

## Article

# Co-Evaluating Landscape as a Driver for Territorial Regeneration: The Industrial Archaeology of the Noto–Pachino Railway (Italy)

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## Abstract

This contribution investigates the potential and the catalytic role of landscape and its collective values in driving territorial regeneration processes. Specifically, it reflects on how the public dimension of landscape—conceived as a shared space of identity, memory, and future-oriented practices—can serve as a strategic lever for initiating local development pathways. Local communities, as custodians of the knowledge and practices that have historically shaped cultural landscapes, are increasingly recognized by territorial policies for their participatory and generative capacity. Building on these premises, the research explores the case of the disused Noto–Pachino railway line, located in south-eastern Sicily (Italy), as a living laboratory for testing collaborative strategies aimed at enhancing landscape value and fostering territorial cohesion. The ongoing investigation has identified several civic and grassroots initiatives seeking to reactivate this dormant infrastructure, repositioning it as a strategic asset for sustainable territorial enjoyment, cultural heritage promotion, and the revitalization of marginalized areas. The main objective of the study is to define an “action lab”—a collaborative framework capable of aligning diverse visions, actors, and resources—through which landscape can be reimagined as both a driver of social innovation and a foundational tool for shaping inclusive and resilient development scenarios.

**Keywords:** landscape regeneration; cultural heritage management; industrial archaeology; disused railway infrastructure; participatory action research; community-based planning; territorial development; social innovation; collaborative governance; sustainable rural development; Noto–Pachino railway (Italy)



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## 1. Introduction

Nowadays, regenerating contemporary landscapes is seen as a very central topic in territorial policies and international research, especially in places where sustainability, community participation, and innovative design intersect. Abandoned infrastructures, like old railways no longer in use, can be seen as strategic opportunities to rethink how built spaces, landscapes, and local communities relate to each other, supporting ecological, social, and cultural revitalization [1–4]. Recent international studies have emphasized that regeneration processes increasingly rely on inclusive governance models and the adaptive reuse of disused assets as catalysts for social–ecological resilience [5,6].

The notion of “landscape commons” is emerging here as a conceptual framework that links environmental concerns with community life: the landscape is no longer just an aesthetic or economic resource but a shared cultural asset that is collectively managed and gov-

erned in innovative ways [5–11]. This reconceptualization highlights the landscape as both a collective value and a human right, emphasizing its social and public dimensions [12,13].

This approach aligns with the European Landscape Convention (2000), as well as its subsequent updates (2020–2025), which encourages participatory and multi-level management, recognizing local communities as custodians and co-producers of landscape values. At the same time, global frameworks—such as UNESCO’s “Culture: Future of Humanity” and the UN New Urban Agenda—reinforce the view of landscape as a shared responsibility, particularly where local actors play an active role in shaping territorial resilience [13,14].

In this perspective, abandoned railways represent emblematic examples of how industrial archaeology can generate new public values and activate processes of social innovation. From being forgotten structures, they can become linear parks, cultural corridors, and ecological connectors that foster participation, mobility, and local identity [4,15–19]. Comparative studies have shown that disused railways can be transformed into sustainable mobility networks and heritage corridors, promoting both ecological continuity and cultural tourism [20,21].

Recent cases show that repurposing these tracks can support not only environmental and landscape restoration, but also community cohesion, slow tourism, and local entrepreneurship [22–26]. Similar international initiatives—such as the reuse of obsolete railway corridors in China and Kenya—demonstrate how adaptive design can integrate heritage preservation, slow mobility, and cultural continuity in both urban and rural contexts [27].

Regeneration, however, is not limited to physical transformation. It requires an integrated, transdisciplinary approach combining ecological design, social innovation, and participatory planning [28–33]. Collaboration among communities, institutions, and local businesses is essential, following co-design and Participatory Action Research (PAR) methods.

Seeing landscape as a common good is therefore not only a theoretical concept, but also a practical strategy capable of addressing ecological resilience, social cohesion, and territorial innovation [34–40]. In this regard, regenerative design principles offer an operational framework to connect environmental and social goals, promoting adaptive, circular and inclusive territorial transformations [41–43].

Against this background, the Noto–Pachino railway in southeastern Sicily provides an exemplary context to explore how abandoned infrastructures can act as catalysts for landscape regeneration and place-based development through co-evaluation with local stakeholders. This 27.5-km line, built in 1935 and decommissioned in 1986, crosses areas with exceptional environmental and cultural value, from the UNESCO-listed Baroque city of Noto to the coastal village of Pachino, passing through the Vendicari Nature Reserve, the Eloro archaeological site, and several disused rural stations.

Although neglected for decades, it has recently re-emerged as a potential driver for sustainable tourism, ecological mobility, and the valorization of local traditions and products [4,16,18]. Comparable examples from UNESCO-listed railway heritage sites—such as the Semmering Railway (Austria), the Rhaetian Railway in the Albula/Bernina landscapes (Switzerland/Italy), and the Darjeeling Himalayan Railway (India) [44–46]—illustrate how industrial railways can be reinterpreted as cultural landscapes integrating engineering heritage and community life, offering valuable international parallels for the Noto–Pachino case.

This study aims to explore the potential of regenerating the Noto–Pachino railway by identifying and assessing adaptive reuse scenarios through a co-evaluation process, consistent with the landscape’s intrinsic values and the community’s vision for the future. Using a collaborative, multi-actor, and iterative approach, the research examines how

abandoned infrastructures can be reimagined as strategic assets for territorial cohesion, cultural continuity, and sustainable innovation in non-core Mediterranean areas [18,47–49].

The research is ongoing: the first two methodological phases—context analysis and stakeholder engagement—have been completed, while the third phase, focused on co-design and assessment, is currently in progress. The framework used here is based on Participatory Action Research (PAR) principles, which conceive co-evaluation as a circular and iterative process embedding collaboration at every stage.

The Noto–Pachino railway, although inactive since 1986, still holds symbolic meaning and latent functions for the territory. Its revival—through reuse of station buildings and reinterpretation of the route—represents not only a technical project but a cultural and social process that redefines local identity and collective memory [50–57].

These ideas have been applied through specific participatory tools and phases, informing both co-design and co-assessment of the Noto–Pachino railway’s valorization scenarios [30,33,58,59]. Ultimately, the study contributes to the international discourse on how landscape-based co-evaluation can serve as a driver of social innovation, heritage conservation, and territorial regeneration in the Mediterranean and beyond.

## 2. Literature Review

The term greenway was first introduced by Whyte in 1959 [60], although comprehensive compilations of greenway initiatives only emerged in the 1990s [61,62]. Early seminal works focused on both American and European contexts, proposing methods derived from landscape ecology to address issues of habitat fragmentation and landscape connectivity [63]. The concept evolved toward the idea of linear planning tools integrating multiple compatible land uses, balancing ecological objectives with cultural and social values [64,65].

A key moment in greenway research occurred in 1995, when *Landscape and Urban Planning* published a Special Issue reviewing the existing literature and categorizing studies according to their primary approach to greenway planning [66,67]. In that context, the following definition was proposed: “Greenways are networks of linear spaces planned, designed, and managed for multiple purposes, including ecological, recreational, cultural, aesthetic, or other compatible uses aligned with the concept of sustainable land use” [65].

The literature identifies several key benefits associated with greenways:

- Functional connectivity and biodiversity enhancement across multiple spatial levels [68–72];
- Versatility, supporting multifunctional and multi-objective management [65,73];
- Recreational, cultural, and heritage opportunities, providing public enjoyment while preserving historical assets [70,74–78];
- Promotion of community participation, enhancing social inclusion through participatory planning processes [70,79–82].

Greenways now form part of the broader concept of Green Infrastructure (GI), encompassing canal towpaths, historic trails, livestock routes, and rail-trails—railway lines converted for non-motorized use [43]. Interdisciplinary research has explored GI as a planning instrument to integrate environmental considerations into regional development, improving connectivity and ecosystem services (ES) [83–91].

While ecological, recreational, and economic dimensions of GI are widely recognized, recent scholarship emphasizes the need to investigate socio-cultural preferences and user perceptions to design greenways that are meaningful to local communities [92,93].

Railways converted into greenways represent a particularly valuable subset of GI. They are recognized not only for their recreational function—especially in rural areas [83,94–96]—but also for their role in supporting sustainable transport and territorial

regeneration, as demonstrated by Spain's Vías Verdes initiative [97–101]. These projects often yield co-benefits in terms of employment, environmental protection, and heritage promotion [101]. In Spain, the Fundación de Ferrocarriles Españoles (FFE) launched the Programa Vías Verdes in the 1990s to systematically convert disused railways, creating over 2800 km of trails to date [101,102].

Beyond European contexts, international experiences confirm the universal value of railway heritage as a driver of sustainable regeneration:

- Uganda Railway Heritage (Kenya): the establishment of the Uganda Railway Museum in Mombasa illustrates how transport heritage can foster cultural tourism and community education [103].
- China: in cities such as Beijing, Guangzhou, and Shanghai, obsolete railway corridors have been transformed into greenways and cultural parks integrating ecological design, heritage preservation, and slow mobility [20].
- Semmering Railway (Austria): completed in 1854 and listed as UNESCO World Heritage (1998), it exemplifies the integration of engineering innovation with Alpine landscape values [44].
- Darjeeling Himalayan Railway (India): recognized for its Outstanding Universal Value, it operates as a living heritage system where transport, tourism, and community coexist [46].
- Rhaetian Railway in the Albula/Bernina Landscapes (Switzerland/Italy): a trans-boundary case highlighting cross-border cooperation and sustainable heritage management [45].
- Trans-Iranian Railway (Iran): listed by UNESCO in 2021, it demonstrates how industrial heritage can narrate modernization processes across cultural and environmental gradients [104].

Across these contexts, the following common principles emerge: recognition of disused railways as linear cultural landscapes combining tangible and intangible heritage; participatory governance and multi-actor collaboration as essential for adaptive reuse; integration of heritage reuse, sustainable mobility, and local development; and balancing conservation and innovation through adaptive management frameworks.

By aligning with these international models, the Noto–Pachino railway initiative can position itself within a transnational discourse that connects Mediterranean cultural landscapes with best practices in railway heritage regeneration.

### 3. Case Study

The Noto–Pachino railway represents a paradigmatic case within broader European strategies for reactivating disused infrastructure as drivers of sustainable territorial development. In line with the European Green Deal and the principles of the Landscape Convention, the case provides a testbed for experimenting with community-driven models of regeneration that integrate cultural heritage, ecological connectivity, and social innovation.

The Noto–Pachino railway (Italy) stretches for approximately 26 km across the south-eastern part of Sicily, within the historic Val di Noto region, traversing a landscape layered with historical, cultural, and environmental richness (Figure 1). The case study explores not only the morphological and historical features of the railway but also its latent potential as a connective cultural infrastructure within a Mediterranean rural landscape, in line with contemporary frameworks of cultural landscape regeneration.

