



# An Integrated Framework for Transforming Cultural Landscapes Through Innovative and Inclusive Strategies

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## 1 Introduction

The built environment can be read as a narrative produced by experiences, events and transformations. This chapter aims to develop a holistic and integrated approach towards addressing the regeneration of cultural landscapes by positioning inclusive and innovative place reactivation strategies as agents in establishing and guiding the outcomes of the transformation process. The building blocks of this transformation process are threefold—inclusive, innovative and circular, with the latter capturing transformation and sustainability (see Table 1).

Inclusion is focused on participation and co-creation models for capturing collective patterns of transforming cultural landscapes. Although several experiences of urban regeneration have been described in the literature, the potential of new collaborative governance tools in stimulating strategies for social inclusion and environmental valorisation is still poorly investigated and problematised. The use of participatory models based on community and multi-stakeholder engagement has been shown to be effective in promoting heritage revitalisation (de Luca et al., 2021;

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**Table 1** Building blocks of research

Topics (what)	Goals (why)	Means (how)
Inclusion	Participatory governance and decision-making Promotion of cultural diversity	Co-creation Promoting dialogue among actors
Innovation	Interaction Enriching user experience	Real-time prototyping/testing step by step Maker spaces and fab labs DIY
Transformation and sustainability	Culture-led urban transformation Sustainable urban development	Circular economy Adaptive reuse plans

Pappalardo, 2020). Stakeholders can integrate their historical information and weave a compelling story around their assets of interest. By effectively turning the users into stakeholders, a community can provide higher-quality services to all participants at lower cost levels and scale to larger numbers of assets and points of interest.

Urban innovation is linked to smart technologies and accessible platforms, which offer additional tools for transforming cultural landscapes and promoting innovative and inclusive strategies for environmentally, socially and economically sustainable revitalisation. Integrated management of services, infrastructures and communication networks is vital in the protection, promotion and enhancement of cultural landscapes in a dynamic and polycentric context. Innovation can also be found in the process of transformation of a cultural landscape: in the ways and tropes of intervention; in the means, methods and techniques employed; or in the scale and logic of the intervention.

Circularity is becoming an important component of cultural landscape management. More in general circular economy principles can inform the interventions, facilitate the reconceptualisation of spaces, enable new activities and valorisation of existing heritage assets and lead to the adaptive reuse of urban land (Ruff-Salís et al., 2021; Ikiz Kaya et al., 2021) for both greenfield sites and built environment (Leising et al., 2018). Additionally, the adaptive reuse of abandoned and underutilised cultural heritage and extant landscapes can play a critical role in promoting new economic growth, social well-being and environmental preservation, contributing to the sustainable development of cities and regions (Garcia, 2004). Approaches combining the ecosystem with the urban social tissue are currently spreading, especially in Europe, where concepts and applications of nature-based solutions (NBS) have been promoted as a tool for achieving locally adapted, resource-efficient and systemic interventions in cities and landscapes (Faivre et al., 2017; Pineda-Martos & Calheiros, 2021).

In this framework, emerging creative sectors, social innovation based on creativity and co-creation and the sharing and circular economy are scrutinised by providing implications for transforming cultural landscapes through innovative and inclusive strategies. Our methodological approach combines a case study of heritage landscape management through participatory interventions in the urban area of

Turin (Italy) accompanied by a survey of relevant literature on participatory planning, urban innovation and circularity. Turin represents a suitable case study because, since 2016, it has embraced Urban Living Labs (ULLs) to regenerate post-industrial districts and high-polluted areas with a robust cultural heritage, such as Campidoglio and Falchera. The case studies are drawn from two Horizon projects funded by the European Union (*FUSILLI* and *ProGireg*), which demonstrate current implementations and their implications. Data was collected through desk research, including reports and documents related to the case studies. The research was based on a review of literature available from public sources, which included project documents from *FUSILLI* and *ProGireg* (deliverables, public reports, MOOC content, scientific articles, etc.), news articles and testimonies of participant actors in the transformation process, namely, local officials, practitioners, academic experts and citizens from Mirafiori Sud. The reviewed documents were coded according to the main research themes of shared spaces, shared knowledge, sharing economy and the topics of innovation, inclusion and resource efficiency/circular economy.

In order to deliver a sound contribution to the emerging literature on shared re-utilisation of urban heritage landscapes, our work aims at dealing with the following research questions based on the three pillars—shared spaces, shared knowledge and sharing economy:

- How is an innovative pattern of space sharing created in the case of (peri)urban farming in the Turin Metropolitan Area?
- How are multi-directional dynamics of knowledge exchange managed in the case of (peri)urban farming in the Turin Metropolitan Area?
- How is the sharing economy applied in the case of (peri)urban farming in the Turin Metropolitan Area?

