PROCEEDINGS
of the
INTERNATIONAL CONFERENCE
on
CHANGING CITIES IV
Spatial, Design, Landscape & Socio-economic Dimensions

Department of Planning and Regional Development, University of Thessaly
Laboratory of Urban Morphology and Design

in collaboration with
School of Architecture, Technical University of Crete and Regional Authority of Crete.

Under the aegis of
THE GREEK MINISTRY OF ENVIRONMENT AND ENERGY

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Professor Aspa Gospodini
University of Thessaly

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PREFACE

Dear colleagues,

The 4th International Conference on **"*CHANGING CITIES: Spatial, Design, Landscape & Socio-economic Dimensions"*, Chania, Crete Island, Greece, 24-29 June 2019,** is now a reality and a big academic event. The conference has been organised by The Laboratory of Urban Morphology & Design, Department of Planning & Regional Development, University of Thessaly, Volos, Greece, in collaboration with School of Architecture, Technical University of Crete and Regional Authority of Crete, and under the aegis of The Greek Ministry of Environment and Energy.

The series of ***CHANGING CITIES*** **international conferences [CCC]** has started in 2013 by The Laboratory of Urban Morphology & Design, Department of Planning & Regional Development, University of Thessaly, Volos, Greece, and has so far delivered three conferences:

- ***CHANGING CITIES I: Spatial, Morphological, formal and socioeconomic dimensions,*** 18-21 June 2013, Skiathos Island, Greece.
- ***CHANGING CITIES II: Spatial, Design, Landscape and socioeconomic dimensions,*** 22-26 June 2015, Porto Heli, Peloponnese, Greece.
- ***CHANGING CITIES III: Spatial, Design, Landscape and socioeconomic dimensions, 26***-30 June 2017, Syros Island, Greece.

All three conferences have been welcome by the academic community of planners and architects worldwide attracting over 300 presenters from more than 50 countries.

The CC conferences are always taking place in Greek venues with characteristic urban or/and natural landscape like the Greek islands in the Aegean Sea. The 4th conference has been decided to take place in Chania, Crete Island, since Chania is the most attractive town in Crete Island exhibiting a well-preserved Medieval and Renaissance historical core with a unique Venetian harbour, built between 1320 and 1356.

The series of CC conferences covers a vast spectrum of fields related to the present and future challenges of cities. In the last decades, we have all witnessed a series of dramatic, universal changes and developments affecting cities – their morphology, environment, economies, and societies. Global new conditions such as economic globalisation, European integration and the creation of urban networks and hierarchies; post–industrial economies of culture and new technologies; consciousness of environmental degradation and the necessity of green design, sustainable development, and resilient cities; the development of informational societies, the increasing mobility of individuals, 'space-time' compression, and the emerging smart cities; growing terrorism attacks and new security infrastructures of public spaces; increasing migrations and cultural diversity of individuals, and coexistence in multi – ethnic and multi-cultural urban societies. In this new milieu, cities change themselves to ad hoc adapt into new conditions while simultaneously scholars and practitioners in urban planning and design, and urban policy-makers attempt to change cities so as to better fit into new conditions.

The series of CC conferences aspires to bring together urban planners and designers, spatial planners, architects, landscape designers, urban geographers, urban economists, urban sociologists, and urban policy makers, and investigate all together new challenges concerning cities and their future. The main aim is providing an international forum of transaction of ideas on changing cities.

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The 4th CC conference focuses on two topics:

1. "SMART CITIES; Smart Environment, Smart Mobility, Smart Economy"
2. Planning and Designing new cities in China.

First, strategic development of smartness in cities is a fast growing field of great academic and policy-making interest, based on the development of new technologies in the services of inhabitants, visitors, tourists, entrepreneurs, et al. Therefore, it is a big challenge for all urban planners, designers, urban economists, and urban policy makers.

