The Landscape from Architecture to the City: Strategies and Methods to Regenerate Through Design

Alessandro Barracco[1], Celestina Fazia[1], Maurizio Oddo[1], Antonella Versaci[1], and Clara Stella Vicari Aversa[2(✉)]

[1] Department of Engineering and Architecture, University of Enna "Kore", 94100 Enna, Italy
{alessandro.barracco,celestina.fazia,maurizio.oddo,
antonella.versaci}@unikore.it

[2] Department of Architecture and Territory - dArTe, University "Mediterranea" of Reggio Calabria - UNIRC, 89124 Reggio Calabria, Italy
clarastella.vicariaversa@unirc.it

Abstract. The contribution intends to propose an innovative and transdisciplinary approach to restore centrality to the landscape in the process of urban regeneration. The urban landscape, in its naturalistic-environmental dimension, is an essential part of cities: both as a physical object and from a perceptive, cultural, and social point of view. It is a continuously changing system also due to the different forms of anthropization, whose effects it sometimes suffers. The landscape system possesses a potential that has yet to be developed, especially in this phase of ecological transition affecting cities. The point of view needs to be reversed to understand what actions need to be taken to recover fragments of the (diffuse) landscape within cities, to promote activities and projects also in water edges and buffer zones by graduating the possibilities of use and protection. How many opportunities and opportunities does the landscape offer in its 'transversal' dimension? The essay will illustrate some virtuous examples of Italian and international case studies on the methodologies of knowledge, design, planning, restoration of the urban and rural landscape. This is the aim of our contribution: to propose new methods, at the various scales of the project (rural architecture, landscape restoration and dynamic management of its transformations, landscape as an element of architectural design, landscape planning) for the valorisation of the landscape by encouraging renaturalization and promoting forms of rewards for the sustainable use and protection of landscapes in their various articulations.

Keywords: Landscape regeneration · Rural and urban landscape · Landscape design · Waterfront landscape · Transdisciplinarity · Landscape restoration

1 Introduction

In Italy, the debate between conservation and transformation in the context of sustainability has long focused on preserving landscapes, cultural heritage, and historic centres through various protection regimes. While early efforts primarily aimed at conservation,

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subsequent regulations and directives have expanded to encompass the entire territory, including areas with potential for tourism and sustainable development. The shift towards prioritizing valorisation compatible with heritage protection has led to considerations of landscape feasibility for various projects, including renewable energy installations. However, recent developments have seen a radical change in approach, with exemptions from regulations and incentives for renewable energy production becoming more prevalent, reflecting a reversal in the traditional conservation paradigm.

The evolving landscape and urban environment present challenges in responding to the demands of the ecological transition. With most Italy's municipal territories comprising agricultural land [1, 2] and forests, the need to balance conservation with necessary transformation is becoming increasingly apparent. As cities and territorial contexts participate in the ecological transition, the concept of urban resilience takes on multiple meanings, emphasizing the capacity to adapt to new challenges while aligning with the recommendations of Agenda 2030. These dynamics underscore the imperative to move beyond static conservation concepts and embrace necessary transformation in or-der to effectively navigate the era of transitions.

This complex interplay between conservation, transformation, and the ecological transition underscores the need to reassess priorities and paradigms in urban and territorial planning. The multifaceted meanings of urban resilience and the evolving demands of the contemporary world highlight the imperative for adaptive responses and a forward-looking approach that aligns with the goals of sustainability and resilience.

Sicily boasts a diverse and captivating landscape, characterized by a rich tapestry of natural and cultural elements. The relationship between rural landscape and architecture in Sicily is intricate, encompassing both the natural and cultural dimensions. The rural landscape in areas like Enna seamlessly integrates with the urban context, blurring the boundaries between architecture and nature. The diverse forms of agriculture, such as vineyards and olive groves, contribute to the distinctive character of the landscape, offering development potential linked to tourism, agriculture, and crafts.

The agrarian landscape in Sicily is undergoing transformation and expansion, driven by processes of productive rationalization and cultural reconversions. The interplay between architecture, agriculture, and landscape in rural centres reflects a profound historical continuity and stratification of land use. These rural settlements exhibit a unique physical and formal structuring, with building typologies closely intertwined with production, product transformation, and conservation activities [2].

The process of urban reforestation is particularly relevant in Sicily, where agricultural green spaces [3] form a dense ecological infrastructure with far-reaching implications. The aesthetic filters of the rural landscape and reforestation processes significantly contribute to the overall quality of the landscape, exemplified in municipalities like Taormina, Leonforte, and Ortigia. These areas showcase the intricate relationship between human activities, historical heritage, and the natural environment, underscoring the importance of sustainable resource utilization and cultural valorisation.

Looking ahead, Sicily is well-positioned to align with the sustainable development goals outlined in Agenda 2030 [4] and the EU's 2026-time target for the National Recovery and Resilience Plan (PNRR). The region's rural tradition, rooted in the sustainable use of resources and the valorisation of cultural heritage and local traditions, provides a

strong foundation for implementing sustainable activities and restoring the centrality of the urban landscape while safeguarding ecosystem services. Sicily's cultural and environmental heritage, combined with its rural traditions, presents a promising opportunity to over-come obstacles and promote sustainable development in harmony with its natural and cultural landscapes.

