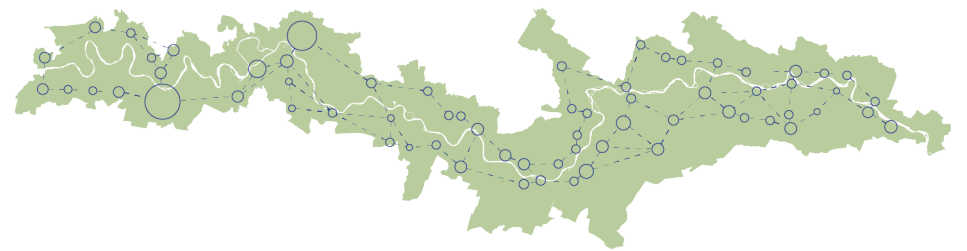
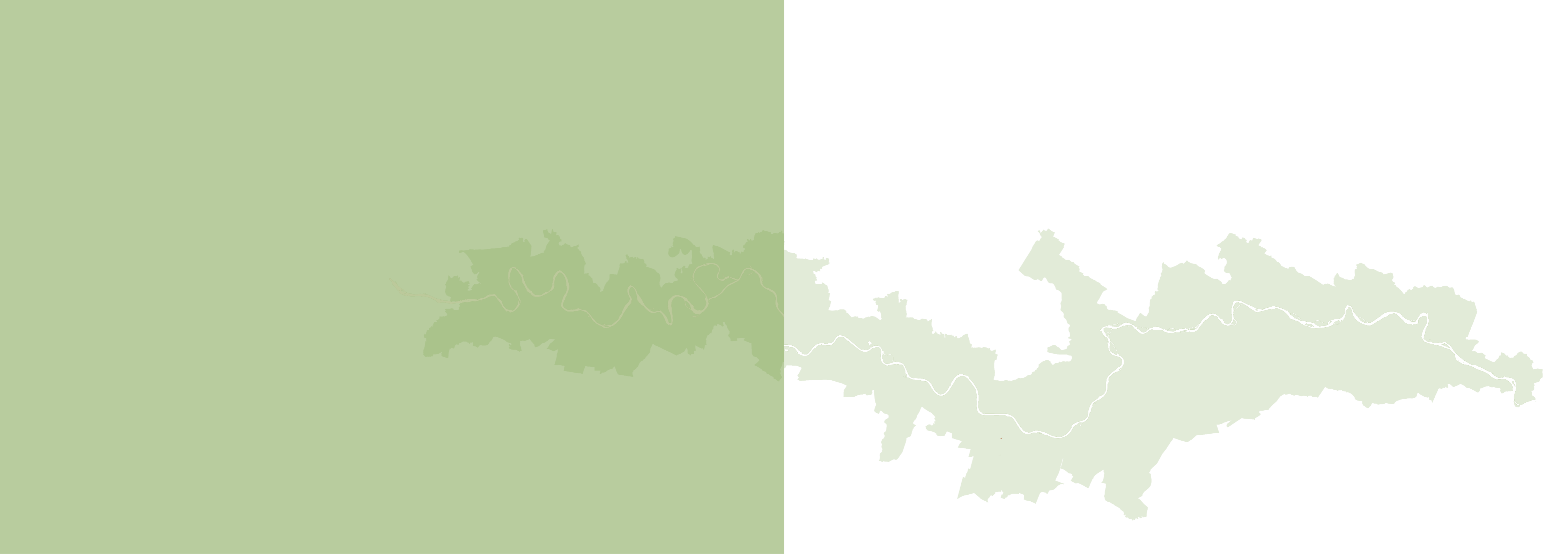


THE ITINERARY AS CONNECTING ELEMENT

From path to system of relations for
the enhancement of the territory



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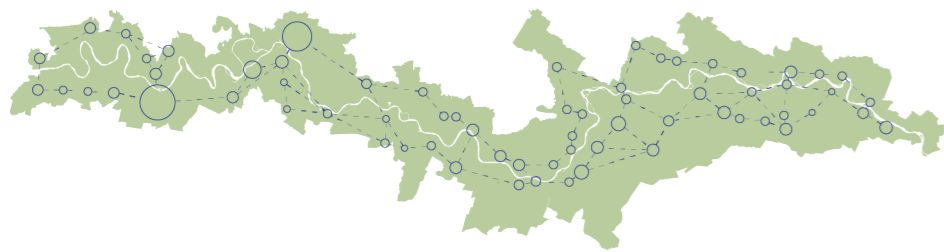
A B S T R A C T

The territory of the Po Grande Biosphere reserve is the result of a succession of events linked to the presence of the river which, over the course of its history, have led to a great diffusion along its banks, and in the surrounding area, of historical, cultural and architectural elements. In the relationship between the artificial landscape forms and the natural facts that over time have mutually constructed and modified, the influence that the Po has had in the conformation of its landscapes remains visible: widespread urban areas full of environmental and cultural values linked to the identity and that need to be preserved and protected from potentially harmful anthropogenic activities.

Important in this morphology is the role of collective mobility, fundamental for the linking of the different centres and their distinctive elements. The slow infrastructure project, in the case of the Po Grande biosphere, takes on new aggregative logics between settlements, encouraging the sharing of services and the strengthening of a system capable of increasing a sense of "community" that attributes identity, quality and value to places, arousing a sense of belonging to a cohesive territory.

In the relationships between the different characteristic elements of these places, the role that each urban centre assumes in the Biosphere becomes legible, making it a field for experimenting with a design tool that lays its foundations in the choice of use of a systematic and multiscale approach. This, inserting itself in the relationship between the cycle ridges and the territory they cross, becomes a concrete tool aimed at defining intervention strategies that set those objectives to be translated into specific actions applicable to the different territorial areas according to their needs.

Starting from these premises, the following paper aims to deal with the development of the Po Grande biosphere territory through the increase of that slow, sustainable and responsible mobility, linked to tourism and local movements, which invites its users to respect and protect the places by implementing their cultural, economic and social value and bringing with them a new urban image of a strong identity tradition of the Po Grande biosphere.



A B S T R A C T

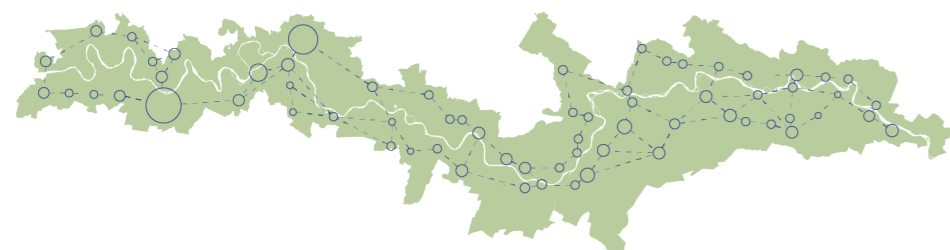
di appartenenza ad un territorio coeso.

Nelle relazioni tra i diversi elementi caratteristici di questi luoghi diventa leggibile il ruolo che ogni centro urbano assume nella Biosfera, rendendola campo per la sperimentazione di uno strumento progettuale che pone le sue basi nella scelta di utilizzo di un approccio sistematico e multiscalare. Questo, inserendosi nella relazione tra le dorsali ciclabili ed il territorio che attraversano, diviene strumento concreto volto alla definizione di strategie di intervento che fissino quegli obiettivi da tradurre in azioni specifiche applicabili ai diversi ambiti territoriali in base alle loro necessità.

Partendo da queste premesse, il seguente elaborato vuole occuparsi dello sviluppo del territorio della biosfera Po Grande attraverso l'incremento di quella mobilità lenta, sostenibile e responsabile, legata a turismo e spostamenti locali che inviti i suoi fruitori a rispettare e custodire i luoghi implementando il loro valore culturale, economico e sociale e portando con sé una nuova immagine urbana di una forte tradizione identitaria della biosfera Po Grande.

Il territorio della riserva della Biosfera Po Grande è risultato di un susseguirsi di eventi legati alla presenza del fiume che, nel corso della sua storia, hanno portato ad una grande diffusione lungo le sue sponde e nel territorio circostante di elementi storico, culturali ed architettonici. Nel rapporto tra le forme paesistiche artificiali ed i fatti naturali che nel corso del tempo si sono vicendevolmente costruiti e modificati, rimane visibile l'influenza che il Po ha avuto nella conformazione dei suoi paesaggi: urbanizzati diffusi carichi di valori ambientali e culturali strettamente legati alla propria identità e che necessitano di essere preservati e protetti da attività antropiche potenzialmente dannose.

Importante in questa morfologia è il ruolo della mobilità collettiva, fondamentale per la messa in relazione dei diversi centri e dei loro elementi distintivi. Il progetto dell'infrastruttura lenta, nel caso della biosfera Po Grande, si fa carico di nuove logiche aggregative tra insediamenti, incentivando una condivisione di servizi e il rafforzamento di un sistema in grado di aumentare un senso di "comunità" che attribuisca ai luoghi identità, qualità e valore suscitando senso



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"Today, as we look to the past with a higher regard or merely with nostalgia, we become increasingly reluctant to obliterate historic patterns for the sake of a doubtful future. The sense of human continuity is becoming more important to us, and as a result, the preservation of cultural patterns in the landscape becomes an ever more pressing issues."
[Lyle J. T., 1999, p. 138]

fig. 01

1. Introduction to the approach

Italian territory is characterized by an important variety of landscapes: they change continuously and in short distances giving strong images and characteristic to our country.

If we take time to look to the morphology of its urban arrangement, the structure of this territory can be divided in different settlement logic and, between them, the widespread one is of great interest. These areas are identifiable in residual territories characterized by a poly-centric structure, where every place is full of environmental and cultural values strictly related to their own identity and that have the need to be protected and preserved by dangerous anthropological activities.

Fundamental characteristic of the territory, beside its identity, it's the readability of its structure: net of nodes and connections that relates through different scales in a precise hierarchical system.

These elements must have their own characteristics but be easily grouped into a unitary system that is clearly identifiable by those who use it since, the perception that the human being has of the environment that surrounds him, modifies his choices of staying or moving between places.

In order to respond to the needs related to the recognisability and protection of widespread settlements, a new model of physical and social connection is therefore necessary: working on the relationship between the internal and external elements of the compositional systems of the territory, it will be possible to identify new centralities and design integration rings between the local and global scale that wants to reconnect and enhance spread cities.

1. Introduction to the approach

1.1. Systemic approach as relation between nodes and connections

In recent years there has been a change in the way that our society thinks about the theme of "environmental awareness", as a consequence of a need for the rethinking of the values and functions of the places in which we live. A new vision of the territory, and of its system of relations, brings with it a new challenge based on the request of the use of planning tools capable of involving environmental, economic, social and political issues in a broader way: the greater is the confrontation with the problems of local realities, the greater is the need to take actions that reflect on a national scale.

A possible answer can be found in the implementation of a systemic design vision capable of looking at the territory in a different way and generating a more complex and complete analysis of its components

and their relational dynamics. The need to shift attention from a single project to a system of interventions, capable of operating simultaneously on different issues with different complexity, leads to an inevitable, and necessary, change in attitude towards current design strategies.

"The system approach is a logical structure for problem solving that emphasizes interrelatedness, the notion that if we alter one part of the system, we inevitably alter other parts and, ultimately, the whole."

[Lyle J. T., 1999, p. 129]

The territory is therefore defined in a complex system characterized by the interaction of different sub-systemic components, each of them with independent evolutionary properties, which influence and are influenced by the environment in which they are inserted. The study of the nature of these interactions, in wider contexts, becomes the basis for understanding the complexity

of the phenomena to which systems are subject: they have characteristics dictated by their being part of a “whole” which are overshadowed when taken individually.

The analysis of places through the tool of systems is based on the concept of “the network”, where each urban environment lives, works and develops, through its web of connections to achieve the goal of regenerating its compositional elements.

The network is therefore identified in the two elements it uses, nodes and connections, and in the relationship between them: the identification of the nodes is, in fact, fundamental for the design of the connections that are necessary for the definition of systems. The nodes, which on a territorial scale count as single elements, placed on a more detailed observation reveal to be, in turn, smaller networks.

The importance of connections can thus be

seen in the dual role they assume, becoming both an ordering element and an element of the territory’s design. The role of nodes is also fundamental within the network, recognized in areas of important environmental and settlement value and in the presence of services, they require protection and enhancement strategies in order to ensure their proper development.

These are the basis for a new collaboration between planning and design that takes shape in a wider field than that of the single intervention, making places and paths part of a system of modification of the territory capable of preserving and emphasizing their individuality, giving them a central role in a wider chain of territorial networks.

In a more practical context, therefore, the systemic approach has the aim of designing new services and planning their connection, triggering a system of enrichment of the environment in which it is applied. The way

in which the inhabitants see and experience these places will thus change, and they will begin to be perceived as an effective part of a wider cultural, environmental, historical and infrastructural system, with a strong territorial identity.

1.2. Multiscalarity: systems analysis through different territorial scale

Scale and measure are fundamental elements for the knowledge of a territory, only through them it is possible to compare the urban system and its compositional elements and to outline the criticalities and potentialities of their relationship.

If, on one side, the systemic approach works and organizes places through relationships that can be defined as “horizontal”, on the other side, it is necessary to adopt, on its side for its support, a multi-scalar approach in order to analyse those “vertical” connections that allow us to understand how systems change through the different scales of interpretation of the territory.

“We need to recognize that every ecosystem is a part - or subsystem- of a larger system and that it in turn includes a number of yet smaller

1. Introduction to the approach

subsystems. It also has necessary linkages to both the larger and the smaller units”
(Lyle J. T., 1999, p. 17)

The analysis of the relation between the systems of the territorial scale and the structure of their components is a fundamental action in the relationship between planning and design: only through territorial relationships is it possible to identify and read the shape of the places and spaces with which the design of a single element must confront.

The multi-scale approach therefore becomes an important tool for the knowledge of contemporary territory and, by using complete cognitive frameworks, it helps to understand measures and dimension of the phenomena that change it. Reading the relationship between local and global values becomes necessary in order to outline the foundational processes of the morphologies of urban fabric and to understand its transformation processes, making identifiable centres

resistant to mutations and the demands for change in order to define the themes for the start of the design project strategies.

For these to be effective, it is therefore necessary to understand the type of interaction that develops between systems and sub-systems that is able to generate different levels of connection with equal importance. No urban plan is, in fact, capable of solving problems of the elements by which is composed if it works focusing only on the larger scale: the study of all levels of the networks is essential in order to outline solutions that can be developed at local level and that have significant and positive repercussions on the whole territory.

