that reflect the principles of sustainable development.

Parallel studies on the circular economy aspect of tourism, such as those by Rodríguez, Florido and Jacob [18], have reviewed how the core principles of circular economy- reduce, reuse and recycle- have been incorporated into tourism activities, while emphasising the persistent need for models that extend beyond basic resource efficiency.

However, despite the emerging interest in both domains, research integrating the cultural dimensions of tourism with the principles of the circular economy remains limited. As noted by Bellato and Pollock [19], current studies tend to interpret sustainability primarily through environmental efficiency, while overlooking its social and cultural regeneration aspects. They call instead for a holistic approach based on community well-being and place-based relationships. Consequently, the link between creative cultural participation and circular-regenerative practices remains underexplored.

### **1.3 Introducing Cultural Cells**

The present study responds to this gap by introducing the Cultural Cells model- an innovative framework aligned with the concept of “Worth-living Integrated Growth” as was defined by Dimitris Rokos [20-22]. The Cultural Cells are conceived as purpose-built spaces that empower artists and art enthusiasts to create while immersed in a destination’s unique environment [23, 24], linking creative production to local cultural assets and circular economy practices to promote community-based regeneration.

Existing literature on Greek tourism highlights the persistent underutilization of inland regions and calls for alternative models like agrotourism and adventure activities (e.g., EU-funded initiatives under the European Regional Development Fund). Studies on experiential tourism [25, 26] emphasize the participatory engagement and environmental sustainability; however, they rarely address logistical barriers faced by artists or apply closed-loop material reuse within artistic contexts to foster economic symbiosis, particularly in disaster-prone, underdeveloped areas like North Euboea.

Furthermore, no prior work has proposed modular “Cultural Cells” as regenerative hubs that target global artists while simultaneously quantifying circularity metrics. This study aims to propose a conceptual model of creative tourism based on circular economy principles, analyzing its applicability through the case study of the northern region of Euboea, Greece. This model provides a blueprint for artistic immersion as a catalyst for balanced and eco-friendly regional development, responding simultaneously to the pressures of coastal overtourism and the shortage of fine-arts infrastructure in inland Greece.

### **1.4 Research Objectives and Questions**

This study adopts a conceptual and case-study approach to propose and evaluate an innovative tourism model, with its objectives articulated as testable Research Questions (RQs) assessed through qualitative analysis of literature, regional data, and projected indicators. These RQs address the identified gap in integrating fine arts-based creative tourism with circular economy principles for regional revitalization:

- **RQ1:** How can "Cultural Cells" be designed as modular hubs to overcome logistical barriers for artists and enhance development in underutilized regions?

- **RQ2:** To what extent can embedding Cultural Cells within North Euboea’s ecosystem stimulate economic and cultural regeneration, as measured through indicators such as job creation and revenue reinvestment, and material reuse?
- **RQ3:** What is the global market potential and scalability of this model for attracting creative tourists, and how does it differ from existing experiential tourism models in fostering more extended visitor engagement and environmental symbiosis?

These research questions are examined through the proposed framework, its case study application, and associated circularity metrics, forming a foundation for future empirical validation (e.g., via pilot implementations). Derived hypotheses include that:

1. Cultural Cells will increase tourism’s contribution to regional GDP by extending visitor stay.
2. Circular material practices within each hub will ensure high levels of local sourcing and reuse compliance.

## 2. Theoretical Framework

### 2.1 Conceptual Model

To realize this vision, the proposed model leverages the intrinsic allure of Greece’s landscapes and cultural heritage to create an environment conducive to artistic production [27]. The cornerstone of this approach is the “Cultural Cell,” a modular infrastructure designed to host artists, art students, and creative visitors. These hubs could provide fully equipped workspaces tailored to the practical needs of fine arts, particularly painting and sculpture, which often require specialized materials and tools that are challenging to transport. For instance, painters need easels, canvases, and diverse paints, while sculptors require heavy mediums like stone or metal, as well as casting and carving equipment—items impractical for air travel or short-term acquisition (Figure 3) [28-30].



(a)



(b)

**Figure 3** (a) 1881 painting by Marie Bashkirtseff, *In the Studio*, depicts an art school life drawing session, Dnipropetrovsk State Art Museum, Dnipropetrovsk, Ukraine [31] (b) First author and sculptor G.-Fivos Sargentis, working on a prototype (2023).