Opened in 1935 and decommissioned in 1986, the railway once served as a crucial link between inland areas and the coast, facilitating the movement of people and goods, particularly local agricultural products. Its historical trajectory mirrors broader socio-

economic transformations that affected southern Italy in the 20th century—especially processes of rural depopulation and infrastructural marginalization.



**Figure 1.** The Noto–Pachino railway and its surrounding landscape. 1. Sicily: case study location (Source: authors' elaboration).

Today, although no longer in use, the railway retains a strong territorial legibility and represents a potential asset for the regeneration of the Ibleo landscape (Figures 2 and 3). The route connects the Baroque city of Noto—the heart of the UNESCO site “Late Baroque Towns of the Val di Noto”—with the coastal-agricultural village of Pachino, renowned for its high-quality local produce, including IGP tomatoes, native grape varieties, and citrus fruits.

The linear morphology of the railway defines a “landscape corridor,” functioning as a perceptive and ecological connector that crosses multiple territorial layers—urban, rural, and coastal—embodying the multi-scalar structure typical of Mediterranean cultural landscapes.

The area preserves a dense built heritage, scattered across towns, agricultural villages, and rural spaces: churches, farmhouses, wine presses, olive oil mills, fortified estates, along with historical railway infrastructure—stations, signal boxes, bridges, tunnels—that

punctuate the line and contribute significantly to local identity. These infrastructural remains should be interpreted as part of a broader “infrastructural heritage” system, whose value lies in its ability to generate new relational meanings.



**Figure 2.** Current state of the Noto–Pachino railway (Source: authors’ elaboration). The landscape along the railway is an integral part of the Val di Noto cultural system, recognized by UNESCO for its exceptional demonstration of Baroque art and architecture, which flourished after the 1693 earthquake.



**Figure 3.** The universal value of landscape Noto–Pachino. (Source: authors’ elaboration).

Agriculturally, the landscape is characterized by traditional crops—citrus trees, almond trees, carob, vineyards, and olive groves—organized through an intricate network of dry-stone walls. These create an orderly, grid-like structure across the land, reflecting centuries of agronomic practices and vernacular construction techniques. Beyond their material presence, such elements embody intangible knowledge, tied to soil care, water management, and seasonal cycles of production.

The railway also skirts areas of high ecological value, including the Vendicari Nature Reserve, an internationally significant coastal ecosystem that hosts protected species and serves as a stopover for migratory birds. The tight relationship between natural and cultural heritage reinforces the railway’s identity as part of a Mediterranean cultural landscape, shaped over time by human-nature interactions.

However, in recent decades, the territory has experienced significant changes: traditional agricultural practices have declined, while tourism and urban growth, especially

along the coast, have intensified. These pressures have fragmented the historic landscape and led to the degradation of numerous identity-bearing elements, including the railway structures themselves. The absence of integrated valorization policies and the poor maintenance of historic infrastructure have further contributed to the functional marginalization of inland areas.

In this context, the Noto–Pachino railway can be regarded as a strategic cultural infrastructure, capable of connecting cultural, environmental, and economic systems within the Ibleo territory. Its largely intact route constitutes a “line of memory” that can reinterpret spatial relationships and act as a catalyst for regeneration processes.

The railway’s key values can be summarized as follows:

- Historical and identity value: it reflects twentieth-century infrastructure policies and the effort to connect agricultural hinterlands with coastal towns. The railway’s memory remains alive in the collective consciousness of local communities.
- Landscape value: the line passes through high-quality agricultural, natural, and coastal landscapes, providing a continuous perceptual corridor linking urban, rural, and environmental areas.
- Social and economic value: disused stations and signal boxes represent tangible assets that could be repurposed for new uses, such as dispersed hospitality, cultural spaces, or environmental education centers. Conversion into a greenway or cycling route could stimulate local micro-economies and experiential tourism.
- Intangible and community value: the railway preserves social practices, memories, and narratives that strengthen a sense of belonging and could support territorial storytelling and heritage community initiatives.

The potential transformation of the line into a multifunctional greenway or bike path fits within a vision of the landscape as a common good and green infrastructure, able to host ecological, social, educational, and touristic functions. This vision is further strengthened by the proximity to the European cycling network EuroVelo 5—Via Romea (Francigena), which crosses southeastern Sicily and serves as a major international corridor for slow mobility. Integrating the railway route with the EuroVelo network could enhance the international visibility of the Ibleo landscape and attract slow, sustainable tourism distributed throughout the year.

Ultimately, the Noto–Pachino railway is not merely a piece of industrial archaeology to be preserved, but a living resource around which new territorial visions can be built—visions that bring together historical heritage, landscape quality, and the resilience of local systems.

#### 4. Materials and Methods

The methodological framework combines principles of Participatory Action Research (PAR) [105,106] with the place-based and adaptive logic of landscape-oriented planning [52], adapting them to the specific socio-cultural conditions of Mediterranean rural territories characterized by fragility and underutilized heritage assets.

In the present research, PAR is not adopted merely as a participatory technique but as a comprehensive framework that connects scientific knowledge with local practices through continuous interaction, reflection, and action. The approach explicitly integrates qualitative, visual, and spatial analysis tools to ensure both analytical depth and operational robustness, for stronger methodological clarity.

The reconversion of the historic Noto–Pachino railway represents a paradigmatic opportunity to explore how local communities can reactivate marginal landscapes and reinterpret disused infrastructures as landscape commons.

The case study functions as a living laboratory where collective narratives, spatial practices, and design actions intertwine; thus, it provides an ideal testing ground for the validation and possible replication of the PAR-Lab model.

Beyond proposing technical solutions, the initiative assumes a broader cultural and social significance, functioning as a territorial laboratory that strengthens belonging, fosters collaboration, and enhances collective responsibility for local development [29,105,106].

The Noto–Pachino enhancement project is structured into five interrelated operational phases, corresponding to the progressive construction of shared knowledge and action (Table 1).

**Table 1.** Operational Phases of the Participatory Action Research (PAR) Process.

Phase	Time Frame	Main Actions	Tools & Methods	Participants	Outputs/Indicators
1. Co-formulation of research questions	November 2023–February 2024	Identification of needs and expectations	Focus groups (4), semi-structured interviews (15), questionnaires (45), participant observation	≈65 actors	Shared agenda; thematic synthesis; trust index
2. Participatory exploration of the context	February–May 2024	Territorial immersion and mapping	Walkscapes (4), participatory mapping labs (3), visual workshops	≈50 actors	12 maps; 5 storyboards; perception survey
3. Building a territorial laboratory	June 2024–ongoing	Establishment of a dialogue hub	Thematic tables (5), cooperation pacts, digital platform	≈40 actors	Charter of Landscape Values (draft); governance map
4. Experimentation and field action (planned)	2026 (Planned)	Pilot reuse and cultural actions	Events, art residencies, tactical urbanism	≈30 actors	Prototypes; attendance; feedback reports
5. Co-evaluation and re-learning (planned)	2026 (Planned)	Participatory evaluation	Focus groups; surveys; logbooks	≈35 actors	Impact report; transfer guidelines

Each phase is conceived as an iterative and adaptive process, supported by feedback loops to guarantee reflection, refinement, and transferability to other territorial contexts [107,108]. Quantitative and qualitative data are integrated through triangulation, ensuring both scientific rigor and participatory depth.

Phases 1 and 2 of the process (Nov 2023–May 2024) have already been completed, producing a detailed socio-territorial diagnosis and a shared framework of objectives. Phase 3—Building the Territorial Laboratory—is currently ongoing, while Phases 4 and 5, concerning field experimentation and co-evaluation, are planned for the 2025–2026 period. This updated timeline reflects the adaptive and iterative nature of the PAR-Lab model, in which the phases partially overlap to ensure continuity and progressive learning.

In this perspective, the methodology is grounded in the Participatory Action Research Laboratory (PAR-Lab) model, which integrates knowledge co-production with practical experimentation, involving citizens, associations, public institutions, and researchers at each stage.

The PAR-Lab draws inspiration from international experiences of community-based heritage reuse, such as the Semmering Railway (Austria) [44] and the Rhaetian Railway (Switzerland/Italy) [45], where adaptive and participatory management models link technical innovation with collective stewardship [13,15].

This method follows a dialogical and transformative process, where research is conducted with the community rather than on it, aiming to co-generate context-based solutions and activate local capabilities through collective learning [19,34].

Such an approach fosters reflexivity and empowerment, connecting scientific research and territorial practice in a way that produces tangible impacts and strengthens social capital [107,108].

This approach is particularly effective in territories marked by social, economic, and institutional fragilities, where the building of social capital and the promotion of self-organization are essential tools for empowerment and resilience [23,48,49].

All qualitative and spatial analyses were conducted using NVivo v.14 (Lumivero Ltd., Denver, CO, USA) and QGIS 3.34 (QGIS Development Team, Zürich, Switzerland). Photographic and audio documentation were collected using a Nikon D750 (Nikon Corp., Tokyo, Japan) and a Zoom H4n Pro recorder (Zoom Corporation, Tokyo, Japan), respectively.

The following subsections describe the tools, participants, and outputs associated with each phase.

#### 4.1. Co-Formulation of Research Questions

The first phase focuses on collaboratively identifying the needs, expectations, and underlying questions of the local community. Tools such as thematic focus groups, narrative interviews, public meetings, and participation in local events were employed to engage directly with community members. This initial stage allows for deep listening and helps establish a common ground between researchers and local stakeholders.

The main aim here is to uncover the territory's needs, recognize latent community desires, and co-create a shared agenda of research questions and priorities. In this phase, the researcher acts more as an exploratory mediator rather than a prescriptive authority. Solutions are not imposed from above; instead, the approach emphasizes active listening, attentive to both explicit requests and subtle, often hidden, concerns. The method upholds the principle of co-generating research questions, ensuring they emerge organically from dialogue with the community rather than being externally dictated.

Key instruments employed included:

- Thematic focus groups with citizens, local committees, and associations.
- Semi-structured narrative interviews with key informants, such as former railway workers, farmers, and local activists.
- Exploratory questionnaires distributed during community events.
- Participant observation in informal settings, including fairs, markets, and local gathering spots.
- Researcher field journals for recording insights, emotions, and cognitive dissonances.

Expected outcomes of this stage were:

- A preliminary mapping of perceived problems and available resources.
- Emergence of local "visions of the future," including divergent perspectives.
- Building trust and fostering openness to collaboration.

#### 4.2. Participatory Exploration of the Context

The next step involved a deep immersion into the territory, aiming to understand its values, underlying tensions, local potentials, and ongoing dynamics. Knowledge was gathered not as an abstract observation, but through walking explorations, thematic workshops, participatory mapping exercises, and public discussion moments. Visual tools, such as community maps, became central instruments to allow different perspectives to surface and to highlight alternative scenarios.

The main goal of this phase was to develop a shared, profound understanding of the territory, its internal relationships, and its subtle tensions, fostering mechanisms for collective knowledge creation.

Methodologically, the approach relied on reflective openness to the territory. Researchers did not simply “study” the context from a distance; rather, they engaged with it, encouraging mutual learning between researchers and local residents. The inside-out perspective helped reveal both sedimented memories and emerging forms of territorial identity.