The observation of the effects of operational choices must take place on portions of the territory of small, medium and large scale in a continuous action of "abstraction and verification". These operations of

decomposition and re-composition of contexts make the structures of their systems readable, leading to the achievement of a complete and articulated design.

Through the large scale different themes can be identified, such as environment, culture, history and economy which, descending in scale, are reorganized and redesigned with more intervention details capable of responding to the needs of the inhabitants of the place in question.

The use of the two approaches, multi-scalar and systematic, allows us to work on a structure of different networks which, once overlapped, lead to the identification of those nodes with the greatest need to be redeveloped, generating an opportunity for consolidation and regeneration of the territory.

1. Introduction to the approach

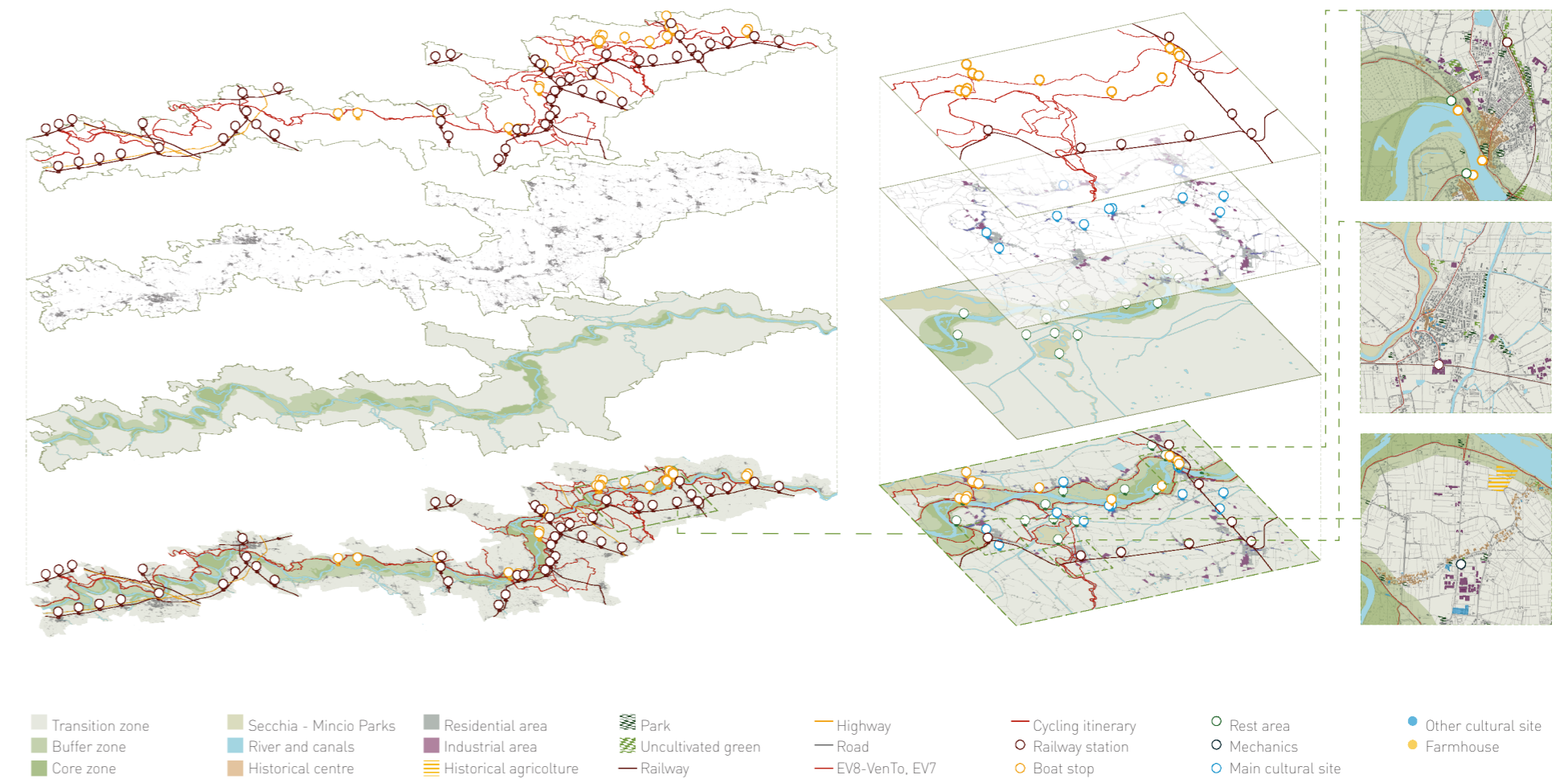


fig. 02

2. Slow mobility and territorial planning

Two main topics emerge from the interaction between slow mobility and a territory: what influence the physical characteristics of the latter have on those who use the bicycle to move around it and what benefits the use of this type of mobility has on the layout of urban spaces.

The introduction of the car played a fundamental role in reading the dimensions of a territory changing the perception that we have of its scale and measures and modifying our choices on the method with which we move, leading us to prefer the use of fast infrastructure instead of the slow one especially in the everyday path.

The way in which we choose to move between places affect the type of experience we can draw from the relationship with them: moving within a territory we go through different scenarios, environmental, settlement and social, and, depending on the speed and the transport by which we cross them, change

the compositional elements that we are able to catch and the perception and interpretation we give to the physical character of their space.

In recent decades, in Italy as in Europe, we assisted to an increase in the demand for touristic and local cycle path which has led to an implementation of their infrastructure and, subsequently, has included them in national plans with the aim of increasing sustainable mobility.

These, leading to the reduction of mobility based on the use of private cars, have made light infrastructure part of the management and planning policies of the territory and cities, giving it the important role of a project fulcrum of sustainable, cultural and environmental development.

The sensitivity of citizens with respect to how to experience the environment that surrounds them and with respect to preserving its

aesthetic and cultural characteristics has also changed and, being an integral part of the experience that the cyclist has of the places, is one of the factors that influence the choices of how and where they will make their movements, whether for tourist purposes or for daily needs.

The possibility of being able to choose between different routes to reach the same place is also important for citizens, therefore it is necessary to implement and complete existing and non-existing cycle networks, which generate a more complete offer becoming a strong opportunity for connection and enhancement of territories, in particular those located in more marginal areas.



fig. 03

2. Slow mobility and territorial planning

2.1. Slow mobility and over systemic itineraries

Using the bicycle as a means of transport is a choice taken by a growing number of people, making urban cycling undertakes an important role in the economic and social changes linked to sustainability and the protection and enhancement of places.

The study of slow mobility is fundamental to understanding its potential in the development of urban cycling, a key element in the hierarchy that governs the entire infrastructure network: from European itineraries to national ones, that further branch into regional and local itineraries.

By exploiting the hierarchy of the cycle network, it is therefore possible to develop a series of branches with the function of connecting an entire territory and its different urban centres. Slow mobility, thus, becomes a

moment of contact between the individual and the territory and if for the tourist it represents an opportunity to discover new places and knowledge of their values, for citizens it assumes the meaning of appropriation of the territory in which they live, bringing to a new perception of its environmental, cultural and social traits.

The integration of over systemic itineraries becomes a necessary tool for the connection and development of a local network that assumes the role of infrastructural reinforcement in support of the whole territory and that connects it, maintaining a hierarchy of paths and flows, adapting to different needs and functions of the places crossed.

Two important functions can therefore be read in the slow mobility networks: these represent an infrastructure of the territory that responds to specific mobility needs on the part of the cyclist and at the same time represents the appropriation of the values of

the places that one passes through, becoming a moment of contact and exchange and an opportunity to "experience a territory".

The role of this infrastructure remains the organization of space and the movement of people and, the quality of these, depends on the design of the elements from which it is composed: the type of route, the connection points, the length, the services offered. The quality of the slow mobility infrastructure network, influencing the quality of the environment it passes through, changes the subjective vision of those who use it, which can change radically over time.



fig. 04



fig. 05

2.1. Slow mobility and over systemic itineraries

2.1.1. Slow mobility in Europe and the Eurovelo project

In the countries of the European Union, traveling by bicycle forms many different facets depending on the state being analysed. However, it is possible to recognize two prevailing trends: states where it is seen only as a means for recreational purposes, and states where it assumes the value of a real alternative means of transport.

In the case of the latter, which include countries such as Denmark and the Netherlands, the bike is used as a means of short and daily trips, for example going to work or shopping and, therefore, have a higher investment in infrastructure and cycling services, leading to a consequent increase in this type of tourism within their own country.

Dwelling on the analysis of European projects for cycle tourism, we meet the Eurovelo network: the 17 long-distance cycling routes involving almost all European countries, crossing 42 of them and ranging almost 70,000 kilometres in continuous expansion.

These routes are born with a dual purpose: to join existing national cycling routes or to act as a stimulus for the design of new routes where they do not exist, both, to be integrated into a single, large infrastructural network. This would lead to the promotion of sustainable tourism and the enhancement of the places crossed by encouraging the use of bicycles as an alternative means of transport to travel by private car, generating new catalytic elements for the increase of safe local routes accessible to all.

The Eurovelo routes are numbered from 1 to 19 where: the odd-numbered itineraries cross the continent from north to south and those with even numbers, instead, from west to east.

Three of these routes cross Italy, specifically: itinerary 5, called "Ciclovia Romea Francigena" which connects Canterbury to Brindisi; itinerary 7, called "Ciclovia del Sole" which connects the North Cape to Malta; itinerary 8, called "Ciclovia del Mediterraneo" which connects Cadiz to Athens.

The peculiarity of the latter lies in the fact that the part of the Italian route will be followed by other projects on a national scale such as the VenTo itinerary and the Bicalitalia route 2.

Unfortunately, not all routes are complete, or well-marked and problems such as the poor intermodality between the different means of transport, especially that of the railway network, to reach these itineraries, or how

the poor quality of the roads used for the cycle paths in some of the states spanned, block the social and economic potential inherent in the development and completion of this network, whose design nature fits perfectly into the European policies of sustainable tourism development.



fig. 06

2. Slow mobility and territorial planning

2.1. Slow mobility and over systemic itineraries

2.1.2. Slow mobility in Italy and VenTo project

The issue of slow mobility in Italy began to garner attention thanks to the creation of associations, first on a local scale and then at a national level, in favour of urban cycling. The main movement for the promotion of the diffusion of the use of bicycles as an ecological means of transport is generated by the FIAB (Italian Federation of the Environment and Bicycle): born as an association for environmental protection, it is a member of the European Cyclist Federation and since 2011 it is a "National Centre for the coordination of the development of the European cycle network - Eurovelo" in Italy.

The development of this network in our country takes place through a specific initiative

called Bicitalia, aimed at designing a unitary infrastructure that crosses the territories by connecting them through ecological itineraries that are a sustainable alternative within the framework of transport planning.

The realization of these itineraries has at its base a particular consideration to the territory and its conservation, most of the interventions concern the recovery of existing or potential minor roads and the reuse of decommissioned railway lines. A national cycle network represents an attraction and an incentive to cycle tourism, bringing significant national and local economic and infrastructural benefits to the area. An innovative turning point in the Italian cycling infrastructure system took place on 27 July 2016 with the birth of the national system of Italian tourist cycle paths which, included in the 2016 stability law, art.1, paragraph 640, provides for the design and construction of the first cycle paths national tourism. Cities, Regions, Associations and the State, thus,

collaborate to offer sustainable tourism which, through the design of about 7000 kilometres of cycle paths, enhances historical, cultural and environmental itineraries through the Italian landscape and its beauties. The project envisages the completion or construction of partially existing and possible routes, pursuing an overall strategy aimed at soft and alternative mobility that includes the bicycle in the infrastructure planning through a new tourism mobility plan aimed at the development of the country. Routes designed in perfect symbiosis with the surrounding area and which, based on sustainability criteria, aim to create new job opportunities thanks to the tourist network that they will engage and consequently to an overall economic revitalization of many areas of the country.

By promoting the use of bicycles, the intent is, first of all, to provide a new development model, raising awareness of the issue of sustainability, but, also the desire to protect the natural and environmental heritage,

relaunch and enhance the territories crossed or adjacent to the cycle paths, consequently increasing the tourist activity.

Among the projects financed, the most relevant for the purpose of this thesis is certainly that of the VenTo cycle route: an itinerary designed with the aim of connecting Venice to Turin along the banks of the Po river, with a connection to Milan along the Naviglio Pavese for a total length of 705km. The project was born in 2010 at the Politecnico di Milano and, crossing the four regions, it passes through a variety of cultural, historical and production heritage along its path.

To this date, it is not yet feasible in safety for its entire extension, but the cycle path is gradually being realized, becoming the first national cycle path project of this size and pursuing its objectives of: safety, linearity, continuity, comfort, intermodality, pleasantness, recognisability, affordability.

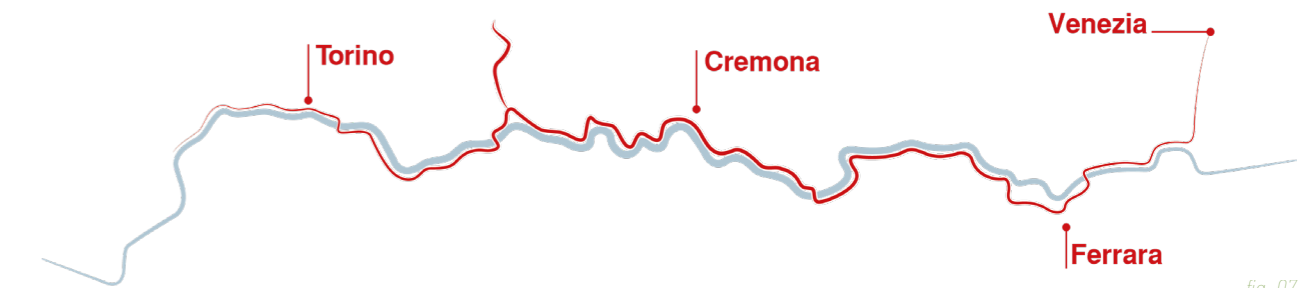


fig. 07



fig. 08



fig. 09

2. Slow mobility and territorial planning

2.2. The role of cyclability in layout of the territory

If we ask ourselves what connection exists between the use of bicycles and the urban environment and what consequences their relationship has on the layout of the territory, having a definitive and clear-cut answer is difficult and varies according to the type of territory we are referring to.