The design logic involves identifying the essential components of a Cultural Cell and standardizing their design to ensure both accessibility and functionality. Each hub includes a central workspace, auxiliary studios for specific crafts, and eco-friendly accommodations that support extended creative stays [32]. Unlike conventional tourism infrastructure focused on transient visits, these cells emphasize prolonged engagement, acknowledging that artistic creation requires time, focus, and immersion [33]. By situating these facilities within inspiring natural and historical settings, the model redefines the tourist experience, transforming it from mere passive observation to active participation, and aligns it with the broader global shift toward experiential and sustainable travel [34].

This approach also considers the logistical barriers commonly faced by artists, such as sourcing materials abroad and finding suitable workspaces. By providing turnkey solutions—pre-equipped studios and on-site resources—Cultural Cells removes these obstacles, enabling creators to focus on their craft. The framework is designed to be adaptable, allowing regions to tailor the concept to their unique assets while maintaining a consistent standard of quality and accessibility.

Cultural Cells adopt circular economy strategies in both artistic production and infrastructure development. Artistic materials, such as paints, clay, and sculpting resins, are sourced locally where feasible, prioritizing biodegradable or recyclable options. A material reuse program encourages artists to repurpose leftover supplies—such as mixing residual paints into new works or recycling plaster scraps into new molds—reducing waste by an estimated 30–40% [35]. Construction of Cultural Cells utilizes regional stone and timber, designed for disassembly to enable future reuse, in line with circular construction principles [36]. These hubs are integrated into a regional symbiosis network, collaborating with local businesses to meet material and service demands, thereby creating a closed-loop system that enhances resource efficiency and supports economic regeneration.

The framework is intentionally designed to be adaptable, enabling each region to tailor the Cultural Cell model to its distinctive cultural, environmental, and economic assets, while maintaining a consistent standard of quality, accessibility, and sustainability. This adaptability introduces a logical transition from the model's conceptual design to its practical implementation, as demonstrated in the North Euboea case study.

Building on this conceptual synthesis, the following section analyses the methodological design, detailing the process by which the model was developed, and outlines the indicators.

## **2.2 Outline of Methodology**

This propositional research adopts an innovative conceptual design, focusing more on creating a theoretical model rather than evaluating empirical hypotheses. Its core lies in combining the principles of creative tourism and the circular economy within a regenerative development framework, following a qualitative and propositional logic.

The development of the Cultural Cells framework followed a sequential conceptual logic: first, identifying and addressing the persistent challenges in underdeveloped cultural destinations; subsequently, integrating creative-participation strategies; then reforming these into operational components; and finally, projecting potential social, economic, and environmental outcomes.

The conceptual model was constructed through an iterative process beginning with an assessment of Greece's tourism challenges, particularly in underdeveloped inland regions like North Euboea, where traditional models fail to capitalize on natural and cultural assets.

This led to identifying the demand for experiential tourism among artists and creatives, drawing on the need as the “Worth-living” (as it was defined by Dimitris Rokos [20]) associated with the need for “dead time,” i.e., time during which the artist—free from the stress of everyday life and the pressures of the modern lifestyle—can be open to new stimuli that may inspire them in an appropriate environment, while also having all the necessary infrastructure to be creative (the proper tools, workshop, etc.).

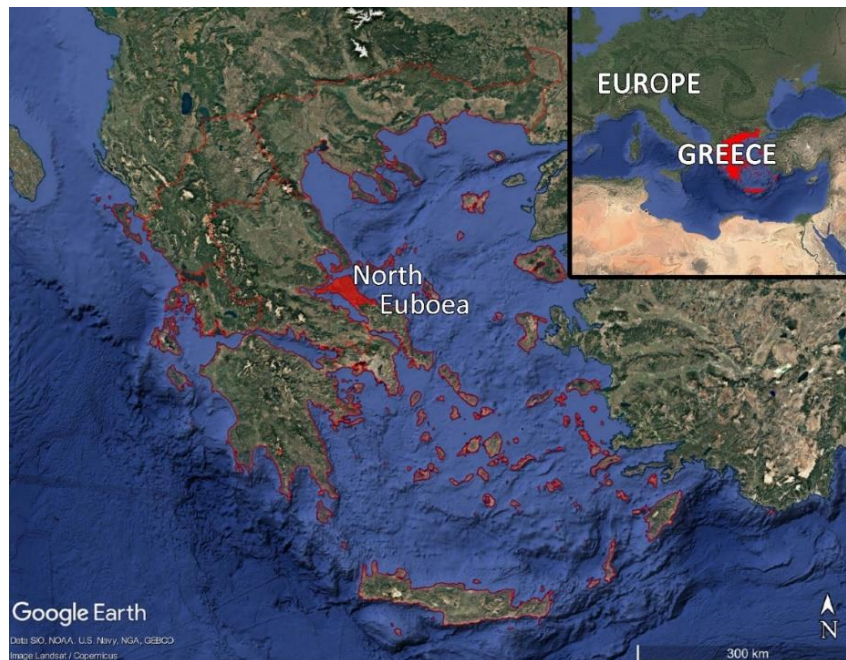
The model then integrated circular economy principles by mapping artistic needs—such as specialized tools and materials—against sustainable practices like local sourcing and waste reduction, resulting in modular components designed for adaptability and symbiosis with regional ecosystems. Finally, scalability was ensured by tailoring the blueprint to North Euboea's unique attributes while allowing replication elsewhere.