Subsequently, secondary findings were validated through on-site visits and discussions with stakeholders during 2022. Finally, the findings from the data analysis were compared and contrasted between the two case studies to identify the similarities and differences in the implementation and outcomes of urban sustainability and participatory initiatives. Thus, the qualitative case of the Turin metropolitan area is utilised for answering complex, real-world questions in line with the functions of ULLs. The case studies provide directions for knowledge transfer in methods and tools, which can be re-used and replicated as good practices for inclusive and innovative strategies.

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## **2 Transformations of Cultural Landscapes: An Integrated Framework**

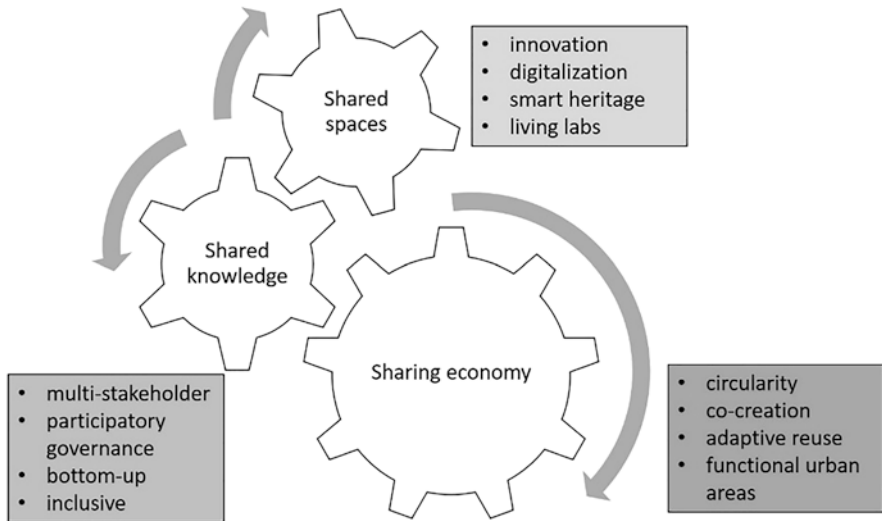
Over the past decades, abandonment and decay of urban, industrial and rural heritage have occurred in many cities around the world due to the reduction of economic activities, industrial and population decline and closure of production sites.

During early rounds of response in Europe and North America, the regeneration processes (Evans & Jones, 2008; Degen & García, 2012; Rodwell, 2008) were mainly implemented through top-down decision-making with a limited engagement of the local population (Swyngedouw, 2000). Thus, they frequently resulted in the breaking up of traditional social structures, gentrification, over-reliance on large projects and volatile sectors such as tourism. Often in opposition to top-down and capital-intensive urban change, resident-generated small-scale urban interventions brought about tactical urbanism practices, such as ‘do-it-yourself’ (DIY) urbanism (Talen, 2015). Yet, due to its low-budget and temporary effect, a greater long-term investment is needed to exploit opportunities generated by the actions of short-term investors (Aquilué et al., 2021), despite the difficulty in predicting the long-term effects due to the ‘vulnerabilities related to organisational, agency and alignment issues’ (Warren, 2014, p. 1).

One example of a socially enabled dynamic search process for solutions on the urban scale is ULLs set up by means of collaborative governance patterns between urban governments, academies, private companies and citizens. ULLs are born from the participatory nature of collective actions based on real-life solutions in which innovation and co-creation play a major role (Blezer & Abujidi, 2021). According to the European Network of Living Labs (ENoLL, n.d.), Living Lab (LL) is an ‘open innovation ecosystem based on a systematic user co-creation approach that integrates public and private research and innovation activities in communities, placing citizens at the centre of innovation’. Although ULLs have become strategic instruments for innovation and experimentation for urban governments, Marvin et al. (2018) argue that their primary purpose and organisation form vary. In this framework, civic ULLs are formed by partnerships of local actors focusing on developmental aspects in the contingent and historically produced urban context. Whereas organic ULLs are often examples of grassroots innovation formed by members of civil society, NGOs and residents with the investment of voluntary time and resources.

Cultural industries have the capacity to take over abandoned areas through adaptive reuse projects aimed at extending the life cycle to turn under-exploited landscapes from a social cost into a resource for sustainable development. Adapting historic urban landscapes for contemporary uses offers opportunities for ensuring their survival while retaining material values and preserving immaterial significance. Moreover, adaptive reuse could be integrated to resolve further economic and environmental concerns, such as creating more environmentally conscious landscapes while keeping costs down and safeguarding cultural and historical values (Armstrong et al., 2021).