Second, China is a huge country with fast growing economy in the industrial sector. This gradually fuels national migration flows of millions of people from agrarian Chinese regions to urban districts, creating a large demand of housing. New large cities are planned, designed and developed in China in the last decade. Since Europe has been shrinking in demographic terms during the last three decades, there is no need for new cities. In this framework, all new schools of thought in urban planning and design are applying new ideas in China – attracting the interest of academia. The Organising Committee is proud to have arranged for the 4th CC conference, important special sessions devoted to Chinese cities:

(a) ***"Planning & Designing new cities in China***", pre-organised by Dr. Huang He, Associate Professor, School of Architecture, Tsinghua University, Beijing, China,

(b) ***"Chinese Cities: Urban development, socio-economic transformations, policy challenges and comparisons with the European experience"***, pre-organised by Prof. G. Petrakos, University of Thessaly, and Prof. Geoffrey Qiping Shen, The Hong Kong Polytechnic University.

The conference thematic fields include the following:

- *Urban Design in Planning,*
- *Sustainable Urban Planning & Development,*
- *Urban Landscapes, Landscape Planning & Design,*
- *Urban Cultures & Public Open Spaces,*
- *Historical Centres & Built Heritage Management,*
- *Environmental Urban Planning,*
- *Cities & Health*
- *Resilient cities,*
- *Transportation Planning and Policy in cities,*
- *Urban Planning Laws, Real Estate & Property Rights,*
- *Urban Economies & spatial impacts,*
- *City Branding and Urban Tourism*
- *Shrinking cities,*

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- *Divided cities,*
- Migration, multinational and multicultural societies & Urban Planning.

The 4th CC conference has initially attracted 485 abstracts, and 186 research papers (optional submission to the conference E-Book of Proceedings). In the final conference program, there are 328 oral presentations and 22 poster presentations from all over the world; from Greece and the Balkans, Northwest Europe, USA, Latin America (Brazil, Chile, Colombia, Mexico), Middle East and North Africa, Asia, Far East (China and Japan), and Oceania (Australia, New Zealand, New Guinea). The 4th CC conference is really international since 42% of the presenters are Greek academics and 58% of the contributors are from global academia.

I would like to thank

- the Organising Committee;
- the keynote speakers;
- the scientific Committee of the conference for reviewing work, and especially the colleagues who pre-organised special sessions for the conference;
- the academic supporters of the conference: University of Thessaly; Technical University of Crete, School of Architecture; and The Greek Ministry of Environment and Energy.
- the financial sponsors of the conference: Regional Authority of Crete, Green Fund of The Greek Ministry of Environment and Energy;
- and especially, all of you having contributed to this big academic event.

Aspa Gospodini, PhD

Professor of Urban Planning & Design,
Dept. of Planning & Regional Development, University of Thessaly,
Chair of the Organising Committee & the Scientific Committee
of the series of CC conferences.

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The urban landscape of the Lura river into the Saronno town*

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* The essay is the result of the shared approach of the two authors. In particular, we owe: to Michele Ugolini 2. Materials and methods, 2.1/2.7; to Stefania Varvaro3. Results and discussion 3.1/3.3;to both Authors: Abstract, 1. Introduction, 1.1/1.2 and 4. Conclusion.

Abstract
The research work and the project take on the Lura river as a resource for urban and landscape enhancement and the containment of environmental degradation in the crossing section of Saronno town. Public open spaces are identified along the river and a pedestrian and cycling connection path capable of generating widespread urban quality. Attention is paid to the fruitive aspects and to the river as a linear element of conjunction between the city and its periurban green areas in the north and south of Saronno, giving continuity to the Parco del Lura (which extends in northwest of Milano towards the city of Como) and its routes, including the junction on the eurovelo 5 line (London Brindisi), is a particular strategic value in view of strengthening sustainable mobility.
key words: public green space system, stream, city, slow mobility