The projected performance indicators, including visitor numbers, economic impact, artist satisfaction, material reuse rates, and local job creation, were selected to align with regenerative development goals and circular economy metrics, providing quantifiable measures of success across economic, environmental, and social dimensions. These indicators justify the model's viability by enabling tracking of tangible outcomes, such as enhanced community pride via cultural engagement, while drawing on established benchmarks from EU initiatives and sustainable tourism literature to ensure they are realistic, measurable, and indicative of long-term regional revitalization.

The analysis relies on secondary data drawn from European Union and UNWTO tourism reports, academic studies, and sustainability benchmarks, which were selected to adapt to the principles of the circular economy. As no primary data were collected, the projected indicators were derived through comparative benchmarking and theoretical reasoning.

### **3. Case Study. North Euboea-Greece**

North Euboea, a verdant and rugged region in central Greece (Figure 4), serves as the ideal proving ground for this initiative.



**Figure 4** The location of Greece and North Euboea [37, 38].

Despite its proximity to Athens—approximately two to three hours by road or bus—the area remains largely overlooked [39] by mainstream tourism, which gravitates toward Greece’s famous islands [40]. Its landscape, a tapestry of rolling hills, pristine beaches, and dense forests [41], has endured natural challenges [42, 43], including recent wildfires [44] and floods [45-47], yet retains an enduring beauty [48]. Historically, North Euboea traces its cultural lineage to prehistoric times and the Trojan War, with ancient settlements like Kerinthos [49] contributing to its storied past [50]. This rich backdrop, interwoven with mythology and natural splendor, offers a profound source of inspiration for artistic exploration [51-55].

The region’s artistic significance is further underscored by its influence on notable creators. Sofia Kanellopoulou, also known as Sofia Vari, heavily influenced by Henry Moore [56], often stated the significance of her Greek origins and frequent visits to her birth country in shaping her view on art in general and art style in particular. She and her husband, renowned artist Fernando Botero [57], also spent considerable time in their house in Euboea, which further deepened her connection to her heritage and influenced both of their work. Among other renowned artists associated with the area, one may find Dimitris Mytaras [58], a prominent figure in Greek Expressionism, and Giannis Skarimpas [59], poet and writer, who have similarly found resonance in the area’s unique character, highlighting its potential as a muse for creative minds.

### **3.1 North Euboea: The Ideal Setting for Creative Tourism**

Several factors make North Euboea a prime candidate for Cultural Cells. Its mild climate, defined by abundant sunshine, creates ideal conditions for outdoor artistic work year-round. The region’s accessibility, facilitated by its proximity to Athens International Airport, makes travel easy for international visitors. Additionally, North Euboea’s underdeveloped tourism sector offers opportunities for innovation, as areas such as Aidipsos, Limni, Agia Anna, and others have seen only localized growth [60]. By introducing a novel tourism product centered on creativity, the region can

attract a new demographic—artists, students, and cultural enthusiasts—while diversifying its economic base [61, 62].

The mythological and historical narratives embedded in North Euboea’s landscape further enhance its appeal [63]. Stories like that of Hercules and Lichas, immortalized in artworks by Antonio Canova and Pavel Sorokin (Figure 5), tie the region to universal themes of human struggle and triumph, resonating with artists seeking to explore timeless motifs. These elements, combined with the area’s natural serenity, foster an environment where creativity can flourish.



(a)



(b)

**Figure 5** (a) “Hercules and Lichas”, a statue by Antonio Canova (c. 1795-1815) in the original language: “Erocole e Lica” [64]; (b) Oil painting by Pavel Sorokin (c. 1849) [65].

### 3.2 Target Audience

The global market for this initiative is substantial [66]. UNESCO estimates that there are approximately 220 million tertiary students worldwide, with arts disciplines accounting for roughly 4-5% of enrollment, translating to 8.8-11 million art students [67]. Within this group, painters and sculptors likely number between 4.5 and 7.2 million [68-71], encompassing professionals, students, and serious hobbyists. When factoring in amateur artists and creative travelers, the potential audience grows significantly. Cultural Cells would cater to this diverse group by offering professional-grade facilities for serious creators and inclusive activities for casual participants, ensuring broad appeal.

