# RIVER AWAKENS THE CITY

*Let the river become the "glue" of LODI towards a new urban design*

School of Architecture Urban Planning Construction Engineering
Master's Degree in Architecture and Urban Design
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Accademic Year 2022-2023

POLITECNICO
MILANO 1863

# LIKE A FLOWING RIVER.
## Projects for places and people in the Adda SudRegional River Park

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# Abstract

This article takes the LODI town in Italy and the ADDA river flowing through the city as an example. The purpose is to study how to strengthen the relationship between the river and urban residents and awaken their place memory about the river. This article is divided into three parts, the first part is background research. The article first studies the history of the evolution of the natural environment of the ADDA river and the birth and development history of the LODI town. The second part is the current situation analysis and case study. This part discusses the relationship between the ADDA River and the LODI town, as well as some of the contradictions and difficulties faced by the two. The researchers collected a large amount of data, conducted a comparative study on three cities that are also located along rivers, and summarized some reference points from the development strategies of these cities. The third part is to propose design strategies based on the site. These strategies include public space/transportation/historical and cultural buildings/ecosystems/industrial structures, etc. The researchers designed and displayed the LODI area as a specific research case, and tried to promote these design strategies in urban design along the river, thereby emphasizing the role of rivers in urban life and development and enhancing people's sense of regional identity. , to achieve sustainable development of man and nature.

**Keywords:** river, urban development, history and culture, ecology, place memory

# CONTENT

*0 /*
*Introdutciton*

I believe that many people have memories of rivers when they were growing up. "When a river grows up with you, perhaps its sound will accompany you throughout your life." This is a sentence from the work "Running River" by American writer Ann Zwinger. Each river expresses its own personality and tells its own story. Everyone understands rivers differently and gives them different meanings. Over the years, I have often walked among mountains and rivers and witnessed the beautiful faces of some rivers. Even if I don't know their names, it does not prevent me from listening to the sounds of nature and exploring the wisdom of life.

Every internationally renowned city is always accompanied by a famous river. For example, in China, the Huangpu River nourished Shanghai, allowing it to rapidly rise from a small fishing village to an international metropolis. The historical buildings and modern skyscrapers along the Huangpu River bear witness to the rise of Shanghai, and the river has become one of the important symbols of the city. Another example is in Paris, France. The Seine River is like a beautiful necklace that connects the whole of Paris. Many famous cultural landscapes in Paris are gathered along the Seine River, which is also the essence of French culture throughout the ages. Major cities in the world are basically built near water. Generally, the middle and lower reaches of rivers are mostly areas with concentrated cities and relatively developed economies. The river network not only makes outstanding contributions to economic development, but also plays an important role in inheriting the city's history and culture and forming beautiful natural and cultural landscapes.

But with the development of science and technology, the digital era is coming. People's lifestyles and behavioral activities have undergone tremendous changes. Human beings' daily life is getting further and further away from the river. The trend of indifference to nature and neglect of the ecological environment seems to be becoming more and more obvious. Although every human standing in fields and rivers is exposed to these real natural landscapes around them, these are not the center of their attention, but are regarded as the background of life, which is only a foil at best. The indifference towards the natural environment gradually spreads in people's hearts. Fewer and fewer people go to the river, the memory of the river is becoming dim, and the understanding of history and culture and the sense of identity with the local culture are gradually disappearing. Urban spaces began to appear with buildings that lacked spiritual value and began to look the same.

As urban designers, we begin to pursue the characteristics and cultural spirit of cities and places, and explore the emotions and memories behind them. The river is an important medium in this process. We began to explore the historical origins of urban development and rivers, and began to look for traces of the close relationship between humans and rivers in the past. We hope to restore the identity of the river as an important participant in urban development and human life, so that people can awaken their beautiful memories of the river and start to value the harmonious coexistence with nature again. This is also a respect for the city's history and cultural knowledge. The unique personality and environment of each river will become an important cultural symbol that the people living around it can be proud of. Harmonious coexistence between man and nature can also explore more possibilities for sustainable human development.

During this process, we found that many cities have begun to make attempts to relate rivers to urban development. Different strategies are proposed based on different river and urban characteristics. Through comparative analysis and research, we have summarized some feasible strategies and rules, and hope to use the Italian town of LODI and the ADDA River as examples to carry out the next series of research.

# A GLIMPSE INTO THE HISTORY

***Rivers Humans and History:***
***Relationship Changes between Rivers and Human Activities in the Process of Historical Evolution***
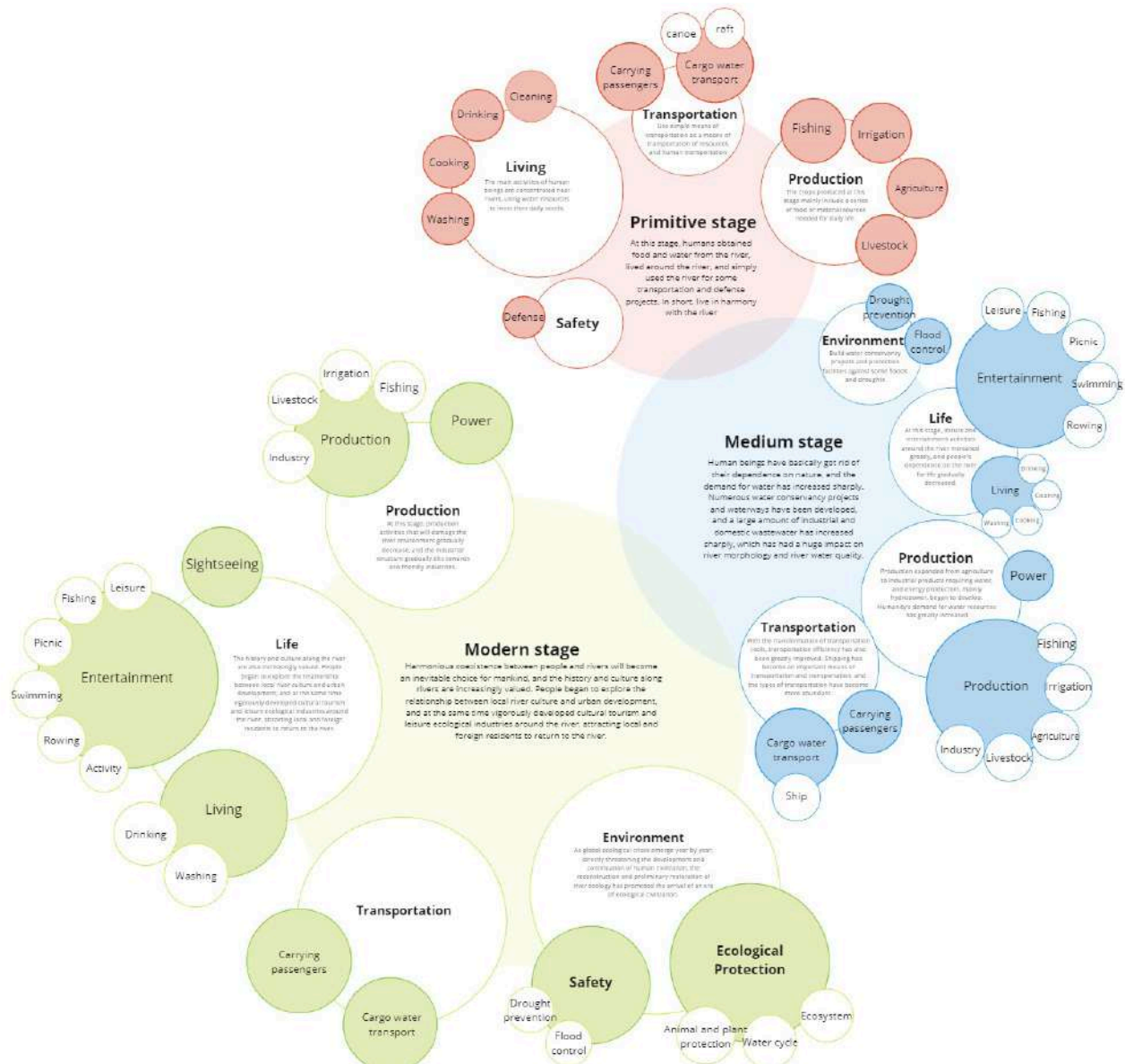


The function of rivers in human development

Primitive farming civilization period

In the primitive civilization period, human beings attached to and worshiped rivers. In primitive societies with extremely low levels of productivity, the ancients were in awe of nature. They lived by the water, made a living by fishing and hunting, and were passively attached to nature. Whenever they encountered natural disasters such as floods and droughts, they had to pray for God's mercy and worship the river as a god. At this time, people and the river are in a primitive natural and harmonious state. Entering the period of agricultural civilization, humans began to initially develop and utilize rivers, but they still advocated respecting rivers. During this period, with the development and use of materials and tools such as steel, humans began to develop and utilize rivers for simple farming. Human beings began to have the conditions to build some water conservancy projects and have certain defense capabilities against river floods. At the same time, some sturdy water vehicles can be made, and traveling along the river greatly improves the convenience of transportation. However, since humans had very limited ability to change the river at this time, it was still considered that the river had a dominant role over humans and protected the ecological balance of the river to a considerable extent. At this stage, humans obtained food and water from the rivers, lived around the rivers, and simply used the rivers for some transportation and defense projects. In short, live in harmony with the river.

Industrial civilization period

Humans began to control rivers and exploit them in a predatory way. With the rapid increase in productivity during this period, humans basically got rid of their dependence on nature and were able to control, transform and harness natural processes through science and technology. Ideologically, the idea that human beings are natural leaders gradually takes the dominant position. With the huge changes in production scale, production and lifestyle, people's desire to obtain wealth and seek social progress from rivers has been greatly stimulated. The demand for water has increased dramatically, numerous water conservancy projects have emerged, and large amounts of industrial and domestic wastewater have been discharged into rivers, which has had a huge impact on river morphology/resource capacity/movement patterns and river water quality. The rivers are drying up/the river beds are drying up/the lakes are drying up/water pollution has intensified, and biodiversity has been reduced, leading to an unprecedented crisis in river ecology. At this stage, human cities gradually developed from the river banks to the inland. The connection between human life and the river gradually became less close with the development of transportation. At the same time, human activities had a destructive impact on the river ecological environment.

Ecological civilization period

In contemporary times, harmonious coexistence between people and rivers will become an inevitable choice for mankind. As global ecological crises emerge year by year, they directly threaten the development and continuation of human civilization, forcing people to seek new and more reasonable development paths, and triggering the international community's reflection on "repositioning the relationship between humans and rivers." Some ecologists have put forward policy suggestions of "returning living space to rivers and rebuilding river life networks", and some countries have launched the "River of Life" movement. The reconstruction and preliminary restoration of river ecology has promoted the arrival of an era of ecological civilization. At the same time, the history and culture along the river are increasingly valued. People began to explore the relationship between local river culture and urban development, and at the same time vigorously developed cultural tourism and leisure ecological industries around the river, attracting local and foreign residents to return to the river. The relationship between humans and rivers has experienced an upward spiral process. The pursuit of harmonious coexistence between humans and rivers in the future will be an inevitable requirement for world economic and social development and civilization progress.

[Important Topics of Rivers and Environmental Protection]

The natural environment in regions around the world is gradually deteriorating, and the relationship between humans and rivers is also at a stage in urgent need of repair. Therefore, it is urgent to protect the ecology and rivers. How to protect the natural environment? Through summary, it can be found that in the context of natural change, some topics have become issues that need to be focused on. These topics can be divided into four broad categories, namely landscape needs, culture, economy and population growth. These factors influence each other, and we should consider these factors at the same time when designing protection. First of all, we must protect the ecological environment, respond to changing environmental problems, protect river wetlands and improve land desertification, and increase biodiversity. Our second goal is to activate the site culture, awaken the place memory of the river, and create a historical and ecological corridor. In the process of achieving these two goals, we need to take into account the growing population and quality of life requirements, as well as economic factors. Protecting the ecological environment/awakening the cultural memory of the place/improving residents' quality of life/pursuing low-carbon, environmentally friendly, efficient and economical solutions are the four important principles we have proposed.
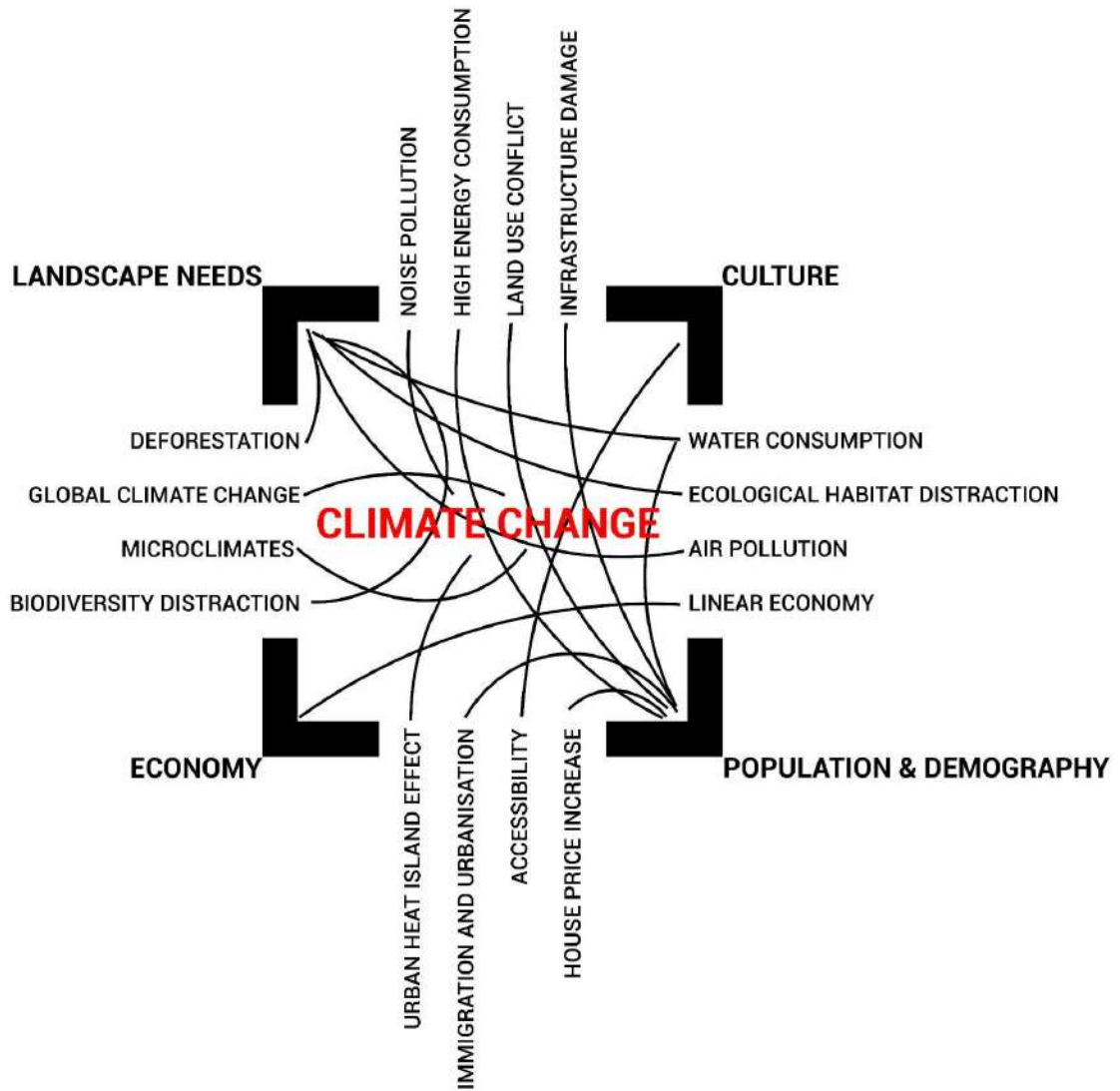
Hot topics about rivers and the natural environment

## 2.1 /
## *Evolution of the natural environment*



2016 LODI regional satellite image *(Image from Google Earth)*



2020 LODI regional satellite image *(Image from Google Earth)*

After discussing environmental and ecological issues in the general context, we know that in recent years humans have been faced with increasingly severe challenges and problems in the natural environment. Next, we will choose LODI as an example to analyze existing changes and problems. By selecting satellite maps of the region in 2016 and 2023 for comparative analysis, we have drawn some conclusions. (More farmland; more dry areas; narrow rivers; river deltas; expanding towns)

A. The farmland area has further expanded, but the degree of land desertification and soil erosion has also become more and more serious. It can be seen from the satellite map that as time goes by, the area of abandoned land (light color) on the map gradually increases, and the area of drought is increasing. As the population increases, the demand for crops and food increases significantly, which leads to a significant increase in water consumption in irrigated agriculture, further exacerbating these consequences.