1. INTRODUCTION

The research work is the result of an analytical and planning path carried out at Politecnico di Milano within the Department of Architecture and Urban Studies by the research group guided by prof. Michele Ugolini. It is developed in collaboration with the Consorzio Parco del Lura and the Municipality of Saronno. The work was funded by Fondazione Ca.Ri.Plo through a competitive call dedicated to the theme of open spaces. The title, "*Between city and nature. The Lura as a habitable urban sign. Recovering the urban role of the Lura river in the crossing section of the Saronno. Masterplan for the redevelopment of the Saronno node*", tries to describe the research frame work.
For the purpose of constructing an overall planning framework for the river basin, the Consorzio Parco del Lura identified some priority areas on its sub-basin on which to intervene, including the Saronno node, where Lura crosses the city.
The project here proposed intends to act simultaneously in terms of both landscape and environmental protection of the river and of the areas system close to Lura in the municipality of Saronno, and in terms of qualitative redefinition of the same areas as open public spaces easily enjoyable by the citizens.
In general, the contribution focuses on the methodology with which the sequence of open spaces was identified, in the belief that enhancing a river within a urban context could constitute not only a form of naturalistic regeneration, but also could offer the opportunity to design habitable and welcoming places facing the water. Specifically the paper also focuses on the results achieved in terms of operation necessary for a naturalistic, architectural and fruition enhancement.

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The study area is located in Italy, (Lombardia region), within the territory of Saronno municipality, in the Lura Park, which stands between the cities of Milano and Como.
In the EXPO 2015 project idea, a wide portion of territory was imagined accessibile through numerous natural and artificial water paths which, together, constitute part of the identity heritage of Milano civilization: a vast water network, both major and minor one, produced by the patient and continuous man work over the centuries.
In general, the peri-urban and urban areas near the rivers are destined to assume ever greater importance related to a sustainable cities development, contributing to the reduction of the pollution rate, to the improvement of the energy balance and to a unified design of the landscape . These areas now suffer negatively from the influence of urban development through the gradual reduction of unbuilt urban zones, wooded or agricultural spaces.
In particular, the tendency to spread and connect the urbanized areas, the fragmentation and the disqualification of the peripheral areas, the landscape homologation and "*trivialization*" of the open spaces connected to the construction of new infrastructures and the disposal of industrial areas, require an unitary project for the protection and redevelopment of urban and peri-urban areas.

1.1 General aim

The research general objective is to demonstrate how a system of open urban and periurban public spaces located along a river can be urban quality generator as well as landscape, environmental and ecological ones.
The intention is to overcome a purely specialist logic that normally characterizes infrastructural interventions, as river areas, loosing the naturalistic and ecological importance related to the water-course. Mostly, the engineering studies frame the river as a problem to be managed through the hydraulic calculation of water flow rates in order to avoid flooding or by controlling soil erosion to protect urban and agricultural spaces. These logics have prevailed over the naturalistic importance of the river itself, often causing important damage to the environmental ecosystem.
The Lura river is intended as a resource for the enhancement of the public spaces system and the containment of environmental degradation in the crossing section of Saronno town.
The course of the river is an opportunity for rethinking on the broader theme about how to recover the relationship between the city and its watercourse, which is expressed in the reconfiguration of the urban open spaces in its vicinity, in their systemization through a network of paths that guarantee continuity of use, renewing and integrating the existing slow mobility. The specific attention underlying the cycle and pedestrian path is the punctual contextualization and the comparison with the river presence, as a natural physical element, but also as a project theme. This attitude suggests the need for a rethinking of these places which is expressed on the urban and territorial scale, but also in small and spatially defined contexts. Particular attention was paid to the relationship between man and river, both in reading the existing conditions and in the transformations proposed by the project guidelines.
Defining a system of public spaces linked to the river means contributing to maintaining a high environmental quality, trasforming them in a significant multi-purpose ecological corridor crossing the city of Saronno.

1.2 Specific aims

It was intended to safeguard and recover unbuilt areas along the river and those connected to them. The aim is to maintain and restore a "*continuum*", where it is possible, of the relationship with water, through new pedestrian path connections and interventions redevelopment of free areas with a public

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vocation, to guarantee, even in a context with some densely built-up parts, the continuity of the public green system, as an extension of the Lura Park from north to south, through the design of a strategic synergy between cycle and pedestrian paths and the river.
In the effort to inseparably link the city to its watercourse, points of "potential permeability" have been identified, as physical paths or visual axes, which favor an organic unity overall reading of public spaces near the stream, from north to south and from east to west.
In the inhabited center however, the park has not succeeded in penetrating, reducing itself to the simple riverbed and, even worse, in numerous cases, some buildings have been built on its banks. For a long urban stretch (from the hospital to the schools) instead, the river disappears completely below the road and the built tracks, losing, its environmental and landscape continuity (not the hydraulic one).
In a territorial and urban context so delineated, the objective of the project is the recovery of the primary role of the torrent in the urban area of Saronno municipality, giving centrality to the Lura in the urban development of the municipal and supra-municipal territory and redefining the city's view towards its own waterway, as an opportunity, at the same time, to reconnect the Lura Park between north and south located areas. The Park enters into the city through the river.