In several cases, there has been the use of cycle mobility as a positive means of achieving a goal aimed at developing a sustainable environment.

If we take a city such as Copenhagen as an example, it can be seen that, from the construction of its first cycle path till date, the enhancement of the slow infrastructural system has increased the value of public space by relating it to other spaces in the city and working in its it functions rather

than simply acting as an overlapping but autonomous network.

The cycle infrastructure project therefore takes on new logics of aggregation between different places, encouraging the sharing of services and the strengthening of a system capable of increasing a sense of "community" that attributes identity, quality and value to places, arousing a sense of belonging to a cohesive territory.

This tool is essential for the connection of territories characterized by a widespread settlement model, identifiable in an organization based on a plurality of morphological and functional centres of different sizes and which live on their connections. This organization stands in contrast to that of traditional metropolises, where the centre-suburban relationship is based on the presence of a single functional pole that is detached from the rest of its morphology, increasing the marginality of

suburban places and their dependence on the metropolis.

Suburbs and widespread settlement are to be understood as two different urban structures, not so much in the type of buildings, but for the different relationship between their urban environment and the frequency of the functions serving it, which are capable of changing the practices of use of the territorial space of these places.

In slow territories it is possible to recognize behaviours and strategies that try to respond to the needs generated by the spread of their centres, which are, in fact, characterized by a lifestyle focused on slower rhythms that differ from those of the metropolis by defining a particular dimension of living the environment.



fig. 10



fig. 11



fig. 12

2. Slow mobility and territorial planning

“The landscape image can be seen as an expression of a local identity and a representation of local system and, at the same time, as a fundamental way of communication with the metropolitan context”¹
(Gambino, 1994, P.344)

Agriculture remains the practice that most strongly shapes this landscape, but, unlike in the past, it is no longer the only element that outlines its development mechanisms: they are characterized by the strong presence of agro-industrial economic systems that have modified these territories, no longer definable as an agricultural landscape but one that still outlines a landscape capable of restoring its values to those who walk through it.

“Either by accident or design, human beings have sometimes created landscapes that are at least as rich and as stable, occasionally as beautiful, as those shaped by nature.”
(J.T. Lyle, 1999, p. 1)

It is however difficult, in these territories, to be able to interpret the internal dynamics and to go back to the ordering principle of their urbanization characterized by discontinuous shapes and complex spaces articulated in the coexistence of several places.

These bring with them a wealth of knowledge and traditions that are the basis of our culture, therefore the safeguarding of their diversity must remain a priority action, possible through the attribution of new functions and ways of use able to give these places a central role in the territory and modify the perception that the individual has of them by protecting them by the means of their enhancement.

“What we are interested in underline talking about slow territories is that they are living environment put in place, more or less explicitly, through the aggregation of local and global elements. They run on the ridge between global and local, they are their chain”²
(Lancerini E., 2009, p. 126)

Focusing on the problems of a part of the territory does not reduce the need to always have a broader view of the networks that compose it, thus, making the local and global scale complementary

What is important in this morphology is the role of collective mobility, which is fundamental for linking the different centres and their distinctive elements. It thus becomes the field of application of a poly-centric strategy that focuses its actions towards the recognition of these places and their connection in order to implement their social, economic, environmental and cultural values.

It can therefore be affirmed that the development of urban settlements does not depend only on their relationships through the connection networks but also on the quality and variety of the resources they make available which also affect the will of users to use a certain means rather than another to move within the territory.

By working on the planning of routes that are based on local scale displacements as well as the needs connected to new forms of tourism, a complete network of cycle routes is obtained, that connects the different urban centres making them accessible to all and generating a new concept of these places.

The cycling of a territory and the potential of the infrastructural system dedicated to it undoubtedly remain indicators of urban quality: the progressive increase in the last decades in the adoption of alternative means of transport to the private car has determined the transformation of the urban transport infrastructure of many countries, leading to the regeneration and better liveability of their spaces.



"It happens that, through squares, sighting shores, walking along arcades, going up the banks, the visitor who comes from afar, just enough to not define itself as part of those places, has the feeling to be in a dimension where everything is understandable, in a continuous reference between the colours and shapes of nature, of water, of earth, of sky and of the landscape built behind them"³
(Pocaterra F., 2005, p. 51)

fig. 13

3. Po Grande Biosphere Reserve

In the concept of landscape is inherent the relationship between the natural and anthropic components that have developed within it: the result of stratifications of events and continuous modification actions that have made the territories a complex system based on the superimposition of different layers, not always easily legible and recognizable.

In preserving the natural values of the biosphere, however, one cannot neglect those historical settlement values that have shaped its territory and which, even today, are recognizable in areas and elements that become key to its cultural, economic and social development.

It is therefore essential to combine a visual analysis with a historical analysis in order to fully understand the effects that the stratifications of these places have had over time and propose actions aimed at their protection and enhancement.

Recognizing the historical areas from those of recent formation is also essential to be able to enhance the territory by protecting the first and to be able to pursue a development goal through the ways of using the latter.

The study of the history of the formation of places is, therefore, at the basis to be able to foresee actions of different nature and purpose and to achieve a final and common goal: to preserve the integrity of the territory, its nature and its history, keeping up with the values of modern urban development.

3. Po Grande Biosphere Reserve

3.1. History of the territory

The river Po, as a result of its geographical position, its length, the size of its basin and the historical, social and economic events associated with it, is considered the main Italian river. Along its route it skirts the territories of seven regions: Valle d'Aosta, Piedmont, Liguria, Lombardy, Trentino Alto Adige, Veneto and Emilia Romagna. Crossing the entire Po Valley, up to its delta into the Adriatic Sea, it enters a territory characterized by a complex intertwining of rivers: a system of tributaries from the right, arriving from the Tuscan-Emilian Apennines; a system of tributaries from the left, coming from the Lombardy and Venetian Prealps; two rivers, Adige and Reno, which flow into the same mouth forming a fan in the delta, about 70km wide, shaped by marshes and lagoon spaces.

The formation of the Po Valley is closely linked to that of the Po: their origins coincide

in that, both the valley and the river arise with the emergence of parts of land from a marine trench that occupied this territory in the Pliocene epoch. The landscape and the natural environment of the Po have changed over time and the causes of this process are mainly due to human activities and in particular those related to agriculture.

The Po basin was characterized by swamps and forests in all its extension, the structure of this landscape begins to change following the Celtic colonisation, and subsequently that of the Romans: these peoples understood the productive potential of the plain and the role of the water that flows through it - that of a precious asset for crops and as a connection between settlements, but dangerous if not controlled. With the Romans, land reclamation interventions began and a phenomenon of intense deforestation aimed at regulating the surface running water in order to achieve levelling of the soils, interrupted only during the Middle Ages.

In the Middle Ages, in fact, there was a return to antiquity through the resumption of the spread of the woods and the partial abandonment of hydraulic control works, defining a landscape that will remain until the Renaissance period.

From this period onwards the population increases continuously, and in addition to the beginning of the cultivation of new species in the agricultural sector, the end of the forests is marked, which was replaced, starting from the sixteenth century, by the "Po valley": a vast agricultural landscape divided into plots with regular geometry and where the cultivation of the grapevines, which was once much more widespread than it is today, was associated with other tree species such as elm and fruit trees.

In the eighteenth and nineteenth centuries, we witness the intensification of the exploitation of the territory and the construction of large irrigation canals which, together with the

birth of heavy industry, the start of railway transport systems and the development of production, led to a systematic cutting of the remaining woods.

The succession of events that involved the waters of the Po led to a great diffusion of historical, cultural and architectural elements in the surrounding area, together with various fortification works and castles and numerous water pumps and sewers in the field of industrial archaeology. In the landscapes influenced by the flow of the Po, one can perceive an everlasting unity between natural facts and artificial landscape forms which, over time, have mutually constructed and modified each other: over the centuries man has found a way to coexist with the river and its full, making it an extraordinary resource to look for new cultivatable and habitable land.

The importance of the Po territory is underlined by the fact that several areas along its development have been recognized

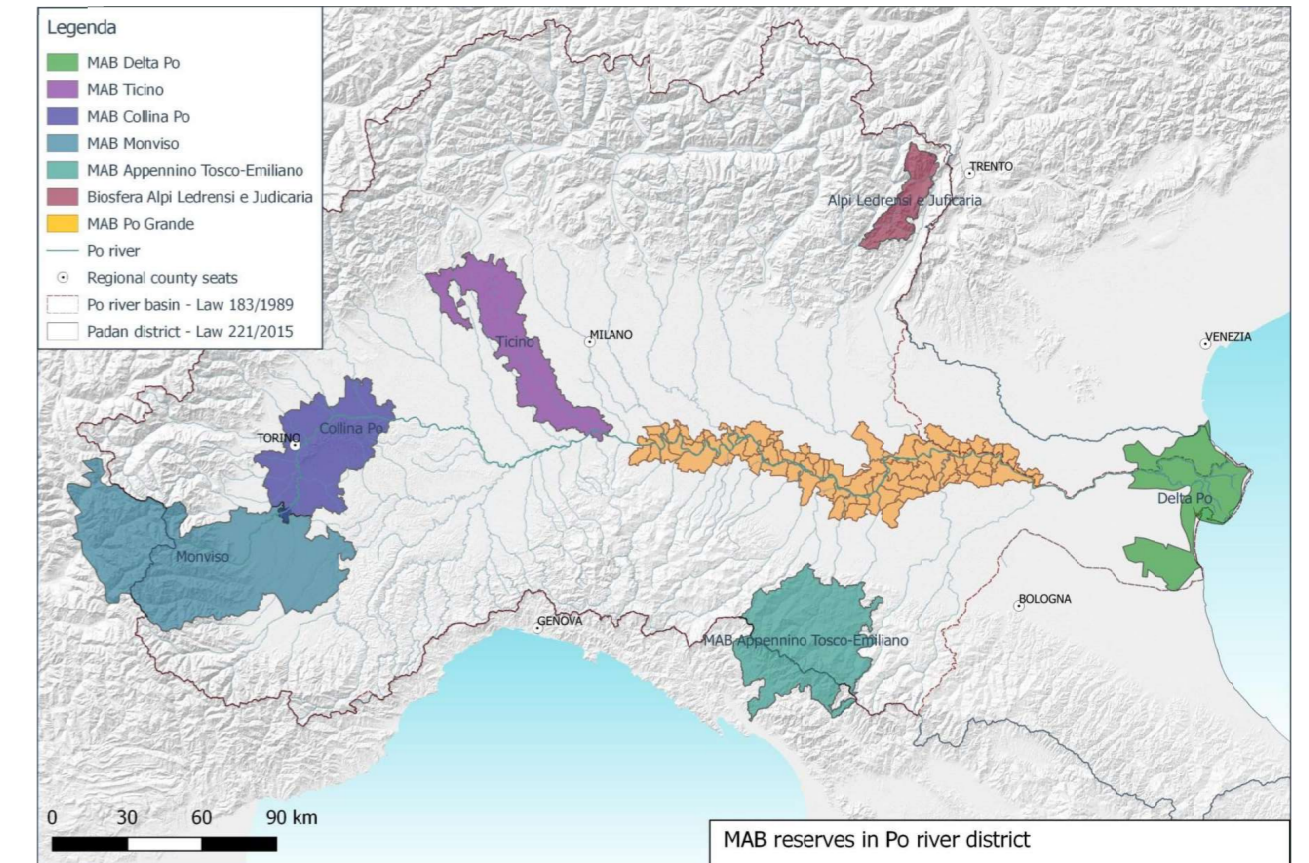


fig. 14

and included by UNESCO in the MAB (Man and the Biosphere) program: started in 1971, it is a worldwide network that involves, at currently, 701 sites divided into 124 countries and aims to improve the relationship between man and the environment and reduce the loss of biodiversity of the latter.

An area, to be recognized as a MaB biosphere, must possess certain characteristics such as: being a mosaic of ecological systems representative of the biogeographical regions; be significant for the conservation of biological diversity; be opportunities for sustainable development on a regional scale; have an appropriate size for its zoning; provide for research, monitoring and education programs and activities that involve public authorities and local communities.

The Po territories recognized so far are the Monviso area including the first Po valley in 2013, the Delta in 2015, Collina Po in Turin in 2016, the middle stretch of the Po Grande

in 2019 and the Tuscan-Emilian Apennines in 2015, which, although not directly located on the Po, constitutes a geographically close area with which the river relates.

The purpose of the proclamation of these reserves is to create a balanced relationship between the human community and ecosystems through the development of privileged sites for research, training and environmental education, as well as experimentation poles for targeted development and territorial planning.

3.2. UNESCO “Po Grande” Biosphere reserve

“The Po Grande will have to be a territory of slow, fluvial and cycling tourism; and it will have to be a territory of landscape and food where this values are intrinsically perceived together with sustainability, with an agriculture and a poplar cultivation that are increasingly evolving towards organic practices and that will preserve biodiversity.”⁴

(Legambiente, in Riserva di biosfera UNESCO Po Grande, 2018)

The candidacy for the “Po Grande” UNESCO MaB reserve is promoted by the Po River District Authority, Legambiente, the University of Parma and 63 Municipalities close to the Grande River that are committed to improving the relationship between man and the environment, helping citizens to recover the identity of local communities and derive values and excellence from them.

This intermediate area of the river has recently entered the MaB program by inserting itself as a seam area between the already existing biospheres and creating the possibility of an overall view of the river for its enhancement and preservation.

The recognition and maintenance process, for the MaB Reserve, followed different phases. The approach and candidacy one began with the activation of the “Promoter Group” and with the elaboration of the Biosphere Reserve Candidacy Dossier as part of the UNESCO MaB Program which was concluded and delivered on 30 September 2018, leading to the final recognition of the “Po Grande” Biosphere Reserve on 19 June 2019.

The recognition process of the area presented an opportunity for local communities to acquire knowledge and awareness about the potential and critical issues deriving from the presence of water and the dynamics linked to the flow of the Po river and recover the values

3. Po Grande Biosphere Reserve

linked to the artistic, cultural and natural heritage by increasing the identity and sense of belonging to these lands.

This project recognizes the naturalistic, artistic, cultural and the anthropological potential of this territory, transforming them into opportunities for its protection and enhancement, thereby giving the river Po a central role in the natural infrastructure that has always served as a unifying element for its communities and which consolidates on a sustainable development model to be safeguarded.