The Sicilian landscape has undergone significant transformation due to technological innovations in agriculture, leading to the loss of its historical agricultural character. The neglect and decay of the architectural heritage [5] in the hinterland also pose challenges. Efforts to protect and promote the rural landscape as a cultural asset have been made, including initiatives by the European Union and local administrations. These efforts aim to mitigate the wear and tear caused by traditional tourism and provide new opportunities for neglected areas.

The Regional Center for Planning and Restoration (*Centro Regionale per la Progettazione e il Restauro* - CRPR) has started in 2006 the drafting of the Regional Map of Places of Identity and Memory (*Luoghi dell'Identià e della Memoria* - LIM). Additionally, the Leader II program focused on cataloguing heritage for tourism, and the Rural Development Programme aimed to improve rural life and diversify the rural economy. The Sicilian Region also initiated projects for the recovery and valorisation of rural villages [6].

However, there is a need for global operational coordination to recover this heritage and recognize its cultural value. An integrated design approach is essential to update the forms of protection and reintroduce these assets into contemporary life while preserving their authenticity and symbolic functions [6]. This approach should draw from the identity and roots of the landscape to regenerate the rural heritage for the future.

Landscape plays a crucial role in architectural design and urban planning, serving as a valuable resource that requires continuous care and attention. The quality of the landscape and open space is essential for ecological transition and sustainable development. Integrating nature into urban infrastructure, such as introducing green spaces and vegetation, can mitigate the impact of urban development on the environment.

With a significant portion of the global population residing in cities, it is imperative to focus on integrating the plant aspect into urban infrastructure to restore ecosystem services and create more sustainable and liveable spaces. Projects like '*SEMEUR*' in Lyon, which integrates green spaces with the tramway, exemplify this approach.

Coastal cities face unique challenges and opportunities due to their proximity to water. Urban and landscape rehabilitation projects in coastal cities must consider the presence of water as both an asset and a potential complication. Climate change further accentuates the complexity of coastal city design, requiring innovative solutions to address the impact of storms and erosion on coastal infrastructure [7].

In response to these challenges, some coastal municipalities have opted for the renaturalization of coastal areas, dismantling fixed structures and retreating inland to create more space for the beach and sea. This approach prioritizes sustainable and regenerative solutions, aiming to redesign public spaces with respect for town planning and the environment.

Additionally, initiatives such as the '*Plan de Acción del Paisaje*' in Santurtzi demonstrate a commitment to sustainable transformation and the consolidation of coastal areas.

By reimagining urban beaches and creating new leisure areas, these projects aim to bring cities closer to the sea while preserving the natural landscape.

Ultimately, the goal is to harness the continuous energy of waterfronts and coastal areas to achieve a perfect interaction between anthropization processes and the surrounding landscape. By embracing transversal and integrative design visions, cities can create more liveable and sustainable environments that harmoniously blend architecture and nature. This holistic approach, guided by the wisdom of nature, holds the key to addressing climate change and creating a healthier, more vibrant urban landscape [8].

2 Literature Review

The essay aims to highlight, through an extensive review of the literature - organized according to two in-depth focuses, landscape conservation/transformation in regeneration process and Architecture and urban reforestation in Sicily - how much the approach to the theme of conservation/transformation, in its ambiguous relationship, is also to be actualized with respect to the new demands of the territory and the solicitations of European programming in terms of responses to environmental challenges, the necessary involvement of the landscape (in all its forms and typifications) and green infrastructure, ecosystem services, and complex and sensitive areas such as coastal contexts.

2.1 Landscape Conservation/Transformation in Regeneration Process

For many decades, in Italy, the orientation of the debate between conservation and transformation in the light of sustainability objectives [1, 2], has been to preserve landscapes, cultural heritage and historic centres with the recognition of different protection regimes -from reconnaissance landscape restrictions, to the perimeter of homogeneous zone 'A' in the PRG, the "*Piano Regolatore Generale*", and with restrictions introduced on 'permitted and prohibited building activities' as a result of the two laws, no. 1089 and no. 1497 of 1937-, aimed substantially at conservation. For years the rest of the territory remained almost always without specific control restrictions, in the case of the inhibitory or tutelary type, except for prescriptions deriving from very sectorial regulations (think of the Royal Decree for water courses, for example). Around the 1970s/80s, with l. 431/85 and the sector regulations (l. 183/89, for example), the rest of the territory was also subjected to binding regimes. One thinks of the framework law on parks and protected areas and the EU (European Union) directives for the Natura 2000 Network. It was probably believed that a wide protection grid, with more or less narrow networks, could preserve the territories. In some cases, it has served to inhibit and avert the risk of damage and compromise to centres of historical and cultural value and landscape areas [2–4],

In other cases, the system of constraints, used without any effort at gradualness, has in fact prevented the use of areas with a vocation for tourism and sustainable enhancement. With the 2004 Code of Cultural Heritage, there is a reversal of this trend: constraint for its own sake is not the priority, but valorisation compatible with heritage protection is. Despite this, many landscape plans - I cite Calabria's QTRP (*Quadro Territoriale Regionale a valenza Paesaggistica)* as an example, but the reasoning extends to the

landscape plans of many regions - introduce the 'new landscape contexts' and emphasise the need to verify the compatibility of transformations. A few years after the issuing of the 2004 Code, for example, even for energy production plants from renewable sources (wind and solar, now considered necessary works for the environment and for the ecological transition) the verification of landscape feasibility was envisaged as part of the EIA with respect to the national Guidelines containing the explication of the criteria for the choice of sites suitable for the installation of plants.