2. MATERIALS AND METHODS

The followed method operates in a multi-scale way, as well as multidisciplinary and multi-objective. A path that we could define as 3M path.
The multiscarity was highlighted in the territorial scale up to a close and detailed investigation, inside the single places in a complex "game" of transcalarity.
The multidisciplinary approach required the participation of architects specialized in different aspects of the discipline and the involvement of environmental engineers and naturalists.
Finally, the multi-objective approach has served to define an articulated and not sectoral framework in an integrated vision of the several issues related to watercourses.
Overall, the research work was defined through an analytical first part carried out with a double approach: on the one hand a mapping operation as a thematic reading of the context, on the other an analytical interpretative operation aimed at highlighting the system of contextual relations and defining a framework of criticality and fragility to put in synergy with the existing potentials.
The second part of the work was expressed in terms of design, on the whole scale, through a masterplan and on the scale of the individual study areas, through site specific design. The masterplan was defined in guidelines, while the in-depth studies worked through a planimetrical approach as well as through the modeling of a ground section, reaching the detail scale and the materials choices.
A very rich analytical component was intended to identify the open spaces system and green vegetation elements.
The analysis took an advantage of existing cartographic maps, of verifying the planning tools and a wide range of surveys and on-site checks that allowed a deep knowledge of the different places features.
Further attention was paid to the historical transformation of the territory starting from the early 1600s by reading the context through maps and historical land registers to understand its transformations and the origin of its own structures and signs, identifying elements of permanence and invariance, over the past four centuries.

2.1 From the territorial scale to the Lura valley

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The territorial park of the Lura river, extending over more than one thousand five hundred hectares of land, involves twelve municipalities, in the provinces of Como, Varese and Milan. The river corridor of the Lura represents a relevant occasion to avoid the negative effects of the urbanization process, which has already affected the Milanese Brianza, characterized by the conurbation of the inhabited areas and the progressive homologation towards the model of the "city-widespread"(Indovina, F.,1999), which tends to denying the complexity and richness of historically stratified articulations.
Attention to the Saronno node along the Lura valley is confirmed by the existence of various projects aimed at safeguarding this territory with specific attention to sustainable water management, as it is a crossroads for highly natural areas (in addition to the Lura Park: the Regional Groane Park, the Appiano Gentile and Tradate Pineta Regional Park, the S. Giacomo Fontanile Park, the Rugareto woodland Park, the Mughetti Park).
The need to evaluate the functionality of the ecological corridors, untouched by the urban expansion of the last decade emerges, establishing fundamental strategies of protection and strengthening in those areas exposed to the risk of artificialization to guarantee the continuity of the green system of the Lura Park, in defense of maintenance a balance in terms of compatible environmental loads.
The research starts from a careful analysis of the territorial structure through a precise cartographic and planning reading, investigating the system of parks and agricultural green areas together with the organization of the buildings to catch the actions planned and the potential connection within the valley of the Lura stream.

2.2 The specific context

The main features of the urban structure of the Saronno city have been analysed starting from the green system and its vegetational elements, mobility and services, production activities and areas of transformation. The system of connections has been examined to highlight fragmentation and elements of discontinuity.
Saronno represents the most substantial urbanistic center that the park with its river is going to touch. The town still maintains a strong urban identity, both at a functional level, with the considerable development of tertiary services, industrial and commercial activities, and at the settlement level, in the close relationship between the new expansions and the historical core.