B. The river channel area has become significantly narrower, and more and more deltas have appeared in the middle of the river. On the one hand, the water flow of the river is decreasing year by year, and the water resources are getting less and less, causing the water level to drop and the river bed to emerge from the water. On the other hand, the concentration of sediment and impurities in the river water increases, and the soil and other components caused by soil erosion will enter the river water and pollute the water quality, affecting the utilization rate of water resources.

C. The town is radiating around. With the development of economy and population, human beings and cities will have more and more demands for water consumption. However, at the same time, human beings pay more attention to the planning and design of living space. We need natural and ecological spaces for leisure activities, and we need to protect nature to pursue sustainable development of humans and nature.

**Production and transportation**

**Living and leisure**

**Ecology and safety**
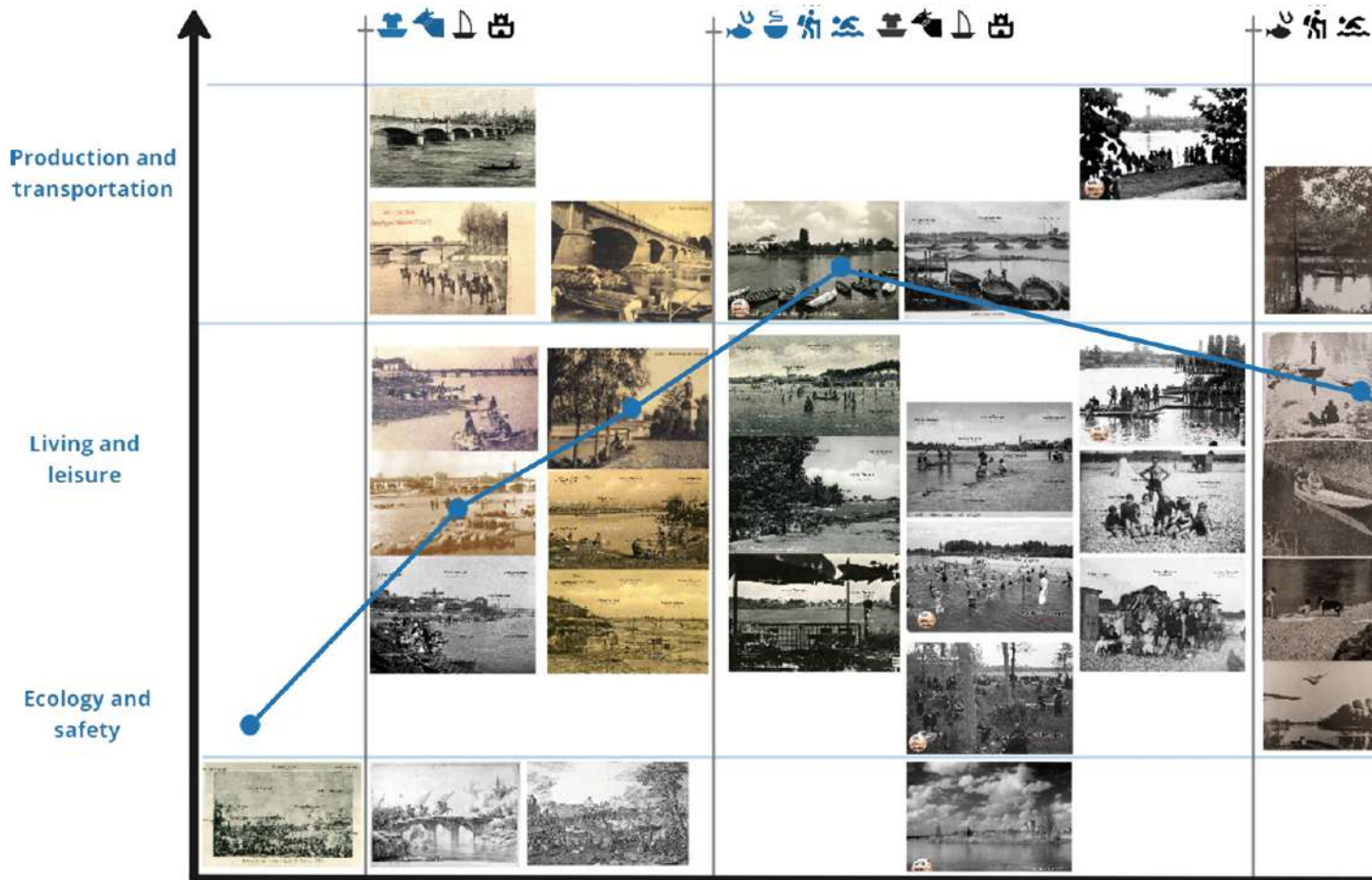
**1796**
The river mainly served as a natural barrier to stop the enemy.

**1800**
Many women in the lower town go to the river to wash their clothes and bed linens and regard this as their main source of income.

Rivers have also become major sites for livestock raising

**1900**
Leisure functions along the river have emerged, including sightseeing/picnics/hiking/swimming, etc.

**1950**
The phenomenon of gradually disappeari frequency of activitie certain percentage c

The evolution history of activities alon

*(Image from LODI Archives and t*

By collecting historical picture data, we analyzed the activities and historical events that occurred around the river in LODI towns from 1796 to 2023 and created an analysis chart. First, we divide the activities happening around the river into three main categories: production and transportation/life and leisure/ecology and safety. We then sorted out these different activities along the timeline and discovered some interesting patterns. As mentioned earlier, the relationship between humans and rivers is an upward spiral. It has experienced a transition from being highly dependent on rivers for life, to destroying river ecosystems, and finally returning to the stage of sustainable coexistence with nature. The river has developed from its initial function of defense/domestic water/transportation to the green ecological function of recreation/habitat protection.

**2000**

The government has re-emphasized the development of leisure functions along the river, added many new functional activities, and emphasized ecology and awakening local historical and cultural memories.

washing clothes by the river is
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s by the river have declined by a
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g the river space

*he Internet)*

-8-

## 2.2 /
## The birth and diversified development of the city culture

Bormio

Tirano

Sondrio

Bellagio

Lecco

Bergamo

Lodi

The ADDA River is a tributary of the Po River. It is 313 kilometers long and originates from the Alpicera Valley at the foot of the Alps. Filled with snow water, glaciers and alpine lakes, the Adda River flows from the highlands all the way down to the lowlands, flowing through various places in what is now Italy's Lombardy region, and finally joins the Po River.

It has existed as long as we know it. The turbulent river may be quiet or fast, but it has existed like this for thousands of years. The area around it became plains or cities. We can trace back to the ancient Roman period, and there were already human presences in the Adda River area. The ancient Romans established settlements, farmlands, and cities to take advantage of the river's water and agricultural potential. During this period, the Adda River area became known as "Laus Pompeia" and became part of the ancient Roman civilization. Until the Middle Ages, towns and cities began to flourish in the Adda River region. Cities such as Cremona and Bergamo became important cultural and commercial centers. This period also saw the construction of castles and churches, with many medieval buildings still intact today. During the Renaissance, the Adda River area continued to develop and became a center of culture and art. Still later, the Adda River left an important historical mark during the Napoleonic era. In 1800, Napoleon Bonaparte led the French army to fight the famous "Battle of Lodi" near the river bridge in Lodi and achieved an important victory. In the late 19th and early 20th centuries, the Adda River area began to industrialize. This area became one of the centers of Italian industry, especially famous for textile and agricultural machinery manufacturing. The river is used to provide industrial water and electricity. In the late 20th century, the Adda River region experienced urbanization and industrial modernization. In recent decades, the Adda River region has become a popular destination for tourism and leisure. People come to enjoy the beauty of the river, go hiking, biking and water sports, while exploring ancient cities and cultural attractions.

It can be said that the historical development of the Adda River reflects the social, economic and cultural

changes in Lombardy and northern Italy. The river has always been one of the important natural resources and cultural heritage of this region and has had a profound impact on its development.

It can be said that its existence gave birth to many cities that we are familiar with today. The riverbed nurtures the river water, but civilization and culture grow along its banks.

These civilizations materialized into cities, which are today's Lodi, Cremona, Bobbio, Lecco and Bergamo. Life along the river is vigorous and enthusiastic, and the memories belonging to the river will last forever.

Cremona, for example, which dates to Roman times, became an important military and commercial city in the medieval period and later became famous for its violin manufacturing. The high-quality forest resources along the ADDA River provide Cremona with high-quality wood, allowing Cremona's violin manufacturing tradition to be passed down from generation to generation. This has also formed one of the city's most important cultural features, making it famous around the world. Cremona has also become a center for world-famous music, art and cultural events that attract artists, musicians and cultural enthusiasts, giving Cremona a unique cultural atmosphere.

As the oldest city on the Adda River, Lodi's origins can also be traced back to the ancient Roman era. The ancient Roman settlement "Laus Pompeia" on the Adda River mentioned above is the predecessor of the city of Lodi. Due to its excellent geographical location, Laus Pompeia vigorously developed agriculture and became an important urban center and agricultural activity center during the Roman period. During the medieval period, Lodi's strategic location along the Adda River made it an important center of trade and commerce. The town has a medieval character with narrow streets and historic buildings. In the 14th century, Lodi fell under the rule of the powerful Visconti family. Under Visconti,

Lodi underwent an important period of development and expansion. Famous landmarks, including churches and palaces, were built during this period. Later, after the Battle of Lodi in 1796, this city, as well as its unique bridge, became a shining presence in history and was remembered by the world. Later in the 20th century, Lodi experienced industrialization and urban development. It became an important manufacturing center, especially to produce agricultural machinery. Today, Lodi is a thriving city that combines historic charm with modern amenities. It remains an important regional center known for its agricultural activities, manufacturing and vibrant cultural life.

All in all, we can conclude that the culture and city along the Adda River are wonderful, vigorous and enthusiastic. The reason why such a splendid civilization emerged is because the Adda River provides the city with abundant water resources. These cities use river water to provide irrigation, irrigate farmland and support industry and manufacturing. Water resources are vital to the survival and development of cities. At the same time, the Adda River also provides an important transportation route for the city. In ancient times, rivers were the main means of transportation. Cities could communicate with other cities and regions through waterway transportation, which also promoted trade and cultural exchanges between cities and promoted urban development.

# COMPLEX GROWTH ALONG THE ADDA RIVER

2

### 3.1 /
### *Rivers and floods*

Floods have always been one of the most important natural disasters in Europe. As you can see from the pictures, there is a risk of flooding in many areas in northern Italy. Among them, the LODI area has a greater risk than other areas due to its terrain and land properties. When we discuss the design and governance of the LODI riverfront, flooding is one of the aspects we need to consider. On November 27, 2002, the LODI area suffered flooding caused by the overflow of the ADDA River. The flood flow reached a record high, with the water level reaching 2.5-3M, and the flood lasted for about 24 hours. The floods first inundated rural areas and then residential and commercial areas of towns. Incalculable losses were caused.Fortunately, after the 2002 flood, the government built a dyke along the river and effectively prevented the flood from damaging farmland/residential and commercial areas.

The flood problem has brought us a lot of thinking. In addition to building dams to resist floods, we are trying to explore more ecological and sustainable methods. Improve the ability of river wetlands to cope with flood disasters through the design of some infrastructure, including the transformation of river ecosystems. At the same time, in addition to building water conservancy projects and creating ecologically sustainable green spaces, we also need to consider the growing farmland and land desertification caused by the decline in land nutrition and moisture content. Therefore, we need to make certain adjustments and improvements to existing agriculture, create ecological agriculture, and combine it with other industries to develop experience ecological agriculture/tourist agriculture, etc. In addition to improving the ecological environment, this can also promote industrial reform and bring local residents or tourists closer to nature.
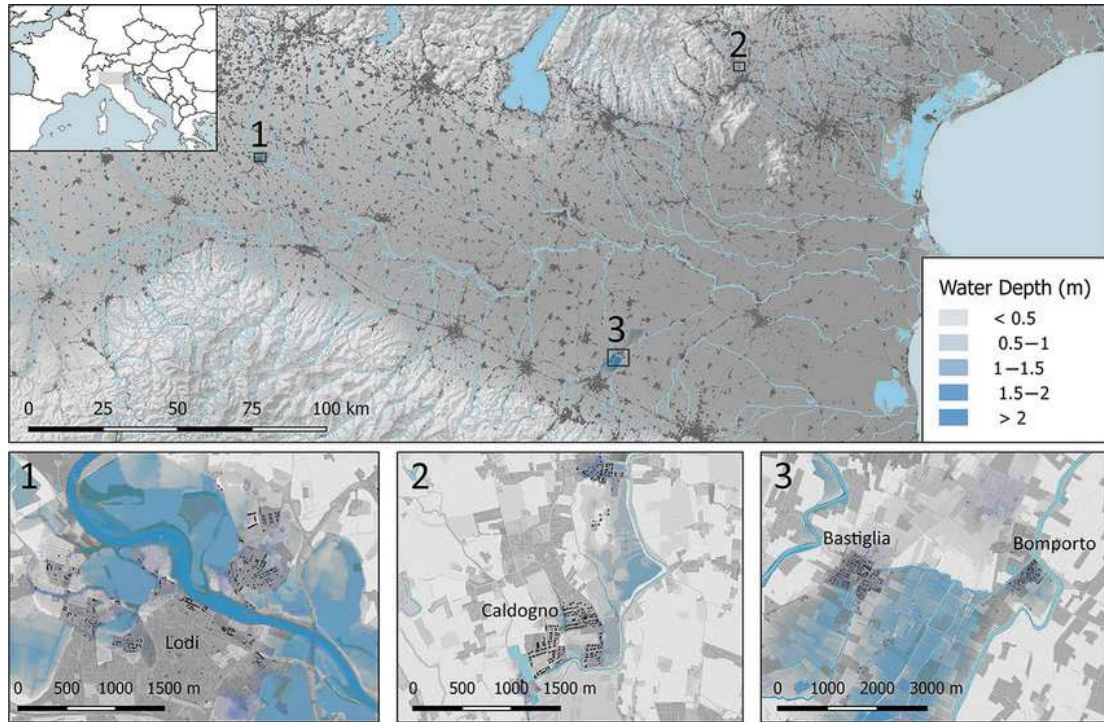
Comparison of flood levels in LODI area and other areas
*(Testing empirical and synthetic flood damagemodels: the case of Italy, Mattia Amadio)*
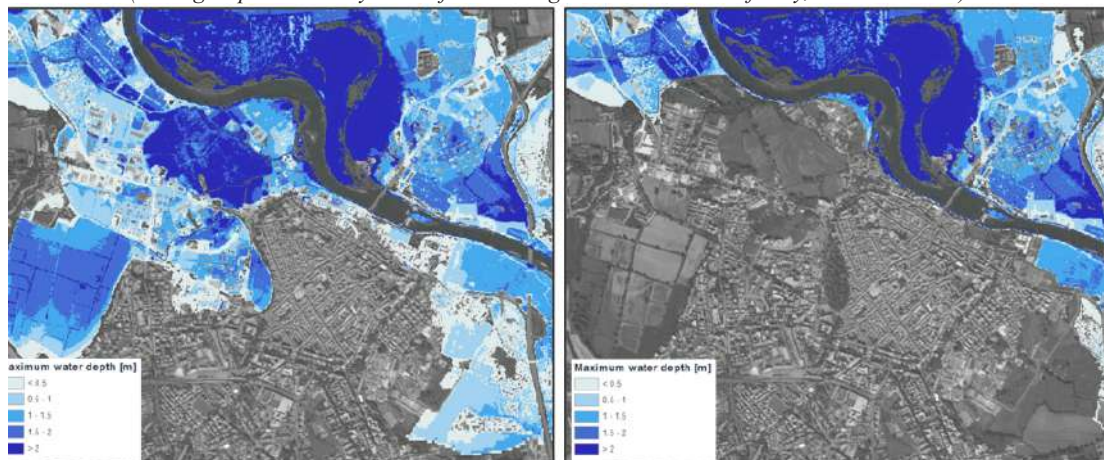