Today, the situation has changed radically. The ecological transition can be implemented if incentives are given, also, for the production of energy from renewable sources, and exemptions from regulations are allowed, as the case may be. The paradigm has changed and there is definitely a reversal: the landscape and the environment participate in the ecological transition, sometimes giving up something. Today it is for the 5Giga, the *Piano Casa/Sisma Bonus,* the Superbonus110 and many derogations are allowed.

The term 'conservation' indicates the maintenance of an object in a state of efficiency so that it is in a condition to be used, protecting it and preserving it from alteration. It presupposes a pro-active approach that can guarantee the functioning and efficient state of the object thus protected.

The legal measure of the so-called 'protection regime' applies to defend, protect, preserve against possible damage, offence, or other unlawful actions.

Preservation of a cultural and environmental asset, be it the historical centre or the landscape, means any activity carried out with the aim of maintaining its integrity, identity, and functional efficiency in a coherent planned and coordinated manner.

Is conservation as a condition of absolute, binding protection of the asset to be protected nowadays, in the light of the widespread demand for transformation, impractical?

And yet, ignoring at times the "bringing of control instruments" we have arrived at the "ope legis" constraint to which the urban planning instruments refer to, as if they were administrative burdens. With the feeling that nothing can be done.

In reality, the city and the landscape are transforming entities. The various anthropic interventions of different periods have shaped today's *forma urbis*, which is the result of historical stratifications. Landscape is also not a static category, it is the "result of modifications of the environment brought about by land use" (European Council) whose appearance results from the action of human and natural factors and their interrelationships. Classical' urban conservation policies, by concentrating hypertrophically on a few historical parts, have neglected the heritage value of important areas of the modern city or rural town. Most of Italy's municipal territories (Fig. 1) are made up of agricultural land and forests (at least 70%), the rest by urban settlements (24%, containing a small amount of urban green spaces), water bodies (5%) and less than 1% by uncultivated land, marshes, and sandy soils [3, 5, 6].

Today there are many challenges. The acceleration of processes of change and the discontinuity of synchronies between space and time characterise the contemporary world we live in and experience. Cities are not prepared to provide adequate responses to the great social and economic changes and challenges of the era of transitions [4, 5].

Everything takes place within the urbanised city, be it the historic city or the consolidated city, and the territorial context participates with it in the ecological transition to

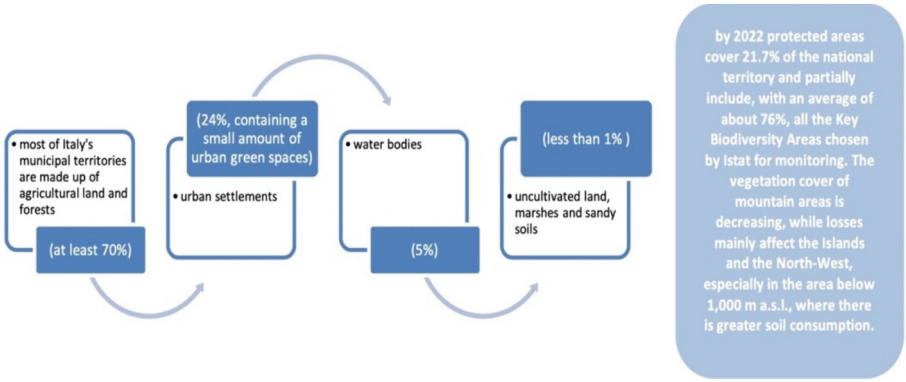


Fig. 1. Land cover at municipal level and in percentage of area. Source: elaboration by Celestina Fazia.

which it is called to respond. To accomplish the ecological transition, some paradigms and orders of priorities may have to be revised.

The meanings of the concept of urban resilience, at the basis of the PNRR which indicates the ecological transition as a necessary condition, are multiple. In general, the term takes on the meaning of resistance, as the capacity of the urban organism to respond to external stresses by absorbing them and restoring its functions in the shortest possible time, but it also means being ready for the future, modifying oneself by adapting one's resources to meet the new challenges that arise, sometimes without 'remorse'. Moving beyond the static concept of conservation, towards that of necessary transformation, also goes in this direction in light of the numerous recommendations contained in the 17 goals of Agenda 2030 [4, 5, 7, 8].

2.2 Architecture and Urban Reforestation in Sicily

Sicily is a palimpsest of landscapes of extraordinary beauty. The morphological variety is remarkable: from hills crossed by streams, to terraced plateaus, to inland slopes and coastal landscapes or centres. Based on this initial classification, the relationship between rural landscape and architecture can be described through the fundamental elements, namely the natural/vegetational dimension and the cultural/perceptual dimension. The complexity can be grasped either by using the critical approach of Creuze de Lesser or the spirit of Norman Douglas, with attention to those fragments where the landscape becomes a place of contamination of history and forms of production.

The relationship between architecture and urban reforestation originates from the structure of the landscape, the components that define urban or rural identity and the characteristics they take on through the modes and types of production. These components are associated with those identifiable in the vegetation system and the human actions that transform the landscape, typical of certain territorial contexts, such as that of Enna. The rural landscape in Enna insinuates itself into the urban context, where the absence of physical limits does not 'contain' the push towards urban reforestation (lower Enna). Architecture and rural landscape merge.

The different forms of agriculture present in the rural territory express as many forms of landscape: vineyards and olive groves, for example, are among the characterising elements. The Enna hills depend on the economy of the valley floor and have development potential linked to the protection of the landscape, the combination of tourism-agriculture or crafts-agriculture. They are often typologies with ecological value, identifiable as areas of diffuse naturalness that are often intertwined with human activities that constitute limiting factors. They are areas of interchange of extraordinary importance and subject to continuous evolution.

