Special Issue Multi-locality studies:
Recent insights and future pathways

FUORI LUOGO

Journal of Sociology of Territory, Tourism, Technology

Guest editors

Marco Alberio
Simone Caiello
Tino Schlinzig

Editor in chief: Fabio Corbisiero
Editorial manager: Carmine Urciuoli

YEAR VII - Vol 20 - Number 3 - November 2024
FedOA - Federico II University Press
ISSN (online) 2723 - 9608 - ISSN (print) 2532 - 750X

Special Issue Multi-locality studies: Recent insights and future pathways

FUORI LUOGO

Journal of Sociology of Territory, Tourism, Technology

Guest editors

Marco Alberio
Simone Caiello
Tino Schlinzig

YEAR VII - Vol 20 - Number 3 - November 2024
FedOA - Federico II University Press
ISSN (online) 2723 - 9608 - ISSN (print) 2532 - 750X

Summary

Redazione di Fuori Luogo
✉ redazione@fuoriluogo.info
tel. +39-081-2535883

English text editors: Pietro Maturi.
Cover by Fabio Improta. Image from Unsplash.

EDITORE

FedOA - Federico II University Press
Centro di Ateneo per le Biblioteche "Roberto Pettorino"
Università degli Studi di Napoli Federico II

Editorial responsibility
Fedoa adopts and promotes specific guidelines on editorial responsibility, and follows COPE's Best Practice Guidelines for Journal Editors.
Authorization of the Court of Naples no. 59 of 20 December 2016.
ISSN 2723-9608 (online publication) ISSN 2532-750X (paper publication)

Articles

In evaluating the proposed works, the journal follows a peer review procedure. The articles are proposed for evaluation by two anonymous referees, once removed any element that could identify the author.
Propose an article. The journal uses a submission system (open journal) to manage new proposals on the site.
http://www.serena.unina.it/index.php/fuoriluogo
Rights and permissions. For each contribution accepted for publication on "Fuori Luogo", the authors must return to the editorial staff a letter of authorization, completed and signed. Failure to return the letter affects the publication of the article.
The policies on the reuse of articles can be consulted on http://www.serena.unina.it/index.php/fuoriluogo
Fuori Luogo is one of the open access journals published under the SHARE Interuniversity Convention.
Fuori Luogo is included in the ANVUR list of Area 14 scientific journals, class A for the sociological sectors, 14/C1, 14/C2, 14/C3, 14/D1,
Fuori Luogo is indexed in: DOAJ Directory of Open Access Journals - ACNP Catalogue code n. PT03461557 - Index Copernicus International ID 67296. The journal is part of CRIS Coordinamento Riviste Italiane di Sociologia.
Fuori Luogo is included in the LOCKSS (Lots of Copies Keep Stuff Safe) network of the Public Knowledge Project (PKP PLN)

Silvia De Nardis[1]

Pursuing Urban Liveability with Nature-Based Solutions: a Multi-Faceted Strategy towards Sustainability[2]

Introduction

The widespread consequences of human activity's impact on the ecosystem require cities to reflect on new ways to build more liveable futures. One contemporary concern is environmental fragility, which will lead a general loss of well-being, health, and economic opportunities. After decades of urban growth and in the face of critical phenomena such as global warming, today, rising attention is given to the planning of liveability in cities (Pacione, 1990).

The concept of urban liveability became popular during the Eighties in conjunction with growing alarm about the environmental crisis, and it became a key word used to attract investment in the global competition among cities (Kashef, 2016). It is often connected with a city's capacity to meet inhabitants' needs and desires for the well-being and a high quality of life (Martino *et al.*, 2021) and establish a bond with residents based on their attitudes, behaviours, and lived experiences (Bedi *et al.*, 2023). Liveability is related to a variety of domains, including clean water and air; high-quality educational, health and social services; infrastructure; employment opportunities; culture, leisure and entertainment; civic participation; public spaces; and green areas. Indeed, a liveable environment integrates material and social parameters, requiring a multi- and transdisciplinary approach. The tangible and intangible dimensions of liveability also imply a cultural interpretation, one anchored in local values and associated with human perceptions. According to Chazal (2010), it embraces the fulfilment of personal life desires and collective aspirations. Chazal (*ibidem*) also focusses on the interesting and prolific conceptual shift that ties liveability to sustainability, identifying the latter as an ecological restraint to the pursuit of those desires and aspirations. However, this category continues to challenge definition, as do measurement and evaluation, precisely because it is inherently changing and contextual (Leach *et al.*, 2017).

Liveability is often defined as a subset of sustainability with an intimately local character and as specifically related to a short- and medium-term horizon. According to Ruth and Franklin (2014, p. 4), liveability «is about the 'now' or 'about to be'. It also tends to be about the 'here'». Gough (2015) defines "liveable sustainability" as the logical and practical connection between local urgencies for liveability and wider purposes for a sustainable future. Based on the author's considerations, the results of liveability seem opening and preparatory to wider sustainability outcomes. Both deal with desirable futures but act in different temporal and spatial dimensions, although they do so in complementary ways. However, as Newton (2012) remarks, there is no obvious liveability-sustainability nexus: embracing both components in strategic cities must include place-based attributes, the quality of the urban environment, high resilience performance, eco-efficient infrastructure, innovative new technology platforms and formal and informal network to increase citizens participation.

Sustainability, resilience, adaptability and liveability have become recurring mantra in a fluid, unpredictable and fragmented society such as ours. Climate change, environmental disasters and the loss of biodiversity are responsible for reducing liveability in cities. In consequence of this complexity administrators at all levels are called to face a wide array of socio-ecological challenges which raise questions about the results of the anthropic pressure on the ecosystem, a theme explored within the current Anthropocene narratives (Lidskog, Waterton, 2016; Block, 2022). According to Folke *et al.* (2021), environmental issue demands a transformative change based on technologies and social innovations embracing the idea that people have to collaborate with the biosphere to solve current ecological matters. In addressing the local costs of

1 Silvia De Nardis, Sapienza University of Rome, silvia.denardis@uniroma1.it; ORCID: 0000-0001-6364-7598.

2 Received: 3/11/2023. Revised: 2/09/24. Accepted: 14/09/24. Published: 30/11/24

the environmental crisis, from extreme atmospheric events to heat islands to food and water insecurity, some city leaders are attempting is to give nature back its space. The main challenge here is to balance environmental, social, economic and institutional aspects of that return. The need is to rethink the traditional human-nature dichotomy in favour of their deep connections (Nelson *et al.*, 2020). This process is part of a vision in environmental theory that conceptualises the co-evolutionary relation between nature and society (Lidskog, Waterton, 2016), considering this tie as a complex, evolving socio-natural assemblage (Bowden, 2017).