Comparison of LODI flood affected areas before and after dam construction
*(Aggiornamento e revisione del Piano di Gestione del Rischio di Alluvione redatto ai sensi dell'art. 7 del D.Lgs. 49/2010 attuativo della Dir. 2007/60/CE – II ciclo di gestione)*
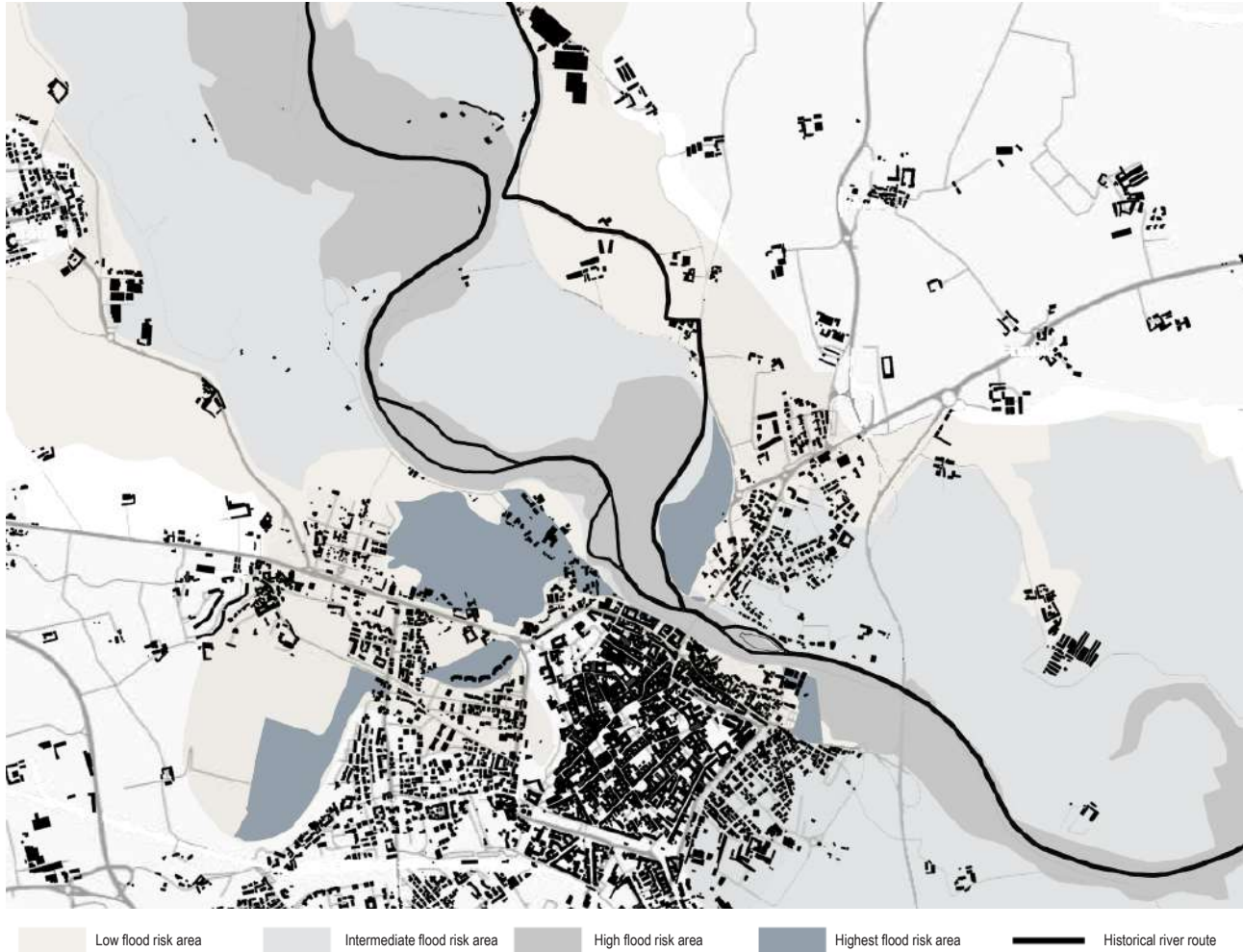
LODI area flood hazard risk areas
*(Source by : https://webgis.adbpo.it/catalogue/#/search/?f=map)*

| | | | | |
|---|---|---|---|---|
| Low flood risk area | Intermediate flood risk area | High flood risk area | Highest flood risk area | Historical river route |

Ecological nature reserve area



Farmland area



River and lake areas



Wetlands and swamp areas

We divided flood hazard risk areas of different levels and overlaid them with buildings/farmland/ecological reserves/urban public spaces/rivers and lakes areas. We can find that currently in the LODI urban area, the areas with the greatest threat from floods to residents and commercial areas are mainly concentrated in the relatively new areas in the northeast of the city. The old urban area is relatively less affected by floods due to terrain reasons and the construction of water conservancy projects. At the same time, farmland areas prone to disasters are also concentrated near the new urban area.

*3.2 /*
*Urban development analysis*
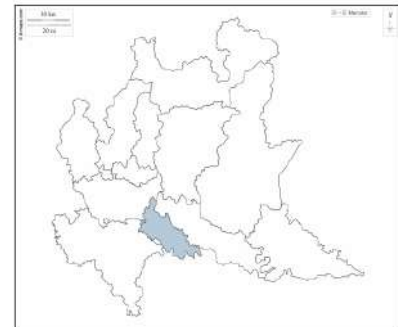


*Source:https://d-maps.com/carte.php?num_car=215630&lang=zh*

Going back to the city on the ADDA River, the focus of our research is on LODI. In fact, from a large scale, LODI is a province located in the Lombardy region of Italy, south of Milan. The province has a total area of approximately 783 square kilometers and a population of approximately 230,000 to 250,000. LODI is its provincial capital and the largest city in the province. In addition, other important cities in this province include lugano, Tavazzano con Villavesco, maleo, cassano d'adda, etc.

City Grow Process

Looking at LODI's past and present, the city's expansion from ancient times to the present can be divided into six main stages.

The first is the ancient period, dating back to the ancient Roman era, probably from 218 to 476 BC. The ancient Romans established a settlement on the banks of the Adda River, so the predecessor of Lodi may be a small settlement in the Roman era. Proceeding to the medieval period, from 476 to 1000, this period was a critical period in the development of the city of LODI. During this period, Lodi received the construction of city walls, medieval architecture and river infrastructure. Lodi also officially became an important city and developed the urban planning river city center. From the 15th to the 16th century, during the period known as the Renaissance, the city experienced a cultural and artistic prosperity. The style of this period had a profound impact on the culture and architecture of LODI. A century after the beginning of the 17th century, modern cities continued to develop, and some Baroque buildings were also produced. Later, during the industrialization period, that is, from the 19th to the 20th centuries, LODI underwent urban expansion and industrialization. Industrial and agricultural activities developed in the city and surrounding areas, and urban infrastructure was expanded and improved. Finally, in contemporary times, LODI City continues to adapt to the needs of modern society and gradually develops economic diversification, reflected in the service industry, culture and tourism industries. At the same time, LODI also began to pay attention to protecting and maintaining its historical heritage in order to achieve the harmonious coexistence of history and modernity.

These six stages reflect the evolution and development of the city of Lodi in different historical periods, making it an important city in Lombardy while retaining its rich historical and cultural heritage.
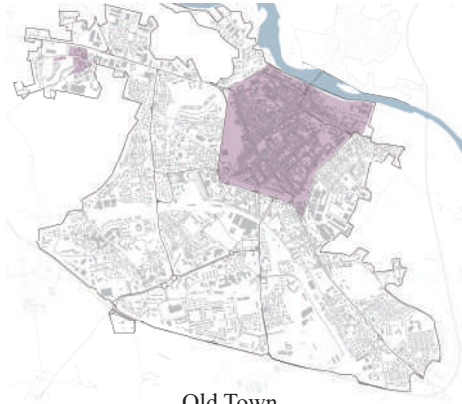
Old Town
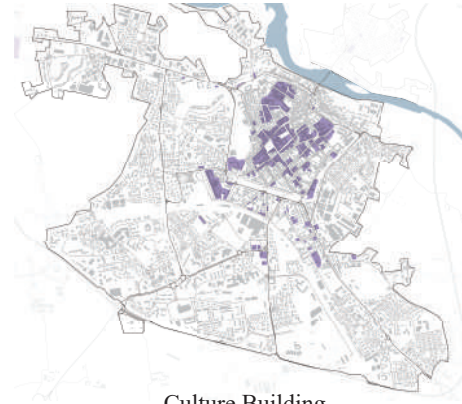


Culture Building



Green System



Developing Area

*3.2.1/*
*"Vecchio" Lodi —— Old town of Lodi*

The ADDA river runs through the middle of the city of LODI. The south bank of the city is the ancient city part of LODI. We can call it "LODI VECCHIO". "LODI VECCHIO" is rich in cultural heritage and ancient architecture.

As the historical center of the entire LODI city, its urban planning and architectural style have extremely distinctive characteristics. Its urban planning is centered around the central square Piazza Alessandro - which is also the style of the old medieval city. In this square, people carry out social activities and celebrate festivals. Its existence not only represents the history of the city, but also enriches the lives of citizens and represents the place spirit of the city.

If you walk around the city, you will see bluestone roads and ancient stone houses, including the medieval wall that once surrounded the city from disaster. The streets in this city are very narrow, and most of them are not suitable for cars to pass through. Therefore, you can easily feel the traces of the city's baptism of time, which also adds to its longer historical charm. The rich architectural heritage of "LODI VECCHIO" is also a valuable asset of this city, such as ancient churches, castles, squares and municipal buildings. These buildings are also products of the Middle Ages and Renaissance.

In addition, the city "LODI VECCHIO" also has a very rich cultural activities, such as concerts, art exhibitions and traditional celebrations. These activities include some traditional religious ceremonies, such as Festa di San Giovanni and Festa di San Paolo, as well as markets full of life, enriching the spiritual life of citizens.

It is not difficult to see that "LODI VECCHIO" is ancient and fresh. It is like an active history book, full of traces of time, but it still continues to write the future life sonorously and powerfully.

Function



Culture Building



Green System



Developing Area

*3.2.2/*
*"Nuovo" Lodi —— New town of Lodi*

On the north bank of the ADDA river is the younger part of the LODI urban area, which we can call "Lodi Nuovo".

Compared with the South Bank, "Lodi Nuovo" is more modern, younger and more in line with current life. Here you can easily find modern buildings and commercial facilities, as most of the buildings here were built after the 20th century. Most of the buildings of this period were influenced by neoclassicism or Art Nouveau, or adopted a modernist style, with more emphasis on functionality and simplicity. Even some buildings constructed after the 21st century embody the sustainable principles now pursued, such as large shopping malls and office buildings. In terms of architectural features, "Lodi Nuovo" has a strong impact and contrast with the south bank.

At the same time, as "Lodi Nuovo" develops, its streets are wider and more modern than those on the south bank. However, because "Lodi Nuovo" provides more business, entertainment and shopping venues, the traffic in "Lodi Nuovo" is more congested on specific dates. This is also closely related to the disproportionate city size and crowd flow. .

*3.2.3/*
*A city between the gap of old and new*



Residence
Green space
Commercial
Industry

Industry building
Residencial building
Cultural building
Commercial center
Church

River Adda
Railway
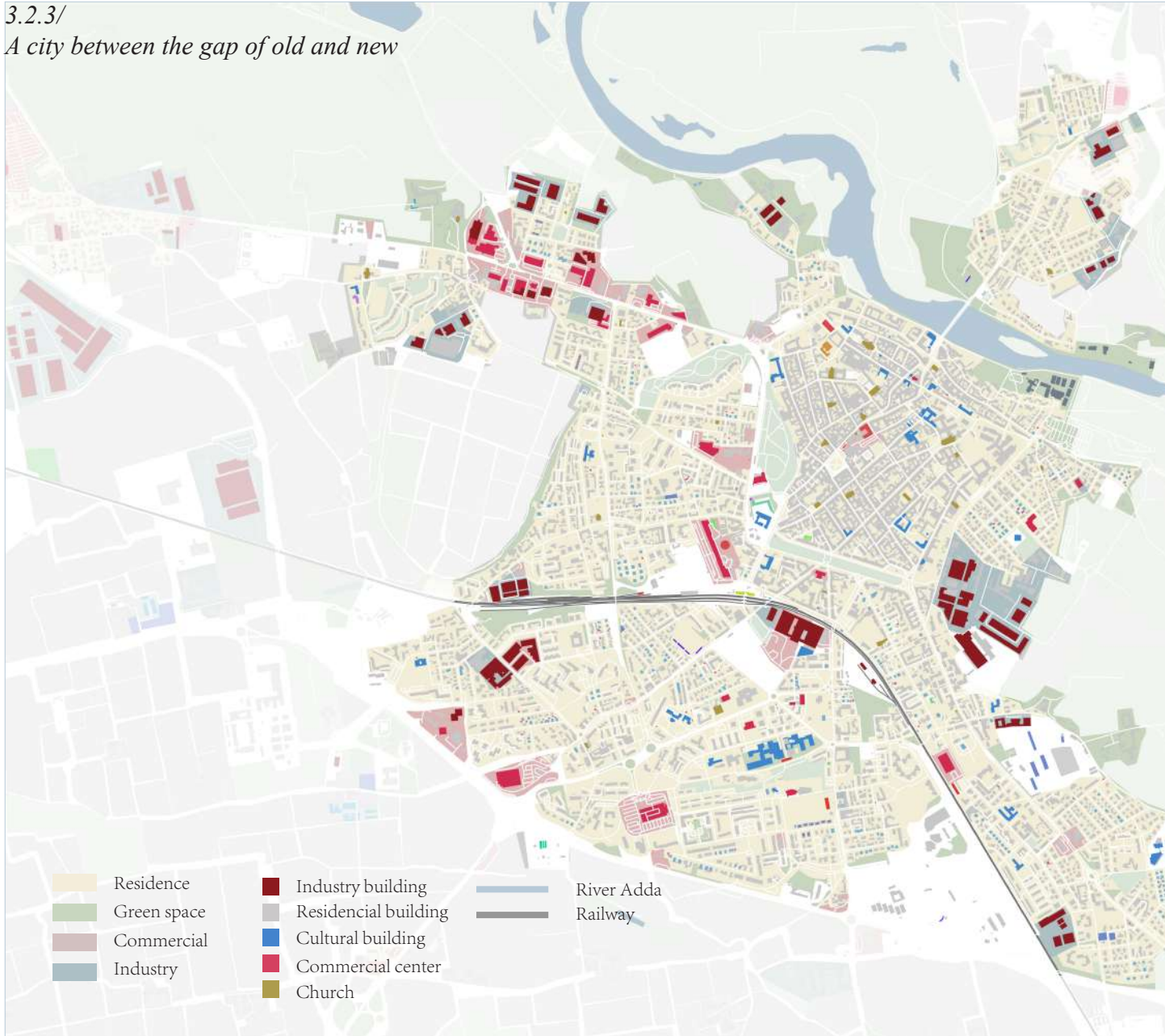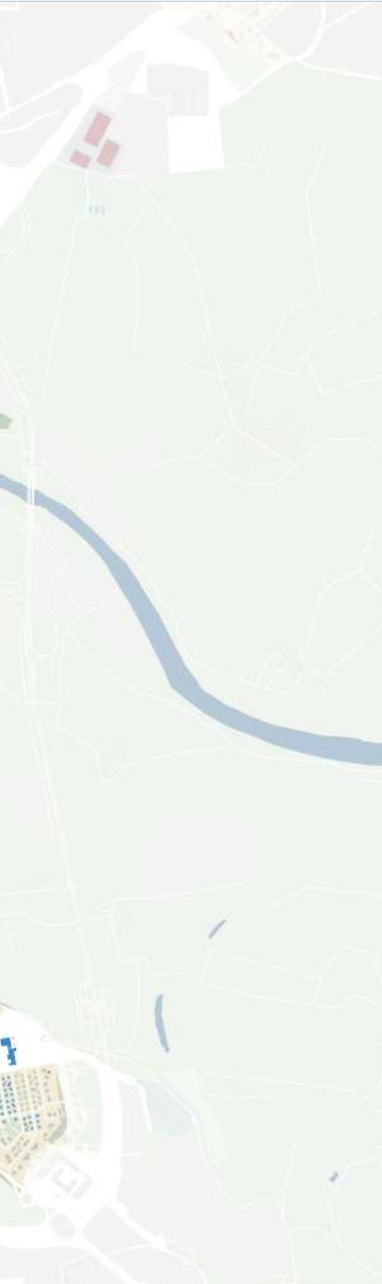
By analyzing the urban areas on both sides of the LODI river, it is not difficult to see that the development and form of the two urban areas are completely different today. The development of "LODI VECCHIO" mainly revolves around history and culture, while "Lodi Nuovo" is more modern and commercial. But the two urban areas also have their own shortcomings. In Lodi Nuovo, it is a more modern city, but in this context, it lacks the cultural heritage of its own city and cannot recall the city's history. It is young but immature. As for Lodi vecchio, it is ancient, but in modern society, it may be slightly limited. Because of the narrow width of the historic street, it lacks easy access and parking spaces. At the same time, the city is too old and may lack many public facilities that seem very basic today.