## 4. Cultural Cells: Blueprint for Artistic Tourism

### 4.1 Conceptual Foundation

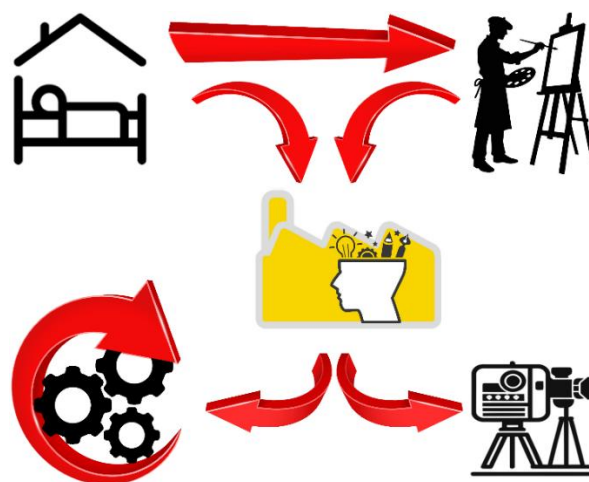
Cultural Cells signify a paradigm shift in tourism, merging artistic production with cultural immersion to further enhance a dynamic environment while fostering a participatory experience. Contrary to traditional tourism models centered around sightseeing or relaxation, these hubs prioritize creativity as the cornerstone of the visitor experience.

By providing artists with the tools and spaces needed to work in situ, Cultural Cells transform destinations into living studios, where the act of creation becomes a shared experience between visitors, locals, and the environment [72].

The concept draws inspiration from North Euboea's unique attributes—its luminous skies, storied past, and tranquil landscapes—but is designed to be replicable across diverse regions. Each Cultural Cell serves as a nexus of artistic activity, cultural dialogue, and community engagement, fostering connections that enrich both visitors and residents. This model adheres to the principles of sustainable tourism, prioritizing eco-friendly infrastructure, local involvement, and long-term economic benefits [73].

A Cultural Cell is a thoughtfully planned ecosystem that integrates creativity, sustainability, and circular design. It comprises several interconnected components that, together, foster artistic production, environmental responsibility, and cultural exchange. Each element is both functional and symbolic—serving as a node in a broader network of creative regeneration.

Figure 6 illustrates the operational flow of the Cultural Cells model. In the upper left, the hosting facilities are depicted, accommodating visiting artists. The artist may work either individually (as shown in the top-right image) or collaboratively (as represented by the workshop at the center of the diagram). In this shared setting, artists communicate and exchange ideas and materials, fostering collective creativity. The Central Hub thus functions as the focal point for the circulation of both concepts and resources. In the lower right, the diagram presents the digital communication facilities, where artworks can be digitized, promoted, and shared [74].



**Figure 6** Flow diagram of the Cultural Cells' operation. Top left: hosting facilities. Top right: individual work option. Center: Central Hub, collaborative workshop. Bottom left: Collaboration, exchange of ideas and materials. Bottom right: digital communication facilities for digitizing artworks.

#### **4.2 Central Hub: Circularity at the Core**

At the heart of the Cultural Cell lies the Central Hub, a vibrant nucleus that fosters creativity while minimizing material waste. Far more than a mere reception area or gallery, the hub is a multifunctional space constructed from modular, locally sourced stone and timber. Its design promotes sustainability through engineered disassembly, allowing materials to be recovered and reused over time, thus significantly reducing the environmental footprint. Artists benefit from access to a shared repository of reusable palettes, recyclable canvases, and surplus materials—resources that encourage collaboration and actively promote material reuse in daily practice.

Taking advantage of the region's mild climate, an Open-Air Hub provides a semi-outdoor space for painting, sculpting, and sketching. This open configuration invites artists into a direct relationship with the surrounding landscape, allowing nature itself to shape their creative process.

Dedicated studios support a variety of crafts, offering artists professional-grade equipment and spaces tailored to their specific needs. These include a metal workshop for sculptural casting, pottery studios for clay work, and multifunctional rooms for jewelry-making and woodworking. On-site production eliminates logistical hurdles, allowing artists to move seamlessly from conception to completion.

