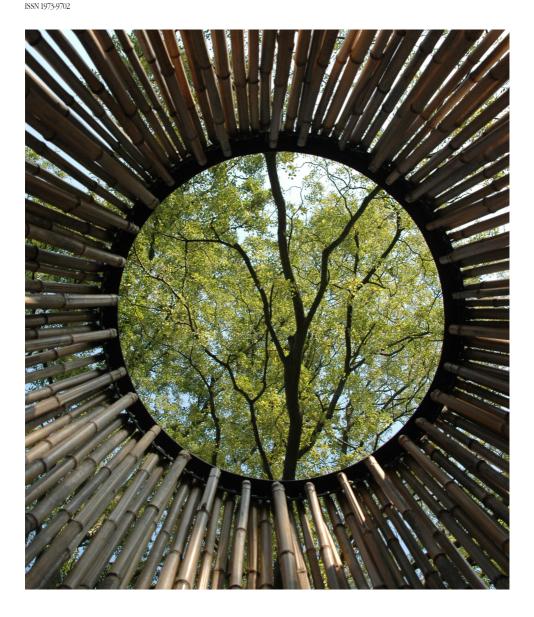
# **Teaching Decarbonisation**

Methodologies and experiences from CITY MINDED

NU3 leNote di U3 number 4 November 2022

edited by Anna Laura Palazzo, Lorenzo Barbieri, Romina D'Ascanio, Federica Di Pietrantonio and Francesca Paola Mondelli





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# **Teaching decarbonisation Methodologies and experiences from CITY MINDED**

edited by

Anna Laura Palazzo, Lorenzo Barbieri, Romina D'Ascanio, Federica Di Pietrantonio and Francesca Paola Mondelli

<b>Lead Partner Foreword</b> A. Poldrugovac, <i>IRENA</i>	05
The background of the CITYMINDED project: urban sustainability in EU cooperation F. Di Pietrantonio, <i>UNIROMA3</i>	07
1. Training on assessment and analysis of vulnerability associated with climate change BOX 1 Sevilla Norte J. Vargas, P. Paneque, J. López, A. Heredia, <i>UPO</i>	11 18
2. Placemaking framework BOX 2 Torrino Mezzocammino, Rome L. Barbieri, R. D'Ascanio, F. P. Mondelli, <i>UNIROMA3</i>	21 32
3 Carbon accounting and carbon footprint mitigation BOX 3 Ravacciano, Siena M. Maccanti, M. Marchi, V. Niccolucci, S. Bastianoni, R. M. Pulselli, UNISI	35 44
4 Energy efficiency and renewable energy technologies in the active service of the city decarbonization processes  BOX 4 Valletta A. Poldrugovac, IRENA, D. Cassar, MIEMA	47 54
<b>5 Incorporating Nature. Urban sustainability Lessons from Italian Planning</b> A. L. Palazzo , F. Di Pietrantonio, <i>UNIROMA3</i>	<b>5</b> 7
Afterword A. L. Palazzo, UNIROMA3	75
Glossary	79











# 5. Incorporating Nature. Urban sustainability Lessons from Italian Planning

Anna Laura Palazzo, Federica Di Pietrantonio, Università degli Studi Roma Tre

#### **Abstract**

Over the last decades, well ahead of climatic and environmental warnings, Italian urban planning and design practices have been increasingly encompassing within their scope nature – both the wild and the tamed – addressing every single dimension of sustainability and buman well-being.

On the backdrop of general debates in the European framework, and in tune with valuable scholarly achievements, this contribution focuses on several approaches tackling history and nature to attain continuity of open space. As a result, a wide-ranging statute of landscape, also implying semantic shifts in common language, claims for joint expert and non-expert knowledge involvement in envisioning

and shaping communities' future.