The conceptual framework is based on three dimensions acting interdependently (see Fig. 1). Neighbourhood-based collaborative processes contribute to more resilient urban developments through sharing and space-commoning practices within ULLs. Shared spaces are formed by urban initiatives and citizens leading innovative and community-based actions as collaborative practices through which spatial resources and knowledge of space are co-produced, exchanged and enacted without being commodified while pursuing transformative goals in urban spaces (Petrescu



**Fig. 1** Conceptual framework (Source: Authors)

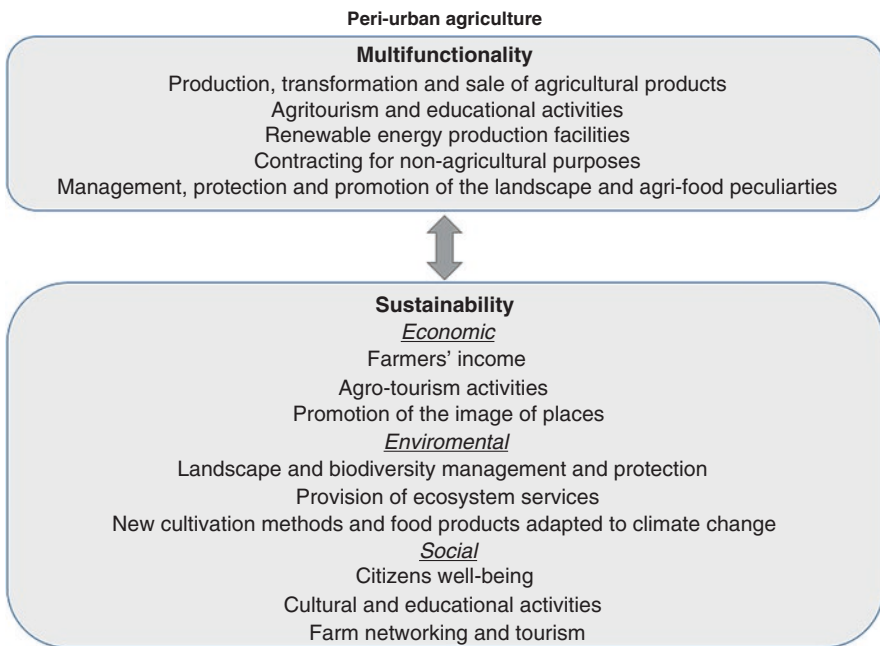
et al., 2022). Smart technology bears a transformative power for expanding the limitations of spatial consumption by making urban spaces part of a broader cultural landscape (Micheler et al., 2019). Iaione and Cannavò (2015) argue that sharing and space-commoning necessitate complex forms of urban governance through the involvement of participants from local communities, practitioners, academics and local non-profit organisations. Self-assessment, co-designing and prototyping might be realised in digital spaces for collaboration or through new stakeholders’ networks.

Digitalization has radically changed how images circulate, stories are shared and meanings are produced collectively through the accessibility of content, raising awareness and opening doors for learning opportunities. Moreover, digital tools provide access to a large network of users, who are more ‘kinetic’ than ever, through the abundance of mobile devices such as smartphones and tablets enabled by context-dependent and multimedia-rich information apps. Digitalisation and social networks enabled end-users to be active agents of innovation. Accordingly, forms of ‘new public governance’ and ‘open government’ emerged through the collaboration between public entities, the private sector, non-governmental organisations and citizens (Mačiulienė, 2018). Pfeffer et al. (2013) give the example of digital mapping tools that facilitate participatory processes and integrate different forms of knowledge through open digital platforms. Smart and digital technologies suggest new perspectives growing parallel to the social trends on the basis of new consumption and business models emerging with the increased application of digital doubles, smart specialisations and eco-design and energy efficiency. The negative impacts of the linear economic model exacerbate climate change, vulnerability and social inequalities. Parallel to post-industrial conditions, there has been a shift from a linear economy to a circular economy model (Jørgensen & Pedersen, 2018), which

also required institutional change as a collective process. In this context, industrial heritage and adaptive reuse can play a vital role in the achievement of a circular city region. Accordingly, regenerative approaches have been employed in community gardens, allotment collectives, NBS and urban green infrastructures.

### 3 Case: (Peri)urban Farming in Turin Metropolitan Area

In the urban environment, (peri-urban) agriculture is the cultivation of crops and rearing of animals for food and other uses, both within and surrounding the boundaries of cities. In this context, agriculture plays a crucial role in managing the peri-urban landscape and the social, aesthetic and environmental functions of urban metropolitan areas, providing several benefits to humans, namely, ecosystem services (Hassan et al., 2005). In particular, the maintenance of agricultural landscapes in urban and peri-urban areas represents a desire to maintain and affirm a cultural landscape (La Rosa et al., 2014; Soulard et al., 2018), characterising the Anthropocene (Willemen et al., 2017). The management of such agricultural landscapes should ensure multifunctionality (see Fig. 2), understood as the integration of different functions in order to produce benefits from an economic, environmental and social point of view (Selman, 2009; O’Farrell & Anderson, 2010; Gullino et al., 2018).