A standout feature of the Cultural Cell is its Digital Capture Studio, where art meets advanced technology. The Digital Capture Studio naturally blends art and technology to empower creators by transforming their physical works into dynamic digital formats. This innovative workspace features a professional photography suite with adjustable LED lighting and high-resolution cameras to capture paintings with vivid accuracy, enabling artists to share portfolio-quality images on social media or with galleries. A dedicated 3D scanning bay uses advanced laser technology to convert sculptures into precise digital models, ideal for archiving, virtual previews, or remote collaboration. Complementing these tools is a high-precision 3D printer capable of producing detailed miniatures or prototypes from materials like resin, offering artists portable, tangible reproductions for exhibitions or experimentation [75]. By enabling crisp documentation, global connectivity, and creative versatility, this studio allows visiting artists in North Euboea to engage with audiences worldwide [76], merging traditional craftsmanship with modern innovation to enrich the cultural tourism experience [77].

To combat waste and foster creative reuse, the Cultural Cell features a residue exchange system—both digital and physical—where leftover materials, tools, or even unfinished works can be traded among artists. This promotes circularity not just in materials, but in ideas, turning potential waste into a collaborative opportunity.

Guesthouses and camping areas reflect the Cell's ecological ethos through their circular design approach [78-81]. Incorporating modular architecture, reclaimed wood, and recycled aggregates [82, 83], these accommodations are designed for adaptability and minimal impact. Each unit carries a material passport detailing the durability and lifecycle of its components to aid in future reuse and adaptation. Solar panels, rainwater harvesting [34, 84-86], and artisan-made furnishings crafted from upcycled materials highlight the project's emphasis on self-sufficiency and local collaboration [87, 88]. For those seeking a deeper connection with nature, an eco-friendly campsite offers a curated wilderness experience, featuring structured plots, modern amenities, and communal spaces that nurture both solitude and camaraderie.

Flexibility is a guiding principle of the Cultural Cell. While each iteration maintains a consistent standard of quality, its materials and configurations are adapted to local conditions. In North Euboea, for instance, the architecture draws on regional aesthetics through the use of stone and timber. In other settings, locally available resources and environmental conditions will shape alternative yet equally sustainable expressions of the Cell.

#### **4.3 Operational Model**

Cultural Cells operate as hybrid spaces, serving both as creative retreats for artists and cultural attractions for tourists [89]. Artists can reserve studio time, access materials, and participate in workshops or mentorship programs, while visitors can engage through guided tours, exhibitions, and hands-on classes. A small theater within the hub could host performances, lectures, or film screenings, adding diversity to the experience.

The operational model promotes collaboration and inclusivity. Artists work both individually and in groups, sharing ideas and techniques in the communal hub. Local artisans contribute by teaching traditional crafts or maintaining the facilities, creating a symbiotic relationship between the Cultural Cell and the community. Revenue is generated through studio rentals, accommodation fees, ticketed events, and a percentage of art sales, ensuring financial sustainability [90].

#### **4.4 Visitor Experience**

The defining feature of Cultural Cells is their ability to elevate the quality of time spent in a destination. Artistic creation inherently requires focus and time, encouraging visitors to stay longer than they would for conventional tourism activities. A painter might spend days capturing the play of light on Euboea's hills, while a sculptor could dedicate weeks to shaping a piece inspired by local mythology. This extended engagement fosters a deeper connection to the place, transforming tourists into temporary residents who contribute to the local culture [91, 92].

For non-artists, Cultural Cells offer a glimpse into the creative process. Visitors can observe artists at work, attend gallery openings, or join introductory workshops to try their hand at painting or pottery. These activities cater to a broad audience, from curious travelers to families seeking educational experiences [93], ensuring the hubs remain vibrant and accessible. The communal hub serves as a social anchor, where stories are shared, ideas are born, and cultural boundaries are bridged.

#### **4.5 Economic and Cultural Benefits, Circularity Indicators, and Regional Impact**

The introduction of Cultural Cells in North Euboea promises significant economic and cultural dividends [94, 95]. By attracting a global audience of artists and creative tourists, the hubs generate revenue through direct spending on accommodations, workshops, and local services. The operation of each cell creates jobs for managers, artisans, and support staff, addressing the region's high unemployment rates [3, 96]. Additionally, the sale of artworks produced on-site provides income for artists and a revenue stream for the hub, fostering a sustainable creative economy [97, 98].

Through art, Cultural Cells significantly strengthen local identity by celebrating North Euboea's heritage and landscapes. Exhibitions and workshops highlight the region's mythology, history, and natural beauty, reinforcing its distinct character. By engaging local communities—whether as

artisans, guides, or participants—the hubs build pride and ownership, countering the alienation often associated with mass tourism. Over time, North Euboea could gain recognition as a global hub for artistic tourism, attracting additional investment and fostering cultural exchange.