Along with its territory, its history, architecture, anthropology, food and wine, culture and tradition must also be safeguarded, identity characteristics that make this place a field of experimentation for new sustainable development models capable of combining tradition and innovation.

The biosphere territory has been profoundly

modified by the anthropic intervention that has led to the definition of an extremely rich and homogeneous territory whose cultural heritage is the result of a multiplicity of social and economic relations generated by the relationship between the communities, which here are settled, and the waters of the Po.

The knowledge of these places, and of the overlapping of the layers of their history, therefore becomes fundamental in order to recognize the uniqueness of their local identity and enhance it in order to be able to preserve and transmit it.

At the centre of a development that lays its foundations on culture and tourism throughout its course, the presence of the Po in the MaB program is recognized as essential to overcome the internal fragmentation of this territory and to achieve a balance that allows the development of its own system of use, recognizable and attractive, which is also placed in the sustainable tourism market,

contributing to the local economy and the dissemination of the values linked to its biodiversity.

The area proposed as a Biosphere Reserve has a total area of 2,866 km² divided into: 201 km² of Core Area, an area rich in biodiversity and linked to the aquatic environment of the mosaic of natural systems; 420 km² of Buffer Area, consisting of areas where only activities compatible with conservation are carried out; 2,245 km² (78%) of Transition Area, enclosed in the administrative boundaries of the municipal territories involved, is the largest area since it has the task of giving importance and protecting the reserve.

And it is this last area that presents itself as a field of interest for the experimentation of trans-scalar design approaches aimed at enhancing landscape, environmental and cultural values.

Its extension remains disproportionately greater than the other two areas, defining a territory that is the result of dynamics of relations between natural elements, urban centres of historical matrices and social and economic contexts that define areas of significant identity that need to be preserved.

If the core and the buffer zone, of decidedly reduced dimensions, are recognized in their natural values, whose defence is implicit in belonging to the MaB biosphere project, the Transition zone is a more complex area.

This area requires a complete system of actions that act on all the issues that affect the territory, not only with respect to the natural values but also the historical and social ones and that will concern its development in a sustainable key which becomes the result of the project actions but also the result of the citizens' awareness of the complexity of the areas which they live.

3. Po Grande Biosphere Reserve

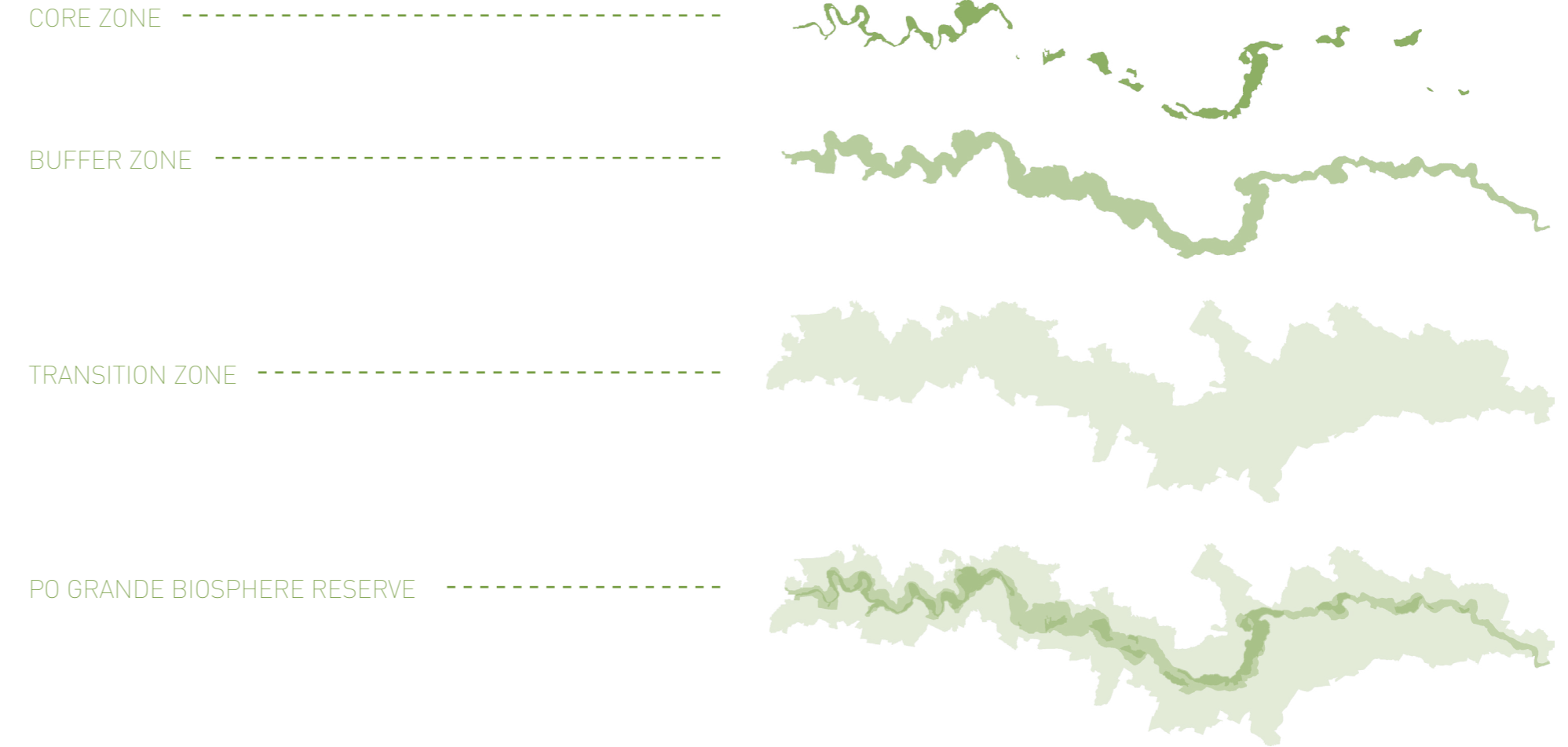


fig. 15

3. Po Grande Biosphere Reserve

In the urban analysis of the biosphere, following the course of the river, we cross the provinces of Lodi, Pavia, Piacenza, Cremona, Parma, Reggio Emilia, Mantua and Rovigo.

The Lodi area is characterized by a rich historical and artistic heritage and by the presence of ancient civil and religious monuments. The most important attractions are the museum of games and children in Santo Stefano Lodigiano, Villa Cavazzi Litta Carini in Orio Litta and the permanent exhibition of antiquities in Somaglia. The river continues remaining about a kilometre from the old city of Piacenza, where Palazzo Farnese, the civic museum, the bell tower and several churches stand.

On the opposite shore, after the Serafini island, it meets the district of Cremona, whose city shares its origins with that of Piacenza: both founded in Roman times as military forces, strategic points for territorial domination. In Cremona there is the only

internal port of the entire biosphere reserve which, built in the twentieth century, was to connect the city with Milan but the connection was never completed. In Cremona there is also a building from the 1930s, seat of the Padane colonies, recently restored.

The most important destinations in the Cremona area are the Paleoanthropological Museum of the Po and the Pescaroli island in San Daniele Po, the neo-Gothic style town hall, the cathedral and the Bijou museum in Casalmaggiore.

The floodplain of the Po between Cremona, Casalmaggiore and Mantua is very interesting and evocative from a panoramic and environmental point of view. The area is characterized by the presence of isolated farmhouses and some small hamlets, often in the process of depopulation.

Moving towards the Parma area you will find: The Museum of Land and River Landscapes

(MUPAC), the Mondo Piccolo Museum, the Reggia di Colorno, the Antica Corte Pallavicina, the Roccabianca Castle, the Rocca dei Terzi, the Cantoni Museum in Coltaro di Sissa, the Regional Tourist Port of Torricella and the Polesine river dock.

After Parma the Po reaches the district of Reggio Emilia where there is the Museum of the Po and inland navigation, the Multimedia Museum of the Central Emilia Reclamation in Boretto, the Bentivoglio Palace, the Co-Cathedral of San Pietro Apostolo and the Ducal Palace of Guastalla, the Museum of Peppone and Don Camillo in Brescello. From Suzzara you reach the Oltrepò Mantovano, which was once the territory of the Gonzagas. One of the historical emergencies in this area is San Benedetto Po, where there is a large basilica and a large monastery. Other interesting architectures of this area are the Pieve di Santa Maria Assunta in Pieve di Coriano and Palazzo Ducale dei Gonzaga in Revere.

In the Rovigo area, the municipality of Bergantino is one of the most characteristic centers, the center of the "merry-go-round district" specialized in the construction of amusement park machines. Other interesting places are the Church of S. Materno in Melara, the oratory of SS. Nome di Maria, the Church of S. Stefano and the Cotogni Theater in Castelmasa, the oratories of S. Francesco and S. Antonio in Salara, the Archpriest Church of Sant'Antonino martire in Ficarolo.



fig. 16



fig. 17



fig. 18



"But the strengthening of local identities cannot be reduced to local dimensions, because the success of local action increasingly depends on what happens in their relations with the networks involved. Therefore, landscape planning must take into consideration a plurality of networks: from urban and ecological infrastructure to those concerning free time and public recreation or to the <<green network>> for the reorganization of "small-scale" rural landscape".⁵
[Gambino R., 1994, P.332]

fig. 19

4. Composite network of the Po Grande Biosphere

The area nominated as a reserve is characterized by great territorial values which, in addition to being inextricably linked to the agricultural and eno-gastronomic tradition, also have significant historical and architectural elements: abbeys, cathedrals, monuments, walls, fortresses, historic villas. From the Middle Ages to the Roman era, up to the present day, this heritage has contributed to enhancing a territory broken down into a mosaic of small municipalities, each with its own customs and traditions.

The river remains an inestimable resource throughout the reserve, providing support to many productive activities and having a recreational and tourist value and, to a limited extent, also for transport and communication.

In addition to the environmental value linked to the river, we also find natural areas of great importance, even if in strong contraction due to the geomorphological and hydrological modifications of the river. To these, then, is

added the architectural heritage that finds maximum characterization in the rural landscape.

The reserve therefore conforms to a homogeneous territorial environment characterized by the presence of significant environmental and cultural elements of great usable potential, among these, however, there are also elements of social fragility due to demographic impoverishment. The complexity of the Transition Area represents a good area for experimenting with new design methodologies that are able to recognize landscape and environmental values by relating them to urban settlement.

In the study of the development of the territory of the Po Grande biosphere, it is noted how some elements are repeated in its extension and during the entire span of its evolution, remaining part of its history and becoming recognizable in the interpretation of this territory.

These elements relate to each other in a system of networks that infrastructures the territory making it readable through their study as individual systems, or in the nodes of their overlap.

This interpretative model can be identified in polycentrism and is used to describe and read the complexity of this type of urbanization, placing itself as an important conceptual reference for pursuing the objectives of a project that seeks to deal with different territorial scales.

In this way we are able to define an articulated structure capable of recognizing polarities, characterized by distinctive elements, where to apply action strategies aimed at environmental, cultural, economic and social enhancement, which will bring with it a positive feedback on the entire network system that characterizes the infrastructural asset of the territory.

4. Composite network of the Po Grande Biosphere

Starting from the recurring values throughout the development of this territory, for the purpose of this thesis, it was decided to read the composition of the biosphere through the subdivision, and the consequent analysis, of three thematic systems identifiable in: environment and landscape, settlements, infrastructures.

In this way is defined a dynamic of relations between the different systems that together form and modify this territory and, in order to arrive at a conscious and effective design, it is necessary to analysed these individually to understand the dynamics generated by their interaction: the urban development of the settlements, the configuration of the territory, the structure of the natural context and how the river affects their size.

“Beyond improbable lines of defence, exist, as result of an analytic work, the understanding of the elements of the built environment. There are those facts on which can be based a design speech that is not mechanically deduced from the analysis, but, instead, aware of the concrete heritage of forms deposited in the territory, of its urbanity, and able, in the end, to interpret the territoriality of architecture within the fractures and discontinuity of landscapes of which every current project must be able to interpret configurations, differences, order.” ⁶
 [Torricelli A., in Lungo il Po, 2005, p. 11]

LEVEL	MUNICIPALITIES	ENVIRONMENT		SETTLEMENT			INFRASTRUCTURE				
		Developed on Po shore	Bridge presence	Cultural Interest		Industries presence	Train stations		Bicycle path		Boat stop
				MAB heritage	Historical center		Sub regional	Local	European itinerary	Local itinerary	
MAIN HUBS	Piacenza	●	●	●	●	●	●	●		●	○
	Castelvetro Piacentino	●	●		◐		●	●		○	○
	Cremona	●	●	●	●	●	●	●	●	◐	○
	Colorno			●	◐		●	●		○	
	Casalmaggiore	●	◐	●	●	●	●	●	●	◐	◐
	Guastalla	●	◐	●	●		●	●	●	●	○
	Suzzara	●	○		◐	●	●	●		●	◐
	Poggio Rusco			●	◐	●	●	●		○	
	Ostiglia	●	●		◐		●	●		●	◐
	Felonica	●	○	●	●		●	●	●	○	◐
SECONDARY ACCESSES	Castel San Giovanni				◐	●		●		○	
	Sarmato				◐			●		○	
	Rottofreno				◐			●		○	
	San Nicolò				◐	●		●		○	
	Santo Stefano Lodigiano	●	○	●	◐			●	●	◐	○
	San Giuliano				◐			●		○	
	Caorso				◐			●		○	
	Villanova sull'Arda				◐			●		○	
	Boretto	●	●	●	●			●	●	◐	◐
	Gualtieri	●	○	●	●	●		●	●	●	○
	Luzzara	●	○		◐	●		●	●	◐	○
	Gonzaga			●	◐	●		●		○	
	Monteggiana	●	◐	●	●	●		●	●	●	○

● The service is present ◐ The service exist but need to be implemented for slow mobility purpose ○ The service doesn't exist but could be built