**Fig. 2** Linking sustainability and multifunctionality in peri-urban farming (Adapted from Gullino et al., 2018)

The application of the Turin case study helps to understand the above concepts better. It is realised with a specific focus on a district with a strong industrial past, located on the edge of three municipalities (Turin, Moncalieri and Nichelino). As in many other realities in northern Italy, in Turin since the 1970s, in response to the phenomena of growing urbanisation and immigration caused by industrial development, urban agriculture has gradually taken on a multiplicity of functions: productive (for self-consumption and family subsistence), fruitive and recreational.

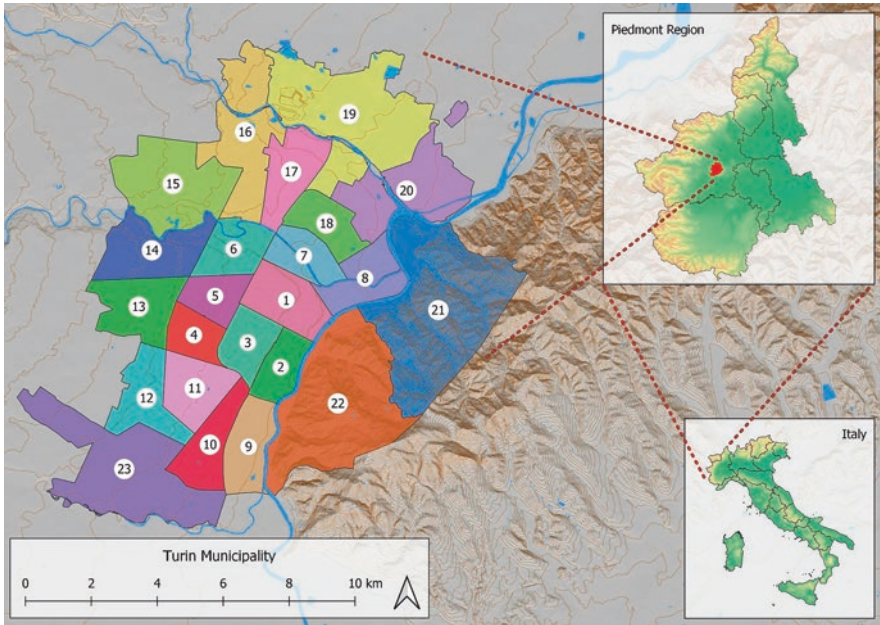
### 3.1 Turin City's Historical Context

Turin was called 'one-company town' for many decades. The economy and society were deeply dependent on FIAT, the most important automobile manufacturer in Italy. Since the 1980s, however, the crisis in the automotive sector and the decision to move many manufacturing plants abroad had severe impacts. Entire industrial sites on the city's borders closed their doors, creating a huge vacuum in terms of employment, social integrity and space. Due to the changed economic equilibria, the local government had to find a new development model and propose alternative strategies to enhance and regenerate former industrial areas (Ravazzi & Belligni, 2016). This policy approach did not plan to totally erase the industrial past but aimed to valorise the cultural heritage of the territory by combining it with new innovative policy fields. By means of a vast array of partnerships between public, private and civil society, the municipality of Turin gradually started to look at its peripheries as open-air laboratories for companies interested in experimenting with innovative products and services in the fields of smart technologies, sustainability, circular economy and social innovation. Launching several LLs via European and national funding, such as the *Campidoglio Living Lab* or the *Living Lab on Sharing and Circular Economy*, the municipality has begun providing streets, squares or entire neighbourhoods to co-test innovative solutions through the direct engagement of local communities.

In the last 5 years, the municipality decided to launch two different LLs aimed at regenerating Mirafiori Sud, a post-industrial neighbourhood situated along the south administrative borders of the city (see Fig. 3). From a historical viewpoint, this district was born and grew in the aftermath of the Second World War, when thousands of workers moved on to Turin from the surrounding countryside and southern Italian regions to look for employment opportunities in the industrial sector.