4.6 Justification and Derivation of Theoretical Estimates

By integrating into North Euboea’s economic fabric, Cultural Cells establish a regenerative system in which tourism revenue supports local suppliers, artisans, and conservation initiatives, fostering a symbiotic relationship that revitalizes the region [99]. This study, however, presents a theoretical blueprint, emphasizing conceptual design over projected indicators based on secondary data. The generality of the circular strategies reflects the exploratory nature of this proposal. Future work will develop these theoretical estimates through pilot implementations, incorporating on-site measurements (e.g., waste audits, stakeholder surveys) to ensure theoretical validation and refine the model for practical application and robust impact assessment.

As a blueprint, the theoretical estimates outlined in this study are conceptually derived, drawing on secondary benchmarks from comparable tourism and creative-sector projects rather than site-specific primary data.

Derivations employ conservative scaling methods, such as economic multipliers from WTTC reports and waste audit data from existing art residencies, adjusted for North Euboea’s regional context. These parameters align with RQ2 and RQ3 and support future empirical testing via pilot studies. Assumptions include moderate occupancy and regional unemployment baselines [3]. Table 1 outlines each target, the projected indicators based on secondary data sources, the calculation logic, and the projected application.

**Table 1** Target, benchmark sources, supporting literature, calculation logic, and projected regional application.

| Target                                                        | Description                                             | Benchmark source and supporting literature                                                                                                                                                                                          |
|---------------------------------------------------------------|---------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 40% Artistic materials Reused/Recycled                        | Progressive waste diversion in hubs via reuse programs. | Ellen MacArthur Foundation reports show 35-45% diversion in creative reuse initiatives (e.g., Fab Labs) [100]; Related UNESCO reports [101] indicate that art studio audits show 30% baseline reducible via mixing/exchange.        |
| 70% Construction materials locally sourced/designed for reuse | Proportion of eco-build inputs and recovery potential.  | Circle Economy modular projects achieve 65-80% in tourism infrastructure (e.g., Alpine eco-huts) [102]; Cradle-to-Cradle certifications average 70% recovery [103].                                                                 |
| 50 Direct or indirect positions per site                      | Jobs in management, artisans, and support staff.        | WTTC (2023) tourism multipliers: 1 job per 100-200 visitors in experiential sites [104]; Res Artis (2021) art residencies create 30-60 roles/hub [105] (e.g., Oberpfälzer Künstlerhaus, Germany: 45 jobs for 5,000 visitors [106]). |
| 20% Revenue reinvested into                                   | Portion of hub earnings for                             | UNWTO (2022) sustainable tourism models reinvest 15-25% (e.g., Costa Rica eco-lodges: 18% to                                                                                                                                        |

|                            |                                                                        |                                                                                                                                                                                                                                                                                                     |
|----------------------------|------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Community-Led initiatives  | reforestation/crafts training.                                         | conservation) [26]; EU Interreg projects average 20% community allocation [107, 108].                                                                                                                                                                                                               |
| 100% Locally Produced Food | The region has a well-developed agricultural and livestock production. | Previous studies [39, 42] have demonstrated that the area’s agricultural and livestock output is sufficient to meet the dietary needs of approximately 225,000—300,000 people. Therefore, the local production capacity is more than adequate to support the nutritional demands of Cultural Cells. |

**4.7 Scalability and Global Relevance**

While North Euboea is the initial focal point, the Cultural Cell model is inherently scalable, applicable to any region with cultural or natural assets. Coastal villages, mountain retreats, or urban fringes could adapt the concept to their unique contexts, creating a network of creative hubs worldwide. The global demand for experiential tourism—evidenced by the millions of artists and creative travelers—ensures a robust market. At the same time, the model’s emphasis on sustainability aligns with international priorities for responsible development [109].

**5. Implementation: Opportunities and Challenges**

**5.1 Strategic Planning**

Launching Cultural Cells requires a phased approach, starting with a pilot project in North Euboea. Securing funding is the first step in the process, potentially through a mix of public grants, private investment, and EU tourism programs. Site selection is equally critical, prioritizing areas with scenic beauty, accessibility, and community support. Partnerships with local governments, art schools, and tourism boards will streamline development and ensure alignment with regional goals [110].

The pilot hub would serve as a proof-of-concept, demonstrating the model’s viability before scaling it to other areas. Key performance indicators—such as visitor numbers, economic impact, and artist satisfaction—would guide refinements to the design and operations. A robust marketing strategy that leverages digital platforms, art fairs, and travel expos is vital for attracting international guests and cementing North Euboea as a creative destination.

**5.2 Promotional Strategies**

Effective marketing is vital to Cultural Cells' success. A dedicated website and social media presence would showcase the hubs’ facilities, highlight resident artists, and share stories of creative journeys in North Euboea [111]. Collaborations with international art schools could facilitate student exchanges and residencies, while partnerships with travel influencers and cultural organizations would broaden visibility. Hosting annual art festivals or open-studio events could draw crowds, positioning the region as a vibrant cultural hub [112, 113].