4. Composite network of the Po Grande Biosphere

LEVEL	MUNICIPALITIES	ENVIRONMENT		SETTLEMENT			INFRASTRUCTURE				
		Developed on Po shore	Bridge presence	Cultural Interest		Industries presence	Train stations		Bicycle path		Boat stop
				MAB heritage	Historical center		Sub regional	Local	European itinerary	Local itinerary	
SECONDARY ACCESSES	Borgoforte	●	◐		●			●		●	◐
	Pegognaga				●	●		●		●	
	San Benedetto Po	●	○		●	●		●	●	●	○
	Governolo				●	●				●	◐
	Quistello				●			●	●	●	
	Quingentole	●	○	●	◐				●	○	◐
	San Rocco Mantovano				◐			●		○	
	Schivenoglia				◐			●		○	
	Villa Poma				◐	●		●		○	
	Magnacavallo				◐			●		○	
	Revere	●	●	●	◐	●		●	●	○	◐
	Sermide	●	◐	●	●			●	●	◐	◐
	NOT CONNECTED CENTERS	Pieve Porto Morone	●	◐		◐	●			●	○
Orio Litta				●	●	●			●	●	
Somaglia				●	●	●				●	
Guardamiglio		●	○		◐	●				◐	○
San Rocco al Porto		●	◐		◐	●		●		○	○
Monticelli d'Ongina		●	◐	●	◐					◐	○
Polesine Parmense		●	○	●	◐	●				○	○
San Daniele Po		●	◐	●	●			●	●	●	◐
Roccabianca		●		●	◐	●				○	○
Fontanelle				●	◐					○	
Sissa				●	◐	●				○	

● The service is present ◐ The service exist but need to be implemented for slow mobility purpose ○ The service doesn't exist but could be built

LEVEL	MUNICIPALITIES	ENVIRONMENT		SETTLEMENT			INFRASTRUCTURE				
		Developed on Po shore	Bridge presence	Cultural Interest		Industries presence	Train stations		Bicycle path		Boat stop
				MAB heritage	Historical center		Sub regional	Local	European itinerary	Local itinerary	
NOT CONNECTED CENTERS	Coltaro	●	○	●	◐					○	○
	Scandolara Ravara				◐					○	
	Gussola	●	○		◐	●			●	○	○
	Martignana di Po	●	○		◐	●			●	○	○
	Cicognara	●	○		◐	●			●	●	○
	Viadana	●	●		◐	●			●	●	◐
	Brescello	●	●	●	◐	●				○	◐
	Pomponesco	●	○		◐	●				◐	○
	Correggioverde	●	○		◐	●				◐	○
	Villastrada	●	○		◐	●				◐	○
	Cizzolo	●	○		◐	●				◐	○
	San Matteo delle Chiaviche	●	○		◐	●				◐	
	Campitello				◐	●				○	
	Virgilio				◐	●				○	
	San Biagio				◐	●			●	◐	
	Bagnolo San Vito				◐	●			●	◐	
	Sustinente	●	○	●	●					◐	◐
	Melara	●	○	●	●	●				◐	○
	Bergantino	●	○	●	◐	●				○	○
	Carbonara di Po	●	○	●	◐				●	○	○
Castelmasa	●	◐	●	◐					○	◐	

● The service is present ◐ The service exist but need to be implemented for slow mobility purpose ○ The service doesn't exist but could be built

4.1. Environment and landscape network

The river has been, and continues to be, the structuring element of the relationship between the territory and the communities that are centred on it: over the course of history they have learned to manage the resources of this element by building their own identity characters and their economic development.

*"Over the centuries there has been a radical change in the relationship between man and nature: from man's initial position of defence we have reached an intense exploitation of nature, to the point of exercising a more or less rational dominion over it"*⁷
[Marchetti G. Sartori F. Vaccardi V. in la pianura padana e le ragioni degli insediamenti umani, 1996, p. 204]

Analysing the system relating to the

environment and the landscape, the stretch of Po affected by the biosphere, constitutes a river system comprising of the areas close to the alveolus and all the portions of the territory that are, or have been, influenced by the action of the course of the river water thus enclosing ecological systems that differ in form and evolution.

The landscape of the Po is characterized by the presence of poplar groves and is rich in curves, meanders and secondary branches, which wind through the plain, characterizing its landscape and generating wealth and environmental value. Speaking of biodiversity, in this section there is a complex system of "Natura 2000 Network" sites which include all the main natural and semi-natural areas of the central Po Valley and mainly constitute the Core Zone.

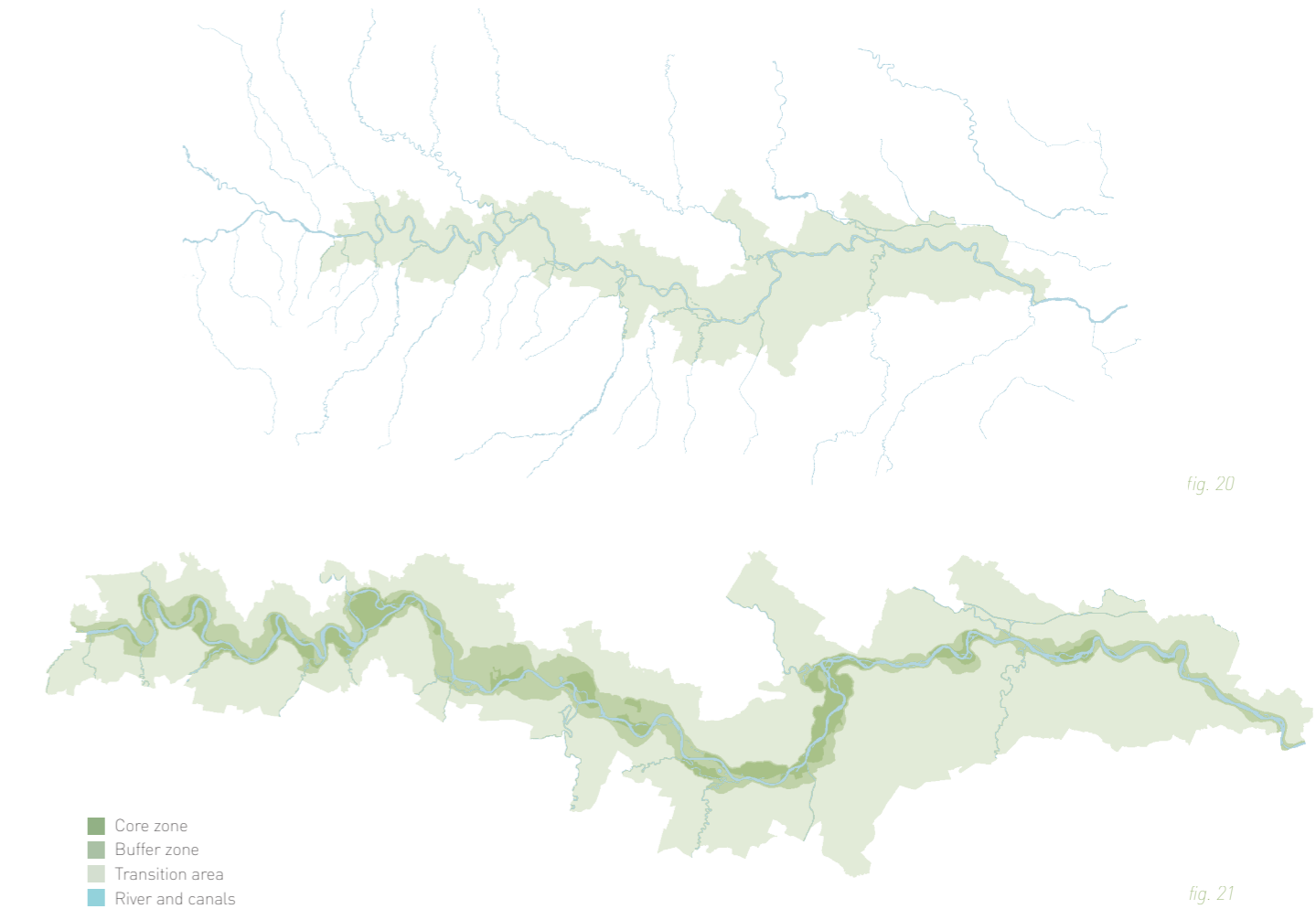
In the course of the history of this territory, human actions have triggered phenomena of ecological modification and alteration,

damaging parts of this environment, causing a loss of the identifying characteristics of its river landscape and transforming these places into marginal areas also from a social and economic point of view. Another worrying phenomenon is that of the lowering of the riverbed, a phenomenon that began in the 60s of the last century, and which represents a threat to the conservation of many wetlands connected to the river. This could be reduced thanks to a greater and deeper awareness of the actions that threaten the values of the environment and of the landscape.

Observing the analysis table relating to the municipalities located within the "Po Grande" biosphere, it can be seen that the historical importance of the river has ensured that most of them developed near its embankment, generating an arrangement that today represents its great potential to be able to restore this watercourse to be a great connective infrastructural element and not a barrier.

4. Composite network of the Po Grande Biosphere

To achieve this goal, improvement actions are necessary, focused, above all, on the theme of connecting the two banks: through the analysis of the bridges it is noted that these do not connect all the urban centres and, where they are present, they need improvement interventions mainly focused on their cyclability, an action aimed at the sustainable development of this territory.



4.2. Settlement network

*"Describing the places of the Po would be an arduous and sterile job without giving space to the story and without invoking an epic dimension. The extraordinary nature of the places, of spaces and of times of the territories and of the presences agglutinated along the course and along the history of the Po river, it's not possible to be represented and interpret it if not as a fantastic dimension, even more for the fact that it is mixed, and resist at the same time, to the concrete and real dimension of contemporaneity."*⁸
[Pocaterra F., 2005, p. 44]

The urbanization characterizing the territories of the Po river is the result of the composition of the different settlement modes deriving from the succession of the different cultures that have inhabited it: populations carrying their own settlement logics and that have

introduced themselves into this territory by juxtaposing the existing dynamics but without modifying them and leaving them still legible today.

During the nineteenth century there is a strong development of the agricultural field that brings with it the modification of the dimensions of the rural centres that expand pushing beyond their Renaissance walls. This trend, however, was reversed after the last war: in this phase economic development leads to an increase in population, due to a migration of many people from south to north and, this phenomenon, accompanied by the development of new activities other than agriculture, leads to the acquisition by the city of many agricultural spaces, changing the territory and the scenery of its landscapes that from rural become urban.

A real settlement structure, is thus defined, made up of various elements still recognizable today: *"Characteristics that combine to restore*

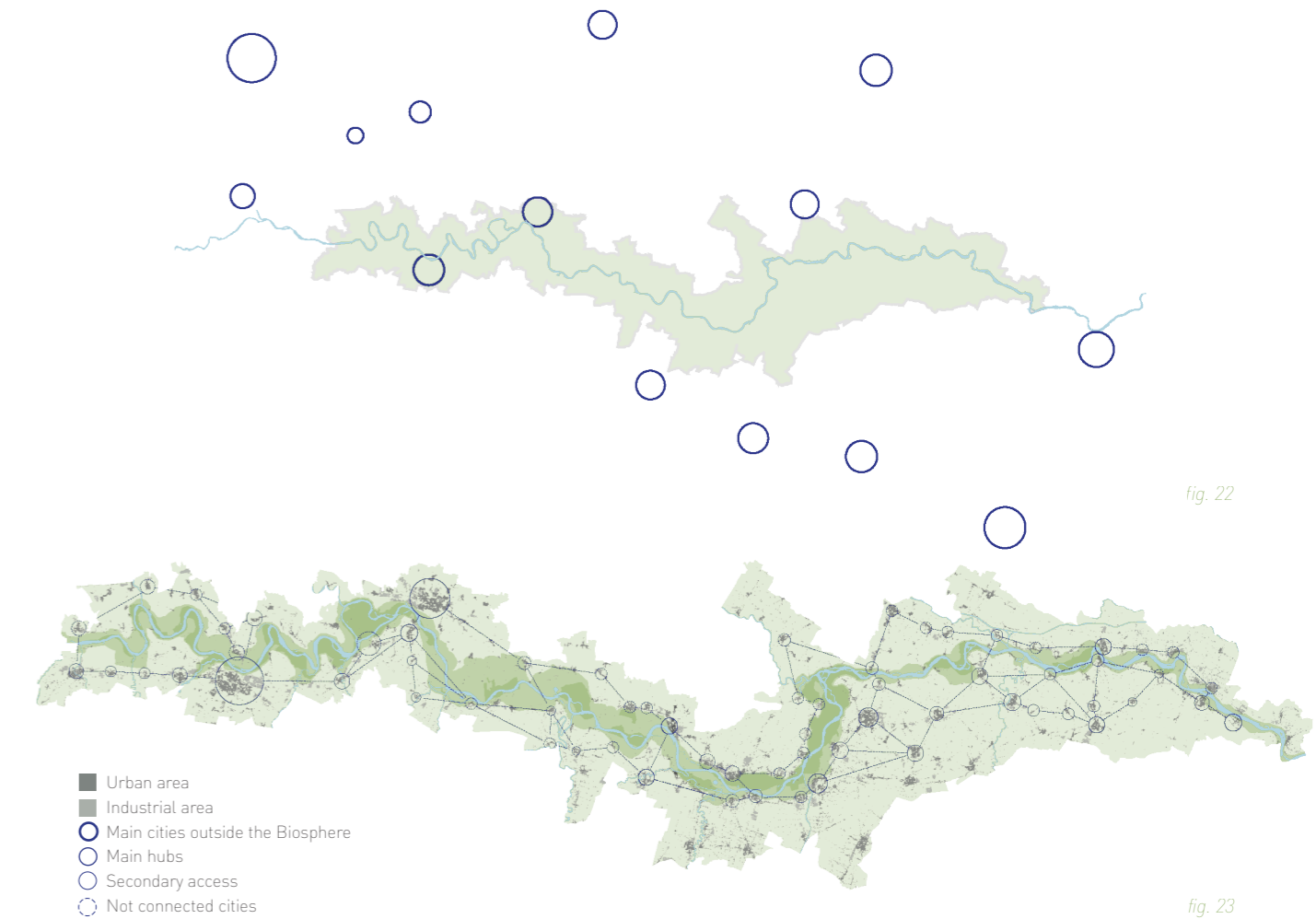
*an image of strong identity for these places, whose vastness and complexity could escape to a distracted and presumptuous look"*⁹
[Pocaterra F., 2005, p. 51]

The settled areas have a fundamental role in the composition of the networks of a territory, in the case of the MaB biosphere these are located at almost modular distances, defining a settlement system concentrated, above all, around the cities, to which the presence of some smaller centres is added. The further that one moves away from the cities, the more there is a settlement dispersion of the centres and the more they diminish in size until they identify themselves in scattered rural buildings.