However, as time progressed, the urban areas on both sides of the river formed their own fixed life patterns. When you are in Lodi, you can feel that the old continues to be old and the young continues to be young. Cross-strait exchanges are decreasing day by day. It is difficult for us to achieve the desired urban form where old and young are compatible with each other.

If we delve deeper into the reasons, it is not difficult to find that rivers that were once particularly important to cities are now rarely cared about. The urban areas that were born around the river eventually forgot the river in the long river of history. The river has become a barrier to the city rather than a link of exchange and communication.

**4.1/**
**The Danube flows through a city: Buda to the west and Pest to the east**
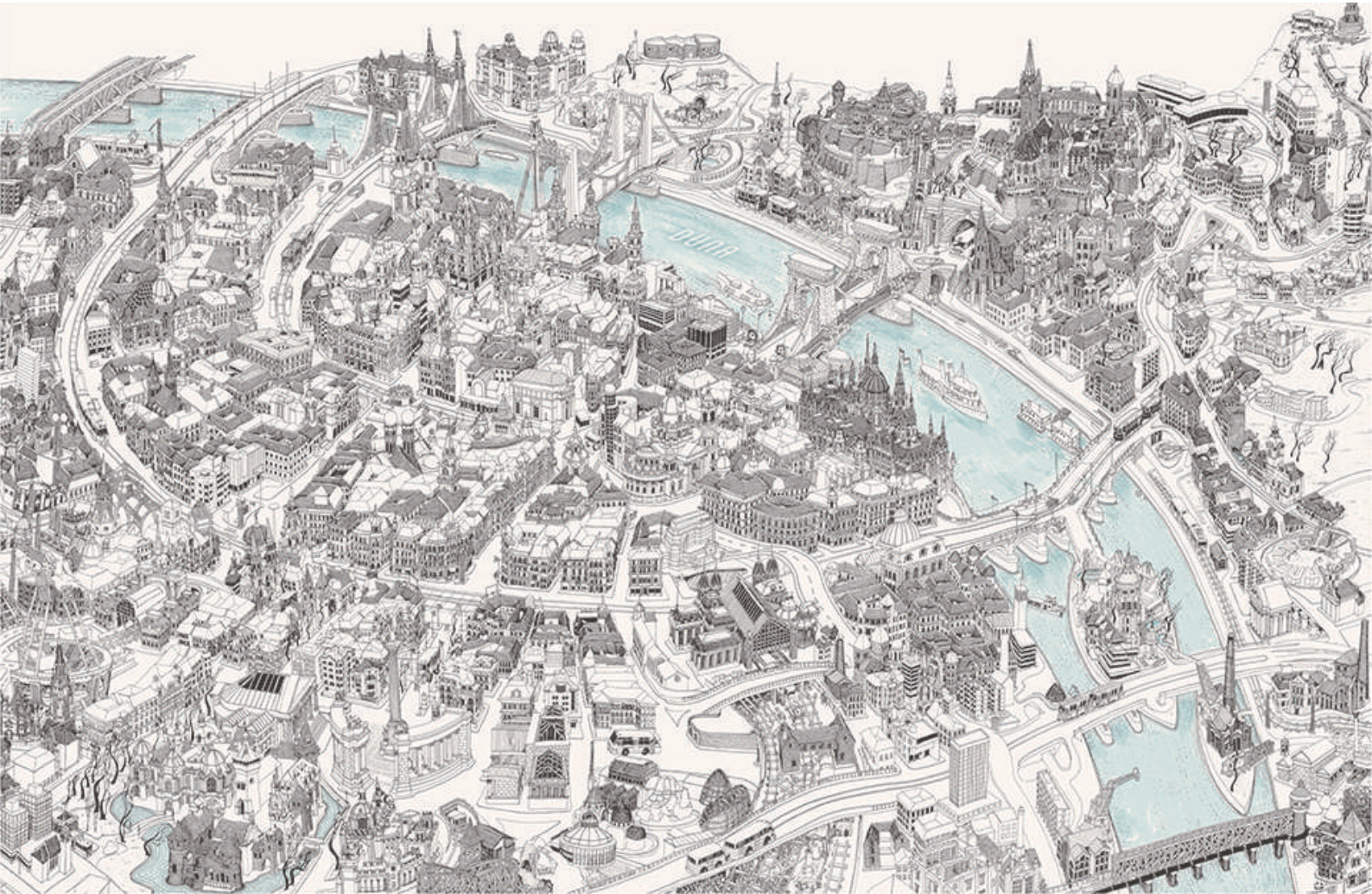
The Danube River flows through Budapest, dividing the city into two parts: Buda and Pest, with Buda in the west and Pest in the east. And the name of this city also comes from this.

However, what is different from traditional cities is that Buda and Pest were originally two relatively independent cities. They were located on the east and west banks of the Danube River, and each had its own development characteristics. Buda was historically the site of the palace of the Hungarian kings, so the architectural style in this area is ancient, mostly represented by Renaissance, Baroque and Gothic buildings. Pest, on the other hand, did not have a strong sense of power like Buda in ancient times, so its development was more economic and commercial. Such different development trends have also created different urban looks and textures in the two cities.

In 1873, the Hungarian government decided to merge Buda and Pest into one city, which became the capital of Hungary. As a result, Budapest has become a city rich in history and cultural heritage, but also a modern European metropolis with bustling commercial and economic power.

After the merger of the cities, how to overcome the distance and barriers between the two cities on both sides of the Danube River has become the focus of this city's planning and development. First of all, the most important decision made by the government is to build bridges. Now there are more than 10 bridges on the Danube River in Budapest, and some of them are very famous and have become famous tourist attractions. Regarding cultural activities, the government has also focused on creating many places for cultural and leisure activities on the Danube River, making the riverside area an important place for cultural festivals, concerts, outdoor performances and sports activities. Such activities not only attract tourists, but also local residents, making the riverside the most active area in the city. The purpose of doing so is also to promote full exchanges between areas on both sides of the river.

From this we can see that even though the predecessor of Budapest was not a unified city and was blocked by a river, it did not affect the city becoming a complete, dynamic and diverse whole. This city is a perfect fusion of history and modernity, and is a typical and perfect "Twin Cities" case.

**4.2/**
**Cultural and historical renewal: River Arno in Pisa, Italy**
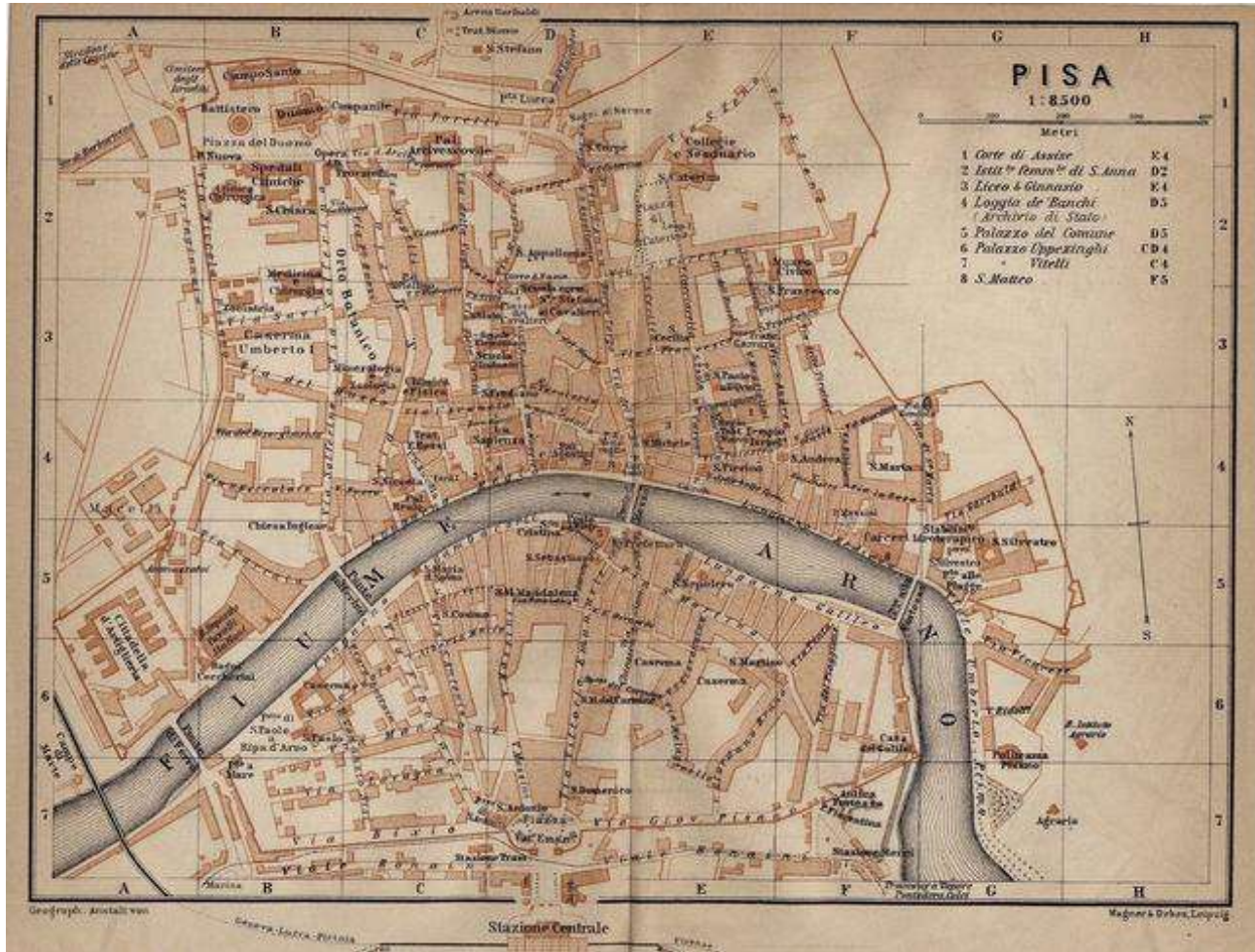


Historical map of Pisa area and Arno river  *(https://commons.wikimedia.org/wiki/File:Baedeker_Pisa.jpg)*

Trading Port

Pisa was once a city of international trade. The banks of the river are bustling with commerce and trade. But the importance of Pisa as a great port continued to decline as the Medici family feared that Pisa threatened Florence. The Pisa shipyard was transformed into a fortress in the Middle Ages, specializing in the construction of military ships for the Knights of the East.

## Construction of the canal

In the early sixteenth century, the Medici family officially ruled Pisa. The first thing they did was to carry out a large-scale waterway improvement project, which had three purposes: to promote water circulation, improve the sanitation environment, and repair the shipping waterway network. Due to the construction of the canal, the zoning of the entire city has also undergone a major transformation. The bustling commercial and trade activities that used to be concentrated on the river bank have been transferred to places in the city far away from the river bank. The river bank has become a high-end residential area, and a large number of luxurious noble mansions have appeared. The canal has also changed from a space for commercial transactions to a gorgeous cultural function block, including some universities, botanical gardens, libraries, etc. The banks of the Arno River also became the facade of Pisa after the Renaissance.

## Modern embankment works + introduction of new activities

From 1840 to 1847, Pisa launched a river bank embankment project from the hilly area to the urban area. A comfortable promenade was planned on the east side of the old block to the upper reaches of the Arno River. Trees are planted on the bank under the embankment, and benches are set up for citizens to rest and overlook the river. At the same time, flower beds and a large number of green plants have been added to repair the defect of less green space in the city center.

At the end of the nineteenth century, bathing beaches became popular for a while, and a water play area was also set up on the banks of the Arno River on the east side of the city. In the peak season of the beach, there are more commuter boats sailing to nearby seaside cities. Pizza shipping is booming again, driven by tourism.

## Cultural symbolic activities

After modern rectification and reconstruction, the Arno River has become a "river of life". Every evening, a large number of residents will come to the water to enjoy the leisure space. To commemorate the history of the Arno River, every year on the night of June 16, the Candlelight Festival of San Renario is held. On this night, candles issued by the city government will be lit on the front of each building along the canal, making beautiful candlelight appear on the dark waterfront. This is a festival that the people of Pisa are deeply proud of.

*4.3/*
*The From "Stinky River" to "Green Ribbon", Suzhou River, China*



Historical photo of Suzhou River in the 1900s *(https://www.sohu.com/a/452102605_100145053)*

As the mother river of Shanghai, Suzhou River has rich cultural heritage along its banks. It is home to China's earliest bank warehouses and Shanghai's famous trade market. Many of China's first enterprises in various fields are located here. It was once known as "Shanghai's No. 1 Financial and Trade Center". Industrial and urban expansion has given rise to the waterfront area. brought economic prosperity. With the development along the Suzhou River, it was originally lined with docks and later became a warehouse center and factory hub. At that time, a large amount of goods produced in the south of the Yangtze River and even the wider region were transported through the Suzhou River. Silk, tea, rice and grain, etc. were distributed here. Special docks appeared, and a large number of factories and warehouses were successively established. After the Shanghai-Nanjing, Shanghai-Hangzhou-Ningbo and other railways were opened, the docks of the Suzhou River, together with the Suzhou River channel, and the Shanghai North Railway Station formed an effective water-land interaction pattern, promoting the urbanization process in the Yangtze River Delta region.

Various cultural landscapes along the Suzhou River*(https://www.sohu.com/a/452102605_100145053)*

In the 1920s, the banks of the Suzhou River became an industrial gathering place. The wanton discharge of water by a large number of textile, flour, grain and oil processing, mechanical and chemical enterprises, as well as residents' domestic water, made the Suzhou River water turbid and smelly. Since then, Shanghai's population has increased and its industrialization process has accelerated. Large amounts of domestic sewage and industrial wastewater have been discharged into the Suzhou River, and the water quality has gradually been polluted.

Since the late 1990s, Shanghai has successively implemented three phases of the Suzhou River Comprehensive Environmental Improvement Project. After more than ten years of treatment, the main stream of the Suzhou River has been completely free of black and odorous smells. The regional water environment has been greatly improved and the water has become clearer. , fish and shrimp are back again. After more than 20 years and four periods of comprehensive environmental management, the Suzhou River has been divided into different river sections with different characteristic themes and functional areas. They include public activity space + composite new functional area, coastal characteristic historical and cultural resources + inherited humanistic connotation, industrial site development, green ecology + park green space. The scenery of the Changning section of the Suzhou River is a green, vibrant and safe Suzhou River that carries the impression of ecological civilization, industrial civilization and spiritual civilization in the new era throughout the entire line. The "Suzhou River impression" is becoming a beautiful city business card to show the world the exquisite charm of Shanghai style.

*5.1/*
**Industry and Population**
*5.1.1/*
*Industry*

| | n. aziende | % aziende | fatturato (€) | % fatturato |
|---|---|---|---|---|
| **Industria** | 124 | 62% | 6.952.466.692 | 68% |
| **Servizi** | 30 | 15% | 2.261.499.974 | 22% |
| **Commercio** | 46 | 23% | 961.617.877 | 9% |

*Source:Top 200 le eccellenze di lodi,2022*

Lodi's industrial development is diversified, including but not limited to agriculture, manufacturing, commerce and service industries. We can summarize it into three parts: agriculture, industry and commerce. Industry includes production related to the secondary industry such as manufacturing, while commerce includes all industries related to the tertiary industry.

Through the statistics of Lodi's enterprises and their production efficiency, we can find from the chart that Lodi's main production comes from industry, and the total industrial production value can reach 60% or more of the total.

Among them, eight out of ten of the top ten companies in terms of turnover are industrial enterprises. Moreover, the top 50 companies account for 80% of the total turnover, and 39 of them belong to the industrial sector. From this we can conclude that industry accounts for the vast majority of Lodi production. One of the more famous companies is L'ERBOLARIO, which we are familiar with.

