ALEKSANDRA
ZAKHAROVA

Regenerative Potential of Tactical Urban Interventions

Rethinking urban regeneration
beyond long-term change



Politecnico di Torino

DEPARTMENT OF ARCHITECTURE AND DESIGN
MASTER'S DEGREE IN ARCHITECTURE CONSTRUCTION CITY
A.Y. 2025/2026

Regenerative Potential of Tactical Urban Interventions

Rethinking urban regeneration beyond long-term change

Supervisors Roberta Ingaramo | Maicol Negrello

Candidate Aleksandra Zakharova
s324670

Abstract

This thesis explores how tactical urbanism and regenerative approaches can serve as a practical tool for enhancing city life, social connections, and local biodiversity. The study is placed in the context of the overall discussion of regenerative and resilient cities, explaining the burning necessity to challenge the traditional concepts of urban regeneration, especially in the new conditions of the rapid climate change, the decline of the biosphere, and the growing social disintegration.

Rather than viewing urban regeneration as an end goal, this study considers it as a continuous process of trial and error; this perspective acknowledges that the complexity of the urban fabric precludes definitive solutions and instead favours proposing and thoroughly testing the interventions in practice to validate their functional effectiveness.

Tactical urbanism, defined as low-cost, temporary, and scalable interventions, is explored as a methodological approach that can allow testing of spatial and regenerative strategies on short periods in real urban situations. These interventions, both small scale and large scale, such as the changes made in the public spaces and community-led ones enable the designers, policymakers and local communities to observe and analyze spatial changes in real-time. Simultaneously, regenerative strategies are oriented on minimizing environmental damage, restoring and improving biodiversity, and reinforcing the relationship between human and non-human agents in the urban environment.

Urban fabric in this study is recognized as complex, dynamic, and context-specific. As such, it resists universal solutions or static design prescriptions. Thus, the study promotes the process-based design approach using trial and error, in which interventions are viewed as hypotheses to be tested and not as solutions. According to this perspective, failure is not taken as a constraint but rather as a key part of learning and refinement.

Within this theoretical framework, in this thesis was developed a site-specific design proposal for Candelo, a historic settlement in the Northern part of Italy. Through the project small-scale, context-sensitive and regenerative interventions were explored, enhancing public space, reinforcing social cohesion, and reintroducing ecological processes. The proposal explores how regenerative principles can be adapted to a given context through tactical urbanism and stronger regenerative strategies.

The focus is especially on the activation of underutilized areas, introducing nature-based solutions, and improving the local biodiversity via design. Temporary and reversible interventions are considered as tools to test spatial configurations and community responses, allowing for gradual and adaptive transformation over time.

Finally, this study places tactical urbanism and regenerative design not only as design approaches, but as complementary frameworks to rethink the way in which cities and settlements evolve throughout time. Furthermore, the thesis argues for a shift from deterministic planning toward a more resilient, responsive, and ecologically embedded urban practice. Through this, the research contributes to the current debate on how built environments may shift towards regenerative and life-supporting landscapes.

Keywords: urban regeneration, regenerative design, tactical urbanism, adaptive design, biodiversity, nature-based solutions, public space.

Abstract 2

01. Introduction

Beyond sustainability: toward regenerative urbanism 6-9

1.1 Research objectives and questions 8

02. Theoretical framework

Regenerative principles and design approaches 10-15

2.1 Regeneration: theoretical framework 12

2.2 Methodology and research structure 14

03. Regeneration through tactical urbanism

Theory, practice and regenerative potential of tactical urbanism 16-93

3.1 Tactical urbanism: theoretical framework 18

3.1.1. Tactical urbanism and place formation 24

3.1.2. Project types 26

3.1.3. Operational layers 28

3.2 Tactical urbanism in the Italian context 38

3.2.1. Piazza Aperte programme 40

3.3 Case studies 44

3.4 Learning from case studies 72

3.5 Tactical regenerative design approaches 74

3.6 Limitations of tactical approaches 90

04. Candelo urban link

Site context, challenges and design requirements 92-115

4.1 Site and territorial context 94

4.2 Design objectives and key challenges 102

4.3 Environmental and climatic conditions 106

4.4 User groups and actors 108

4.5 Phased design development process 112

05. The project

Design development 116-157

Phase I — Pilot project 118

A.1 Pilot design strategy 120

A.2 Tactical devices 121

A.3 Evaluation framework and regenerative performance 123

Phase II — Integrated spatial intervention 124

B.1 Spatial design framework 126

B.2 Layered intervention strategy 128

B.3 Tactical devices by thematic areas 130

B.4 Ramp as urban infrastructure 132

B.5 Regenerative performance assessment 138

Phase III — Long-term urban framework 140

C.1 Long-term development scenario 142

C.2 Spatial responsiveness adaptability 152

C.3 Regenerative performance assessment 156

06. Conclusion

Final reflections and future perspectives 158

6.1 Comparative assessment of the design phases 160

6.2 Findings and research outcomes 164

Bibliography 166

Acknowledgements 172

01. Introduction

Beyond sustainability: toward regenerative urbanism

why is regenerative urban design relevant today?

what are the main objectives of this research?

what research questions guide the study?

how does this thesis explore the concept of tactical regeneration?

how is this research structured?

1.1 Research objectives and questions

As the building and construction industry has rapidly grown in size and significance as a global emitter of CO_2, biodiversity loss has been accelerating, and urban ecosystems are becoming degraded (GlobalABC, 2020; UNEP, 2021). Cities are increasingly losing their public green areas, in particular, which are essential for ecosystem services and human well-being. Furthermore, the progressive reduction of green spaces leads to a "baseline shift", where each generation perceives the degraded state of urban nature as normal, obscuring long-term environmental decline (Colding et al., 2020). This convergence of intensive urban development and ecological degradation is a clear warning that construction and design principles need to be reconsidered in the context of the current urban scene and in relation to nature and biodiversity. In response to these global challenges, a critical question emerges:

What kinds of design approaches are needed to create greater benefits for the city, its citizens, natural systems, and the planet itself?

This thesis is a continuation and a part of a larger research project on regenerative design approaches led by Prof. Roberta Ingaramo and Arch. PhD Maicol Negrello during the Summer School "Beyond Sustainability: Regenerative Design", organized by Politecnico di Torino in collaboration with Henning Larsen and Ramboll. The initial phase of this research was shaped through direct dialogue with international professionals and experts in the field, which assisted in identifying the main research problems and potential directions for further regenerative design studies.

The interdisciplinary investigation discovered that regeneration has become a key theme in current architectural and urban discourse, extending beyond the concept of mitigation to encompass frameworks aimed at restoring systemic value and producing measurable outcomes. This experience reinforced the understanding that regeneration should not be considered merely an extension of sustainability, but rather a shift beyond it: a paradigm change currently unfolding at the international level, which demands a fundamentally new design mindset.

On this basis, the concept of regeneration is further expanded in this thesis through the lens of tactical urbanism, exploring alternative ways of conceptualizing temporary interventions. Regenerative design practices are typically associated with complex, large-scale projects that require extensive timeframes, significant human resources, multidisciplinary expertise, and substantial financial investment. Such projects often take years to materialize, as they necessitate comprehensive analyses and long-term impact assessments in order to demonstrate effectiveness to clients, developers, and investors. This inquiry leads to the primary research question addressed in this study:

How can short-term tactical interventions generate regenerative outcomes?

This question is explored particularly in reference to the role of local context, in this case small municipalities, where conditions differ significantly from those of large metropolitan areas characterized by established and developed urban strategies with more complex socio-economic systems. In this research, the design competition in the small Italian town of Candelo for an urban square transformation is considered as a case study and an experimental platform. The fragility and specificity of small-town contexts introduce an additional research question:

Can tactical urbanism serve as an effective design tool in small-town and non-metropolitan contexts?

This question explores the potential of tactical urbanism as a tool for smaller municipalities: is it a viable strategy for smaller places that have their own spatial, social and environmental challenges? The study compares its applicability in the context of Candelo and examines its potential as a catalyst for local urban regeneration.

The work addresses the conceptual and practical aspects of tactical urbanism, such as its implementation, spatial responsiveness and its regenerative potential in the proposed design intervention, and it evaluates its potential. This leads to a further research question:

What regenerative design strategies and devices can be implemented through tactical interventions?

This question seeks to identify and categorize tactical design strategies and devices that can generate environmental, social and spatial improvements.

Lastly, the study aims to assess the overall effectiveness of these interventions through the following question:

What regenerative outcomes can be achieved through tactical urban interventions?

This question explores the potential benefits that can be achieved through a series of tactical interventions on different layers, evaluated through a set of key performance parameters.

The thesis consists of six chapters, organized in a logical sequence starting from the theory and the analysis of the existing case studies to the development of the concept of regenerative tactical urbanism:

1. Beyond sustainability: toward regenerative urbanism — outlines the research objectives and key questions, framing the shift from sustainability to regenerative thinking;

2. Regenerative principles and design Approaches — explores the concept of regenerativity and its key principles within contemporary architectural discourse;

3. Theory, practice and regenerative potential of tactical urbanism — investigates both the conceptual and practical dimensions of tactical urbanism, with a focus on its potential as a regenerative design approach;

4. Site context, challenges and design requirements — analyzes the project site and defines the spatial, environmental, and social conditions informing the design process;

5. Design development — presents the design proposal through three phases, emphasizing spatial responsiveness and the performance of tactical regenerative interventions;

6. Final reflections and future perspectives — evaluates the proposed strategies and discusses their potential contribution to the development of regenerative design practices.

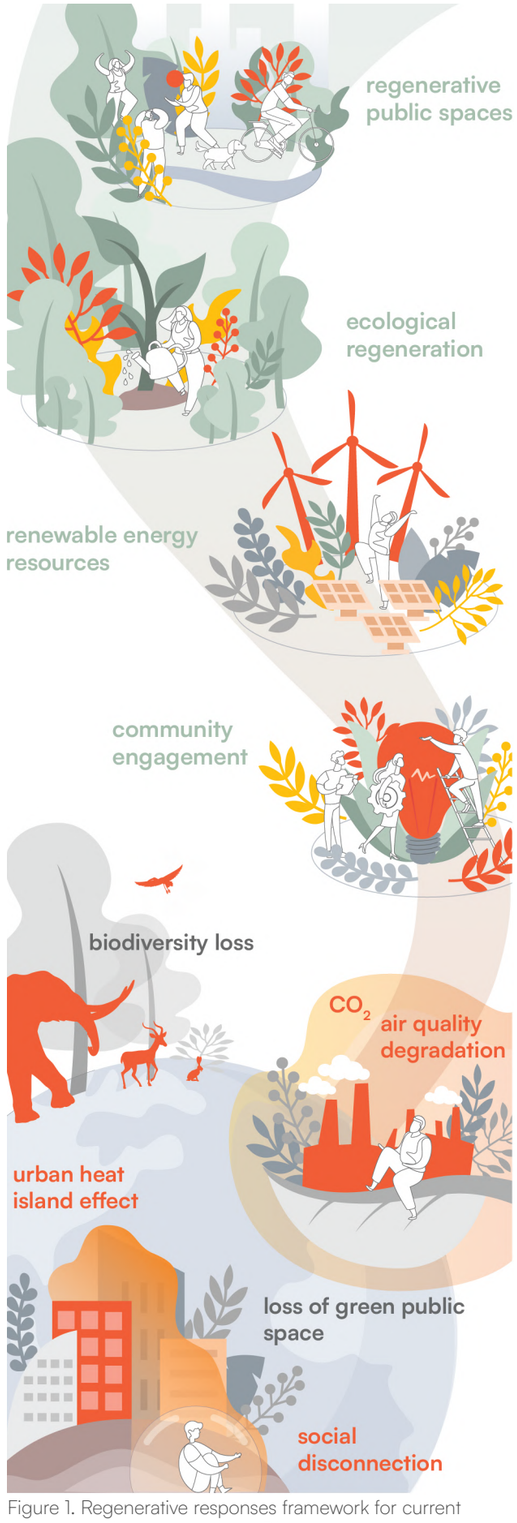


Figure 1. Regenerative responses framework for current urban and climate challenges. Diagram by the author.

02. Theoretical framework

Regenerative principles and design approaches

what is regenerative design?

how does regeneration differ from sustainability?

why is a paradigm shift necessary?

what principles define the regenerative paradigm?

what is systems thinking, and why is it fundamental to regenerative design?

what are the regenerative tactical devices?

what methodological framework guides this research?

2.1 Regeneration: theoretical framework

The sustainability framework has been widely discussed and implemented across disciplines in recent years, becoming a dominant concept in environmental discourse. However, after decades of following the paradigm of sustainable development, global environmental degradation continues to accelerate. This becomes evident after the declaration of a global climate emergency by over 1,400 local governments and 28 countries, highlighting that **existing approaches have not effectively addressed the climate crisis** (Crowley et al., 2021).

After identifying and understanding current global challenges, we must return to the very beginning of the design process and reconsider its primary questions:

Who is the client? Would the planet accept this kind of design?

This perspective reframes the concept of the client, instead of concentrating on the human stakeholders, this change makes architects consider ecological systems as active beneficiaries. Considering the planet, ecosystems, and all living beings affected by a project raises a responsibility toward biodiversity and environmental care (Ramboll, 2024). This expanded meaning of responsibility provides a basis for understanding **regenerative design** as an innovative and still evolving paradigm.

Regenerative design is still an emerging field, lacking theoretical foundation and having various interpretations. The term **regenerative** is used unevenly in the field of architecture and it often encompasses concepts of ***increased sustainability*** and ***ecological renewal***. This diversity of definitions has slowed the development and establishment of coherent methodology and measurable criteria of regenerativity (Mang & Reed, 2012). However, over the past years, the paradigm is gaining increasing relevance within architectural theory and practice (Attia, 2016).

Regenerative design, as defined by Lyle (1994), **seeks to design systems that can regenerate and sustain themselves over time.** This approach implies a deeper, systemic transformation that encompasses not only physical changes in nature, but also social and economic dimensions (Marcus, 2024).

Mang and Haggard (2016) argue that the central principle of regenerative development lies in designing for evolution. **For centuries, humanity has largely built in ways that separate humans from nature and gradually damage both.**

Evolution of regenerative thinking can be seen as a progression beyond sustainability. Sustainability brought in performance driven architecture and new methods for environmental evaluation, whereas regenerative design offers a more innovative and transformative vision of the built environment (Attia, 2016). **It shifts beyond the concept of reducing negative impacts to generating positive environmental and social outcomes**. Regenerative sustainability can be described in this sense as the next wave of sustainability, seeking to support thriving, integrated living systems (Gibbons, 2020).

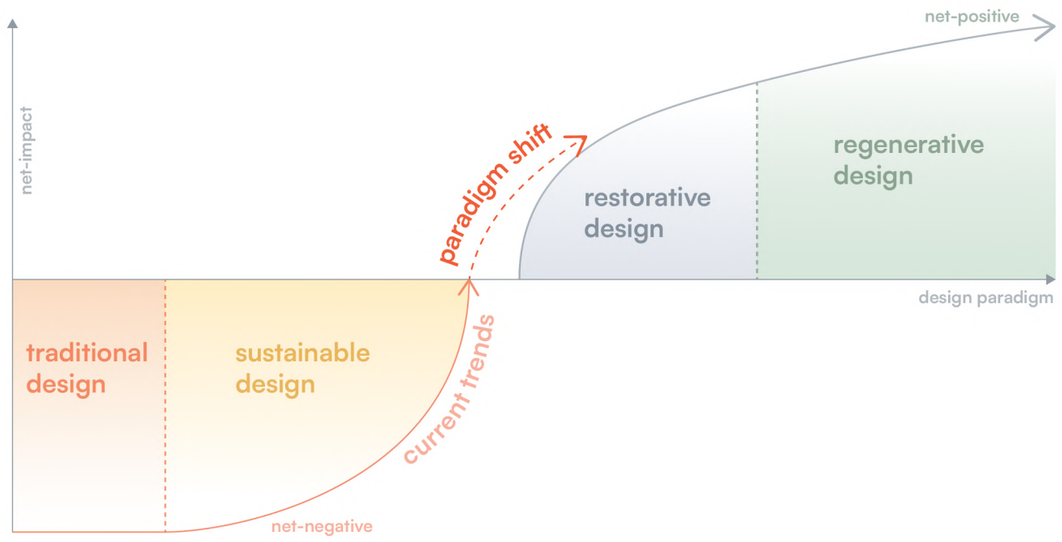


Figure 2. Paradigm shift. Diagram by the author.

Regenerative design is always grounded in the framework of **systems-thinking**, which stresses on long-term ecological sustainability, interdependence, and feedback loops. **Regenerative design must be perceived as a system of a complex, interdependent relationship of parameters which influence and support each other**. (Ramboll, 2025)

A major distinction between sustainability and regeneration lies in the conceptual frameworks on which they are based. **While sustainability has traditionally been understood as minimizing human harm to the environment, regenerativity seeks to reverse the ecological degradation and promote the co-evolution of human and natural systems** (Crowley et al., 2021; Mang & Reed, 2013). This co-creative relationship emphasizes adaptation, resilience, and the capacity for continuous transformation (Du Plessis, 2012). Restoring the balance between humans and environment is the goal of such an approach, as it leads to a new transformative way and shared future (Ingaramo et al., 2025).

Within this perspective, three principles may define the foundation of the regenerative paradigm. Firstly, **human development efforts should follow the creative course of nature**, where the approaches are not merely human-oriented, but rather nature-oriented, following its laws. Secondly, **the world is seen as dynamic, unpredictable, and continually changing**, with flexible and adaptive design approaches. Thirdly, **humans are acknowledged as active actors in ecosystems**, not only seeking to reduce impact, but to improve the well-being and resilience of the ecosystems they inhabit (Du Plessis, 2012).

While the importance of regenerative design is increasingly recognized, the implementation of its approaches remains challenging. The holistic and integrative nature of regenerativity is closely linked to its underlying principles, meaning that standardized tools cannot be used. In order to achieve an effective application, **a fundamental shift in mindset is needed**, as well as the reconciliation of technological and ecological perspectives within design practice (Mang & Reed, 2012).

It is important to acknowledge that **regenerativity is inherently dependent on time**. Unlike conventional sustainability assessments, **regenerative outcomes cannot be fully measured immediately after implementation.** Many ecological, social, and spatial benefits require time to emerge, mature, and reveal their full potential. Regenerative design supports the development of regenerative cultures capable of continuous learning and transformation, fostering biocultural diversity for future generations (Wahl, 2016).

Regenerative interventions are therefore not defined by a fixed or final state, but by a continuous process of adaptation and co-evolution between the built environment, natural systems, and local communities. Consequently, a regenerative project should not be understood as a one-time achievement or a completed outcome. Instead, it represents an ongoing process that requires long-term monitoring, maintenance, and adaptive management to respond to changing environmental conditions and community needs. **The value of regeneration lies not only in the initial design intervention but also in its capacity to evolve over time, continuously strengthening the resilience, health, and vitality of the place** (Du Plessis, 2012; Mang & Reed, 2013).

2.2 Methodology and research structure

The research follows a hybrid methodological approach between theoretical investigation and design-based experimentation in order to create a design framework that relates critical reflection to regenerative and tactical practice.

The methodological framework is structured as a progressive and cumulative process and divided into six main phases:

1. Theoretical framework

The first phase sets the conceptual basis of the research through a critical study of the literature on urban regeneration, regenerative design, tactical urbanism, placemaking, and public space production. Starting with understanding the concept of paradigm shift from sustainability-oriented approaches toward regenerative ones, and the different impacts of these design models.

Furthermore, the study explores the definition, principles and roots of tactical urbanism, firstly by theoretical literature reviews and its worldwide applications, and subsequently through its adaptation and implementation within the Italian context. The following case studies are evaluated based on this preliminary theoretical investigation.

2. Tactical urbanism case studies analysis

In this phase a comparative analysis of 6 successful tactical projects in small and medium-sized Italian cities is conducted. Case studies were selected primarily by territorial context, the scale of interventions and urban design characteristics similar to Candelo. The analysis focuses on tactical devices and interventions employed in each case study, local community engagement and the project's output on the transformation of public space.

The study seeks to define the effective spatial strategies, participatory mechanisms and tactical devices across a variety of temporary, low-cost and scalable urban solutions in the activation of underutilized spaces. During this phase, strengths and weaknesses of each case study were identified in order to produce the adaptive tactical design principles. Thus, case study analysis provides a solid foundation for future design proposals in the project of Candelo.

3. Exploration of regenerative tactical approaches

The third phase is the development of an operational framework for regenerative tactical urbanism, building on the theoretical framework and findings of the case study analysis. This stage explores possible application of regenerative thinking to tactical interventions that can generate short-term and long-term benefit simultaneously. The investigation is structured into four thematic layers that represent the key parameters of regenerative urban transformation: Biodiversity and Water Management; Mobility, Accessibility and Urban Infrastructure; Social Activation and Urban Comfort; and Resource, Energy and Material Circularity. Each layer is identified for its main objectives, strategies, and possible tactical devices, forming a device catalogue of tactical regenerative approaches that are later applied to the design proposal.

4. Site analysis and contextual framework

The fourth phase is dedicated to investigation of the site in Candelo city, where the competition project serves as a platform for the experimental design approaches of this study. Territorial, spatial, environmental, social, and infrastructural conditions of the site are examined. During this phase, key site challenges and constraints are identified in order to guide the site-specific design development of the project.

5. Design development and spatial experimentation

The next phase presents a progressive tactical design strategy based on a methodological framework and articulated through three phases of project development.

The first phase is an experimental pilot project based on temporary and completely reversible tactical interventions aimed at testing primarily spatial responsiveness and user interaction. The second level introduces a more holistic spatial idea, shaped by ecological, social and infrastructural interventions to reinforce the site's regenerative potential. Lastly, a long-term design project is proposed as a final phase of tactical interventions, exploring possible future development scenarios and adaptive transformation pathways. Furthermore, the final design phase is tested on spatial responsiveness and evaluated through key space quality parameters.

Each phase allows for the observation and analysis of varying levels and forms of intervention and exploration of the capacity of tactical responses to evolve into long-term regeneration.

6. Regenerative performance evaluation

The final phase evaluates the proposed design scenarios by phases through a regenerative assessment framework. A comparative analysis is used to evaluate the intervention performances according to key environmental, social, infrastructural, energy and resource parameters. The aim of this study is to determine the regenerative benefits which are generated by the proposed tactical devices. The main benefits associated with regenerative capabilities are related to the improvement of biodiversity, water management, accessibility and urban comfort, social activation, reduced resource use, renewable energy sources and a greater urban environment's resilience.

The evaluation table presents the capacity of the proposed tactical interventions to generate positive systemic effects and contribute to long-term urban resilience. This phase is related to one of the main research questions: whether tactical interventions can function as catalysts for regenerative urban transformation.

Methodological aim

The overall goal of this methodology is to explore the potential of tactical urban interventions to contribute to regenerative urban development. The research aims to create an operational framework that can support adaptive and context-sensitive urban transformation by analyzing the theoretical basis and precedent-relevant case studies, investigating the site, and experimenting with design.

The methodology thus does not only present tactical urbanism as a short-term design intervention, but as a potential regenerative process that can produce immediate benefits and establish the groundwork for long-term environmental, social and spatial development.

03. Regenerating through tactical urbanism

Theory, practice and regenerative potential of tactical urbanism

what is tactical urbanism, and how can it foster urban regeneration processes?

what is the difference between the creation of space and the creation of place?

what are the practices of tactical interventions in the italian context?

what can be learned from relevant case studies?

how can tactical regenerative approaches act as a catalysts during the transition toward long-term transformation?

what are the regenerative tactical devices?

what kinds of benefits can re-generative tactical approaches generate?

3.1 Tactical urbanism: theoretical framework

Tactical urbanism (TU) is an urban planning approach that involves low-cost, often temporary, highly visible and small-scale interventions designed to test and improve streets and public spaces before (or instead of) permanent changes are made (Lydon & Garcia, 2015).

Since the TU can take multiple forms, this framework does not have a single definition. Instead, **it should be understood as an adaptable and evolving paradigm that involves a range of practices, actors and spatial scales** (Douglas, 2018; Campo, 2016).

This approach enables a range of local actors **to experiment with new concepts prior to committing significant political and financial actions** (Lydon & Garcia, 2015). TU serves as a **low-risk diagnostic tool**, which allows planners, designers, and communities to test spatial solutions and assess their performance in real time. **Successful interventions could be scaled up or formalized and ineffective solutions could be changed or eliminated easily.** However, it is difficult to incorporate tactical urbanism into spatial strategy as it is non-hierarchical, self-organised and flexible, which tends to conflict with formal, goal-oriented planning systems (Silva, 2016).

From a practical perspective, **TU employs simple interventions to promote active mobility, social engagement and ecological improvement**. For example, colouration of pavement surfaces and building facades, the installation of simple seating and playing facilities, basic greenery, traffic calming, and other initiatives. These interventions are considered as a real-world experimentation for innovative forms of urban design thinking, intended to catalyze long-term benefits in the city environment.

While TU is often implemented at street or block scale, it can also be applied to individual lots, buildings, districts, and broader municipal areas (Bishop & Williams, 2012).

The diversity of tactical urbanism practices is also reflected in its modes of implementation. Yassin (2019) identifies three primary types of TU applications:

1. Citizen-driven initiatives, where citizens bypass bureaucratic obstacles to demonstrate the need for urban transformations, reflecting the limitations of traditional planning and asserting their right to the city;

2. Public engagement, as a tool for governments, developers, or non-profit organisations to involve citizens and overcome opposition through sanctioned temporary projects;

3. Phase 0 implementation, an early-stage, low-risk approach for testing projects before long-term investment, although critics argue it risks diluting the original activist spirit of Tactical Urbanism in favor of policy-driven redevelopment; (Yassin,2019)

Socio-Spatial Processes in TU

The theoretical relevance of TU can be further understood through its relationship to broader spatial and social frameworks, as it can be described as:

> *"the latest response to our basic human instincts: incremental and self-directed action toward increasing social capital, economic opportunity, access to food, safety from natural and human enemies, and general livability" (Lydon & Garcia, 2015)*

In that regard, TU is not only a design approach, however, it is a **socio-spatial process** which ties the physical intervention with the wider objectives of urban resilience and community welfare (Finn, 2014; Silva, 2016).

This perspective corresponds to Lefebvre's (1991) theory of the production of space, where urban space is not a neutral background, but is actively produced through social relations, practices and power relations. Within this framework, tactical urbanism is seen as a form of spatial agency, which allows citizens and local actors to temporarily reclaim and reconfigure space in line with "right to the city" concept (Lefebvre, 1968). Such interventions highlight the socio-spatial dialectic described by Soja (1980), where urban space is continuously produced, negotiated, and transformed. In this regard, **TU tests physical solutions, and opens up space for more inclusive, participatory, and adaptive urban transformations.**

At its core, tactical urbanism operates as a process of:



Figure 3. TU concept. Diagram by the author.

In recent research, Bråten (2024) explores spatiality through the conceptual framework of "loose" and "tight" spaces. The "loose" spaces defined in this concept are multifunctional which have the ability to facilitate spontaneous interactions between strangers. The "tight" spaces maintain their security through their strict regulations and standardisation which narrows the space for improvisation and natural social interactions. Bråten observes that modern urban design is increasingly leaning towards "tight" configurations, while Tactical Urbanism can reintroduce "looseness" by enabling more open-ended and user-driven spatial experiences.

TU can be experienced not only spatially but also in influencing behavioral patterns and urban practices:

> *"Tactical Urbanism became a vehicle for enacting change under this dynamic, where long-term change is possible as a result of breaking down existing habits, creating entirely new norms, and maintaining them" (Suslowicz, Hillnhütte, 2025)*

Historical development of TU

While it is tempting to view tactical urbanism as a modern invention, **these temporary and participatory methods actually recontextualize ancient placemaking principles dating back to the Roman Empire.** (Lydon & Garcia, 2015). Today TU practices are thus developed on established traditions of incremental urban-making, in which urban space is constantly produced through reuse, adaptation, and collective action.

Although the term "tactical urbanism" is relatively new, its logic has its roots in informal urban practice in the **pre-1960s** in dense historic cities and the working-class neighborhoods, where the urban space was framed by flexibility and collective usage. Streets and residual spaces were used by residents to pursue their daily activities without legal planning systems. These spontaneous bottom-up practices set a precedent of subsequent types of citizen-led spatial transformation, prioritizing use-value over formal design (Stevens & Dovey, 2022).

The 1960s and 1970s marked the pivotal point in urban theory and practice, driven by growing criticism of the modernist and top-down planning methods. Influential writers such as Jane Jacobs, supported the concept of human-scale urbanism, with an emphasis on diversity, street life and the significance of local knowledge in urban development (Jacobs, 1961). During this period, small-scale and temporary actions, particularly in North America and Europe, like community gardens, street closures and neighborhood improvements appeared to reclaim urban space and reestablish local agency. These practices can be regarded as precursors to tactical urbanism, as they foregrounded participation, experimentation, and incremental change (Bishop and Williams, 2012).

From the 1980s to the early 2000s, such grassroots practices started to be more visible and began to be theorized in the language of academia and professional practice as **"DIY urbanism"**, **"guerrilla urbanism"**, as well as **"pop-up urbanism"** (Finn, 2014; Lydon et al., 2012). Furthermore, Bishop & Williams (2012) formed the conceptual basis of tactical urbanism.

Finally, **these practices were formalised by Lydon and Garcia (2015) as such, with the name of "tactical urbanism"**, and movement has attracted remarkable attention worldwide within a limited amount of time.

The 2008 global financial crisis had a prominent part in TU popularization since the economical limitations encouraged cities to implement flexible, incremental, and cost-efficient urban regenerating methodologies. In turn, **tactical urbanism started to be integrated into the official planning policies and urban development programs** (Mould, 2014).

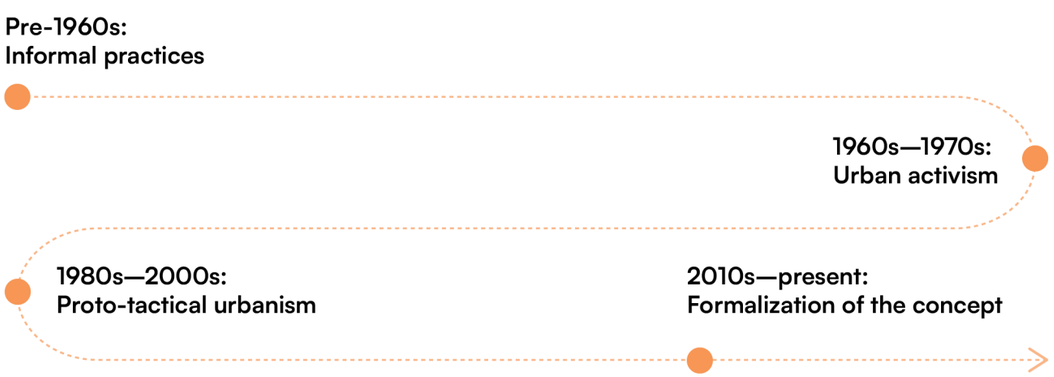
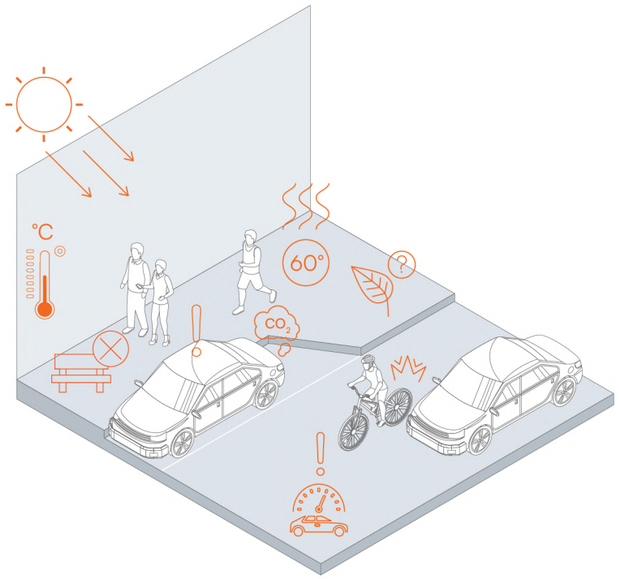


Figure 4. Historical Development of TU. Diagram by the author.