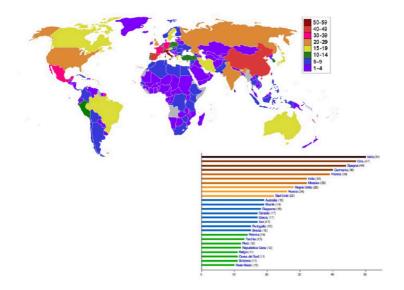
#### 1. Introduction

Generally speaking, sense of place typical to European and Italian urban planning and design practices has proven a most relevant part of current reflection on cityscape, affecting human behaviors and relationships while shaping insiders' and outsiders' perception, notably in dealing with historic centers hosting a huge urban heritage to be preserved and passed down to future generations. Thus, current planning and regeneration practices are daily confronted with environment, territory, and landscape, that pertain to different fields of knowledge despite their unavoidable overlapping (Table 1).

On the left: Torrino Mezzocammino, Roma Credits: Anna Laura Palazzo

Table 1: False friends. A Glossary of common use terms

ENVIRONMENT	The English term refers to: 1) circumstances, objects, or conditions by which one is surrounded. and 2.1) the complex of physical, chemical, and biotic factors (as climate, soil, and living things) that act upon an organism or an ecological community and ultimately determine its form and survival; 2.2) the aggregate of social and cultural conditions that influence the life of an individual or community (Merriam-Webster Dictionary) There is a good correspondence with the Latin ambiens-entis, as a surrounding space.			
TERRITORY	The English term refers to an area of land under the jurisdiction of a ruler or state.  In Neo-Latin languages, its use is much more spread. From the original meaning of cultivated land (terra), the term has taken on wider and more complex meanings over time, accounting for organized human settlements and related activities, eventually encompassing principles of sovereignty within political-administrative circumscriptions with defined borders.			
LANDSCAPE	The English term refers to all the visible features of an area of land, often considered in terms of their aesthetic appeal (Oxford Languages).  The term paesaggio/paysage/paisaje conveys the idea of paese/pays/pais, thus evoking the action of moving from the inside to the outside, from known places to unknown ones to be appropriated. Over time, landscape ended up coinciding with the perceived result of the manifold relationships of human societies with their environment and the territory where they live and operate.			



In Italy, the *placemaking* approach, aiming at creating people-centred places, capitalizing on local community assets, inspiration, and potential, has been encompassing all kinds of settlements and regional areas as well, under two main assumptions: (i) an effective and socially sustainable planning should be place-specific; (ii) irrespective of the scale involved, the main focus should be on public space, deemed as the most authentic dimension of community relationships. Accordingly, placemaking entails dynamic surveys of all kinds of outdoor spaces liable to incorporate new uses, thus renewing the vitality of the city. At the turn of the century, a third attitude has gained a foothold. Well ahead of the European Strategy for Green Infrastructure (2013), the point was to encompass nature along with heritage within urban and metropolitan governance schemes, accommodating within local planning all features of greenery liable to increase the

overall environmental performance (i.e. prevention of global warming phenomena by fixing carbon dioxide), along with design criteria and rules concerning general requirements and place-specific settings and endowments of open space (conformance). In turn, for some years now all over Europe the demand for less energy-intensive consumption patterns aligns with 'good city form' issues affecting both regeneration and redevelopment practice.

These fundamentals are at the basis of operational approaches connecting the human realm and the one of nature, from both the fields of humanities and life science.

### 2. General Overview

Over time, there has been a slow yet steady rapprochement between man and nature, retrieving the missing linkages between protection and safeguarding principles of natural components and artifacts in the light

Figure 1 - World Heritage Sites – Europe and North America host 48% of the listed items, while these territories account for only 16% of the world population, a rate of 40 items listed for 100M inhabitants. By comparison, the rate is 5/100M in Asia, 10/100M in Africa, 20/100M in the Arab States and 21/100M in Latin America. Credits: UNESCO

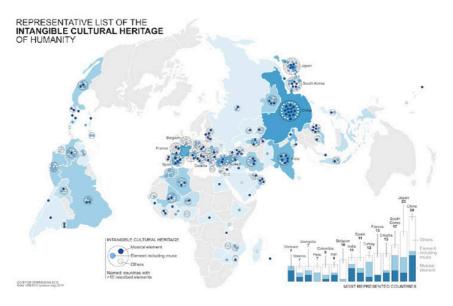


Figure 2 - Intangible Cultural Heritage. Implicitly, the intangible cultural heritage directory aims to restore a form of balance, including a new element to list. As a result of a political choice to favor the marginalized elements, the number of intangible heritage elements in North America and Europe are less numerous (but still 33% of the new list). Asia, meanwhile, is better highlighted. Credits: SA Grandjean,