The revival of green approaches in city-making includes nature-based solutions (NBSs), which are progressively seen as levers of innovation that can tackle pressing societal issues, environmental challenges and create value in production chains (Faivre *et al.*, 2017). According to Kashef (2016), to be liveability-oriented, a planning strategy directed at safeguarding nature must examine the material and immaterial components of demands from the social, financial and environmental worlds. Moreover, recent studies believe that the current discourse on ecosystem challenges widens new horizons for research into social innovation. According to Olsson *et al.* (2017), restoring the balance and relations between people and the planet is required by working with integrated solutions (*bricolage* in the authors' words) that address innovations from the perspective of socio-ecological systems. This parameter seems to be taken into account by some contemporary theories of NBSs, which are especially targeted at embracing the tripartite approach to sustainability.

Based on these assumptions, this paper theoretically explores NBSs as drivers of reduced urban vulnerability and increased sustainability in cities. On one hand, it highlights how these actions go beyond the sectorial approach to include at the same time environmental, social, economic and institutional components, thus contributing to urban liveability. On the other hand, it examines the role of the co-design and co-management processes of self-produced NBSs, with the aim of better understanding these strategies' innovative potential. According to Wickenberg *et al.* (2021), there is a need to understand *how* green solutions are carried out. In their opinion, better analytical and operational results could be achieved through collaboration and co-creation of knowledge. In summary, this research concerns if and under what conditions a *process* of creating liveable and vibrant urban environments through NBSs can allow positive change towards sustainability.

On these bases, the paper deepens the case of the UPPER project, an NBS co-design initiative promoted by the city of Latina, Italy. The experience carries out a collaborative approach to NBS implementation, integrating NBSs into innovative services in business and education. To fulfil this aim, UPPER experiments with the creation of urban productive parks in vacant and underutilised land while engaging civil society to foster social cohesion, ecosystems recovery and economic development. The analysis focusses on the process that led to the project's emerging community of practice, highlighting its results, including the strengths and weaknesses of this collective and multistakeholder path.

1. The Role of Nature-Based Solutions for Enhancing Liveability in Cities

As is well known, faced with the challenges of climate change, cities are looking for adaptation and mitigation strategies to manage ongoing impacts (World Bank, 2008; European Commission, 2013). NBSs are proposed as effective tools through which to meet this need, even if, according to Seddon *et al.* (2021), they cannot be considered as an alternative to the prompt abandonment of fossil fuels. However, this concept goes beyond greenness by including social, economic, and institutional features. That is also why the European Environment Agency (2021) identifies it as an umbrella term with which to describe a multipurpose strategy via which to approach climate-change-adaptation and disaster-risk-reduction initiatives in both urban and rural areas.

The International Union for the Conservation of Nature's definition, NBSs appear as interventions or tools that preserve and revitalise ecosystems while helping to address the deep-seated needs of society in an adaptive way for the prosperity and health of all living organisms (Cohen-Shacham *et al.*, 2016). European Commission (2022) identifies them as actions inspired, supported or copied by nature and resilient to change. They include reforestation, the restoration of wetlands, rain gardens, pocket parks, green roofs and urban gardens. The United Nations Environment Assembly (UNEP, 2022, p. 2) describes NBSs as actions to protect, conserve and restore the various elements of the environment, using and managing them in a sustainable way, delivering widespread benefits. Generally, NBSs are intended to be forms of socio-ecological-technical innovation used to face collective issues and address sustainable urban development (Xie *et al.*, 2022). Due to their adaptive ability to meet challenges, interest in this field is constantly increasing. In fact, a growing number of local place-based trials are emerging in Europe and beyond. Global and EU policy frameworks recognise the role of NBSs in meeting the objectives of sustainable development (European Commission, 2022; UNEP, 2022), and a significant effort is being made in practice (e.g., ProGIreg and URBiNAT), as well as in networking and the sharing of knowledge (e.g., Network Nature and OPPLA). European Green Deal (European Commission, 2019) and the new EU biodiversity strategy for 2030 (European Commission, 2020) are supported by NBSs under the motto "innovating with nature".

That attention is paid because NBSs are associated to diversified ecosystem services in terms of regulation, provision and culture (Pereira, Barò, 2022). These services may derive from green spaces and bodies of water in and around cities and, together with social and economic services, can contribute to fostering a liveable environment (Ruth, Franklin, 2014). According to Raymond *et al.* (2017), they provide some side advantages, including improved desirability, safety and quality of a place, and the creation of green sector employment opportunities. Therefore, the multipurpose character of NBSs is expressed in providing ecosystem services, which can be define as the benefits that nature offers to human well-being (Faivre *et al.*, 2017). However, the notion of ecosystem service can result troublesome. Some critical views suggest that NBSs are mostly treated as instruments in a technocratic and engineering city-making, incorporating the modern human disposition to control nature (Herrmann-Pillath *et al.*, 2022). Rather, we need to reconnect humans with the multiplicity of other species and ecosystems they depend on (Maller, 2021). Against these issues, adopting a relational approach (*ibidem*), NBSs seem to emerge as a potentially effective formula via which sustainability and liveability reinforce one another. Indeed, NBSs can act on material and tangible dimensions, such as water security (Cassin *et al.*, 2021) and food system efficiency (Keesstra *et al.*, 2023), while fostering public health, wellness and social cohesion. Moreover, as argued by Sturiale *et al.* (2023), green infrastructures are becoming increasingly recognised by citizens as efficient solutions with which to improve the quality of the air, aesthetics, happiness and psychological and physical health. Green and blue infrastructures are chosen by local communities, instead of those that are grey, for the sake of a wide range of benefits that include reduced aesthetic and environmental impacts, the wide involvement of stakeholders and advantages in terms of construction and maintenance costs.