The agrarian landscape is undergoing transformation and expansion, on the one hand due to agrarian processes of productive rationalisation, and on the other hand due to cultural reconversions. In many rural centres in Sicily, architecture, agriculture, and landscape are difficult to separate: their relationship is characterised by an extraordinary continuity and a specific historical stratification of uses and forms. Rural settlements have rules of physical-formal structuring, while building typology is the result of functional relations with the places deputed to production, product transformation and conservation [5, 6]. It is not difficult, in these centres, to think of a process of urban reforestation as the (agricultural) green represents a continuum, an ecological and environmental infrastructure with dense ramifications. One thinks of the rural centres of Zafferana Etnea, Acitrezza, Leonforte or Ortigia [6, 7]. Relationships with the extra-urban landscape depend on the presence of environmental emergencies, particular altimetric and geographical conditions, and more or less intimate proximity to water and nature. Zafferana Etnea is among the municipalities included in the Etna Park. In the neighbouring territory there are no inhabited centres, and the diffuse city is located at lower altitudes near the towns of Nicolosi and Pedara [7, 8]. The historical and cultural heritage consists of the isolated assets that mark the territory, high mountain refuges and architecture serving agriculture. The economy of the Acitrezza area has been transformed over time because of different historical contingencies. The historic centre, which today is a complex of rural architecture, two centuries ago represented the town's gateway to the farming world.

The components of the rural landscape and reforestation processes present in some centres are the aesthetic filters of the territory and play a decisive role in the quality of the landscape, as in Taormina. In Leonforte, a municipality in the province of Enna, the inhabited centre is located in the Erei mountain system [8] and presents the characteristic features of historic towns and the widespread presence of demo-anthropological elements, forms of agricultural production and processing, such as rational systems for crop irrigation and numerous water mills. Of considerable ethno-anthropological interest are the finds of industrial archaeology including the Faccialavata Sulphur Mine, the Spinning Mill and the artefacts still present along the old Dittaino-Nicosia railway line.

Ortigia is an island located on the east coast of Sicily, a strip of land joins it to Syracuse. Due to its geological conformation, it lends itself to the natural seepage of water, so much so that the island is connected to the mainland of the city of Syracuse and through the water the processes of interchange between green and blue infrastructure take place. Reforestation in these contexts is an easy process to implement; there is no need to intervene artificially to boost the natural re-appropriation of areas that are already suited to being subservient to nature and its rules.

In line with the 17 Goals of Agenda 2030 [5, 6, 8], and within the 2026-time target set by the EU for the PNRR, it will be possible to complete numerous sustainable activities and actions [9] to restore the centrality of the urban landscape and the restoration of ecosystem services subtracted and swallowed up by urban logics detached from the protection of environmental balances. In Sicily, this process will encounter fewer obstacles because there is a (widespread, even if in some areas it is not prevalent) rural tradition that encourages a sustainable use of resources through the valorisation of cultural heritage, material culture and local traditions [10].

3 Discussion

The case studies analyzed point to the need to address some priority issues: urban reforestation and rural landscape conservation and the Regeneration and coastal urban landscapes, methods, and results from international cases also in progress. The issues of reforestation and coastal areas provide an opportunity to initiate discussion and provide answers also through the interpretation of the results of best practices and successful experiments.

3.1 Rural Built Heritage and Landscape Conservation

In the present day, Sicily preserves only a fragment of its extensive rural heritage, owing to the legacy of plants, animals, agrarian practices, land utilization and social relationships that have been left over from many cultural civilizations, contaminations, and stratifications. In the latter half of the 20th century, the landscape has undergone significant changes due to the implementation of revolutionary national land policies. In 1950, following the establishment of Sicily as one of the four autonomous regions of Italy, an agrarian reform was implemented. By setting up the Agency for Agrarian Reform (*Ente per la Riforma Agraria in Sicilia* – ERAS) together with the financial resources provided by the Fund for the South (*Cassa per il Mezzogiorno*), an agency created by the Italian Government, the program incited agriculture to its greater intensity since the apex of Norman era. However, projects were formulated without a proper understanding of the physical and human geography of Sicily, leading to their failure [11, 12]. Even though productivity increased dramatically, the island's countryside was transformed from 'agricultural' to 'rural' due to a profound and definitive territorial reorganization [13]. Technological innovation in agriculture very often used indiscriminately and without proper assessment, the abandonment of polyculture towards monoculture, the agriculture mechanization and the unsafe usage of pesticides and herbicides for the weed control, generated a profound alteration of its layout.

In recent years, the rural landscape, largely marked by phenomena of degradation and abandonment, has become an emerging issue at international, national, and regional levels, in the now widespread awareness that its safeguarding and valorisation would play an essential role in sustainable socio-economic and cultural development. In this regard, the European Union has promoted numerous initiatives to transform these areas in sustainable development laboratories by enhancing their cultural and natural heritage. However, these programs are still struggling to show truly perceptible results, perhaps

due to the complexity of the phenomena involved and/or because they are not yet sufficiently based on a perfect awareness of the culture of places, seen as space-time entities, repositories of testimonies and relationships from which every subsequent action should derive. A knowledge based on the understanding of the marks still existing in the territory and of the links with their interpreters, in the mindfulness that, as stated by the Charter of Krakow - principles for conservation and restoration of built heritage (2000): "Each community, by means of its collective memory and consciousness of its past, is responsible for the identification as well as the management of its heritage" [14].