Key tools and methods included:

- Walkscape and exploratory walks: walking along the former railway path, guided by local experts—long-time residents, farmers, hunters, and local activists.
- Participatory mapping: collecting experiential data through mental maps, sketches, geo-referenced notes, and photographs to identify “hotspots” and critical points.
- Workshops and visual laboratories: producing interpretative materials such as thematic maps, collages, photo-stories, and infographics to support discussion.
- Listening tables with institutional and technical stakeholders.

Expected outcomes:

- Identification of the railway’s landscape, symbolic, and emotional values.
- Emergence of latent conflicts between different visions for development.
- Production of shared, narrative accounts of the landscape and its transformations.

#### 4.3. Building Territorial Laboratory

In this phase, a permanent space for dialogue is established—a territorial laboratory, both physical and symbolic—where actors with sometimes divergent interests could come together to define shared goals, operational strategies, and collective responsibilities. Facilitating dialogue was crucial to overcome communication barriers and latent conflicts, and to transform the laboratory into a generative space for co-production policies.

The aim of this stage was to collectively define objectives, strategies, and roles, giving shape to a structured and recognizable space for negotiation and decision-making.

Methodologically, the approach functions as a relational and operational laboratory, where different forms of knowledge and power intersect. It became a place where deliberative democracy is practiced and project governance was co-constructed. The laboratory was both material—a physical location, a meeting space—and immaterial—the shared rules, language, and codes of interaction.

Key tools and methods included:

- Permanent territorial laboratories, conceived as open coordination and communication hubs.
- Thematic tables focusing on slow mobility, landscape, culture, agriculture, and tourism.
- Scenario simulations with physical or digital models (maquettes, GIS maps, digital platforms).
- Community agreements or “cooperation pacts” among stakeholders.
- Landscape Values Charter, collectively constructed to guide shared principles.

Expected outcomes:

- Co-definition of project priorities.
- Clarification and negotiation of conflicts.
- Consolidation of a local coalition for change.

#### 4.4. Experimentation and Field Action

The emerging proposals will be put to the test through concrete initiatives, such as activation events, small-scale landscape interventions, temporary reuses, and cultural activities connected to the railway. These actions will carry a dual value: on one hand, they

will generate tangible, visible effects in the territory; on the other, they will encourage new forms of active and creative citizenship.

The main goal of this phase was to launch concrete regeneration actions on the ground and to experiment with ways of reusing, even temporarily, both the infrastructure and the surrounding landscape.

From a methodological perspective, this stage will mark the transformative phase. Ideas and co-constructed strategies will be tested through social and territorial prototypes. The experimental dimension was essential: the process will work through successive iterations, valuing both errors and the lessons they will produce.

Key tools and methods will include:

- Activation events, such as railway memory days, cycling tours, and cultural walks.
- Temporary and tactical uses, for instance, small gardens along the tracks, stations repurposed as cultural hubs, and artistic installations.
- Co-designed activities with local associations and schools.
- Crowdmapping and participatory digital platforms to document the initiatives.

Expected outcomes will be:

- Generation of visible and measurable effects on both the landscape and collective perception.
- Strengthening of local self-organization capacities.
- Field testing of the feasibility and sustainability of the shared strategies.

#### 4.5. Co-Evaluation and Re-Learning

Finally, a participatory evaluation process will be launched, in which community members and researchers will reflect together on the outcomes achieved, the lessons learned, and potential future developments. This evaluation will not be conceived as a final, conclusive moment, but rather as an opportunity to reactivate the project cycle and ensure continuity of the experience.

The main goal of this phase will be to critically and collectively reflect on results, processes, and the knowledge generated throughout the path.

The methodological approach of participatory co-evaluation—between the landscape community and researchers—will not be about giving a final judgment, but about creating a dialogic and reflective space. It will function as a moment of collective learning, where successes, limitations, conflicts, and future possibilities will be analyzed. This phase will also be essential for documenting the project's impact and generating knowledge that can be transferred to other contexts.

Key tools and methods included:

- Collective logbooks (written or audio) to capture experiences and reflections.
- Self-evaluation forms for participants.
- Public feedback sessions, where results were shared and discussed with the wider community.
- Qualitative and narrative indicators, such as change stories or relational metrics.
- Debriefing sessions between researchers and community members for co-creating new research questions.

Expected outcomes:

- Assessment of tangible and intangible impacts generated by the process.
- Reformulation of strategies based on feedback received.
- Launch of a new action research cycle, built on stronger foundations and shared knowledge.

## 5. Results

The research project focused on the reuse of the historic Noto–Pachino railway began in January 2023, with the objective of exploring the potential of the railway landscape as a collective catalyst for social, cultural, and economic regeneration in the marginalized areas of southeastern Sicily (Appendices A and B). By May 2024, the operational phases of the PAR-Lab process had been successfully completed (see Appendices A and B), while the third phase is ongoing (Appendix C).

The implementation of these initial stages has already yielded notable results in terms of contextual understanding, community engagement, and co-production of knowledge. The participatory approach enabled a collaborative exploration and shared interpretation of the landscape, highlighting local needs, available resources, and underlying tensions. The process actively involved a broad spectrum of stakeholders—citizens, local activists, farmers, institutional representatives, and cultural associations—creating a fertile ground for dialogue, mutual learning, and co-creation of knowledge around the Noto–Pachino railway.

The following subsections describe the results obtained, distinguishing between outputs (activities and concrete products) and outcomes (effects, impacts, and learnings), in line with the methodological framework outlined in Section 4 and detailed in Appendices A–C.

### 5.1. Phase 1. Co-Creation of Research Questions

Between November 2023 and February 2024, the project entered its first phase, focused on listening to local communities and establishing a shared platform for dialogue. This stage aimed to identify local needs, expectations, and latent opportunities through participatory activities (Appendices A and A.1–A.3).

A combination of complementary methodological tools was employed to collect diverse perspectives and co-define research priorities (Appendices A, A.1 and A.2). Thematic focus groups enabled participants to discuss shared challenges and opportunities. Semi-structured narrative interviews were conducted with 15 informants: 3 former railway workers, 4 farmers/landowners, 5 association representatives, and 3 young entrepreneurs/cultural operators (Appendices A and A.1). The interviews explored personal and collective memories, perceived challenges, visions for the future, and willingness to collaborate. Each interview lasted 50–60 min, was audio-recorded with consent, anonymized in transcription, and thematically coded using Nvivo v.14 under the macro-categories Memory, Identity, Conflict, Vision, and Collaboration (Appendices A and A.1).

In parallel, exploratory questionnaires were administered to 45 community members during public events in Noto, Marzamemi, and Pachino, with an 82% response rate and a demographic distribution including 54% adults aged 30–50, 22% youth aged 18–29, and 24% seniors over 60. The questionnaires addressed perceptions of the railway landscape, attachment to the community, trust in institutions, preferred reuse functions, and willingness to participate. Key quantitative findings indicated that 68% of respondents supported a slow mobility corridor, 47% emphasized educational and ecological value, 71% expressed interest in participatory workshops, and the average trust index improved from 3.0 to 4.1 after public sessions (Appendices A and A.2).

Approximately sixty actors participated through four focus groups, fifteen interviews, and forty-five questionnaires. These activities were complemented by participant observation and twelve researcher field diaries documenting informal interactions and emotions emerging during the process (Appendices A and A.3).

The main outcomes of Phase 1 included the preliminary mapping of challenges and resources along the former railway corridor. Key challenges identified included abandoned stations, limited accessibility in certain sections, and fragmented local interventions. Conversely, the resources highlighted by participants included valuable agricultural landscapes,

the historical significance of the railway, and tourism potential linked to slow mobility (Appendices A and A.3). Diverse future visions also emerged, with the railway seen both as a cultural infrastructure for artistic and educational activities and as an ecological and cycling corridor supporting agriculture and sustainable tourism. These divergent expectations were considered a generative potential for co-creation (Appendices A and A.3: Visions for Reuse).

Latent and implicit needs also became evident, such as the desire for stronger social cohesion, spaces for youth expression, and more transparent and inclusive decision-making processes (Appendices A and A.3: Collaboration and Trust). Trust and willingness to collaborate were progressively built, as evidenced by increased participation in public meetings and the spontaneous creation of an inter-municipal mailing list connecting the towns along the railway route (Appendices A and A.3: Excerpt from Report Conclusion on collective narrative infrastructure, trust, and awareness).

Finally, the co-generation of research questions led to the identification of key guiding inquiries for subsequent phases of the project, including how the collective memory of the railway could be preserved and mobilized to foster intergenerational storytelling, which forms of temporary reuse might strengthen a sense of belonging and activate local proximity-based economies, and which actors or stakeholders could take on facilitation or coordinating roles in the regeneration process (Appendices A and A.3: Analytical Framework).

### *5.2. Results of Participatory Exploration of the Context*

From February to May 2024, the project entered its second phase, characterized by a deeper immersion into the territory and the co-production of knowledge through hands-on experiences and visual tools. The “inside-out” approach facilitated mutual learning and the emergence of polyphonic representations of the railway landscape (Appendices B, B.1 and B.2).

During this phase, four walkscape sessions were organized along representative stretches of the railway, with 52 participants (22 local residents, 10 students, 6 farmers, 8 cultural operators, 6 researchers), guided by long-term residents, farmers, and environmental activists (Appendices B and B.1). These explorations allowed for the documentation of infrastructural and environmental criticalities, such as abandoned stations and signal boxes or intersections with historic trails and irrigation networks, while also recording participants’ emotional perceptions, emphasizing concepts such as “memory,” “silence,” and “potential” (Appendices B and B.1: Walkscape Sheets, Fieldwork Documentation Template). All data were digitized and georeferenced, resulting in twelve community maps showing accessibility, visual quality, and symbolic hotspots, and heritage sites of cultural and historical interest along the entire railway corridor.

In parallel, participatory mapping workshops enabled the production of collective representations of the railway landscape through community maps and narrative storyboards. Outputs included 12 community maps and 5 narrative storyboards (Appendices B and B.2). Participants, organized in mixed groups of citizens, students, and technicians, worked on printed orthophotos and transparent overlays to identify landscape values, fragilities, and potentials, guided by visual storytelling prompts such as “What does this place mean to you?” and “Which spaces should be protected or transformed?” The analysis of the maps revealed a strong concentration of identity values along the Marzamemi–Pachino segment, confirming it as a symbolic node for collective regeneration, whereas areas north of Testa dell’Acqua showed perception gaps and lower visibility, indicating priorities for future awareness actions.

A complementary perception survey was administered in April–May 2024 to 120 participants, including walkscape attendees, local residents, and students, with the aim of quantifying emotional attachment, perceived accessibility, and reuse potential along the railway (Appendices B and B.3). The results highlighted a strong landscape attachment (mean 4.5/5), limited accessibility perception especially in the northern sections (mean 2.9/5), and high interest in cultural and ecological reuse (mean 4.2/5). Sixty-eight percent of respondents expressed willingness to participate in future co-design workshops, and 57% identified the railway as a “landscape memory corridor.” Open-ended responses emphasized the need for soft mobility and environmental restoration.