However, as Pereira and Barò (2022) argue, NBSs can also provide ecosystem disservices, such as plant allergies, poisoning or unpleasant smells; trade-offs, such as risen water consumption, wildfire risk and related management costs; and implementation barriers, including political motivations, a lack of knowledge, a lack of time and workload. NBSs can present different ecological, economic, and social costs. The "green gentrification" concept, for example, emerges when green interventions produce residential islands favoured by an environmental advantage, excluding lower-income people (Anguelovski *et al*, 2019). The development of gardens and parks increases the attractiveness of a neighbourhood but can represent a mechanism of expulsion and the loss or weakening of identities, voices and practices. Moreover, according to Bell *et al.* (2014), individual agency can affect when and why different people use green spaces, as well as how they use them. These researchers analyse the influence of life contexts and personal orientations

towards nature in determining the perception and experience of green spaces. In addition, as previously mentioned, NBSs have been accused of anthropocentrism where a hierarchical view of human needs is adopted with respect to those of other species and ecosystems (Maller, 2021). In summary, we cannot imagine an absolute correlation between green solutions and sustainability without considering path dependency and the wide range of features that define human quality of life and the quality of non-human habitat. A multi-faceted strategy is needed to capture liveability and sustainability attributes through NBSs.

2. Co-creating Liveable Urban Futures: What if Green Solutions Encounter Social Innovation?

Green solutions' ability to meet collective urban challenges (Almenar *et al.*, 2021) leads us to consider their connections with social innovation. On one hand, social innovation is associated to the topic of societal needs satisfaction (Murray *et al.*, 2010). On the other hand, an innovation's "social" component is represented by a diversified array of collective values correlated with solidarity, responsibility and inclusion (BEPA, 2014). Ziegler *et al.*'s (2022) approach to social innovation for biodiversity considers the former to be a civic action intended to change practices and thus address unsustainability, framing it as a positive change that can be derived from local pilot trials or be policy driven. The recent literature suggests the strengthening of that correlation when green solutions are designed, developed and managed by communities, together with institutions, scientists, researchers and profit and non-profit organisations. Generally, Balian *et al.* (2016) suggest the value of using green solutions for social innovation and *vice versa*, meaning the integration of new economic, social, educational, and nature-based approaches to create co-benefits by adopting holistic/systemic and transdisciplinary processes.

The increasing public attention paid to the city's re-naturalisation (Bauduceau *et al.*, 2015) is even more taken into account in order to maximise social ties' added value in fragile settings or changing times. Scholarship in this field highlights the crucial role of collaboration between diversified players, such as institutions, the third sector, businesses, academia and citizens. The co-design processes value is widely recognised, while a growing emphasis is placed on what Rhodes *et al.* (2022) call "translation consultant" actors. These are intermediators between stakeholders interested in social innovation, and they act as focal points for the communication, explanation and connection of interests. This collaborative approach is also in line with Moulaert *et al.*'s (2013) idea of using social innovation to improve social relations and community empowerment without embracing neoliberal drifts. Frantzeskaki (2019) highlights some lessons regarding NBSs implementation in cities. In her opinion, NBSs require trust in the local government, the testing process, diversity and learning from social innovation. They must also be aesthetically attractive to people and create new green urban commons. Moreover, NBSs call for a collaborative governance and an inclusive narrative and should be replicable in the long term.

In summary, multiple, complementary and interdependent innovations seem to be needed to achieve concrete results in terms of systemic transformations. Sometimes, NBSs initiatives demonstrate their positive impact, as proved by some community urban gardens/farming acting for well-being and food production (Spijker, Parra, 2017), or some cooperative forest-based social enterprises aimed at personal subsistence and environmental protection (Lawrence *et al.*, 2020). Nevertheless, NBSs applications can produce paradoxical or unfair results in terms of costs and benefits for the society, producing trade-offs in sustainability aims. They may become a discursive tool by encouraging forms of nature's neoliberalisation (Kotsila *et al.*, 2021) or reproduce geographical inequalities across territories and countries (Cooper *et al.*, 2024). Moreover, as Castellar *et al.* (2024) affirm, transversal barriers such as technological complexity, lack of skilled staff and awareness of NBSs as valid options continue to negatively affect NBSs' applicability. In authors' study, initiatives in information, education and governance are described as strategic

choices enhancing sustainability. Additionally, according to Kabisch *et al.* (2016), multi-stakeholder and integrated governance approaches need to be reinforced as well.
Changes in social and public practices can be driven and stimulated by NBSs. Adams *et al.* (2023) define them as actions with comprehensive advantages, encouraging profound changes in terms of urban planning and governance. Citizens' participation, civic engagement and community social innovation represent key components. As Nassauer (2011) argues, there is a "care effect" that can occur for both the home and the planet, stimulating a process of change that could affect global scale transforming values and institutions where small actions are contagious from person to person within social networks and through the web. While it provides a concrete path to liveability, multi-actor social innovation surrounding green practices represents a stimulating field of experimentation concerning sustainability transitions (Markard *et al.*, 2012). The aim is to understand the mechanisms via which to activate an inclusive NBS mainstreaming process through the development of collaborative forms of social and public innovation (Sørensen, Torfing, 2013). There is an open debate regarding how achieve concrete results in terms of sustainable transitions, and a promising argument in this regard suggests the need for collaboration and co-designing at a local scale (Nevens *et al.*, 2013).

3. Methodology

The paper focuses on the contribution that NBSs make to urban living, approaching reflection on the long-term impacts that the application of these solutions produces in terms of urban sustainability.
The research addresses the following questions:
- What is the contribution of NBSs to urban liveability?
- How do NBSs stimulate social innovation processes at a local scale?
- Can NBSs encourage cities to act for a sustainable transition?