Urban space problems and tactical design responses



PROBLEMS

- insufficient microclimate protection
- absence of public resting infrastructure
- constrained pedestrian realm
- undefined spatial hierarchy
- missing safety buffer between modes
- modal conflict: bicycles vs vehicular traffic
- excessive on-street parking allocation

TACTICAL INTERVENTIONS

- introduction of shading elements
- tactical surface marking
- installation of modular street furniture
- placement of mobile green infrastructure
- installation of bike parking
- reorganisation of on-street parking
- introduction of protected bike lane
- traffic calming measures

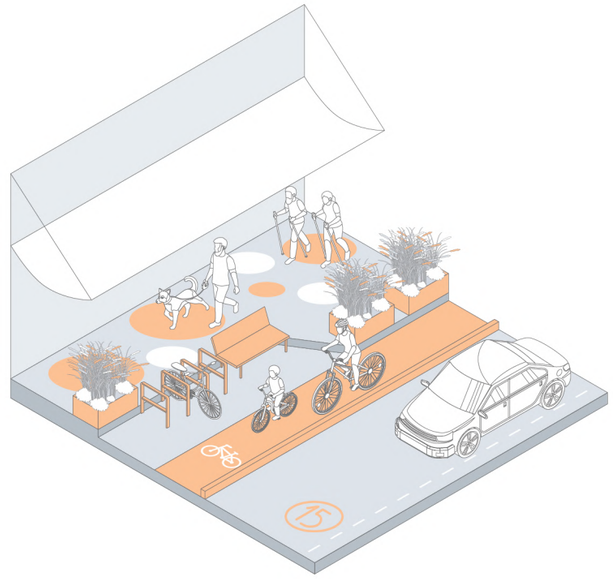


Figure 5. Urban space problems and tactical design responses. Diagram by the author.

Evolution of tactical urbanism

Beyond its historical development, **tactical urbanism has experienced a significant conceptual evolution**, which is indicative of wider transformations in urban governance, design practice, and civic engagement. Instead of a linear evolution, this evolution can be seen as a sequence of changes in the framing, implementation and institutionalization of temporary urban interventions.

Firstly, TU has evolved from informal and spontaneous practices into a formalized planning approach. Uncontrolled and citizen-driven early forms of temporary spatial appropriation have increasingly been formalized into a systematic approach with established principles and toolkits and strategies of implementation. This formalization, as it is discussed by Lydon and Garcia (2015), allowed the shift of tactical urbanism towards isolated actions and a model that could be transferred to a different location and used to intervene in the city on a large scale.

Likewise, Bishop and Williams (2012) also highlight that the growing focus on temporality in urban design helped to legitimize short-term interventions as an acceptable part of the long-term planning processes. Nonetheless, this move towards formalization brings about its own restrictions, since institutional structures can restrict the spontaneity and adaptability previously inherent in such practices.

Secondly, tactical urbanism has become less of a bottom-up phenomenon and more of a hybrid form of governance. Although early efforts were mainly inspired by citizen action outside of official structures, modern TU exists within a more multifaceted web of actors comprising of municipalities, planners, designers, and individual stakeholders. Such a transformation is indicative of the coexistence of citizen-led activities, participatory planning instruments, and institutional strategies at the Phase 0 stage as identified by Yassin (2019). In this regard, **tactical urbanism is not a pure grassroots practice, but a type of mediating tool between informal urbanism and formal planning regimes.** This hybridity has diversified its application although it has also re-contextualized the power relations in the generation of urban space.

Thirdly, TU has experienced a paradigm shift between urban activism and strategic planning tool. Tactical urbanism was initially linked with practices that subverted mainstream spatial orders and put a claim on the city, but has more recently been taken up as an instrument of experimentation, social participation and incremental realization by institutions. According to Finn (2014), **practices that were viewed as being oppositional or informal are now often integrated into the formal planning agendas**. Nevertheless, this shift also poses important concerns in terms of how it depoliticizes tactical urbanism since its adoption by institutional structures can result in its erosion of its emancipatory and disruptive nature.

Finally, institutionalization of tactical urbanism has created a considerable amount of critical discourse in urban studies. Some academics like Mould (2014) claim that tactical urbanism is at risk of being appropriated as a means of urban branding and neoliberal urban development, where temporary interventions are used to create a superficial aesthetic or symbolic impact without tackling more fundamental structural problems.

Similarly, Brenner (2016) frames such practices in a wider critique of neoliberal urbanism in which flexible and low-cost interventions may potentially obscure the systemic inequalities and project an image of participatory governance. These critiques underscore a clear contradiction in the development of tactical urbanism, that as it moves towards mainstream acceptance, it gains visibility and influence, it also risks losing its grassroots ethos and transformative potential.

Tactical urbanism: global examples

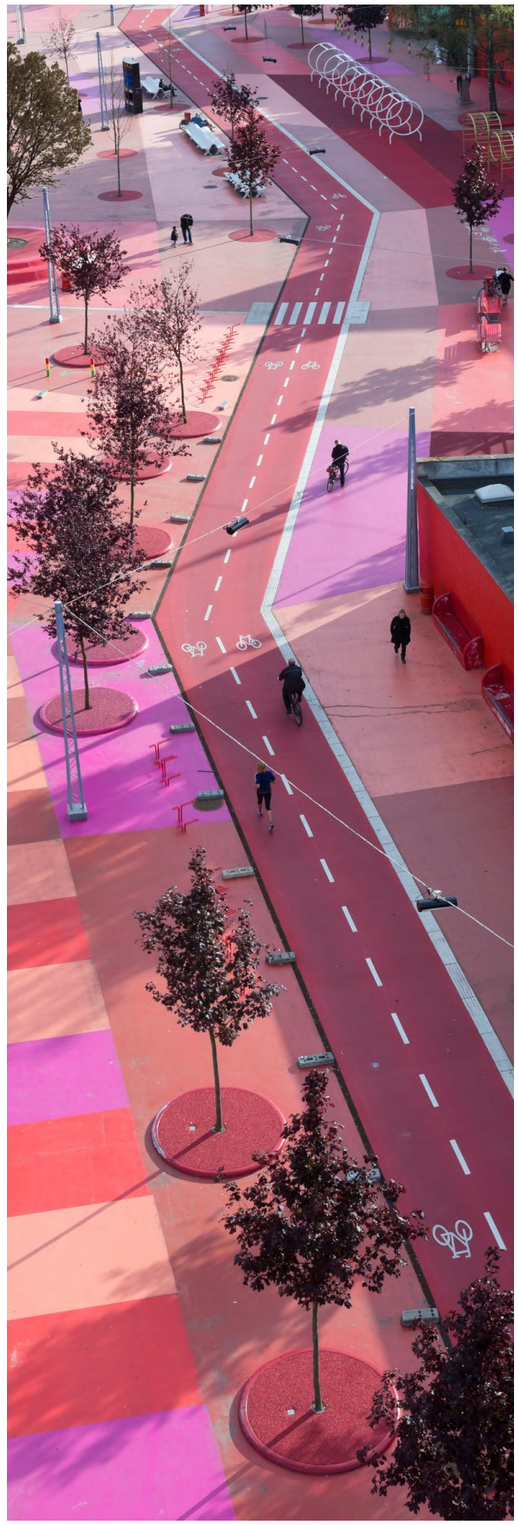


Fig. 6. Superkillen in Copenhagen © Iwan Baan

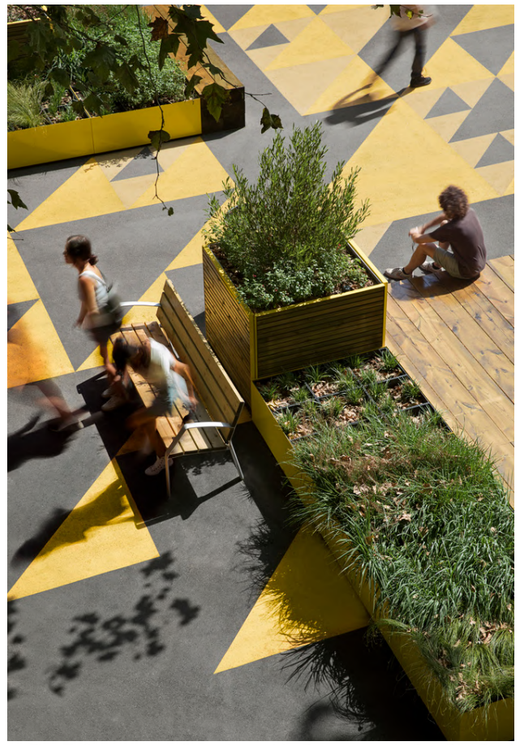
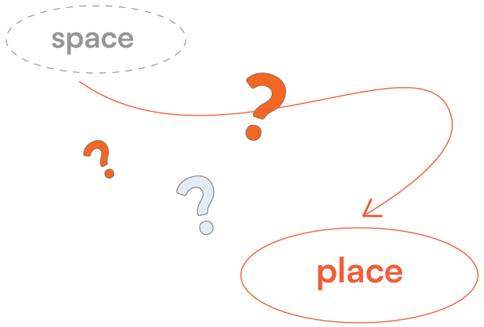


Fig. 7. Superblock Sant Antoni in Barcelona © Del Rio Bani



Fig. 8. Agora Maximus in Montreal © Raphaël Thibodeau

3.1.1. Tactical urbanism and place formation



From an architectural and urban perspective, the **difference between space and place** is crucial to understanding how environments are experienced and used. **Space is usually seen as an abstract and geometric measure**, defined by size, physical boundaries and operational structure. However, in its raw and unarticulated state, it remains undifferentiated and lacks attachment or identity (Tuan, 1977; Lefebvre, 1991).

Architecturally, this means that the design is not sufficient to create a place. Instead, place is created, rather, through the process of spatial configuration and human occupation over time. As Abusaada and Elshater (2021) argue, while spaces are produced through physical construction, **places are constituted through meaning, lived experience, and the presence of bodies engaging with those spaces**. Placemaking becomes a process of everyday practices, everyday experiences, and everyday social exchanges, which build up the process and make it tangible and real to the community (Basaraba, 2023).

The ideas behind placemaking can be found in Jane Jacobs' theories about how people's daily interactions in the city create safe, vibrant streets. **The concept of social presence and informal communication** through "eyes on the street" is an example of the role of social presence and informal communication in the creation of the spatial identity and security (Jacobs, 1961). Placemaking is described by Mark Wyckoff as a **people-centered planning, design and management of public space** that focuses on the relationships between persons, communities and built environment (2014).

Placemaking is then a multi-scale activity, **ranging from a wide-ranging urban placement to small-scale**, incremental placemaking. Tactical urbanism is most relevant in this latter field, as a method of quick and flexible place-making. This is a process that is **time-based**. Because tactical interventions are temporary, changes can continue to be made based on user feedback so that the changing space stays current with **the actual patterns of use** (Lydon & Garcia, 2015). **Place in this sense is not a final product, but a continuous process of negotiation between what is planned and what happens.**

Tactical urbanism creates **a feeling of ownership of users.** As spaces open up and become more inviting, they encourage participation and collective stewardship (Bruzzese, 2026). This social aspect is essential to the formation of places, and plays an important role in strengthening **the bond between people and place:**

> *"places matter as they are sites where strangers can meet and mix with others with whom they share their neighbourhoods and cities" (Latham & Layton, 2019)*

Furthermore, placemaking practices can be effectively integrated with the **principles of sensory urbanism. Sensory urbanism prioritizes the full spectrum of human perception, and systematically involves visual, auditory, olfactory and tactile senses in the formulation of urban experience.** As noted by Di Croce and Guastavino (2025), such interventions can be a subtle, but a powerful design tool due to their ability to adjust the perception, use, and interaction pattern of people in the most common urban settings.

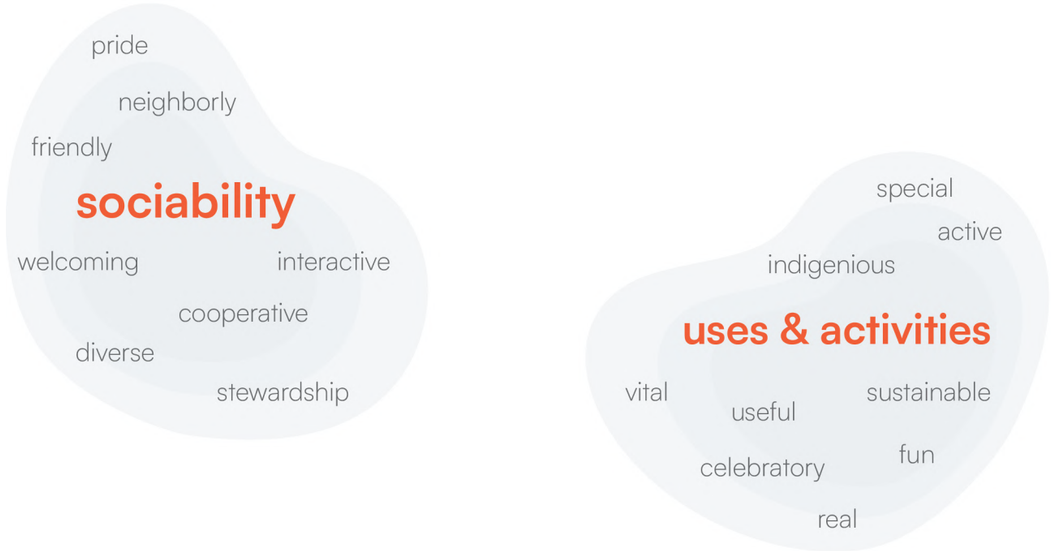


Figure 9-10. Key attributes and intangible qualities of place. Adapted by the author from Project for Public Spaces, What Is Placemaking?

3.1.2. Project types

Tactical urbanism interventions can be understood as a **phased process that evolves from temporary experimentation to permanent urban transformation**. This mode depicts a cyclic reasoning where thought processes are experimented, criticized, and gradually developed.

This phased approach to TU interventions was first outlined by Lydon and Garcia (2015).

The first phase, **the Prototype or Demonstration**, is short-term, and very experimental, and lasts between a day and a few weeks. The level of intervention of this type is **extremely short-term**, and may be based on basic, low-cost materials like paint, portable furniture, or temporary installations. The worth of such a stage is not its permanence, but its **capacity to expose, in short order, the spatial possibilities and to provoke the interest** of the populace.

The Pilot Project phase will extend the process of intervention, which will last several weeks to several months. At this point, the emphasis becomes on **feasibility estimation, data gathering, and refining of the original design** depending on the actual use and feedback. Although temporary, pilot projects bring more structure and frequently coordinate with municipalities, non-governmental organizations, and design professionals. This stage is **an important transition between informal experimentation and more formal planning activities** in which concepts can be tested in actual practice.

The Interim Design stage is another step towards the consolidation, and the interventions can take **a few months to years**. In this case, it is aimed at refining and stabilization of the proposed solution with a certain level of flexibility. **Materials and construction techniques get tougher, and the design starts to be more connected to the systems** which are already in place in the city. The stakeholders at this level are usually the city departments, engineers and planners which means that the institutional involvement is greater.

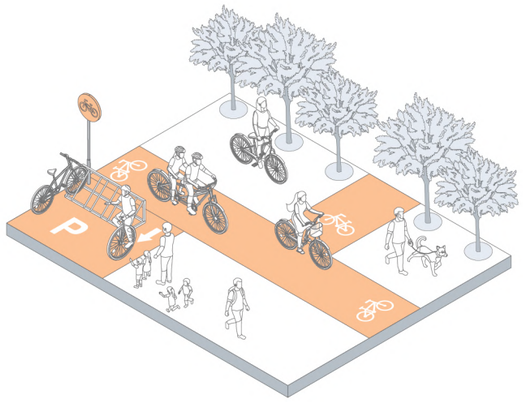
Lastly, **the Long-Term Design** is associated with a permanent implementation, in which the tested solutions are integrated into urban policy and infrastructure involving the participation of the public authorities and investors. At this phase, **the experience of the earlier stages is converted into long term and stable urban solutions.**

Table 01. Tactical urbanism project types, time frames, purposes, and stakeholders.

Project Type	Time Frame	Purpose	Stakeholders
Prototype / Demonstration	1 day — 2 weeks	Test ideas, raise awareness, provoke discussion	citizens / grassroots groups / activists
Pilot Project	2 weeks — 6 months	Evaluate feasibility, collect data, adjust design	municipalities / NGOs / designers
Interim Design	6 months — 3 years	Refine and adapt solution before permanence	city departments / engineers / planners
Long-Term Design	3 years +	Permanent implementation and policy integration	government / investors / policy-makers

Table content adapted by the author from Lydon and Garcia (2015), Tactical Urbanist's Guide to Materials and Design (v1.0), Street Plans Collaborative. Available at: https://issuu.com/streetplanscollaborative/docs/tu-guide_to_materials_and_design_v1

3.1.3. Operational layers

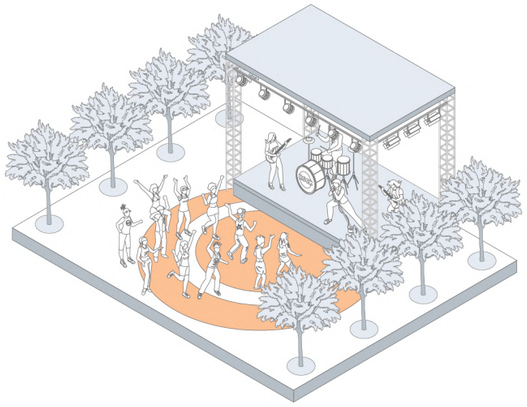


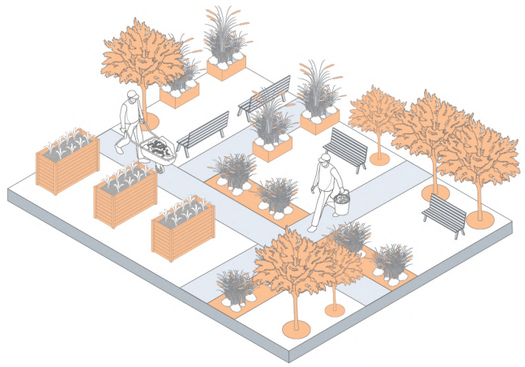
Mobility and street reallocation

This layer focuses on the redistribution of street space in order to prioritize pedestrians, cyclists, and public transport over private vehicles. Interventions aim to provide safety, accessibility, and comfort for all users. Examples include temporary bike lanes, curb extensions, shared streets, and traffic-calming measures.

Public space activation

Public space activation addresses the transformation of existing areas into vibrant, attractive, and multifunctional environments. The goal is to create welcoming spaces that accommodate various activities and uses. Spaces can be reimagined through event structures, seating furniture, and temporary installations that encourage social interaction.





Urban greening

The urban greening layer is responsible for the green infrastructure on the site. The interventions contribute to improving microclimatic conditions, enhancing local biodiversity, and supporting better water management. Vegetation is introduced through low-cost and adaptable solutions such as modular planters, parklets, and urban farm modules.

Cultural and community integration

This layer reflects the importance of social inclusion and the cultural expression of identity within tactical projects. It prioritizes the direct participation of local residents in representing their ideas and needs through the design process. The tools include community-led projects, open co-design workshops, cultural events and other participatory activities.

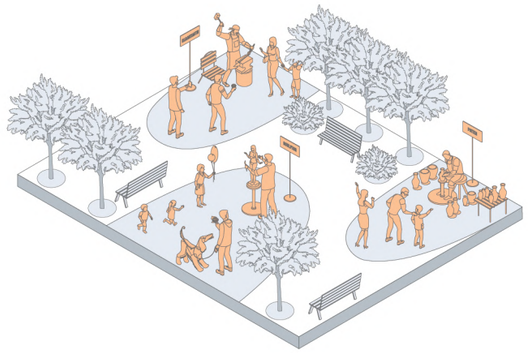


Figure 11. Intervention layers. Diagram by the author.

Table 02. Mobility and street reallocation layer.

Intervention	Tools / materials	Scale	Temporality	Reversibility	Cost level	Complexity	Adaptability	Stakeholder involvement	Impact
Street reallocation & widened side-walks	Paint, bollards, planters	Street	Temporary / semi-permanent	High	Low / medium	Low	High	Hybrid	• Reduction of spatial conflicts among users • Improvement of pedestrian safety and walkability
Pop-up pedestrian zones	Barriers, signage, greenery	Street / district	Temporary / seasonal	High	Low / medium	Low	High	Top-down / hybrid	• Promotion of pedestrian activity and social interaction • Reduction in vehicular emissions
Temporary bicycle lanes	Paint, cones, planters	Street	Short-term	High	Low	Low	High	Hybrid	• Enhancement of cycling safety • Encouragement of modal shift toward active mobility
Traffic calming measures	Chicanes, curb extensions, raised crosswalks	Street	Temporary / semi-permanent	High	Medium	Medium	Medium	Top-down	• Improvement of road safety through speed reduction • Increased pedestrian priority
Pop-up mobility infrastructure	Modular bus stops, mobility hubs, parklets	Street	Temporary / seasonal	High	Low / medium	Medium	High	Hybrid	• Strengthening of accessibility and multimodal connectivity within the urban environment
Integration of micro-mobility	Dedicated parking zones, signage	Street / site	Temporary / semi-permanent	High	Low	Low	High	Hybrid	• Facilitation of safe modal transitions • Improvement of last-mile connectivity
Adaptive street design	Temporary markings, sensors	Street	Temporary / evolving	High	Medium	High	High	Hybrid	• Support for data-driven decision-making • Gradual transition toward permanent urban solutions

Table 03. Public space activation layer.

Intervention	Tools / materials	Scale	Temporality	Reversibility	Cost level	Complexity	Adaptability	Stakeholder involvement	Impact
Parklets	Platforms, seating, plants	Site	Temporary	High	Medium	Medium	High	Bottom-up / hybrid	• Reallocation of street space to support social use • Enhancement of pedestrian-oriented public life
Urban seating furniture	Modular furniture	Site	Temporary	High	Low	Low	High	Bottom-up	• Encouragement of longer stays in public space • Facilitation of everyday social interactions
Play installations	Modular play elements, soft surfaces	Site	Temporary	High	Low / medium	Low	High	Hybrid	• Stimulation of playful engagement • Diversification of user groups within public space
Pop-up sports areas	Painted surfaces, modular flooring	Site	Temporary	High	Low	Low	Medium	Bottom-up	• Activation of underused spaces through physical activity • Promotion of collective use
Outdoor fitness installations	Exercise equip-ment	Site	Temporary	Medium	Medium	Medium	Medium	Top-down / hybrid	• Promotion of healthy lifestyles • Integration of physical activity into daily urban routines
Shaded rest areas	Canopies, textile structures	Site	Seasonal	High	Low / medium	Low	High	Hybrid	• Improvement of thermal comfort and inclusivity, enabling prolonged and diverse use of space
Event infrastructure	Stages, kiosks, stalls	Site	Temporary	High	Medium	Medium	Medium	Hybrid	• Temporary intensification of public space use • Strengthening of community gathering

Table 04. Urban greening layer.

Intervention	Tools / materials	Scale	Temporality	Reversibility	Cost level	Complexity	Adaptability	Stakeholder involvement	Impact
Guerrilla gardening	Soil, plants	Pocket	Seasonal	Medium	Low	Low	Medium	Bottom-up	• Enhancement of urban biodiversity • Activation of underutilized spaces
Movable planters / pop-up gardens	Planters, vegetation	Site	Temporary	High	Low	Low	High	Hybrid	• Introduction of flexible green infrastructure • Improvement of microclimatic conditions in urban areas
Urban farming	Raised beds, soil systems	Site	Seasonal	Medium	Low / medium	Medium	High	Bottom-up	• Promotion of local food production • Community engagement with ecological systems
Temporary stormwater planters	Modular planters, soil	Site	Temporary	High	Low / medium	Medium	Medium	Hybrid	• Support of small-scale water retention • Contribution to urban microclimate regulation
De-paving / permeable surface prototypes	Gravel, permeable pavers	Site	Temporary	High	Low / medium	Medium	High	Top-down	• Improvement of water infiltration • Reduction of surface runoff through permeable ground
Green shading elements	Climbing plants, pergolas	Site	Seasonal	Medium	Low / medium	Low	Medium	Bottom-up	• Reduction of heat gain • Enhancement of thermal comfort
Pollinator habitats	Bee hotels, bird boxes	Pocket	Semi - permanent	High	Low	Medium	High	Hybrid	• Support of pollinator species • Reinforcement of urban ecological networks

Table 05. Cultural and community integration layer.

Intervention	Tools / materials	Scale	Temporality	Reversibility	Cost level	Complexity	Adaptability	Stakeholder involvement	Impact
Murals /street art	Paint, walls	Building	Semi - permanent	Medium	Low / medium	Low	Low	Bottom-up / hybrid	• Strengthening of local identity • Expression of collective cultural narratives
Temporary art installations	Lightweight materials	Site	Temporary	High	Low / medium	Medium	Medium	Hybrid	• Activation of public space through cultural expression • Stimulation of community engagement
Co-design workshops	Maps, models, participatory tools	Street / district	Temporary	High	Low	Low	High	Bottom-up	• Empowerment of local communities • Inclusion of diverse stakeholders
Co-creation / DIY interventions	Recycled materials, tools	Site	Temporary	High	Low	Low	High	Bottom-up	• Fostering of community ownership • Collective responsibility in shaping the environment
Community-led events / markets	Temporary stalls, infrastructure	Site	Temporary	High	Low / medium	Medium	Medium	Bottom-up	• Enhancement of social cohesion • Support of local economies through shared activities
Cultural events / festivals	Stages, lighting, equipment	Site	Temporary	High	Medium	Medium	Medium	Hybrid	• Reinforcement of cultural exchange • Strengthening of community bonds
Wayfinding and storytelling	Signage, graphics	Site	Temporary / semi-permanent	High	Low	Low	High	Hybrid	• Communication of local identity • Improvement of spatial legibility

3.2 Tactical urbanism in the Italian context

Tactical urbanism in Italy is the regional application of international strategies of incremental and experimental urban design. Instead of emerging as a distinct theoretical framework, it renders global principles of temporary and participatory urbanism into particular institutional and spatial practices influenced by the local governance structures.

Cariello et al. (2021) state that **in Italy, tactical urbanism has gradually ceased to be the preserve of individual grassroots efforts and has become an institutional means of testing the public space**. This is especially visible in cities like Milan and Bologna, where short-term interventions are part of the city plans of regenerating urban areas. In this context, tactical urbanism does not serve as a combative practice but rather as **a way of experimenting and assessing the spatial changes** and then putting them into practice permanently.

The Italian context contrasts with the global discourse, which tends to overemphasize theoretical discussions of hybridity and governance, by the fact of the practical implementation of the concept of hybridity and governance into **administrative practices**, especially via municipal programs, pilot projects and collaborations between the government and business. This has been more noticeable in cities like Milan where tactical interventions are incorporated into larger city regeneration plans.

In practice, **Italian tactical urbanism is based on low-cost and reversible interventions** such as street markings, modular seating, planters, and temporary pedestrianization initiatives. These tools enable cities **to quickly adjust the settings of public spaces** and **monitor shifts** in movement and social activity. As Rossitti et al. (2023) mention, these interventions can also produce local externalities, such as more pedestrian movement, possible economic activation, but these outcomes are context-dependent and hard to generalize.
A notable application of tactical urbanism in Italy is its use in school surroundings and community-oriented spaces. Ammendola and Masiani (2026) emphasize the role of interventions around schools in enhancing safety, access, and socialization, and changing traffic-driven spaces into common public spaces that accommodate community life. **“Piazze Aperte per ogni scuola”** is an example of how tactical interventions could turn infrastructural edges, traditionally characterized by traffic, into civil spaces. Such programs make schools the center of neighborhood activity, expand the role of the public space beyond mobility in social integration and community development. However, their effectiveness is strongly dependent on long-term governance mechanisms, including maintenance responsibilities and continued institutional support.

Despite these advantages, the Italian experience also reveals key limitations. **The short-term character of interventions may restrict the long-term effect**, unless they are incorporated into the long-term planning strategies, and the uneven allocation of interventions among the municipalities results in spatial inequalities. Moreover, **the institutionalization of tactical urbanism** creates some doubts regarding the balance between the ideals of participatory and administrative control (Cariello et al., 2021).

Lack of balanced territorial implementation is another issue of concern. Although other cities like Milan have come up with sophisticated tactical urbanism systems, other cities show little ability to either adapt or sustain such systems, thus resulting in **spatial and institutional fragmentation**.

Tactical urbanism in Italy **is used to complement long-term urban regeneration rather than replace it**. Its temporary interventions can activate spaces and test solutions, but require continuous monitoring and integration into broader planning, highlighting its role as a flexible and iterative approach (Cariello et al., 2024).



Figure 12. Parcobaleno in L’Aquila © VIVIAMOLAq



Figure 13. Via Pacini in Milan © Apicultura



Figure 14. “Parking Day” in Turin © IZMO

3.2.1. Piazza Aperte programme



Figure 15. Projects location in Milan. Diagram by the author.

One of the most famous programmes based on tactical urbanism principles in Italy, called “Piazza Aperte”, launched in 2018 by the Municipality of Milan. The program has already created 54 open spaces in the piazza all over the city with further spaces to be created in the future and at developmental stages. (Comune di Milano, n.d.)

The initiative of the Piazze Aperte follows a new paradigm of urban design where short-term, low-cost interventions are implemented with **the goal of creating new spaces for the citizens and improving street safety**. Through interim or tactical urbanism, municipalities may embark on experimentation of new spatial use, which will provide the foundation to long term strategies that help in creating livable urban environments. (Global Designing Cities Initiative, 2022)

The program is a classic example of participatory governance whereby the city and its citizens formalize goals, objectives, and expected outcomes of “Piazze Aperte” with Collaboration Agreements, which are instrumental documents that facilitate partnership. Non-governmental organizations, informal groups, associations, schools, committees, foundations and corporations promoting corporate responsibility can cooperate with the municipal governments to execute programs that govern, maintain, ameliorate, and mobilize various urban commons.

“Piazza Aperte” programme involved the use of three major types of interventions. These largest ones were the **establishment of new walk areas, which required full street closures, the rearrangement of traffic, or the elimination of parking spots to create parklets with lightweight seating in 30 km/h areas.** The second involved **the expansion of existing pedestrian spaces** and that was done by rationalisation of carriageway width, which was occasionally by **reducing the lanes, removing some of the parking space and introducing traffic-reducing devices.** The last but the least intensive intervention was related to **equipping and activating underuse spaces** and utilised temporary installations of new pieces of furniture (benches, tables) and social activities organisation.

Notable to observe is that among these projects, only slightly **more than 10% of the projects, 6 in total, have so far been consolidated into permanent plans** by means of redevelopment works that formalised pedestrianisation and the introduction of new paving, vegetation and urban furnishings. **The other cases remain in some tactical or semi-permanent state**, casting serious doubt on transition time and ultimate stability. (Bruzzese, 2026)

The interventions were implemented in multi-phase format, during which various types of interaction between the citizens and the public administration appeared. Public funds and the vital input of voluntary work were the main sources of funding the programme, although there were also technical sponsors (i.e. provision of materials or services), corporate sponsorship by businesses in the re-developed districts, as well as European funding. (Bruzzese, 2026)



Figure 16. Piazza Dergano © Comune di Milano

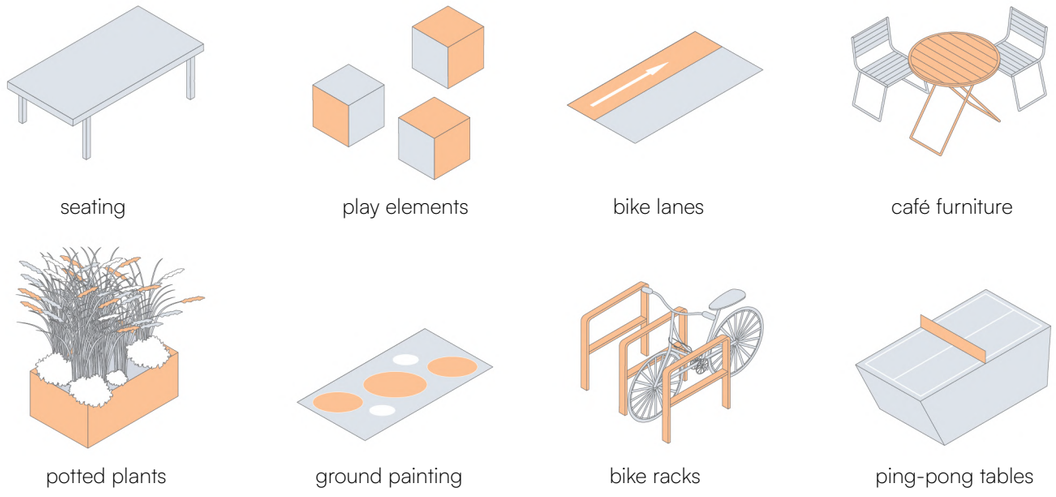


Figure 17. Main devices used in Piazza Aperte Programme. Diagram by the author.





