"Ecomuseo dell'Acqua": An Indivisible Unit of Strategic Sustainable Planning

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Abstract. The paper introduces an experimental approach aimed at delineating strategies for urban regeneration with a focus on nature-based leisure, recreational, and outdoor activities within the framework of downscaling the New Urban Agenda 2030. The objective of this research project is to develop and implement practical tools for applying the principles outlined in the New Urban Agenda (NUA) within diverse territorial components. These components encompass not only anthropic elements, such as urban infrastructure and built environments, but also natural elements, including ecological systems and landscapes. This approach is pivotal in guiding the programming and execution of the sustainable project proposals, which is deeply rooted in addressing the specific needs of the locality and its residents. A core emphasis of the project lies in ensuring equitable access for all individuals, considering factors such as proximity to populated areas, availability of parking, clearly identifiable access points, and accessible restroom facilities during the selection of project areas. Furthermore, the design of these routes aims to offer diverse options in terms of length and accessibility. Ultimately, the project seeks to generate public value and potential benefits for the local community. This comprehensive approach strives to harmonize efforts towards heritage conservation, enhancement, and effective management, all while ensuring the appropriate allocation and investment of public resources.

1 Introduction

The New Urban Agenda (NUA) [1, 2] represents a widely embraced framework that has fostered the development of fresh agreements among various stakeholder groups engaged in urban planning and territorial management. Linked with global sustainability objectives, the NUA has engendered a novel form of commitment in public decision-making [3]. Described by the United Nations as a global pledge to advance sustainable urban development, the NUA aims to cultivate inclusive, safe, resilient, and sustainable cities and human settlements. It deals with tackling global challenges by fostering local innovations in urban management practices. While there exists no comprehensive conceptualization on how to downscale NUA principles and objectives, recent research

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indicates that sustainable development design demands additional and varied tools. A study conducted exemplified the efficacy of an approach in adapting NUA principles and laid the groundwork for devising new tools to bolster the emerging generation of territorial technicians, particularly engineers and architects [3–9]. It provides a framework for guiding policies and programs aimed at fostering sustainable growth in cities and human settlements worldwide. Within this comprehensive agenda, several key dimensions of sustainability (Fig. 1) have been highlighted, each playing a crucial role in shaping the urban landscape of tomorrow.



Fig. 1. Key dimensions of sustainability from NUA Handbook

One significant dimension addressed in the NUA social sustainability is "*Planning for migrants, ethnic minorities and persons with disabilities*" (Table 1). This dimension underscores the importance of ensuring that urban spaces and infrastructure are designed to be inclusive and accessible for all members of society, regardless of their physical abilities. By prioritizing accessibility in urban planning and design, cities can create environments that empower individuals with disabilities to fully participate in and contribute to community life.

Table 1. Social sustainability | selected components from NUA Handbook

Planning for migrants, ethnic minorities and persons with disabilities		
Principles	Universal design	*"Accessible and disability-inclusive urban planning is "universal design" and can be realized everywhere"*
Illustrative actions	Transit equity	*"Plan for transit equity for marginalized groups and especially persons with disabilities."*

Another crucial aspect emphasized in the NUA is "Job creation and livelihoods" Sustainable urban development involves not only the physical transformation of cities but also the promotion of economic opportunities for residents. By fostering entrepreneurship, supporting small businesses, and investing in job training and skills development,

cities can create vibrant and resilient economies that benefit all members of society (Table 2).

Table 2. Economic sustainability | selected components from NUA Handbook

Job creation and livelihoods		
Principles	Policy design	*"A sound economic development strategy includes stakeholders in policy design."*
Illustrative actions	Growth sectors	*"To create new jobs, link with other "growth" sectors such as infrastructure, renewable energy, education, and so on."*

Biodiversity and ecosystem conservation are also key considerations within the NUA. As urban areas expand, preserving natural habitats and green spaces becomes increasingly important for maintaining biodiversity, mitigating climate change, and enhancing the overall quality of life for urban residents. By incorporating green infrastructure, such as parks, wetlands, and green roofs, cities can promote ecological resilience and provide valuable ecosystem services to their inhabitants (Table 3).