The Sicilian rural buildings, which bear the memories of past life, ancient construction techniques, craftsmanship and lifestyles and contain the spirit of cultural landscape, are an essential component of this system and require a holistic approach for their protection. Globally, they are experiencing problems of neglect, decay, and poor accessibility due to rural depopulation, which caused the deprivation of their original function. In other cases, they are at risk of mischaracterization due to refurbishment activities that prioritize modern architectural trends and industrial materials over traditional ones, leading to a progressive loss of traditional knowledge and skills [15, 16]. Nevertheless, these elements demonstrate the existence of local construction logics that allow them to be traced back to the building typologies they belong to. Despite their growing depredation due to meteorological, climatic, and environmental factors, certain constructions and settlements have managed to retain their authenticity and integrity to a certain extent and are now waiting for new functions. If subjected to appropriate revitalization actions, it could prove to be strategic, especially for inner Sicily: an area with great patrimonial wealth, but historically less frequented and still lacking sufficient attractiveness for tourist flows due to the lack of coordinated and strong policies in the sector.

Supporting framework of an organizational system related to agricultural life and distinctive elements, in form and material, of the identifying characteristics of the cultural landscape, these assets deserve to benefit from specific, detailed, and accurate knowledge activities to be reintroduced into the life cycle in a conscious and conscientious manner. The methods implemented for their protection have so far favoured the monumental heritage and the historic urban centres, even if, historical rural buildings are perceived as cultural assets to be preserved according to the Convention for the Protection of the Architectural Heritage of Europe (Granada, 1985) and the European Landscape Convention (Florence, 2000). Since 1992, UNESCO considers rural landscapes as biocultural mosaics and has designated them as the most common types of 'continuing cultural landscapes', a category of World Heritage.

The same architectural and urban planning culture in Italy, in recent years, has been predominantly characterized by a tradition of an urban-centric nature, seen as the conceptual prerequisite and the goal of a vision that subordinates the suburbs, the open territory, the countryside to the city. Only recently, the fate of rural architecture and villages has overcome conditions of secondary importance to take on a strategic role in the rebalancing and development of the territory, but also a scientific and cultural interest, rich in possible innovative values [17]. Following the ICOMOS-IFLA ISCCL Milano Declaration on Rural Landscapes (2014), the Principles Concerning Rural Landscapes as Heritage were approved by the IFLA in October 2017 and adopted as a doctrinal text

by the ICOMOS General Assembly in Delhi in December 2017. The document encourages thorough reflection and provides guidance on the ethics, culture, environment, and sustainable transformation of rural landscape systems, at all levels, both internationally and locally. It provides principles and criteria for the protection and promotion of heritage related to rural landscapes, focusing on the steps to be taken. Its goal is to promote an appropriate balance between economic, social, cultural, and environmental aspects [18].

After the experience of the COVID-19 pandemic, the European Commission has allocated significant resources in the Next Generation EU Programme to promote rural development strategies as a response to the global health crisis. Rural areas are no longer identified as areas outside urban centres, but "places with important environmental, natural and cultural assets, where local actors play a strategic role in the preservation of biodiversity and soil, as well as cultural heritage" [19]. The recovery of rural architecture can offer several benefits, playing an essential role in sustainable development and cultural safeguarding. Contemporary architecture and urban planning can be improved by incorporating the intrinsic values of traditional rural built to create culturally rich and socially connected communities. However, locals and other stakeholders need to have a complete understanding and appreciation of the intrinsic values of this heritage for this process to be successful.

In Sicily, regional and local administration have understood that the rural landscape is a resource to be protected and promoted, together with other sectors connected to it such as culture, food, tourism, ecology, health, and well-being. The Regional Center for Planning and Restoration (*Centro Regionale per la Progettazione e il Restauro* - CRPR) has started in 2006 the drafting of the Regional Map of Places of Identity and Memory (*Luoghi dell'Identià e della Memoria* - LIM). The aim is to expand the protection and enhancement of the cultural and environmental heritage of Sicily to include the places and buildings that contribute to the island's identity and cultural memory. In Sicily, the traditional model of tourism focuses on a few monuments and monumental complexes in urban contexts or on archaeological parks and sites, or even on the tourist resorts located along the coasts and in the tiny islands which surround it. This results in a significant anthropic pressure that the charter aims to alleviate. Applied across the entire territory, it also intends to provide new opportunities to territorial areas neglected by the main visitor flows, by proposing often unexplored itineraries, through places and routes that characterize the rich complexity of the Sicilian cultural landscapes.

The Leader program introduced as a 'Community initiative' and financed under the EU Structural Funds across rural Europe stipulated that artistic, archaeological, and naturalistic heritage be inventoried so that it could be accessible to the tourism industry. This research, implemented in Sicily by the Sicilian Region, has focused on finding themed itineraries, including the rural naturalistic route known as 'The Ways of the Water Mills'. Improving the quality of life in rural areas and diversifying the rural economy has been the goal of Axis III of the Rural Development Programme. Sicily 2007/2013, which has made significant funding available for the conservation and upgrading of the rural heritage: sites of high naturalistic and landscape value (ponds, crossroads, hedges, indigenous monumental tree specimens) and cultural elements of the traditional agricultural landscape (isolated buildings of rural historical-architectural