This phase confirmed the value of visual and immersive tools in fostering community ownership of the process. The knowledge produced was not merely descriptive but generative, stimulating collective imagination and preliminary proposals for railway’s reuse, providing a solid foundation for the subsequent establishment of the Territorial Laboratory (Appendices B.1–B.3).

### 5.3. Construction of the Territorial Laboratory

Starting in June 2024, the project entered its third phase of Participatory Action Research, focused on the construction of the territorial laboratory, conceived as a permanent, both physical and symbolic, space for dialogue among the diverse actors involved (Appendices C and C.1). The primary objective of this phase is to co-define shared visions, operational strategies, and collective responsibilities, laying the groundwork for the project’s future governance

Before establishing the laboratory, a cross-sectional analysis of the materials produced in the first two phases—including questionnaires, participatory maps, walkscales, thematic tables—was carried out. The purpose of this analysis was to identify recurring issues, points of convergence among the different imagined futures, and priority themes to bring to collective discussion. Preliminary results were presented publicly during a territorial forum held in Noto in early July 2024, which gathered over 50 participants, including residents, associations, institutional representatives, researchers, and local professionals (Appendices C and C.1).

During the forum and subsequent thematic meetings, there emerged a shared desire to establish a stable local hub, functioning as a coordinating center and reference point for activities. Experimentally, a space at the former Marzamemi railway station was temporarily adapted as a listening and participatory design center, open weekly to the public (Appendices C and C.3).

Four thematic tables were activated and dedicated, respectively, to slow mobility and cycle tourism, the landscape and environment, culture and railway heritage, and local economy and agri-food chains. These tables worked on the development of operational scenarios and micro-projects, supported by external facilitators and visual co-design tools, including interactive maps, physical models, and storyboards (Appendices C and C.1).

One of the most notable outcomes of this phase is the collective drafting of a Charter of Railway Landscape Values, a programmatic document capturing shared principles for the regeneration of the old railway line and the territories it crosses. The charter, currently in draft form, represents a first step toward formalizing a territorial cooperation pact based on reciprocity, transparency, and care for the common good. The preliminary draft was published for consultation in September 2024, receiving forty-seven comments via an online platform, with a consolidated version scheduled for public presentation in December 2025 (Appendices C and C.2).

Although this phase is still ongoing, several preliminary effects have already been observed. Local alliances between previously unconnected actors have been strengthened,

mutual recognition between expert knowledge and local know-how has emerged, a distributed leadership capable of catalyzing bottom-up energy has developed, and a shared framework of meaning has been defined, essential for guiding the subsequent phases of the project (Appendices C.1–C.3).

#### *5.4. Expected Outcomes—Experimentation and Field Action*

In this phase, the collaborative territorial laboratory will activate pilot actions at strategic nodes identified along the abandoned Noto–Pachino railway, transforming them into laboratory spaces to experiment with innovative ways of enhancement and temporary reuse.

The selection of these nodes derives directly from the evidence and priorities identified in the previous three phases—participatory maps, walkscapes, and thematic tables—thus ensuring continuity between community needs, landscape potential, and priorities emerging from co-design activities (Appendices A–C).

Planned activities will focus on temporary and reversible interventions, such as narrative installations along the railway, lightweight micro-architectures, land art interventions, and movable furnishings at former stations, all conceived to stimulate community participation and creativity while maintaining minimal landscape impact. In parallel, site-specific participatory events—exploratory walks, open-air workshops, artistic residencies, and co-design sessions—will foster an inclusive and collective rediscovery of the railway landscape. These actions will be supported by shared management models—collaboration agreements, temporary stewardship, and co-management trials with local associations, enabling the exploration of sustainable forms of care and maintenance. All activities will include the systematic collection and integration of qualitative and quantitative data (questionnaires, interviews, perception maps, participant observation), with the aim of embedding findings within the methodological framework already developed during previous co-evaluation processes (Appendices B and C).

The expected effects include visible and immediate impacts on both the physical landscape and collective perception, strengthened social capital and community self-organization, and on-the-ground validation of the feasibility of co-constructed strategies.

Ultimately, the process aims to create new imaginaries and narratives that consolidate a shared sense of belonging to the railway landscape as a cultural common, emphasizing the dialectical relation between experimental action and collective knowledge construction, and synthesizing the insights and protocols developed in previous co-design phases (Appendices B and C)

#### *5.5. Expected Outcomes—Co-Evaluation and Shared Learning*

This phase will focus on a collective and reflective assessment of the outcomes emerging from the field experimentation, aiming to refine the visions and strategies developed in earlier stages while ensuring continuity through a dialogic, flexible, and adaptive approach. Its primary goal is to consolidate shared learning, strengthen participatory governance, and generate transferable tools for similar marginal territories.

Planned activities will include the public dissemination of results through open meetings, temporary exhibitions, and outreach publications, ensuring transparency and community engagement. In parallel, a shared evaluation of environmental, social, and cultural impacts will be conducted using tools co-developed with participants, consistent with the thematic protocols and methods previously tested (Appendices A–C). Feedback and observations will inform the refinement of design tools and participatory strategies, adapting them to empirical evidence and community insights.

Additionally, the development of evolutionary scenarios and adaptive guidelines will support the replication and scalability of the model, while project activities and valorization scenarios will be co-evaluated and shared with the local community and public decision-makers, providing a strategic basis for future territorial policies and integrated governance frameworks.

The expected outcomes will include a comprehensive assessment of both tangible and intangible impacts generated by field actions; the reinforcement of collective learning processes capable of overcoming challenges and enhancing local cooperation; and the consolidation of shared medium- to long-term visions, translatable into operational and strategic tools for the regeneration of the railway and the Iblean landscape.

Ultimately, this phase will initiate a new cycle of Participatory Action Research grounded on stronger methodological foundations and oriented toward long-term territorial sustainability and resilience (Appendices B and C).

In this perspective, the PAR-Lab outcomes are expected to contribute to the design of multi-scalar planning instruments and regional development frameworks capable of integrating cultural, ecological, and social dimensions of landscape regeneration. By translating community-driven experimentation into actionable policy insights, the project aims to inform future governance models and inspire adaptive strategies for other Mediterranean territories facing similar challenges.

## 6. Discussion

In comparison with other European experiences of railway reuse, the Noto–Pachino case demonstrates the significance of a participatory and landscape-centered methodology capable of integrating social innovation with heritage conservation. The process contributes to expanding the theoretical debate on infrastructure as cultural commons, offering insights that can be transferred to marginal territories across the Mediterranean.

By operationalizing the concept of “landscape commons” through participatory tools and shared governance mechanisms, the study bridges theoretical frameworks and applied practices, thus reinforcing the methodological relevance of landscape-based regeneration approaches.

The case of the Noto–Pachino railway demonstrates the transformative potential of disused infrastructure when reimagined as a cultural and landscape commons. Early outcomes of the Participatory Action Research (PAR-Lab) indicate that communities do not act merely as passive stakeholders but as active agents capable of reinterpreting abandoned assets through practices of memory, creativity, and collective responsibility, as evidenced by the co-generation of research questions, participatory maps, walkscapes, and thematic tables (Appendices A–C). This observation aligns with recent studies on the adaptive reuse of minor railways as shared cultural heritage, highlighting their role in urban regeneration and social cohesion [109,110].

From a theoretical standpoint, the findings reinforce the relevance of a landscape-centered approach, in line with the European Landscape Convention [52], which frames landscape as a common good essential for individual and collective well-being. This interpretation expands previous landscape governance models by integrating participatory evaluation and iterative co-design as key methodological dimensions, demonstrating how shared learning processes can effectively reframe local narratives of abandonment into proactive visions of care and stewardship.

This perspective acknowledges the landscape’s multidimensional value—material, symbolic, and relational—while emphasizing its role in mediating heritage conservation, ecological connectivity, and community aspirations. Accordingly, the Noto–Pachino railway

is not simply an infrastructural relic but a narrative and performative corridor connecting ecological systems, historical memory, and contemporary social practices.

Methodologically, the iterative and dialogic structure of Participatory Action Research has proven effective in contexts characterized by social and infrastructural fragility [107]. The co-definition of research questions (Phase 1, Appendix A) and the collaborative construction of scenarios (Phases 2 and 3, Appendices B and C) have facilitated a shift from problem-focused narratives of abandonment and decay to opportunity-oriented narratives emphasizing heritage, sustainability, and innovation. Co-design workshops and thematic tables have served as crucial mediating spaces where technical expertise and local perspectives converge, producing more integrated and actionable outcomes [108]. The methodology also highlights the value of adaptive cycles, where feedback loops and continuous reflection become engines of innovation, enhancing both scientific robustness and social legitimacy.

The broader implications suggest that marginal landscapes, often overlooked in conventional planning, can serve as experimental grounds for socio-spatial innovation. Preliminary observations indicate that disused railways may function not only as corridors for soft mobility and tourism but also as catalysts for civic imagination, reinforcing territorial identity and social cohesion. In this regard, the Noto–Pachino experience contributes to a growing corpus of research exploring Mediterranean non-core areas as testing grounds for resilience-oriented planning, providing empirical evidence that supports the operational transferability of the PAR-Lab model beyond the Italian context.

Future research should extend these insights through comparative cases across the Mediterranean contexts and by evaluating the long-term governance, economic sustainability, and institutional integration of such initiatives. This would ensure that community engagement and civic enthusiasm are effectively aligned with formal policy frameworks.

## 7. Conclusions

This ongoing research highlights that the regeneration of the Noto–Pachino railway should be approached not merely as a technical infrastructure project but as a cultural, methodological, and community-centered endeavor grounded in landscape values [111]. The participatory process has demonstrated the railway's potential to reconnect fragmented territories, strengthen local identity, and support pathways for sustainable development, as evidenced by the co-generated outputs of all three phases (Appendices A–C).

From a methodological standpoint, the research contributes to consolidating the PAR-Lab model as an adaptive and transferable framework for co-evaluating landscape-based regeneration processes. Its iterative and reflexive structure, combining qualitative and quantitative tools, allows the continuous alignment between scientific knowledge and community experience. The integration of participatory mapping, walkscapes, and thematic laboratories has proven effective in transforming knowledge into action, providing a replicable model for other marginal territories across the Mediterranean. In this sense, this paper advances methodological innovation in participatory landscape research by demonstrating how collaborative infrastructures can serve as long-term governance platforms rather than temporary project tools.

This study confirms that disused infrastructures, when examined through participatory and landscape-oriented approaches, can act as drivers of social innovation and instruments of territorial cohesion [112]. By situating the process within the broader debate on landscape commons and community stewardship, the research demonstrates how co-evaluation can serve as a methodological bridge between heritage conservation and contemporary regeneration policies. The Noto–Pachino case, therefore, exemplifies

an operational synergy between cultural values, collaborative governance, and adaptive design practices.