2.3 Historical matrices as the basis of the project

Saronno, located along the Roman origin ancient route, Strada Varesina, already an important center in the Middle Ages, assumed further importance in the mid-fifteenth century, the time of construction of the famous Sanctuary (Madonna dei Miracoli), and later towards the end of the nineteenth century, when it becomes a fundamental node of the railway system north of Milano.
The approach to reading the historical evolution of the main settlement features of Saronno was developed through the knowledge of significant historical maps.
Starting from the map of "Richino il vecchio" dated around 1600, the research began a systematic comparison between the Teresian land register (1722), the Cessato land register (1855) and the updating one (1949).
The work was carried out through the reading of the built enviroment development together with the system of roads, identifying permanence and modifications, elements of continuity in the territory and in the urbanized part.
A historical and functional analysis of the development of the city in different historical thresholds and of today's land use has allowed us to confirm the importance of the torrent not only as a natural

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element of the territory, often denied and ignored in the building process, but also as primary north-south linear element of the urban structure, a foundational sign around which the inhabited center was born and developed. Perpendicularly to it, a second axis of significant importance emerges, historically known as the "axis of the three churches", which was already created around 1500, along which there are three important points of reference for the city: the Sanctuary of Santa Maria dei Miracoli, the Church of St. Francesco and the Prepositural Church.
While the Lura torrent cuts the city of Saronno from north to south, this transverse axis creates a strong connection between the east and west areas: the study and mapping of the location of public buildings have shown that precisely along this axis there are two distinct poles of collective importance, a cultural center to the west and a recreational sports center to the east.
From this first historical and functional reading of the inhabited center urban structure, one of the main project ideas taken into consideration in this proposal springs: to give value to the north-south direction through east-west cross-connections.

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Fig.1 The evolution of the urban fabric in relation with the river, through an analysis of the historical maps, starting from 1600, going to the 1721 (Catasto teresiano), 1855 (Catasto cessato), 1949.

2.4 The river, its banks, the relationship between man and water

The relationship with the river is almost completely denied, mostly hampered by an urbanization without attention for the water course and for the areas of compliance provided for by law. Many are the buildings directly overlooking the river or in close proximity to it that also hinder normal maintenance operations. The analysis allowed us to focus on the different characteristics of the banks made of: reinforced concrete, masonry, "cyclopic boulders", natural type with different shrub species. It has also been possible to map the different conditions in which people approach the water, differentiating it between direct and indirect, and the possibility of walking the adjacent space to the banks rather than allowing only a glimpse or a denial of the water view.
The bridges are the only rare places from which it is possible to notice the existence of the stream. The Lura thus becomes a forgotten urban sign and only accidentally recognizable as well as usable in very few places.
There are few and often disqualified places where a direct visual relationship with water is allowed, not compromised by barriers or invasive vegetation, both in urban areas and in naturalistic contexts. In Saronno it is hardly possible to go by walking or cycling, stoppping and feeling in direct relationship with the stream.

2.5 The system of open spaces along the river

The interpretative analysis of open spaces (in the historic area often characterized by public functions placed in socio-cultural importance buildings; in the residual peripheral areas lacking of specific functions) took into consideration both their naturalistic-environmental value and their importance as potential public use spaces and new opportunities to get closer to the torrent.
The analytical elements examined to define the open spaces along the river line have been intended to classify them according to quite different parameters to highlight the many features and potentials. It has been mapped: their possible condition of fenced spaces (even if public) and consequently their capacity to relate to the surrounding spaces; the different accessibility conditions of green spaces through specific categories (high accessibility, controlled, low, or inaccessible but relevant for visual and environmental aspects); the property regime (municipal, public, private) and the kind of paving of public spaces in the historical area (and consequently the level of permeability of the soil).
The richness of the heritage of open spaces located along the river system has become the interpretative basis of the project itself, defining a series of areas of intervention that allow the problems of regeneration of the relationship between river and city to be treated in an integrated and differentiated way.