of the United Nations Educational, Scientific and Cultural Organization (UNESCO) International Conventions (Figs. 1-2). Additionally, a general understanding about landscape as the common ground for man-nature interplay has widespread. Such trends have marked protection, planning and management milestones (Table 2). Both UNESCO in categorizing World Heritage Cultural Landscapes, and the International Union for Conservation of Nature (IUCN) in establishing Category V Protected Landscapes, frame landscape as the result of human relationships with the natural environment (Phillips, 2002). The first approach stresses the relevance of human history, cultural traditions, and social values and aspirations, while the second one emphasizes natural environment, biodiversity conservation, and ecosystem integrity (Brown et al., 2005). A relentless move towards more

A relentless move towards more people-centered approaches has

been notably stated by the Council of Europe, deeply inspiring the way heritage and landscape discourses are currently politically acknowledged and addressed.

Expert and general public awareness over tangible and intangible assets have gradually broadened to include all types of living environments, converging over a concept of cultural landscape as a powerful means for social identification and a source of inspiration for embracing sustainable development paths (Hawkes, 2001). Firstly, the European Landscape Convention (2000) has provided an essential stimulus to this end, by framing landscape (including natural, rural, urban and peri-urban areas) as a common ground for sharing opinions and visions, targeting socalled landscape quality objectives, and ultimately achieving integration between different policy design measures, actions and tools for landscape protection, planning and

## Table 2. A Timeline

1992	World Heritage Convention	UNESCO	Definitions of heritage: Heritage is our legacy from the past, what we live with today, and what we pass on to future generations. Our cultural and natural beritage are both irreplaceable sources of life and inspiration. The following shall be considered as natural beritage: (i) natural features consisting of physical and biological formations or groups of such formations, which are of outstanding universal value from the aesthetic or scientific point of view; (ii) geological and physiographical formations and precisely delineated areas which constitute the habitat of threatened species of animals and plants of outstanding universal value from the point of view of science or conservation; (iii) natural sites or precisely delineated natural areas of outstanding universal value from the point of view of science, conservation or natural beauty. (Article 2
1992	World Heritage Convention	UNESCO	The World Heritage Convention is the first international legal instrument to recognize and protect cultural landscapes. Accordingly, Guidelines concerning their inclusion in the World Heritage List have been enforced.
2011	New life for historic cities: The historic urban landscape approach explained	UNESCO	The booklet addresses the challenge of integrating the goals of urban heritage conservation and those of social and economic development. The Historic Urban Landscape approach moves beyond the preservation of the physical environment and focuses on the entire human environment with all of its tangible and intangible qualities. It seeks to increase the sustainability of planning and design interventions by taking into account the existing built environment, intangible heritage, cultural diversity, socio-economic and environmental factors along with local community values (https://whc.unesco.org/en/news/1026)
2000	European Landscape Convention	Council of Europe	Landscape is framed as an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors, [] an essential component of people's surroundings, an expression of the diversity of their shared cultural and natural heritage, and a foundation of their identity. Landscape quality objective means, for a specific landscape, the formulation by the competent public authorities of the aspirations of the public with regard to the landscape features of their surroundings.
2002	Management guidelines for IUCN Category V protected areas: protected landscapes/ seascapes	International Union for Conservation of Nature and Natural Resources (IUCN)	IUCN is an influential independent body founded in 1948 and composed of both government and civil society organizations, that established a Commission Task Force on Category V, <i>Protected Areas</i> .  **Protected Landscapes** are acknowledged as areas shaped by long-standing human-nature relationships, gathering significant ecological, biological, cultural and scenic value. The protected area management, acknowledged by international bodies such as the United Nations and many national governments as the global standard, draws upon global expertise and fosters such approach through specific Guidelines with the aim of safeguarding the integrity of this interaction that proves vital to protecting and sustaining the area and its associated nature conservation and other values.