Nevertheless, the results remain provisional. Key challenges include consolidating governance arrangements, aligning local initiatives with regional and European mobility networks, and translating participatory visions into durable policies and investments programs. Future developments will focus on measuring the social and environmental impacts of the process and on refining the PAR-Lab indicators to better assess its long-term transformative capacity. Further applications of the framework will be aimed at testing its scalability in different Mediterranean contexts and evaluating how local governance cultures and socio-ecological conditions influence the transfer and adaptation of the methodology.

Ultimately, the Noto–Pachino railway exemplifies how marginal infrastructures can seed inclusive and resilient futures. Although the process is ongoing, it confirms that methodological innovation and participatory design are crucial for reimagining landscape as a cultural and generative commons capable of producing measurable benefits for communities and ecosystems. The proposed framework therefore contributes not only to the theoretical discourse on adaptive reuse but also to the operational field of landscape-based regeneration, strengthening the connection between academic research, policy design, and territorial practice [34,37,40,49,58,96,110,112,113].

**Funding:** This research received no external funding.

**Institutional Review Board Statement:** Ethical review and approval were waived for this study, as per the institutional guidelines of Mediterranean University of Reggio Calabria, since the research activities (anonymous questionnaires, focus groups, narrative interviews, walksapes, and co-design workshops) did not involve clinical trials, medical treatments, or personal sensitive data requiring IRB authorization.

**Data Availability Statement:** The data presented in this study are available on request from the corresponding author. The data are not publicly available due to privacy restrictions.

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**Conflicts of Interest:** The author declares no conflicts of interest.

## Appendix A. Phase 1—Co-Creation of Research Questions (Completed)

This appendix provides the supporting materials and outputs generated during Phase 1 of the Participatory Action Research (PAR-Lab) process (November 2023–February 2024). The phase aimed to identify shared research priorities through dialogue, listening, and co-definition of objectives between researchers and local communities in the Noto–Pachino railway corridor. The materials included below document the methodological tools and preliminary analytical synthesis produced during this stage.

### *Appendix A.1. Semi-Structured Narrative Interview Guide (Template)*

**Purpose:** To collect individual and collective narratives concerning the historical, cultural, and emotional relationship between inhabitants and the disused Noto–Pachino railway, and to explore expectations for its reuse as a landscape commons.

**Participants:** 15 informants representing different social and professional backgrounds: former railway workers (3), farmers and landowners (4), representatives of local associations (5), and young entrepreneurs and cultural operators (3).

## Interview structure and guiding questions:

Section	Aim	Example Guiding Questions	Notes for Interviewer
1. Personal background	Understand the informant's connection to the territory	Can you describe your relationship with the railway or the surrounding landscape?	Allow free narration; prompt for memories or sensory descriptions.
2. Collective memories	Explore shared cultural and emotional values	What memories do people in your community associate with the railway?	Use mapping aids (photos, old maps).
3. Perceived challenges	Identify perceived barriers to reuse or enhancement	What are the main obstacles to reactivating the railway and its landscape?	Probe for institutional, social, or economic factors.
4. Future visions	Collect ideas and aspirations	How do you imagine this railway in ten years?	Encourage creative and open responses.
5. Collaboration and participation	Assess readiness for co-management	What forms of collaboration could you imagine between citizens, associations, and institutions?	Explore willingness to participate in collective actions.

Average duration: 50–60 min. Recording: Audio with consent; anonymized transcription. Coding scheme: Thematic coding (Nvivo v.14) under macro-categories: Memory, Identity, Conflict, Vision, Collaboration.

#### Appendix A.2. Exploratory Questionnaire

Purpose: To quantitatively assess perceptions, expectations, and levels of trust among community members regarding the reuse of the Noto–Pachino railway.

Sample: 45 respondents (response rate 82%) collected during public events in Noto, Marzamemi, and Pachino. Demographic breakdown: 54% residents aged 30–50, 22% youth (18–29), 24% seniors (>60).

Structure: The questionnaire combined closed and open questions across five thematic areas: perception of the railway landscape; community attachment and local identity; trust in institutions; preferred reuse functions; and willingness to participate.

Example items (5-point Likert scale):

- I feel emotionally attached to the railway and its landscape. → Mean: 4.3/5
- I trust local institutions to manage heritage enhancement. → Mean: 2.8/5
- I would be willing to participate in community maintenance or reuse projects. → Mean: 4.1/5

Key Quantitative Findings: 68% supported a slow mobility corridor; 47% emphasized educational and ecological value; 71% expressed interest in participatory workshops; the average trust index improved from 3.0 to 4.1 after public sessions.

Interpretation: Results indicate strong emotional connection and willingness to engage in stewardship, while institutional trust remains moderate.

#### Appendix A.3. Preliminary Synthesis Report (Abstract and Analytical Framework)

Title: Shared Visions and Latent Fragilities along the Noto–Pachino Railway Corridor. Date: February 2024. Length: 35 pages (excerpt below).

Abstract: This report consolidates findings from 15 interviews, 45 questionnaires, and four focus groups. It identifies converging themes, latent conflicts, and opportunities for participatory reuse of the railway landscape.

**Analytical Framework:** Data were categorized under five thematic dimensions: Memory and Identity; Perceived Fragilities; Landscape Values; Visions for Reuse; Collaboration and Trust.

**Key Findings:** The railway is perceived as a ‘memory corridor’ connecting rural and coastal identities. Latent social capital is strong. Divergent expectations coexist, but a moderate-to-high trust level (index 4.2) toward facilitators validates the PAR-Lab approach.

**Excerpt from the Report Conclusion:** “The co-formulation stage has established the first layer of a collective narrative infrastructure. Trust, awareness, and shared curiosity have emerged as key intangible assets for subsequent phases.”

**Document status:** Internal research output, validated by the Department of Architecture and Territory (dArTe), Università Mediterranea di Reggio Calabria.

#### *Credit and Data Access Note*

All data and materials are the result of fieldwork conducted between November 2023 and February 2024 by the PAR-Lab research team. Audio recordings, anonymized transcripts, and survey datasets are archived at the Mediterranean University of Reggio.

## **Appendix B. Phase 2—Participatory Exploration of the Context (Completed)**

This appendix documents the results and materials produced during Phase 2 of the Participatory Action Research (PAR-Lab) process (February–May 2024). The phase focused on immersive, collective exploration of the Noto–Pachino railway landscape through participatory mapping, walkscape sessions, and perception surveys. Its objective was to generate shared and multi-perspective knowledge of the territory as a foundation for the subsequent establishment of the Territorial Laboratory.

### *Appendix B.1. Walkscape Sheets (Fieldwork Documentation Template)*

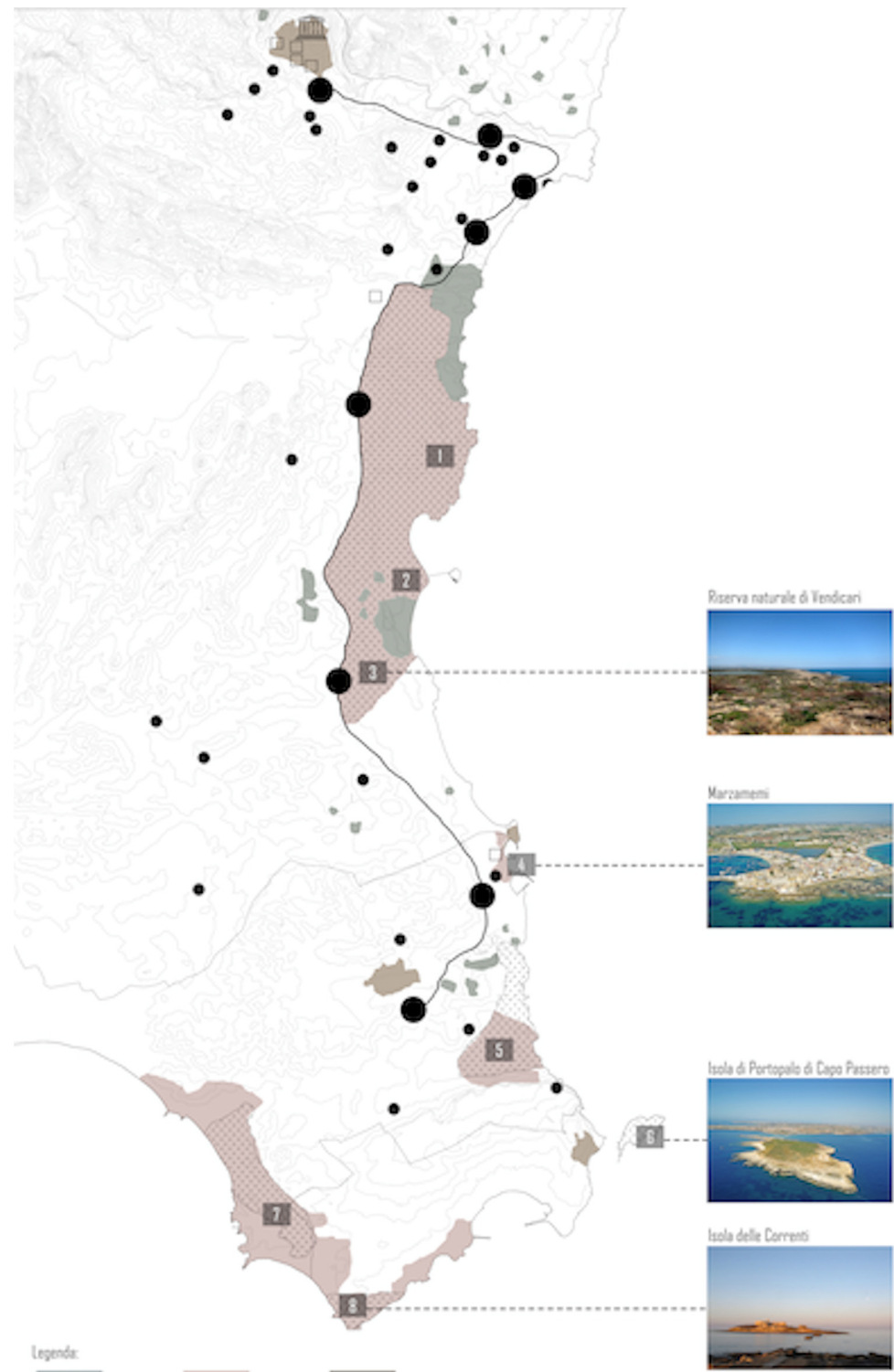
**Purpose:** To document collective explorations (‘walkscapes’) along the disused Noto–Pachino railway, integrating spatial, emotional, and visual observations by participants.

**Number of sessions:** 4 (February–April 2024). **Average duration:** 3 h per session. **Total participants:** 52. **Composition:** local residents (22), students (10), farmers (6), cultural operators (8), and researchers (6).