Starting from the 1980s, this area has been suffering in terms of employment opportunities and social cohesion due to the gradual downturn of the automotive company FIAT. In the 1990s and 2000s, the municipality started to launch urban regeneration projects aimed at turning Mirafiori Sud into a creative laboratory for alternative environmental and social policies. More specifically, Project 'Periferie' improved some of the local mobility infrastructures, such as the bridge over the Sangone river and the main bus lines connecting the city centre and proposed the first pilots of social inclusion with disadvantaged categories of citizens. From 2010 onwards, new urban regeneration projects focused on recovering and readapting





**Fig. 3** Map of Turin Metropolitan area (Source: Massimiliano Moraca)

post-industrial spaces. With the Miraorti project, a new pattern of management of public green spaces for urban horticulture began to be tested along the Sangone River. Miraorti gave 6 hectares of public green space back to the district while maintaining their agricultural vocation through a participatory process involving squatters and volunteers in the creation of a large park of urban gardens. Consequently, new forms of urban agriculture and social inclusion occurred. In the meantime, Miraorti promoted a first comprehensive soil analysis to check for possible pollution problems and the evaluation of different management models.

Nowadays, by means of two European-funded LLs, namely FUSILLI and proGReg, the municipality of Turin is promoting a collaborative governance approach to urban regeneration, engaging all of the local stakeholders in a step-by-step dialogue to experiment with innovative, sustainable and circular solutions.

### 3.2 Urban Horticulture

Various forms of urban agriculture, such as community gardens, allotments, rooftop gardens and urban farms, contribute to the availability of fresh food, create educational and recreational opportunities and flourish green cities. Such activities succeed well in urban realities, despite the intensive land use in such contexts, as consumers increasingly prefer regional production, especially for high-quality products, and the urban population prefers the scenic attractions resulting from a



heterogeneous, small-scale agricultural structure punctuated by natural elements (Zasada, 2011). From a production point of view, urban gardens present interesting potential. A study conducted in the city of Bologna in 2014 concerning the potential production of vegetables on the city's flat roofs underlined the possibility of producing more than 12,000 vegetables per year on an area of 82 hectares, meeting 77% of urban vegetable needs (Orsini et al., 2014).

Focusing on Turin, metropolitan authorities have been involved in various projects to improve the quantity and quality of local food production and promote conscious consumption by citizens. Of particular interest was the '*Torino città da coltivare*' project (Tecco et al., 2017), which promotes the idea that urban agriculture could provide food and simultaneously reduce the costs of managing urban greenery and introduce alternative forms of public space management. In the following 5 years, the area of the city allocated to urban gardens grew significantly, exceeding 100 hectares (5 m<sup>2</sup>/inhabitant), and in 2017 the first report for the urban food strategy was launched. In 2020, the City of Turin drew up the 'Strategic Green Infrastructure Plan', an analysis and planning tool to direct investments and management policies for Turin's urban public green system in the coming decades, supplementing urban planning tools. Moreover, there are ongoing European research projects, which are important means of transforming the city and promoting economic, social and environmental well-being. Specifically, ProGIreg and FUSILLI are characterised by ULLs in the Mirafiori Sud district.

### **Case of FUSILLI Project**

'FUSILLI' (Fostering Urban Food System Transformation through Living Labs Implementation) aims to formulate shared urban food strategies to complete the transition towards a quality, sustainable, safe and inclusive food system in 12 European cities.<sup>1</sup> FUSILLI is aligned to European Commission's food strategy 'Food 2030' and based on the experimentation of innovative policies along five axes of the food chain: production, distribution, consumption, waste management and governance. Participating cities chose to support their interventions to the territory and food system of reference through LL approach, a method of intervention and applied research based on the involvement of citizenship in designing, formulating, testing and evaluating innovative actions in real-life contexts.

Parallel to open-air experimentation, FUSILLI intends to build a community of knowledge on the food system by acting locally and internationally. Local partners develop solutions in a shared and participatory manner through an open and ongoing dialogue between public administrations, research organisations, territorial associations and enterprises. The 12 cities involved were called upon to confront each other through a monitoring methodology called Dynamic Learning Agenda (DLA). It serves to identify particularly thorny policy issues or research questions (the Learning Questions) through the exchange of good practices. In doing so, each

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<sup>1</sup>Athens, Castelo Branco, Differdange, Kharkiv, Kolding, Oslo, Rijeka, Rome, San Sebastian, Tampere, Turin

city learns from others' experiences, inspires and generates synergies to transform the urban food system.

FUSILLI's LL in Mirafiori Sud promoted innovations through practical pilots of distribution and production, but also with a new pattern of governance for the management of local food policies. At a practical level, FUSILLI started the transformation of a kiosk and a restaurant in a circular perspective. This initiative was accompanied by the creation of a diffuse hub for the distribution of unsold food and the activation of workshops to disseminate and raise awareness in favour of healthy and conscious eating.