Figure 18. Piazzetta Santi Patroni d'Italia before and after intervention. Annotated by the author. Photos © Comune di Milano.





Figure 19. Piazza Spoleto-Venini before and after intervention. Annotated by the author. Photos © Comune di Milano.

3.3 Case studies

To review and critically assess the actual applications of tactical urbanism projects in **the Italian context**, a series of case studies were chosen. This kind of comparative approach gives an **insight into what sort of interventions, of various scales, are capable of being temporary, low-cost, or long-term and systemic changes that can help improve the urban environments.**

The sampled projects, which include Floating Forest (Biella), BaiaBlanca (Levice), Luogo (Lugo), Mulino (Cuneo), Restart (L'Aquila) and CivicoCivico (Riesi), reflect a heterogeneous but consistent range of urban conditions, with a strong focus on small and medium-sized cities. This emphasis is particularly applicable to the project site in Candelo, since it **can be effectively compared with scenarios that have similar spatial scales, resource constraints, and community organizations.**

The case studies chosen demonstrate the functionality of tactical urbanism within smaller urban areas, where interventions are usually more contained, directly perceptible, and tightly connected to local communities. Tactical approaches are especially appropriate in those settings where the scale of action allows implementing it faster, with a deeper emphasis on citizen engagement, and more direct feedback. Meanwhile, these conditions also expose **certain limitations, including the lack of sufficient funding, decreased institutional capacity, and increased reliance on local efforts.**

The choice was informed by factors such as the applicability of participatory processes, variety of spatial strategies, and the clarity of the recorded results. Special focus was placed on the projects that show how interventions that are temporary can mobilize unused spaces and possibly precondition long-term changes. All these examples demonstrate **how even minor actions can have enormous social and spatial influence**, particularly when those are done in a setting of a similar scale as the one in Candelo.

Through a comparative lens of these case studies, the chapter develops a framework to grasp **how tactical urbanism can be adapted to the smaller urban context**. This point of view is critical of the basis of the further design proposal, so that the strategies constructed about Candelo are not only theoretically based, but also based on practices that have been tested and specific to each situation.



Figure 20. Location of case studies in Italy. Diagram by the author.

Floating forest

Location: Biella (BI)
Developed by: Better Places APS
Year: 2022



Figure 21. Project location in Biella. Diagram by the author.

Context

The Floating Forest project is located in Biella, in the area in front of Spazio Hydro, which was relocated after the flood of October 2020 destroyed its previous premises. The new site, situated along Via Cernaia within the EST-Urbano context, included a parking area that lacked social and environmental value. This condition prompted the rethinking of the space as a potential public and ecological resource (Fondazione per l'Architettura Torino, 2022).

Objective

The primary goal of the project was to transform the existing unwelcoming parking area into an open, accessible, and community-friendly space that would provide the citizens of Biella with a green urban environment for recreational activities. The project was also meant to become a continuous experiment in community empowerment, fostering collective imagination, and environmental awareness (Produzioni dal Basso, 2022).

Spatial Strategy

The spatial strategy focused on the temporary and incremental conversion of a paved surface into a green, inhabitable environment. Through the introduction of modular elements and vegetation, the project redefined the space as a hybrid between urban infrastructure and natural landscape. The intervention emphasized flexibility and reversibility, allowing the space to evolve over time while maintaining its experimental character (Produzioni dal Basso, 2022).

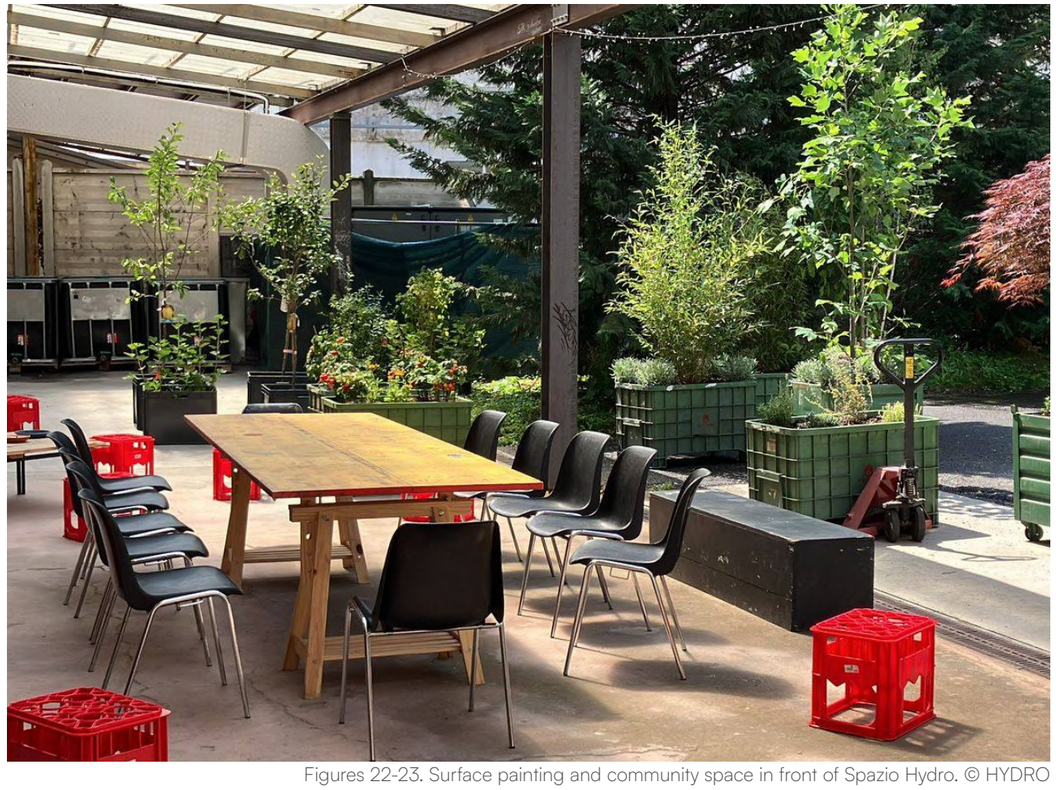
Community Participation

Community involvement was a major part of the project, both in design and in construction processes. The intervention has been designed in an open and participatory process, where citizens are directly engaged in the different phases of spatial design. Participants also contributed to the realization of the installations through the guided self-construction workshops, which reinforced a sense of shared ownership and collective knowledge production (Artieri, 2024).

Project Output

The result of Floating forest is a multifunctional public space that serves as a social hub, accommodating cultural activities, which involves various users. It is an ongoing project that encourages dialogue on climate change, urban ecology, and human and non-human relationships. It is a small but noteworthy example of bottom-up urban regeneration that is both community and environmentally focused (Fondazione per l'Architettura Torino, 2022).





Figures 22-23. Surface painting and community space in front of Spazio Hydro. © HYDRO

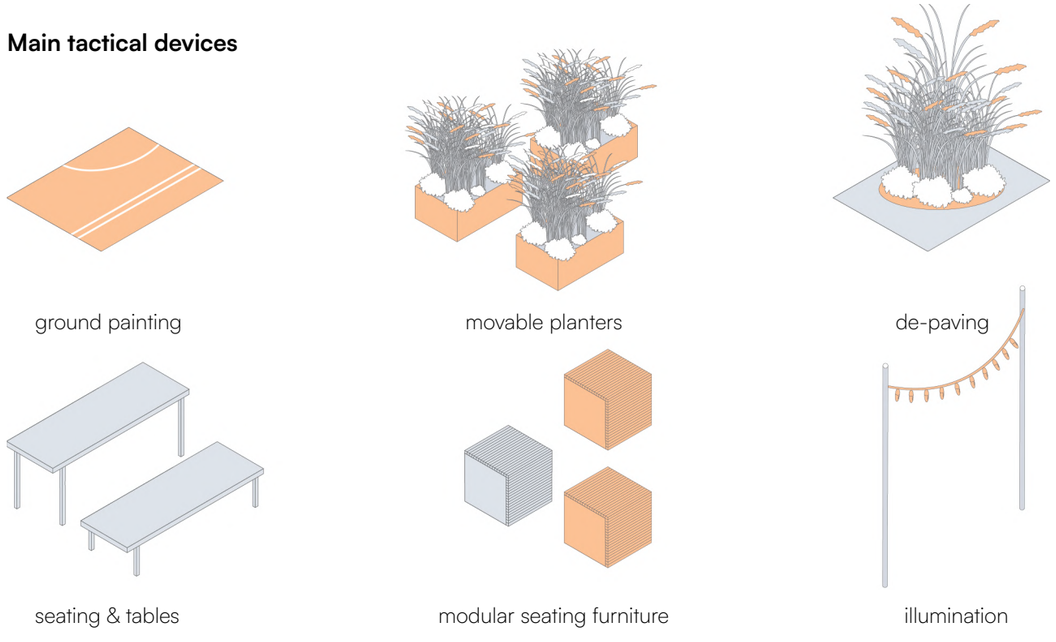
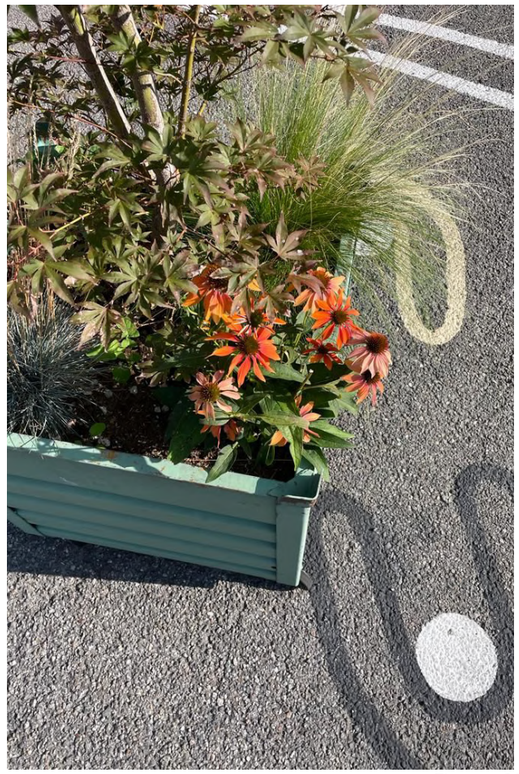


Figure 24. Main devices used in Floating forest project. Diagram by the author.

Table 06. Assessment of the Floating forest project

Assessment criteria	User experience	Project impact	Performance indicators
Spatial identity formation	perception of space as distinct and recognizable	transformation into identifiable ecological node	recognition of place, stopping behavior, visual prominence
Conditions for permanence	short-term stay, rest, contemplation	moderate increase in permanence	duration of stay, occupancy patterns
Activation of use	passive and contemplative engagement	limited but meaningful social interaction	diversity of low-intensity activities
Constructive and material logic	perception of flexibility and temporariness	easy adaptation and replication	maintenance effort, installation time
Governance and stewardship	indirect user involvement	continuity dependent on care	evidence of maintenance, plant condition
Learning and adaptive capacity	awareness of ecological interventions	knowledge on microclimate and greenery integration	monitoring of environmental performance







Figures 25-27. Modular vegetation, de-paving areas. © Maicol Negrello

BAIABLANCA

Location: Levice (CN)
Developed by: Orizzontale
Year: 2019



Figure 28. Project location in Levice. Diagram by the author.

Context

Baia Blanca is a former open-air discotheque, where the project takes place. The site is located in Levice, a small rural village with problems of depopulation and low economic activity. The place was a main nightlife attraction during the 1980s—90s and was closed in 2007, after that structure was abandoned. Baia Blanca represents a significant but neglected part of the local community's memory (A.titolo, 2019)

Objective

The main goal was to breathe new life into an abandoned and symbolic space that would become a location of cultural production and social interaction. The project explores new ways of re-inhabiting neglected spaces through the "Ricettario" format, as well as to fill the void of recreational and cultural opportunities in the area (Orizzontale, 2019).

Spatial Strategy

A temporary, adaptive, based on the restructuring of the existing discotheque place by the low-cost and modular installations. The space was reorganized according to functions, such as the entrance zone, dance floor, bar, and landmark tower. The materials included wood, steel, and textiles to create a new spatial identity. This flexible approach allows accommodation of various activities and leaves the possibility for future changes (Orizzontale, 2019).

Community Participation

A long preparatory phase has led to the development of the project with the participation of the local community, its associations, and the municipality. The construction process was an open workshop, involving residents, students, and professionals, who worked together on building and inhabiting the space. This was a collaborative process, which enabled knowledge sharing and strengthened a sense of shared ownership (Orizzontale, 2019).

Project Output

The outcome was a temporary but highly active cultural platform that combined architecture, events and social practices. The new reactivated space was used for workshops, discussions, and a final public event that brought the community back to the space. In addition to the physical changes, the project developed a replicable method for the reuse of abandoned buildings in participatory and experimental design processes (Orizzontale, 2019).





Figures 29-30. Event canopy and entrance structure. © Riccardo Angius

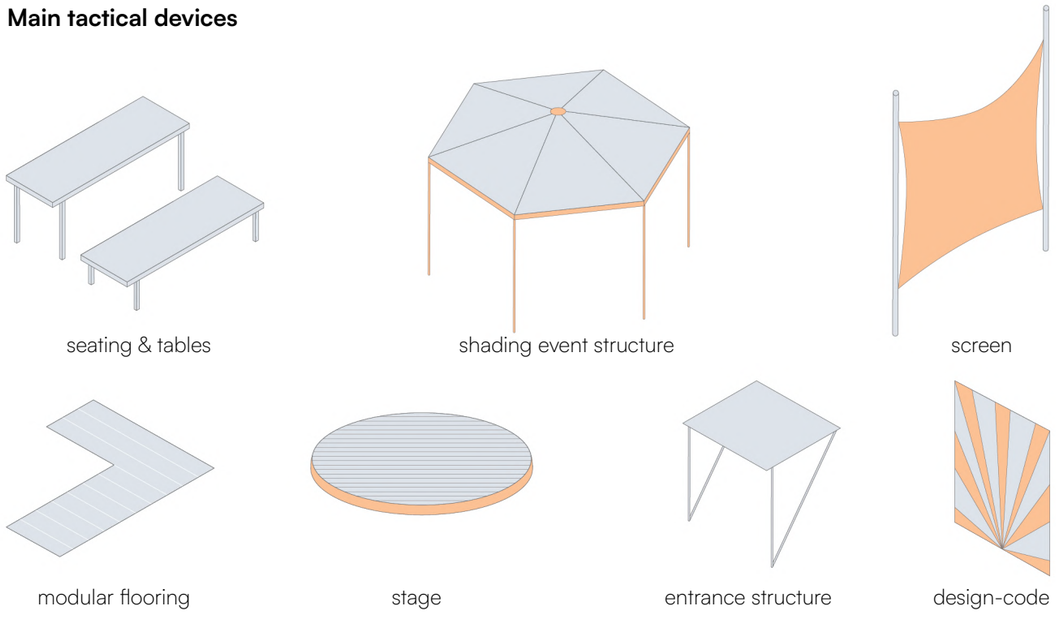
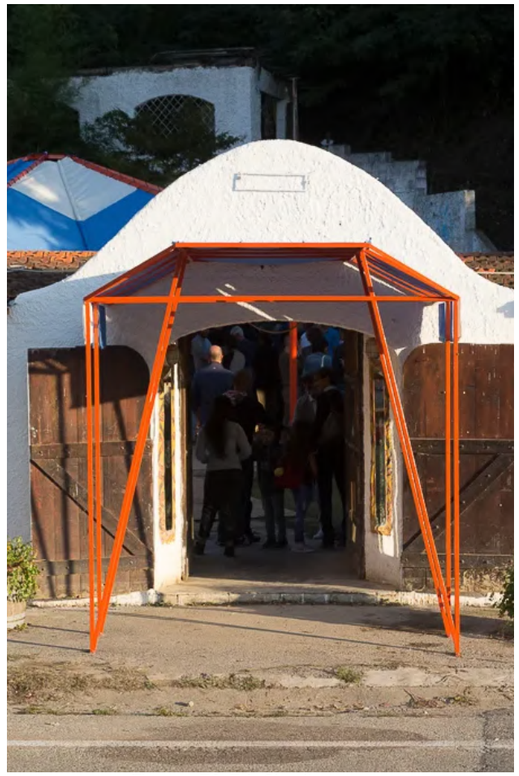


Figure 31. Main devices used in BaiaBlanca project. Diagram by the author.

Table 07. Assessment of the BaiaBlanca project

Assessment criteria	User experience	Project impact	Performance indicators
Spatial identity formation	recognition of a shared gathering place	requalification of marginal area	user presence, spatial recognition
Conditions for permanence	informal gathering and seasonal use	increased temporary occupation	duration of stay, seasonal variation
Activation of use	social interaction and informal events	strengthening of local social life	number and type of activities
Constructive and material logic	accessible and participatory construction	high adaptability and replicability	cost efficiency, ease of assembly
Governance and stewardship	high sense of ownership	sustained activation over time	community involvement level
Learning and adaptive capacity	collective learning through use	transferable model for small contexts	documentation, replication potential







Figures 32-34. Shading structure, entrance canopy, and aerial view of the intervention. © Riccardo Angius

CivicoCivico

Location: Riesi (CL)
Developed by: Orizzontale
Year: 2020



Figure 35. Project location in Riesi. Diagram by the author.

Context

Riesi is a small town in central Sicily, in the province of Caltanissetta: the yellow and brown heart of Sicily, once a granary and a mine and now an inland area suffering from depopulation and marginalization. Project was created in the context of LURT - Laboratorio Umano di Rigenerazione Territoriale - international summer school organized by the collective Orizzontale in partnership with local organizations such as Servizio Cristiano Riesi (religious and social support centre) and academic and professional institutions (Urban Matters, 2025; Solari, 2021).

Objective

The project is a part of the process of urban regeneration aimed at encouraging Riesi's young people to live their town. The main objective was to reuse and recover a three-storey building that was seized by the Mafia and left in a deplorable state turning it into a community facility that could be used by inhabitants (Urban Matters, 2025).

Spatial Strategy

The architectural aspect of the intervention concerned opening the ground floor to the street and constructing flexible interior spaces that could support various activities like workshops, play and cultural activities. Big openings - such as a glass street door - physically linked the inside to the street life and strengthened the purpose of the building as a civic space (Urban Matters, 2025). Outside, the nearby Via Campania was transformed into a walking street by painting it in vivid blue and white graphic play markings, which encourage informal games and play, continuing the spatial impact of the project into the city (Urban Matters, 2025; Solari, 2021).

Community Participation

The project strongly based itself on a communal process of construction, uniting participatory approaches in design that engaged architects, students, local craftspeople, inhabitants, and young professionals. This strategy was aimed at not only the physical space renovation but also the mobilization of social relationships and a sense of belonging in the town (Solari, 2021).

Project Output

Placed within larger debates about depopulation, marginalisation, and the degradation of historic towns in the internal regions of Italy, CivicoCivico is one example of how managing spatial change, with low-budget interventions, can be used to tackle social fragmentation at the same time.
Its procedure was intertwined with architecture, community involvement, and cultural mobilization, showing how the regeneration of built fabric can be accompanied by the growth of networks, skill formation, and civic agency among the local communities (Urban Matters, 2025; Ferrante, 2024).





Figures 36-37. Playable street and community space intervention. © Federica Lecci; Emanuele Piccardo

Main tactical devices

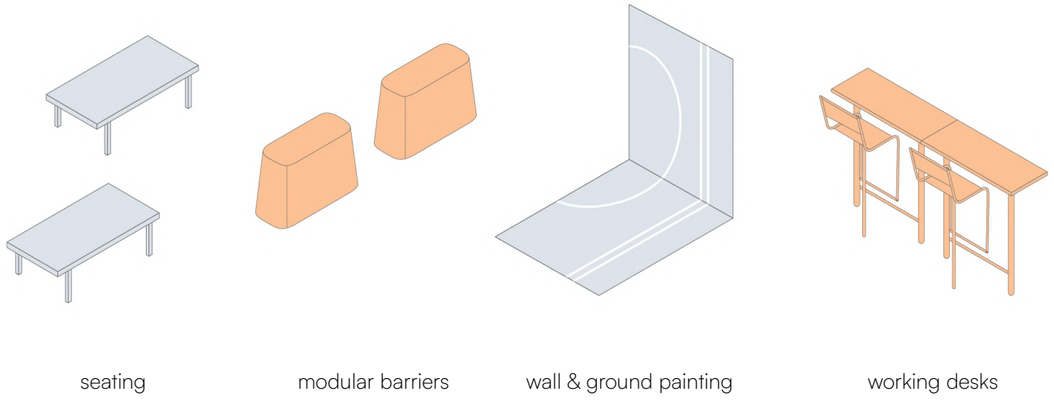


Figure 38. Main devices used in CivicoCivico project. Diagram by the author.

Table 08. Assessment of the CivicoCivico project

Assessment criteria	User experience	Project impact	Performance indicators
Spatial identity formation	strong sense of belonging and recognition	re-signification of public space	user perception, identity building
Conditions for permanence	daily use and social interaction	increased permanence and civic presence	duration, frequency of use
Activation of use	active participation and engagement	social cohesion and inclusion	diversity of users and activities
Constructive and material logic	perception of openness and flexibility	incremental spatial transformation	adaptability, maintenance ease
Governance and stewardship	strong collective ownership	long-term sustainability of intervention	actor involvement, continuity
Learning and adaptive capacity	awareness and empowerment	knowledge production on participatory design	documentation, feedback cycles







Figures 39-41. Interior view, community participation, modular public furniture. © Emanuele Piccardo; Giulio Marzullo

Mulino

Location: Cuneo (CN)
Developed by: Orizzontale
Year: 2018



Figure 42. Project location in Cuneo. Diagram by the author.

Context

The project is located in the park in Via Ghedini 1 in Cuneo Nuova, a neighborhood in the city of Cuneo in Piedmont region. The neighborhood is characterized by contemporary urban fabric, open spaces, and a lack of strong identity or public gathering points.

Objective

The project Mulino, created by Orizzontale as a part of the ZOOART A.R.C.A. program in Cuneo, can be seen as a participatory intervention involving the construction of a playground in public space, by using self-construction practices. The objectives was to rethink the park in Via Ghedini 1 (Cuneo Nuova), with a new proposal for a playground and to design a playful design object produced by Gufram for Cuneo Nuova's bowls club. As a subset of a larger set of workshops initiated to reactivate public spaces, the project involves students, designers, and local communities in a shared design-build process (Orizzontale, 2018).

Spatial Strategy

Spatially, Mulino is imagined as an urban game, a traditional board game, but put into a real space. The installation is made up of a system of simple modular elements which also serve as playground equipment and informal urban furniture. These aspects promote a variety of interpretations and usages, and people are free to engage in interaction and recycle the space with play and movement (Ragazzo, 2018). The project focuses on being flexible and open, which is one of the features of tactical urbanism interventions. Instead of specifying a predetermined program, the design encourages flexibility and appropriation by users, to accommodate diverse activities and age brackets. In this respect, Mulino is not just a playground but a social tool which can trigger the collective use and redefine the understanding of the public space.

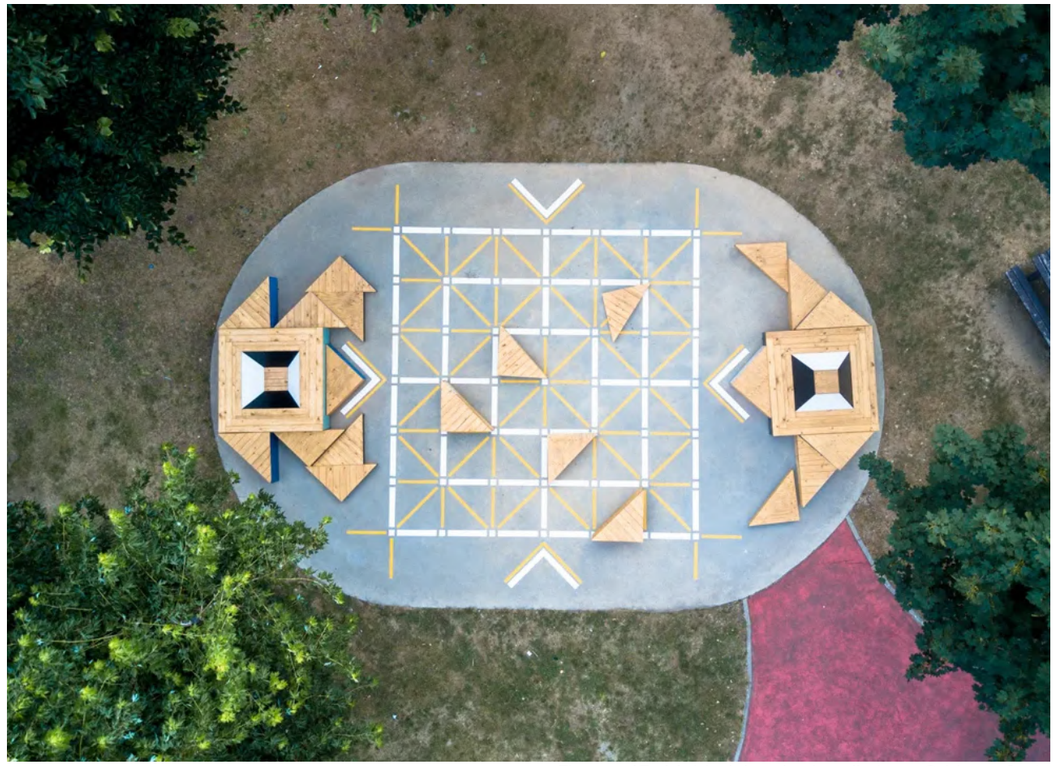
Community Participation

The form of the intervention is a construction workshop, which is a key methodological instrument in the practice of Orizzontale, and through which it is possible to integrate design, experimentation, and direct involvement of the user. This solution allows testing spatial solutions in real-time and contributes to the cooperation of various players, who are engaged in transforming the public space (Orizzontale, 2018).

Project Output

Mulino proves that low-cost, participatory, and play-based interventions can help to regenerate urban environments. The project reveals the prospect of temporary installations as a way of social interaction and the establishment of inclusive community spaces by embedding modular structures and community interaction.





Figures 43-44. Modular play installations. © Marco Sasia

Main tactical devices

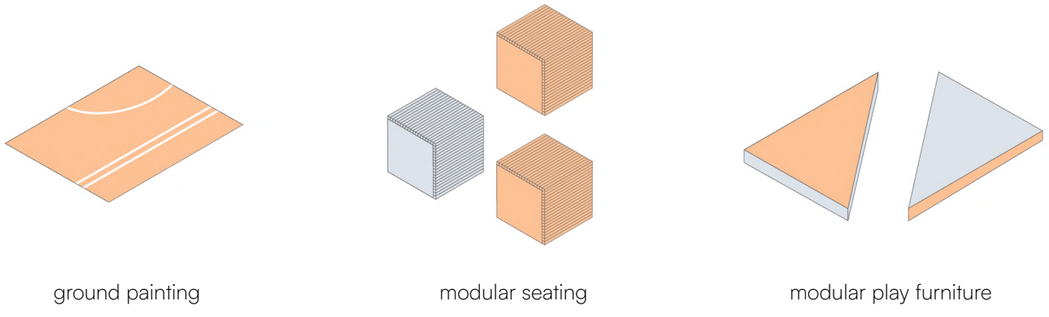


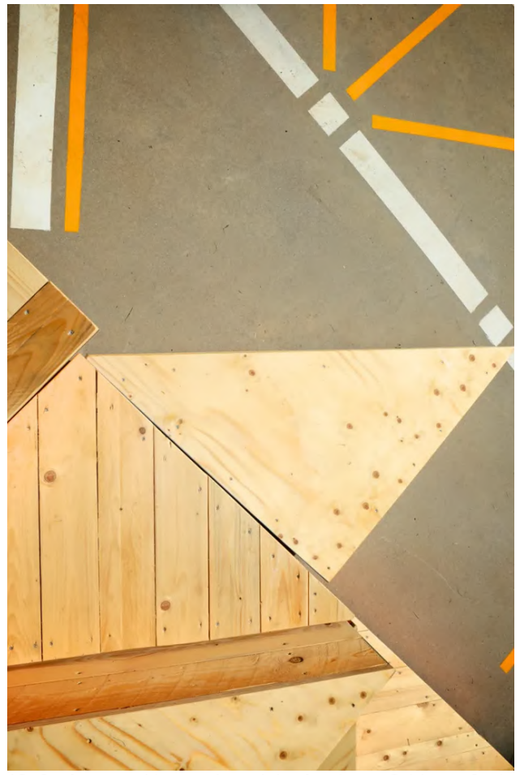
Figure 45. Main devices used in Mulino project. Diagram by the author.

Table 09. Assessment of the Mulino project

Assessment criteria	User experience	Project impact	Performance indicators
Spatial identity formation	recognition of place as cultural node	strengthened local identity	user perception, symbolic value
Conditions for permanence	structured yet flexible use	increased permanence and intensity	duration of stay, event participation
Activation of use	active engagement and participation	revitalization of space	frequency of events, user diversity
Constructive and material logic	perception of stability with adaptability	balanced transformation approach	material durability, flexibility
Governance and stewardship	shared responsibility	sustained use over time	stakeholder involvement
Learning and adaptive capacity	increased awareness of potential reuse	replicable regeneration strategy	documentation, scalability







Figures 46-48. Surface marking and modular furniture. © Marco Sasia

LuOgo

Location: Lugo (RA)
Developed by: Orizzontale
Year: 2022



Figure 49. Project location in Lugo. Diagram by the author.

Context

The LuOgo project is situated in the historic centre of Lugo, in the area in front of the Rocca Estense, within a monumental square of great historical and symbolic significance.
Lugo is a medium-sized town characterised by a strong tradition of community organisations, co-operation and civic participation. Although not a marginal context in the strict sense, the project is situated in a non-metropolitan setting, where cultural and social practices in public spaces already exist but require opportunities for consolidation.

Objective

The project sought to reclaim a historically important, but underutilized public space with a lightweight and reversible architectural installation (IFDM, 2022). The aim was to create a place where citizens can meet, play, plan events and activities. Tactical urbanism is not used to 'activate' an absent community, but to strengthen an already existing network of relationships.

Spatial Strategy

Spatially, the project is arranged around a circular wooden inscribed structure which establishes a permeable enclosure in the open landscape. This layout forms an interim room within the open area, which provides a new point of focus, without breaking visual and spatial connections with the environment (IFDM, 2022; Divisare, 2022). Simple urban landscapes like seating platforms, swings, and shaded areas are included in its installation and they are meant to facilitate informal activities, social interaction, and cultural activities. Modular wooden elements and dry-assembly methods are indicative of the ethos of tactical and ephemeral urbanism. The building is specifically temporary and flexible and can be disassembled, reused, and repurposed with time, keeping such costs low and minimal environmental effects (Divisare, 2022).

Community Participation

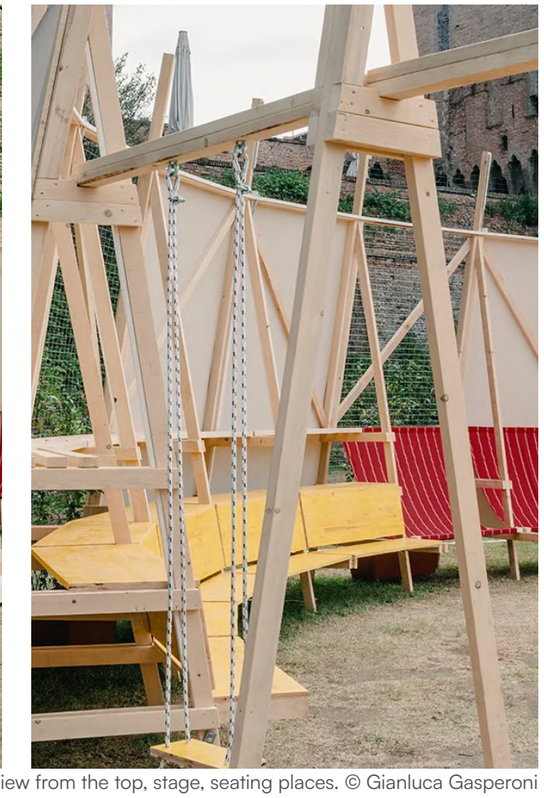
The intervention became achievable with the help of a participatory process of self-construction which involved the presence of students, designers and local participants. This shared strategy not only simplified the process of construction but also strengthened the social aspect of the project, making the process of building a construction resource to engage the community (Area, 2022).