**Indice della produzione industriale manifatturiera**

(anni 2010-2022 – indice base 2010=100)
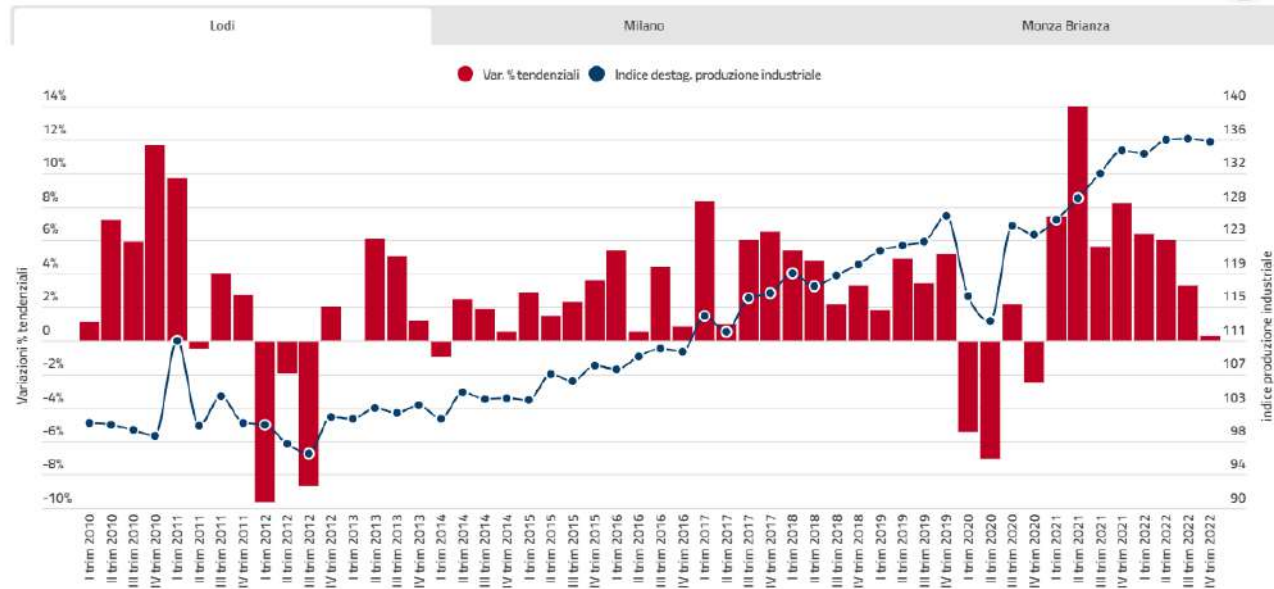
| Lodi | Milano | Monza Brianza |

● Var. % tendenziali  ● Indice destag. produzione industriale



Fonte: elaborazione Studi, Statistica e Programmazione su dati Unioncamere Lombardia – Indagine congiunturale industria manifatturiera

*Source:https://ester.milomb.camcom.it/congiunture/industria/2022/quarto/lodi*

However, Lodi's industrial production capacity began to show a downward trend due to various factors. Industrial Production Index: Manufacturing production in Lodi experienced a cyclical decline in the fourth quarter of 2022, in sharp contrast to the growth dynamics in Lombardy. However, order and turnover indicators continued to grow; the latter was also affected by higher prices, which showed signs of improvement during the quarter for the first time in more than a year. Contrary to the slowdown in production, Lodi entrepreneurs' expectations for the future are improving. On an annual basis, industrial production showed a positive change but was just above zero (+0.3%), which, as shown in the chart, slowed significantly compared to previous quarters. The index (based on 100 in 2010) fell slightly to 135.6. Observing the trend of the manufacturing production index curve, the strong decline in the first half of 2020 and the subsequent recovery are clearly evident. The growth path will resume in 2021, but by the end of 2022, it will be characterized by: a substantial stagnation in production levels.

## Produzione industriale, fatturato, ordini

(4° trimestre 2022 – variazioni percentuali congiunturali destagionalizzate)
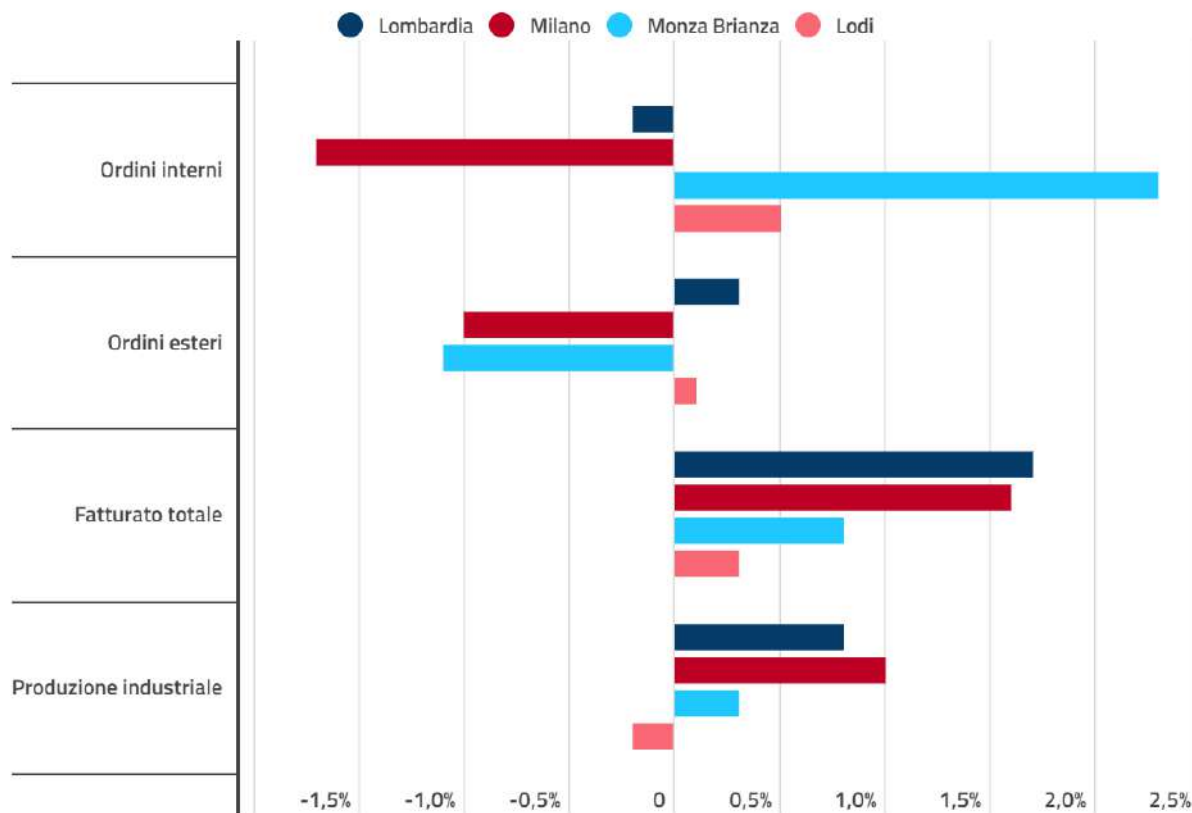


Fonte: elaborazione Studi, Statistica e Programmazione su dati Unioncamere Lombardia – Indagine congiunturale industria manifatturiera

*Source:https://ester.milomb.camcom.it/congiunture/industria/2022/quarto/lodi*

Economic Analysis: As mentioned earlier, economic indicators for the Lodi manufacturing industry point to a decline in production, but turnover and order dynamics remain positive. Industrial production in the Lodi manufacturing industry fell cyclically by 0.2% (seasonally adjusted data); at the regional level, the same phenomenon was not observed, on the contrary, output showed strong growth (+0.8%).

There are similar differences in turnover dynamics between provincial and regional data; growth was limited in Lodi (+0.3%) and more significant in Lombardy (+1.7%), possibly also due to the impact of inflationary phenomena. In Lodi, the share of revenue from overseas sales in the quarter was 33%, up from recent quarters but still a few percentage points below the region's 38.8%.

From the perspective of order dynamics, overseas orders, which declined slightly three months ago, increased slightly (+0.1%), while domestic orders increased by 0.5%, which is more gratifying. But from a regional perspective, domestic demand was the most difficult, falling by 0.2%, while foreign orders increased by 0.3%.

Raw material price increases in the province and region have slowed compared with previous quarters. Raw material prices in Lodi increased cyclically by 5% (Lombardy 5.2%), compared with 7.1% three months ago (Lombardy 9.8%). Price growth for manufactured goods slowed in Lombardy (to 4.3% now from 6.1% three months ago) but not yet in Lodi (to 4.7% from 3.4%).

## Produzione industriale, fatturato, ordini

(4° trimestre 2022 – variazioni percentuali tendenziali grezze)
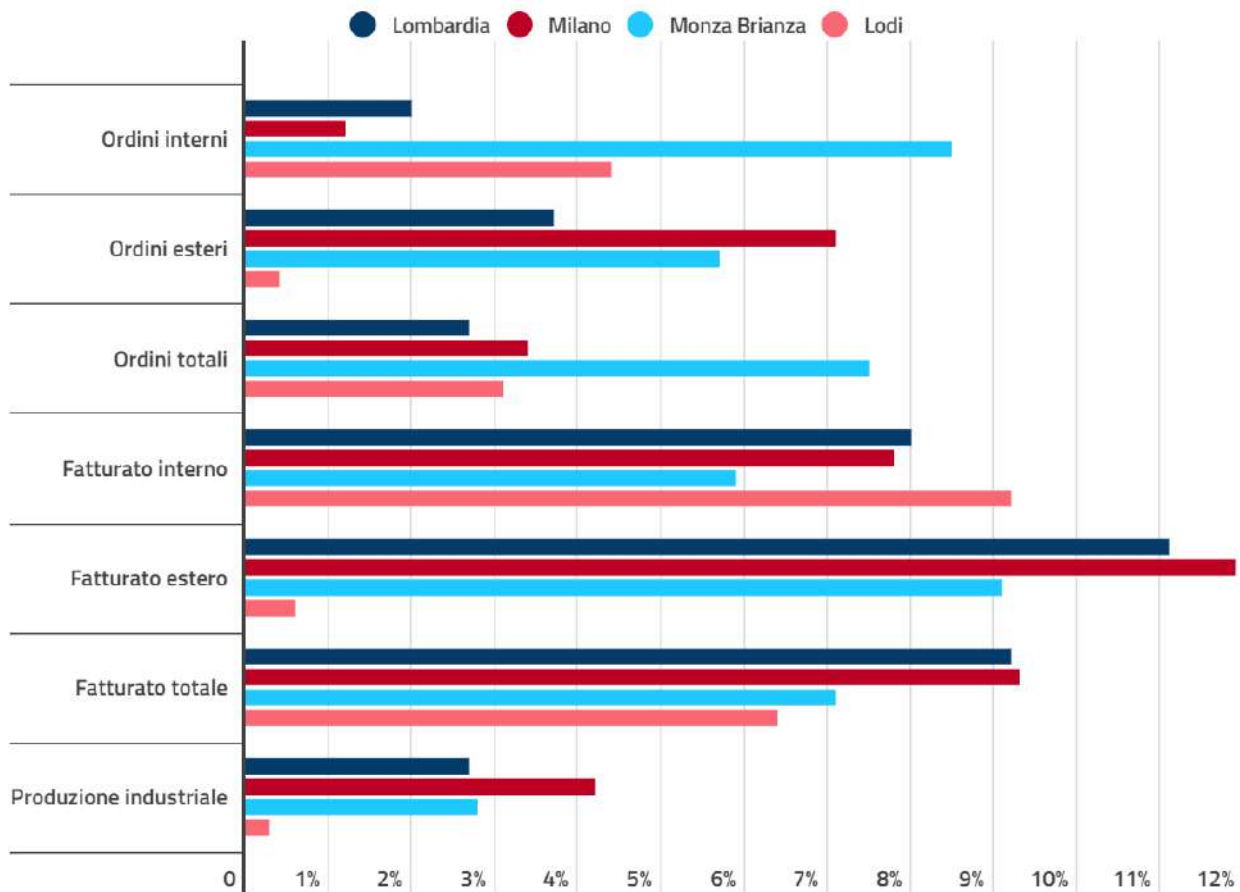


Legend: ● Lombardia ● Milano ● Monza Brianza ● Lodi

Fonte: elaborazione Studi, Statistica e Programmazione su dati Unioncamere Lombardia – Indagine congiunturale industria manifatturiera

*Source:https://ester.milomb.camcom.it/congiunture/industria/2022/quarto/lodi*

Trend Analysis: The Lodi Industrial Trend Indicator Framework shows a sharp decline in production growth, almost close to zero; a similar slowdown in the foreign component of turnover and orders was partly offset by the performance of the domestic market. In Lodi, production increased just 0.3% compared to the fourth quarter of 2021. Growth elsewhere in the region also slowed, but by 2.7%.

The turnover of the Lodi industry also benefited from the simultaneous increase in prices and continued to record a substantial annual growth rate of 6.4%; however, as mentioned earlier, overseas sales were not very dynamic and increased compared with 2021 0.6%, while Italy's turnover performance was outstanding (+9.2%). In Lombardy, on the contrary, we observe that the sector's foreign turnover (+11.1%) grows faster than its domestic turnover (+8%).

Orders in the Lodi region recorded modest growth (+3.1%), also higher than regional figures (+2.7%). However, as with turnover, we can observe a key issue, namely that the foreign content grew by only 0.4%, while the domestic content reached 4.4%. In Lombardy, the foreign order mix (+3.7%) grew more significantly compared to the domestic order mix (+2%).

*5.1.2/*
*Population*



TREND POPOLAZIONE
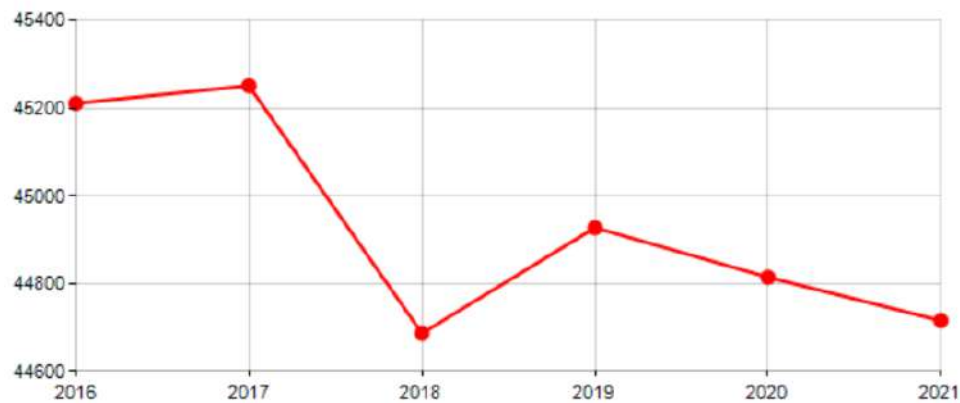


BILANCIO DEMOGRAFICO

*Source:https://ugeo.urbistat.com/AdminStat/it/it/demografia/popolazione/lodi/98031/4*
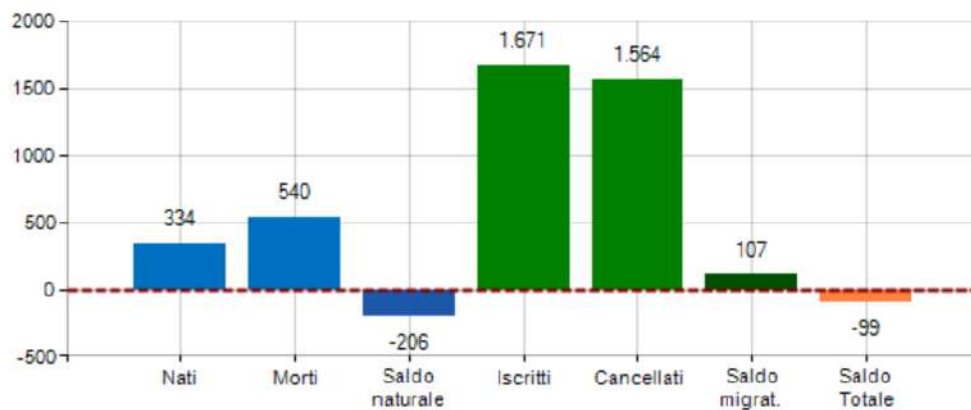
In the Lodi area the population continues to decrease, confirming the trend of the last programming, in fact it goes from 236,975 inhabitants in 2015 to 234,856 in 2020.