interest to be used for public use, artefacts such as dry-stone walls, terraces, troughs, etc. Within the same programme, in 2009 the Sicilian Region drew up a pilot project for the recovery and valorisation of the rural villages of the Agricultural Development Board (*Ente Sviluppo Agricolo* - ESA) established in 1965 to replace ERAS called '*La via dei borghi'* which saw its first concrete manifestation in the intervention of redevelopment of Borgo Bruca, starting point of the itinerary, located in the municipality of Buseto Palazzolo, in the province of Trapani. Two other rural villages - Libertinia, which falls in the territory of Ramacca, and Pietro Lupo, which is part of the Municipality of Mineo - became part of the project in 2019 while restoration activities are not started yet due to operational difficulties [20]. In 2022, the Italian National Recovery and Resilience Plan (PNRR) provided Sicily with over 76 million euros to restore and enhance its rural architectural and landscape heritage. 565 projects were admitted for financing aimed at enhancing and making more modern and functional a built heritage, which includes farms, farmhouses, stables, mills, or even small rural churches that will thus be able to return to being living garrisons of the territory, also with cultural and touristic purposes.

These initiatives, while not exhaustive, show a process already underway that considers the rural landscape as a cultural expression of memory, collective identities, and recognisability: the "shape that man, in the course and for the purposes of his agricultural productive activities, consciously and systematically imprints on the natural landscape" [21]. Despite these actions, there is still a lack of global operational coordination focused on recovering this heritage, based on its recognition through the analysis of artefacts and sites in the context in which they are located.

Operational research tools, such as inventory and cataloguing aimed at the characterization of the built heritage can be used in a shared methodology that provides comprehensive information and documentation, making it a valuable resource with a wide range of potential uses. The data gathered from the inventories - implemented by the research and analytical review of historical documents, a direct, extensive, and detailed reading of these assets, and efficient three-dimensional survey techniques - supported by Information and Communication Technologies (ICT) have huge potential for preservation and didactic-educational purposes. By engaging and activating them, they can increase people's interest in the uniqueness of culturally significant properties. The insights they give can serve as a basis for planning ongoing investigations, as they can efficiently provide valuable information [22]. An essential starting point for any subsequent evaluation and critical representation of the built space as well as for the establishment of design proposals coherent with both the valorisation of the permanencies and the adaptation of the values susceptible to change for the purpose to make them suitable for today's needs, in harmony with the environment and the values embodied in the territory.

It is indeed essential to launch new integrated design paths in which to bring together the theoretical-methodological and technical-operational contributions of architectural and urban conservation, adaptive reuse, structural and energy retrofitting, and coherent responses to the imperatives dictated by economic sustainability to make this heritage suitable for satisfying civil, cultural, and environmental needs. Hypothesizing harmonious and sustainable functions will be necessary for producing the necessary regenerative sap from the landscape itself.

3.2 Regeneration and Coastal Urban Landscapes, Methods and Results from International Cases in Progress

Landscape, its understanding, protection and valorisation has enormous potential in the interpretation of any context, and is undeniably of extraordinary importance as a fundamental element and tool for correct architectural design and urban planning.

The landscape system is a unique resource, only partially "renewable" and under certain conditions; it is a collective heritage in continuous change that requires continuous care and attention both in architectural and urban planning terms and in ecological, economic and social terms.

The quality of the landscape and open space is also a pivotal element in strategies of ecological transition towards sustainable development models, models that are considered to require an approach to design with architectural, urban planning and landscape visions that are also quite transversal and integrative, perhaps with different, sometimes even opposing views, but always reconnected. Particularly when the ecological transition affects cities, it is necessary to identify all possible actions to be taken to make 'fragments' and pieces of landscape, even diffuse ones, resurface, recover and enhance them through design, within the cities themselves. There is no doubt that, when possible, nature in its various 'forms' offers the best way to transform our cities, helping us to stop thinking of them as places that only consume resources and emit pollutants, and start imagining them as regenerative, healthier and more liveable spaces, capable of offering benefits to the environment and society.

But it is also true that, although the presence of a green and/or blue spot is desirable in contexts that are often too compressed and built-up within cities, urban and landscape regeneration does not necessarily need the identification of large spaces to take place. How, then, can we bring nature and its benefits back to the big cities by reclaiming their passage? Starting precisely from the margins that fragment it, which sometimes seem to be the greatest element of rupture, and therefore from the individual infrastructures that cross it, including water edges, when present, often too much or completely denied. Just as when redesigning an object one starts from the edges, in the same way when talking about blue or green regeneration it would sometimes be enough to start from the edges, from the limits (sometimes almost only apparent), to redesign a new face of the city, restoring its urban ecosystems. Countless, in fact, are the possibilities offered by buffer zones and edges, if seen not as barriers but as obstacles to be overcome, each of which can sometimes become an important pretext and occasion for the development of valuable new opportunities.

It becomes important, for example, to be able to use the construction of new infrastructure to integrate the plant aspect. To mitigate the impact of urban infrastructures on the environment, it is basically enough to introduce into the project, in its immediate surroundings, the various benefits that nature offers us and that we enjoy, such as, for example, the shade of trees or water sources that allow us to have a more temperate climate or the purer air that comes from having more green spaces. Apparently, this is not just a designer's fantasy, but apparently the economist Carmen Cantuarias, a member of the Scientific Council of the *ITTECOP - Infrastructures de Transports Terrestres, Écosystèmes et Paysages* - research programme, led by the French Ministry of Ecological Transition, is absolutely convinced of this [23].