Project Output

LuOgo shows that the use and perception of the public space can be redefined through the aid of small-scale and flexible interventions that are premised on urban furniture and participatory construction. The project mentions the potential of ephemeral architecture to create new types of collective utilization and spatial identity in the pre-existing urban settings.







Figures 50-52. View from the top, stage, seating places. © Gianluca Gasperoni

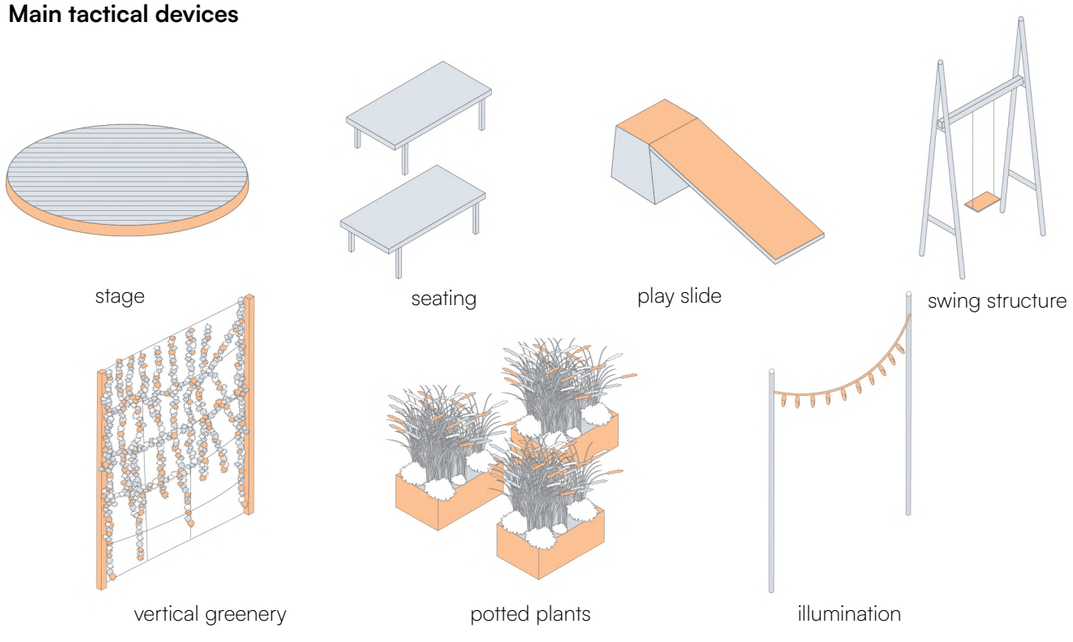


Figure 53. Main devices used in LuOgo project. Diagram by the author.

Table 10. Assessment of the LuOgo project

Assessment criteria	User experience	Project impact	Performance indicators
Spatial identity formation	immediate recognition and orientation	creation of distinct place identity	behavioral patterns, recognition
Conditions for permanence	everyday usability	increased regular occupation	daily use frequency
Activation of use	spontaneous and diverse activities	social activation of space	variety of uses, repetition
Constructive and material logic	perception of adaptability	ease of modification and scaling	construction efficiency
Governance and stewardship	balanced ownership	stable yet flexible use over time	maintenance evidence
Learning and adaptive capacity	awareness of spatial adaptability	transferable design model	replicability, documentation







Figures 54-56. Construction process and swing structure. © Gianluca Gasperoni

RESTART

Location: L'Aquila (AQ)
Developed by: VIVIAMOLAq
Year: 2014



Figure 57. Project location in L'Aquila. Diagram by the author.

Context

L'Aquila is a historic city in central Italy, located in the Abruzzo region and surrounded by the Apennine Mountains. The city was severely damaged by the 2009 L'Aquila earthquake, which led to extensive restoration efforts. The project site is situated in Piazza San Basilio, which is close to the university area, where an abandoned gravel area with some trees was seen as a possible location to be transformed.

Objective

A small-scale intervention of tactical urbanism to reactivate public space in a post-disaster setting. The main aim was to transform this unused area into a mini public square serving students and locals, offering them a chance to rest, socialize, and have informal activities (Latini, 2016).

Spatial Strategy

The spatial intervention was mainly related to implementation of urban furniture components, which are modular and flexible elements. The square was organized with the help of the system of seating devices which created various functional areas including reading, conversation, and leisure areas, but the overall open and flexible structure was preserved (Latini, 2016). The unique aspect of RESTART is the high level of usage of recycled materials, which are located directly in the waste of the earthquake, and in the immediate construction sites. The seating elements were made of metal gabions stuffed with rubble and wooden planks that were taken out of a dismantled scaffold. This approach not only greatly reduced expenses but also incorporated a solid symbolism into the project, turning the remains of devastation into components of communal renewal (Latini, 2016).

Community Participation

It was designed using participatory principles, in which users, especially students, are engaged in the definition of the needs and possible applications of the space (Viviamolaq, 2016). This participatory practice was also applied to the construction stage, structured as an open self-building workshop that involved citizens in the actualization of the intervention (Interni Magazine, 2016). Its construction involved fairly simple methods and manual assembly, thus being accessible to non-professional participants.

Project Output

RESTART is a socio-spatial machine designed to reconstruct a communal identity of a traumatized community. The project will help in re-establishing everyday social practices by reactivating a small yet strategic urban space and aid in the gradual reoccupation of the historic center. It is, therefore, a perfect example of how small, tactical interventions can be important to larger-scale post-disaster recovery efforts.





Figures 58-59. Construction team, seating place. © VIVIAMOLAq

Main tactical devices

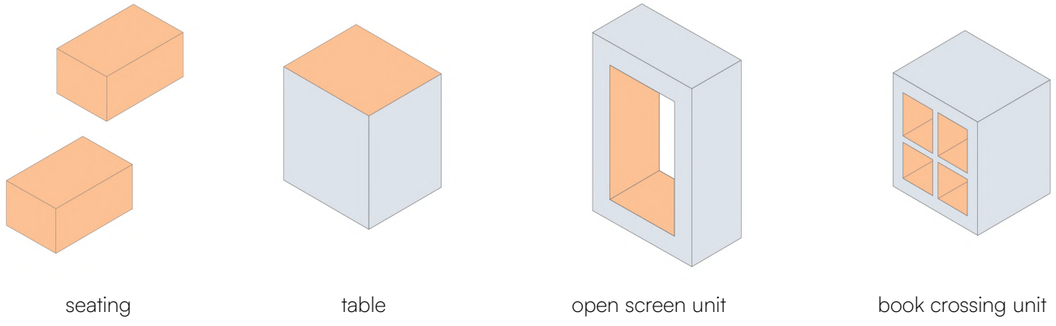


Figure 60. Main devices used in Restart project. Diagram by the author.

Table 11. Assessment of the Restart project

Assessment criteria	User experience	Project impact	Performance indicators
Spatial identity formation	reconnection with place	restoration of urban identity	user return, spatial recognition
Conditions for permanence	safe and usable environments	gradual reoccupation of space	duration of stay
Activation of use	renewed social interaction	revitalization of inactive areas	activity frequency
Constructive and material logic	perception of flexibility and safety	rapid implementation	time and cost efficiency
Governance and stewardship	shared responsibility	structured regeneration process	stakeholder coordination
Learning and adaptive capacity	collective learning process	model for resilient urban regeneration	monitoring, long-term adaptation



Figures 61-63. Metal gabions stuffed with rubble, view from the top. © VIVIAMOLAq

Table 12. Comparative matrix of tactical interventions of case studies

Layer	Tactical intervention	Floating forest (Biella)	BaiaBlanca (Levice)	CivicoCivico (Riesi)	Mulino (Cuneo)	LuOgo (Lugo)	Restart (L'Aquila)
MOBILITY & STREET REALLOCATION	Street reallocation & widened sidewalks			●			
	Pop-up pedestrian zones						
	Temporary bicycle lanes						
	Traffic calming measures			●			
	Pop-up mobility infrastructure						
	Integration of micro-mobility						
PUBLIC SPACE ACTIVATION	Parklets						
	Urban seating furniture	●	●		●	●	●
	Play installations			●	●		
	Pop-up sports areas						
	Outdoor fitness installations						
	Shaded rest areas	●	●			●	
	Integration of micro-mobility						
	Event infrastructure	●	●	●			●
URBAN GREENING	Guerrilla gardening			●			
	Movable planters / pop-up gardens	●				●	
	Urban farming	●					
	Temporary stormwater planters	●					
	De-paving / permeable surface	●					
	Green shading elements	●				●	
	Pollinator habitats	●					
CULTURAL & COMMUNITY INTEGRATION	Murals / street art	●	●	●	●		
	Temporary art installations		●			●	
	Co-design workshops	●	●	●	●	●	●
	Co-creation / DIY interventions	●	●	●	●	●	●
	Community-led events / markets	●	●	●	●		●
	Cultural events / festivals	●	●			●	
	Wayfinding and storytelling		●	●			

3.4 Learning from case studies

The comparative study of the chosen case studies offers **a consistent pattern of how temporary urban interventions are to be conceived, implemented, and appropriated within the Italian context**. The matrix of interventions reveals recurring patterns in both the types of strategies employed and the conditions that enable or constrain their realization. In this perspective, the concept of tactical urbanism is revealed not as a design strategy but also as a **socio-spatial process that is determined by economic, institutional, and cultural factors**.

The first observation is the prevalence of the interventions that are connected to community engagement and activation of the public space. **The most widely implemented devices across all case studies are urban seating, event infrastructure and participatory practices** (co-design workshops and co-creation processes). These aspects suggest a common logic of operation, which is **the quick mobilization of spaces** which are not in use with minimum physical restructuring. These projects emphasize **reprogramming space with temporary uses and collective activities** rather than depending on massive renovation of infrastructural change. **Such strategies are effective** because of their ability **to create instant visibility and social engagement**, which can turn parts of the city that were left unused or forgotten into active urban nodes in a few days.

This tendency is linked to the nature of tactical urbanism itself, its **low cost, reversible, and flexible solutions**. Focused on reducing the costs of financial input and technical complexity, **these interventions reduce the barriers to implementation** and allow a more significant number of actors to enter the process. Specifically, the key theme in all the case studies is **the centrality of participatory practices**, which highlights the importance of tactical urbanism as a civic engagement platform. **Co-design and DIY interventions** are not just supportive elements but are at the heart of the projects as they enable the transition of top-down planning to more inclusive and collaborative types of urban production.

The fact that the urban greening strategies in the analyzed case studies are not as widespread as they could have been can be partially attributed to their spatial limitations since **most of the interventions target small or residual spaces**.

But, in addition to these constraints, **vegetation is a comparatively undeveloped layer**. I believe that **this dimension can be enhanced**, and it can help not only to enhance the quality of space but also to enhance environmental performance, which is why it can help address such issues as **the regulation of microclimate and resilience in urban areas**.

The same argument is to be made with **interventions related to mobility**. Some of the case studies are located in places where road infrastructure is not directly involved, which is why no precautions, like temporary bike lanes or street reallocation have been taken. This is an indication of the size and situation of the projects and not insignificance. Simultaneously, it also underscores one of the main limitations: **interventions that interact with mobility systems are more difficult to execute under regulatory, technical and institutional limitations**, and thus are less studied in these examples.

Altogether, the discussion of the case studies indicates that **tactical urbanism in the Italian environment is mainly shaped towards socially-oriented types of change**, with the focus on participation, temporality and adaptability. Although this method is very efficient in making spaces active and creating community interaction, it is more likely to work within the boundaries of already existing urban buildings as opposed to making fundamental changes in them. The difficulty, then, is how to get the disconnect between the short-term interventions and the long-term change, so that **the experiences and lessons learned in tactical urbanism can be applied to the wider planning efforts** and build a more reliable and inclusive urban setting.



Figure 64. Tactical devices in case studies. Diagram by the author.

3.5 Tactical regenerative design approaches

This study explores **how tactical and short-term interventions can also be regenerative**. How can tactical practices facilitate not just the temporary enhancement of urban areas but the full reconfiguration of urban metabolism, eco-system and social structures? In this perspective, tactical urbanism is defined as an operative field where experimentation and adaptability merge to produce regenerative outcomes across multiple city layers.

To move forward in understanding the regenerative potential in tactical urbanism, **the main strategies are explored through 4 layers**, which address specific aspects of the system:

- biodiversity and water management
- mobility, accessibility and urban infrastructure
- social activation and urban comfort
- resourse, energy and material circularity

The four thematic layers were chosen as an operational structure for the application of regenerative principles to measurable design strategies. Their definition is closely related with the evaluation criteria adopted in this research, as each layer corresponds to a set of Key Performance Indicators (KPIs) used to assess the effectiveness of the proposed interventions.

Another important yet less visible layer is the participatory process and governance of the tactical regenerative project. Although crucial for decision-making and community engagement, it does not involve physical devices and is therefore not explored further in study.

Considering the **Biodiversity and water management layer**, small-scale interventions such as vegetation systems, habitat creation, partial de-paving and soil regeneration enhance ecological connectivity and resilience, addressing challenges related to habitat fragmentation and urban biodiversity loss (Fahrig, 2003; Hwang & Jain, 2021; Mertens, 2021). The goal is to reinforce the interdependence of ecological systems. Although interventions can be limited in size, they act as experimental prototypes for larger green infrastructures, demonstrating how biodiversity can be reintroduced incrementally into urban environments.

In parallel, **mobility-focused strategies** are focused on temporary solutions such as pop-up bike lanes, widened sidewalks for pedestrians, and traffic-calming regulations allow cities to test alternative configurations of mobility. These interventions promote safe and environmentally friendly transportation by giving priority to pedestrian modes of movement. The interventions seek to improve the environmental performance through the introduction of permeable mobility surfaces and the use of climate-responsive materials, such as cool pavements (Kappou et al., 2022).

Social activation and urban comfort reflect the importance of public space in terms of interaction and inclusiveness, and how spatial design relates directly to the behaviour of human beings, social exchange and duration of stay (Gehl, 2011). Microclimatic aspects such as exposure to solar radiation, heat island effect and seasonal changes are critical in determining the usability of public space, nature-based design strategies are not only essential for adapting to climate change but also for improving overall environmental comfort and quality of life in urban areas (Negrello, 2024).

The resource, energy and material circularity layer highlights the importance of small-scale renewable energy systems and circular material flows. Such interventions can contribute to reduced environmental impact and increased resilience (Chen et al., 2024). The implementation of small-scale renewable energy prototypes, such as community-based solar energy or micro wind turbines, enables on-site testing, engaging the public, and showcasing low-impact solutions in real-world conditions before widespread adoption.

Importantly, **all of the interventions are not viewed as isolated solutions, but as elements of a single system that interact in parallel and are interdependent**. It is a multifaceted method of evaluation in which the relatively small-scale, temporary interventions can play a role in longer-term environmental, social and infrastructural change.



Figure 65. Tactical regeneration. Diagram by the author.



Figure 66. Regenerative tactical strategic layers, design objectives, and outcomes. Diagram by the author.

Regenerative tactical strategic layers, design objectives, and outcomes

On the diagram (Fig. 66), the interconnections between the four strategic layers are illustrated. Each layer encompasses a set of objectives, while many of the topics intersect and interact to generate regenerative outcomes. Together, these strategies contribute to the main regenerative goals of the framework, namely ecological resilience, thermal comfort, social inclusion and well-being, resource efficiency, renewable energy integration, and material circularity.

The four strategic layers were selected based on the synthesis of the literature review and analysis of case studies. Another criterion for the selection was the relevance to the project development and the specific context of the Candelo site. Thus, the layers collectively address the environmental, social, spatial and resource-based aspects of urban regeneration.

The relationships and interconnections between the layers represent a fundamental aspect of regenerative approaches and reflect the principles of systems thinking. The intended outcomes can only be achieved through the cooperation and mutual reinforcement of multiple layers rather than through isolated interventions.

Each strategic layer is associated with a KPI category, which is further subdivided into a set of specific performance indicators. As shown in Table 13, each KPI category is evaluated through measurable indicators that enable a quantitative assessment of the project's regenerative performance. For example, biodiversity is assessed through vegetated area, vegetation stratification, and green network continuity, while microclimate performance is evaluated through average surface temperature reduction (°C) and the extent of shaded areas (m^2).

The four strategic layers, their main objectives, and the corresponding tactical regenerative devices are further explored and developed throughout the research.

Table 13. KPI categories and their indicators

KPI category	Indicators
Biodiversity	Vegetated area (m^2), vegetation stratification (%), and green network continuity
Water management	Rainwater-retaining and permeable surface increase (%)
Mobility & accessibility	Barrier-free accessible public space (m^2 / %), and eco-mobility parking capacity (n.)
Social activation	Diversity of supported activity types (n.), and supported user groups (n.)
Microclimate performance	Average surface temperature reduction (°C) and shaded area (m^2)
Resource circularity	Reused/reclaimed materials (%)
Energy performance	Renewable energy production (kWh/year)

Strategic design objectives and tactical devices

Biodiversity and Water Management

vertical vegetation and green roofs

Biodiversity strategies can include vertical gardens, green roofs, and hanging plant installations to maximize greenery where ground space is limited. Modular green roofs could be installed on temporary or permanent structures. Growing vertical gardens on fences, walls, and building facades improve insulation and stormwater management.

pop-up vegetation

Temporary interventions such as movable planters, pop-up gardens, and parklets can significantly increase urban vegetation, even within dense urban environments. By using plants that attract pollinator-friendly species, these elements create micro-habitats that are conducive to insects, birds, and other members of the urban fauna, thereby fostering the formation of local ecological networks on a micro-scale.

urban wildlife habitats

Shelters and habitats of urban wildlife can also be offered through tactical projects. The pollinators and useful insects are provided with bee hotels, birdhouses, and insect hotels, and the small green corridors and shaded areas provide shelter to birds and small mammals. In some contexts, providing shelters or feeding stations for stray cats and dogs can promote coexistence and improve animal welfare, while engaging the community in responsible care.

urban farming

The community gardens, rooftop farms, and raised planter beds provide habitats for pollinators, birds, and other beneficial insects, enhancing micro-ecosystems with diverse plantings. Urban farm soil promotes nutrient cycling and the existence of diverse microorganisms enhancing the overall ecological health. Farming also helps create awareness and stewardship of the local biodiversity through the involvement of residents in farming.

soil regeneration

In addition to vegetation, tactical projects can incorporate soil regeneration methods, such as de-paving and rehabilitating compacted ground. The process involves primarily removing impermeable surfaces and then reintroducing living soil systems. These interventions allow to restore natural processes like water infiltration and nutrient cycling.

rain gardens and bioswales

Furthermore, small-scale rain gardens and bioswales can be used for pollutant removal. As stormwater flows through the bioswale, pollutants such as silt, organic chemicals, and pathogens are filtered out by vegetation and soil, improving water quality before it reaches surface water bodies.

The principles of nature-based solutions are based on the research work of Negrello M. (2024). Architettura per il cambiamento climatico: Nature-based solutions come elemento del progetto architettonico e urbano. In B. Giudice (Ed.), Città e natura (pp. 73—89). Città Studi Editore.

Mobility, Accessibility and Urban Infrastructure

street space reallocation

One of the most effective tactical strategies for improving mobility, safety and walkability is the street reallocation, including widening of sidewalks using temporary materials such as paint, bollards, and planters. Bicycle lanes can be separated from vehicular traffic with low-cost barriers in order to enhance the safety. Streets should have a clear division between pedestrian, cycling, and vehicular zones in order to reduce conflicts among different users.

traffic calming measures

Slower traffic contributes to safer shared urban space. Firstly, reduction of vehicle speed can be achieved by narrowing the car lanes. Another way to slow down the traffic is to design raised crosswalks and intersections, elevated above the adjacent roadway. Additionally, chicanes or curb extensions can be created with temporary elements to make the path more curvy, naturally slowing down vehicles.

pedestrian priority zones

Some measures, such as car-free streets, can be implemented permanently or temporarily: on certain days of the week or during specific hours when it is needed to give pedestrians a priority. Safe and vibrant shared streets can be activated by greenery, lighting, and seating areas, encouraging walking and social interaction while reducing emissions.

pop-up mobility infrastructure

Pop-up infrastructure is a low-cost and flexible solution that can be adjusted based on user behavior. For example, temporary bicycle lanes “pop-up lanes” allow to test and analyze further new mobility patterns. Similarly, modular bus stops and micro-mobility hubs can be implemented to enhance accessibility and connectivity. In addition, pop-up parklets can replace vehicle parking spaces, transforming them into areas for public use.

integration of micro-mobility

Various forms of modern mobility such as e-scooters and sharing bicycles, can be integrated into the urban environment through dedicated zones. To prevent visual and physical clutter, the parking and circulation areas should be clearly marked and visible for all users. Furthermore, establishing safe transitions between micro-mobility and city public transport nodes is essential to support end-point connectivity.

adaptive street design

Adaptive street design involves temporary markings and sensors to monitor traffic flows, pedestrian movement, and overall street performance in real-time. Importantly, by using adaptive strategies it is possible to enable the gradual transformation from tactical, short-term interventions to permanent solutions based on observed effectiveness.

The principles of sustainable urban mobility are based on the research work of Papadakis D. M. et al. (2024).

Social Activation and Urban Comfort

social activation through seating modules

The modular seating blocks, parklet deck platforms and urban amphitheater introduce moments of pause in the urban environment. These elements provide a transition from movement to occupation, allowing for extended presence, informal gathering and observation. Spatial legibility is achieved by the integration of seating with slight elevation which define the edges while maintaining open spaces and boundaries.

active play and physical engagement

Play installations, pop-up sports areas, and marked activity surfaces enhance the dynamic nature of the cityscape and turn static spaces into spaces for interaction and movement. These devices accommodate a variety of users, encouraging physical engagement among all age groups, while enhancing spontaneous social interaction. These devices are flexible in their setup and can be modified over time, adapting for user needs.

microclimate comfort and environmental control

Shading canopies and mist cooling modules provide microclimatic comfort for users, making the outdoor spaces usable throughout the different seasons and weather conditions. These interventions prolong the stay duration and enhance the quality of public space use by mitigating heat and providing shelter. Climate-responsive design becomes a key driver of public life, particularly in high-density built environments where thermal comfort is directly connected to social activity.

temporary programming and event infrastructure

The market pavilion and the pop-up event platform enable the capacity for temporal transformation because they are flexible structures for programmed and spontaneous activities. These devices can be used in a variety of ways, such as performances, markets, exhibitions and community gatherings, giving public space the possibility of a dynamic change over time. They are also modular, allowing them to be adapted to serve different needs and purposes.

everyday amenities and inclusive services

The inclusion of the public hygiene module guarantees the provision of essential services and promotes inclusiveness and allows longer stays within the public realm. Infrastructure that meets basic human needs facilitates greater access for a wide range of user groups, and improves the usability of urban space. These features, combined with other social and spatial features, make the environment more humane, equitable and supportive.

adaptive lighting and spatial safety

Smart lighting operates as an essential infrastructure for safety, accessibility, and perception of space. Beyond basic illumination, it adapts to temporal patterns, user presence, and the level of activity, adding functional and experiential qualities of the environment. As a responsive system, it supports all other devices, ensuring that the public realm remains legible, secure, and welcoming throughout the day, as well as contributing to the overall atmosphere and identity of the space.

Resourse, Energy and Material Circularity

climate-responsive design elements

Introducing shading devices such as lightweight canopies combined with climbing vegetation, can improve microclimatic conditions by reducing heat gain and enhancing thermal comfort. In addition, the use of ecological reflective paint for pavement surfaces helps to minimize heat absorption by increasing solar reflectance, thereby reducing the urban heat island effect.

integration of renewable energy systems

In the regenerative vision, the project components should work on principals of the renewable energy system where energy is generated from natural sources, such as solar, wind, or water, and can operate independently, reducing reliance on centralized energy grids while supporting devices like e-bike charging stations and smart infrastructure.

solar-based urban solutions

In terms of solar energy, small-scale and financially viable solutions such as solar-powered lighting, PV panels, solar canopies, and integrated charging points can be applied within temporary projects, serving as prototypes for more permanent sustainable infrastructure in public space. PV panels can be integrated directly onto building façades and rooftops, transforming existing surfaces into active energy-generating systems without requiring additional land use.

site-specific wind and water systems

The implementation of wind and water-based systems mainly depends on site-specific conditions. However, micro-hydropower systems can be used on urban water canals, while wind-powered lighting units can be installed in open public spaces alongside water collection tanks for reuse and irrigation.

use of reclaimed and locally sourced materials

Reclaimed, recycled, or locally sourced materials can be used in tactical projects in order to minimize construction waste, cost and reduce embodied carbon. Tactical elements, such as street furniture, can be constructed from reused or locally available materials, while existing resources such as reclaimed bricks can be repurposed for paving. Small architectural interventions can incorporate elements or details derived from existing structures, reinforcing material continuity and supporting circular economy principles.

modular and reconfigurable design

Modular and lightweight components can be easily assembled and disassembled. Over time, these elements can be adapted, reused, or relocated on site. Reconfigurable design solutions extend the lifecycle of materials and enhance their overall longevity.

The principles of renewable energy practices are based on the research work of Chen L. et al. (2024).

Biodiversity and Water Management

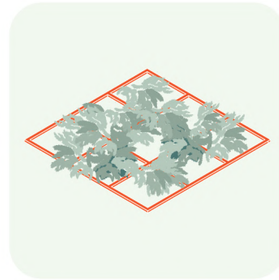


Figure 67. Isometric view of Biodiversity and Water Management layer. Diagram by the author.

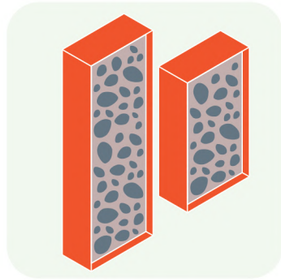
Regenerative tactical devices


movable planter


vertical garden system

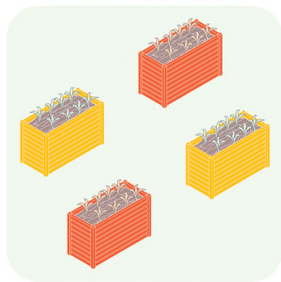

green roof system


bee hotel unit

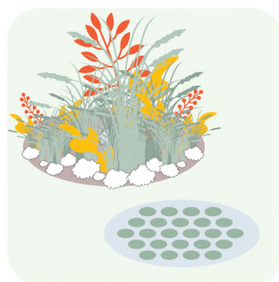

insect habitat block

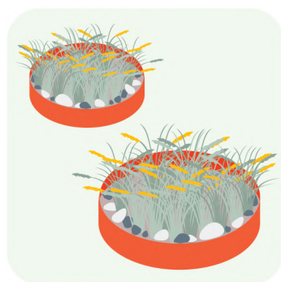

mobile pollinator planter


bird house


raised urban farming bed


community compost station


de-paved permeable module


modular rain garden

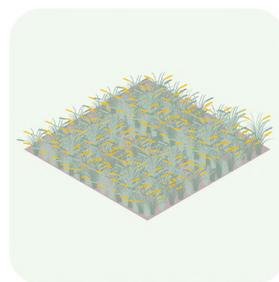

bio-based panel module

Figure 68. Regenerative Tactical devices. Diagram by the author.

Mobility, Accessibilty and Urban Infrastructure

permeability

carbon emissions

active mobility

surface cooling

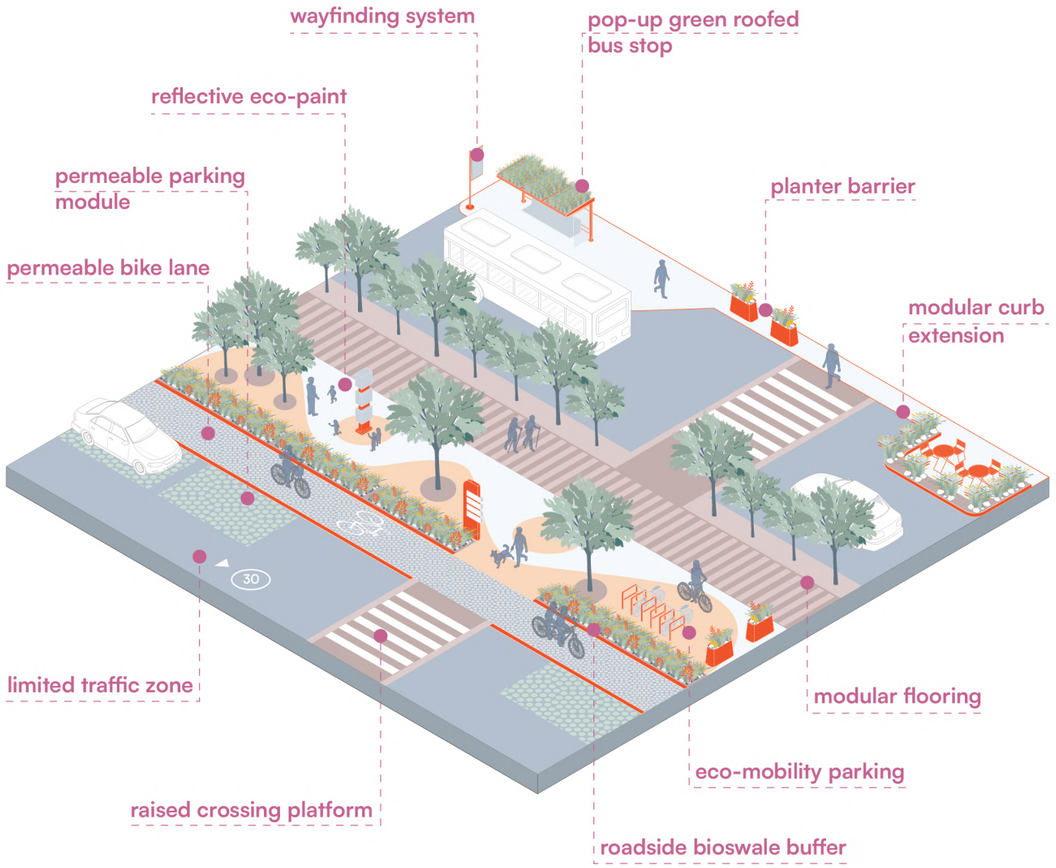
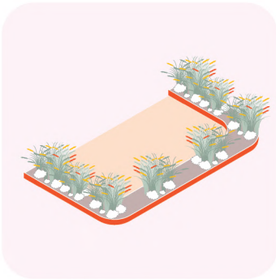


Figure 69. Isometric view of Mobility, Accessibility and Urban Infrastructure layer. Diagram by the author.

Regenerative tactical devices

permeable parking module



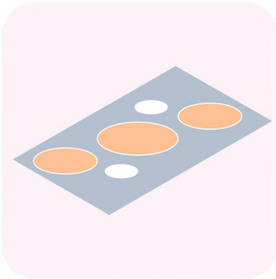
modular curb extension



permeable bike lane



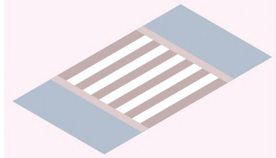
planter barrier



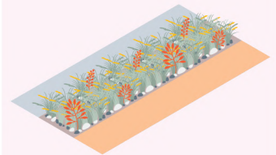
reflective eco-paint



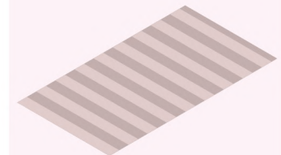
eco-mobility parking



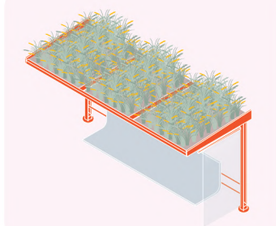
raised crossings platform



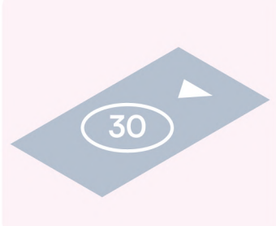
roadside bioswale buffer



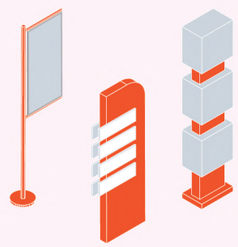
modular flooring



pop-up green roofed bus stop



limited traffic zone



wayfinding system

Figure 70. Regenerative Tactical devices. Diagram by the author.

Social Activation and Urban Comfort

thermal comfort ↑

social isolation ↓

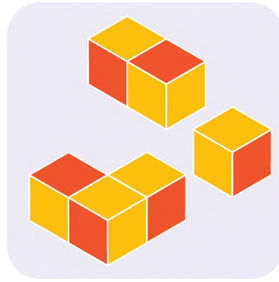
public health ↑

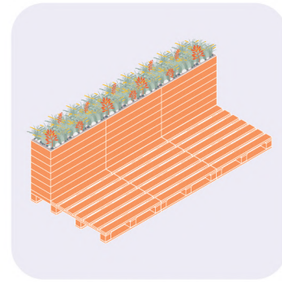
urban heat island effect ↓



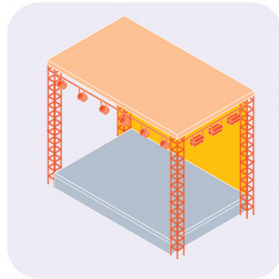
Figure 71. Isometric view of Social Activation and Urban Comfort layer. Diagram by the author.