The decline in births in the Lodi area is confirmed. The number of children under the age of three in fact suffers a sharp decline, from 8,616 children in 2015 to 7,796 in 2019 and 7,567 in 2020, 1,049 fewer births than in 2015.

In comparison with the previous three-year period, the negative trend also begins for the age groups 0-14, 0-17 which go from 33,214 to 32,074 (in 2015 33,736) and from 39,778 to 38,679 (in 2015 40,129) respectively. The decline in the 18-34 age group is also confirmed, going from 40,927 to 40,447, in 2015 the population was 42,093. The increase in the age groups of the elderly (over 65 years) and the very elderly (over 75 years) continues.

In 2020 the population of the Areahas 51,615 elderly people (>65 years), a share equal to 21.97% compared to the total population, continuously increasing compared to the previous three years where it constituted 21.17 %; 6,500 more units than in 2012 in which the population over sixty-five was equal to 45,115 units. Same situation for the over-seventy-five population, which continues to increase in the period considered; it goes from 23,894 in 2015 up to 25,591 in 2020.

The population under 18  in 2020 reached 38,679 (decreased further compared to 2017 where it had 39,778 residents). The share of minors is significantly lower than the share of the elderly population (51,615 >65 years old), confirming the progressive overall aging of the population.

Grafico 1 - Popolazione residente per macro classi d'età



Grafico 2 - Minori residenti 0-17 anni
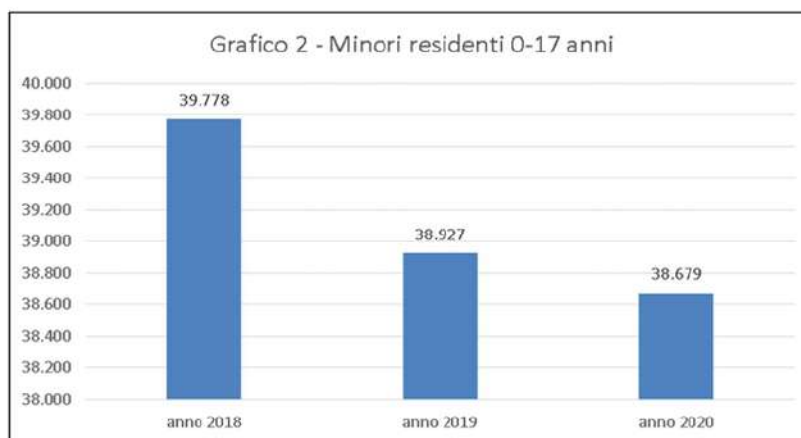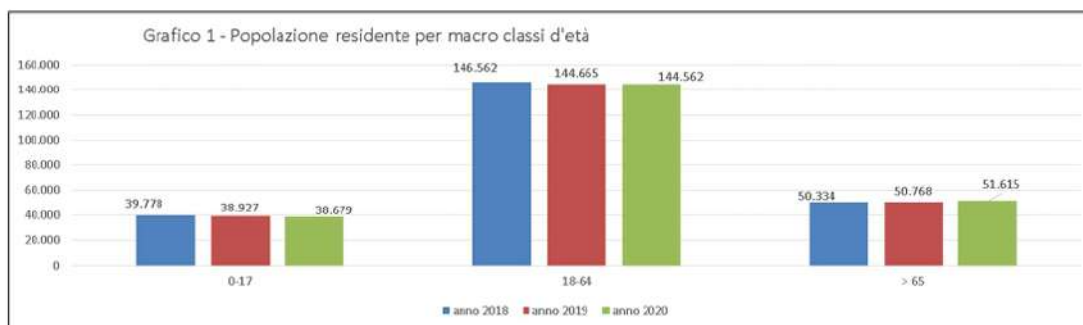
## Tabella 1 – Popolazione dell'Ambito

| 2020 | Italia | | Lombardia | | Ambito di Lodi | | Totale |
|---|---|---|---|---|---|---|---|
| >75 anni | 7.063.716,00 | 11,84% | 1.187.521,00 | 11,84% | 25.591,00 | 10,90% | 60.589.445,00 |
| >80 anni | 4.419.703,00 | 7,41% | 737.640,00 | 7,36% | 15.653,00 | 6,66% | 10.019.166,00 |
| >85 anni | 2.188.167,00 | 3,67% | 357.985,00 | 3,57% | 7.395,00 | 3,15% | 236.674,00 |

Fonte: Elaborazione a cura dell'Ufficio di Piano su dati Istat

*Source:Ambito Territoriale di Lodi,2023*

*5.1.3/*
*Concept*



Commercial
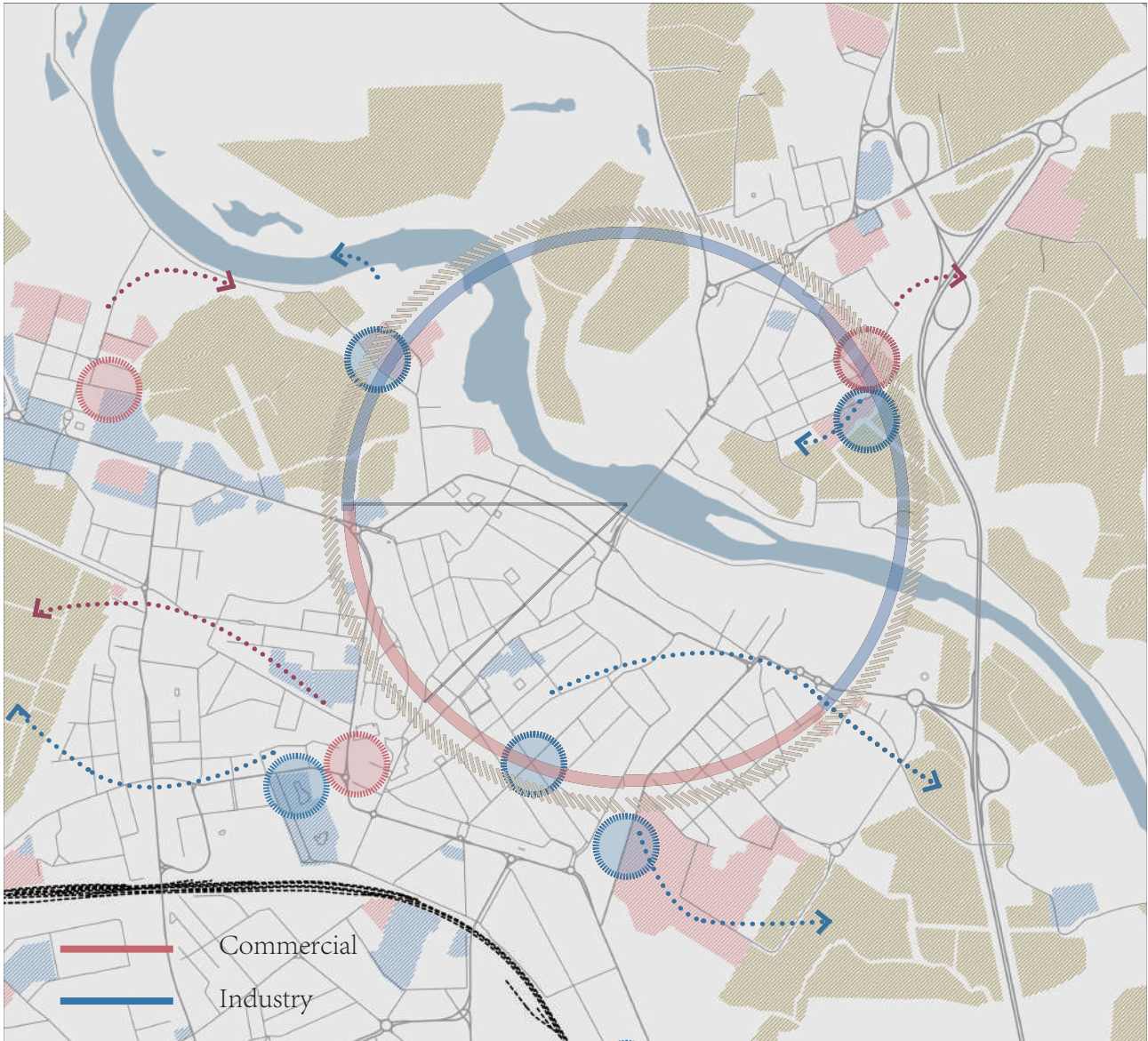
Industry

But let us also be clear that the origin of lodi is inseparable from the agriculture related to its rivers and rivers. Although as time goes by, the industrial center of Lodi gradually shifts and develops towards the manufacturing industry, we can open up a new path for the development of the city when the development of the manufacturing industry is sluggish.

Agriculture in the Lodi region dates back to ancient Roman times. The ancient Romans introduced irrigation systems and built waterways and farmlands to support agricultural production. Wheat, barley and grapes were the main agricultural products of ancient Lodi.

Agriculture in the Lodi region experienced important developments during the Middle Ages and Renaissance. The existence of monasteries and noble estates promoted improvements in agricultural technology and production levels. The wine industry also began to flourish and became a major feature of the region.

Over time, Lodi's agriculture changed under the influence of modernization and industrialization. The introduction of mechanized agriculture and modern agricultural technology has increased the yield and quality of agricultural products. In addition, agricultural products such as wheat, corn and olives form part of the main agricultural production.

It can be seen from the map that most of the suburbs of Lodi city are farmland. We can gradually shift the focus of some companies away from heavy industry and transform them into industries combined with organic agriculture. In this way, we can use the agricultural areas around our city to carry out industrial integration and innovation, thereby stimulating the economic development of the entire city.

*5.2 /*
*Natural and green spaces*



City park    Farmland    Development potential area    Green space network    Main axis of cultural activities    Important cultural event nodes

LODI regional natural ecological space analysis
*(Source by*：*https://geoportale-provlodi.hub.arcgis.com/apps/ba2051e9a6d24229ba127e6c79d7fd29/explore*)

By systematically analyzing the green and blue areas around LODI, we can draw some conclusions about the ecological problems in the LODI area.

1. We can find that the surrounding areas of LODI town are mainly farmland. Farmland walks around the transportation network, and the farmland is dominated by traditional planting agriculture. This kind of planting agriculture will cause water and soil erosion, reduce soil fertility and other negative effects. At the same time, crop cultivation in farmland will also be seriously affected due to drought and flooding problems in the ADDA river. We hope to improve this situation by adjusting planting methods and industrial structure.

2. In addition to farmland, the main green ecological areas are various nature reserves and urban parks. However, we can see that the ecological parks do not form a system, but are very scattered in various corners of the city, with poor accessibility. This has resulted in not many people going to these parks, the atmosphere in the parks is relatively negative, and there are relatively few activities. And we found that some parks in the city lack design and layout, and even many areas are in a state of neglect, with only a layer of grass. A lot of space is not fully utilized.

3. The small brown areas are some abandoned private or public green spaces in towns. These green spaces have been in a state of neglect for a long time due to unmanaged management or other reasons such as height difference and inconvenience for planting. But these green spaces actually have good views or are located in important ecosystem networks. We hope to reactivate these areas and form a LODI urban ecological green park network. At the same time, it will improve the quality of life of local residents and create more ecological, comfortable and livable living spaces.

4. The brown solid lines represent the current main traffic and tourist sightseeing axes, and the circles represent the main nodes. At present, the main axis of LODI town is the central street in the old city, which is not connected with the ecological green space. Moreover, the connection between the city and the river is very weak, and the main purpose of people passing the river is to cross the river to reach the other bank. The areas along the river with excellent views are not designed, and people are unwilling to stay by the river.

Unique flora and fauna around the ADDA River
*(Source by*: *https://www.comune.lodi.it/flex/cm/pages/ServeBLOB.php/L/IT/IDPagina/789)*

Through investigation and research, we found that there are rich wildlife resources along the ADDA River. Cultivated species, such as Populus alba and Trifolium pratense; wild tree species, such as Acer campestre, Leucoium aestivum, Equisetum arvense, Ulmus minor, Alnus glutinosa, Quercus robur, Salix alba e cinerea, Salix caprea, Sambucus nigra, Cornus sanguinea, Typha latifolia .

Wildlife is equally diverse, such as Ardea cinerea, Coluber viridiflavus, Columba palumbus, Cuculus canorus, Mustela nivalis, Egretta garzetta, Merops apiaster, Lepus europaeus, Natrix natrix and tesselata, Nycticorax nycticorax, Anguis fragilis, Dendrocopos major, Buteo buteo, Rana temporaria, Lacerta viridis, Meles meles, Triturus vulgaris. In the areas near Rivolta d'Adda and Camairago (Lodi) there are protected forests where animals such as Sus scrofa and Dama dama live.

At present, our urban planning is designed and thought more from a human perspective, but the earth is not only the home of mankind. Our urban design must not only create a comfortable environment for humans, but also consider the survival of animals and plants. In this context where the global climate is getting worse and the natural environment is being destroyed, thinking about how to protect animal and plant habitats and restore the ecological environment will become an increasingly important topic. We hope that in the future, people and nature can live in harmony and live together on this land. Moreover, these unique local flora and fauna will also become the cultural business card of the LODI area and become part of the cultural identity of the local residents in the LODI area.

*5.3 /*
*Public areas and activities*



Important functional facilities analysis in ADDA area
*(Image from Google Maps)*
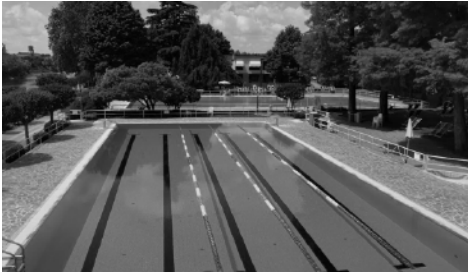
Canottieri Adda
(Image from Google Maps,same below)

The party venue has swimming pools/tennis courts/ football fields/volleyball courts/rowing facilities and other sports venues, as well as restaurants/leisure areas/children's playgrounds/showers, etc., which can fully satisfy people who want to come over to exercise or enjoy some rest time. . It also has an excellent location, located by the ADDA River, with a good view of the landscape. There are also deck chairs by the river for resting and sunbathing. The restaurant also regularly hosts live music and dance parties.

Football stadium located on the ADDA riverside. Although it has a superior landscape view, the land area is tight and there are no stands and surrounding service facilities. Tournaments are organized and tickets are sold here for more than 50 teams.



G.S. Azzurra 1939

LODI's historic sports center, international tennis champions played and taught on these courts in the 1990s. There are now fewer tennis courts, replaced by covered but open artificial turf football fields. These venues often host major competitions such as championships. In addition, there are aerobics venues and swimming pools. There are also venues and facilities for less common sports.



Sporting Isola Bella Di Ballardini Flaminio & C. Sas

The football stadium has a small bleacher for spectators, a bar run by the sports club and a large car park nearby. The football field itself has two competition venues and a training venue. The football field is mainly used for youth team training and football training, with a dedicated coaching group that can provide guidance.



Campo sportivo Nuova Lodi

Scuola Media "Ponte" Paolo Gorini

An educational research institution with primary/secondary/university status, the institute intends to develop young people who are culturally curious, able to make the most of their creativity through design skills related to problem solving, and open to new technologies . Therefore, this school regularly holds training or cultural exchange activities to allow students and outsiders to learn technology and understand cultural knowledge.



Parcheggio Via Massena

This is a parking lot located near the hospital. Half of the area is free and half of the area is charged. This parking lot is very large, with 800-900 parking spaces. The large parking lot is located next to the football field, and has a camping area and free shuttle service. But it is poorly maintained and the ground is uneven. Moreover, the number of parking spaces during peak periods cannot meet the demand.



Maggiore Hospital in Lodi

A large hospital in the LODI area, including outpatient clinics and 9 other departments. The departments and examination items are relatively complete, and the hospital makes continuous efforts to provide services that meet the needs of patients and ensure the continuity of care at all stages in the health protection process.



Carrozzeria Gorla (S.N.C.)

There are many factories in this area, gathering companies in the industrial fields including electricity/auto repair/software/computer repair/industrial equipment/warehouses and so on. Among them, the GORLA body shop, active since 1963, was one of the first body shops in Lodi and its province. The body shop covers an area of 1000 m2 and is divided into 3 sheds, a large outdoor courtyard, customer reception area and two offices.