**5.3 Addressing Challenges**

Several challenges must be navigated to ensure success. Costs linked with the initial infrastructure, including eco-friendly accommodations and specialized studios, may be substantial,

requiring careful financial planning [114]. Engaging local communities is essential to prevent resistance and foster inclusivity, which could be achieved through workshops, job opportunities, and cultural events. Maintaining high standards across multiple hubs as the model scales reasonably demands rigorous oversight and training.

Given the region's vulnerability to natural disasters, environmental sustainability is an essential consideration. Bioclimatic design, renewable energy, and low-impact materials will minimize the hubs' footprint, while reforestation and conservation programs could enhance their positive impact. Finally, competition from established art destinations like Florence or Provence necessitates a clear value proposition—North Euboea's unique blend of accessibility, affordability, and authentic Greek charm.

#### **5.4 Future Vision**

Looking ahead, Cultural Cells could evolve into a global network, each hub reflecting its region's distinct identity while sharing a commitment to creativity and sustainability. North Euboea's success could inspire similar initiatives in other Greek areas, from Crete to the Peloponnese, creating a national brand for artistic tourism. By fostering innovation, collaboration, and cultural pride, this model has the potential to redefine how the world experiences travel, art, and community.

#### **5.5 Limitations of the research**

1. While this study proposes an innovative blueprint for Cultural Cells, it is subject to several methodological and conceptual limitations that merit acknowledgment. Methodologically, the research is conceptual and desk-based, relying on secondary data sources [87] and literature-derived projections rather than primary empirical testing, such as on-site pilots or longitudinal surveys in North Euboea. The absence of fieldwork means that the theoretical estimates—though justified through benchmarks and scaling models—remain projective and unvalidated, potentially overestimating outcomes due to unaccounted variables such as seasonal tourism fluctuations or macroeconomic shocks (e.g., post-COVID recovery).
2. Conceptual limitations include the model's focus on the fine arts (painting/sculpture), which may undervalue broader creative disciplines or non-artist stakeholders, thereby limiting generalizability beyond regions with similar cultural and geographic profiles (e.g., North Euboea's mythology and proximity to Athens). The integration of circular economy principles draws on generalized frameworks that potentially overlook context-specific constraints, including Greece's regulatory barriers for modular construction and cultural resistance to symbiotic networks in rural areas. Challenges identified earlier—such as community engagement risks and exposure to natural hazards—further constrain feasibility, as they are framed propositionally rather than through quantitative risk modeling.
3. These limitations stem from the study's exploratory nature, which addresses RQ1-RQ3 at a conceptual level. Future research could mitigate them through empirical pilot testing or mixed-methods evaluations. Nonetheless, these limitations highlight the blueprint's role as a foundational proposition, inviting iterative refinement toward real-world implementation.

## 6. Discussion

Redefining tourism in North Euboea, the Cultural Cells model blends artistic expression with circular-economy principles, positioning the region as a pioneer in sustainable regenerative development. These hubs empower artists and visitors to co-create within a circular ecosystem, utilizing reusable materials, sustainable infrastructure, and regional synergies to reduce environmental impact while maximizing community benefits. By encouraging longer stays and celebrating local heritage, Cultural Cells generate economic vitality—measured through circularity targets, such as material reuse and local job creation, while preserving North Euboea's natural and cultural assets for future generations.

North Euboea, with its breathtaking vistas, storied past, and proximity to Athens, stands as an ideal canvas for this initiative [115]. The region's underutilized tourism potential, coupled with its high unemployment rates, underscores the urgency of innovative solutions. Cultural Cells address these challenges by attracting a global audience of creatives—estimated at millions of painters, sculptors, and enthusiasts—who seek immersive experiences. These hubs not only generate economic activity through accommodations, workshops, and art sales but also create jobs for locals, from artisans to support staff, fostering a self-sustaining ecosystem.

The model's emphasis on prolonged stays sets it apart from conventional tourism, which often prioritizes fleeting visits [116]. Artistic creation demands time, encouraging visitors to linger, explore, and invest in the region's culture. This extended engagement amplifies economic benefits, as travelers contribute more to local services, ranging from dining to transportation. Moreover, by showcasing North Euboea's mythology, light, and landscapes through art, Cultural Cells elevate the region's global profile, positioning it as a beacon for cultural tourism [117].