FUSILLI promoted the creation of a new governance body within the administration capable of coordinating the city's food policy and transforming the urban food system, expanding and enriching what has been achieved in Mirafiori Sud. In the long term, with the support of the Food Atlas and ESTà, the city aims to establish a Food Council that is enlarged and open to grassroots organisations and trade associations. For this activity, the City of Turin was supported by the ESTà Association, which has consolidated experience in accompanying and promoting processes towards local food policies through the FUSILLI partnership. Consequently, the City of Turin established an interdepartmental and inter-sectoral governance structure for the management of food policies and the definition of a 'Food Policy Plan' with objectives to be achieved by 2030 within the Single Programming Document (DUP). On 20 June 2022, the working group was officially launched by the Department of the Environment with the support of ESTà and the Atlas of Food, bringing together 30 technicians and officials from various municipal sectors (from social policies to school cafeteria services and the management of public green spaces) for an initial cognitive interview.

### **Case of proGIreg Project**

ProGIreg is a 5 years (2018–2023) project financed by the European Commission under the Societal Challenges—Climate action, Environment, Resource Efficiency and Raw Materials Programme of Horizon 2020.<sup>2</sup> With a budget of 11 million Euros and the Coordination provided by the Rheinisch-Westfaelische Technische Hochschule of Aachen in Germany, the project aims to implement NBS, which are citizen-owned and co-developed by municipalities, market and civil society stakeholders. A specific area in each partner city<sup>3</sup> has been selected to be redeveloped and revitalised as LL to demonstrate benefits ensured by the NBS. The NBS to be tested include: regenerating industrial soils biotic compounds, creating community-based urban agriculture and aquaponics and making renatured river corridors accessible for local residents.

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<sup>2</sup>Funded under the Societal Challenges – Climate action, Environment, Resource Efficiency and Raw Materials Programme: Productive Green Infrastructure for post-industrial urban regeneration. <https://cordis.europa.eu/project/id/776528>

<sup>3</sup>Dortmund, Ningbo, Turin, Zagreb, named frontrunner city and Cascais, Cluj Napoca and Pyreus as follower cities.

Specifically, seven types of NBS have been implemented and are being tested in the LL of Mirafiori Sud. During the design phase, each NBS in the city has seen an important and continuous dialogue with numerous stakeholders from different professional categories. This participatory approach turned out to play a key role in co-designing solutions and matching the environmental quality and social inclusion objectives. Detailed work on the NBS of proGIreg was published by Battisti et al. in 2021. Table 2 provides a summary of the main NBS implemented in Turin.

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## 4 Discussion

The following part summarises and analyses the outcomes of the three research questions.

### 4.1 Shared Spaces

The two European projects implemented in Mirafiori Sud, led to two pilot initiatives to rethink spaces through a multifunctional and inclusive perspective. Specifically, both initiatives fall within Orti Generali, conceived in proGIreg as NBS and FUSILLI as an innovative LL experimentation. Since 2018, proGIreg has initiated the transformation of a piece of land used for commercial agricultural purposes into a multifunctional urban horticultural reality with multiple purposes. This transformation has allowed citizens from the neighbourhood and surrounding areas to use the space and participate in agricultural, cultural and recreational activities. Today, Orti Generali covers an area of 30,000 m<sup>2</sup> divided into 170 plots of various sizes (50, 75, 100 m<sup>2</sup>), assigned through the volunteer application, with pre-emption rights and ad hoc facilities for disadvantaged categories.

In addition to the individual plots, the collective vegetable garden covering 1000 square meters with beehives is used for educational-pedagogical purposes. The collective garden has been a catalyst in strengthening the community of vegetable gardeners in an area with a strong industrial past while making efficient use of land. Furthermore, since 2020, close to the community garden, a new sharing space has been created with the launch of the Fusilli project: Orti Generali kiosk. In and around the kiosk, the community has strengthened its bond and sense of belonging, sharing and jointly managing the furniture (dining table, sink for washing vegetables and the play and relaxation area).

The two living labs have enabled the post-industrial spaces to become a place of aggregation and sharing that is particularly appreciated not only by the neighbourhood community but also by neighbouring urban areas (mainly Moncalieri, Nichelino and Borgaretto). According to an estimate of the Orti Generali managers, about 500 people habitually frequent the shared garden and/or the kiosk.