After analyzing the important service facilities and functions around the site, we found that there are the following problems

1. There are facilities with public service functions such as hospitals/parking lots/schools around the site, but the number is limited. When the flow of people is relatively large, there will be insufficient resources and some customers will not be able to obtain services. In addition, these facilities are mostly concentrated in the areas surrounding the old city of LODI. The geographical location is relatively remote, the transportation network is not developed enough, and the accessibility is poor. And due to its age, some facilities are not very comfortable to use. For example, the road surface in the parking lot is uneven, and when it rains, there will be a lot of puddles and mud.

2. There are many sports-themed venues and facilities around the venue, and they are all in normal operation. However, these activity areas do not form a unified system, and each of them lacks connections and operates independently. This will make these venues unattractive, and few people will come except for customers with a clear purpose. In fact, these venues themselves have complete facilities and rich activity content, and three of them are located on the banks of the ADDA River, with excellent landscape views and beautiful environments.

3. Except for some facilities distributed around the river, many other working and living areas are no longer so closely connected with the river. These areas are far away from the river, and residents do not often go to the river unless necessary. The number of river-related facilities and functional services is still relatively small, and the extent of riverbank development is not large. We found that the image of the ADDA River has become increasingly dim in the minds of LODI residents.

## 5.4/
### *Transportaion*



high road
bus line
×   bus stop
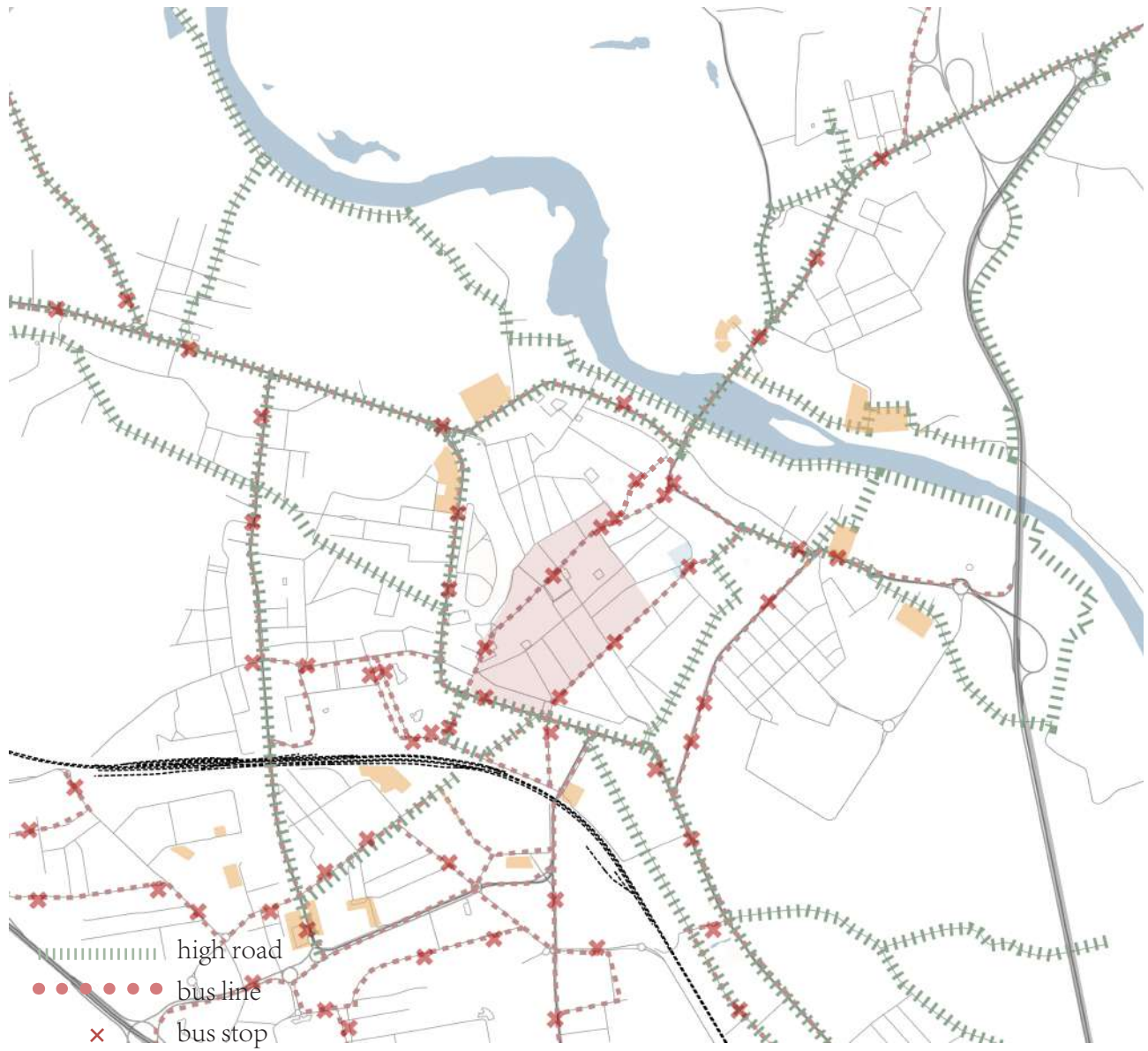
Transportation in Lodi is similar to most Italian cities. The city's transportation is relatively convenient, including a variety of travel modes, including road transportation, rail transportation and public transportation.

Lodi's urban roads are divided into 5 levels. The first is the main artery, which is the main traffic artery within the city. It is usually a two-way road and is responsible for connecting different areas of the city and traffic with surrounding areas. Main arterial roads usually carry high traffic volumes and are the backbone of urban road networks. The most important of these is the A1 motorway, which connects Milan to Bologna via Lodi. This makes traveling to Milan and many other cities very easy. In addition, the SS9 road is also an important main road connecting Lodi with surrounding cities. and the A1 motorway, connecting Milan with Bologna, via Lodi. This makes traveling to Milan and many other cities very easy. Secondly, there are secondary roads, which usually connect to main arterial roads and can also be used for intra-city travel. They may be one-way or two-way roads and usually carry lower traffic volumes. LODI's secondary arterial roads mainly connect the old and new urban areas of LODI and are important roads within the city. Then there are residential roads, which are usually located in residential areas and serve to connect houses, parking lots and pedestrian areas. They are usually narrow streets that mainly provide convenient transportation for local residents. Then there are pedestrian areas, which are usually designed for pedestrians and closed to motor vehicles. They are often located in city centers and are used to provide walking and shopping experiences. In addition, there is another kind of road that cannot be ignored, which is the bicycle path. There are dedicated roads for bicycles in LODI to promote environmentally friendly travel and relieve traffic pressure.

Lodi is an important rail hub, with multiple rail lines passing through the city. The Milan to Bologna high-speed rail line (high-speed rail) passes through Lodi, providing citizens with a fast rail transportation option. Lodi is also connected to local and regional rail lines in surrounding cities and regions.

LODI also has the city's own bus and tram systems, which cover the city's main streets and areas, providing people with convenient ways to travel.

But it is also worth noting that because LODI is a historical ancient city, there is a ZTL in the ancient city of LODI, which restricts the passage of vehicles. And due to the narrow roads within the ancient city, many roads only allow one-way traffic.
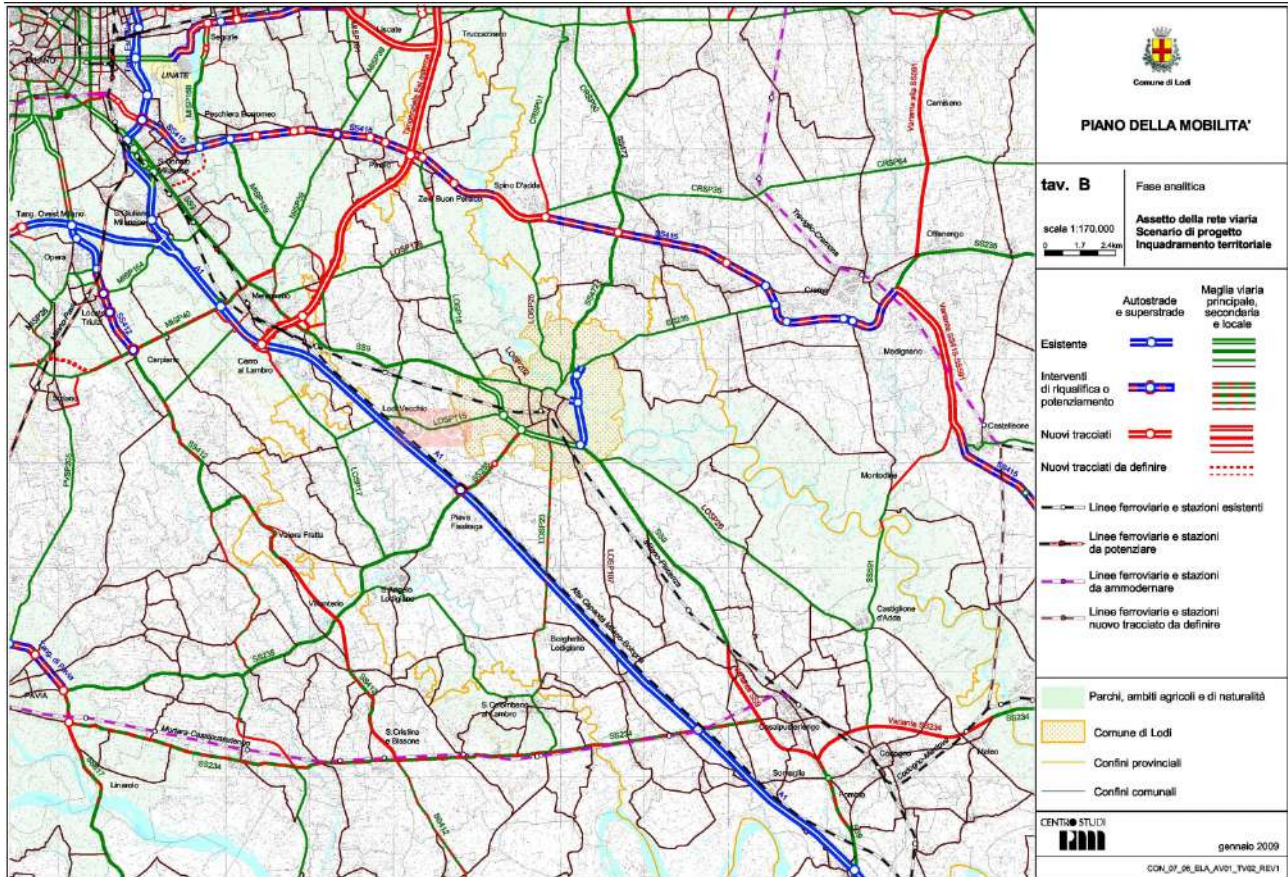
*Source:Piano Ddella Mobilita Urbana,2009*

Lodi's accessibility structure is typical of hubs in the Lombardy plain, occurring in areas with lower settlement densities. It is connected to Milan in a kind of umbilical cord via Via Emilia and the Milan-Piacenza railway line, which historically ran through its historic centre. [Recently (December 2008) a new high-capacity rail line was built at Milan-Bologna, parallel to the A1 motorway]. The urban structure of the city has long been characterized by the presence of two axes and a radial line connecting the urban core of its hinterland (relatively far from its borders) to other poles of equal status.

Today, the SS9 Emilia runs on the edge of Lodi's urban fabric, where the route has a two-lane section that serves as the southern loop. This local ring road system has also been completed in the east thanks to the creation of a new two-lane connecting road as a variant of the Orzinuovi SS235 (which used to pass through the city center). The road connects the SS9 to the south and the SS472 Bergamina to the north and the SS235 itself. This creates a traffic detour and an external/internal traffic distribution system that is less intrusive than the urban road network.

The A1 Milan-Bologna motorway runs parallel to the SS9 motorway. Lodi is connected via the Pieve Fissiraga - Borgo S. Giovanni junction and is accessible via the SS235 branch line to Pavia, now transferred to the jurisdiction of the Lodi province. The other penetration radial axes of Lodi always deviate from SS9 and are expressed as:
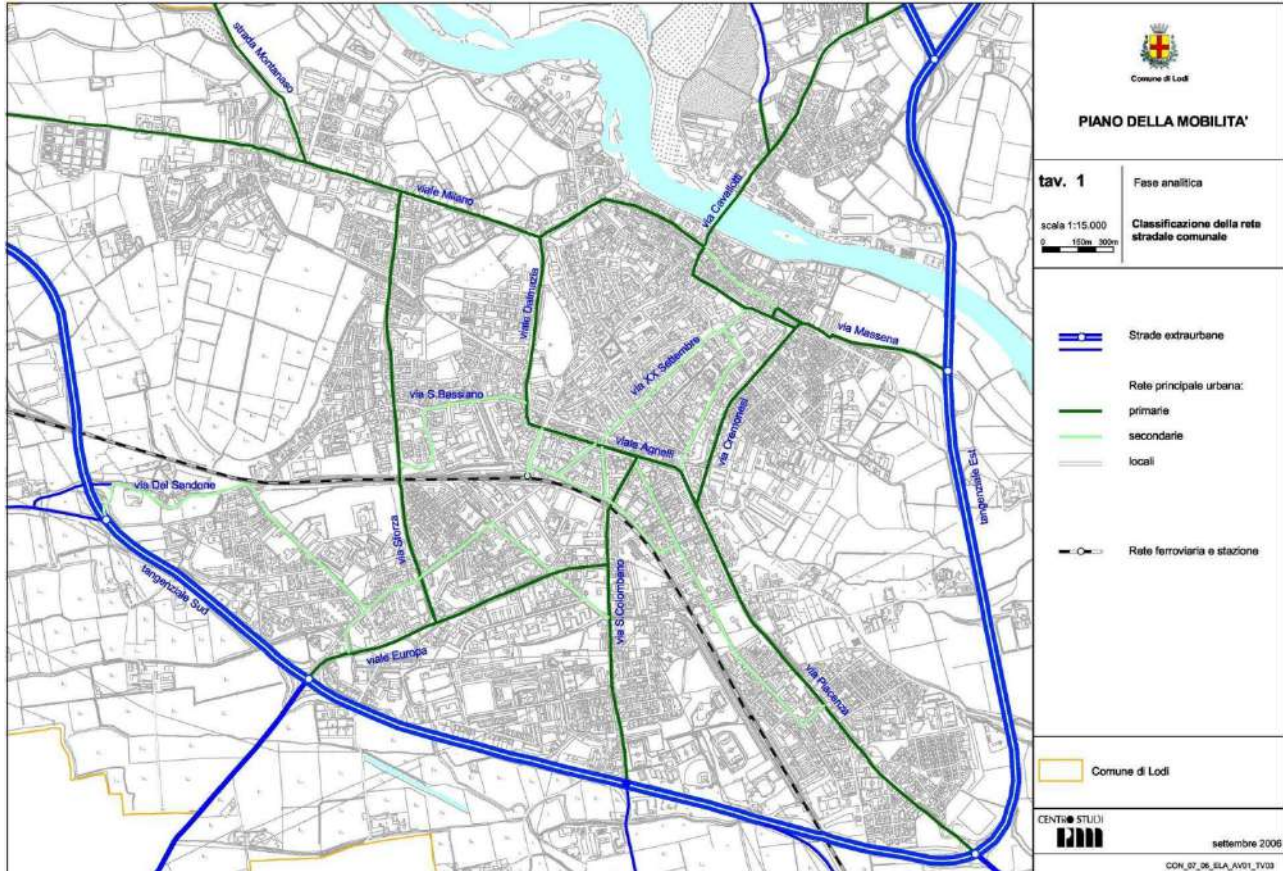
SP115 Lodi - Salerano al L. west;
SP23 Lodi - Borghetto L. south;
SP107 Lodi － San Martino in Strada － Livraga, heading south;
SP26 Lodi － Adaburg, southeast;
ex SS235, ex SS472 and SP25 north to ex SS415 Paullese;
SP16 S.Grato - Zelo B. Persico, facing north.