Each walkscape was recorded using standard observation sheets containing the following fields:

<b>Field</b>	<b>Description</b>	<b>Example Entry</b>
Route Segment	Specific section explored along the Noto–Pachino line.	Noto—Testa dell’Acqua (rural segment, citrus fields).
Observers/Participants	Names and roles of contributors.	10 participants (citizens, 2 researchers, 1 artist).
Spatial Observations	Notes on infrastructure, vegetation, accessibility.	Abandoned bridge over torrent, dry stone walls intact.
Emotional Perceptions	Keywords expressing affective reactions.	‘Silence’, ‘memory’, ‘potential’.
Photographic/Sketch Records	Images or sketches linked to GPS points.	Photo 0321_Noto1.JPG—Old signage post.
Criticalities	Environmental, social, or infrastructural issues.	Illegal dumping near former station building.
Opportunities	Potential for reuse or enhancement.	Space suitable for rest area with educational panel.

Data from all sessions were digitized and processed in a GIS environment, resulting in geo-referenced maps illustrating accessibility, visual quality, symbolic hotspots, and heritage sites of cultural and historical interest distributed along the railway corridor. (Figure A1)



**Figure A1.** Geo-referenced map illustrating the main cultural and historical heritage sites distributed along the Noto–Pachino railway corridor, including disused stations, archaeological areas, rural architectures, and landscape landmarks. (Source: authors' elaboration, PAR-Lab 2024).

### *Appendix B.2. Participatory Mapping Outputs*

**Purpose:** To create collective representations of the railway landscape through participatory mapping and visual workshops. Three mapping laboratories were held (March–May 2024), each engaging between 15 and 20 participants.

**Methodology:** Participants were divided into mixed groups (citizens, students, technicians). Each group worked on a printed orthophoto (1:10,000 scale) and transparent overlays to identify landscape values, fragilities, and potentials. The workshops were guided by facilitators using visual storytelling prompts ('What does this place mean to you?', 'Which spaces should be protected or transformed?').

**Outputs:** 12 community maps and 5 narrative storyboards were produced. The most frequently mapped elements included: abandoned stations (92%), panoramic viewpoints (74%), traditional cultivation areas (63%), and conflict zones (illegal waste sites, infrastructural barriers, 41%). Each map was scanned, digitized, and coded according to thematic layers: Memory, Conflict, Opportunity, Identity.

**Analytical Summary:** The participatory maps revealed strong spatial concentration of perceived identity values around the Marzamemi–Pachino segment, confirming it as a symbolic node for collective regeneration. Conversely, areas north of Testa dell'Acqua showed perception gaps and lower visibility, indicating priority for future awareness actions.

### *Appendix B.3. Perception Survey Summary (Quantitative Indicators)*

To complement qualitative data, a perception survey was administered in April–May 2024 to 120 participants (including walkscape attendees, local residents, and students). The aim was to quantify emotional attachment, perceived accessibility, and perceived potential for reuse along the railway.

**Survey structure:** 18 items divided into three scales—Landscape Attachment, Accessibility Perception, and Reuse Potential—scored on a 5-point Likert scale. Cronbach's  $\alpha = 0.89$ , indicating high internal consistency.

**Main quantitative results:**

- Mean Landscape Attachment score: 4.5/5 (strong emotional bond).
- Perceived Accessibility: 2.9/5 (limited physical access, especially in northern sections).
- Perceived Reuse Potential: 4.2/5 (high interest in cultural and ecological reuse).
- 68% of respondents indicated willingness to participate in future co-design workshops.
- 57% identified the railway as a 'landscape memory corridor'.
- Open-ended responses emphasized the need for soft mobility and environmental restoration.

**Interpretation:** Quantitative evidence supports the qualitative findings from participatory mapping. The railway landscape is perceived as a valuable collective asset, though physical barriers and fragmented governance limit its accessibility. These findings directly informed the objectives of Phase 3—the establishment of the Territorial Laboratory.

### *Credit and Data Access Note*

All materials in this appendix were collected and processed by the PAR-Lab research team between February and May 2024. Raw data, maps, and anonymized survey datasets are archived at the Università Mediterranea d'Arte (Reggio Calabria) under GDPR-compliant protocols.

## **Appendix C. Phase 3 (Ongoing)—Building the Territorial Laboratory**

Status: Preliminary draft, updated to October 2025

### *Appendix C.1. Thematic Table Protocols (Draft Extracts)*

Objective: To provide evidence of the participatory mechanisms used during the establishment of the Territorial Laboratory, focusing on co-decision and multi-actor governance.

Content (extract):

- Thematic Laboratory 1—Slow Mobility and Cycle Tourism: Minutes of the meetings (June–August 2024); emerging priorities (signage system, greenway network, accessibility nodes).
- Thematic Laboratory 2—Landscape and Environment: Shared analysis grids and conflict-mapping notes regarding ecological corridors and agricultural landscapes.
- Thematic Laboratory 3—Culture and Railway Heritage: Draft of the Charter of Railway Landscape Values (first 10 shared principles).
- Thematic Laboratory 4—Local Economy and Agri-food Chains: Stakeholder mapping and cooperative scenarios for local product valorization.

Indicators (preliminary):

- 4 thematic tables activated, with an average of 12–15 participants per session.
- 9 plenary meetings (June–September 2024).
- 1 digital collaboration platform (Beta version, August 2024).

### *Appendix C.2. Charter of Railway Landscape Values (Working Draft)*

Objective: To consolidate shared principles and governance guidelines for the reuse and management of the Noto–Pachino railway landscape.

Structure (draft summary):

- Section 1—Common Vision: “The railway landscape as a connective tissue between territories, memories, and communities.”
- Section 2—Guiding Principles: Care, reciprocity, transparency, adaptive reuse, and knowledge sharing.
- Section 3—Commitments: 10 collective commitments for stewardship and co-management, signed by 22 local actors (municipalities, associations, research institutions).
- Section 4—Implementation Tools: Cooperation pacts, participatory monitoring, and open data system for project updates.

Outputs so far:

- Draft Charter published for consultation (September 2024).
- 47 comments received via public online platform.
- Consolidated version scheduled for public presentation (December 2025).

### *Appendix C.3. Digital Participation Platform—Beta Version Report*

Objective: To document the co-design and testing of the digital environment supporting the participatory laboratory.

Contents:

- Overview of the platform structure (interactive map, discussion forum, and document repository).
- Quantitative indicators: 125 registered users; 480 interactions recorded in the first three months.

(a) Preliminary feedback from usability survey:

- 86% of respondents rated the interface as “useful” or “very useful”;
- 72% reported improved communication among working groups.

Next steps: Integration of georeferenced project monitoring tools and public consultation dashboards.

## References

1. Camagni, R.; Borri, D.; Ferlaino, F. Per un concetto di capitale territoriale. In *Crescita e Sviluppo Regionale: Strumenti, Sistemi, Azioni*; Borri, D., Ferlaino, F., Eds.; FrancoAngeli: Milan, Italy, 2009; pp. 66–90.
2. Camagni, R.; Capello, R. Regional competitiveness and territorial capital: A conceptual approach and empirical evidence from the European Union. *Reg. Stud.* **2013**, *47*, 1383–1402. [[CrossRef](#)]
3. Barca, F. *An Agenda for a Reformed Cohesion Policy: A Place-Based Approach to Meeting European Union Challenges and Expectations*; Independent Report for the Regional Policy Commission; Economics and Econometrics Research Institute (EERI): Brussels, Belgium, 2009.
4. Pane, A. Alle origini dell'ingegneria ferroviaria in Campania: La costruzione della linea Avellino-Ponte S. Venere (1888–1895) e gli attuali problemi di conservazione. In *Atti del 2° Convegno Nazionale Storia dell'Ingegneria*; D'Agostino, S., Ed.; Cuzzolin Editore: Naples, Italy, 2008; pp. 1291–1300.
5. Scott, M.; Parkinson, A.; Waldron, R.; Redmond, D. Planning for historic urban environments under austerity conditions: Insights from post-crash Ireland. *Cities* **2020**, *103*, 102788. [[CrossRef](#)]
6. Brown, D.; Gabrys, J. Community-led landscape regeneration: A review of and framework for engagement in restoration initiatives. *Ambio* **2025**. [[CrossRef](#)] [[PubMed](#)]
7. Antrop, M. Why landscapes of the past are important for the future. *Landsc. Urban Plan.* **2005**, *70*, 21–34. [[CrossRef](#)]
8. Antrop, M.; Van Eetvelde, V. Bringing it all together—Taking care of the landscape. In *Landscape Perspectives*; Antrop, M., Van Eetvelde, V., Eds.; Springer: Berlin/Heidelberg, Germany, 2017; pp. 377–421. [[CrossRef](#)]
9. Magnaghi, A. *Il Progetto Locale. Verso la Coscienza di Luogo*; Bollati Boringhieri: Piemonte, Italy, 2010.
10. Magnaghi, A. *Montespertoli: Le Mappe di Comunità per lo Statuto del Territorio*; Alinea Editrice: Florence, Italy, 2010.
11. Innes, J.; Booher, D. Network power in collaborative planning. *J. Plan. Educ. Res.* **2002**, *21*, 221–236. [[CrossRef](#)]
12. Menatti, L. Landscape as a way of knowing the world: A philosophical perspective. *Int. J. Commons* **2017**, *11*, 758–777. [[CrossRef](#)]
13. Council of Europe. Framework Convention on the Value of Cultural Heritage for Society (Faro Convention). 2005. Available online: <https://rm.coe.int/1680083746> (accessed on 6 September 2025).
14. Jones, M.; Stenseke, M. (Eds.) *The European Landscape Convention: Challenges of Participation*; Springer: Dordrecht, The Netherlands, 2011. [[CrossRef](#)]
15. Ciampa, F.; De Medici, S.; Viola, S.; Pinto, M.R. Regeneration criteria for adaptive reuse of the waterfront. *Sustainability* **2021**, *13*, 4156. [[CrossRef](#)]
16. Pedata, L.; Altamura, P.; Rossi, L. Turning heritage railway architecture into an infrastructure for resilience and circularity: An opportunity for sustainable urban regeneration. In *ETHICS: Endorse Technologies for Heritage Innovation*; Springer: Cham, Switzerland, 2024; pp. 329–358. [[CrossRef](#)]
17. Della Spina, L.; Lanteri, C. A collaborative multi-criteria decision-making framework for the adaptive reuse design of disused railways. *Land* **2024**, *13*, 851. [[CrossRef](#)]
18. Maggi, S. *Le Ferrovie*; Il Mulino: New York, NY, USA, 2008.
19. Della Spina, L. Revitalization of inner and marginal areas: A multi-criteria decision aid approach for shared development strategies. *Valori Valutazioni* **2020**, *2020*, 37–44.
20. Rovelli, R.; Eizaguirre-Iribar, A.; García, J. From Railways to Greenways: A Complex Index for Assessing the Potential of Disused Railways for Sustainable Mobility. *Transp. Res. Part D* **2020**. Available online: <https://www.sciencedirect.com/science/article/abs/pii/S0264837719320411> (accessed on 6 September 2025).
21. Ristić, D.; Vukoičić, D.; Ivanović, M.; Nikolić, M.; Milentijević, N.; Mihajlović, L.; Petrović, D. Transformation of Abandoned Railways into Tourist Itineraries/Routes: Model of Revitalization of Marginal Rural Areas. *Land* **2024**, *13*, 321. [[CrossRef](#)]
22. Attardi, R.; Cerreta, M.; Franciosa, A.; Gravagnuolo, A. Valuing cultural landscape services: A multidimensional and multi-group SDSS for scenario simulations. In *Computational Science and Its Applications—ICCSA 2014*; Murgante, B., Misra, S., Rocha, A.M.A.C., Torre, C.M., Rocha, J.G., Falcão, M.I., Taniar, D., Apduhan, B.O., Gervasi, O., Eds.; Lecture Notes in Computer Science; Springer: Cham, Switzerland, 2014; Volume 8581. [[CrossRef](#)]
23. Ferilli, G.; Sacco, P.L.; Tavano Blessi, G.; Forbici, S. Power to the people: When culture works as a social catalyst in urban regeneration processes (and when it does not). *Eur. Plan. Stud.* **2016**, *24*, 241–258. [[CrossRef](#)]
24. Poli, D. Il patrimonio territoriale fra capitale e risorsa nei processi di patrimonializzazione proattiva. In *Aree Interne e Progetti D'area*; Meloni, B., Ed.; Rosenberg & Sellier: Turin, Italy, 2015; pp. 123–140.
25. Hutniczak, A.; Urbisz, A.; Watoła, A. The socio-economic importance of abandoned railway areas in the landscape of the Silesian Province (southern Poland). *Environ. Socio-Econ. Stud.* **2023**, *11*, 1–12. [[CrossRef](#)]
26. Garramone, M.; Scaioni, M. A BIM/GIS digitalization process to explore the potential of disused railways in Italy. *Int. Arch. Photogramm. Remote Sens. Spat. Inf. Sci.* **2023**, *48*, 37–42. [[CrossRef](#)]