2003	Convention for the Safeguarding of the Intangible Cultural Heritage	UNESCO	The intangible cultural heritage is defined as the practices, representations, expressions, knowledge, skills – as well as the instruments, objects, artefacts and cultural spaces associated therewith – that communities, groups and, in some cases, individuals recognize as part of their cultural heritage. This intangible cultural heritage, transmitted from generation to generation, is constantly recreated by communities and groups in response to their environment, their interaction with nature and their history, and provides them with a sense of identity and continuity, thus promoting respect for cultural diversity and buman creativity [].
2005	Millennium Ecosystem Assessment	UN Secretary General	Called for by the United Nations Secretary-General Kofi Annan in 2000, launched in 2001 and published in 2005, it is a major assessment of the human impact on the environment, defining ecosystem services as the multiple benefits provided, directly or indirectly, by ecosystems to humans and contribute to the well-being of communities. They are grouped into four broad categories: (i) provisioning, such as the production of food and water; (ii) regulating, such as the control of climate and disease; (iii) supporting, such as nutrient cycles and oxygen production; and (iv) cultural, such as spiritual and recreational benefits.
2011	Faro Convention on the Value of Cultural Heritage for Society	Council of Europe	The Convention establishes rights and responsibilities to and for cultural heritage, stating that <i>rights relating to cultural heritage</i> are inherent in the right to participate in cultural life, and that everyone has the right to benefit from the cultural heritage and to contribute towards its enrichment. The Faro Convention also focuses on promoting sustainability, access, and the use of digital technology in the context of cultural heritage.
2013	Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee and the Committee of the Regions "Green Infrastructure (GI) — Enhancing Europe's Natural Capital"	European Commission	The Green Infrastructure Strategy defines GI as a strategically planned network of natural and semi-natural areas with other environmental features, designed and managed to provide a wide range of ecosystem services, which are the benefits that flow from nature to people, such as water purification, air quality, space for recreation and climate mitigation and adaptation. This network of green (land) and blue (water) spaces can improve environmental conditions and therefore the health of citizens and the quality of life. The international debate assigned GI a cross cutting and multiscalar statute, and a key role in targeting environmental sustainability goals and addressing the ecological transition (Davies et al., 2006, Hansen and Pauleit, 2014). These stances, spurred by a decadeslong reflection also stressing the importance of creating/restoring ecological connectivity to counter land fragmentation, are in tune with spatial planning initiatives throughout Europe.
2020	Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions "EU Biodiversity Strategy for 2030. Bringing nature back into our lives"	European Commission	As an essential component of the Green Deal, the Biodiversity Strategy states the priority of protecting biodiversity and ecosystems to address the climate change, highlighting how Green Infrastructure contributes to the cooling of urban areas, mitigation of the impacts of natural disasters, protection, or restoration of biodiversity at different scales. The scenario of a coherent and resilient trans-European natural network has as a precondition the creation of ecological corridors to prevent the genetic isolation of species, allowing their mobility and maintaining or improving ecosystems.



management. According to current experiences in participatory planning, communication about landscape and environmental issues is being brought outside the inner circle of experts, towards the population involved in planning decisions. People are increasingly interested in discussing plans, schemes and renderings related to alternative development scenarios. A decade later, further insight was provided by the so-called *Historic Urban Landscape approach* (HUL) by UNESCO, bringing landscape issues in urban environments: "Rather than a case-by-case approach, cities and their key stakeholders are coming to realize that heritage planning and urban conservation can no longer be handled in isolation", and, as such, "heritage as a concept also requires redefinition with the further enhancement and adoption of more sustainable models of resource consumption and production. A global challenge requires supranational goals" (Pereira Roders,

2019).

As a matter of fact, historic cities constitute the largest heritage category on the World Heritage List, with over 250 inscribed sites out of more than 900: "Historic Urban Landscape seems to be the proper term to describe the contents of the contemporary historic urban centres and the doubts related to its definition. The lower level of territorialization expressed by the choice of landscape allows a larger scope of social actors to identify themselves with this territorial entity [...]. The interrelatedness of place, local community, local practices and local identities through legislation and use of urban cultural heritage protection has presented itself as a new exciting field of study" (Somkoly, 2017).