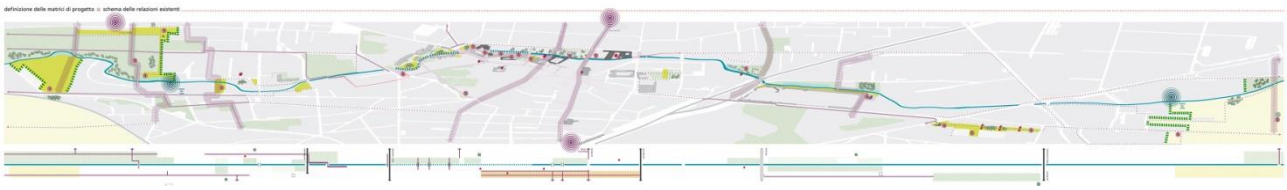

Fig. 2 The matrices of the project and the system of existing connections

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2.6 The river ecosystem of the Lura

From a naturalistic point of view, the Lura river ecosystem crosses the Municipality of Saronno from north to south. In the Park it is particularly heterogeneous and rich, while in the highly urbanized sections the water course is impoverished being, forced between concrete walls or, for some stretches, completely underground. In this way both the river's self-purifying capacity and the function of ecological corridor between areas of high biodiversity are altered. Therefore the inhabited center currently represents an element of ecological fragmentation where to urgently intervene to redevelop the degraded areas and safeguard the interconnection gates still present along the river and in the peripheral areas.

Despite of the precarious ecological status and the "funnel" effect that the town of Saronno represents for the Lura ecosystem, the project suggests river redevelopment interventions aimed at mitigating existing problems.

2.7 Real potential and project objectives

Interpreting the idea that water is a precious resource from many points of view and not a threat to protect oneself from, the research has been set up on the spaces and on the buildings of Saronno, to define a masterplan of river requalification that starts from the recovery and safeguard of the urban waterfront and consequently, becomes a great resource for the whole city.

This attitude suggests a thinking on the urban scale and at the same time faces spatially smaller areas. In the design approach it was considered essential to respect the historical and cultural identity of Saronno, recovering and enhancing, where it is possible, signs, paths and constitutive lines of the urban fabric, cultural and social importance architectural emergencies, historically significant green areas marginal or abandoned parts in the city of Saronno, as well as the analysis of historical transformations have highlighted.

The set of studies conducted allowed us to identify a system of open spaces with very different features due to the different periods of city construction, such as areas with still unexpressed potential for intervention and new possibilities of redefining the relationship between the river and the park. These are open spaces to be redeveloped and of undoubted public interest that wind along the river crossing axis, partially networked by some mobility paths that guarantee a discontinuous fruition, allowing however to glimpse possible synergies and integration with the largest system of urban spaces in Saronno.

3. RESULTS AND DISCUSSION

3.1 Guidelines and masterplan

The result in terms of design, compared to the proposed method and objectives, obtained during the elaboration of the masterplan, was to reconnect the set of identified open spaces to the Lura torrent, even if they did not directly overlook it, to the city and to the park, creating and upgrading a system of public use spaces.

The main objective achieved is to re-launch the potential of the torrent as a connective element, making it the privileged site and meeting point for slow mobility paths, developed through the green areas, the open spaces near the river, the park to the north and the south agricultural. To redesign the Lura waterfront and define a renewed river-city relationship, improve its accessibility and its recognizability, constitute a continuous system of urban green and open spaces with multi-purpose characteristics, reachable and accessible thanks to a renewed and integrated network of paths for slow

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mobility, a series of design guidelines have been elaborated that bring into the system and make recognizable areas of squares, streets and parks.
The guidelines try to record the characters of overall homogeneity of the spaces and at the same time try to capture, reveal and define up to the small scale of the furnishing project, the peculiarities that each area proposes as its own, reinterpreting in a different way each time the theme of the relationship with the river.
In some situations, where it was possible, pedestrian and cycle paths along the riverfront were proposed, directly related to the artificiality of the stream banks and of the city that overlooks it, with the natural condition of the riverbed and its water.
It has not been renounced to face the *subject* of the river even in its most difficult degradation conditions. In some cases where the river was covered underground, bringing it to light, significantly changing the character of the surrounding places. In other cases, where it was not possible to recover the open physical condition directly, even symbolically recalling its presence with signs of water on the surface. Sometimes, where it was not directly accessible, the design work was carried out proposing the recovery of privileged points of view from which it was possible to view the waterway, catching the opportunity to give back to city green areas or urban squares qualified.
They are spaces in which the intervention is aimed at realizing a new and different connection between the historic center and the river, the periphery and the park, in order to obtain another way of living and inhabiting public spaces. The future of these areas is therefore not entrusted to the simple safeguard from building, but to the recognition and consolidation of a high public and social value as well as landscape and ecological value.