At the heart of this analysis, there is the consciousness of liveability's defining and measurable limits (Leach *et al.*, 2017). To face this difficulty, the present paper adopts a qualitative, inductive and case-oriented approach to better understand the concept of liveability as it relates to NBSs in urban areas. Here, liveability is linked to the meeting of social needs and, relating to NBSs, to the activation of local and public-oriented social innovation processes.
This explorative research uses a qualitative content analysis (QCA) that includes, in its coding framework, three main domains derived from NBSs' initial theoretical setting: i) liveability; ii) social innovation and iii) sustainable transitions. This method is chosen because it is systematic, flexible and context-conscious and it allows us to reduce the data, including material generated by the researcher or derived from other sources that require some degree of interpretation (Schreier, 2012). This paper presents the results of a qualitative research based on a review of scientific literature and a QCA which draws upon: public sources and documents (e.g. UPPER project website, newsletters, social media channels narratives, working papers, and policy documents); secondary data (e.g. Istat, UPPER's data such as users stories and assessment reports); five semi-structured interviews with key actors involved in the selected case study (from June 2023 to August 2023), using a non-casual method of selecting participants by contacting those who were informed about the process (members of the project's partner associations and local government)[3]; on-site visits during the project life, where interventions to be implemented were foreseen (three urban productive parks and eight demonstrative sites), informal discussions during the project's final public event with significant stakeholders, including promoters, both technical and political public administrators, academics, practitioners, associations and citizens.
Regarding the empirical and case-related factors, the research investigates the following:

3 Interviews were conducted in-person; one of those was via e-mail and telephone.

- How does the project strive to meet citizens' and participants' needs?
- Does the project contribute to changes with respect to sustainability?
- What sensitive components are affected by the project and can potentially drive change?

The study investigates whether, in the analysed experience, there are connections between adopted green solutions and opportunities to improve the urban living environment by observing the achieved results and questioning participants' experience. The strengths and weakness of the implemented strategy, along with opportunities, lessons learned and open research scenarios are considered. The interest is embedded in identifying the key relationships at the local project scale (based on the liveability-social innovations-sustainability nexus) and new perspectives emerging from the community of practice based on the experience. This research then explores the enabling conditions through which the project embraces horizons of changes in policies, governance and practices, creating a path for sustainable transitions.

4. The Case of UPPER in the City of Latina

The UPPER (Urban productive parks for the development of NBS-related technologies and services) project (2019-2023), has been carried out by the Municipality of Latina, with contributions from the European Regional Development Fund under the Urban Innovative Actions initiative[4]. It consists of a public-private partnership focused on the urban regeneration of abandoned and degraded areas using self-produced NBSs addressing environmental and social issues, as well as pursuing economic and governance objectives.

Latina is a medium-sized Italian city in the Lazio region, and it has over 120,000 inhabitants. Born at the beginning of the Twentieth century as part of the reclamation plan of the fascist regime, it has experienced exponential demographic and urban growth because of the associated agricultural production, economic development and improved living conditions. This "city without walls" is representative of the wide expansion encouraged by its radial plan, which led to residential agglomerations, with some areas of the suburban type (Landini, 1974). The intense building development of the postwar period helped consolidate the urban growth that has recently delivered new dormitory neighbourhoods.

The urban challenges addressed by the project include rapid urbanisation, the limited availability of public and accessible green areas per inhabitant (12.6 m^2 per person, with a national average of 31.1 m^2 per person; Istat, 2016); a fragile ecosystem of canals and rivers facing pollution and hydrogeological risks and extreme weather events, such as sudden heat waves and flooding. The project also faces a high concentration of the unemployed and inactive, with youth unemployment at 43%; brain drain to other regions, with 70% of graduates leaving the province; the illegal exploitation of immigration and the social exclusion of both minorities and vulnerable people. The lack of public economic resources, the fragmented coordination between public and private actors and the dispersion of specialist skills are other critical factors identified by the municipality.

Bases on these issues, UPPER's activities focus on the regeneration of degraded areas that combine greenness with productive, social and educational services. The pathway taken by the UPPER project is developed within four thematic fields: environment, well-being, participation and development.

The first strategic field-*environment*-concerns the regeneration of green areas as part of developing three urban productive parks, specifically multifunctional public green areas dedicated to the production of NBSs, together with social care, jobs creation, training, education, sports, creativity, and entertainment. It also includes eight demonstrative sites for testing natural solutions and experimenting with self-produced services.

4 https://www.upperlatina.eu/.

The identified urban productive parks are as follows:
- UPP1 - Campo Boario: located in a popular area at the northern periphery of Latina, it is planned to host a municipal nursery that will be open to the public and a centre providing orientation and support to new businesses in the green sector (NBS Business Information Point);
- UPP2 - Area Mercato: placed southeast of the city, it is devoted to educational, sports, recreational, social and health services, including remunerative services, based on contact with nature to increase the psycho-physical well-being of citizens;
- UPP3 - Foce Verde: situated along the coast, this area is devoted to renaturation and the cultivation of vegetation with phyto-depurative functions.
The demonstrative sites distributed throughout the city perform diverse functions that include the consolidation of canal embankments and their filtration function, the planting of new plant species that work against pollutants from road surfaces, combatting the increase in temperature and the purification of air and soil. The digital platform UPPER ENGIE, which is composed of air quality sensors and air-pollutant and weather parameters, returns real-time environmental data for each demonstrative site.
The second area-*well-being*-aims to meet social and public health challenges, such as inactivity, social isolation, sedentary lifestyles and a lack of time spent outdoors. It consists of a free program of socio-educational activities based on contact with nature. An initiative called UPPER SEEDS co-designs NBSs with local schools and inhabitants. Among the added services, there are cultivation and sale of trees and plants to be used as NBSs to address or prevent specific environmental problems; cleaning and maintenance and restoration services for gardens, parks and riverbanks. The initiative also includes edutainment, outdoor services, children's activities, the collection of garden and recycling waste for agricultural or industrial use, open-air social work services for the elderly and people with mental and physical disabilities and cultural initiatives.
The third field-*development*-is the UPPER JOBS training and work programme devoted to combatting the high rate of youth unemployment, the illegal exploitation of migrants and the social exclusion of ethnic minorities and vulnerable people. It draws up a course to train operators who are able not only to maintain the greenspaces but also manage the park through reception, environmental education and communication services. The programme provides guidance and qualified supervision for vulnerable applicants.
The fourth field-*participation*-is represented by the UPPER CITY LAB, a social platform based on co-design workshops (e.g. questionnaires, collective and self-mapping, urban walks, role-playing games, world cafes, roundtables, online interactions). The WHiP platform also allows citizens to interact with the project by enriching its database with information derived from experience. The project's co-design procedure also contains the Collaboration Pact tool, an emerging model in Italy based on the horizontal relationship between citizens and administrators in the common management of the city[5].
In summary, UPPER represents the ambition of transform the challenge of green infrastructure maintenance into an opportunity for job inclusion, well-being, participation and space liveability for citizens. However, the pandemic emergency, the increase in construction costs and the changing of government at a local level have slowed down the process, extending the time needed for these works.