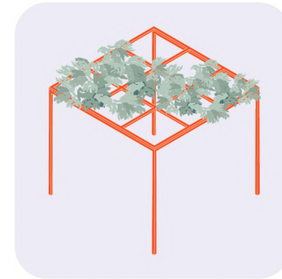
Regenerative tactical devices

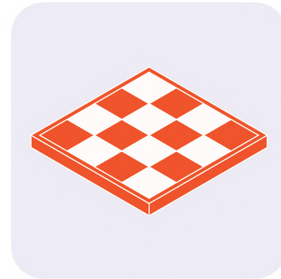

modular seating block

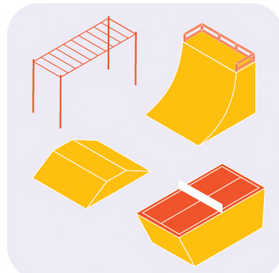

parklet deck platform


market pavilion

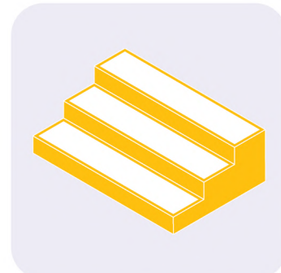

pop-up event platform

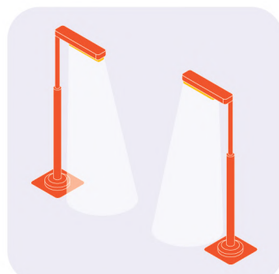

shading canopy

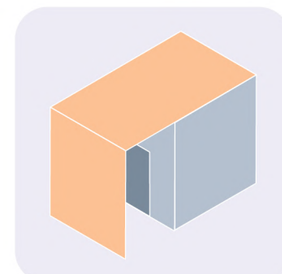

play installations


pop-up sport area


marked activity surface


urban amphitheater


smart lighting


public hygiene module

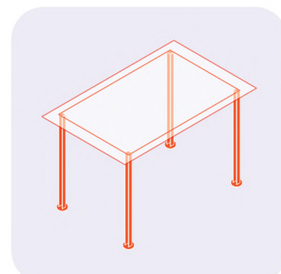

mist cooling module

Figure 72. Regenerative Tactical devices. Diagram by the author.

Resourse, Energy and Material Circularity

material circularity

embodied carbon

renewable energy

resource consumption

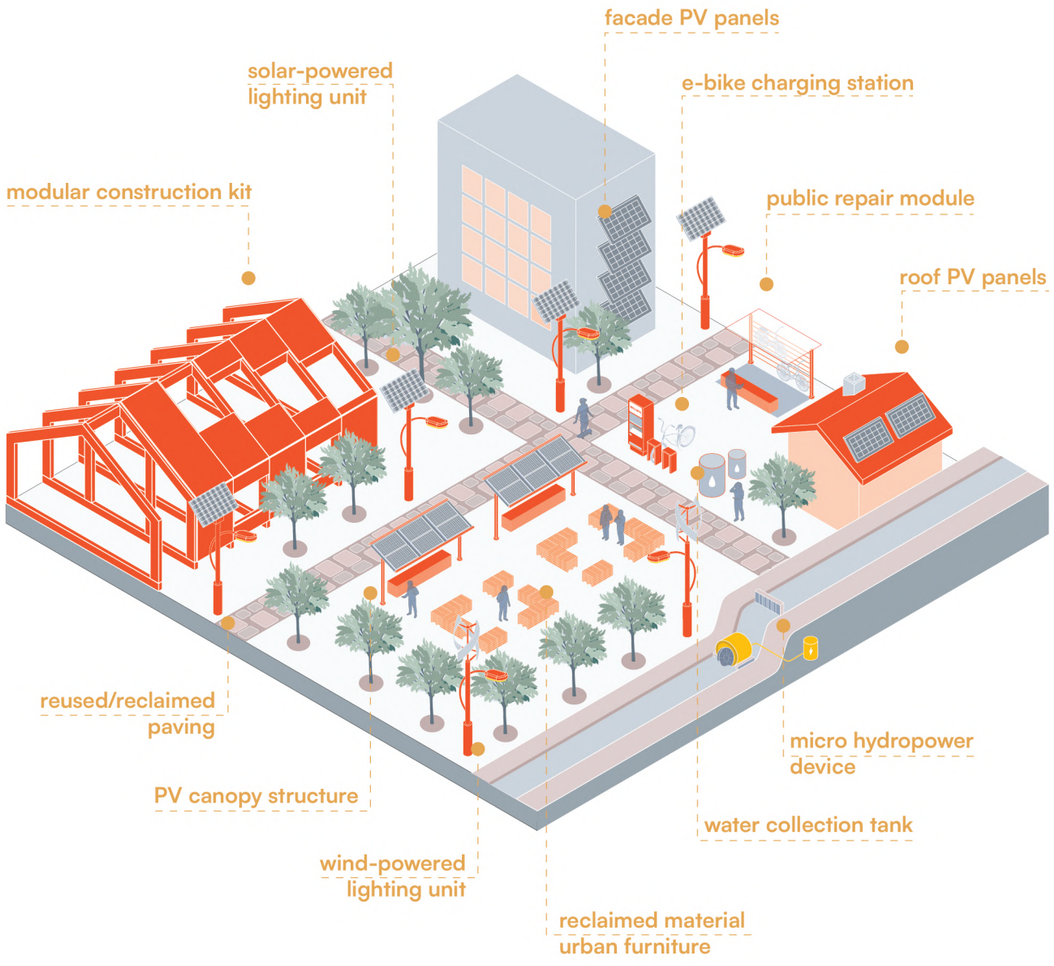
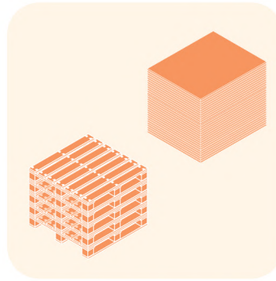
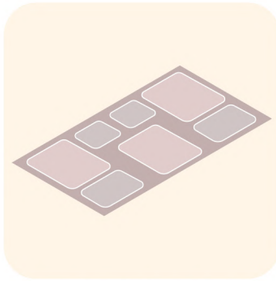


Figure 73. Isometric view of Ecological Regeneration idea. Diagram by the author.

Regenerative tactical devices



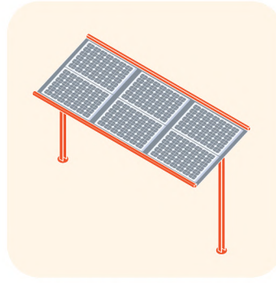
reclaimed material urban furniture



reused/reclaimed paving



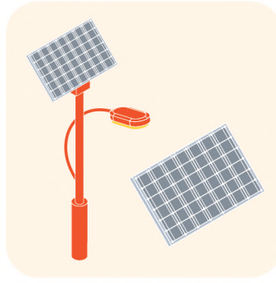
modular construction kit



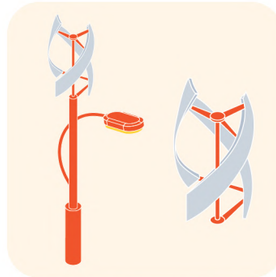
PV canopy structure



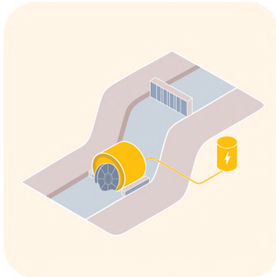
e-bike charging station



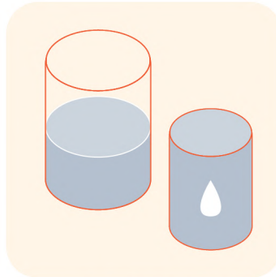
solar-powered lighting unit



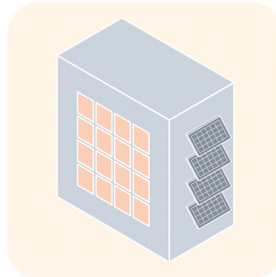
wind-powered lighting unit



micro hydropower device



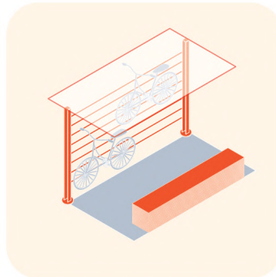
water collection tank



facade PV panels



roof PV panels



public repair station

Figure 74. Regenerative Tactical devices. Diagram by the author.

3.6 Limitations of tactical approaches

Although tactical urbanism offers a flexible path to change, its application is often limited by certain constraints, such as political, administrative, and physical ones.

At the governance level, initiatives often encounter difficulties related to bureaucratic systems and fundamental tendency of municipal authorities to avoid taking risks. **The lack of a legal classification for "temporary use"** in historic cities prevents grassroots innovation from receiving institutional support.

Furthermore, as described by Finn (2014), tactical interventions could face **institutionalization** where bottom-up approaches get incorporated in top-down planning discourses, which reduces the original community-driven intentions. Simultaneously, as Evans et al. (2021) explain, **municipalities and other actors often do not have the capacity or will to make the organizational shift** necessary to support such initiatives. For this reason, tactical interventions can be institutionalized in ways that take away their intended value and kept as isolated experiments that have a short-term effect.

In the case of Italy, the administrative and legal regulations are notably complex, forcing actors to undergo complicated procedures to obtain permits and follow strict public procurement rules that were not originally designed for flexible solutions. This complexity creates significant obstacles in terms of **liability and insurance**, as uncertainty regarding responsibility for temporary structures in public spaces often stifles initiatives before they even launch. Furthermore, the inherent rigidity of **traditional planning tools makes it difficult to accommodate the changing and fluid nature of tactical experiments**. Alberti et al. (2018) propose using tactical approaches that can adapt to a wide range of situations while minimizing their impact on regional Italian legislation and existing plans.

Like in traditional urban planning methods, **TU is also shaped by a variety of site-specific constraints, such as spatial planning decisions, property ownership structures, and the physical nature of the environment.** These include topographical and hydrological conditions, built heritage and natural environment regulatory considerations. In this regard, defining and intervening in urban space is also an indirect design, as boundaries and constraints actively influence the design possibilities of transformation, especially in **sensitive and historically complex urban environments** (Carmona, Bento, & Gabrieli, 2023).

An examination of TU has to consider **scale as another critical limitation**. Until now, such initiatives have mostly been done in a localized context, focusing on discrete sections of streets, blocks, or individual structures. This can be used to intervene with exact precision and according to the context, but it also perpetuates **a fragmented understanding of the city as a collection of isolated elements**. Given this context, Silva (2016) proposes that an evolutionary paradigm is essential: **tactical interventions should not be considered individually, but as parts of a larger, adaptive urban system**. Their capacity to support long-term urban regeneration is constrained unless there are mechanisms to scale and integrate.

Another key limitation of tactical actions lies in its **temporal and institutional fragility**. Short-term solutions are effective but they are made of perishable materials, demanding ongoing maintenance and adaptation. As in the case of Milan, only a small percentage of projects evolve into permanent transformations. **Thus, tactical interventions should not be viewed as transitional steps toward permanence but as medium-term adaptive processes with their own temporal logic** (Bruzzese, 2026).

Although tactical approaches provide useful tools to spark action, they must work with **institutional structures, spatial limitations, and systemic urban processes** if they are to create a lasting impact in leading to a more regenerative change.

04. Candelo Urban Link

Site context, challenges and design requirements

how does the context of Candelo shape the project area?

what are the existing conditions and challenges of the site?

how has the site transformed over time?

what limits the site's potential as a public space today?

how do climate and environmental conditions influence user experience?

who are the primary users of the site and the key project stakeholders?

what is the methodological framework of the project?

4.1 Site and territorial context



Figure 76. Site location in Candelo. Diagram by the author.

The town of Candelo is located in northern Piedmont in the Province of Biella, at the foothills of the Biella Prealps, approximately 60 km northeast of Turin. The town lies within a transitional landscape between the Po Valley plain and the alpine system. Candelo is situated about 8 kilometres north-east from the provincial capital and main urban pole of the area, Biella. (ISTAT, 2024)

It is a lowland region located between the valleys of the river Elvo and of the river Cervo, characterized by the presence of small municipalities at various levels and by socio-economic fragilities typical of the inner region of Italy (Casavola, 2015). In this context, demographic imbalance, defined as population ageing and a decrease in the proportion of working-age population, has a direct impact on the economic and social vitality of these areas, in terms of employment opportunities, deteriorating social networks, and changing daily life, which can be characterised as a growing trend of isolation and a decrease in the amount of local interaction.

At the local level, Candelo shows many of the typical features of peripheral contexts in the Italian peripheral regions, which are often fragile in nature. It has a population of around 7,500-8,000, a small-sized settlement, typically characterised by less administrative capacity and high reliance on more powerful urban centres for access to higher-level services (OECD, 2022; ISTAT, 2023).

From a cultural perspective, Candelo has one of the most well-preserved medieval fortified ensembles, Ricetto di Candelo, and is included among the most beautiful Italian villages, “Borghi piu belli d’Italia”. The town is marked by a smooth blend of sweeping vineyards, forests as well as alpine streams. Candelo has a rich agricultural heritage that continues to significantly influence the local community identity. (Provincia di Biella, 2023).

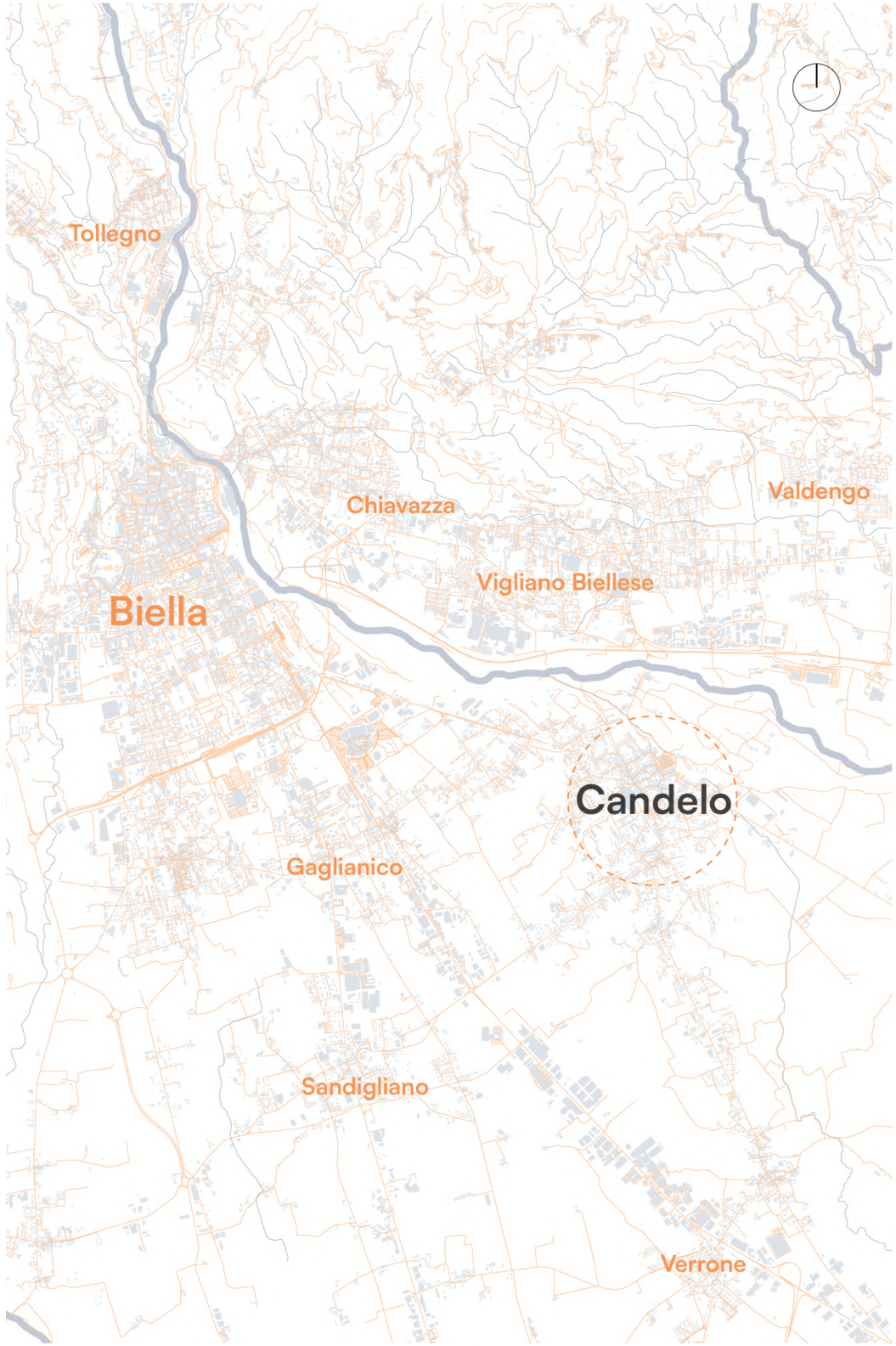


Figure 77. Territorial context of Candelo and surrounding municipalities. Map by the author.

Functional site analisys



Figure 78. Functional site analysis of Candelo. Map by the author.

Public spaces and open playgrounds

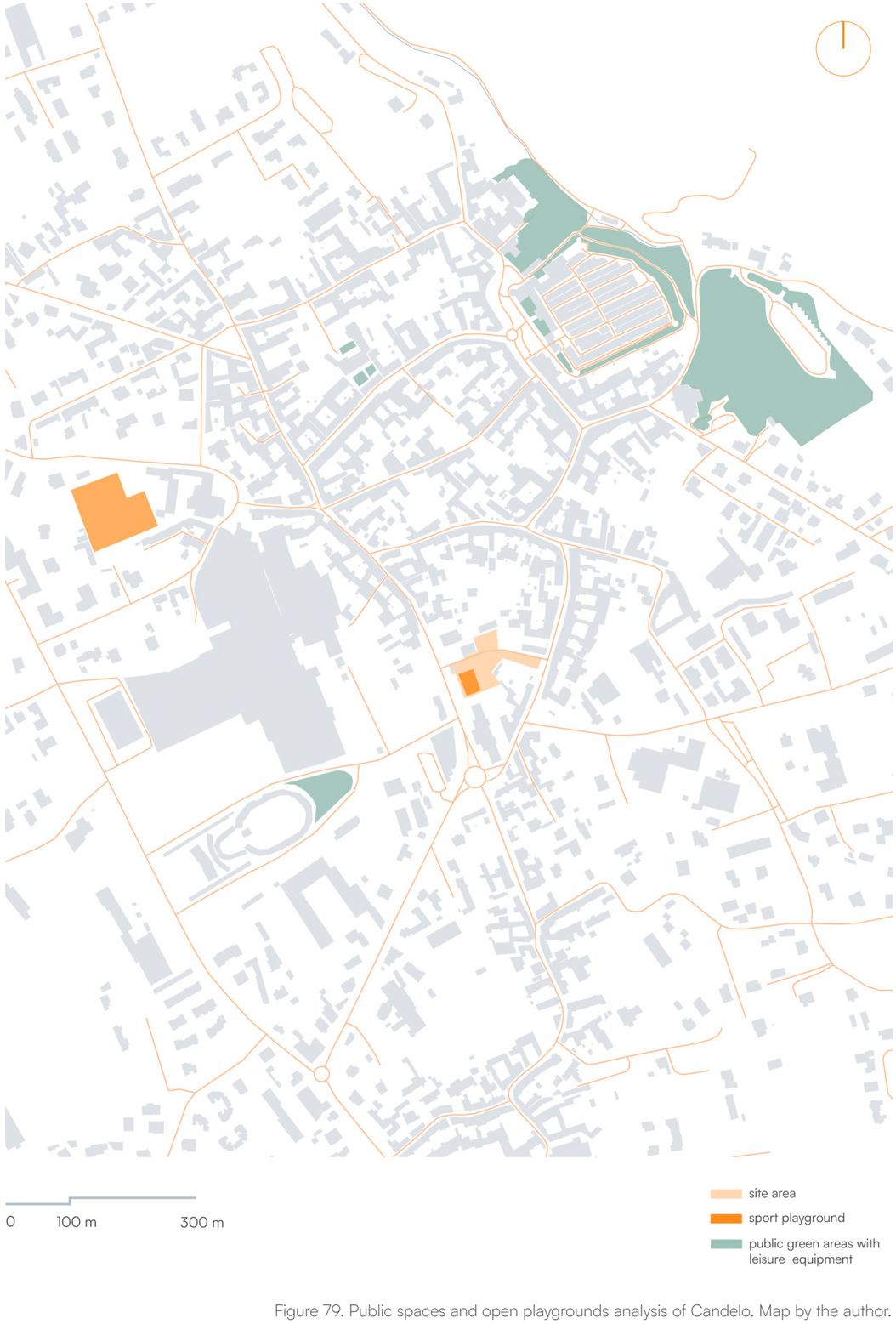


Figure 79. Public spaces and open playgrounds analysis of Candelo. Map by the author.

Site transformations over time

According to the series of maps, the triangular site along Via San Sebastiano in Candelo has been subject to a gradual transformation between a rather undefined open block into a more multi-functional community space.

In the first map (2014) the area is shown as partially empty and less organized, with scattered buildings on the edges and a central open space that is not organized very much and is partially empty.

The sports yard started forming part of the site by 2018, mainly characterized by ground markings and well-defined contours.

A key transformation is visible by 2022, when a basketball field emerged, but with the difference that the design of the surface is more colorful and expressive in terms of visual effects. Moreover, the space was made more organized with the introduction of small barriers, which helped to divide the space. The green area along the fence on the north side was converted into a car parking.

As observed in the map of 2025, there are no changes since 2022.



Figure 80. Satellite view of the site in 2025. © Google Earth



Figure 81. Satellite view of the site in 2014. © Google Earth



Figure 82. Satellite view of the site in 2018. © Google Earth



Figure 83. Satellite view of the site in 2022. © Google Earth

Site photos













Figures 84-89. Existing site conditions. Photographs by the author.

4.2 Design objectives and key challenges

The project, organized by the Municipality of Candelo and Terraviva, explores the urban landscape defined by its prestigious historical heritage and integration with the natural environment. The competition challenged designers to radically rethink this abandoned urban space, which is formed by a primary school building, commercial and residential buildings, but remains fragmented due to the steep terrain and is occupied by informal parking. Although it is well situated at the edge of busy side streets, **the square is currently hidden by physical and functional barriers**, preventing it from serving as a meaningful public center. **The aim was to transform this square into a dynamic open space by removing existing topographical dislocation and availing a new, appealing and practical space to the residents.**

Within the spatial configuration of the Via San Sebastiano square, the transformation begins with the fundamental challenge of **universal accessibility**. Through a critical evaluation of the feel and experience of the site, that is, how people move, live and interact within the space, planners can unlock a latent potential that goes beyond functionality. This approach prioritizes the diverse rhythms of daily life, ensuring that **the square transitions from a fragmented transit point into a welcoming environment** that accommodates various physical abilities and paces of movement.

In order to overcome these topographical barriers, the project invited designers to create an integrated scheme of ramps that would link the level changes existing. Instead of perceiving these aspects as mere technical mandate, **the aim was to establish a fluid network of circulation that promotes social equity**. The intervention will support access to steep slopes that suggest autonomy over all users, especially the elderly, and will make what was once a constraining place a unified and inclusive civic feature.

Finally in the case of Italy with an ageing population, the processes of urban planning in this context should focus on ensuring spaces with more than safety features and **enable the independence and physical/psychiatric well-being of the elderly members of the population**.

Beyond being an effective utility, walkability is also an effective symbolic and political mark on the part of the city in terms of its age-friendliness. The fact that a municipality is making investments in pedestrian-scale infrastructure in case of the older ones is an official acknowledgment that the elderly is an important constituent in the collective recording of existence. By focusing on these enhancements, the city has been a proactive pioneer to leave the ageing concept to be a withdrawal process, but rather they promote the idea of active ageing where **older adults are not only visible but also mobile and highly integrated into the social fabric of the community**. (Carrera, 2025)

In addition to topographical constraints, the ultimate objective is to redesign the urban space in the holistic approach. **The redesigned square is imagined as a flexible and inclusive environment**, capable of supporting social activity throughout the day and remaining accessible across all the year round.

Although the initial competition brief was not specifically challenging ecological and sustainable improvements, **this study proposes the increase in the biodiversity and the encouragement of systemic regenerativity** as the preventive measures of the end-result objectives of the project.

Total area of design site

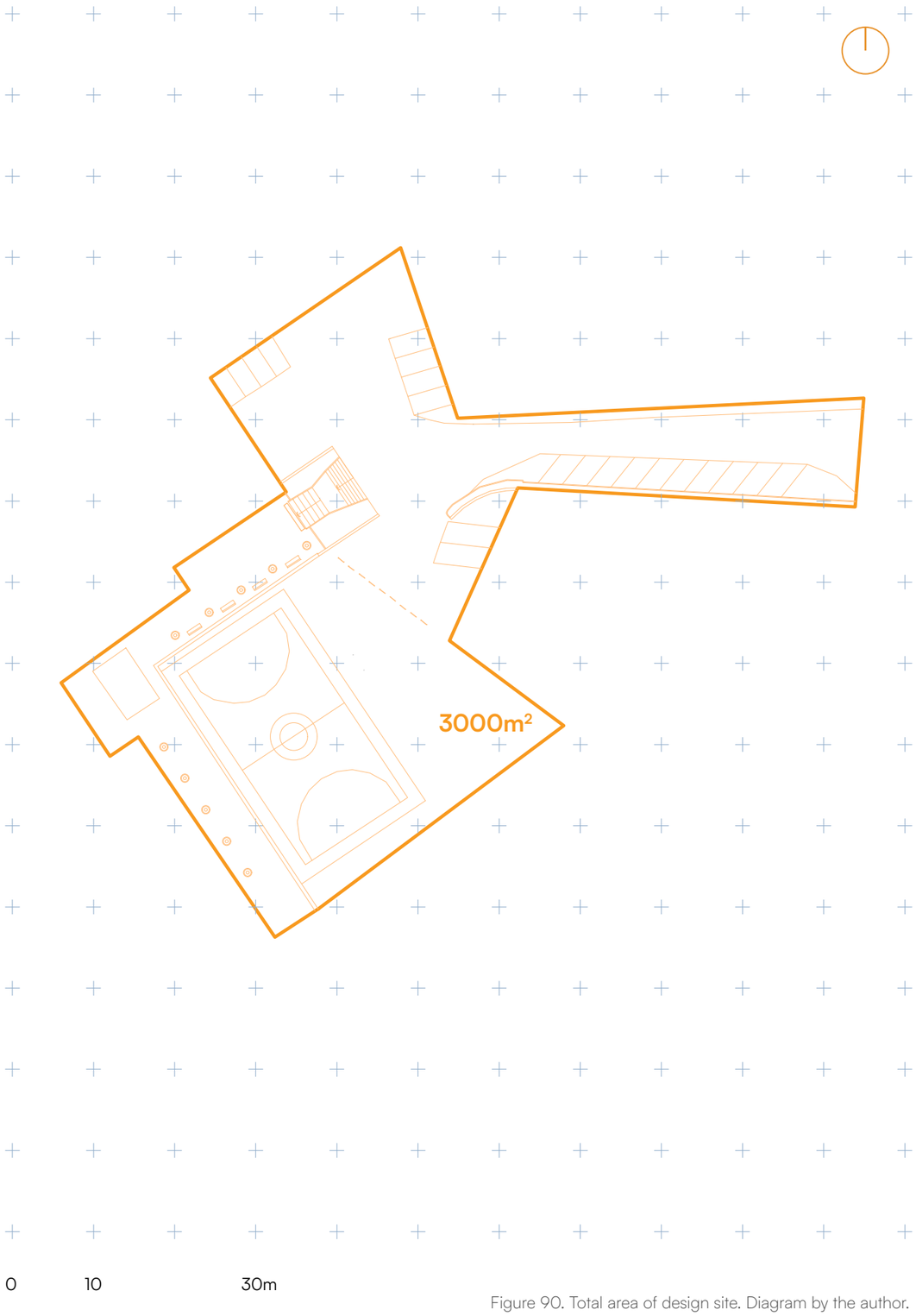


Figure 90. Total area of design site. Diagram by the author.

Existing conditions and key issues

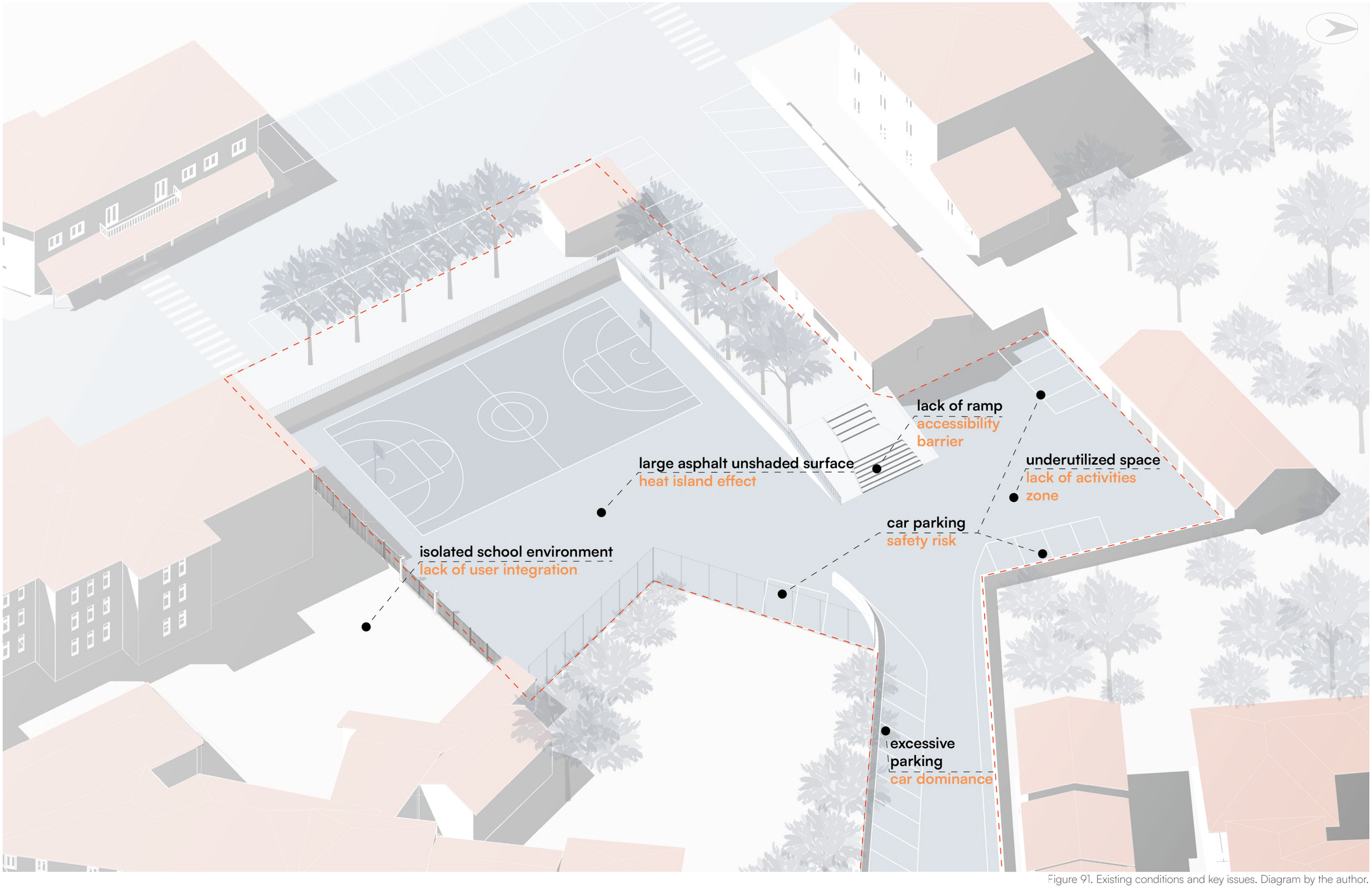


Figure 91. Existing conditions and key issues. Diagram by the author.