**Table 2** Types of NBS implemented in Mirafiori Sud Living Lab (Battisti et al., 2021, pp. 58, 70)

Name of NBS	Type of NBS	Content of NBS approach	Type of social participation
NBS 2—NEW SOIL	New green area on new regenerated soil	Placed in the park of the Sangone river, the project tests a regenerated soil obtained by mixing deep excavation material from urban construction sites, compost, zeolite and a biotic compound to stimulate the growth of mycorrhizae. The initial idea stems from the City's need for fertile soil for the construction of parks and green areas, without consuming agricultural land and jeopardising biodiversity in the surrounding countryside. On the other hand, there are always huge quantities of excavated soil and rocks that have to be removed from construction sites. A dialogue was conducted by Envipark, a science and technology park dedicated to the environment, with DUAL s.r.l., a company operating in the excavation soil sector, Acea Pinerolese, which produces quality compost, and CCS Aosta, which produces specific mycorrhizal inoculum formulations. The University of Turin, with the Departments of Agricultural, Forestry and Food Sciences and the Department of Chemistry, acts as a scientific advisor in the selection and care of plants, conducting multi-year monitoring on the complex system tested	Dialogue, scientific input
NBS 3	Urban horticulture (see Fig. 4)	The creation of both in-ground and in-box vegetable gardens involves many actions spread throughout the neighbourhood, involving schools, vulnerable groups and interested citizens. This activity is carried out by neighbourhood associations: Orti Generali Fondazione Mirafiori. The most extensive case of urban horticulture concerns the Foundation of Orti Generali, which, having leased an area in the city, manages both rented vegetable gardens for citizens and community areas with activities carried out with vulnerable groups and schools. This experience is explored below as a case study.	Leadership by neighbourhood associations; Participation of schools and vulnerable groups
NBS 4 AQUAPONICS	Aquaponics (see Fig. 5)	The city selected two experiments by means of a call for tenders for dissemination purposes, both aimed at testing new techniques based on fish farming combined with vegetable production by engaging local communities	City-led, community participation

(continued)

**Table 2** (continued)

Name of NBS	Type of NBS	Content of NBS approach	Type of social participation
NBS 5 GREEN ROOFS AND WALLS	Green roofs and green walls (see Fig. 6)	A green roof has been created by one of the project partners, Orti Alti, in Via Onorato Vigliani, to cover a disused public building with a flowering meadow populated by honey bees maintained by local beekeepers. The area also includes a garden for pollinators (Spazio WOW). This infrastructure complements the existing green roof of the House in the Park. In addition, green walls are being experimented in the First Night Home in Corso Tazzoli and the Cairoli School in Via Torrazza. In this case, the implementation is being led by the City and the company Verde Profilo, but all interaction with the work is being shared with the school, the Turin Polytechnic and the cooperative that manages the dormitory. Arpa Piemonte, the City's third party in the proGReg project, is conducting some environmental monitoring, while the University of Bari will assess the children's perception of nature before and after the installation of the wall	Private sector, university involvement
NBS 6 GREEN CORRIDORS	Accessible green corridors	Interventions are planned to enhance the mobility network of Mirafiori Sud and to connect the Sangone river area to the district by means of green corridors. Those corridors are supposed to settle a good habitat for pollinator insects and make walking more pleasant for the inhabitants	Accessibility by general public

## 4.2 Shared Knowledge

Among the many dynamics of shared knowledge that more or less spontaneously take place in the Mirafiori Sud area, such as the exchange of cultivation tips and the exchange of seeds, proGReg project includes specific citizen involvement activities. Specifically, citizens are involved in creating and monitoring pollinator-friendly spaces, promoting pollinator awareness. In particular, the 'Butterflies in Tour' project is based on citizen science, which takes a socially inclusive approach to scientific design. This is realised by the collaboration of researchers and citizens with doctors and patients of mental health centres for the promotion and management of pollinator-friendly green areas.

This project is conducted in different areas of the neighbourhood and in particular in the Orti Generali area, as well as in the Spazio WOW area. Spazio WOW is a green space created by recovering the courtyard of an abandoned complex,



**Fig. 4** Orti Generali (Source: Evinç Doğan)

**Fig. 5** Mitte Garten—  
Aquaponics (Source: Evinç  
Doğan)



**Fig. 6** Spazio WOW (Source: Evinç Doğan)



consisting of a box garden, an extensive green roof and an apiary. Several associations, signatories of a cooperation pact with the city, collaborate in the space. The caissons were designed with the collaboration of a group of experienced researchers. They included species attractive to pollinating insects and horticultural species, while the roof was planted with wildflowers that are sources of nectar and pollen. Since May 2021, workshops open to citizens have been held in this area, organised by all proGIreg partners together with the ‘Centro Scienza’ association project. The workshops are also an opportunity for social inclusion, thanks to the active involvement of the neighbourhood Mental Health Centres and users and educators as citizen scientists. These works and activities have led the administration to initiate a procedure for the concession of the entire building, now abandoned, giving it a new vocation that includes the existing activities. Within the spaces, different categories of citizens were trained by academic experts to collect data on the presence of pollinating insects, ensuring long-term monitoring. The citizens who took part in these training activities became trainers and vectors of knowledge, ensuring a continuous flow of shared knowledge.