Table 3. Environmental sustainability | selected components from NUA Handbook

Biodiversity and ecosystem conservation		
Principles	Conservation	*"Conserve natural areas and assets providing critical ecosystem services through land management and landuse planning."*
Illustrative actions	Incentives	*"Develop incentives for stakeholders to comply with biodiversity & ecosystem preservation goals."*

While the objectives outlined above identify the dimensions, principles, and actions related to sustainable development, the means of implementation (Fig. 2) are the tools, techniques, and specific actions that cities and urban actors can use at national, supranational, and local levels to achieve these objectives.

Culture and health are two soft macro-measure highlighted in the NUA for urban development. Recognizing the importance of cultural heritage and identity, as well as promoting health and well-being, is essential for creating livable and resilient cities. By supporting cultural initiatives, preserving historic sites, and providing access to healthcare services, cities can nurture vibrant and healthy communities where people can thrive.

Transportation and mobility are critical components of sustainable urban development addressed in the NUA. By promoting sustainable modes of transportation, such as walking, cycling, and public transit, cities can reduce greenhouse gas emissions, alleviate traffic congestion, and improve air quality. Investing in efficient and accessible



Fig. 2. Means of implementation from NUA Handbook

transportation systems can enhance mobility for all residents while reducing reliance on private cars and fossil fuels.

In conclusion, the NUA offers a comprehensive framework for addressing the multi-faceted challenges of urbanization and advancing sustainable development in cities and human settlements worldwide. By focusing on key dimensions such as accessibility, economic opportunity, biodiversity conservation, transportation, culture, and health, cities can chart a course towards a more equitable, resilient, and sustainable future. "While the objectives outlined above identify the dimensions, principles, and actions related to sustainable development, the means of implementation are the tools, techniques, and specific actions that cities and urban actors can use at national, supranational, and local levels to achieve these objectives".

The following sections showcase a case of local downscaled selected components.

The analysis of the Val D'Agri Park context, in Basilicata, provides an opportunity to highlight the variables of sustainable strategic design according to the principles and means described. Section 2 highlights the choice of the future intervention path through an analysis of elements that depict territorial dynamics related to accessibility and environmental characteristics. Section three introduces the means of implementation and knowledge at the local scale for defining an eco-museum. The final part discusses and concludes the research themes, highlighting the critical aspects and future developments of the study.

2 Accessibility is a Necessary Prerequisite for Usability

The contribution focuses on trails and itineraries primarily of a naturalistic nature where recreational activities can be carried out, allowing people to interact with nature.

The proposed project starts from the premise that it is necessary to optimize and plan interventions in the realization of itineraries so that they can serve as connecting elements between territorial components (both natural and human-made). The approach strategy is crucial in the planning and implementation of an idea, upon which a specific design process must be based. The idea arises from the need to interpret the needs of a place

and its citizens, integrating and bringing together technological design with traditional design.

The premise for the realization of a project involving trails and their related recreational areas is to ensure free access for everyone, taking into account the necessary accessibility features [10–12]. The requirements considered in the identification of the route and the areas subject to design can be distinguished into intrinsic, which are identified among the contextual characteristics, and extrinsic, which are identified among the specific qualities of the intervention area.

The extrinsic requirements are listed as follows:

- Proximity to inhabited centres, easily accessible scattered houses;
- Presence, near points of easy access, of parking lots with spaces reserved for holders of disabled parking permits;
- Presence of connecting paths to public services and public use structures, accessible to anyone's needs;
- Presence of equipped areas, appropriately sized and furnished, located near the route in question;
- Presence of informative points providing precise indications on the routes to follow and visit, aiming to guide users based on their physical abilities, energy levels, and personal needs.