4.3 Environmental and climatic conditions

From a climatic perspective, the context of Candelo is characterized by moderately warm summer conditions, with **average temperatures ranging between approximately 14.3°C and 24.8°C** during the warmest months (Weather Atlas, n.d.), **occasional heatwaves can push temperatures above 30-33°C, introducing significant stress on the urban environment and its users** (Nomad Season, 2025). This problem leads to another **goal: to create "oasis" spaces** where people find it pleasant and attractive to stop and spend time.

The collage highlights how the spatial configuration and materiality of the site contribute to **the formation of an urban heat island condition**. The predominance of hard impervious surfaces like asphalt and the lack of tree canopy and shaded areas, allows solar exposure to be largely unmitigated. **The street section is lacking in spatial components that are usually used to moderate climate**, for example, vegetation, permeable ground and articulated facades, and therefore forms a continuous surface of heat absorbing components. This is exacerbated by the presence of parked vehicles and exposed pavements making the site an urban surface with **low environmental buffering**. Consequently, **the space acts as a heat retaining corridor** instead of a comfortable public space.

The absence of microclimatic diversity and spatial hierarchy means that **the site has limited ability to offer thermal relief** from an urban perspective. **Thermal comfort in urban spaces** is not determined solely by climatic conditions but **is strongly influenced by spatial configuration and materiality**. Studies show that **users perceive greater thermal discomfort in open, exposed, and poorly articulated spaces, where shading and spatial enclosure are limited** (Lenzholzer & Van der Wulp, 2010). In this sense, the current spatial condition of the square in Candelo fails to mediate between climate and user experience.

The spatial conditions will directly affect the thermal behaviour of the site. **High thermal mass materials like asphalt and vehicles, such as cars, can reach surface temperatures of up to 60°C which are considerably higher than the ambient air temperature of around 30°C** and retain heat through the day and slowly release it after sunset, as demonstrated in urban microclimate studies (Matias et al., 2026). The lack of plant cover eliminates important cooling mechanisms like **shading and evapotranspiration**. Vegetation plays a critical role in moderating urban temperatures, as tree canopies provide shade that reduces direct solar exposure, while even unshaded green areas or low vegetation contribute to cooling through evapotranspiration processes (Bowler et al., 2010).

Beyond horizontal greenery, recent studies reveal that **building-integrated greenery systems are efficient in reducing urban heat**. The use of **green façades**, in particular, has been proven more effective than green roofs to **lower the pedestrian-level air temperature.** As a spatial and architectural response to the urban heat island, these strategies can be relevant for **the reduction of the urban temperature, with an average of up to 1°C in built areas** (Susca et al., 2023).

As a result, a layered microclimatic imbalance emerges. This significantly impacts user experience, as elevated mean **radiant temperatures increase perceived heat far beyond measured air values**. The absence of shade and cooling features creates thermal discomfort, reducing pedestrian usage and extended use of the space. **Site becomes physically challenging and psychologically inhospitable that diminishes the space's potential to be a vibrant urban environment.**

Thermal accumulation on site



Figure 92. Thermal accumulation on site. Diagram by the author.

4.4 User groups and actors

User groups

In order to assess and understand the function of a public space, it is critical to understand the different types of users who will fill it throughout the day, thus creating **varying spatial needs, rhythms of occupation and movement patterns**. The intensity of activities is also closely related to the distribution of activities and spatial and environmental conditions, and **the higher the movement, the higher the spatial depth and concentration of use** (Rajabi & Sharifian, 2022).

The given square already has an informal supporting role in school related activities, with the courtyard being an extension of it and as an area for physical activity in the absence of a dedicated gym, but it is still marginalised when compared to the wider public life of the town. **The situation allows for tactical experimentation as it exposes a need for use and adapts to a variety of potential users without being rigidly defined.**

The project site study conducted in Candelo indicates a very explicit **user hierarchy, divided into primary users, secondary users and tertiary users**.

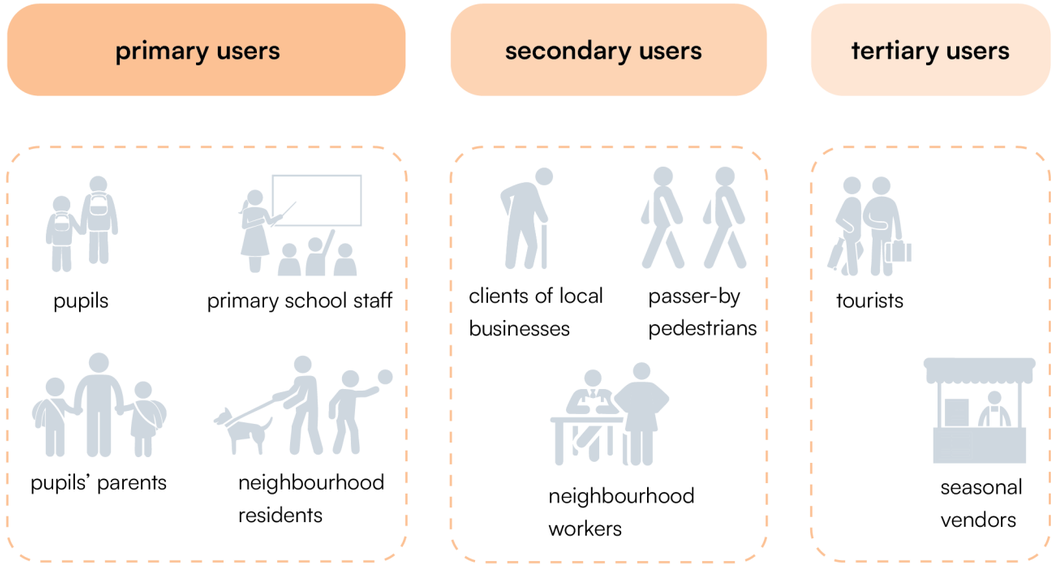
Primary users are directly connected to the neighbouring primary school, including pupils, school staff, parents and neighbourhood residents, with pupils being the largest, dominating the daily amount and nature of use. **Secondary users**: clients of local businesses, passers by, school workers etc. help to continue use throughout school hours, beyond the time of formal education. Occasional and variable patterns of occupation are added by the **Tertiary Users** (tourists or seasonal vendors) especially during holidays and events, reflecting the wider cultural and economic setting of Candelo.

The site has been shown to be **highly dependent on school based cycles**, with intense use during morning arrivals, midday pick-up and afternoon activities, then becoming more moderate and community based during evening use. The layering actually shows the square as a hybrid space in between the school and a neighbourhood public space, and needs a flexible design which can support different, growing, inter-generational and “time-binding” uses.

The temporal analysis of the behaviour of users shows that the square is well organised by the daily activity of the school that is adjacent; this creates specific moments of use. **The peak of intensity in the space is during the morning time and midday** when students arrive and pick up from school, high levels of short-term use, mobility, and informal sharing are found. The afternoon, however, brings a different focus as days get longer, children play and residents make use of the space for social interaction, where more flexible and accommodating space is needed. Activity is reduced in the evening, shifting to mainly local residents and older users, which are more quiet activities like walking or resting. The square is also used for more flexible activities on weekends and during municipality events, such as fairs and local markets.

Thus, user analysis shows the strong correlation between time, users and activities on the given square, which can be characterised as dynamic and adaptable, influenced by both regular patterns of daily life and occasional use.

Types of site users



Time table of user activities on site

Time period	Main users	Intensity	Key activities
Morning (08:00 - 09:00)		high	school arrival, drop-off
Midday (12:00 - 13:30)		high	pick-up, waiting, socializing
Afternoon (13:30 - 17:00)		high	playing, staying, afterschool activities
Evening (17:00 - 21:00)		medium	leisure, rest, social life
Weekend / Events		variable	markets, events. tourism

Figure 93. Type of site users and user activities on site. Diagram by the author.

Actors

Identifying actors is essential to the understanding of **how the project can function as both a spatial and relational system**. In the case of Candelo, the design process is based on the involvement of multiple local actors, considered not as passive recipients but as active contributors to the use, transformation, and evaluation of public space. **Participation is thus not taken for granted simply, but as an evolving objective that is achieved at various levels of participation from passive to active.**

In the tactical urbanism practices, **actors are generally seen as a multi-layered web of stakeholders with different intensities of involvement with each other**. Core actors include daily users who test and validate interventions with ongoing use, institutional actors who give them legitimacy and help them be implemented, and intermediate actors like associations or local groups who help with their activation as well as with the link between top-down and bottom-up dynamics (Lydon & Garcia, 2015).

The primary school is the central actor in this project, as a constant user and test area of the space, as a space to give constant feedback on spatial performance. **The municipal administration is an enabling institutional actor**, who enables the process through regulation, coordination and, in some cases, long-term integration. In between, **local associations, residents and local businesses are hybridly engaged actors** who contribute to co-design activities, daily use, and local economic activation, ensuring social and functional continuity of the space.
The third are **occasional or uninvolved users**, which represent a passive layer of actors with indirect interaction through spontaneous use or non-use, that offers crucial clues for accessibility, inclusiveness and unforeseen spatial dynamics. **The more diverse the actors, the more successful the tactical urbanism intervention** — this diversity is key because the effectiveness of the intervention depends on the space being iterated, tested and adapted as new information flows in, and the capacity for a range of different stakeholders to shape and influence the space over time. As a whole, **these actors create a multi-layered and dynamic space of action** in which the project is an enabling process, which brings people together, invites experimentation and the gradual development of common public space practices.

Level of engagement

passive
(behavior-based)

hybrid
(light engagement)

active
(direct engagement)

Actor typologies

Actors	Engagement level	Role in the process	Expected outcomes
Primary school	●	daily users and primary testers of the space	continuous real-life testing, generating feedback on usability, safety, and integration
Municipal administration	●	institutonal responsibility and decision-making authority	policy legitimization, regulatory compliance, and the long-term integration and scalability
Local associations & organizations	◑	activation and organization of co-design activities	activation of space through programming, mediation between actors, temporary stewardship
Residents & citizens	◑	space activation and co-production by users	legitimization the intervention socially through everyday use, appropriation
Local businesses	◑	local economic activation	increasing of local vitality, attractiveness, and informal surveillance
Occasional / uninvolved users	○	indirect interaction through spontaneous use or non-use	unbiased validation of the space, revealing accessibility issues and unintended uses

Figure 94. Actor typologies and level of actor engagement. Diagram by the author.

4.5 Phased design development process

The design proposal is conceived as a phased and evolving process that will gradually transform the study area through a series of interventions. Within every phase, the permanence and complexity of interventions are progressively increased.

Rather than proposing a final design solution, the project adopts a process-driven approach following the principles of tactical urbanism and regenerative design. This strategy recognizes that urban transformation is a gradual process, achieved through a combination of experimentation, observation and ongoing adaptation.

The process starts with **Phase I: Pilot project** in which a series of low-cost, reversible, tactical interventions are introduced. These actions are meant to quickly activate the project site and to test various spatial settings. Tactical urban devices such as surface markings, modular urban furniture, movable planters, shading elements and micro-mobility infrastructure are incorporated and deployed in strategic locations in order to stimulate interaction and enhance environmental performance. Importantly, these tactical interventions do not prescribe specific behaviours but instead provide an open framework in which users can appropriate space as needed. The pilot phase provides valuable insights into how people interact with the transformed environment through user observation and behavioural mapping. Immediate user feedback helps to determine which interventions demonstrate the greatest potential for future long-term implementation.

The results obtained in the pilot phase inform **Phase II: Integrated spatial intervention**. At this stage, the most successful tactical strategies are developed and consolidated into a more integrated spatial system. Individual devices evolve into interconnected groups of interventions, addressing environmental, social, and infrastructural challenges simultaneously. Special focus is on accessibility improvement, enhancing the microclimatic comfort for users, and supporting social activation by various activities. Within this phase, the proposed pedestrian ramp becomes a key infrastructural element, creating new connections between different street levels as well as incorporating multifunctional regenerative elements. In this process, temporary experiments are converted into more permanent and space-integrated design solutions.

Phase III: Long-term regenerative development defines the strategic vision for long-term development. This stage addresses long-term adaptability and continuous evolution in the process of regenerative urban transformation. In contrast to the previous stages where low-cost, reversible, easily deployable interventions were emphasized, Phase III focuses on higher-investment strategies that will enable long-term performance, durability and maintenance efficiency. Temporary materials are gradually replaced with permanent materials and systems that are more environmentally sustainable and capable of serving future needs and uses.

The idea of a ‘phased approach’ is based on the classic method of tactical urbanism and reflects the central question of the research: that tactical interventions can operate as catalysts for regenerative urban transformation. Temporary interventions can not only provide immediate ecological, social and spatial benefits but also a valuable basis for the future urban development.

Table 14. Phased design development process

Phase	Implementation time	Testing duration	Purpose	Key actions / tools	Methods of realization	Evaluation methods
PHASE 0 Development of project	4—8 weeks	—	understand site conditions and define testable hypotheses	• site analysis (spatial + behavioral mapping) • stakeholder mapping (municipality, residents, tourists, local businesses) • co-design workshops (low-intensity, local scale) • temporary scenario design	• participatory mapping sessions • walking interviews / site walks • co-design charrettes • on-site observation protocols	• baseline mapping (flows, activities, conflicts) • interviews • photo/video documentation • behavioral observation logs
PHASE I Pilot project	1—3 weeks	1—3 months	rapidly test interventions in real conditions	• temporary installations (furniture, paint, signage) • event-based activation (markets, cultural use) • soft mobility interventions (pedestrianisation, seating zones)	• self-construction workshops (residents, students, makers) • community build days • pop-up urban interventions • temporary kit-of-parts systems	• behavioral observation • short surveys • before/after comparison • time-based mapping
PHASE II Integrated spatial intervention	2—4 months	3—6 months	consolidate successful strategies into semi-permanent interventions	• design refinement based on pilot results • durable material upgrades (wood, stone, long-life paint) • infrastructure integration (lighting, accessibility, safety) • landscape and ecological integration	• professional construction teams + hybrid community participation • small-scale contractors / municipal services • prototype-to-permanent fabrication processes	• dwell time tracking • spatial performance assessment • community validation workshops
PHASE III Long-term regenerative development	—	—	establish a self-sustaining regenerative public space through long-term ecological, social and resource systems	• renewable energy and circular resource systems • blue-green infrastructure and biodiversity enhancement • community facilities and adaptive public spaces • long-term ecological management	• permanent infrastructure implementation • municipal and community co-management • stewardship programmes • adaptive implementation based on monitoring results	• long-term KPI monitoring • ecological and social performance assessment • resource and energy performance evaluation • adaptive management and project scalability

The phases of the Tactical Urbanism projects framework presented in this table, along with the associated tools, key actions, and methods of realization, are based on the structure and methodology outlined in the Tactical Urbanist's Guide to Materials and Design (v1.0) by Street Plans Collaborative (Mike Lydon and Anthony Garcia) available at https://issuu.com/streetplanscollaborative/docs/tu-guide_to_materials_and_design_v1

05. The Project

Design development

phase I

how can tactical interventions activate the space and test future possibilities?

phase II

how can tactical strategies evolve into an integrated regenerative intervention?

phase III

how can temporary actions support long-term urban transformation?

Phase I

Experimental pilot project



A.1 Pilot design strategy

After conducting a thorough analysis of the problems at the site, user groups, and existing climatic and topographic conditions, and a clear understanding of the municipality's goals, an initial design proposal was created.

Phase I is defined as a low-risk experimental stage, or Pilot Project, based on preliminary research on site conditions. **This phase is aimed to test the first design hypothesis and explore the latent potential of the site.**

The initial design action is to **define the main activity zones by marking the surface directly on the existing asphalt.** These painted spaces are designed to attract users and encourage engagement with the space. The markings are not intended to prescribe particular behaviours or fixed functions, but rather they operate as an open test field that allows the user to behave spontaneously and enables the natural activation of the space. This ambiguity is intentional since it allows the emerging patterns of use to be observed, analysed, and later translated into design decisions for the following phases.

Simultaneously, **a series of temporary, low-cost urban furnishings elements made from reclaimed materials are introduced.** They are meant to investigate spatial configurations, scale and size relationships, and user behaviour over time. Various furniture typologies are offered, such as modular seating, play installations, canopies, temporary frames and pop-up sport zones. In addition, the transitional stair connecting the street level to the piazza is activated through the addition of lightweight canopies that provide shade and encourage extended use. These interventions collectively seek to experiment with various ways of occupying and interacting in the site.

Alongside these elements, **potted plants and small trees are introduced as initial prototypes of green areas.** These are arranged on site in order to provide shade, enhance the environmental comfort, and to soften the large asphalt surface. In parallel, they enrich the visual and spatial quality of the area, and begin to transform its character with light ecological additions.

The implementation phase is followed by an **observation period that can last from 1 to 3 months**, during which the space is left to develop in the way it is used. The focus of this stage is not quantitative measurement but rather qualitative interpretations of the evolving spatial practices: who is using space, when, where, under what conditions, and on a continuum of engagement or intensity. As a key methodological approach, the space is observed in detail, along with spontaneous conversations and feedback sessions with users.

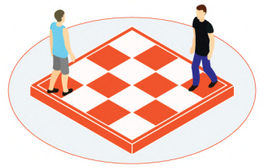
Within this context, **the intention of Phase I is not to produce definitive project results, but to verify whether and how the space becomes inhabited, recognized, and cared for over time.**

The success of this phase is therefore evaluated by the meaningful emergence of signs of appropriation and shared interest, which can be signs of viability for future developments. The shift into later phases is not assumed as automatic, but it rather depends on the ability of this first experiment to produce visible, enduring and socially recognized practices of spatial involvement.

A.2 Tactical devices



modular seating block



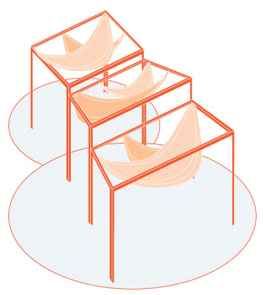
play installations



movable planters



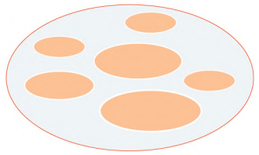
eco-mobility parking



shading canopy



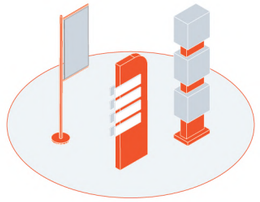
planter barrier



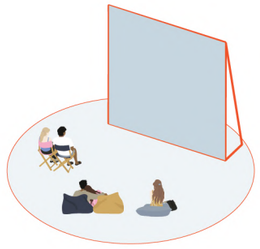
reflective eco-paint



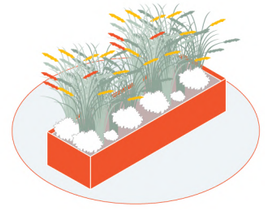
pop-up sport area



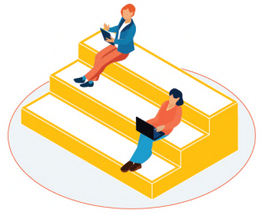
wayfinding system



pop-up open air cinema



mobile pollinator planter



urban amphitheater

Figure 95. Tactical devices in Phase I. Diagram by the author.

Table 15. Project regenerative performance. Phase I

KPI category	Urban devices	Area / quantity	Regenerative outcomes
Biodiversity	• mobile pollinator planters • vegetation planters • planter barriers	33 planters ≈100 m² vegetation (3% of site area)	• vegetated area increased by ≈3% • creation of 33 micro-habitats for pollinators and beneficial insects • introduction of native flowering species supporting local biodiversity
Mobility & accessibility	• eco-mobility parking • wayfinding system	3000 m² walkable public area 12 bicycle/scooter spaces	• ≈ 60% of the site is barrier-free accessible • prioritized pedestrian use through reorganization of existing parking areas • support of active micro-mobility
Microclimate performance	• reflective paint • shading canopy • vegetation planters	630 m² reflective painted surface (21% of site area) 120 m² shaded area	• surface temperature reduction of ≈ 5—7°C on treated asphalt surfaces • localized shaded areas achieving temperature reductions of 10—15°C
Social activation	• modular seating blocks • pop-up sport area • urban amphitheater • open-air cinema	8 supported activity types	• increased diversity of activities • increased user dwell times • spontaneous appropriation of space
Resource circularity	• reclaimed furniture • temporary structures	≈ 80% reused materials	• ≈ 80% of materials for urban furniture sourced from reused or reclaimed components

A.3 Evaluation framework and regenerative performance

In order to explore regenerative tactical approaches and their potential, the **key evaluation parameters (KPIs)** were identified in order to determine the main regenerative outcomes for each project phase.

For Phase I, **six parameters were considered**, excluding the Energy Performance indicator, since no energy-related urban devices were implemented at this initial stage. The parameters were evaluated through the urban devices applied in the project and further measured in units, square meters, percentages, and estimated environmental performance.

The main outcomes of Phase I include:

- **the introduction of approximately 100 m² of vegetation** on site through vegetation and pollinator planters, and planter barriers;
- **approximately 60% of the site becoming barrier-free accessible**, together with the introduction of bicycle and scooter parking spaces supporting active mobility;
- **surface temperature reduction of approximately 5—7°C on treated asphalt surfaces** through the use of reflective paint, shading canopies, and vegetation planters, with **localized shaded areas achieving temperature reductions of 10—15°C;**
- **increased diversity of activities, longer dwell times, and spontaneous appropriation of space** through the introduction of temporary social and recreational functions;
- **approximately 80% of urban furniture and temporary structures being sourced from reused or reclaimed materials**, reducing material consumption and demonstrating circular construction practices.

The evaluation demonstrates that Phase I represents an initial step toward regenerative outcomes.

Phase II

Integrated spatial intervention



B.1 Spatial design framework

Following the implementation and evaluation of the experimental pilot project (Phase I), the design proposal is further developed by integrating the observations gathered during the testing process with the site analysis, user needs, existing climatic and topographic conditions, and the municipality's long-term objectives. **The project expands the initial tactical interventions into a more coherent spatial strategy while maintaining the principles of affordability, feasibility, and phased implementation from both the technical and economic points of view.**

In design and space, **the key visual axes and viewpoints are further reinforced**. These are important factors in reconnecting the fragmented urban fabric and creating a dialogue between the intervention area and its historical context. Building upon the initial activation of the site, **the project aims to create a unified and legible public realm that seamlessly blends with the existing urban fabric**, transforming it into a vibrant and welcoming environment.

The spatial arrangement of the site has been further refined by identifying the most appropriate areas based on their functions, user comfort, and observed patterns of interaction. **The zoning concept is oriented toward avoiding possible conflicts between different uses by clearly defining areas for active and passive activities**, while maintaining flexibility and allowing the space to accommodate a variety of changing needs.

The project utilises a series of tactical and site-responsive strategies to enhance spatial quality while preserving the principles of minimum intervention established during the pilot phase. **Selective de-paving** to reduce sealed surfaces and improve permeability remains a key approach, together with the introduction of **potted greenery** to enhance microclimatic conditions and strengthen spatial identity without requiring extensive permanent ground modification. **Painted pavement surfaces** continue to reinforce spatial hierarchy and guide pedestrian movement while improving the overall legibility of the site.

The design also expands the range of thematic spaces through the introduction of light urban furniture and flexible areas for play, picnics, informal games, open-air cinema, pop-up cafés, and outdoor workouts. Essential amenities such as benches, bicycle parking, and ping pong tables contribute to a dynamic and welcoming public environment capable of adapting to future community needs.

Overall, **the architectural design remains flexible and adaptable while offering a higher level of spatial integration than the pilot phase**. These interventions consolidate the successful temporary strategies into a more coherent public space, supporting year-round use, enriching the municipality's cultural life, and strengthening social interaction and community cohesion.



B.2 Layered intervention strategy

The spatial structure is filled by layers of intervention, both horizontally and vertically, resulting in a variety of different layers and different functions. These layers are not isolated, but rather are **intertwined with each other** and interact with one another, creating a **coherent spatial system** that adds depth and dimension to the site's overall usability and complexity.

The ground plane is modified by using asphalt treatment and graphical painting. This layer serves not just as a visual focus, but also as an **intuitive navigation system**. It provides a way to guide users around the site and to clearly establish and define various activity zones by the delineation of pathways and movement corridors.

The green infrastructure layer brings natural features into the urban landscape and greatly enhances visual appeal and physical comfort. Vegetation can be used to regulate microclimates and at the same time serve the function of spatial orientation, in the form of trees, shrubs and green walls. This layer boosts environmental efficiency and creates a more **human-centred environment**.

Tactical activation zones can be read as areas of the programme which can contain a range of activities and may overlap due to **flexible boundaries**. Various uses and scenarios are supported by different types of equipment and installations, allowing for changes and interactions within the space.

Each of the layers is part of the whole system and the loss of a single layer would greatly diminish the overall function and space quality of the site. In extreme climatic conditions, for example, only surface configuration and tactical devices would not be enough to provide comfort without the support of green infrastructure. Likewise, the absence of seating structures and programme activities would lead to non-use of spaces. Thus, the interaction between layers is crucial to **guarantee usability, comfort, and long-term user engagement**.

Design intervention layers

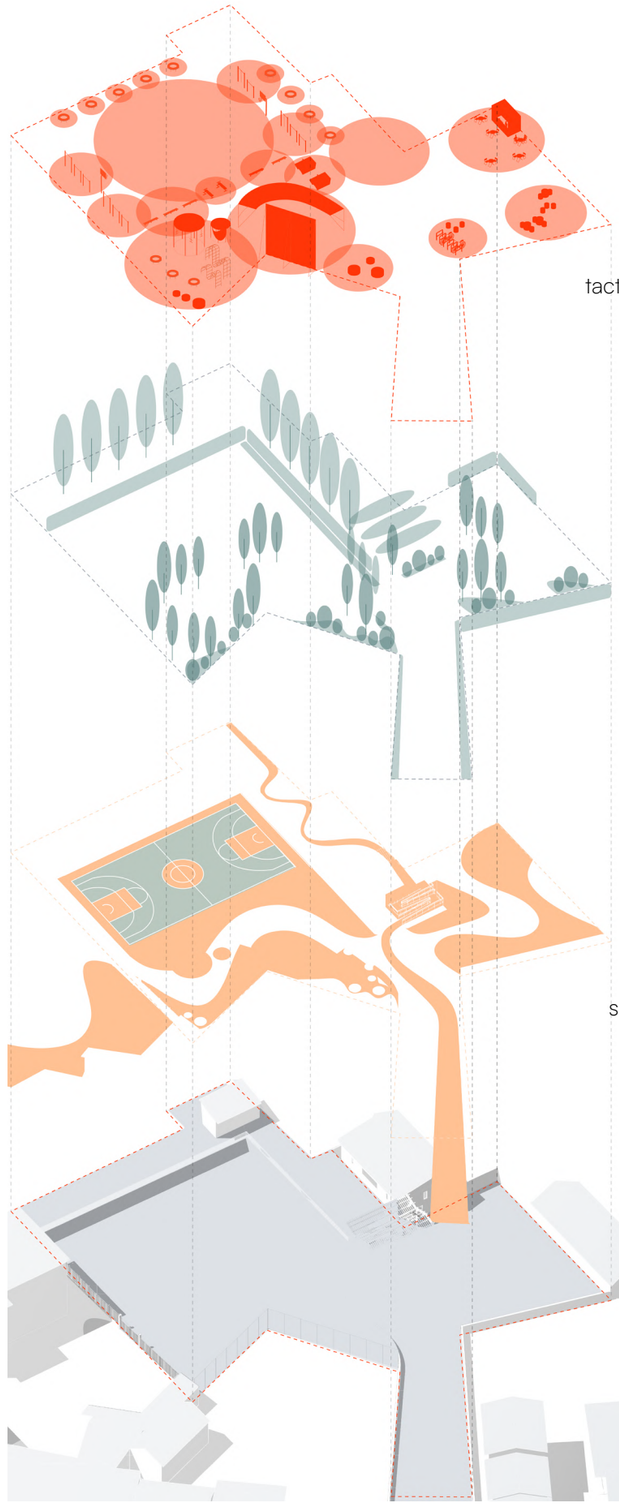


Figure 96. Design intervention layers in Phase II. Diagram by the author.

B.3 Tactical devices by thematic areas

The design presents a coherent system of tactical urbanism interventions, structured through a range of small-scale, programmatically diverse devices aimed at **activating public space**. These are not separate interventions but are instead a network of spatial practices, **flexible, accessible and user-oriented**, addressing the needs of the contemporary city.

Many of the suggested devices focus on recreation and leisure, with a **strong emphasis on comfort and prolonged occupation of space**. Shaded seating areas, resting spaces and parent waiting areas create micro-environments to reduce climatic conditions and promote inclusiveness. While they may be limited in scale, their impact on the **creation of a pause, place of observation, and social presence** is significant.

Moreover, there are a variety of devices focused on **physical activity and play.** Climbing structures, suspended playgrounds and outdoor exercise facilities together target a wide age range, from young to adult. Their tactical character is both their capacity to bring in high impact activities with relatively low investment, and in the capacity to adapt them on an iterative basis based on usage patterns.

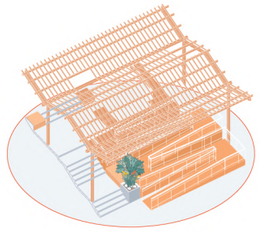
Another key element is the focus on social interaction and group activities. Picnic and games areas, ping-pong table zones and urban amphitheatre are devices designed to make both informal and organized encounters happen, functioning as **'social condensers'**. These flexible areas can be utilized for various uses, **from casual gatherings to organized community events**. The amphitheatre, especially, provides a semi-formal spatial architecture, which facilitates cultural expression and civic involvement, thereby affirming the importance of public space as a place for **collective identity**.

Additionally, cultural and temporary event-based interventions are included which further extends **functional range of the design**. Pop-up cinema shows and cafés are examples of how ephemeral programming can reimagine urban settings. These elements use the concept of temporality as a design tool, which means the space can change in character throughout time, various seasons or particular events. The interventions presented are experimental, and used to test the long-term strategies in an urban context, especially in terms of **cultural demand and economic viability**.

Furthermore, this design takes into account key issues in urban infrastructure, such as bicycle parking provision. The objective of this element is to emphasize tactical urbanism as a way to **enable sustainable mobility and urban everyday uses**. Even though bicycle parking is such a simple amenity, it can play a major role in improving accessibility and promoting the use of **environmentally friendly transportation methods**.

The strategic combination of diverse yet complementary elements fosters an environment that is **adaptable, inclusive, and responsive to user needs**. These devices are designed to emphasize the participatory use and human-scale experiences, offering a new approach to resilient and vibrant city-making that is **flexible and experimental**.

Urban devices



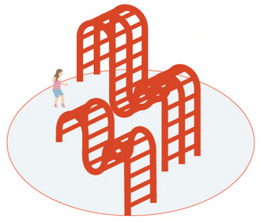
ramp infrastructure



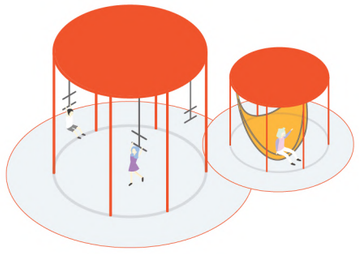
modular bioswales & de-paved areas



tree seating modules



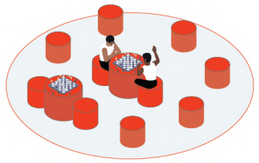
climbing playground



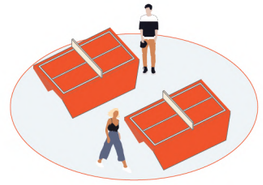
suspended playground



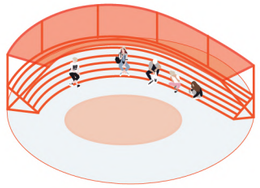
outdoor workout



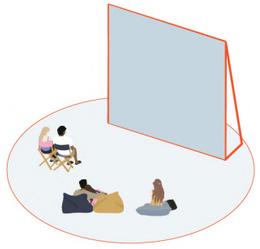
picnic & games area



ping-pong tables



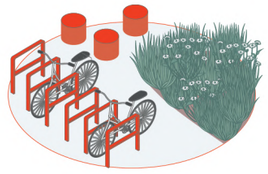
urban amphitheatre



open-air cinema



pop-up café



bicycle parking

Figure 97. Tactical devices in Phase II. Diagram by the author.