5. Findings and discussion

The project strategy is based on the interdependency between environmental, economic, institutional and social dimensions in an NBS-based experiment, giving rise to interesting results in terms of urban liveability and sustainability.

5 For more information on the Collaboration Pacts: https://www.labsus.org/.

This research firstly asked how the UPPER project strives to meet citizens' and participants' needs. This issue is initially explored looking at the urban productive parks that emerge as social inclusion incubators reducing work inactivity by implementing green jobs. The professional internship fostered by the UPPER JOBS platform is oriented in that direction, also stimulating hope for the future, as one of training beneficiary affirms[6]:

> «the project was for me a positive experience, it gave me a purpose and hope that you can go on. I feel like I'm doing something socially useful. On a personal level it has given me so many tools to move forward in life at times when it is so difficult» (UPPER user's story on project's website).

The same consideration involves the community laboratories carried out in some city's greenspaces that resulted as enablers of social cohesion, sense of belonging to the places and personal gratification and responsibility. For example, teachers involved in the environmental education project with schools reported that the children had become autonomous in picking up garden items and that caring for garden and animals had become a priority to be accomplished collaboratively before entering the classroom. Furthermore, in discussing the data collected on the project's social impact, the UPPER SEEDS' referent reports an improvement in participants' opinions on liveability after the activities. As she argues:

> «the challenge was to increase psycho-physical well-being, social relations and inclusion, the perceived quality of urban green spaces, as well as the practice of healthy lifestyles thanks to public greenery. The dimension on which there has been a positive impact of greater intensity for citizens regards the 'spatial well-being' [...] citizens have expressed very positive assessments compared to having 'revalued the square'» (interview).

Moreover, UPPER project works in terms of complementary with existing local energies and in listening to the needs of active citizenship responding to a collective need to participate in the public sphere and influence decision-making. In fact, the project successfully connects with previous citizens' spontaneous initiatives. Special attention is paid the Canal of the Middle Waters (Canale delle Acque Medie), a long waterway that involves five peripherical neighbourhoods facing hydraulic risks and anthropic pressure. It represents an extraordinary green and blue infrastructure that, embracing the north-south trajectory of the city, forms an ecological connection between the coast and the mountains. A grassroots movement of more than eighteen social entities, the PUAM Latina Committee (Comitato Pro Parco Urbano Acque Medie) began a canal-care initiative in 2020. In 2022, some results of the intensive process of political and civic reappropriation were integrated into the UPPER's co-planning activities. This fruitful correspondence emerged from the voice of one PUAM-Committee activist:

> «we had already started. Perhaps they saw that the city and citizens were moving spontaneously. There was this interesting part of participation and also of consideration: a strategic line carried out by the University that matches that spontaneously requested by the citizens» (interview).

In this way, UPPER Latina seems to have catalysed existing dynamics, knowledge and relationships. It has launched a multistakeholder arena based on people-private-public-partnerships, which can help increase the long-term sustainability of the implemented nature-based infrastructures.

Secondly, this research asked whether the project contributes to changes in terms of sustainability. In this regard, it should be noted that emerging NBSs were planned in parallel with the studies for the strategic plan of the city and the territory of Latina (Budoni, 2022), which was commissioned by the municipality and completed by the university which is project partner. At the same time, green solutions and practices experienced in the European project are combined in the Integrated Plan of Activities and Organisation 2022-2024, which cites them under the program-

6 15 people experienced a successful job placement path as green operators.

matic line "Green revolution and ecological transition". Together with the use of Collaborative Pacts, these dynamics show an emerging new narrative anchored at an idea of sustainable future and progress towards changes in the city's normative, planning and organisational aspects.
At the same time, the experience has pointed out some criticalities. One of the referents for the municipality's political body during the project reported both strengths and weaknesses:

> «We have made a contribution especially in terms of attention at the city level, because the city has begun to reflect on these issues [...]. Something has changed and a bit of involvement there was but it was slow to start, slow to be digested and I see that the participation of the city in the management of green spaces is not always easy» (interview).

The Municipality recognises that its weakness in working transversally between the internal sectoral articulations has partially compromised the optimisation of the activity's execution. As regards the negative events intervened, Alberto Budoni, the academic partner's referent, affirms as follows:

> «Unfortunately, the project has had a difficult journey and many of its objectives have not been achieved. There were three main external factors that negatively affected it: the pandemic, which greatly hampered interaction with places and people and led to the European headquarters accepting the one-year extension [...]; the war in Ukraine that led to a very strong increase in raw material costs and made the planned budgets inadequate [...]; the presence of an external commissioner at the municipal administration level that had promoted the project, for more than seven months and in the final phase of the work, where the capacity of policy makers to engage stakeholders was most needed» (UPPER Working Paper n. 4).

The exposed valuable and critical matters highlight the usefulness and need of strengthening the existing socio-institutional paths via multi-actor alliances and an active citizenship that is already sensitive to environmental issues and public interventions.
Thirdly, this research asked which sensitive components are affected by the project determining possible changes towards sustainability. In order to answer this question, it explores the three main analytical domains faced in the literature review - *liveability*, *social innovation* and *sustainable transitions* - identifying for each domain key components and related project's activities (see Table 1).