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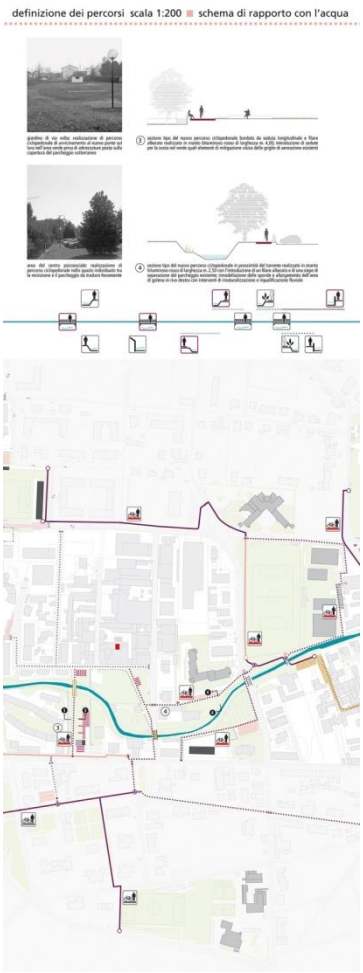

Fig. 3 Excerpt from the paths masterplan: the different scales in which the project is structured from 1: 2000 to 1: 200.

3.2 Project insights

By integrating the existing slow mobility with pedestrian and cycle paths, continuity on the north south axis was guaranteed, at the same time paying attention to the creation of a new system of transversal connections that favor the achievement and livability of the public spaces located along the Lura.

To ensure greater safety for cyclists and pedestrians, in some driveways located near the river and the system of the project areas identified, it was proposed the limit of 20 km/h, in others, linked to the streets of the historic center, a continuous repaving to characterize them as urban roads redeveloped, traffic limited, more easily accessible and suitable for slow mobility.

The analysis of the vegetation (public and private) existing in the vicinity of the river bed, has allowed us to recognize other areas, in continuity with it, which, in compliance with the existing urban planning documents, can be subjected to possible redevelopment, in order to integrate and improve the public green system with the project green.

In this regard, particular attention is given to the area of the hospital, central portion of Saronno, where the Lura has been closed for a long stretch. After a careful analysis of the functions, of the

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traffic system, of the accessibility to these places and their relationship with the context, it was proposed to reopen the river, rethinking the form and the new connection with the relevant public spaces, and ensuring the current functions of all the important buildings involved.
The increase in environmental connectivity, the enhancement and the protection of existing green areas and the recovery of those marginal or abandoned along the course of the river, together with a particular attention to the banks system regarding their renaturalization are the cornerstones of the integrated multidisciplinary, multi-objective and multi-scalar approach.
The project proposes to give back to the river, where possible, the space it needs, thus moving from canalized and extremely simplified areas to more sinuous areas, diversified with vegetated riparian strips, rich in species and micro-habitats.
These types of interventions increase the action of water regulation, the self-purifying capacity of the stream and favor the ecological connection with a progressive increase in biodiversity.
It is proposed to intervene on the plant variety and requalification, diversifying the habitats, favoring the creation of refuge areas for the fish and for the water and wet areas typical fauna, with the creation of hygrophilous vegetative strips for the restoration of functional ecotones , strengthening the defense against bank erosion thanks to the elimination of invasive vegetation and to consolidation interventions.
In the densely built stretches where there is no possibility of working on a green wide solution, the structural consolidation of the walls (masonry and reinforced concrete), was proposed together with the elimination of the infesting vegetation and the insertion of climbing hygrophilous vegetation through wooden structures and panels.
This set of the river and environmental redevelopment interventions is essential for improving the quality of the ecosystem, restoring the municipal ecological network and, at the same time, improving the physical and mental well-being of the users of the areas.