B.4 Ramp as urban infrastructure

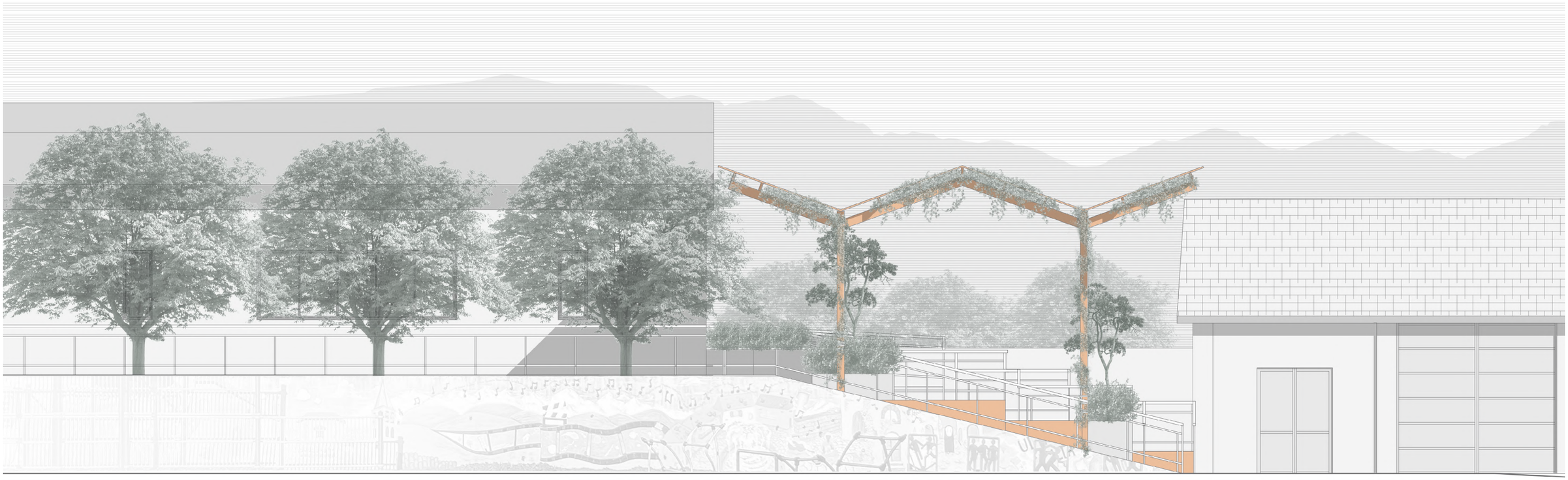


Figure 98. Roofscape concept. Diagram by the author.

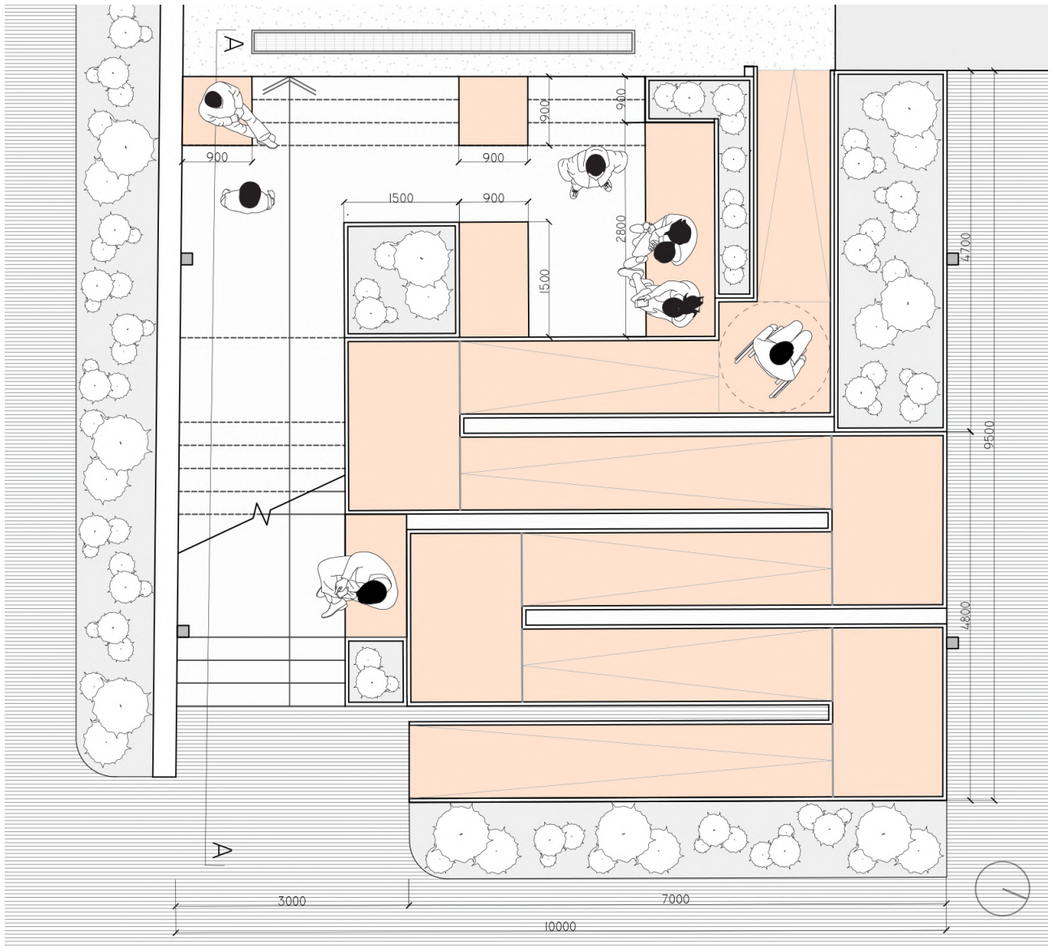
The proposed pedestrian ramp connecting Via S. Sebastiano and Via Libertà is not only an infrastructural object, but an architectural intervention capable of **redefining the urban void** it inhabits. Rooted in the local identity of Candelo, the project draws formal inspiration from the **articulated roofscape of the Ricetto di Candelo**. Its typical broken silhouette is reinterpreted as a modern linear structure that balances between two different urban levels and creates a **respectful communication with the historic fabric**.

The geometry of the ramp is the fractured and continuously consistent profile, repeating the rhythm of the surrounding landscape with existing trees. From the upper level, it frames **picturesque views toward the Alpine background** and the historic center, transforming vertical movement into a spatial and perceptual experience. Rather than functioning as a purely transitional element of the passage, the ramp becomes **an inhabited and interactive path as a civic promenade**.

The roof is developed as a **system of brise-soleil** which incorporates vegetation in the structure, The climbing plants, like vines, are growing in the framework, and the roots are planted in the depaved areas along the staircase. Moreover, there are openings in the roof structure allowing the trees to grow further but still provide enough natural light. Potted and rooftop greenery create **shadow areas with microclimate** that reduces the heat temperature in the summer period. The seating areas are designed in a way to allow individual or group seating, **enhancing the social interactions**. The gentle slope and welcoming design invite users of all ages to move across the space at their own pace, reinforcing the ramp's role as a convenient **urban link**.

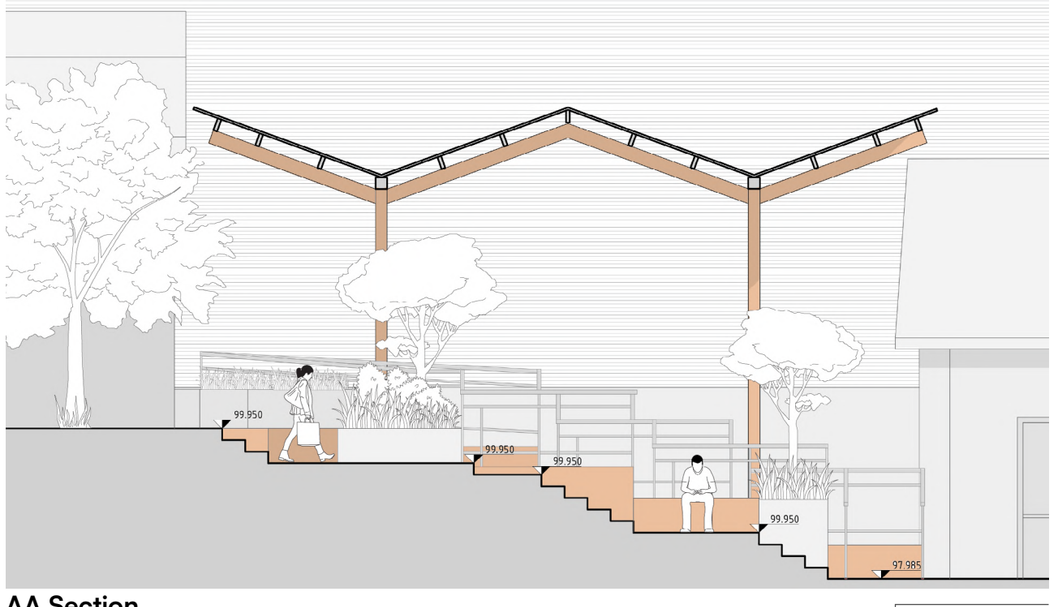


Ramp elevation



Plan

0 1 3m



AA Section

0 1 3m

Exploded axonometic view of the ramp structure

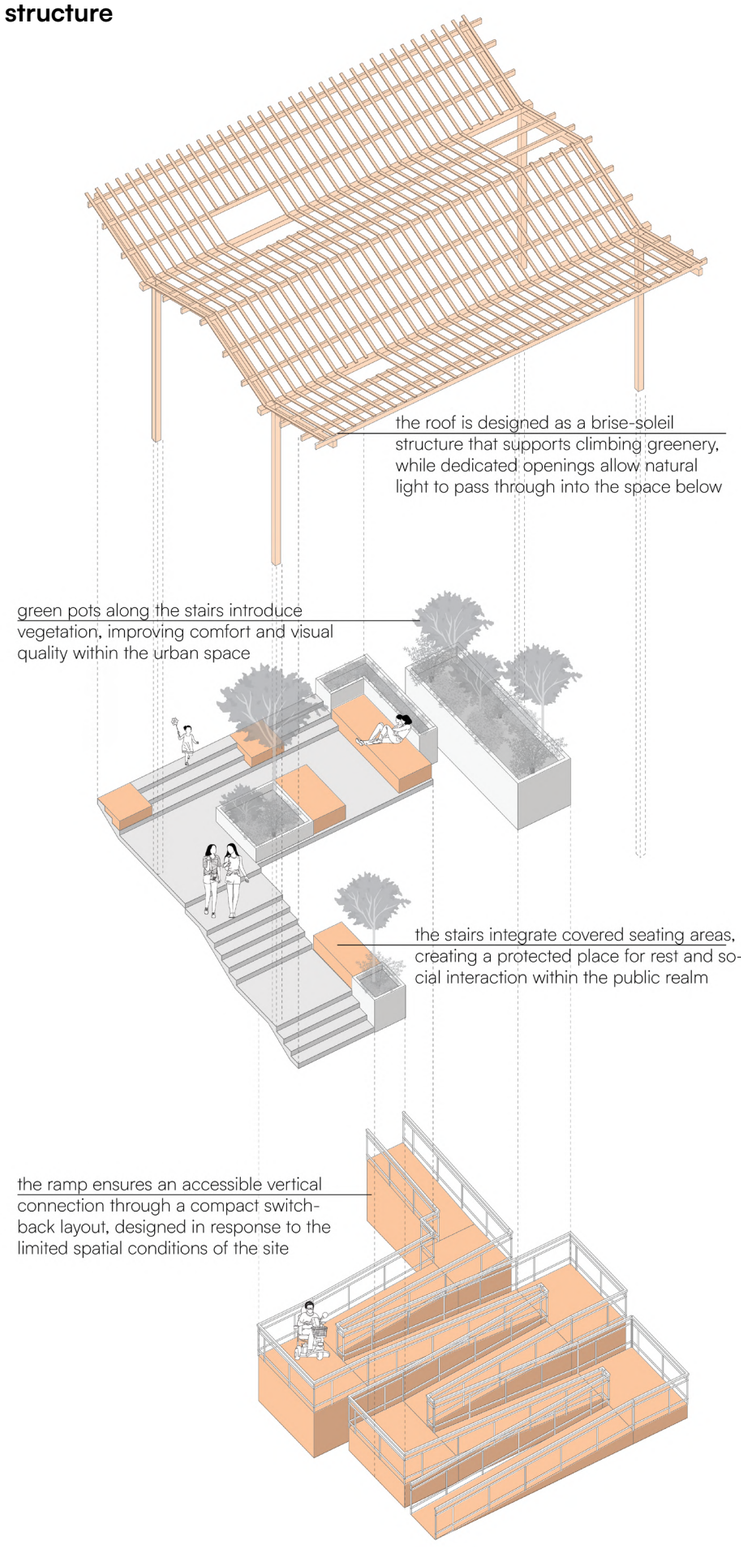


Table 16. Project regenerative performance. Phase II

KPI category	Urban devices	Area / quantity	Regenerative outcomes
Biodiversity	• planted trees • mobile pollinator planters • vegetation planters • planter barriers	25 trees ≈450 m² vegetation (15% of site area)	• vegetated area increased by ≈15% • creation of continuous planting corridors supporting pollinators • increased native vegetation and ecological connectivity
Water management	• de-paved permeable modules • modular rain gardens • potted vegetation	≈250 m² rainwater-retaining landscape (≈10% of site area)	• rainwater-retaining surfaces increased to ≈ 10% of the intervention area • improved rainwater interception and evapotranspiration • localized stormwater infiltration through nature-based solutions
Mobility & accessibility	• universal-access ramp • eco-mobility parking • wayfinding system	3000 m² walkable public area 12 bicycle/scooter spaces	• 100% of the site is barrier-free accessible • improved pedestrian permeability and site legibility • support of active micro-mobility
Microclimate performance	• reflective paint • shading canopy • vertical greenery systems • vegetation planters	1000 m² reflective painted surface (33% of site area) ≈500 m² shaded	• surface temperature reduction of ≈ 6—8°C on treated pavement • localized shaded zones achieving 12—18°C cooling
Social activation	• modular seating blocks • pop-up sport area • urban amphitheater • open-air cinema	10 supported activity types	• increased diversity of activities • increased user dwell times • stronger community use during the day
Resource circularity	• reclaimed street furniture • modular structures • locally sourced materials	≈70% reused/reclaimed materials	• reduced embodied material consumption • increased use of modular and locally sourced elements • improved adaptability for future project development

B.5 Regenerative performance assessment

The same 6 evaluation parameters were used for Phase II in order to have a direct comparison with the previous experimental Phase.

The main outcomes of Phase II include:

- **the introduction of approximately 450 m² of vegetation** on site through native tree planting, pollinator planting, vegetation planters, and planted buffers;
- **rainwater-retaining surfaces increased to approximately 10% of the intervention area** through rain gardens, vegetated infiltration areas, and nature-based water management strategies, enhancing rainwater interception, evapotranspiration, and localized stormwater infiltration;
- **the creation of a 100% barrier-free accessible public space** through the implementation of the universal-access ramp, together with an improved pedestrian network, wayfinding system, and bicycle and scooter parking supporting active mobility;
- **surface temperature reduction of approximately 6—8°C on treated pavement** through the use of climate-responsive surfaces, tree canopies, pergolas, and vegetation, with localized shaded areas achieving temperature reductions of 12—18°C;
- **increased diversity of activities, longer user dwell times, and stronger community use** throughout the day through the introduction of permanent public spaces, recreational areas, and multifunctional social infrastructure;
- **approximately 70% of urban furniture and modular structures are produced from reused or reclaimed materials together with the use of locally sourced materials**, reducing environmental impact while maintaining the adaptability of the intervention.

The evaluation shows that the project's regeneration performance in Phase II is better than Phase I in terms of vegetation cover, climate responsive surfaces, stormwater management, accessibility and diversity of public activities. The project emerges from a tactical pilot intervention to a holistic regenerative public space as the spatial and ecological base for the long-term regenerative systems in Phase III.

Phase III

Long-term regenerative development



C.1 Long-term development scenario

After collecting the feedback from Phase II, the possible solutions for the long-term development of the site could be identified.

During this phase, the site was significantly transformed across all strategic layers. Starting with the ground surfaces, the small **de-paved areas** that were tested in Phase II were expanded and integrated with **native trees and pollinator-attractive planting**. A **roadside bioswale** was also introduced to improve on-site water management. In addition, a **vertical greenery system** was applied to the eastern façade of the building, creating a more comfortable microclimate for the adjacent café area.

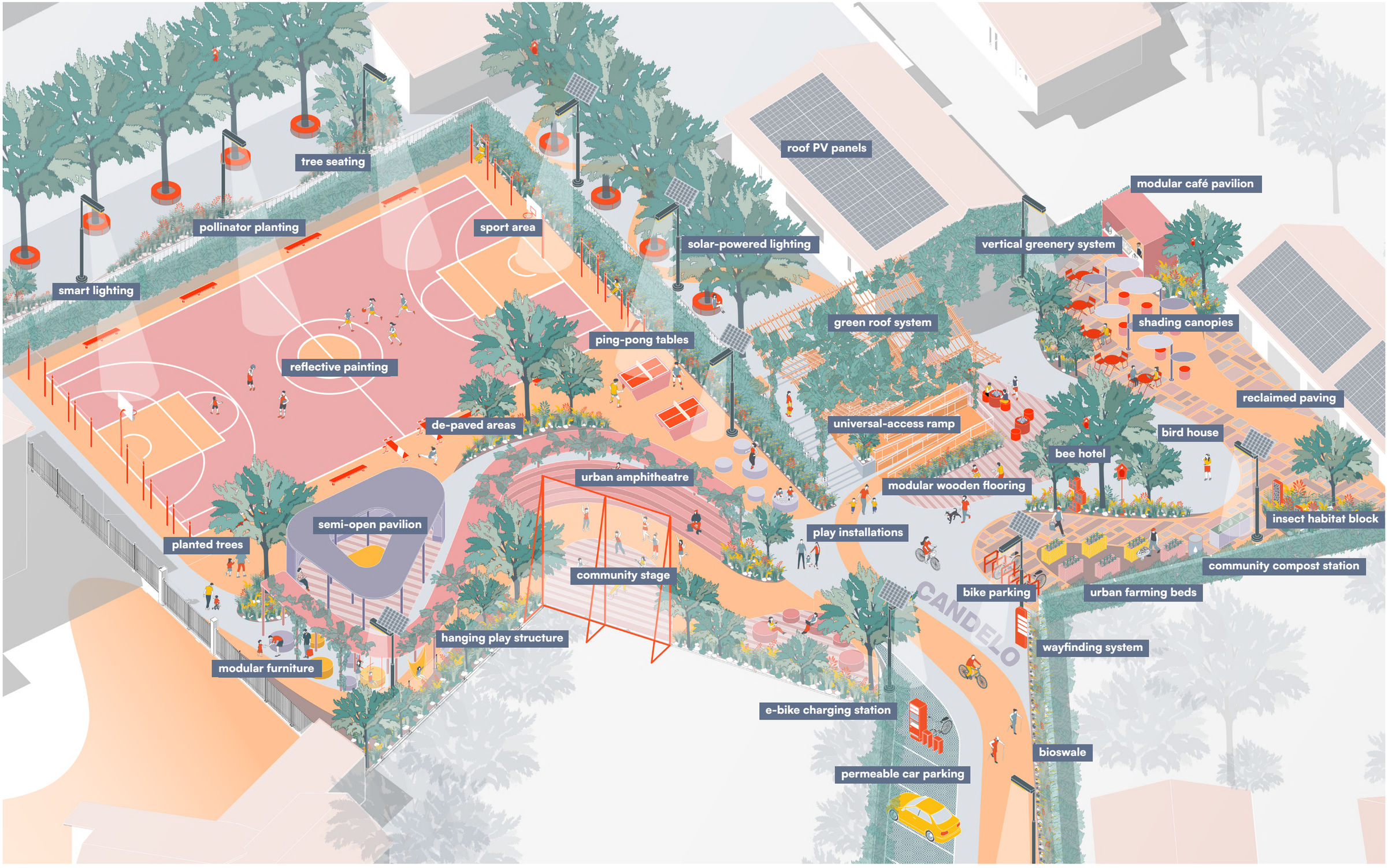
The painted surface was extended by applying **reflective coating** to the entire sports courtyard. **Pavement made from reused materials**, such as reclaimed bricks, was introduced, contributing not only to material reuse but also to increased ground permeability. **Modular timber flooring** was partially implemented in resting areas with **modular street furniture**, creating comfortable shaded spaces, as well as in front of the open-air screen, forming a **small community stage**.

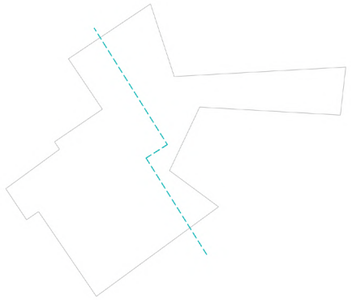
Architectural elements such as an **open semi-open pavilion** were introduced with seating areas and tables inside, creating a gathering space for children and parents. Following the observations from Phase II, the pavilion became a rational design response, introducing a more enclosed and private space separated from the sports zone while establishing a community meeting place. **The urban amphitheatre** is now connected to the playground through curved landscape forms surrounding the pavilion. A **modular café pavilion**, constructed from more permanent materials, became another focal point of the public space.

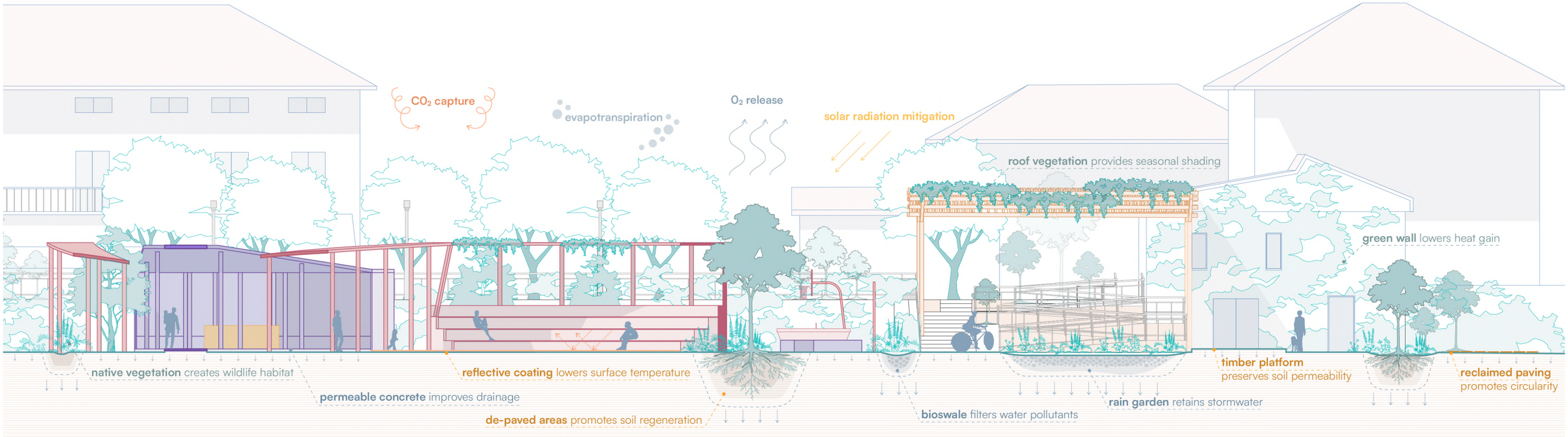
This phase also allows for the **implementation of renewable energy systems**. Considering the context of Candelo, solar energy is the most appropriate renewable source, while wind conditions are not sufficient and hydropower cannot be considered due to the absence of watercourses on the site. Therefore, **photovoltaic panels** were installed on the south-facing roof slopes of the existing buildings to maximize solar exposure. **Solar-powered lighting units** were also introduced to support energy-efficient public lighting throughout the site.



Main regenerative urban devices







Site section



Note. Render by the author, created from an Autodesk Revit model and enhanced using Visoid AI.



Note. Render by the author, created from an Autodesk Revit model and enhanced using Visoid AI.

C.2 Testing spatial responsiveness

The spatial responsiveness of the proposed intervention is tested **on the basis of a series of parameters of qualitative nature**, measuring the project's ability to function as an adaptive, inclusive, multifunctional urban environment. Following the framework proposed by John et al. (2025), the assessment is structured around key quality factors of public space: accessibility, functionality, comfort, activities, aesthetics, environment, and safety. As a tactical urbanism project, it is not seen as a fixed and static solution, but as a **dynamic system that is effective through use, interaction and environmental performance**. The evaluation framework is therefore structured around key questions: **what is being tested, why it is relevant, how it is assessed, how the design responds, and what outcomes are expected**.

Primary parameters of **accessibility** evaluation are **accessibility, connectivity, and spatial legibility**, which will gauge the extent to which the space will be **accessible for people with varying physical abilities** and will be **continuous within the urban fabric**. The ramp is the design response, it is the structure which links the two streets, Via S. Sebastiano and Via Libertà, at the same time allowing the use of secondary paths throughout the site. The desired outcome is **an increased urban permeability, inclusiveness and spatial coherence**.

Functionality is addressed through **programmatic diversity, flexibility, adaptability, and spatial efficiency,** assessing the ability of the space to support a wide range of uses and respond to changing conditions over time. The project can be tested for temporary and evolving uses through scenario simulations and activity mapping. **Multiple attractors are distributed throughout the site** to keep everything active and to not create unused pockets of space. Intuitive navigation is achieved through **painted ground configurations** and through **clearly defined zones**, which can be used for recreation, social and contemplative functions, offering inclusivity in use. Thus, the space will be used by a **diversified group of users** and will be active all day long.

Activities focus on **intensity of use** and **social interaction**, evaluating how the space supports occupation patterns and collective use. It refers to how the project encourages continuous activation through the strategic placement of gathering areas, play spaces, and circulation paths. These elements promote interaction among diverse user groups and contribute to a vibrant and continuously used environment throughout the day.

The physical conditions that are required for long-term use of public space are referred to **comfort quality factor** through **environmental comfort and dwell time potential.** Thermal comfort studies and seating analysis assess the **effectiveness of shade, air quality, and spatial configuration**. The integration of shaded areas, seating clusters, and resting points supports longer stays and enhances user well-being.

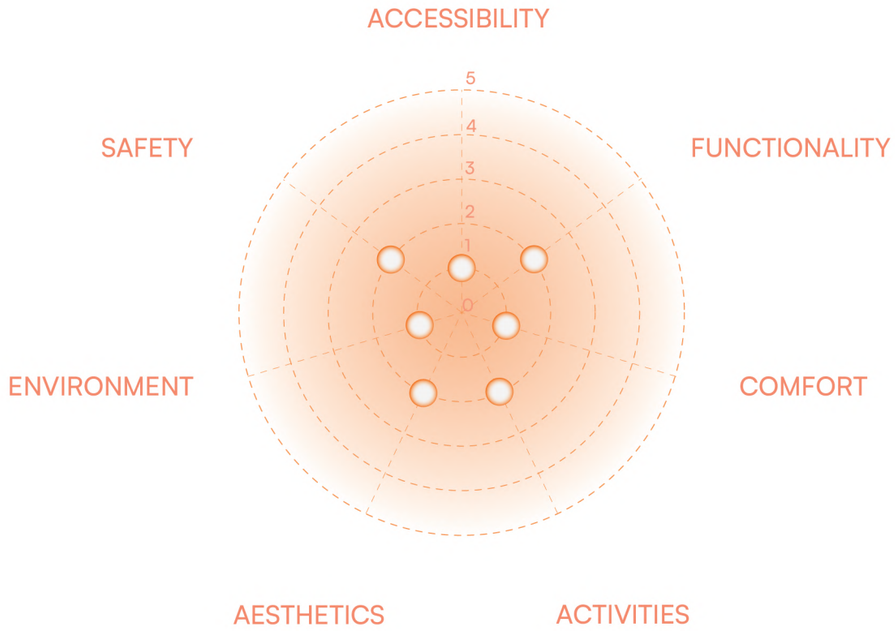
Environment is explored through microclimate regulation, focusing on the environmental performance of the intervention. Mitigating heat and air quality impacts of trees, green walls and shading devices through **vegetation analysis and seasonal simulations**. These strategies help **to minimize the urban heat island effect** and promote a more stable and comfortable microclimate.

Experiential quality relates to **aesthetics**, and it takes into account the sensory richness and spatial qualities of the user experience.

The **safety** is assessed by visibility, space openness and active use, both perceived and actual security. **Behavioral observation and visibility analysis** is used to evaluate the presence of natural surveillance in the space.The design features open sightlines and continuous movement along the ramp, providing a way **to minimize isolated areas and promote safety**.

The comparative diagrams (Fig. 100) show a significant increase in the project's spatial responsiveness as a result of the proposed intervention. The existing site shows low scores in all quality factors, especially accessibility, environment and comfort factors. In contrast, **the proposed design scores achieve high scores in each category since the regenerative strategies are focused on improving the whole system.**

Existing site quality assessment



Post-intervention quality assessment

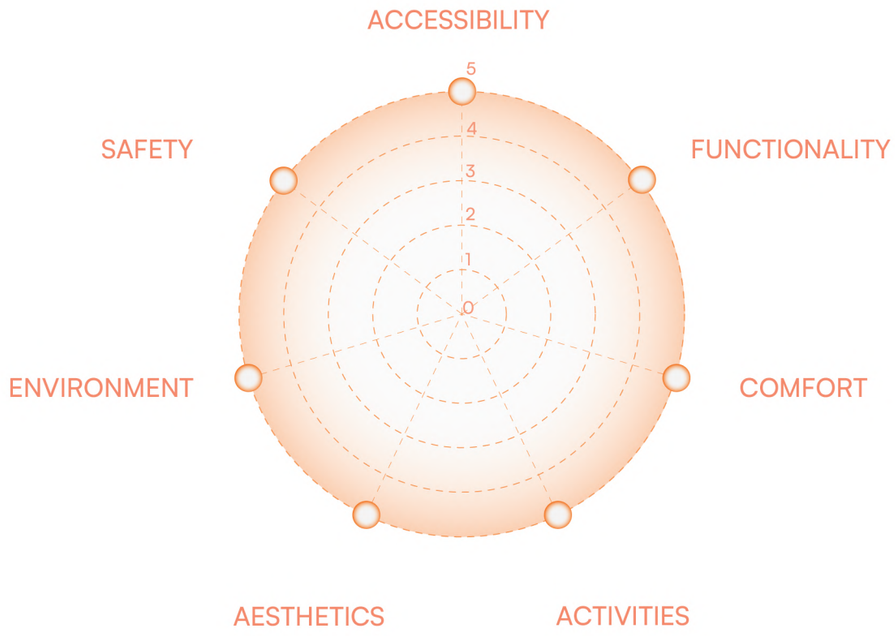


Figure 100. Spatial responsiveness assessment before and after the proposed intervention. Diagram by the author.

The framework of a multidimensional assessment model, integrating spatial, social, and functional dimensions across various urban typologies, is adapted from John et al. (2025).

Table 17. Evaluation the projects' spatial responsiveness

Quality factor	Parameter	Definition	Evaluation method	Project response	Expected impact	Perfomance assessment
Accessibility	**Accessibility**	degree to which the space is usable by all users regardless of physical ability	section analysis, slope study, circulation mapping	continuous ramp connection, gentle slopes, barrier-free paths	inclusive and universal access across the site	●●●●●
	Connectivity	ability to link different urban levels and spatial zones	movement flow diagrams	ramp links Via S. Sebastiano and Via Libertà; integrated paths	improved urban continuity and permeability	●●●●●
	Spatial legibility	clarity of spatial organization and ease of orientation	diagrammatic analysis, user path observation	painted ground patterns and defined zones guide movemen	intuitive navigation and reduced spatial confusion	●●●●○
Functionality	**Programmatic diversity**	range of activities supported within the space	functional mapping, scenario testing	mix of leisure, play, rest, and social areas	attraction of diverse user groups	●●●●●
	Flexibility/ adaptability	capacity of space to accommodate changing uses over time	scenario simulations, temporary use testing	tactical devices and open zones allow reconfiguration	long-term usability and resilience	●●●●●
	Spatial efficiency	degree to which space is actively used without leftover zones	density mapping	overlapping activity radii and multifunctional zones	minimal underused areas	●●●●●
Comfort	**Environmental comfort**	level of physical comfort (shade, temperature, air quality)	thermal comfort studies, vegetation analysis	trees, green walls, shaded ramp structure	improved microclimate and longer dwell time	●●●●○
	Dwell time potential	ability to encourage users to stay rather than pass through	observation, seating usage analysis	integrated seating, shaded areas, social nodes	increased duration of stay	●●●●●
Activities	**Social interaction**	ability to foster encounters and collective activities	behavioral observation, density mapping	seating clusters, games, amphitheatre, ramp as promenade	increased social engagement	●●●●●
	Intensity of use	frequency and density of occupation	activity mapping	multiple attractors distributed across the site	active and continuously used space	●●●●○
Aestethics	**Experiental quality**	sensory and spatial richness of user experience	view analysis, user journey mapping	framed views, changing perspectives along ramp	memorable and engaging spatial experience	●●●●●
Environment	**Microclimate regulation**	capacity to mitigate heat and improve thermal conditions	seasonal simulation	green infrastructure and shading devices	reduction of heat island effect	●●●●○
Safety	**Visibility**	capacity to ensure physical and perceived safety through visibility	visibility analysis, lighting assessment, behavioral observation	open sightlines, continuous space circulation, distributed activity zones	increased perceived and actual safety	●●●●○

This table presents a synthesized framework of evaluation criteria for urban public space, developed based on a review of key academic studies. The criteria are derived primarily from Mehta (2014), which proposes a user-centered assessment model, and from John et al. (2025), which introduces a multidimensional framework integrating spatial, social, and functional performance across different urban typologies.