56% of the world's population lives in cities, or 4.4 billion, a figure that is set to double by 2050, according to the World Bank. The environmental economist, who is Peruvian but works in Paris, argues that, given this scenario, many challenges in terms of infrastructure and sustainability need to be addressed by placing the plant aspect at the centre of them. 'We need to see how infrastructure that provides a public service can also be a source of restoring ecosystem services, how this infrastructure that fragments our landscape can be an opportunity to restore urban ecosystems. This is precisely what, thanks in part to the economist, is being done in France with a project in Lyon, called *SEMEUR* (sower), which is part of the *ITTECOP* programme, in which the tramway not only brings better mobility between the centre and the suburbs, but also more green spaces. In fact, *SEMEUR* focuses precisely on the ability of infrastructure to accommodate and maintain urban ecosystem services through ecological soil restoration. "We know that the tramway's vegetation will not save us from heat islands, but it will encourage neighbouring buildings, shops and houses to integrate green spaces", explains Carmen Cantuarias, confident that the many works to be carried out in cities in Latin America or the rest of the world will also include this new paradigm [24, 25]. A tramway line under construction in the Lyon metropolitan area also aims to integrate the city of Saint-Fons to create a city based on the concept of proximity, so as to reduce car journeys within the city, favouring those by bicycle or on foot: thus recreating the more sustainable 15-min city, conceived by Carlos Moreno in 2016, which received renewed interest after the Covid-19 pandemic [26, 27].

This same approach, always guided by the search for sustainable and regenerative solutions for the landscape, naturally to be calibrated on a case-by-case basis, cannot fail, but rather is perhaps even more exalted when we focus on other linear margins, on the water edges or sea fronts of coastal cities. They require a particular approach precisely because of the presence of the element water or sea. This, on the one hand, can be an obvious asset and facilitate sustainability in urban and landscape rehabilitation and regeneration projects but, on the other hand, it can sometimes prove to be a complication that, if poorly managed, can result in some green and sustainable solutions proving unusable or aberrant. It is necessary to study different water cities to go to their inner nature and thus whether they are open or closed to the sea, whether they are river cities, lake cities, but also whether they are tourist cities, seaside cities or predominantly port cities. This context makes evident the contemporary design complexity of coastal cities, whose urban spaces on the margins are in any case, though often denied, almost always the most identifiable spaces and therefore those from which to start again for a new operation of urban landscape regeneration of the same. And if until a few years ago this process identified at most a seafront promenade along the coastal edge, now we increasingly speak of an urban beach.

This is an ongoing process, but one that is also accentuated by climate change, so much so that even in some Spanish municipalities the decision is being made to demolish part of the *Paseo Marítimo* to make way for the urban beach (Fig. 2). Even the exceptional force of storm Gloria, which brought Spain to its knees in January 2020, has sharply highlighted how urban and landscape planning and design can no longer continue to turn its back on the nature of places. There was a realisation of the need to solve the problem

of beaches, promenades and breakwaters damaged by each storm with the aim of not repeating the same mistakes each time [28].

The first example of this transformation is taking place on the promenade of La Pineda in the municipality of Vila-seca (Tarragonès), one of the most emblematic and popular beaches on the Costa Daurada, but the municipalities of Calafell and Roda de Berà (Baix Penedès) and l'Ampolla (Baix Ebre) have also decided to stop investing in repairing their promenades given the continuous and intense winter storms that destroy them every year. A pioneering change of strategy in several municipalities of the Costa Daurada and the Ebro delta, which are continually punished by increasingly intense and frequent storms as a result of the weather emergency [29].



Fig. 2. The demolition of part of the *Paseo Marítimo* and the deconstruction works affecting part of the Plaça del Mil-lenari, built on the sand in 2002, Calafell, Spain, 10-01-2024. Source: La Vanguardia.

And so rather than the annual repair of the extensive damage caused by the waves to the promenades, they opted for the dismantling of the fixed concrete and asphalt structures, the renaturalisation of part of the coastal façade urbanised decades ago, and the retreat inland to give more space to the beach and the sea. The Ministry of Ecological Transition, on which the coastal zones depend, supports and defends these alternatives as the most sustainable and other municipalities on the Catalan coast are likely to follow the same path. Beach and seashore promenades are among the most attractive spaces in many coastal municipalities and deciding to reduce or end them is not easy, but if they prove to be impactful and obsolete, alternatives must be found, as the above-mentioned municipalities are doing. The important thing is to always redesign new public spaces with the utmost respect for town planning and the environment, readjusting them to be more attractive to both tourists and residents all year round. It is then the ability to be able to turn a problem into a solution and thus an opportunity for improvement that will determine success and new opportunities for the coastal cities in question [30].