Analysed domains	Domains' key component	Related project' activities	Main theoretical references
Liveability	- Green jobs and economic creation; - Better quality of environment; - Increasing the well-being of citizens; - Active citizen participation and good governance.	- Urban productive parks; - Demonstrative sites; - UPPER ENGIE and WHiP; - NBS Business Information Point (UPP1); - UPPER JOBS; - UPPER SEEDS; - Co-design workshops; - People-private-public partnership.	Ruth, Franklin (2014); Faivre *et al.* (2017); Bedi *et al.* (2023); Martino *et al.* (2021).
Social innovation	- Satisfaction of unmet social needs; - Solidarity, responsibility and inclusion; - Creation of synergies with other initiatives, players and existing projects.	- Tested solutions to floods and heat islands, youth unemployment, exploitation and social exclusion of minorities; - PUAM Committee's collaborative path; UPPER CITY LAB and WHiP.	Murray *et al.* (2010); BEPA (2014); Rhodes *et al.* (2022).
Sustainable transitions	- Processes and outcomes fostering urban resilience and sustainability; - Change in policies, governance and practices.	- Place-based, multi-level and multi-purpose solutions (see Canal of the Middle Waters case); - Collaboration Pacts; - Studies for the strategic plan and Integrated Plan 2022-2024.	Frantzeskaki (2019); Adams *et al.* (2023).

Table 1. Project's contribution to the liveability, innovations and sustainable-transitions domains
Source: Author's elaboration

The project seems to have laid the groundwork for the preparation phase for sustainable changes to begin. The window of opportunity that UPPER has opened incorporates some past innovations reinforcing their value, such as the use of collaborative governance tools. At the same time, it introduces some new features, such as monitoring systems that remain in the city (see the ENGIE and WHiP platform). The analysed initiative demonstrates its place-based and multi-directional nature, acting both on governance procedures and the community sphere. Finally, the project represents an interesting experiment in which the predominant dynamics are the result of mixed players. However, it is necessary to observe the city's ability to learn from failures and understand how many features of the project will root in the future.
A prospective survey could investigate the project's long-term impact; the citizens' consciousness of the green values; the social, ecological, and economic outcomes in terms of liveability and the added results in terms of NBS mainstreaming. A quali-quantitative approach to NBSs study and implementation appears to be needed to better understand the liveability-sustainability nexus on the local scale, with the aim of discovering the value of community and place-based projects. Experimentation with co-produced knowledge and collaborative methods is also an interesting field of analysis.

Conclusion

This research shows the potential of NBSs to positively affect urban liveability by strengthening the possibility of achieving sustainability objectives. It also highlights various ways in which social innovation can be explored to understand its link with transformations in society. Generally, the focus on the multi-faceted strategy explored in this paper is an attempt to highlight the several contributions to practical usability provided by NBSs at the city level.
Nevertheless, NBSs must be integrated into urban planning and policies and implemented by using open and flexible governance to deal with critical issues, such as inequalities, unemployment and social exclusion. According to Wickenberg *et al.* (2021), the capacity of each city to develop structures and platforms for experimentation is what truly matters. Due to the uncertainty, mutability and complexity of local ecosystems, as well as the multiple green approaches available, NBSs require adaptive management, in which goals and actions are adapted to ongoing ecological and social changes (Nesshöver *et al.*, 2017).

References

Adams, C., Frantzeskaki, N., & Moglia, M. (2023). Mainstreaming nature-based solutions in cities: A systematic literature review and a proposal for facilitating urban transitions. *Land Use Policy*, 130, 106661. https://doi.org/10.1016/j.landusepol.2023.106661.

Almenar, J. B., Elliot, T., Rugani, B., Philippe, B., Navarrete Gutierrez, T., Sonnemann, G., & Geneletti, D. (2021). Nexus between nature-based solutions, ecosystem services and urban challenges. *Land Use Policy*, 100, 104898, https://doi.org/10.1016/j.landusepol.2020.104898.

Anguelovski, I., Connolly, J. J., Garcia-Lamarca, M., Cole, H., & Pearsall, H. (2019). New scholarly pathways on green gentrification: What does the urban 'green turn' mean and where is it going? *Progress in Human Geography*, *43*(6), 1064-1086. https://doi.org/10.1177/0309132518803799.

Balian, E., Berhault, A., Eggermont, H., Lemaître, F., von Korff, Y., & Young, J. C. (2016). *Social innovation and nature-based solutions*. EKLIPSE/EPBRS/BiodivERsA Joint Foresight Workshop: Brussels, 6-7 December 2016. Workshop Report.

Bauduceau, N., Berry, P., Cecchi, C., Elmqvist, T., Fernandez, M., Hartig, T., Krull, W., Mayerhofer, E., N, S., Noring, L., Raskin-Delisle, K., Roozen, E., Sutherland, W., & Tack, J. (2015). *Towards an EU research and innovation policy agenda for nature-based solutions & re-naturing cities: Final report of the Horizon 2020 Expert Group on 'Nature-based Solutions and Re-naturing Cities'*. Publications Office of the European Union. https://data.europa.eu/doi/10.2777/479582.

Bedi, C., Kansal, A., & Mukheibir, P. (2023). A conceptual framework for the assessment of and the transition to liveable, sustainable and equitable cities. *Environmental Science & Policy*, 140, 134-145. https://doi.org/10.1016/j.envsci.2022.11.018.

Bell, S. L., Phoenix, C., Lovell, R., & Wheeler, B. W. (2014). Green space, health and wellbeing: Making space for individual agency. *Health & Place*, 30, 287-292. https://doi.org/10.1016/j.healthplace.2014.10.005.