Sustainability lies at the heart of this vision. Eco-friendly accommodations, bioclimatic design, and low-impact materials ensure that Cultural Cells harmonize with the environment, preserving North Euboea's natural beauty for future generations. Community involvement further strengthens this approach, as locals contribute as guides, craftspeople, or participants in cultural events, fostering pride and ownership. Unlike mass tourism, which can erode local identity, this model celebrates it, weaving regional narratives into the creative process.

Given Cultural Cells' scalability, their impact could extend well beyond North Euboea. Regions worldwide, from rural hamlets to urban outskirts, could adapt the concept, tailoring it to their unique assets. A network of such hubs could redefine global tourism, prioritizing authenticity over commodification. In Greece, areas like Crete or Thessaly could follow suit, creating a national tapestry of creative destinations that draw discerning travelers seeking substance over spectacle.

Challenges, such as securing initial funding or competing with established art hubs, can be overcome through strategic partnerships and targeted marketing. Collaborations with art schools, tourism boards, and digital platforms can amplify visibility, while public-private investments can bridge financial gaps. North Euboea's accessibility and affordability give it a competitive edge.

At its core, Cultural Cells' vision embodies a philosophy of tourism as a shared journey—one that nurtures creativity, strengthens communities, and honors place. By transforming North Euboea into a sanctuary for artistic expression, this initiative not only revitalizes a region but also sets a strong precedent for how tourism can inspire, connect, and endure. It invites the world to see Greece not merely as a destination, but as a canvas for imagination, where every brushstroke, every sculpted form, tells a story of renewal and possibility.

## 7. Conclusions

The Cultural Cells model reimagines tourism in North Euboea by integrating artistic expression with circular economy principles to promote sustainable and regenerative development. Its objectives have been achieved by showcasing how creative tourism can act as a catalyst for place-oriented revitalization by utilizing cultural production, environmental consciousness, and local participation.

The proposed model pioneers a new form of creative tourism, positioning North Euboea as a sanctuary for artistic creation and attracting international artists and enthusiasts through immersive and participatory experiences that go beyond conventional tourism. It also integrates circular-economy principles through material reuse, sustainable construction, and local synergies, aiming to achieve approximately 40% material reuse and 70% of construction materials sourced locally or reused within three years of implementation.

It contributes to economic revitalization by extending visitor stays and strengthening local economies through accommodations, workshops, and art-related commerce, generating around 50 direct jobs per hub and reinvesting 20% of revenue into community-based initiatives. In addition, the Cultural Cells foster cultural and social enrichment by celebrating local cultural heritage and landscapes, enhancing community pride, and countering the alienation associated with mass tourism through inclusive workshops and engagement.

Furthermore, the framework supports environmental sustainability by promoting eco-friendly accommodation, bioclimatic design, and conservation initiatives such as reforestation.

Finally, its scalability underscores its global relevance, as the model can be replicated in other regions to establish a network of creative hubs that focuses on authenticity and the philosophy of “Worth-living Integrated Development”. Beyond its practical value, the Cultural Cells model offers a theoretical contribution by linking creative tourism with the circular economy within a regenerative development context.

Its main limitations lie in the study's conceptual nature and the absence of empirical pilot data, both of which should be addressed in future studies. Subsequent studies, therefore, should evaluate pilot applications of the framework, assessing measurable impacts on employment, resource efficiency, and community well-being while also exploring its applicability across different cultural and environmental contexts.

Overall, the proposed model of Cultural Cells positions North Euboea as a reference point for artistic and regenerative tourism, exemplifying how creativity, ecology, and community engagement can converge to foster long-term regional revitalization and sustainable cultural development.

## Author Contributions

Conceptualization, G.-F.S.; Methodology, G.-F.S.; Software, G.-F.S.; Validation, G.-F.S., N.P.; Formal Analysis, G.-F.S., N.P.; Investigation, G.-F.S., N.P.; Resources, G.-F.S., N.P.; Data Curation, G.-F.S.; Writing-Original Draft Preparation, G.-F.S., N.P.; Writing-Review & Editing, G.-F.S., N.P.; Visualization, G.-F.S.; Supervision, n/a.; Project Administration, n/a; Funding Acquisition, n/a.

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The authors have declared that no competing interests exist.

## Data Availability Statement

The data sets used have been retrieved from the sources described in detail in the text.

## AI-Assisted Technologies Statement

Artificial intelligence (AI) tools were used solely for basic grammar correction and language refinement in the preparation of this manuscript. Specifically, OpenAI's ChatGPT was employed to improve the readability and linguistic clarity of the English text. All scientific content, data interpretation, and conclusions were developed independently by the author. The authors have thoroughly reviewed and edited the AI assisted text to ensure its accuracy and accept full responsibility for the content of the manuscript.

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