In all types of settlements, regardless of their size, the historical value of their formation and the importance of the presence of numerous cultural assets that often require maintenance and enhancement, remain evident. A good part of the settlements is also characterized

by the presence of industrial areas, linked to the agro-industrial economic system, which are located in the areas surrounding the urban centres and scattered in the territories between the ones urbanized and the others, this situation if not managed with actions well thought out can pose a threat to the biosphere and its sustainable development.

4. Composite network of the Po Grande Biosphere



4.3. Infrastructure network

*"The gradual strengthening of the urban network, which already in Roman times constituted one of the peculiar aspects of the Po-Venetian plain, it is gone, as already mentioned, progressively accentuating, especially after national unity and especially in the last half century. This is a consequence of the development and structural transformations of the economy of the northern regions, as evidenced by the prevalence of the industrial and tertiary functions of most of the urban centres of the plain, regardless of their size"*¹⁹

[Laureti L. Pellegrini L., in *La pianura padana e le ragioni degli insediamenti umani*, 1996, p.138]

The territorial system of the Biosphere has always been crossed by important transport axes: road, sea and rail. Arising from a very distant design tradition, these have

undergone changes in their size but never in their role as a link: irrigation infrastructures have been converted into large canals and the farm roads are still recognizable in the size and shape of these territories.

The strong presence of regional and local railway networks is important, these are distributed throughout the territory, in a fairly homogeneous way, connecting most of the urban centres with each other and with the big cities. In support of this network there is also the cycle infrastructure, currently defined in the presence of the national itinerary, developed along the banks of the Po, and the cultural itineraries intersected with it and distributed only in some parts of the territory. The flow of the river, is an unexploited potential which represents an infrastructural element that is currently used only for tourism restricted to the navigation of the Po and for some commercial exchange.

Implementing these infrastructures and their

junctions means placing them in relation with each other and making the infrastructural system that serves this territory stronger and more compact and, consequently, bringing both local and tourist benefits, creating real permeable membranes make the entire biosphere accessible and usable by placing itself as a dense connective tissue between public and private space and between anthropic landscape and nature.

Intermodality, therefore, assumes a fundamental role in these relationships, understood as the combined use of different means to move within a territory, and with it its exchange of nodes, central elements in the urbanized area that become a place of intersection and relationship between different flows of movements in the territory that define the use and importance of public space.

As previously mentioned, a fundamental presence in the territories is that of the

large national itineraries, such as the aforementioned Eurovelo and VenTo: these present a positive impact on the local cycling network since, by increasing cycle tourism, they push towards its implementation, favouring the development of a network capable of engaging and supporting a single large sustainable infrastructure system that is capable of changing the way of living and seeing the territory.

The planning of this form of mobility, therefore, cannot be limited to the infrastructural system alone, but involves the redesign and change of the formal layout of public spaces. Fitting into this dynamic, project proposals for the recovery or enhancement of those places are identified as key environmental and cultural value and which need to be made usable by the soft mobility network, whether they are urban centres, isolated buildings, natural elements or landscapes.

4. Composite network of the Po Grande Biosphere



fig. 24

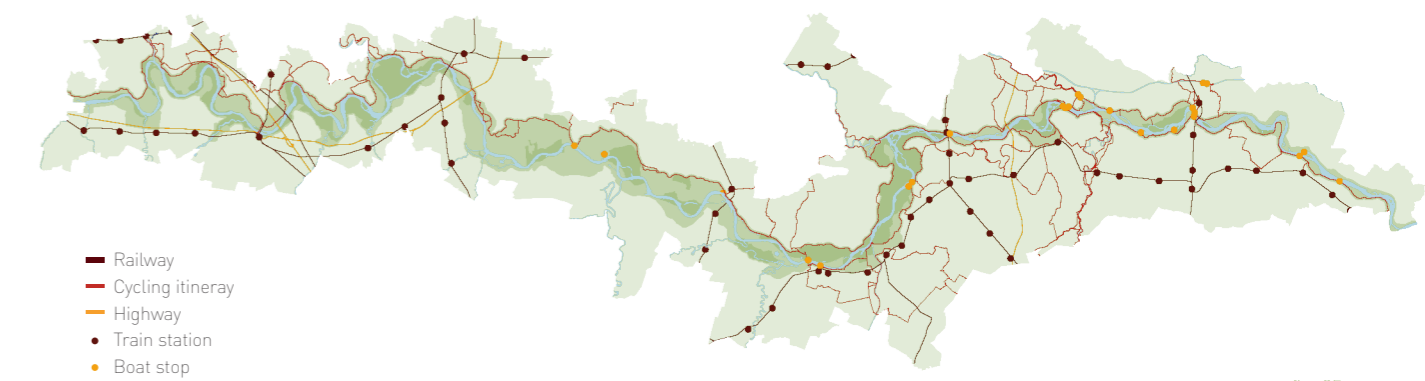


fig. 25

4.4. First considerations

The Transition Area, as we have seen, is defined by a strong territorial identity rich in environmental and cultural values. The widespread settlement is characterized by the presence of a network of urbanized historic centres that assume different roles within the territory, not so much for their size but for the existence of an intersection, in them, of the previously analysed systems, environment and landscape, settlements, infrastructures, and on the basis of the shape and importance they assume when they relate in their intersections.

In these intersections, in fact, the role that each urban centre assumes in the territory can be read, providing us with the possibility of their systematization and hierarchical organisation: actions that are necessary to be able to develop a design strategy that differs according to the needs of the places, not as

individual cities, but as urbanized groups with equal functions and characteristics.

As can be seen in the table, on the basis of the services identified for each urban centre in its three networks, these have been divided into: main hubs, secondary accesses, not connected centres.

The former is identified in places connected, mainly by the railway system, with large cities outside the biosphere: through these centres pass the major flows of displacement on a regional scale making them assume a central and strategic role in the territory. Secondary accesses are cities characterized by the presence of railway stations of local lines or docks for tourism on the Po, these are essential for the intermodality within the biosphere. Finally, we find those cities that are not connected through fast infrastructures, but would have a strong potential for territorial development if subjected to appropriate enhancement actions.

This, as established by the candidacy dossier of the Po Grande biosphere, must take place through sustainable development mainly focused on the theme of increasing tourism, environmental and cultural, which integrates into the territory without breaking its equilibrium.

The project actions will focus on strengthening existing cycling services and increasing them with new systems aimed at a dual function: exploiting the presence of tourism in the large cycle itineraries, directing it towards the centres, spread across the territory and encouraging the local population to move between them through the use of bicycles, changing the role of itineraries from an element reserved for cycle tourism to a structuring element for territorial connections.

The infrastructure project, however, constantly implies a double dimension: that of a system of connections, relating to mobility and

accessibility, and that of a place, a space of proximity and contact with the local territory from which the various relationships with the natural and man-made environment.

For the correct enhancement of the territory, therefore, it is not possible to focus only on the design of new cycle paths, but it is also necessary to take care of the enhancement of the places that they connect, through actions that touch all three systems that make up this territory.

Only through the implementation of these systems, taken both individually and as a single element, and of their relationships, is it possible to obtain a territory with a strong and cohesive identity that stands in contrast to its current fragmentation.

5. Strategy development

The territory of the Po Grande biosphere analysed so far presents different critical issues that have become visible in the study of the individual systems and the process of their superimposition, which, in the daily reality of these places, result in the constant abandonment of natural and rural areas and in the loss of their landscape and cultural heritage.

The intent of this thesis therefore lies in the preparation of an overall approach consisting of different tools, which sets the objectives to be translated into specific actions and interventions applied in different territorial areas according to their needs.

It was decided to analyse, for the application of this, the portion of the area located in the eastern part of the Po Grande Biosphere and, more specifically, between the cities of San Benedetto Po and Ostiglia. Characterized by the presence of many interesting elements and with great potential for the development

and enhancement of its values, this area is crossed by the river Po, its tributaries Secchia and Mincio, and their respective parks.

While in the north and west this area is delimited by the presence of water, on the contrary, to the east and south, this is delimited by the passage of the railway lines, in which we recognize an important axis of extra regional connection between Verona and Bologna.

River and railway act as a key infrastructural framework for the movement of citizens and tourists within the entire territory, and for which there is the need to implement their intermodal characteristic, also considering the use of a third vehicle, the bicycle.

In fact, the passage of the European cycle paths Eurovelo 7 (from north to south) and Eurovelo 8 (from west to east) which intersect in the city of San Benedetto Po, become fundamental in the theme of infrastructures,

generating movement within this territory of a type of tourism and sustainable transport that we find at the basis of the points of development identified by the dossier of the candidacy of the Po Grande Biosphere.

The presence of these flows then becomes important for the urban settlements of this area as they are characterized by a multiplicity of historical elements of great cultural and architectural value, which need to be preserved: an action possible thanks to the increase in awareness of citizens and of the touristic influx.

The distance between these settlements is also modular and of adequate length for the identification of new connecting cycle paths that direct the flows of tourists to urban centres, detached from the river banks, and that encourage citizens to make their small daily movements through the use of the bicycle.



fig. 26



fig. 27

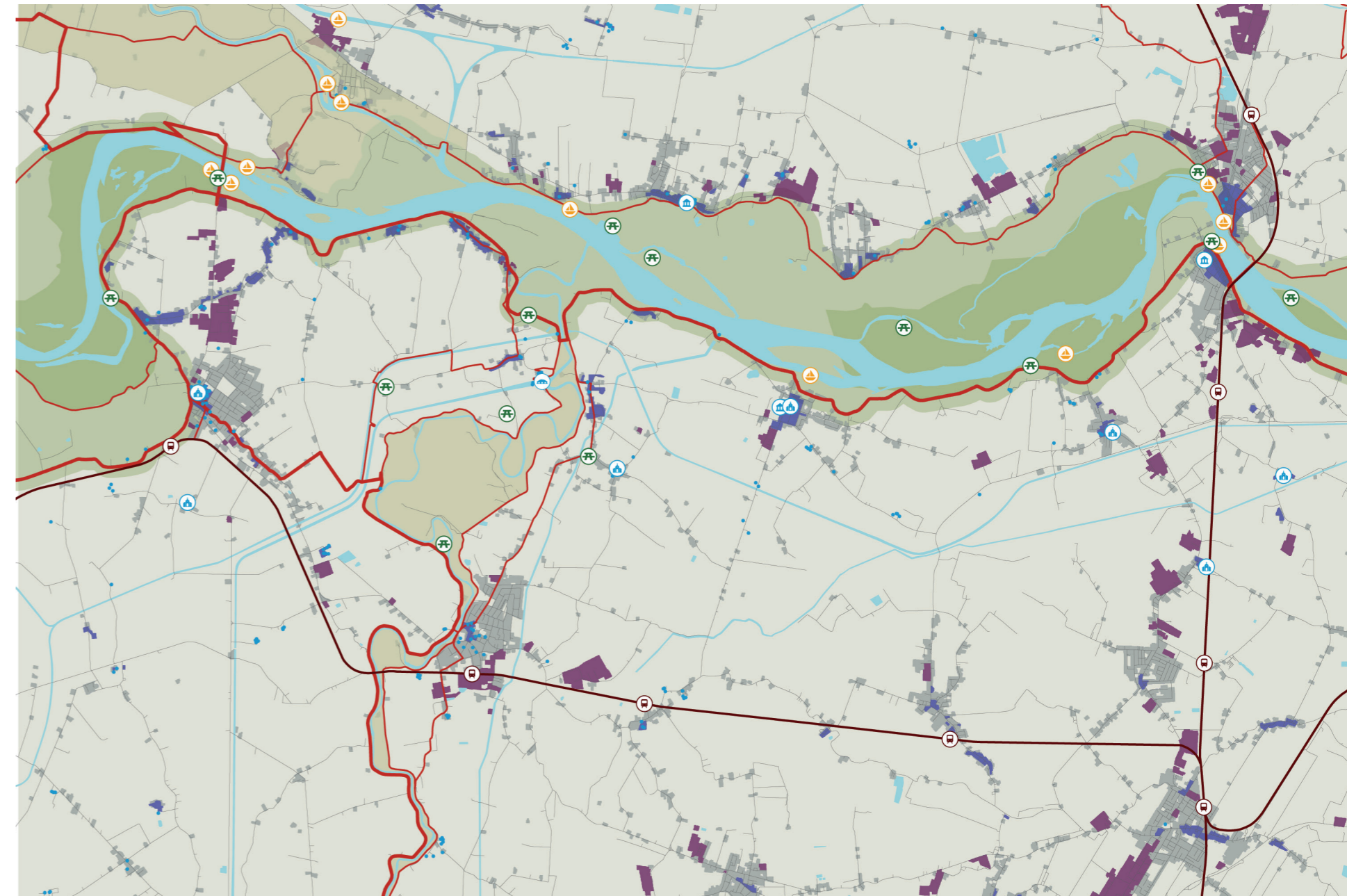
5.1. Intervention definition

With these premises, taking into account the identified criticalities and potentials, in compliance with the indications of the regional and provincial territorial plans, the first project interventions were defined.

Various project actions have therefore been developed, aimed at achieving the set objectives: for each objective one or more interventions may correspond. The interventions identified were divided according to the three themes (environment and landscape, settlements, infrastructure), becoming the basis for experimenting with this approach thereby being superimposed to arrive at a single system of interventions that completes the final objective set for the beginning of these analyses.



fig. 28



ENVIRONMENT AND LANDSCAPE

TO CONNECT the cities with the river in order to bring natural values from core zones to urban settlement, through

- green corridors that follows existing canals courses
- green corridors that follow main cycle path

TO VALORIZE the environment values in order to protect it and make it recognizable by citizen and tourists, through

- ⊕ Enhancement of existing stop areas with explanation panels and services for cyclist
- Path to connect rest areas with cycle path
- Element to direct tourist from Eurovelo through green corridors to reach cities
- ▼ Enhancement of panoramic views on natural elements of Po river

TO VALORIZE cultural heritage present in the landscape in order to safeguard it, through:

- Preservation of historical monuments with installation of information panels;
- Preservation of hydraulic artefacts with installation of information panels.

TO VALORIZE the agricultural territory and limit human activity impact in order to improve local production and agrarian landscape, through

- Green barriers as protection near big street, industrial areas, railway lines.