BEPA (2014). *Social innovation. A decade of changes*. Luxembourg: Publications Office of the European Union.
Block, K. (2022). The Anthropocene as a challenge for sociological thinking in planetary dimensions. *DIE ERDE - Journal of the Geographical Society of Berlin*, 153(3), 188-197. https://doi.org/10.12854/erde-2022-603.
Bowden, G. (2017). An environmental sociology for the Anthropocene. *Canadian Review of Sociology*, 54(1), 48-68. https://doi.org/10.1111/cars.12138.
Budoni, A. (2022). *Studi per il piano strategico della città e del territorio di Latina*. Roma: Aracne.
Castellar, J. A. C., Popartan, L. A., Pucher, B., Pineda-Martos, R., Hecht, K., Katsou, E., Nika, C. E., Junge, R., Langergraber, G., Atanasova, N., Comas, J., Monclús, H., & Pueyo-Ros, J. (2024). What does it take to renature cities? An expert-based analysis of barriers and strategies for the implementation of nature-based solutions. *Journal of Environmental Management*, 354. https://doi.org/10.1016/j.jenvman.2024.120385.
Cassin, J., Matthews, J. H., & Lopez Gunn, E. (2021). *Nature-based solutions and water security: An action agenda for the 21st century*. Amsterdam: Elsevier.
Chazal, J. d. (2010). A systems approach to livability and sustainability: Defining terms and mapping relationships to link desires with ecological opportunities and constraints. *Systems Research and Behavioral Science*, *27*(5), 585-597. https://doi.org/10.1002/sres.1058.
Cohen-Shacham, E., Walters, G., Janzen, C. & Maginnis, S. (Eds.) (2016). *Nature-based solutions to address global societal challenges*. Gland, Switzerland: IUCN.
Cooper, C., Cunningham, N., Bracken, L. J., & Collier, M. (2024). Distribution of Nature-based Solutions in cities across Europe. *Land Use Policy*, 141. https://doi.org/10.1016/j.landusepol.2024.107160.
European Commission (2013). *An EU strategy on adaptation to climate change*. 16.4.2013 COM(2013) 216 final. Brussels. https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52013DC0216 (last access 10 September 2023).
European Commission (2019). *The European Green Deal*. 11.12.2019 COM(2019) 640 final. Brussels. https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM%3A2019%3A640%3AFIN (last access 10 September 2023).
European Commission (2020). EU Biodiversity Strategy for 2030. Bringing nature back into our lives. 20.5.2020 COM(2020) 380 final. Brussels. https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52020DC0380&qid=1694364074867 (last access 10 September 2023).
European Commission (2022). *The vital role of nature-based solutions in a nature positive economy*, Publications Office of the European Union, Directorate-General for Research and Innovation. https://data.europa.eu/doi/10.2777/307761.
European Environment Agency (2021). *Nature-based solutions in Europe: Policy, knowledge and practice for climate change adaptation and disaster risk reduction*. EEA Report, 1. Luxembourg: Publications Office of the European Union.
Faivre, N., Fritz, M., Freitas, T., de Boissezon, B., & Vandewoestijne, S. (2017). Nature-based solutions in the EU: Innovating with nature to address social, economic and environmental challenges. *Environmental Research*, 159, 509-518. https://doi.org/10.1016/j.envres.2017.08.032.
Folke, C., Polasky, S., Rockström, J., Galaz, V., Westley, F., Lamont, M., Scheffer, M., Österblom, H., Carpenter, S.R., Chapin III, F. S., Seto, K. C., Weber, E. U., Crona, B. I., Daily, G. C., Dasgupta, P., Gaffney, O., Gordon, L. J., Hoff, H., Levin, S. A., Lubchenco, J., Steffen, W., & Walker, B. H. (2021). Our future in the Anthropocene biosphere. *Ambio*, 50, 834-869. https://doi.org/10.1007/s13280-021-01544-8.
Frantzeskaki, N. (2019). Seven lessons for planning nature-based solutions in cities. *Environmental Science & Policy*, 93, 101-111. https://doi.org/10.1016/j.envsci.2018.12.033.
Gough, M. Z. (2015). Reconciling livability and sustainability: Conceptual and practical implications for planning. *Journal of Planning Education and Research*, *35*(2), 145-160. https://doi.org/10.1177/0739456X15570320.
Kabisch, N., Frantzeskaki, N., Pauleit, S., Naumann, S., Davis, M., Artmann, M., Haase, D., Knapp, S., Korn, H., Stadler, J., Zaunberger, K., & Bonn, A. (2016). Nature-based solutions to climate change mitigation and adaptation in urban areas: Perspectives on indicators, knowledge gaps, barriers, and opportunities for action. *Ecology and Society*, *21*(2). http://www.jstor.org/stable/26270403.
Kashef, M. (2016). Urban livability across disciplinary and professional boundaries. *Frontiers of Architectural Research*, *5*(2), 239-253. https://doi.org/10.1016/j.foar.2016.03.003.
Keesstra, S., Veraart, J., Verhagen, J., Visser, S., Kragt, M., Linderhof, V., Appelman, W., van den Berg, J., Deolu-Ajayi, A., & Groot, A. (2023). Nature-based solutions as building blocks for the transition towards sustainable climate-resilient food systems. *Sustainability*, *15*(5), 4475. https://doi.org/10.3390/su15054475.
Kotsila, P., Anguelovski, I., Baró, F., Langemeyer, J., Sekulova, F., & Connolly, J. J. T. (2021). Nature-based solutions as discursive tools and contested practices in urban nature's neoliberalisation processes. *Environment and Planning E: Nature and Space*, *4*(2), 252-274. https://doi.org/10.1177/2514848620901437.
Herrmann-Pillath, C., Hiedanpää, J., & Soini, K. (2022). The co-evolutionary approach to nature-based solutions: A conceptual framework. *Nature-Based Solutions*, 2, https://doi.org/10.1016/j.nbsj.2022.100011.
Istat (2016). Verde urbano. Anno 2014. https://www.istat.it/it/files/2016/05/VERDE-URBANO.pdf (last access 10 September 2023).
Landini, P. (1974). Latina: Evoluzione spontanea e orientamento programmato di una città pioniera. *Bollettino della Società Geografica Italiana*. 83-114. https://www.bsgi.it/index.php/bsgi/article/view/6170 (last access 10 September 2023).
Lawrence, A. Wong, J. L. G., & Molteno, S. (2020). Fostering social enterprise in woodlands: Challenges for partnerships supporting social innovation. *Forest Policy and Economics*, 118. https://doi.org/10.1016/j.forpol.2020.102221.
Leach, J. M., Lee, S. E., Hunt, D. V. L., & Rogers, C. D. F. (2017). Improving city-scale measures of livable sustainability: A study of urban measurement and assessment through application to the city of Birmingham, UK. *Cities*, 71, 80-87. https://doi.org/10.1016/j.cities.2017.06.016.