27. Yang, J.; Yang, L.; Ma, H. Community Participation Strategy for Sustainable Urban Regeneration in Xiamen, China. *Land* **2022**, *11*, 600. [CrossRef]
28. Kaneklin, C.; Galuppo, L.; De Carlo, A. Dalla costruzione della committenza allo sviluppo dei committenti: L'avvio di una ricerca-azione. In *La Ricerca-Azione Cambiare per Conoscere nei Contesti Organizzativi*; Kaneklin, C., Piccardo, C., Scaratti, G., Eds.; Raffaello Cortina Editore: Milan, Italy, 2010.
29. Saija, L. *La Ricerca-Azione in Pianificazione Territoriale e Urbanistica*; FrancoAngeli: Milan, Italy, 2017.
30. Cerreta, M.; Daldanise, G. Community branding (Co-Bra): A collaborative decision making process for urban regeneration. In *Computational Science and Its Applications—ICCSA 2017*; Gervasi, O., Murgante, B., Misra, S., Borruso, G., Torre, C.M., Rocha, A.M.A.C., Taniar, D., Apduhan., B.O., Stankova, E., Cuzzocrea, A., Eds.; Springer: Cham, Switzerland, 2017; Volume 10406, pp. 730–746. [CrossRef]
31. Della Spina, L. Sustainable collaborative strategies of territorial regeneration: Learning from the Costa Viola case (Italy). *Land* **2023**, *12*, 497. [CrossRef]
32. Lee, J.; Arts, J.; Vanclay, F.; Ward, J. Examining the social outcomes from urban transport infrastructure: Long-term consequences of spatial changes and varied interests at multiple levels. *Sustainability* **2020**, *12*, 5907. [CrossRef]
33. Straatemeier, T.; Bertolini, L. How can planning for accessibility lead to more integrated transport and land-use strategies? Two examples from the Netherlands. *Eur. Plan. Stud.* **2020**, *28*, 1713–1734. [CrossRef]
34. Della Spina, L. Strategic Planning and Decision Making: A Case Study for the Integrated Management of Cultural Heritage Assets in Southern Italy. In *New Metropolitan Perspectives, NMP 2020*; Bevilacqua, C., Calabrò, F., Della Spina, L., Eds.; Smart Innovation, Systems and Technologies; Springer: Cham, Switzerland, 2021; Volume 178. [CrossRef]
35. Magnaghi, A. Dalla partecipazione all'autogoverno della comunità locale: Verso il federalismo municipale solidale. *Democr. E Dirit.* **2006**, *3*, 134–151.
36. Panaro, S. Landscape Co-Evaluation: Approcci Valutativi Adattivi per la co-Creatività Territoriale e L'innovazione Locale. Doctoral Dissertation, Università degli Studi di Napoli Federico II, Naples, Italy, 2015.
37. Della Spina, L.; Viglianisi, A. Hybrid evaluation approaches for cultural landscape: The case of "Riviera dei Gelsomini" area in Italy. In *New Metropolitan Perspectives. NMP 2020*; Bevilacqua, C., Calabrò, F., Della Spina, L., Eds.; Smart Innovation, Systems and Technologies; Springer: Cham, Switzerland, 2021; Volume 178. [CrossRef]
38. Vettori, M.P. Common goods, cities, territories: Processes for the reactivation of disused public assets. *TECHNE-J. Technol. Archit. Environ.* **2024**, *28*, 201–210. [CrossRef]
39. Barbanente, A.; Grassini, L. Landscape regeneration and place-based development in marginal areas: Learning from an Integrated Project in Southern Salento. *City Territ. Archit.* **2024**, *11*, 26. [CrossRef]
40. Della Spina, L.; Giorno, C. Waste Landscape: Urban Regeneration Process for Shared Scenarios. *Sustainability* **2022**, *14*, 2880. [CrossRef]
41. Pardo Abad, C.J. Valuation of Industrial Heritage in Terms of Sustainability: Some Cases of Tourist Reference in Spain. *Sustainability* **2020**, *12*, 9216. [CrossRef]
42. Spanedda, F. Post\_production. Architectural design and the landscape of de-industrialisation. *City Territ. Archit.* **2023**, *10*, 17. [CrossRef]
43. Paris, S.; Gattulli, V.; Landa, A.; Vannini, C. Protecting and Redeveloping Industrial Archaeological Heritage Through Design Strategies Driven by Digital Modelling. 2023. Available online: <https://conservation-science.unibo.it/article/view/20083> (accessed on 1 September 2025).
44. UNESCO. Semmering Railway. 1998. World Heritage List. Available online: <https://whc.unesco.org/en/list/785/> (accessed on 25 January 2025).
45. UNESCO. Rhaetian Railway in the Albula/Bernina Landscapes (Switzerland/Italy). 2008. World Heritage List. Available online: <https://whc.unesco.org/en/list/1276/> (accessed on 25 January 2025).
46. UNESCO. Mountain Railways of India (Darjeeling Himalayan Railway). 1999. World Heritage List. Available online: <https://whc.unesco.org/en/list/944/> (accessed on 25 January 2025).
47. Esposito De Vita, G.; Trillo, C.; Martinez-Perez, A. Community planning and urban design in contested places: Some insights from Belfast. *J. Urban Des.* **2016**, *21*, 320–334. [CrossRef]
48. Dell'Anna, F. Multicriteria-decision support for master plan scheduling: Urban regeneration of an industrial area in Northern Italy. *Constr. Manag. Econ.* **2024**, *42*, 476–501. [CrossRef]
49. Della Spina, L.; Carbonara, S.; Stefano, D.; Viglianisi, A. Circular Evaluation for Ranking Adaptive Reuse Strategies for Abandoned Industrial Heritage in Vulnerable Contexts. *Buildings* **2023**, *13*, 458. [CrossRef]
50. Settis, S. *Il Paesaggio Come Bene Comune*; La Scuola di Pitagora: Naples, Italy, 2013.
51. Bonesio, L. *Paesaggio, Identità e Comunità tra Locale e Globale*; Diabasis: Parma, Italy, 2007.
52. Stephenson, J. The cultural values model: An integrated approach to values in landscapes. *Landsc. Urban Plan.* **2008**, *84*, 127–139. [CrossRef]