TO VALORIZE the elements of the traditional agrarian landscape in order to preserve their cultural and architectural values and give a unified identity to rural areas, through:




- Preservation of historical farm building
- Maintenance of roads that connect farmhouses to cycle path network
- ▨ Agricultural use of historic fields surrounding significant farmhouse to produce typical crops
- Maintenance of the identity of historical canals.





fig. 29

SETTLEMENT

TO VALORIZE areas of particular historical interest in order to preserve them and increase local awareness and identity, through

-  Adding information on historical values in strategic point
-  Element that direct tourist from Eurovelo to urban settlement
-  Attracting cycle tourist in urban areas through new services.

TO MITIGATE industry expansion in order to protect physical and aesthetic values of the natural environment, through:

-  Identify future expansion areas from PTCP to be kept for future industry
-  Addition of green buffer zone around industrial areas.

TO IMPROVE permeability of urban edges in order to re-define their relation with the nature, through:










-  Identify future expansion areas from PTCP to be kept for future residential
-  Adding tree lines on cycle path sides to bring nature in the city
-  Green belt surroundings cities.

fig. 30






INFRASTRUCTURE

TO CREATE a sustainable inter-modal network in order to improve the accessibility of the territory, through:

-  Creation of new ports for waterway transport with bicycle services
-  Implementation of existing railway station with bicycle rent and services
-  Implementation of services and accessibility of existing ports
-  New touristic boat path along river Po with possibility of bicycle transportation
-  Improve the pedestrian link from the train and boat station to the city centre and bicycle itineraries
-  Element that direct cyclist to inter-modal nodes.

TO DEVELOP cycle routes network in order to encourage citizen to use bicycle for their movement between cities, through:

-  New cycle path of connection
-  Improvement of cycle path through rest areas
-  Addition of directing element on crucial intersection.

TO IMPROVE the connection between opposite sides of the Po river in order to change its role from barrier to connection infrastructure, through:

-  New boat connection between shores.



fig. 31

5.2. Territorial nodes

The actions undertaken so far have led to the drafting of a unitary planning strategy of the networks sensitive to the project of a portion of the territory of the Po Grande biosphere. To give more concreteness and promote a planning approach applicable to the reality of the territory, strategic projects were then elaborated, developed in specific detailed actions and applied to territorial nodes.

These nodes have been identified in those situations where the overlap of the networks studied and the proposed actions find a relevant development. These become the basis for the formulation of more specific actions that wishes to prove the effectiveness of the approach underlined in this paper and the need for its application for the proposed development for the Po Grande biosphere.

Each selected node has been associated with a title that recalls the specific relationship that exists, at that point, between the different systems of analysis and that the proposed actions want to face.

The latter bring with them the will to demonstrate that the development of a unitary network based on the relationship between elements and connections in the different territorial scales, is the basis for the elaboration of coordinated and coherent projects that are able to achieve the common goal of the protection and enhancement of these territories.

NEW MOVEMENTS FOR A CHANGE

ALTERNATIVE PATH

GREEN ROADS FOR DEVELOPMENT

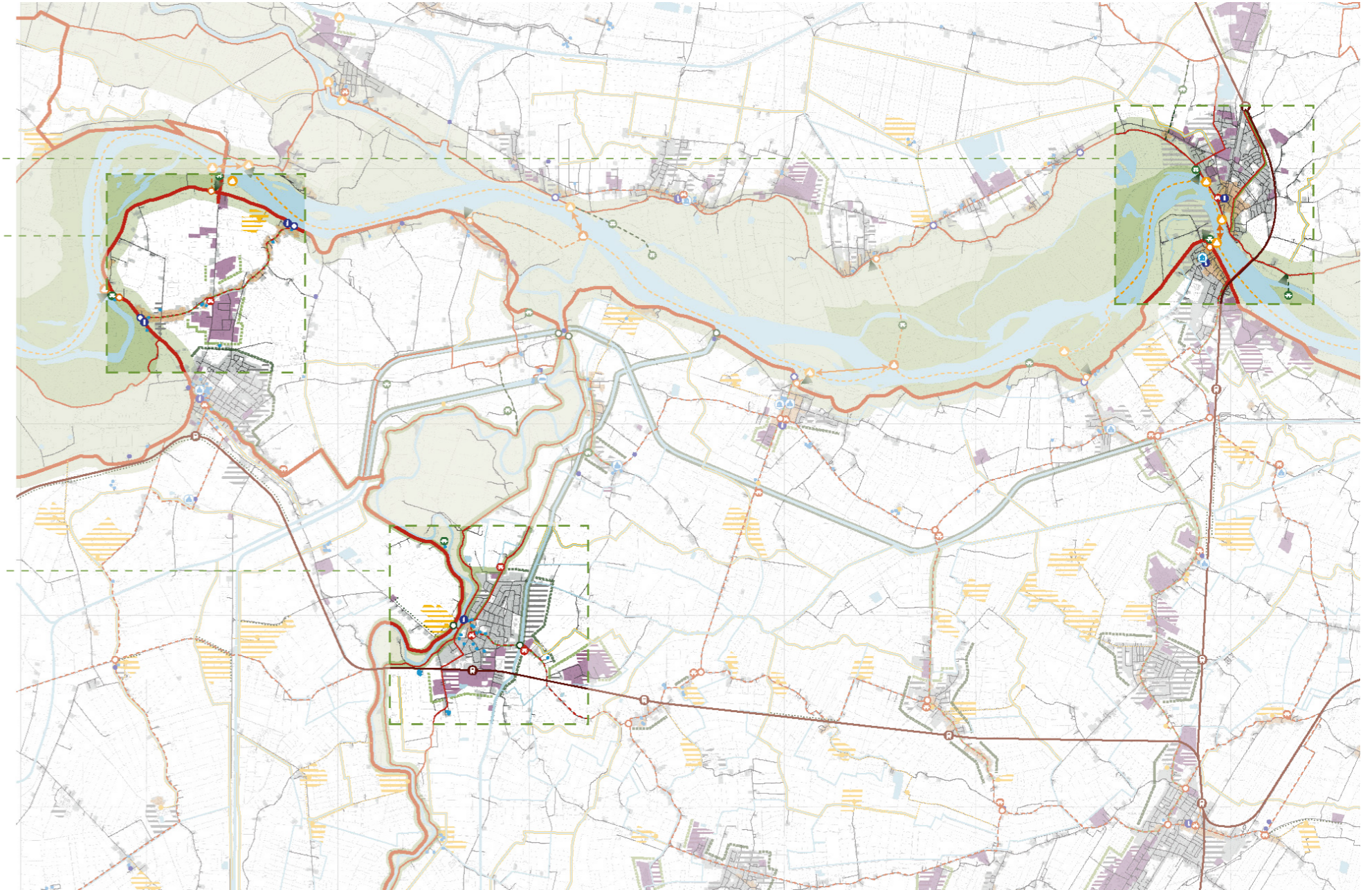


fig. 32

5.2. Territorial nodes

5.2.1. New movements for a change

The urban centre of Ostiglia is located on the Verona - Bologna railway axis, making it assume, thanks to the presence of the railway station, the important role of access to the territory which takes place mainly from the surrounding regions, Veneto and Emilia Romagna.

In addition, the town is developed on the banks of the Po river and is characterized by the presence of two naval docks that are inserted as potentialities within a river connection network with other urban areas located along the banks. On the opposite bank runs the VenTo itinerary, the Italian route of the European Eurovelo 8, which connects to the town of Ostiglia through a local cycle route. The presence of cycle routes, railway station and docks is a strong potential to

make this city a central hub of intermodality in the territory in fact, the implementation of the intermodal exchange between the three means, becomes a fundamental element for sustainable development both of tourist and local mobility within this territorial portion and giving the possibility of directing tourist flows in strategic places for their enhancement.

With these considerations, is developed the title of this node "New movements for a change". It refers to the possibility to bring a concrete change in this territory for its enhancement and sustainable development by giving the possibility to inter-change the way of transportation to move along the territory. In this way cycling tourist will be able to move faster to different points of the territory changing their mode of transport between the bicycle, train and boat, whereas citizens, on the contrary, will have the possibility to do smaller movements between cities using the bicycle.

HARBOUR ENHANCEMENT



Enhancement of the existing boat stops to improve the inter-modality of the city of Ostiglia by the addition of services for cyclability

STATION ENHANCEMENT



Enhancement of the existing train stops to improve the inter-modality of the city of Ostiglia by the addition of services for cyclability

HISTORICAL CENTRE ENHANCEMENT



Positioning of information point and cyclist services in the historical Palazzo Foglia situated in the centre of the city to attract tourist and to increase the knowledge of citizens on cultural values of Ostiglia

RESTING STOP ENHANCEMENT



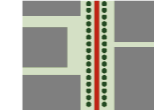
Enhancement of the existing rest stops to provide shadow and services to cyclists

DIRECTION ELEMENT



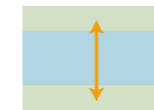
Positioning of direction element in order to change the flux of people to strategic points

GREEN ELEMENT



Addition of trees on the sides of the main itinerary that connects the river to the train station and go across all the historical centre to make the path more placeable and bring natural values in the city

BOAT NETWORK



Connection between Ostiglia and other urban settlement developed along the river Po through a new boat network with the possibility to transport bicycle in order to give a possibility to people to move between Ostiglia and Revere and along the biosphere territory more easily

VISUAL ELEMENT



Addition of element for the improve of panoramic view on the Po river in order to enhancement its aesthetic and natural values

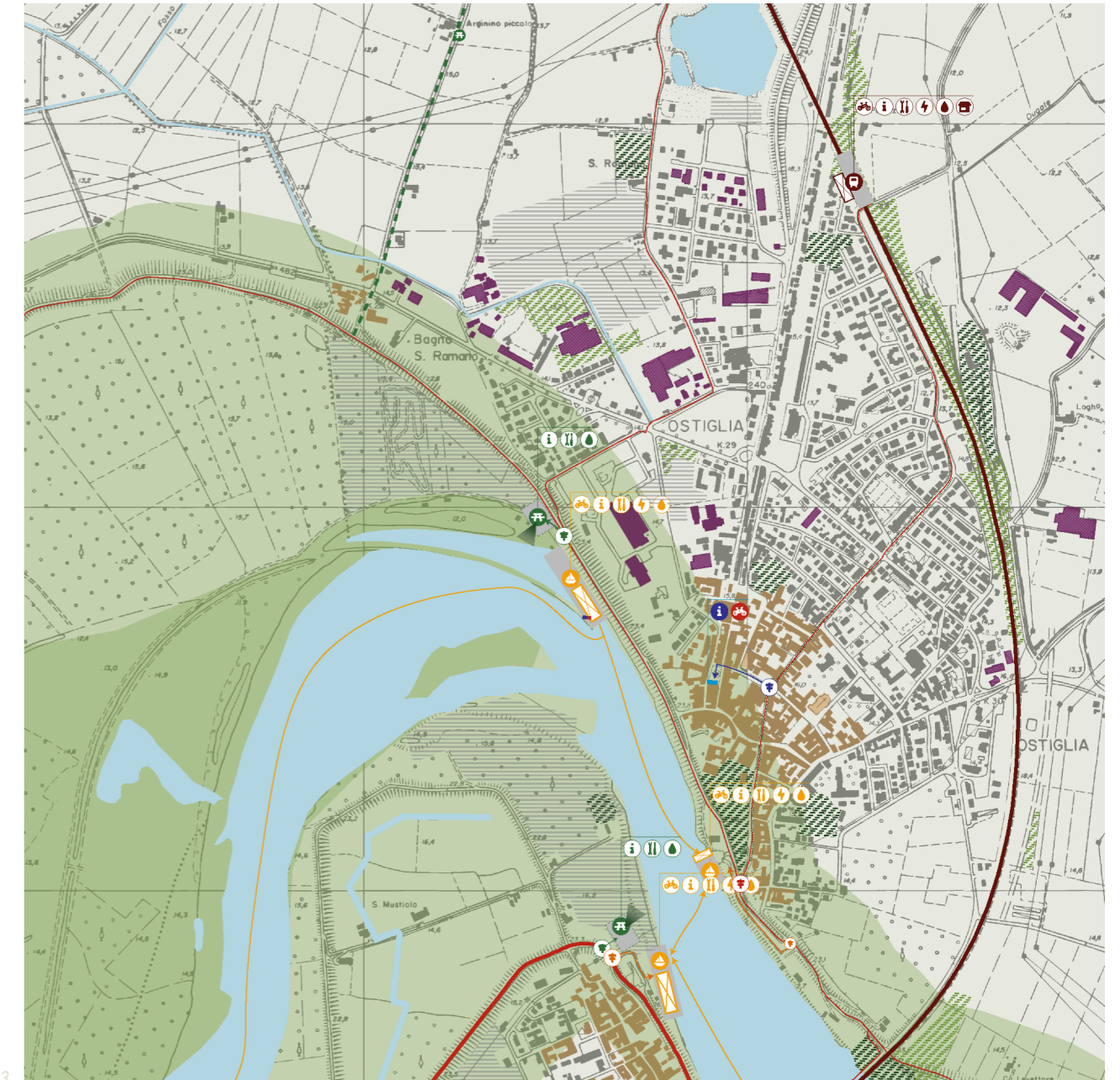


fig. 33

5.2. Territorial nodes

5.2.2. Green roads for development

The city of Quistello is not developed directly on the banks of the Po river, however, it is connected to it through one of its tributaries, the Secchia River and with this comes also its park. Both elements, water and nature, play a vital role in this area, they have important values that need to be preserved and enhanced in order to create a more liveable environment in and around the city of Quistello.

This city has also a relevant historical development, that is visible in the presence of its different heritage elements, recognized by the region of Lombardy, that are located mainly in its centre.

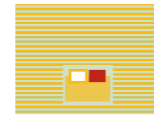
The centre of the city is connected to the river, besides the Secchia, by the presence of the Eurovelo 7 cycle path and by other

local itineraries. The presence of this cycling infrastructural network becomes a potential for the enhancement of the city and its heritage by taking the role to direct tourist travelling across them in to the city centre of Quistello and make them, and the citizens, aware of its values by giving proper information about them.

Beside cycle path and river connection it is also important to bring in to the city the natural elements and values characteristic of the buffer zone situated in proximity of the river Po, taking advantage from this action to also improve the existing cycle path and make them more enjoyable to cycle.

For this reason the action of this node are summarized with the title "Green roads for development".