Concurrently, the interplay between nature and communities highlighted by the Millennium Ecosystem Assessment (MA, 2005) introducing the concept of ecosystem services, has further been

Figure 3 -Montepulciano. View of the city. Credits: Pixabay.

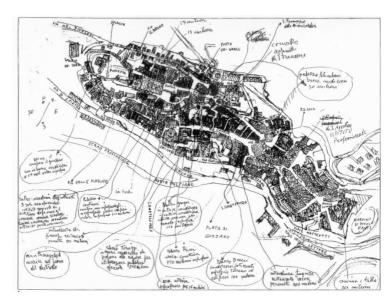


Figure 4 -Montepulciano Master Plan (G. Samonà, M. Marchetta, A. Samonà). In: G. Samonà, I contenuti e le linee del Piano particolareggiato di Montepulciano, "Casabella", Issue 444, XLIII, Feb. 1979: 17-25. Each context is a set consisting of artifacts, streets and plazas linked by contiguity to a main street acting as their formal and substantial backbone. Such a continuity between streets and building volumes conveys a strong, vivid image.

framed by the EU Green Infrastructure Strategy (EC, 2013), which has proven its effectiveness mostly in the built environment. Since 2011, when the EU launched the Biodiversity Strategy (EC, 2011) setting objectives to be achieved by 2020, new approaches have been placing the GI at the core of regeneration measures, to improve both the Natural Capital and the environmental quality within urban areas. As for the latter, slow mobility systems and green areas with high environmental and landscape quality provide communities with safe access to a variety of outdoor recreational and work activities.

In turn, the new European Biodiversity Strategy 2030 (EC, 2020) states that the promotion of healthy ecosystems, green infrastructure and nature-based solutions in urban and peri-urban areas should be systematically integrated within urban practices and planning.

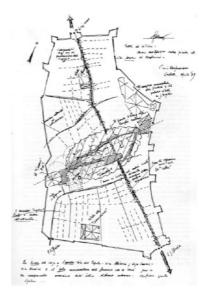
# 3. Planning on Trial. A Glance to Italian Placemaking

How and to what extent can placemaking contribute to current debate in the light of energy and ecological transition?

As a matter of fact, in the historic city greenery had not a statute of its own: *the wild* was pushed beyond the city walls, in the form of saltus (forests and pastures) and silva (woods), turning, when necessary, into ager (arable land), whereas the tamed burst quietly inside private spaces protected by high fences, such as courtyards, gardens, and allotments. Only across the past century has greenery increasingly been used to underpin the plot structure of the city, somehow emphasizing its diverse value of form and memory. From the eighties onwards, nature in the city has been taken into account within plans and a variety of design tools, such as schemes, diagrams, guidelines, etc.

The conceptual framework of current





reflection on the city has been fostered by different fields of investigation and research approaches grounded in interdisciplinary studies; whatever the case, *duration* (process over time) has come to the fore as the most innovative aspect, affecting city syntax and shaping urban landscapes.

# 3.1. Morphology VS Typology. City as a Text

The first approach, by far the most enduring in the Italian experience, is rooted in morphology, intended as the dialectical relationship among general and specific spatial elements, and claims for the city as an assemblage of meaningful forms standing together like the words in a sentence. The City as a Text metaphor allows for overwriting, i.e. the establishment of new elements and uses, provided that they comply with the span and rhythm of urban fabric. Duration is taken into account, in the sense that city forms are more stable than uses: accordingly,

despite the ravages of time, historic cities hold on by accommodating new uses into a given Forma Urbis according to inhabitants' needs. Therefore, what we call Forma Urbis (the image of the city as a whole in the perception of its users) is deemed stronger than the permanence of the original building typologies, hardly attainable after centuries of changes and adaptations. The building fabric displays continuous layers and rearrangements of pre-existing materials, more or less consistent with each other, often resulting in architectural units partly or wholly different from the original ones. Nevertheless, the overall image and identity of the city persist. The Master Plan of Montepulciano addressed the whole city, unveiling strong linkages between natural characters and artifacts of the original town despite transformation over time, as well as the connections between the road system and the urban fabric

Figure 5 - Città di Castello, schemi per il nuovo Piamno regolatore generale (Antonino Terranova, Orazio Carpenzano). In: Antonino Terranova, Obiettivi e strumenti del progetto dell'esistente. Dal recupero edilizio al piano di riqualificazione e restituzione urbana, Rassegna di Architettura e Urbanistica, n. 71-72, 1990: 34.