The intrinsic requirements are listed as follows:

- Recognizable and identifiable access points;
- Morphological features of the trails, regarding the forms that make up the terrain relief (elevation changes and slopes), the length of the route, and the level of difficulty (tourist or hiking itinerary);
- Landscape quality (natural, semi-natural, and anthropic) and its physical and material, immaterial, and perceptual components, specific to the intervention area and encountered along the route (e.g., wooded areas, peculiar geographical features, hydrographic networks, springs, historical-cultural points of interest);
- Components of the cultural heritage (e.g., tree elements of particular naturalistic and/or testimonial value, crops of remarkable landscape and environmental value, historical and/or archaeological settlements, historical-cultural points of interest);
- Furnishing elements (fixed or movable artefacts) contributing to enhancing the usability and quality of the area in question, valorising the territory and considering the needs of the citizens (e.g., fountains, benches, waste containers, public lighting systems).

3 Place's Identity and Collective Needs

The design actions stem from the analysis and interpretive evaluation of a place, its physical identity, and its vocation. The proposed eco-museum described below is based on this premise. The pilot case has been identified within the trails located within the National Park of the Lucanian Apennines Val d'Agri Lagonegrese [13, 14], whose perimeter encompasses some of the highest peaks of the Lucanian Apennines. The Park was established by Presidential Decree on December 8, 2007. It is located in the southwest of the Basilicata region, covering an area of 68,996 hectares and including 29 municipalities in the province of Potenza.

"*The preservation of natural and environmental values as well as historical, cultural, and traditional anthropological values entrusted to the Park Authority is pursued through the instrument of the Park Plan* [15]*."*

In particular, not only must the general organization of the territory, constraints, and land use designations be regulated, but also "c) vehicular and pedestrian accessibility systems with particular attention to routes, accesses, and facilities reserved for disabled individuals, handicapped individuals, and the elderly; d) equipment and services systems for the management and social function of the park, museums, visitor centers, information offices, camping areas, agro-tourism activities; e) guidelines and criteria for interventions on flora, fauna, and the natural environment in general." The symbiosis between humans and the environment, a distinctive characteristic of the Park, represents an opportunity for the promotion of sustainable and lasting development initiatives, in harmony with the territory's vocation and the needs of the community. The set mission, within the scope of the design choice, is represented by the realization of an ecomuseum, whose concept goes beyond the traditional idea of a museum.

"*The Ecomuseum is a participatory practice for the enhancement of material and immaterial cultural heritage, developed and elaborated by an organized subject, expression of a local community, in the perspective of sustainable development. (carta di Catania)"* Its essential components are: the reference territory, the population, the real supporter and advocate of the project, and the heritage, the set of components that communities recognize, protect, and promote.

The ecomuseum proposal aims to identify, rediscover, enhance, and reconnect naturalistic routes and contextual areas. With this proposal, the intention is to safeguard and make recognizable the system of paths and the values of the reference territory in relation to those expressed by the communities [16].

Specifically, reference is made to a system of paths identified and named "Water Ecomuseum," for the territorial specification described below. The northern part of the Park territory is crossed by watercourses with an Ionian outfall, including the initial stretch of the Basento river and one of its tributaries, the Rifreddo stream. In the central part flows the middle-upper stretch of the Agri river, where several streams Cavolo, Alli, Maglia, Trigella, and Raganello converge. To these is added the artificial reservoir of Pertusillo in the municipality of Spinoso and the reservoir of Marsico Nuovo, the institutional seat of the Park.

The components included in the ecomuseum territory are: landscape assets (including geological singularities, monumental trees, viewpoints accessible to the public, from which one can enjoy the spectacle of panoramic beauties), arable lands, open spaces and their detectable biotopes, rivers, streams, watercourses, territories covered by forests and woods, wetlands, monuments, and places of interest. The complex of cultural resources present in the area of interest and the reference areas are connected through a specific fruition path.

The system of paths identified and implementable over time meets the extrinsic and intrinsic requirements previously outlined (Fig. 3). The design actions are represented along the path by episodic and consequential elements. The enhancement of the path system and the design of the reference areas are planned, with different purposes and objectives, but all part of a single design system. The participation of the population in

its development is allowed through various means of expression, essentially based on the reality of the places. The idea, therefore, of designing an ecomuseum system of paths, is inherent in the new way of conceiving the territory and the populations that own and enjoy its assets.