Lidskog, R., & Waterton, C. (2016). Anthropocene - a cautious welcome from environmental sociology? *Environmental Sociology*, 2(4), 395-406. https://doi.org/10.1080/23251042.2016.1210841.
Maller, C. (2021). Re-orienting nature-based solutions with more-than-human thinking. *Cities*, 113. https://doi.org/10.1016/j.cities.2021.103155.
Markard, J., Raven, R., & Truffer, B. (2012). Sustainability transitions: An emerging field of research and its prospects. *Research Policy*, *41*(6), 955-967. https://doi.org/10.1016/j.respol.2012.02.013.
Martino, N., Girling, C., & Lu, Y. (2021). Urban form and livability: Socioeconomic and built environment indicators. *Buildings and Cities*, *2*(1), 220-243. https://doi.org/10.5334/bc.82.
Moulaert, F., MacCallum, D., & Hillier, J. (2013). Social innovation: Intuition, precept, concept. In F. Moulaert, D. MacCallum, A. Mehmood, & A. Hamdouch (Eds.), The international handbook on social innovation: Collective action, social learning and transdisciplinary research (pp. 13-24). Edward Elgar Publishing.
Murray, R., Caulier-Grice, J., & Mulgan, G. (2010). The open book of social innovation. NESTA Report. The Young Foundation.
Nassauer, J. I. (2011). Care and stewardship: From home to planet. *Landscape and Urban Planning*, *100*(4), 321-323, https://doi.org/10.1016/j.landurbplan.2011.02.022.
Nelson, D. R., Bledsoe, B. P., & Shepherd, J. M. (2020). From hubris to humility: Transcending original sin in managing hydroclimatic risk. *Anthropocene*, 30. https://doi.org/10.1016/j.ancene.2020.100239.
Newton, P. W. (2012) Liveable *and* Sustainable? Socio-Technical Challenges for Twenty-First-Century Cities. *Journal of Urban Technology*, *19*(1), 81-102. https://doi.org/10.1080/10630732.2012.626703.
Nesshöver, C., Assmuth, T., Irvine, K. N., Rusch, G. M., Waylen, K. A., Delbaere, B., Haase, D., Jones-Walters, L., Keune, H., Kovacs, E., Krauze, K., Külvik, M., Rey, F., van Dijk, J., Inge Vistad, O., Wilkinson, M. E., & Wittmer, H. (2017). The science, policy and practice of nature-based solutions: An interdisciplinary perspective. *Science of The Total Environment*. *579*(1), 1215-1227. https://doi.org/10.1016/j.scitotenv.2016.11.106.
Nevens, F., Frantzeskaki, N., Gorissen, L., & Loorbach, D. (2013). Urban Transition Labs: co-creating transformative action for sustainable cities. *Journal of Cleaner Production*, *50*(1), 111-122, https://doi.org/10.1016/j.jclepro.2012.12.001.
Olsson, P., Moore, M. L., Westley, F. R., & McCarthy, D. D. P. (2017). The concept of the Anthropocene as a game-changer: a new context for social innovation and transformations to sustainability. *Ecology and Society*, 22(2). http://www.jstor.org/stable/26270142.
Pacione, M. (1990). Urban liveability: A review. *Urban Geography*, *11*(1), 1-30, https://doi.org/10.2747/0272-3638.11.1.1.
Pereira, P., & Baró, F. (2022). Greening the city: Thriving for biodiversity and sustainability. *Science of The Total Environment*, 817,153032. https://doi.org/10.1016/j.scitotenv.2022.153032.
Raymond, C. M., Frantzeskaki, N., Kabisch, N., Berry, P., Breil, M., Razvan Nita, M., Geneletti, D., & Calfapietra, C. (2017). A framework for assessing and implementing the co-benefits of nature-based solutions in urban areas. *Environmental Science & Policy*, 77, 15-24. https://doi.org/10.1016/j.envsci.2017.07.008.
Rhodes, M. L., McQuaid, S., & Donnelly-Cox, G. (2022). Social innovation and temporary innovations systems (TIS): Insights from nature-based solutions in Europe. *Social Enterprise Journal*, *18*(2), 252-270. https://doi.org/10.1108/SEJ-01-2021-0001.
Ruth, M., & Franklin, R. S. (2014). Livability for all? Conceptual limits and practical implications. *Applied Geography*, 49, 18-23, https://doi.org/10.1016/j.apgeog.2013.09.018.
Schreier, M. (2012). *Qualitative Content Analysis in Practice*. London: SAGE Publication.
Seddon, N., Smith, A., Smith, P., Key, I., Chausson, A., Girardin, C., House, J., Srivastava, S., & Turner, B. (2021), Getting the message right on nature-based solutions to climate change. *Global Change Biology*, *27*(8), 1518-1546. https://doi.org/10.1111/gcb.15513.
Sørensen, E., & Torfing, J. (2013). Enhancing social innovation by rethinking collaboration, leadership and public governance. Paper presented at NESTA Social Frontiers, London, United Kingdom.
Spijker, S. N., & Parra, C. (2017). Knitting green spaces with the threads of social innovation in Groningen and London. *Journal of Environmental Planning and Management*, 61(5-6), 1011-1032. https://doi.org/10.1080/09640568.2017.1382338.
Sturiale, L., Scuderi, A., & Timpanaro, G. (2023). Citizens' perception of the role of urban nature-based solutions and green infrastructures towards climate change in Italy. *Frontiers in Environmental Science*, 11, 1105446. https://doi.org/10.3389/fenvs.2023.1105446.
UNEP (2022). *Resolution adopted by the United Nations Environment Assembly on 2 March 2022*. Nairobi. https://wedocs.unep.org/handle/20.500.11822/42938?show=full (last access 10 September 2023).
World Bank (2008). *Biodiversity, climate change and adaptation: Nature-based from the World Bank Portfolio*. Washington, DC. http://hdl.handle.net/10986/6216.
Xie, L., Bulkeley, H., & Tozer, L. (2022). Mainstreaming sustainable innovation: Unlocking the potential of nature-based solutions for climate change and biodiversity. *Environmental Science & Policy*, 132, 119-130. https://doi.org/10.1016/j.envsci.2022.02.017.
Wickenberg, B., McCormick, K., & Alkan Olsson J. (2021). Advancing the implementation of nature-based solutions in cities: A review of frameworks. *Environmental Science & Policy*, 125, 44-53. https://doi.org/10.1016/j.envsci.2021.08.016.
Ziegler, R., Balzac-Arroyo, J., Hölsgens, R., Holzgreve, S., Lyon, F., Spangenberg, J. H., & Thapa, P. P. (2022). Social innovation for biodiversity: A literature review and research challenges. *Ecological Economics*, 193, 107336, https://doi.org/10.1016/j.ecolecon.2021.1073.