Figure 6 - Siena. View of the city. Credits: Pixabay.

(Samonà, 1979). The morphology of the hill is at the base of the urban pattern: continuous strips of buildings and streets laid out prevalently from north-east to south-west according to contour lines split the city within the walls into five areas, different in size and importance. Each part has its own character that can be defined as a context. In turn, each context is divided into morphological systems, a group of similar buildings which together form a *unit* (Figs. 3-4). Such planning approach incepted a long-lasting debate over the rules generating urban forms and the relationship between morphology and typology.

3.2. Performing Urban Structure
The second approach challenges
the concept of urban structure that
has been defined and dealt with by
influential works, albeit based on
different assumptions.
Compared to Kevin Lynch's The Image

of the City (Lynch, 1962) addressing the perceptual form of urban environments caught by mental mapping (paths, edges, districts, nodes, and landmarks), the Italian way to urban structure originally hinges on the concept of bermanence, which affects collective and individual artifacts in the city in different ways (Rossi, 1966). "The two main permanences in the city are housing and monuments. With respect to the first, Rossi distinguishes between housing and individual houses. Housing is a permanence in the city while individual houses are not; thus, a residential district in the city may persist as such over many centuries. while individual houses within a district. will tend to change. With respect to monuments, the relationship is the opposite, for here it is the individual artifact that persists in the city. Monuments are defined by Rossi as primary elements in the city which are persistent and characteristic urban artifacts. They are distinguished from



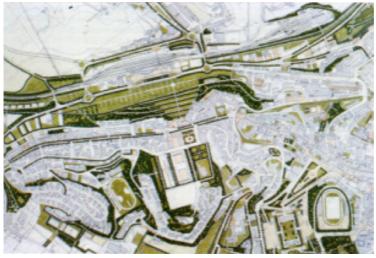


Figure 7 - Siena, Master Plan and the Project of the Soils (Bernardo Secchi). In "Urbanistica", n. 99, giugno 1990: 42.

housing by their nature as a place of symbolic function, and thus a function related to time, as opposed to a place of conventional function, which is only related to use" (Eisenman, 1982). The concept of permanence couples tangible and intangible relationships within urban fabric, allowing *primary elements* belonging to the public sphere to emerge: streets, paths, city

walls... (Figs. 5-8). Nature is also called upon: squares, tree-lined streets, green areas, rivers and waterways, along with their physical and visual relationships, are being connected in the so-called *progetto di suolo* (Secchi, 1990), shaping the outdoor space as a *continuum* that proves beneficial for humans (and other species).

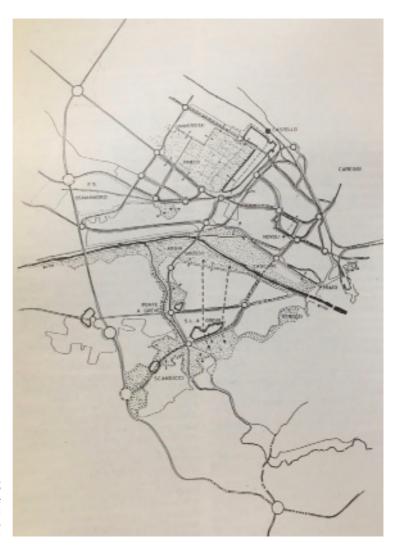


Figure 8 - Firenze, Preliminary Layout (Giuseppe Campos Venuti). In: "Urbanistica", n. 95, giugno 1989: 34.

Quite recently, under the pressure of destructive earthquakes, urban structure has been at the core of new concern about vulnerability of cities and has spurred an interesting research field, supported by several regional laws. The likeliness of the loss of a city's organization during an earthquake entails the reading of crucial priorities in the urban structure,

that is, places and connections of primary importance. They may include strategic structures, different areas relevant for civil protection targeting, sites and building compounds with special functions, the town's main sites, entry points, etc. At the same time, the main connections may be different in nature, including main thoroughfares, technological networks of various



types, etc.