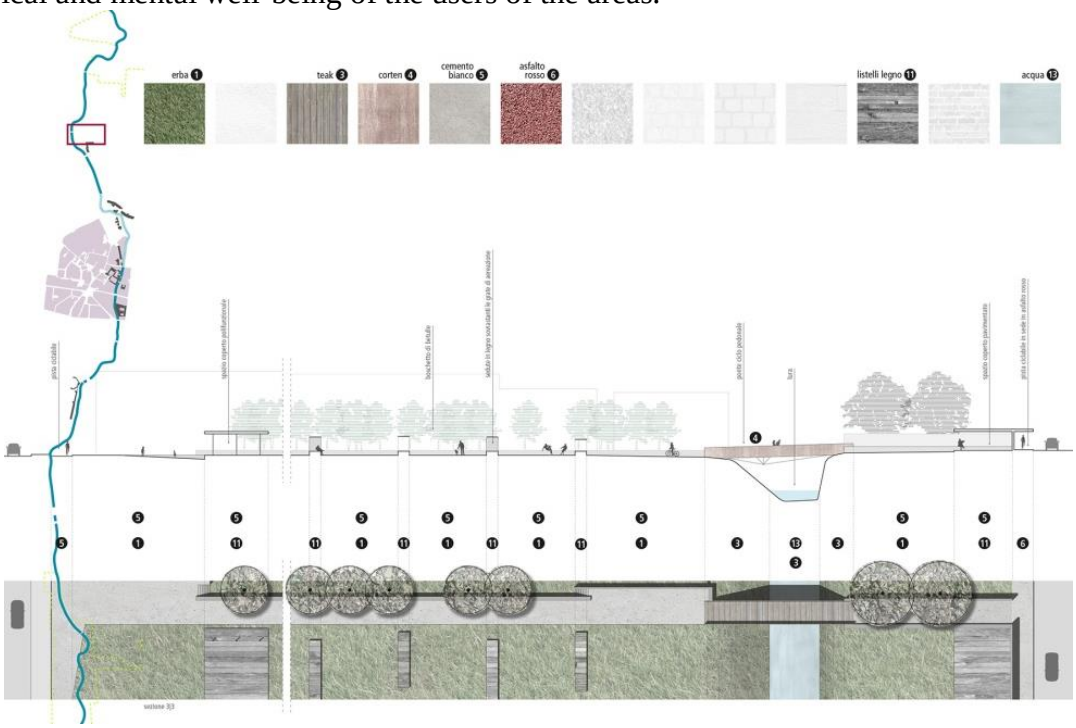

Fig. 4 Excerpt from the study of one of the 20 areas identified

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3.3 The effects on planning

One of the results achieved is the identification of circumscribed functional areas of intervention in which the starting conditions, derived from the analytical path, are specified, the multiplicity of objectives to be reached, the strategies to be used and the multidisciplinary actions to be carried out at different scales. This tool, made available to the Municipal Administration, allowed the drafters of the Territorial Government Plan to implement the identification of these areas directly within the plan. The master plan for river redevelopment has thus acquired regulatory law, translating into P.G.T. in a specific document (Service Plan and Plan Document) in which the areas called A.R.U. (Areas of Reorganization and Urban Redevelopment along the Lura torrent) are regulated.
The Government of the Territory Plan, approved by Resolution of C.C. n. 27 of 15.06.2013, adopts as a P.G.T support document the Masterplan for the Lura river redevelopment.

4. CONCLUSIONS

The added value of this regeneration process sought through the Masterplan for the Lura river redevelopment is obtained integrating the naturalistic aspect with the purely urban one.
Sustainability is here ultimately understood as the protection and development of the river area, but also an occasione for the project requalification and contextualisation. The aspects of fragility that emerged in the analytical phases can be considered as critical points on which it needs to act. The project becomes a tool of positive conversion and generator of widespread quality. The binomial torrent-open spaces in relation to an urban context obliges us to think in a systemic way. The linear development that characterizes a stream makes it possible to involve a conspicuous band of urban fabric and to insert in the city a regeneration chain based on the habitability of the places.

Fig. 5 One of the requalified open spaces

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