53. Selman, P. *Planning at the Landscape Scale*; Routledge: Oxfordshire, UK, 2006.
54. Onesti, A. Built environment, creativity, social art: The recovery of public space as engine of human development. *Reg. J. ERSA* **2017**, *4*, 87–118. [[CrossRef](#)]
55. Bradbury-Huang, H. What is good action research? Why the resurgent interest? *Action Res.* **2010**, *8*, 93–109. [[CrossRef](#)]
56. Reason, P.; Bradbury, H. (Eds.) *Handbook of Action Research: Participative Inquiry and Practice*; Sage: Thousand Oaks, CA, USA, 2001.
57. Cerreta, M.; Inglese, P.; Malangone, V.; Panaro, S. Complex values-based approach for multidimensional evaluation of landscape. In *Computational Science and Its Applications—ICCSA 2014*; Murgante, B., Misra, S., Rocha, A.M.A.C., Torre, C., Rocha, J.G., Falcão, M.I., Taniar, D., Apduhan, B.O., Gervasi, O., Eds.; Lecture Notes in Computer Science; Springer: Cham, Switzerland, 2014; Volume 8581.
58. Cerreta, M.; Panaro, S.; Cannatella, D. Multidimensional spatial decision-making process: Local shared values in action. In *Computational Science and Its Applications—ICCSA 2012*; Springer: Berlin/Heidelberg, Germany, 2012; pp. 54–70. [[CrossRef](#)]
59. Alberti, F. Regenerative Streets: Pathways towards the Post-automobile City. *Sustainability* **2023**, *15*, 10266. [[CrossRef](#)]
60. Whyte, W.H. *Securing Open Space for Urban America: Conservation Easements*; Urban Land Institute: Washington, DC, USA, 1959.
61. Bischoff, A. Greenways as vehicles for expression. *Landsc. Urban Plan.* **1995**, *33*, 317–325. [[CrossRef](#)]
62. Ahern, J.; Fabos, J.G. Greenways as a planning strategy. *Landsc. Urban Plan.* **1995**, *33*, 131–155. [[CrossRef](#)]
63. Smith, D.S.; Hellmund, P.C. *Ecology of Greenways: Design and Function of Linear Conservation Areas*; University of Minnesota Press: Minneapolis, MN, USA, 1993.
64. Searns, R.M. The evolution of greenways as an adaptive urban landscape form. *Landsc. Urban Plan.* **1995**, *33*, 65–80. [[CrossRef](#)]
65. Ahern, J.; Fabos, J.G. Greenways [Special Issue]. 1995. *Landscape and Urban Planning*, *33*. Available online: <https://www.sciencedirect.com/journal/landscape-and-urban-planning/vol/33/issue/1> (accessed on 18 January 2025).
66. Fabos, J.G. Introduction and overview: The greenway movement, uses and potentials of greenways. *Landsc. Urban Plan.* **1995**, *33*, 104024. [[CrossRef](#)]
67. Walmsley, A. Greenways and the making of urban form. *Landsc. Urban Plan.* **1995**, *33*, 81–127. [[CrossRef](#)]
68. Qian, J.; Xiang, W.N.; Liu, Y.; Meng, X. Incorporating landscape diversity into greenway alignment planning. *Urban For. Urban Green.* **2018**, *35*, 45–56. [[CrossRef](#)]
69. Yu, K.; Li, D.; Li, N. The evolution of greenways in China. *Landsc. Urban Plan.* **2006**, *76*, 223–239. [[CrossRef](#)]
70. Ndubisi, F.; DeMeo, T.; Ditto, N.D. Environmentally sensitive areas: A template for developing greenway corridors. *Landsc. Urban Plan.* **1995**, *33*, 159–177. [[CrossRef](#)]
71. Bryant, M.M. Urban landscape conservation and the role of ecological greenways at local and metropolitan scales. *Landsc. Urban Plan.* **2006**, *76*, 23–44. [[CrossRef](#)]
72. von Haaren, C.; Reich, M. The German way to greenways and habitat networks. *Landsc. Urban Plan.* **2006**, *76*, 7–22. [[CrossRef](#)]
73. Flink, C.A.; Olka, K.; Searns, R.M. Rails-to-Trails Conservancy. In *Trails for the Twenty-First Century: Planning, Design, and Management Manual for Multi-Use Trails*; Island Press: Washington, DC, USA, 2001.
74. Flink, C.A.; Searns, R.M. *Greenways: A Guide to Planning, Design, and Development*, 1st ed.; Island Press: Washington, DC, USA, 1993.
75. Palardy, N.P.; Boley, B.B.; Johnson Gaither, C. Residents and urban greenways: Modeling support for the Atlanta BeltLine. *Landsc. Urban Plan.* **2018**, *169*, 250–259. [[CrossRef](#)]
76. Zhao, F.; Nie, R.; Zhang, J. Greenway implementation influence on agricultural heritage sites (AHS): The case of Liantang Village, Zengcheng District, Guangzhou City, China. *Sustainability* **2018**, *10*, 434. [[CrossRef](#)]
77. Ribeiro, L.; Barão, T. Greenways for recreation and maintenance of landscape quality: Five case studies in Portugal. *Landsc. Urban Plan.* **2006**, *76*, 79–97. [[CrossRef](#)]
78. Hoover, A.P.; Shannon, M.A. Building greenway policies within a participatory democracy framework. *Landsc. Urban Plan.* **1995**, *33*, 433–459. [[CrossRef](#)]
79. Bischoff, A. Author index. *Landsc. Urban Plan.* **1995**, *33*, 481–482.
80. Liu, Z.; Lin, Y.; De Meulder, B.; Wang, S. Can greenways perform as a new planning strategy in the Pearl River Delta, China? *Landsc. Urban Plan.* **2019**, *187*, 81–95. [[CrossRef](#)]
81. Hague, C.; Jenkins, P. *Place Identity, Participation and Planning*; Routledge: Oxfordshire, UK, 2005.
82. Siderelis, C.; Moore, R. Outdoor recreation net benefits of rail-trails. *J. Leis. Res.* **1995**, *27*, 344–359. [[CrossRef](#)]
83. Di Marino, M.; Tiitu, M.; Lapintie, K.; Viinikka, A.; Kopperoinen, L. Integrating green infrastructure and ecosystem services in land use planning: Results from two Finnish case studies. *Land Use Policy* **2019**, *82*, 643–656. [[CrossRef](#)]
84. Davies, C.; MacFarlane, R.; McGloin, C.; Roe, M. *Green Infrastructure Planning Guide*; North-East Community Forests: Newcastle upon Tyne, UK, 2006.
85. Mell, I.C. Can green infrastructure promote urban sustainability? *Eng. Sustain.* **2009**, *162*, 23–34. [[CrossRef](#)]

86. Linehan, J.; Gross, M.; Finn, J. Greenway planning: Developing a landscape ecological network approach. *Landscape Urban Plan.* **1995**, *33*, 179–193. [[CrossRef](#)]
87. Girardet, H. Regenerative cities. In *Green Economy Reader*; Springer International Publishing: Cham, Switzerland, 2017; pp. 183–204. [[CrossRef](#)]
88. Tzoulas, K.; Korpela, K.; Venn, S.; Yli-Pelkonen, V.; Kaźmierczak, A.; Niemelä, J.; James, P. Promoting ecosystem and human health in urban areas using green infrastructure: A literature review. *Landscape Urban Plan.* **2007**, *81*, 167–178. [[CrossRef](#)]
89. Elmqvist, T.; Setälä, H.; Handel, S.N.; van der Ploeg, S.; Aronson, J.; Blygnaut, J.N.; Gómez-Baggethun, E.; Nowak, D.J.; Kronenberg, J.; de Groot, R. Benefits of restoring ecosystem services in urban areas. *Curr. Opin. Environ. Sustain.* **2015**, *14*, 101–108. [[CrossRef](#)]
90. Gómez-Baggethun, E.; Barton, D.N. Classifying and valuing ecosystem services for urban planning. *Ecol. Econ.* **2013**, *86*, 235–245. [[CrossRef](#)]
91. Martín-López, B.; Iniesta-Arandia, I.; García-Llorente, M.; Palomo, I.; Casado-Arzuaga, I.; Del Amo, D.G.; Gómez-Baggethun, E.; Oteros-Rozas, E.; Palacios-Agundez, I.; Willaarts, B.; et al. Uncovering ecosystem service bundles through social preferences. *PLoS ONE* **2012**, *7*, e38970. [[CrossRef](#)]
92. Larson, L.R.; Keith, S.J.; Fernandez, M.; Hallo, J.C.; Shafer, C.S.; Jennings, V. Ecosystem services and urban greenways: What's the public's perspective? *Ecosyst. Serv.* **2016**, *22*, 111–116. [[CrossRef](#)]
93. Reis, A.C.; Jellum, C. Rail trail development: A conceptual model for sustainable tourism. *Tour. Plan. Dev.* **2012**, *9*, 133–147. [[CrossRef](#)]
94. Delgado Hernández, L.; Carpio Pinedo, R.; Delgado Ruiz, M.A.; García Pastor, A. *Intermodality: Bikes, Greenways and Public Transport. Best Practices Guide*; Consorcio Regional de Transportes de Madrid (CRTM): Madrid, Spain, 2014.
95. Hernández Colorado, A.; Aizpurúa Giraldez, N.; Aycart Luengo, C. *Desarrollo Sostenible y Empleo en Las Vías Verdes*; Fundación de los Ferrocarriles Españoles: Madrid, Spain, 2011.
96. Ferretti, V.; Degioanni, A. How to support the design and evaluation of redevelopment projects for disused railways? A methodological proposal and key lessons learned. *Transp. Res. Part D Transp. Environ.* **2017**, *52*, 29–48. [[CrossRef](#)]
97. García-Mayor, C.; Martí, P.; Castaño, M.; Bernabeu-Bautista, Á. The Unexploited Potential of Converting Rail Tracks to Greenways: The Spanish Vías Verdes. *Sustainability* **2020**, *12*, 881. [[CrossRef](#)]
98. Aycart Luengo, C. Vías verdes: Las pioneras. *Ambient. Rev. Minist. Medio Ambiente* **2007**, *65*, 32–38.
99. Gobierno de España, Ministerio de Fomento. Ferrovuario. 2019. Available online: <https://www.fomento.gob.es/ferroviario> (accessed on 18 January 2025).
100. Guerrieri, M.; Ticali, D. Design standards for converting disused railway lines into Greenways. In Proceedings of the International Conference on Sustainable Design and Construction (ICSDC) 2011, Kansas City, MO, USA, 23–25 March 2011; pp. 375–383.
101. Aycart Luengo, C. Vías Verdes 'Greenways', to reuse disused rail-ways line for non motorised itineraries, leisure and tourism. *Inf. Constr.* **2001**, *53*, 17–29. [[CrossRef](#)]
102. Available online: <https://viasverdes.com/en/greenways/spanish-greenways-programme.asp> (accessed on 6 September 2025).
103. European Union External Action. European Union support: First Railway Museum in Uganda Opens. Delegation of the European Union to Uganda. 19 March 2021. Available online: [https://www.eeas.europa.eu/delegations/uganda/european-union-support-first-railway-museum-uganda-opens\\_en](https://www.eeas.europa.eu/delegations/uganda/european-union-support-first-railway-museum-uganda-opens_en) (accessed on 25 January 2025).
104. Trans-Iranian Railway (Iran): Listed by UNESCO in 2021. Available online: <https://whc.unesco.org/en/list/1585> (accessed on 2 May 2025).
105. Luhmann, N.; Febbrajo, A. *Sistemi Sociali: Fondamenti di una Teoria Generale*; Il Mulino: New York, NY, USA, 1990.
106. Maturana, H.R.; Varela, F.J. *Autopoiesis and Cognition: The Realization of the Living*; Springer: Dordrecht, The Netherlands, 1991; Volume 42.
107. Baum, F.; MacDougall, C.; Smith, D. Participatory action research. *J. Epidemiol. Community Health* **2006**, *60*, 854–857. [[CrossRef](#)] [[PubMed](#)]
108. Bianchi, A.; De Medici, S. A sustainable adaptive reuse management model for disused railway cultural heritage to boost local and regional competitiveness. *Sustainability* **2023**, *15*, 5127. [[CrossRef](#)]
109. Misirlisoy, D. Railways as common cultural heritage: Cyprus as a case study. *J. Cult. Herit. Manag. Sustain. Dev.* **2023**, *13*, 345–358. [[CrossRef](#)]
110. Della Spina, L.; Rugolo, A. A Multicriteria Decision Aid Process for Urban Regeneration Process of Abandoned Industrial Areas. In *New Metropolitan Perspectives—NMP 2020*; Bevilacqua, C., Calabrò, F., Della Spina, L., Eds.; Smart Innovation, Systems and Technologies; Springer: Cham, Switzerland, 2021; Volume 178. [[CrossRef](#)]
111. Council of Europe. European Landscape Convention. 2000. Available online: <https://www.eea.europa.eu/help/glossary/eea-glossary/european-landscape-convention> (accessed on 18 January 2025).

112. Trapani, F.; Savarese, R.; Safonte, F. A territorial approach to the production of urban and rural landscape. *Environ. Sci. Sustain. Dev.* **2018**, *3*, 1–20. [[CrossRef](#)]
113. Giuffrida, S.; Napoli, G.; Trovato, M.R. Industrial areas and the city: Equalization and compensation in a value-oriented allocation pattern. In *Computational Science and Its Applications–ICCSA 2016 (Lecture Notes in Computer Science)*; Gervasi, O., Apduhan, B.O., Taniar, D., Torre, C.M., Wang, S., Misra, S., Murgante, B., Stankova, E., Rocha, A.M.A.C., Eds.; Part IV; Springer: Cham, Switzerland, 2016; Volume 9789, pp. 79–94. [[CrossRef](#)]

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