In the case of Bevagna, such linkages between seismic vulnerability of the town's areas, urban morphology, and urban planning have been deepened. The results have demonstrated that the layout and density of the building fabric, buildings' size and proximity to each other influence, differently and in many ways, the response capability of a seismic-risk town (Figs. 9-10).

## 3.3. Landscape and Memory

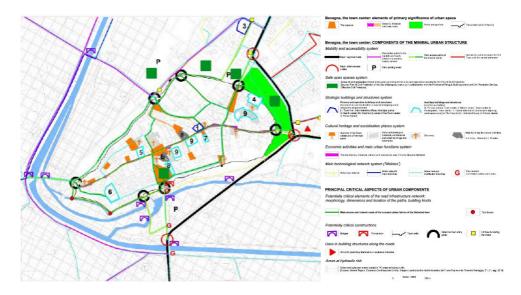
Contemporary urban planning allocates a key role to history and memory, identity of places and communities in restoring quality to large portions of the existing city. For some time now, participatory planning, along with drawings and other communication tools, has been providing communities with the experience of places to keep alive the awareness of current times merging common perceptions and personal inscapes.

Somehow anticipating the European Landscape Convention (2000), the

third approach marked a fundamental step towards the acknowledgement of the sense of place, questioning everyday landscapes. In such cases, the idea of landscape as form and memory seemingly acts more as a sort of aura than as a material resumption of past traces. Anyway, the legitimacy of any transformation relies almost entirely upon the landscape project. In the Lucca Plain, the historic *Contado* delle Sei Miglia, and the surrounding hills to the south, various rural patterns have been strongly marked by continuous human permanence since ancient date, which has left, apart from evident material traces, also tiny but persistent signs in the richness of toponyms (Caponetto et al., 2002). The ancient landscape of scattered settlements hardly emerges because of the densification due to industrial development after the Second World War, and can only be grasped in the persisting original system of courtyards grouped into small settlements, at times incorporating religious buildings

Figure 9 - Bevagna. View of the city. Credits: Antonio Cappuccitti.

Figure 10 - Bevagna, Map of the Minimal Urban Structure (Town Centre); annex to the Programmatic Document of the General Municipal Plan, 2013. The map highlights the close complementarity between the Minimal Urban Structure and the morphological structure of the historical settlement. The Minimal Urban Structure is made up of all the elements of a town which are strategic from a functional and accessibility point of view (road networks, infrastructures, communication networks and their relative hubs. evacuation routes and safe areas, key functional hubs), but also those places linked to community identity, and productive and cultural functions which can play an important role in the town's recovery.



[http://www.comune. bevagna.pg.it/ mediacenter/FE/articoli/ nuovo-prg-comunaleprocedura-di-vas.html]. Working group of the Municipal General Plan of the Municipality of Bevagna: Giuseppe Imbesi (Coordinator), Antonio Cappuccitti (scientific collaboration), Mario Cerqueglini (Geology), Paolo Colarossi, Carlo Di Berardino, Paola Nicoletta Imbesi, Elio Piroddi, Carlo Sportolaro (Agronomy). In: A. Cappuccitti, Earthquake, urban form and city planning: research perspectives, "City Safety Energy Journal", 2014, Issue 2, July-December 2014, at 15-28.

(pievi).

Single-crop farming, as a countermeasure to rural abandonment given the highly split-up land pattern, has modified farming typologies in the Plain, where the typical fields with annual rotations and mulberry plantations described in the 19th century have quite disappeared. Lastly, the traditional hill landscape. linked to the villa type settlement and the terracing system, still resists due to the difficulty of introducing machinery and the resistance to the *rittochino* system that has reshaped almost everywhere the hill slopes. Here, visual and productive relations between rural artifacts (whether dwellings of aristocrats or humbler farmhouses and farm buildings) and their pertaining territory, are still readable (Figs 11-13). These details, like as many mosaic tyles capturing dense and relevant lifestyle patterns somehow resisting to change, convey specific aspects, such as government systems, trade relationships, social life and religious

beliefs, mobility, architecture, and notably urban-rural linkages within the Plain. The overall image stands as a palimpsest, interweaving connections among different players and their interests that account for the overall identity value in the area.