Table 18. Project regenerative performance. Phase III

KPI category	Urban devices	Area / quantity	Regenerative outcomes
Biodiversity	• planted trees • pollinator bioswales • vertical greenery systems • urban farming	35 trees ≈650 m² vegetation (≈22% of site area)	• vegetated area increased to ≈22% • expanded habitats for pollinators and beneficial insects • strengthened ecological connectivity through integrated green infrastructure
Water management	• de-paved areas • modular flooring • pollinator bioswales • permeable reused pavement • permeable parking	≈685 m² permeable and rainwater -retaining surfaces (≈23% of site area)	• permeable and rainwater-retaining surfaces increased to ≈23% • replacement of sealed asphalt with permeable and vegetated surfaces • enhanced stormwater infiltration, runoff reduction
Mobility & accessibility	• universal-access ramp • diverse mobility surfaces • permeable parking • wayfinding system	3000 m² walkable public area 24 bicycle/scooter spaces	• 100% of the site is barrier-free accessible • improved pedestrian permeability and site legibility • support of active micro-mobility
Microclimate performance	• reflective paint • shading canopy • vertical greenery systems • pollinator bioswales	1208 m² reflective pavement (≈40% of site area) ≈800 m² vegetation	• surface temperature reduction of ≈7—9°C on treated pavement • localized cooling of ≈15—20°C in shaded and vegetated areas • enhanced mitigation of the urban heat island effect
Social activation	• community stage • urban amphitheater • urban farming • educational gardens • modular seating • open-air cinema	14 supported activity types	• increased diversity of recreational, educational, and cultural activities • strengthened community participation • promoted environmental awareness, local food production, and year-round community use
Resource circularity	• modular flooring • reused permeable pavement • reclaimed street furniture • locally sourced materials	207 m² modular flooring 166 m² reused pavement ≈65% reused/reclaimed materials	• reduced embodied material consumption • increased use of modular and locally sourced elements • improved adaptability for future project development
Energy performance	• rooftop photovoltaic panels • solar-powered lighting	37 PV panels 7 solar lighting units ≈16.65 kWp installed PV capacity	• ≈21,000 kWh/year renewable energy generation potential • on-site renewable electricity generation • reduced operational energy demand and associated carbon emissions • increased long-term energy resilience

C.3 Regenerative performance assessment

Long-term development scenario Phase III was assessed in the same manner and using the same categories of KPIs, such that the regenerative performance can be compared across the three project phases.

The main outcomes of Phase III include:

- **the introduction of approximately 650 m² of vegetation** on site through native tree planting, pollinator bioswales, vertical greenery systems, urban farming areas, and integrated green infrastructure, strengthening biodiversity and ecological connectivity;

- **rainwater-retaining and permeable surfaces increased to approximately 23% of the intervention area** through de-paved areas, permeable modular flooring, permeable parking, bioswales, and reused permeable paving, improving stormwater infiltration, runoff reduction, and on-site water management;

- **the maintenance of a 100% barrier-free accessible public space** through the permanent implementation of the universal-access ramp, diverse mobility surfaces, permeable pedestrian routes, wayfinding systems, and bicycle and scooter parking supporting active mobility;

- **surface temperature reduction of approximately 7—9°C on treated pavement** through the extensive use of reflective surfaces, vertical greenery systems, tree canopies, and pollinator bioswales, with localized shaded and vegetated areas achieving temperature reductions of approximately 15—20°C;

- **increased diversity of recreational, educational, and cultural activities, together with stronger community participation, environmental awareness, local food production, and year-round community use** through the introduction of urban farming, educational gardens, a community stage, modular seating, and multifunctional public spaces;

- **approximately 65% of urban flooring, paving, and street furniture is produced from reused or reclaimed materials,** combined with locally sourced materials, reducing embodied environmental impacts;

- **renewable energy generation potential of approximately 21,000 kWh/year** through the installation of rooftop photovoltaic panels and solar-powered lighting units.

The evaluation shows that the project's regeneration performance in Phase II is better than Phase I in terms of vegetation cover, climate responsive surfaces, stormwater management, accessibility and diversity of public activities. The project emerges from a tactical pilot intervention to a holistic regenerative public space as the spatial and ecological base for the long-term regenerative systems in Phase III.

06. Conclusion

Final reflections and future perspectives

can tactical urban interventions
generate regenerative
outcomes?

how do the three design phases
differ?

what are the key findings and
contributions of this research?

how can this framework inform
future regenerative urban
projects?

6.1 Comparative assessment of the design phases

The final step of this study is to summarize the outcomes of all project phases, analyze them, and conduct a comparative assessment of their regenerative performance. Therefore, to carry out the comparative analysis, the defined KPI categories and their corresponding indicators were taken into consideration. The outcomes of the analysis by KPI categories are as follows:

Biodiversity

Biodiversity was evaluated through the extent of vegetated areas, vegetation stratification, and green network continuity. The results demonstrate a progressive increase in vegetated surfaces from approximately 100 m² in Phase I to approximately 650 m² in Phase III, accompanied by the development of a more diverse vegetation structure. The improvement in green network continuity contributes to habitat creation by strengthening ecological connectivity and providing more suitable conditions for local flora and fauna.

Water management

Water management was assessed through the percentage of permeable surfaces. While Phase I focused primarily on temporary interventions with limited hydrological impact, the introduction of permeable paving, bioswales, and rainwater management strategies in the following phases increased permeable surfaces to approximately 23% in Phase III. This contributes to improved stormwater infiltration and reduced surface runoff.

Mobility and accessibility

Mobility and accessibility were evaluated through the proportion of accessible public space and the provision of bicycle parking. Accessibility increased from approximately 60% in Phase I to 100% in Phases II and III following the implementation of the universally accessible ramp. Bicycle parking capacity also increased from 12 to 24 spaces, encouraging active mobility and improving the overall functionality of the public space.

Microclimate performance

Microclimate performance was evaluated through average surface temperature reduction and the extent of shaded areas. The progressive introduction of vegetation and shading devices increased shaded space from approximately 120 m² in Phase I to approximately 800 m² in Phase III, while the estimated cooling effect improved from approximately —5—7°C to —7—9°C. These results demonstrate the project's increasing capacity to mitigate the urban heat island effect and improve outdoor thermal comfort.

Social activation

Social activation was evaluated through the diversity of supported activities, the number of user groups accommodated, and the proportion of illuminated public space. The assessment indicates a gradual increase from 8 to 14 supported activity types, and from 4 to 8 user groups. Together, these indicators suggest a more active, inclusive, and attractive public environment throughout the project phases.

Resource circularity

Resource circularity was assessed through the percentage of reused and reclaimed materials incorporated into each phase. The proportion decreases from approximately 80% in Phase I to approximately 65% in Phase III, reflecting the transition from temporary tactical interventions to more permanent construction. While the later phases require a greater proportion of new structural materials, reclaimed materials continue to be integrated wherever technically feasible.

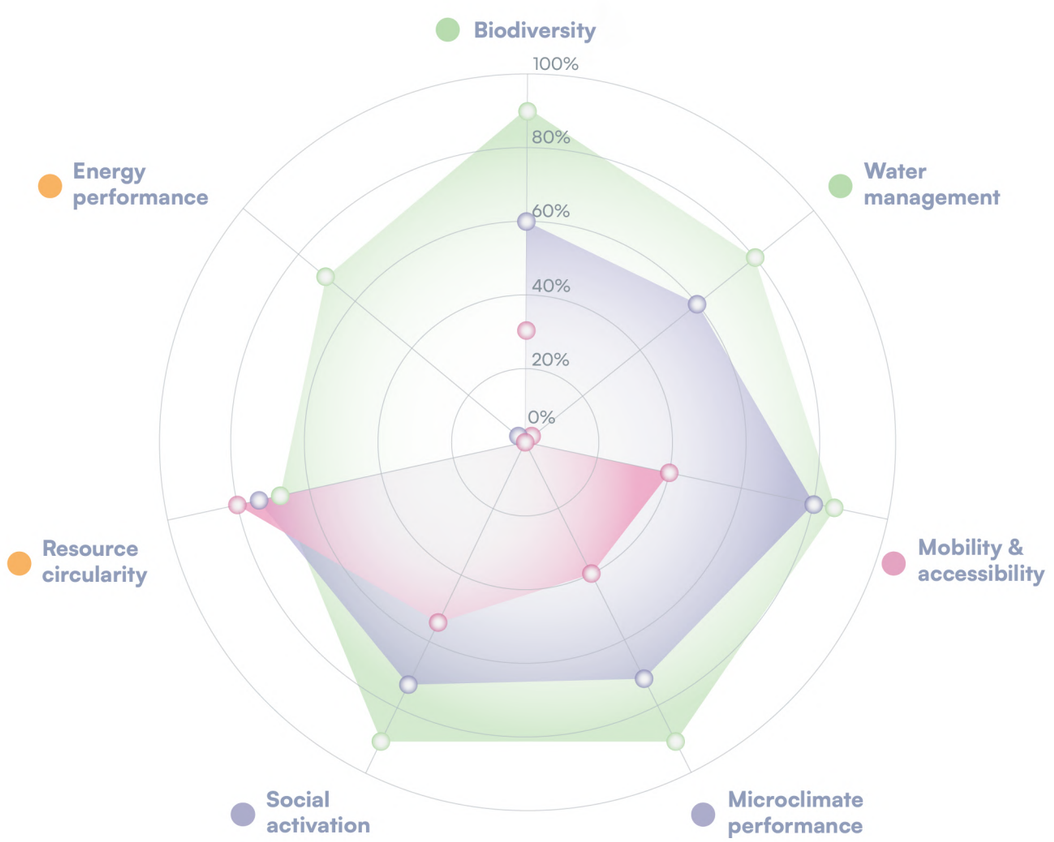
Energy performance

Energy performance was considered only in Phase III, representing the long-term development scenario. The installation of rooftop photovoltaic panels on the existing buildings is estimated to generate approximately 21,000 kWh/year of renewable electricity, contributing to the reduction of operational energy demand and supporting the project's long-term environmental performance.

Table 19. Comparative analysis of the project phases

KPI category	KPI	Phase I	Phase II	Phase III
Biodiversity	• vegetated area (m²) • vegetation stratification (%) • green network continuity	≈100 m² 55/20/15/10 low	≈450 m² 45/20/20/8/7 medium	≈650 m² 40/20/20/10/10 high
Water management	• permeable surface (%)	—	≈10%	≈23%
Mobility & accessibility	• accessible public space (%) • bicycle / micro-mobility parking (spaces)	≈60% 12	100% 12	100% 24
Microclimate performance	• average surface temperature reduction (°C) • shaded area (m²)	≈5—7°C ≈120m²	≈6—8°C ≈500m²	≈7—9°C ≈800 m²
Social activation	• supported activity types (n.) • user groups supported (n.)	8 4	10 6	14 8
Resource circularity	• reused / reclaimed materials (%)	≈80%	≈70%	≈65%
Energy performance	• renewable energy production (kWh/year)	—	—	≈21,000 kWh/year

Note. Vegetation stratification values (%) represent the proportional distribution of functional vegetation layers in the following order: herbaceous plants, grasses and sedges, shrubs, small trees, and canopy trees.



PHASE I

pilot intervention

PHASE II

integrated intervention

PHASE III

long-tern regenerative development

Figure 101. Comparative assessment of the design phases. Diagram by the author.

A comparative assessment of the three design phases on the basis of the created Key Performance Indicator (KPI) framework is displayed in the radar diagram. The radar chart differs from the previous quantitative assessments, where each indicator was measured in a given unit (e.g., m^2, %, °C, number of activity types) by mapping each KPI category into a normalized performance score between 0 and 100%. This approach allows indicators that are measured in different units to be compared within a single graphical framework.

The percentages assigned are not the measured indicator values themselves, but rather **the relative level of achievement of the regenerative objectives based on each project phase**. The scores were derived in a comparative interpretation of the quantitative evaluation tables, taking account of the depth of intervention, the variety of applied urban devices and their anticipated environmental, social and spatial advantages. The higher the score, the more the project contributes to the regeneration goals and the more integrated the approach towards regeneration.

The diagram shows the estimated regenerative potential of each design phase and is not a reflection of actual post-occupancy performance as the evaluation was performed prior to project implementation. Therefore, a maximum of 90% is given, as the long-term ecological and social impacts of regenerative interventions can only be confirmed through future monitoring after implementation. The scores are derived from a comparative assessment of the KPI categories and represent the relative regenerative contribution of each phase rather than the direct measured values of individual indicators.

The scores for each phase are progressively higher, indicating the shift from temporary tactical interventions (Phase I) to integrated spatial strategies (Phase II), and finally to a long-term regenerative development framework (Phase III). The Resource circularity category, however, shows a steady decline through the phases. This indicates a shift from temporary interventions, which maximize the use of reclaimed materials, to long-term interventions, which demand more permanent infrastructure and durable construction systems.

6.2 Findings and research outcomes

The research demonstrates the **transformative and regenerative potential of short-term tactical actions** when they are connected to a long-term regenerative approach to the project, rather than being considered as isolated, temporary interventions. Tactical interventions can enhance biodiversity, improve microclimate conditions on site, activate public space, and support the gradual transformation of public space into a more adaptive and resilient environment.

The proposed layered regenerative framework demonstrates that there are multiple ways of implementing regenerative design strategies and urban devices through tactical interventions. The interconnections between actions related to biodiversity, water management, mobility and accessibility, microclimate improvement, resource circularity, and renewable energy can create an integrated system capable of generating regenerative outcomes.

This research explored the theoretical foundations of tactical urbanism, regenerative design, and urban regeneration in order to develop an original methodological framework for the design process. A layered regenerative framework was developed based on the synthesis of literature review and outcomes of case study analysis. The main operative areas of the framework: biodiversity, water management, mobility and accessibility, microclimate performance, resource circularity, and energy performance. Specific design strategies, urban devices and measurable KPI indicators were associated with each layer, allowing the proposed interventions to be evaluated, compared and monitored systematically during the three phases of the project. This thesis shows the potential for tactical urbanism to be developed into a formal, iterative design process for regeneration.

Based on the project in Candelo, **the study validates tactical urbanism as an effective design tool for small-town settings**. The research proposes three possible implementation scenarios illustrating how the site can be transformed over time. The expected outcomes of each phase were identified and comparatively evaluated through the defined KPI categories. Therefore, it can be concluded that progressive improvements are achieved across all regenerative performance categories.

The Phase II proposal of the Candelo project presented in this research participated in the **Candelo Urban Link competition** organized by Terraviva and received a Finalist Mention (Terraviva Competitions, 2026). It provided an opportunity to test the proposed design approach beyond the academic context. Consequently, the project was reviewed and evaluated by an international jury composed of professional architects and municipal representatives. This recognition confirms the relevance of the proposed strategies and supports the applicability of the regenerative and tactical design framework developed in this research.

Although the proposed framework demonstrates the regenerative potential of tactical urban interventions, its long-term effectiveness can only be verified through implementation and continuous monitoring. Future research should evaluate the proposed KPI categories through post-occupancy studies, including ecological monitoring, thermal measurements, user behaviour analysis, and community feedback.

The methodology developed in this research can also be tested in other small towns and rural settlements to assess its transferability under different spatial, environmental, and socio-economic conditions. Further studies may also explore participatory governance processes, the economic feasibility of regenerative tactical devices, and long-term maintenance strategies to strengthen the practical application of the proposed theoretical framework.







Bibliography

Abusaada, H., & Elshater, A. (2021). Revealing distinguishing factors between Space and Place in urban design literature. Journal of Urban Design, 26(3), 319—340. https://doi.org/10.1080/13574809.2020.1832887

Alberti, F., Scamporrino, M., & Rizzo, A. (2018). Promuovere l'azione tattica: La temporaneità nella pratica urbanistica / Promoting tactical actions: Temporary uses and urban planning. Urbanistica, 157, 16—21.

Ammendola, J., & Masiani, B. (2026). Liveable school surroundings: Italian tactical urbanism for community-friendly public spaces. Sustainability, 18(3), 1487. https://doi.org/10.3390/su18031487

Attia, S. (2016). Towards regenerative and positive impact architecture: A comparison of two net zero energy buildings. Sustainable Cities and Society, 26, 393—406. https://doi.org/10.1016/j.scs.2016.04.017

Bishop, P., & Williams, L. (2012). The temporary city. Routledge.

Bowler, D. E., Buyung-Ali, L., Knight, T. M., & Pullin, A. S. (2010). Urban greening to cool towns and cities: A systematic review of the empirical evidence. Landscape and Urban Planning, 97(3), 147—155. https://doi.org/10.1016/j.landurbplan.2010.05.006

Bråten, L. N. (2024). Temporary temporariness? The (mis)use of tactical urbanism from the "open city" framework. Urban Studies, 62(6). https://doi.org/10.1177/00420980241263436

Brenner, N. (2016). New urban spaces: Urban theory and the scale question. Oxford University Press.

Bruzzese, A. (2026). Reclaiming public space through governance transformation: The case of Piazze Aperte, Milan. Urban Planning, 11. https://doi.org/10.17645/up.11032

Campo, D. (2016). Tactical urbanism: short-term action for long-term change. Journal of Urban Design, 21(3), 388—390.

Cariello, A., Ferorelli, R., & Rotondo, F. (2021). Tactical urbanism in Italy: From grassroots to institutional tool—Assessing value of public space experiments. Sustainability, 13(20), 11482. https://doi.org/10.3390/su132011482

Cariello, A., Ferorelli, R., & Rotondo, F. (2024). Tactical urbanism experiences in building public spaces: Lessons learned in Italy. In Social cohesion and resilience through citizen engagement (pp. 212—229). Edward Elgar Publishing. https://doi.org/10.4337/9781035317103.00027

Carmona, M., Bento, J., & Gabrieli, T. (2023). Urban design governance: Soft powers and the European experience. Routledge. https://doi.org/10.2307/j.ctv2w61bbq

Carrera, L. (2025). The right to walkability for older citizens in age-friendly cities: "Let's move through the city" an explorative qualitative survey. European Scientific Journal, 21(42), 30. https://doi.org/10.19044/esj.2025.v21n42p30

Casavola, P. (2015). A strategy for inner areas in Italy: Definition, objectives, tools and governance. Agenzia per la Coesione Territoriale.

Chen, L., Hu, Y., Wang, R., et al. (2024). Green building practices to integrate renewable energy in the construction sector: a review. Environmental Chemistry Letters, 22, 751—784. https://doi.org/10.1007/s10311-023-01675-2

Colding, J., Gren, Å., & Barthel, S. (2020). The incremental demise of urban green spaces. Land, 9, 162. https://doi.org/10.3390/land9050162

Crowley, D., et al. (2021). Towards a necessary regenerative urban planning: Insights from community-led initiatives for ecocity transformation. CIDADES, Comunidades e Territórios, 21(1). https://doi.org/10.15847/cct.20505

Di Croce, N., & Guastavino, C. (2025). Toward a sensory approach to tactical urbanism. City. https://doi.org/10.1080/13604813.2025.2565032

Douglas, G. C. C. (2015). Tactical urbanism: Short-term action for long term change, by Mike Lydon and Anthony Garcia. Journal of the American Planning Association, 81(2), 154—155.

Du Plessis, C. (2012). Towards a regenerative paradigm for the built environment. Building Research & Information, 40(1), 7—22. https://doi.org/10.1080/09613218.2012.628548

Evans, J., Vácha, T., Kok, H., & Watson, K. (2021). How cities learn: From experimentation to transformation. Urban Planning, 6(1), 171—182. https://doi.org/10.17645/up.v6i1.3545

Fahrig, L. (2003). Effects of habitat fragmentation on biodiversity. Annual Review of Ecology, Evolution, and Systematics, 34, 487—515.

Finn, D. (2014). DIY urbanism: Implications for cities. Journal of Urbanism, 7(4), 381—398. https://doi.org/10.1080/17549175.2014.891149

Gehl, J. (2011). Life between buildings: Using public space (6th ed.). Island Press.

Gibbons, L. V. (2020). Regenerative—The new sustainable? Sustainability, 12, 5483. https://doi.org/10.3390/su12135483

Harvey, D. (2008). The right to the city. New Left Review, 53, 23—40.

Hwang, Y. H., & Jain, A. (2021). Landscape design approaches to enhance human—wildlife interactions in a compact tropical city. Journal of Urban Ecology, 7(1). https://doi.org/10.1093/jue/juab007

Ingaramo, R., Pollo, R., & Negrello, M. (2025). Adaptive to resist + mitigate. LetteraVentidue.

Jacobs, J. (1961). The death and life of great American cities. Random House.

John, M., Turaev, S., Al-Dabet, S., & Abdulghafor, R. (2025). Multidimensional assessment of public space quality: A comprehensive framework across urban space typologies. arXiv. https://doi.org/10.48550/arXiv.2505.21555

Kappou, S., Souliotis, M., Papaefthimiou, S., et al. (2022). Cool pavements: State of the art and new technologies. Sustainability, 14(9), 5159. https://doi.org/10.3390/su14095159

Latham, A., & Layton, J. (2019). Social infrastructure and the public life of cities: Studying urban sociality and public spaces. Geography Compass, 13(7), 1—15.

Lefebvre, H. (1991). The production of space. Blackwell.

Lefebvre, H. (1996). Writings on cities (E. Kofman & E. Lebas, Trans.). Blackwell.

Lenzholzer, S., & Van der Wulp, N. (2010). Thermal experience and perception of the built environment in Dutch urban squares. Journal of Urban Design, 15(3), 375—401. https://doi.org/10.1080/13574809.2010.488030

Lenzholzer, S., & Van der Wulp, N. (2010). Thermal experience and perception of the built environment in Dutch urban squares. Journal of Urban Design, 15(3), 375—401. https://doi.org/10.1080/13574809.2010.488030

Lydon, M., Bartman, D., Garcia, T., Preston, R., & Woudstra, R. (2011). Tactical urbanism: Short-term action, long-term change (Vol. 1). Street Plans Collaborative.

Lydon, M., Garcia, A., Duany, A., & Steuteville, R. (2012). Tactical urbanism 2: Short-term action, long-term change. Street Plans Collaborative.

Lydon, M., & Garcia, A. (2015). Tactical urbanism: Short-term action for long-term change. Island Press.

Lyle, J. T. (1994). Regenerative design for sustainable development. John Wiley & Sons.

Mang, P., & Haggard, B. (2016). Regenerative development and design: Evolution. https://doi.org/10.1002/9781119149699.ch1

Mang, P., & Reed, B. (2012). Regenerative development and design. In Encyclopedia of sustainability science and technology. https://doi.org/10.1007/978-1-4614-5828-9_303

Mang, P., & Reed, B. (2013). Regenerative development and design. In V. Loftness & D. Haase (Eds.), Sustainable built environments. Springer.

Marcus, L., & Colding, J. (2024). Placing urban renewal in the context of the resilience adaptive cycle. Land, 13(1), 8. https://doi.org/10.3390/land13010008

Matias, M., Silva, T., Mills, G., & Lopes, A. (2026). Recognising vehicles as thermally active surfaces in urban microclimates based on evidence from Lisbon. Discover Environment, 4, 93. https://doi.org/10.1007/s44274-026-00593-8

Mehta, V. (2014). Evaluating public space. Journal of Urban Design, 19(1), 53—88. https://doi.org/10.1080/13574809.2013.854698

Mertens, E. (2021). Resilient city: Landscape architecture for climate change. Birkhäuser.

Mould, O. (2014). Tactical urbanism: The new vernacular of the creative city. Geography Compass, 8(8), 529—539. https://doi.org/10.1111/gec3.12146

Negrello, M. (2024). Architettura per il cambiamento climatico: Nature-based solutions come elemento del progetto architettonico e urbano. In B. Giudice (Ed.), Città e natura (pp. 73—89). Città Studi Editore.

Negrello, M. (2025). Nature-based regeneration: Five stories of architecture that will change the world. LetteraVentidue.

Papadakis, D. M., Savvides, A., Michael, A., & Michopoulos, A. (2024). Advancing sustainable urban mobility: insights from best practices and case studies. Fuel Communications, 20, 100125. https://doi.org/10.1016/j.jfueco.2024.100125

Ramboll. (2024). Ramboll DESIGN Excellence 2023—2024. Ramboll Design Publications.

Ramboll. (2025). Systems Thinking. Ramboll Design Publications.

Rajabi, M., & Sharifian, S. (2022). User activity impact assessments in a sustainable public space: A measure by regarding visual graph analysis. International Review for Spatial Planning and Sustainable Development, 10(2), 111—128. https://doi.org/10.14246/irspsd.10.2_111

Rossitti, M., Oppio, A., Torrieri, F., & Dell'Ovo, M. (2023). Tactical urbanism interventions for the urban environment: Which economic impacts? Land, 12(7), 1457. https://doi.org/10.3390/land12071457

Silva, P. (2016). Tactical urbanism: Towards an evolutionary cities' approach? Environment and Planning B: Planning and Design.

Stevens, Q., & Dovey, K. (2022). Pop-up city: City-making in a fluid world. Routledge.

Soja, E. W. (1980). The socio-spatial dialectic. Annals of the Association of American Geographers, 70(2), 207—225.

Susca, T., Zanghirella, F., & Del Fatto, V. (2023). Building integrated vegetation effect on micro-climate conditions for urban heat island adaptation: Lesson learned from Turin and Rome case studies. Energy and Buildings, 295, 113233. https://doi.org/10.1016/j.enbuild.2023.113233

Suslowicz, J., & Hillnhütter, H. (2025). From temporariness to mobility futures: A review of progress in tactical urbanism as an active travel planning tool. https://doi.org/10.1016/j.trip.2025.101510

Tuan, Y.-F. (1977). Space and place: The perspective of experience. University of Minnesota Press.

Turku, V., Kyrönviita, M., Jokinen, A., & Jokinen, P. (2023). Exploring the catalytic power of temporary urbanism through a binary approach. Cities, 133, 104145. https://doi.org/10.1016/j.cities.2022.104145

Wahl, D. (2016). Designing regenerative cultures. Triarchy Press.

Yassin, H. H. (2019). Livable city: An approach to pedestrianization through tactical urbanism. Alexandria Engineering Journal, 58(1), 251—259. https://doi.org/10.1016/j.aej.2019.02.005

Websites

A.titolo. (2019). Ricettario BaiaBlanca — Orizzontale Collectif ETC. https://www.atitolo.it/project/ricettario-baiablanca-orizzontale-collectif-etc/

Area. (2022). LuOgo — Building the common space. https://www.area-arch.it/luogo-building-the-common-space/

Artieri. (2024, May 15). Floating Forest @ spazio HYDRO. https://artieri.org/2024/05/15/floating-forest-spazio-hydro/

Divisare. (2022). LuOgo — Building the common space. https://divisare.com/projects/463424-orizzontale-gianluca-gasperoni-luogo-building-the-common-space

Ferrante, R. (2024, May 27). LURT, il modello itinerante per la rigenerazione sociale e territoriale delle aree interne. Innovation Island. https://innovationisland.it/lurt-modello-itinerante-rigenerazione-sociale-territoriale-aree-interne/

Fondazione per l'Architettura Torino. (2022, November 9). Floating Forest. https://www.fondazioneperlarchitettura.it/2022/11/09/floating-forest/

Global Alliance for Buildings and Construction (GlobalABC). (2020). Global status report for buildings and construction. https://globalabc.org

Global Designing Cities Initiative. (2022, May 24). Piazze Aperte: How Milan gave its piazze back to the people. https://globaldesigningcities.org/update/piazze_aperte_report-en

IFDM. (2022). LuOgo — Costruire lo spazio comune. https://ifdm.design/2022/07/11/luogo-costruire-lo-spazio-comune/

Istituto Nazionale di Statistica (ISTAT). (2024). Popolazione residente e caratteristiche territoriali del comune di Candelo. https://demo.istat.it/app/?i=POS&l=en

Latini, F. (2016). RESTART: Una piazzetta post-sisma tra autocostruzione e riciclo. https://www.architetturaecosostenibile.it/design/arredo-urbano/restart-piazzetta-sisma-718

Nomad Season. (2025). Climate in Candelo, Italy. https://nomadseason.com/climate/italy/piedmont/candelo.html

Organisation for Economic Co-operation and Development (OECD). (2022). Rural well-being: Geography of opportunities. OECD Publishing. https://doi.org/10.1787/d25cef80-en

Orizzontale. (2018). Mulino — workshop di costruzione di un playground. https://www.orizzontale.org/en/workshop/

Orizzontale. (2019). Baia Blanca. https://www.orizzontale.org/en/portfolio_page/baia-blanca/

Produzioni dal Basso. (n.d.). Sostieni Floating Forest: Uno spazio verde per Hydro a Biella. https://www.produzionidalbasso.com/project/sostieni-floating-forest-uno-spazio-verde-per-hydro-a-biella/

Project for Public Spaces. (n.d.). What is placemaking? https://www.pps.org/article/what-is-placemaking

Ragazzo, S. (2018). ZOOART A.R.C.A. 2018 — Installation, public space. https://archiaward.com/en/work/2786

Solari, A. (2021, July 15). CivicoCivico, Orizzontale, Riesi (CL). Arketipo Magazine. https://www.arketipomagazine.it/civicocivico-orizzontale-riesi-cl/

Street Plans Collaborative. (n.d.). Tactical Urbanist's Guide to Materials and Design (v1.0). https://issuu.com/streetplanscollaborative/docs/tu-guide_to_materials_and_design_v1

Street Plans Collaborative. (n.d.). Tactical urbanism volume 5: Italy. https://issuu.com/streetplanscollaborative/docs/tu_italy_ita

Terraviva Competitions. (2026, March 16). Candelo Urban Link competition results. https://www.terravivacompetitions.com/candelo-urban-link-competition-results-2025/

Urban Matters. (2025). Civico Civico — LURT — Human Laboratory of Territorial Regeneration. https://urban-matters.org/projects/civico-civico-lurt-human-laboratory-of-territorial-regeneration/

Weather Atlas. (n.d.). Climate and average weather in Candelo, Italy. https://www.weather-atlas.com/en/italy/candelo-climate

Acknowledgements

I would like to express my sincere gratitude to **Maicol** for introducing me to the concept of regenerative design, which allowed me to see architecture and the built environment from a new perspective. I am also deeply thankful for his guidance, thoughtful discussions, and inspiring ideas that accompanied me throughout the development of this thesis.

My heartfelt thanks go to **my family** for supporting me throughout my entire architectural journey from the very beginning, for always believing in me, and for encouraging me to pursue my ambitions.

Finally, I would like to thank **my friends** for their sincere support, encouragement, and for standing by me throughout this journey.

Aleksandra

The sustainability framework has been widely discussed and implemented across disciplines in recent years, becoming a dominant concept in environmental discourse. However, after decades of following the paradigm of sustainable development, global environmental degradation continues to accelerate.

As a result, attention has increasingly shifted toward regenerative approaches.

The interdisciplinary investigation discovered that regeneration has become a key theme in current architectural and urban discourse, extending beyond the concept of mitigation to encompass frameworks aimed at restoring systemic value and producing measurable outcomes. This experience reinforced the understanding that regeneration should not be considered merely an extension of sustainability, but rather a shift beyond it: a paradigm change currently unfolding at the international level, which demands a fundamentally new design mindset.

Within this theoretical framework, in this thesis was developed a site-specific design proposal for Candelo, a historic settlement in the Northern part of Italy. Through the project small-scale, context-sensitive and regenerative interventions were explored, enhancing public space, reinforcing social cohesion, and reintroducing ecological processes. The proposal explores how regenerative principles can be adapted to a given context through tactical urbanism and stronger regenerative strategies.

The work addresses the conceptual and practical aspects of tactical urbanism, such as its implementation, spatial responsiveness and its regenerative potential in the proposed design intervention, and it evaluates its potential.