HISTORICAL AGRICULTURE



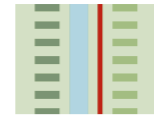
Positioning of information point and cyclist services near the farm building to attract tourist and to increase the knowledge of citizens on agricultural values of historic fields

STATION ENHANCEMENT



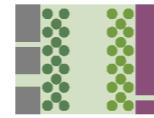
Enhancement of the existing train stops to improve the inter-modality of the city of Quistello by the addition of services for cyclability

GREEN CORRIDOR



Design of a green system of elements to preserve the natural and aesthetic values of the Po Biosphere and the Secchia parks and bring them in to the cities increasing citizen awareness of them and improve the qualities of cycle path

GREEN BELT



Design of green belt around the city of Quistello and its industrial area to stop their spread and improve the landscape values

HISTORICAL CENTRE ENHANCEMENT



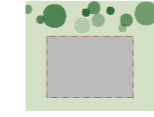
Positioning of information point and cyclist services in the city hall palace to attract tourist and increase the knowledge of citizens on cultural values of Quistello

HERITAGE ENHANCEMENT



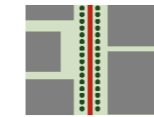
Positioning of information panels on buildings part of the cultural heritage of Lombardia region to inform tourist and to increase the knowledge of citizens on cultural values of Quistello

RESTING STOP ENHANCEMENT



Installation of new rest stops to provide shadow and services to cyclists and give information on cycle path

GREEN ELEMENT



Addition of trees on the sides of the main itinerary that connects the river to the train station and go across all the historical centre to make the path more placeable and bring natural values in the city

DIRECTION ELEMENT



Positioning of direction element in order to change the flux of people to strategic points

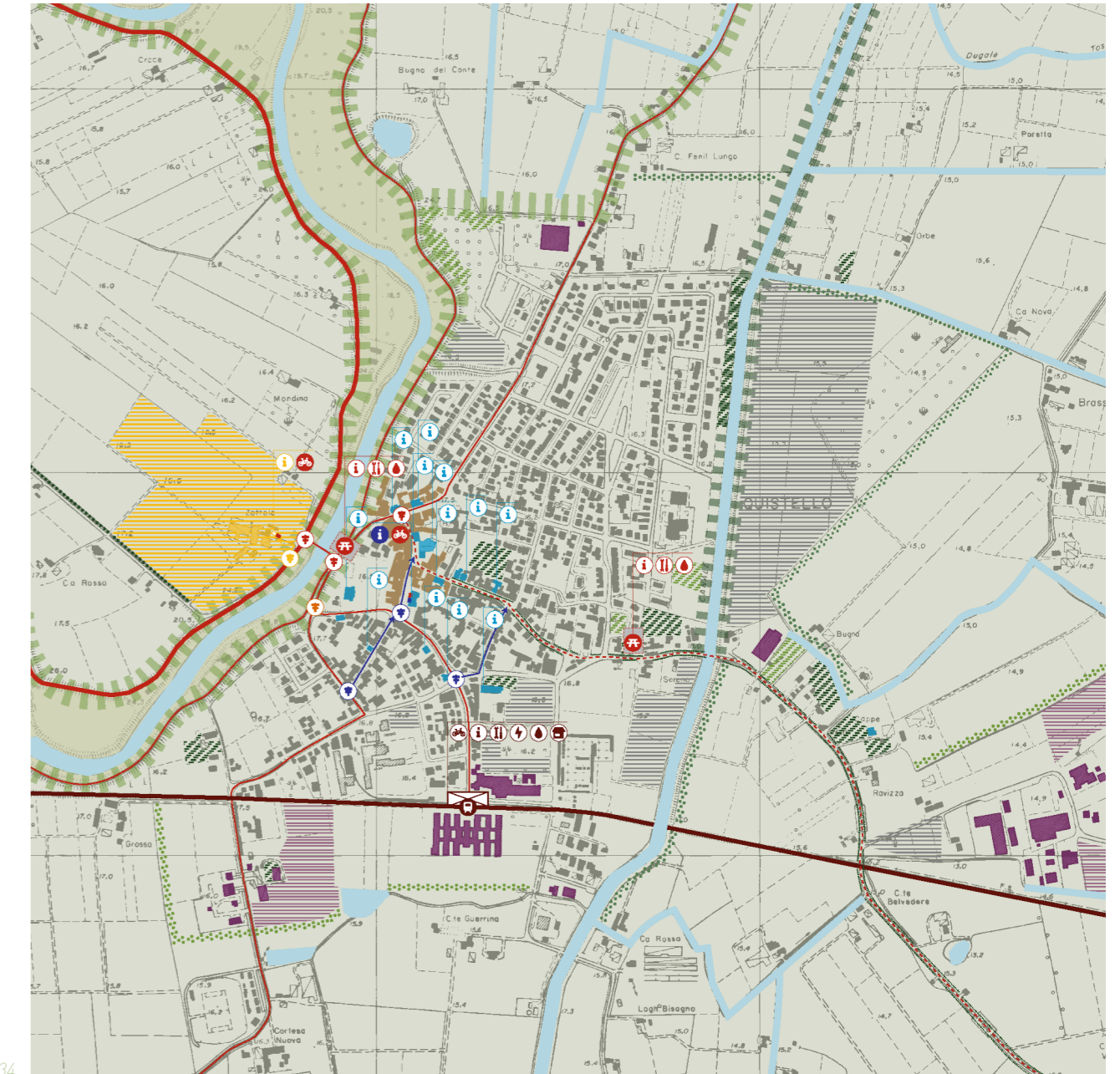


fig. 34

5.2. Territorial nodes

5.2.3. Alternative path

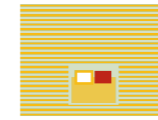
The city of San Benedetto Po and its peripheral areas are surrounded on three sides by the river Po and by cycling itineraries, Eurovelo 7 and Eurovelo 8, that are developed on its shore and that, in this part of their itinerary, overlap generating an important flux of cycle tourism. The peripheral zone of this city is characterized by a linear development of its urban settlement that is concentrate on just one main road that has its start and its finish on the river of the Po. Just outside this residential area is relevant the presence of the industrial areas that, if not regulated, may be dangerous for the environmental, cultural and aesthetical values of this city and of its historical development.

Protecting and preserve it from this threat becomes fundamental for the final goal of

enhancing the territory of the Po Grande Biosphere Reserve. This is possible, also, thanks to the presence of the European itineraries, that in this portion are developed in the national cycle path VenTo, and thanks to the opportunity that may represent the change of the flux of cyclist from the main cycle path to the city road on which this periphery is built.

On this premises the analysis and intervention on this node take the name of "Alternative path". Proposing a different path to tourist, full of cultural heritage and services for bicycle, it's a way to increase the use of this road and its practicability and, also, will incentive citizens to use the bicycle as way of transportation for short distance movements. Changing the use of this places will also help to change their perception giving more importance to their natural and cultural values, to their heritage and adding new possibilities of sustainable development.

HISTORICAL AGRICULTURE



Positioning of information point and cyclist services near the farm building to attract tourist and to increase the knowledge of citizens on agricultural values of historic fields

GREEN BELT



Deign of green belt around the industrial area of San Benedetto Po to stop their spread and improve the landscape values

HISTORICAL CENTRE ENHANCEMENT



Positioning of information panels on buildings that are part of the cultural heritage of Lombardia region to inform tourist and to increase the knowledge of citizens on cultural values of San Benedetto Po peripheral area

HERITAGE ENHANCEMENT



Positioning of information point and cyclist services in historical sites situated in the peripheral areas of San Benedetto Po in order to attract tourist and to increase the knowledge of citizens on cultural values

DIRECTION ELEMENT



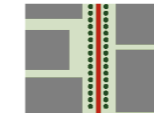
Positioning of direction element in order to change the flux of people to strategic points

BICYCLE MECHANIC



Enhance the position of the existing bicycle mechanics to direct cyclist from cycle path to it and adding information about historical centre of the city and on cycle path

GREEN ELEMENT



Addition of trees on the sides of the main itinerary that connects the river to the train station and go across all the historical centre to make the path more placeable and bring natural values in the city



fig. 35

6. Conclusion

these places.

The design insights complete the work of analysis and development of actions, which takes shape in the nodes identified in a specific area of the Biosphere. The simulation of application of the design methodology, carried out on those nodes considered to be of greatest interest and sensitivity, proves to be potentially applicable to the entire territory, demonstrating how much the concept of systematization and multiscale reveals its effectiveness.

Through the aforementioned processes, the project becomes an experience capable of interpreting the complexity of the Po Grande Biosphere and, with the understanding of its compositional networks, it is able to develop a set of solutions. The latter, through the promotion of the interaction between man and the biosphere, lead to the enhancement of this precious territory and to a promotion of a new perception of the identity of its places, which will be stronger and rediscovered, as it deserves to be.

The key and ordering element of this vision remains the connection which, in the form of a network of elements and in that of a cycle route, has made it possible to connect the different places of this territory identifying spaces that need to be sew up and combining the needs of modern urban development with existing environmental and cultural characteristics.

In this way the slow infrastructure is no longer an isolated element that crosses the territory but becomes an integral part of it: qualifying infrastructural reinforcement developed in territorial connection rings that branch off from the main cycle path and cover the entire territory making it usable by tourists and citizens.

The presence of the national cycle itinerary represents the fundamental starting point for the development of this new network of connections which, in the concrete case of its application to the Po Grande Biosphere, turns out to be a positive experience capable of generating enhancement and protection of

Investigating the possibility of using the slow infrastructure for the enhancement of the cultural heritage of the territories of the Po Grande biosphere has led to questioning the processes and actions that would be triggered if one reconsidered the role that the cycle itinerary has in the structure of this territory.

The initial choice of experimenting with a systematic and multiscale approach which, working for systems of different scales, analyses the multiple compositional elements of the territory, proved to be optimal for dealing with the problems associated with the characteristics of these places.

The choice of dividing the territory into three systems such as "environment and landscape", "settlement" and "infrastructure" has become essential in order to be able to foresee specific implementation actions for each of them that led to the obtaining of a complete project, result of their superimposition, which acts simultaneously on all those elements which, coexisting, collaborate in the characterization of this territory.



fig. 36

¹ Original version: "L'immagine del paesaggio può essere vista come un'espressione dell'identità locale e una rappresentazione del sistema locale e, nello stesso tempo, come un essenziale mezzo di comunicazione col contesto metropolitano" (Gambino, 1994, P.344)

² Original version: "Ciò che ci interessa affermare in proposito è che i territori lenti sono ambienti di vita messi in atto, più o meno esplicitamente, aggregando elementi locali e globali. Essi corrono sul crinale tra globale e locale, ne sono un concatenamento" (Lancerini E., 2009, p. 126)

³ Original version: "Succede così che, attraverso piazze, traguardando rive, percorrendo portici, risalendo argini, il visitatore che giunge da lontano, quel tanto che basta per non definirsi parte esso stesso di quei luoghi, ha la sensazione di essere entrato in una dimensione in cui tutto è comprensibile, tutto è riconoscibile, in un continuo rimando tra

i colori e le forme della natura, dell'acqua, della terra, del cielo e il paesaggio costruito dentro a questi." (Pocaterra F., 2005, p. 51)

⁴ Original version: "Il Po grande dovrà essere un territorio del turismo lento, fluviale e della ciclabilità; e dovrà essere un territorio del paesaggio e del cibo dove questi valori sono intrinsecamente percepiti assieme a quello della sostenibilità, con un'agricoltura e una pioppicoltura che evolvono sempre più verso pratiche bio e che tutelano la biodiversità." (Legambiente, in Riserva di biosfera UNESCO Po Grande, 2018)

⁵ Original version: "Ma il rafforzamento delle identità locali non può ridursi in dimensioni localiste, poiché il successo delle azioni locali dipende sempre più da ciò che avviene nelle loro relazioni con le reti interessate. Perciò, la pianificazione paesistica deve prendere in considerazione una pluralità di reti: da quelle urbane infrastrutturali ed ecologiche a quelle che riguardano il tempo libero e la

pubblica ricreazione o alle <<reti verdi>> per la riorganizzazione dei paesaggi rurali <<di piccola scala>>" (Gambino R., 1994, P.332)

⁶ Original version: "Al di là di improbabili linee di difesa, esiste, come esito del lavoro analitico, la comprensione degli elementi del paesaggio costruito. Esistono quei fatti su cui si può fondare un discorso progettuale non dedotto meccanicamente dall'analisi, ma invece consapevole del patrimonio concreto di forme depositate nel territorio, della sua urbanità, e capace, infine, di interpretare la territorialità dell'architettura entro le fratture e la discontinuità dei paesaggi di cui ogni attuale progetto deve saper interpretare configurazioni, differenze, ordini." (Torricelli A., in Lungo il Po, 2005, p. 11)

⁷ Original version: "Nei secoli si è passati al mutamento radicale dei rapporti uomo/natura: da una posizione dell'uomo iniziale di difesa si è arrivati ad un intenso sfruttamento della natura, fino ad esercitare su essa un

più o meno razionale dominio." (Marchetti G. Sartori F. Vaccardi V. in la pianura padana e le ragioni degli insediamenti umani, 1996, p. 204)

⁸ Original version: "Descrivere i luoghi del Po risulterebbe lavoro arduo e sterile, senza concedere spazio al racconto e senza invocare una dimensione epica. La straordinarietà dei luoghi, degli spazi e dei tempi dei territori e delle presenze agglutinate presso il corso e lungo la storia del fiume Po, non è possibile rappresentarla e interpretarla se non come una dimensione fantastica, ancor più per il fatto che essa è mescolata, e resistente al tempo stesso, alla dimensione concreta e reale della contemporaneità". (Pocaterra F., 2005, p. 44)

⁹ Original version: "Caratteri che concorrono a restituire una immagine di forte identità per questi luoghi, la cui vastità e complessità potrebbe sfuggire ad uno sguardo distratto e presuntuoso". (Pocaterra F., 2005, p. 51)

¹⁰ Original version: "Il graduale raffittimento della rete urbana, che già in epoca romana costituiva uno degli aspetti peculiari della pianura padano-veneta, si è andato, come già accennato, progressivamente accentuando, in special modo dopo l'unità nazionale e soprattutto nell'ultimo mezzo secolo. Ciò in conseguenza dello sviluppo e delle trasformazioni strutturali dell'economia delle regioni settentrionali, come testimonia il prevalere delle funzioni industriali e terziarie della maggior parte dei centri urbani della pianura, indipendentemente dalle loro dimensioni." (Laureti L. Pellegrini L., in La pianura padana e le ragioni degli insediamenti umani, 1996, p.138)

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fig. 24:Infrastructure system, Extract from panel 02	p. 47		

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