### 4.3 Sharing Economy

The two LLs under investigation have triggered sharing economy dynamics within the Orti Generali space. Specifically, the community of gardeners share working tools, furniture and infrastructures from a collaborative perspective, optimising management costs and reducing environmental impacts. Six specific items represent clear examples of shared resources and resources that gardeners can access by paying a symbolic fee. First, gardeners have agreed to share a tiller to prepare the soil, ploughing the ground at the beginning of the season in preparation for planting. Second, the community can make use of a weather station that collects and analyses temperature and humidity data, indicating suitable times to distribute pesticides to treat fungal pathogens. Third, the community collaboratively manages a greenhouse for the in-house production and sale of seedlings. Fourth, in their daily activities, the gardeners exchange seeds and vegetables to optimise the management of their plot in terms of economic and environmental sustainability. Fifth, thanks to the FUSILLI project, the community gardeners have started to deliver discarded vegetables that are still edible to the kiosk managers to prepare dishes to be eaten at the Orti Generali spaces. At the same time, the surplus of vegetables from the gardens is also distributed at ‘Locanda nel Parco’, a community-based hub of food retailing placed close to Fondazione della Comunità di Mirafiori.<sup>4</sup>

Besides the five items shared in Orti Generali, a further example of a sharing economy launched by means of the two LLs takes place in ‘Casa di Ospitalità Tazzoli’.<sup>5</sup> The shelter has an outdoor green wall, realised and conceived as one of the proGIreg NBS. This green solution provides multiple ecosystem services to the

<sup>4</sup> an NGO devoted to social inclusion and environmental regeneration in the district.

<sup>5</sup> a night shelter for homeless people.



users, such as the retention of air pollutants, aesthetic pleasantness and psychological-spiritual benefits. In addition, economic value can be attributed to these ecosystem services. The same can also be said for the care that users take of the green wall, understood as the economic value of the time and energy and matter (e.g. water) invested in enabling the NBS to continue to provide ecosystem services. It is, therefore, a question of mutual care and the human-nature relationship, which could be interpreted as a form of sharing economy between man and nature, or between nature itself (if the human is considered part of nature).

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## 5 Conclusion

Urban regeneration and revitalisation policies have been executed to transform cities in both socio-economic and environmental terms focusing especially on derelict and brownfield sites. Current societal trends have furthered the emergence of new approaches to the management of urban spaces, taking place along the following paths: (a) from top-down authoritarian to participative-inclusive culture of place governance; (b) the spread of smart technologies, digitalisation tools and strategies; and (c) innovations in place management and activities mix. In the long term, this shift towards more sustainable and co-created urban spaces is likely to become a key priority for communities and urban authorities. It is expected that cities will endorse the shift from upscaling to co-creation by stressing the role of ULLs in the green and digital transition towards living and sharing locally. As cities and communities continue to evolve, they will be faced with increasing challenges in promoting sustainable landscape management. This will involve the adaptive reuse of urban assets, including the transformation of urban heritage sites into maker and farming spaces and using digital and smart technologies to facilitate the process. The trend towards more sustainable and liveable urban spaces is also expected to drive the growth of local and alternative food networks and promote bioeconomy solutions and regenerative art practices, which can contribute to employment and fighting depopulation.

The peri-urban regeneration in Turin illustrates the role of ULLs in urban farming as a transformative process. First, participatory-inclusive processes shifted the discourse into sustainable agriculture, short-local supply chains for fresh produce and localised networks of farms. This facilitated the participatory processes through community engagement and co-creation while introducing innovation through NBS to create circular urban food systems. Second, faced with the dominant concern of resource and energy efficiency, the transformation of urban heritage sites into maker and farming spaces is gaining ground. Related to the land use dimension, it demonstrates positive outcomes of adaptive reuse oriented towards production and revival of declining areas by ensuing benefits for the local economy. Third, digital and smart tools have facilitated the process of transformation by enabling communications, the design and planning tools for the interventions and the ongoing management of the project. The collaboration between institutions or individuals for the mutually beneficial exchange of knowledge and resources enabled the acquisition

of gardening skills and ecological knowledge. Therefore, the support for urban agriculture initiatives could improve the ability of cities to provide alternative food (and cultural) networks in the short term, using an inclusive approach and promoting biophilia in the younger generations. Community is the key for living labs to be successful. In this context, combating unemployment and depopulation through/by using regenerative art for community engagement can be given as examples of good practices.

Technological developments have influenced the realisation of NBS, particularly green walls or aquaponics systems. Yet their impact on cultural aspects is uncertain and less understood. This necessitates research focusing on the transition areas from analogue to digital, the shift from traditional hierarchies of cultural landscapes to more fluid, decentred practices and digital and smart technologies becoming a force in the new urban tourism as a model of co-creation.

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