# 4. Landscape on the move. Spatial planning and environmental approaches

Over the last decades, the pace of nature's tampering has accelerated, with only partially reversible phenomena. In Italy, pioneering experiences dealing with landscape ecology date back to Law 394/91 (Framework Law on Protected Areas), followed by regional laws addressing areas with different protection levels. Only recently has this same attitude entered our cities, with a major contribution from non-expert knowledge collected by Regional Landscape Observatories. Thus, the study of man and the rest of nature, at the basis of environmental history, also

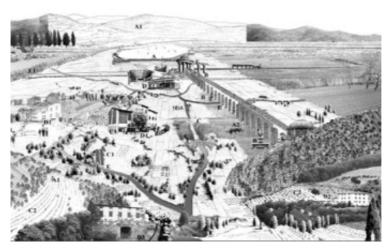


Figure 11 - Lucca and the Contado delle Sei Miglia. Heritage and Identity representations in planning practices. After an in-depth historical survey illustrating the functional structure of the Lucca Plain along the centuries, some drawings sketch out visions and expectations bridging common and expert knowledge. Such synthetic images that anticipate the concept design hold heteronomous expressions (overwritings, out-of-range, contaminations in visualization techniques) deliberately distant from traditional planning tools.



Figure 12 - Lucca and the Contado delle Sei Miglia. Heritage and Identity representations in planning practices.



Figure 13 - Lucca and the Contado delle Sei Miglia. Listing the characters contributing to the identity framework in the Lucca Plain during the Ancien Régime (F. Balletti, M. Caponetto, A. L. Palazzo, Rappresentazioni eterodosse dell'identità locale progettando con gli abitanti: S. Concordio a Lucca, in: A. Magnaghi (ed.), La rappresentazione identitaria del territorio. Atlanti, codici, figure, paradigmi per il progetto locale, Firenze, Alinea, 2005, at 151-168).

lies at the core of recent investigation in town planning and city design, where any rapprochement between life sciences and humanities is expected to unveil human-nature solidarity and trade-offs.

Co-evolution has become the main focus of analytical surveys, rooted either in the 'socio-metabolic' model borrowed from ecological economy, or 'urban metabolism', or else 'ecological heritage' approaches. Such broad area of studies proves fruitful in mitigating the determinism of intrinsic cultural or institutional factors.

On the theoretical ground. environmental history, focusing on the interplay between anthropic and environmental systems as they were historically set up, offers a lens for a better understanding of past events, helping assessing inherent sustainability in current development paths and providing alternative scenarios to the trend one, In fact, although knowledge of the past does not place us in a position to foresee the future, it undoubtedly gives us a better understanding of the times in which we live (Agnoletti, Neri Serneri, 2014: XIV). A wide range of approaches have been adopted, ranging from exclusively ecological settings to more advanced arrangements encompassing ecological networks within spatial planning on a regional and city level. Those city councils that are fully aware of the consequences of these assumptions have been embracing a wide notion of urban ecology as an essential ingredient and a testing ground for spatial planning, called upon to ensure the social sustainability of decarbonization measures in the urban environment.

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## **Teaching Decarbonisation**

This issue of leNote di U3 brings together the results of the Erasmus+ project CITY MINDED.

It aims to promote learning opportunities in order to produce professional profiles that are able to pursue decarbonisation by conducting proper actions resolve environmental challenges, whilst ensuring a good quality of life for citizens. The project involves five European partners - three Universities and two Energy Agencies: the lead partner, IRENA - Istrian Regional Energy Agency (HR); the Italian Universities of Roma Tre – Department of Architecture and Siena - Department of Earth, Environmental, and Physical Sciences (IT); the University 'Pablo de Olavide' - Department of Geography (ES); and the Malta Intelligent Energy Management Agency (MT). This publication is a unique opportunity to share the knowledge on how the workshops were structured and conducted, particularly in the situation when the activities had to be adapted to the pandemic, as was the case in Siena, Rome and Seville. The workshop in Malta was carried out in person, so this provides the opportunity for a comparison.

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