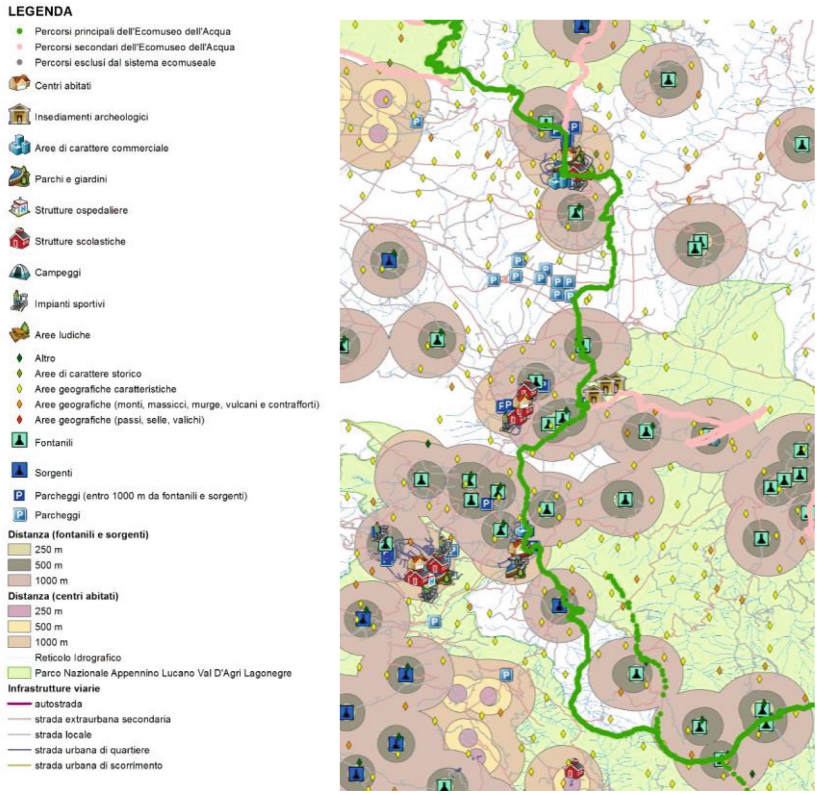


Fig. 3. The system of paths identified and implementable over time meets the extrinsic and intrinsic requirements previously outlined.

4 Discussion and Conclusions

The article explores a new experimental method aimed at developing strategies to revitalize natural areas in Basilicata. The goal is to address the strategic concerns of a specific group of marginalized territory users, conserve natural habitats, and promote integrated development of stakeholders. The approach is based on the principles of the National Urban Agenda (NUA), which are "downscaled" to the local level. The methodology begins by defining the target population of territory users using principles such as "Planning for Migrants, Ethnic Minorities, and Persons with Disabilities", Job Creation and Livelihoods, and Biodiversity and Ecosystem Conservation. Collaborative

design frameworks are strongly recommended, and a decisive approach is required to effectively implement such a proposal. The main focus of this study is on the emerging technical requirements for territorial context analysis aimed at developing a sustainable study and defining tangible interventions and soft skills that align with the mentioned principles. The research experiment has revealed several distinct advantages compared to traditional project approaches. Specifically, the approach allows for a broader and more comprehensive understanding of the specific problems and issues that need to be addressed [17–20]. It correlates problems, local conditions, and potential solutions, and uses a reference matrix based on NUA principles to structure tangible actions and soft skills, as well as development goals. The robust accounting system of the reference matrix provides strong evidence of the project's quality. However, the limitations of the study concern the still too generic dimension of the approach, which shows a weakness in its selection matrix of NUA components to be adapted to the reference context. This research provides a significant contribution to the ongoing discussion on tools and methodologies to support the downsizing of the NUA at the local level, using innovative technologies in the thematic domain of urban design [21–23].

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