In other cases, it is enough to go back to the origins of the cities themselves to initiate new projects of architectural and landscape regeneration by the sea. In this vein,

just a few months ago in Santurtzi, near Bilbao, in the Basque Country, the municipal council gave the green light to the new *Plan de Acción del Paisaje*, Action Plan for the Landscape, a document through which the seaside town will attempt to consolidate its process of moving closer to the sea. Santurtzi is thus starting the procedures to have an urban beach thanks to an agreement signed by the Santurtzi municipality with the Basque Government's Department of Tourism, Commerce and Consumption, which provides for the municipality to receive a subsidy of 2.2 million euros for the recovery and sustainable transformation of the coastline around the municipality's fishing port. This approach to the blue coat is also expected to be realised through the total dismantling of the tracks from the beach, with the creation of new leisure areas in the seaside town. "We have been working on this action plan for a long time, a document that will allow us to continue advancing in the most transformative and exciting project we have before us as a municipality: bringing Santurtzi closer to the sea", explained Aintzane Urkijo, Mayor of Santurtzi. The *Plan de Acción del Paisaje* is a very extensive document that divides the municipality into two areas: the urban area (with five prominent areas such as the Lehendakari Agirre seafront, the fishing harbour, the backside of Itsasalde Street, La Sardinera Park, and the vegetated cliff slope) and the port-industrial area that focuses on the Port of Bilbao facilities. "The aim is to redesign the existing promenade of Lehendakari Agirre to give it a greater variety of uses. In particular, a combination of green areas, a solarium and the revitalisation of the promenade through stairs, ramps and balconies is planned. Our goal is to return to the water", said Urkijo [31].

Returning to water is the fate of coastal cities, the reason for their birth and their inevitable destiny. It is impossible to think of intervening with the project without thinking of having to identify and perceive this continuous tension, a constant and inexhaustible energy that, if not captured, runs the risk of dispersing and even the identity of the places themselves. Waterfronts have always had a decisive impact on the birth, structure, economy and very image of their respective cities. These are the spaces from which to start with the project to consolidate the social, economic and environmental benefits as well, achieving a perfect interaction between the different anthropization processes in the area and thus wisely imprinting on the surrounding landscape, all of course thanks to the transversal and integrative design visions mentioned above. It is sometimes forgotten not only that "the Architecture_Nature relationship has its seal in the notion of landscape intended to regenerate the aesthetics of architecture" [32], but also that nature is capable of providing us with both the raw material and the instruction manual to regenerate living organisms such as the city and its landscape: it is the most effective tool to address climate change and the need for a healthier life, and thus to achieve more liveable cities from a holistic perspective that includes the various design aspects in perfect synergy with the social, economic and environmental ones.

Listening to the sea, therefore, to walk in coastal cities towards a greener and more sustainable future, and in this way, thanks also to a skilful and conscious complex and unitary design at all scales, regaining possession of the landscape. César Portela, recently awarded Spain's *Medalla de Oro de la Arquitectura* 2023 and recognised as a master of seaside design [33]. Not surprisingly wrote as much a few years ago about his seaside project in Finisterra, "I wanted first and foremost to respond to an order", to design "a

sublime place and in which architecture was able to join nature in a positive way, the same way earth, sea and sky have always done in that same place since all times" [34].

4 Conclusions

This first part of this paper investigates the approach to conservation and transformation in Italy that has shifted towards a focus on sustainable enhancement and compatibility with heritage protection, rather than absolute and binding protection. The importance of considering the dynamic nature of cities and landscapes, as well as the need to revise paradigms and priorities to achieve the ecological transition are also highlighted. Additionally, the interconnectedness of architecture, agriculture, and landscape in rural areas, and the potential for urban reforestation to contribute to the restoration of ecosystem services and the protection of environmental balances are emphasized.

The transformation and loss of the historical agricultural landscape in Sicily due to industrial policies, technological innovation in agriculture, and the abandonment of traditional practices are also highlighted. This work emphasizes the need for coordinated efforts to protect and revitalize rural cultural heritage and landscapes, which can contribute to economic, social, and cultural improvement. The initiatives promoted by the European Union [23, 25, 35] and regional policies demonstrate recognition of the importance of the rural landscape, but there is a lack of global operational coordination. The text also emphasizes the potential of landscape in architectural design and urban planning, as well as its role in ecological transition and the regeneration of cities. It suggests that even small spaces and edges can be opportunities for urban ecosystem restoration and the integration of nature into cities.

The main point of the third part is that integrating the plant aspect into urban infrastructure projects can help mitigate the environmental impact of cities and contribute to sustainability. This approach is being implemented in projects such as the Lyon tram-way and the transformation of coastal cities to adapt to climate change and protect against storm damage.

In conclusion, the text emphasizes the importance of reimagining coastal urban spaces to be more sustainable and environmentally friendly. By dismantling concrete structures, renaturalizing coastal areas [3–5], and focusing on regenerating landscapes, coastal cities can create more attractive and resilient environments for both residents and tourists. This shift towards a greener and more integrated design approach is crucial for addressing climate change and creating healthier, more liveable cities in the future [35].

Contribution Authors. Corresponding authors: although the research is the result of the work carried out jointly by all the authors, which Clara Stella Vicari Aversa is the supervisor, the drafting of the essay is to be attributed differently to each of them:

§ Abstract, by Celestina Fazia and Clara Stella Vicari Aversa; § 1. Introduction, § 4. Conclusion, by Alessandro Barracco; § 2. Literature Review and § 2.1. Landscape conservation/transformation in regeneration process, by Celestina Fazia; § 2.2. Architecture and urban reforestation in Sicily, by Maurizio Oddo; § 3 Discussion and § 3.1. Rural built heritage and landscape conservation, by Antonella Versaci; § 3.2. Regeneration and coastal urban landscapes, methods and results from international cases in progress, by Clara Stella Vicari Aversa. Graphics optimization and essay review by Clara Stella Vicari Aversa. Review by Celestina Fazia and Clara

Stella Vicari Aversa. It should be noted that paragraphs 1–2–2.1–2.2–3–3.2–4 represent the first results of research carried out by the authors both in their respective laboratories and in a joint convention between the two Universities entitled “A.Ma.Te Sponde”.

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