*Source:Piano Ddella Mobilita Urbana,2009*

Table shows the hierarchy of the road network deduced from the use of the urban road network. At the top of the hierarchy are the streets whose main function is to connect the different sectors of the city:
  The historical route of the Via Emilia (Milan Dalmazia-Vignati-Agnelli-Mazzini Piacenza), an itinerary that crosses the town center from north-west to south-east, skirting the historic centre; whose terminals are located on the new Via Emilia/southern ring road;

via Defendente, the S.Giacomo/Savoia/Borgo Adda system, via Secondo Cremonese, which complete the internal ring road, on the perimeter of the historic centre;
the Cavallotti radials, with the bridge over the Adda, heading north; Europa and San Colombano which converge from the south in the railway underpass and then onto viale Agnelli, connected to the southern ring road with the viale Europa junction, via Massena from the east, connected with a junction to the eastern ring road;
Via Cadamosto, Sforza and Colombo, which, through the second vehicular railway underpass, connect Viale Europa and Viale Milano.

The roads that enter the internal ring road, from the east and the south, are regulated with one-way traffic, to reduce the number of maneuvers allowed at the intersections. These axes are also affected by the routes of public transport lines, over almost their entire extension. The caliber of these roads is normally greater than 10m, with some rare bottlenecks (for example in via Cremonesi). The maximum section is along Viale Europa, which has two lanes in each direction and two carriageways separated by a large traffic island. There is a sidewalk almost everywhere.

The radials San Bassiano, Pavia, Rimembranze Italia, Dante Alighieri; in the historic center, some streets are still used by through traffic, in particular the aforementioned Borgo d'Adda, San Giacomo e Savoia, XX Settembre and Gorini; here the sections are small, all less than 8m.
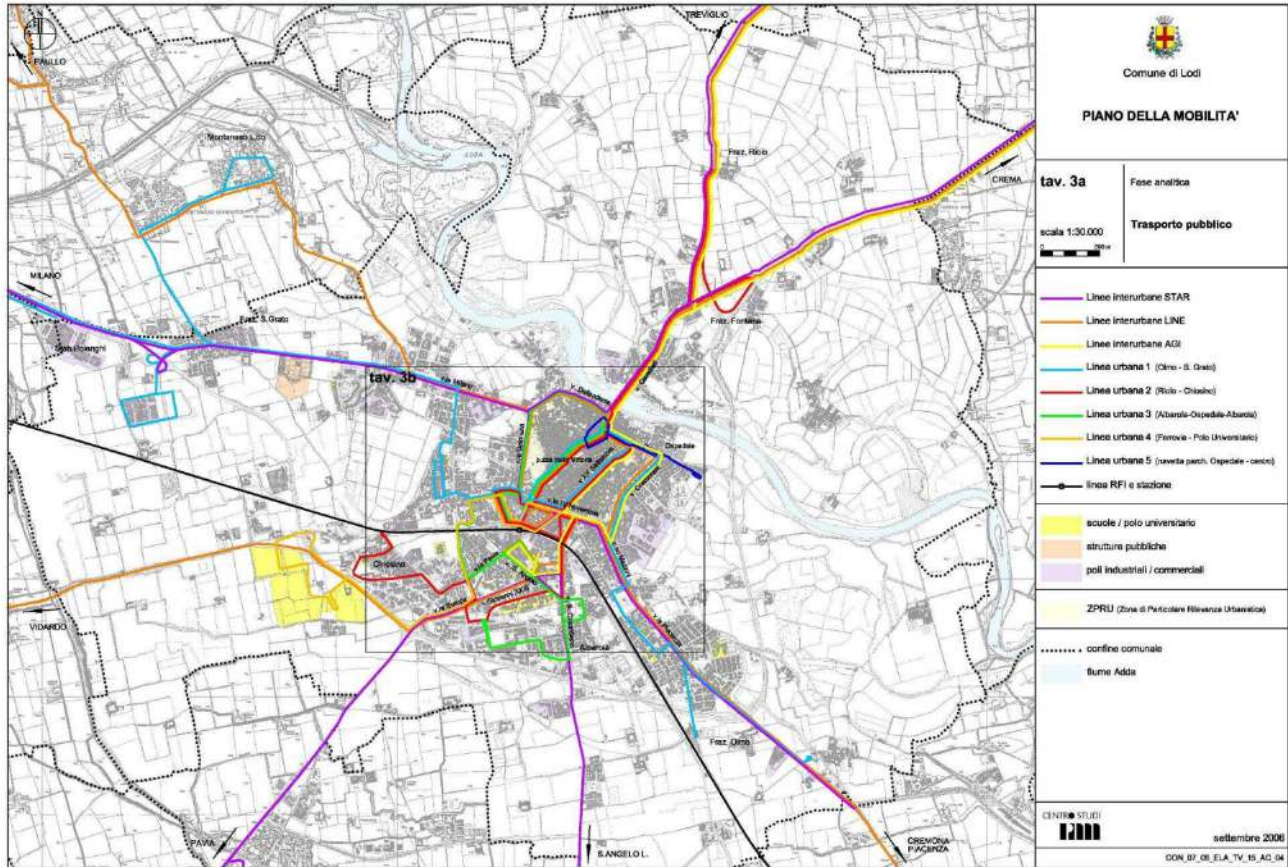
*Source:Piano Ddella Mobilita Urbana,2009*

Public services in Lodi are provided by public road transportation. Relations to and from the outside of the city are also guaranteed by the RFI network (Milan-Bologna and Milan-Mantua lines), which represents universal public transport, especially with station municipalities and the city of Milan. Current service at Lodi Station guarantees 45 train pairs per day;

On the Milan-Bologna line, there are 45 trains to Milan every day (41 local, 1 express, 5 intercity). There are also 45 trains to Bologna (41 local, 1 express and 3 intercity trains).There are 8 pairs of trains per day on the Milan-Mantova line. By the end of 2009, Lodi will become the terminus of the Milan suburban railway line S1 (Saronno-Lodi).

For information purposes, it should be noted that Lodi station has an estimated "exclusive market" of 4 million passengers per year (e.g. Reggio Emilia, Lucca, Arezzo) and is included in the "Gold" category. It is reasonable to assume that this market estimate refers to a scenario where regional rail service is extended to Lodi, where urban and out-of-town users are concentrated at a single station. In the city of Lodi and downtown, 5 lines are currently under development, defined as follows:

Line 1: Olmo-S. Gratto;
Line 2: Chiosino-Campo di Marte
Line 3: Albarola-Hospital-Albarola;
Line 4: RFI-Polo University Station;
Line 5: Central Hospital parking shuttle bus;
The annual mileage of the 2005 operating plan is as follows:
Line 1: 232,738 buses*km/year, equivalent to 45 pairs of trips/day;
Line 2: 165,934 buses*km/year, equivalent to 34 daily trips to Chiosino and 33 daily trips to Riolo;
Line 3: 59,096 buses*km/year, equivalent to 13 trips/day;
'Line 4: 16,575 buses*km/year, equivalent to 9 trips/day;
Line 5: 28 trips/day.

These lines, despite course corrections, follow the recommendations of the 1993 Transport Plan and the 1997 update due to the need to connect surrounding communities and major attraction centers and the need to ensure access arranged first along the main axis station - Victoria Square - Hospital.
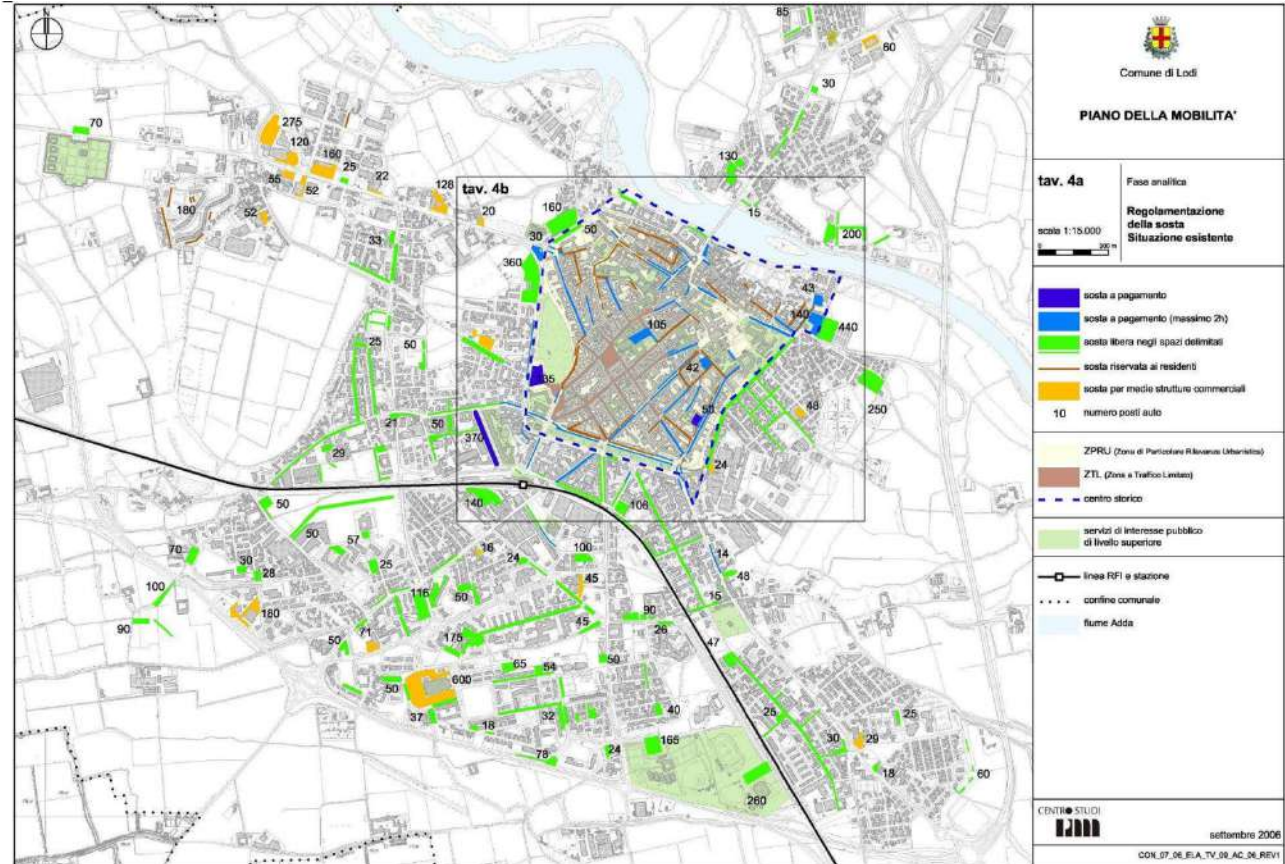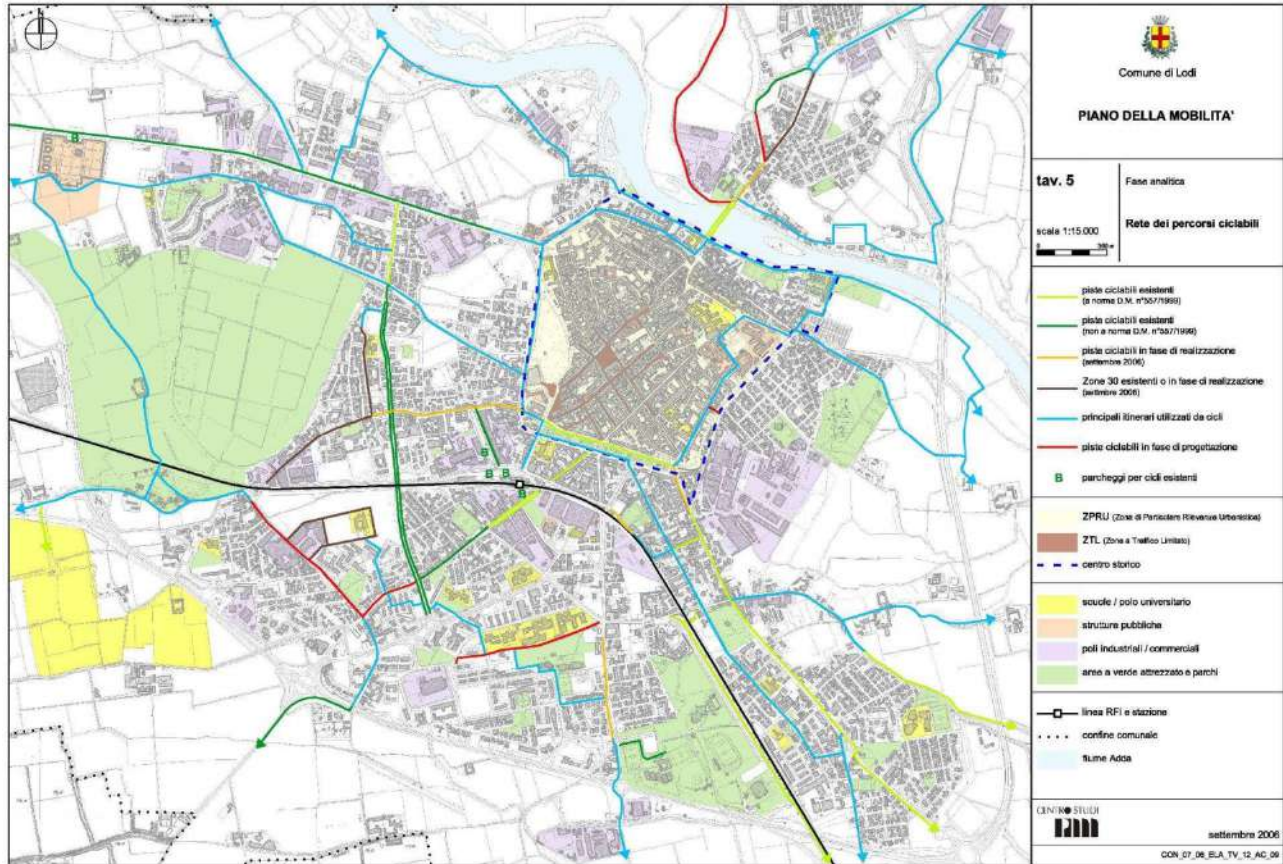
*Source:Piano Ddella Mobilita Urbana,2009*

The Lodi parking system has been in critical condition and its problems have been and remain the most complex of the entire transportation system. Surveys reveal a situation of unease and intolerance among many citizens in the city of Lodi: commuters can't find enough space to change trains, and residents can't find parking spaces because they can't find them. Parking is difficult for commuters, traders complain about lack of parking spaces for customers, ZTL is surrounded by cars with or without formal permits, cargo loading and unloading often takes place regardless of the allowed time, etc.

In particular, especially in the past, the areas where the most critical levels have been recorded are those associated with the historic centre. In fact, in this area, the lack of parking regulation and the failure to distinguish between different types of users (long-term and short-term parking needs of non-residents) further amplifies the objective problem of insufficient space, as well as the problem of parking needs of residents. The result is that the average occupancy factor throughout the entire historic center is always above 1 throughout the day, with up to 25% more cars parked during peak times compared to actual parking spaces.

The first traffic plan (1994) completely restructured the city's parking services with the aim of: limiting traffic in the historic centre, introducing paid parking and rotating parking within the historic centre. And provide marginal parking spaces with a higher parking rate. Ensure adequate reserved parking spaces for residents of the historic center; meet long-term parking needs in further outer areas.

*Source:Piano Ddella Mobilita Urbana,2009*

Of the total number of people who travel to Lodi for work or study reasons, or who have Lodi as their origin or destination, the predominant mode of travel is, as expected, by car. The proportion of people who move on foot or by car or who use bicycles is very high (41%, 2001 Census).

The proportion of trips to and from the city is also very high: 24 percent of trips originating in Lodi and 17 percent of trips destined to Lodi are by bicycle or on foot, according to the district's 2002 origin/destination survey. According to the census, we found that 24% of systemic mobility uses public transport (7% of internal mobility, 13% of incoming workers, 26% of migrant workers and 75% of commuting students).

The Department of Social Services and Public Works recently launched the "Accessible Living Pathways in Buildings and Cities" project. The project was agreed with regional and local committees for the removal of architectural barriers and associations with disabled people. The project must be translated into department-specific plans for mobility for people with motor and/or sensory impairments. Preserve and enhance bicycle mobility for the accessibility of central city cores and for short distances between different functions in the urban fabric (schools, workplaces, sports facilities, public offices, commercial activities) and for the majority of households.

Compatible with the addresses indicated by the advanced programming tool, the plan proposes the following bicycle-pedestrian network structure:

1. Load-bearing routes, defined as major urban systems. It occupies the shape of the radiating centers of the city (urban ring of the historic center, outer ring between neighbourhoods, load-bearing radials). Mainly using own tracks and protected reserved lanes.
2. A set of local connection routes to residential areas (secondary urban system). Establish dedicated tracks and protected reserved lanes, as well as fully signposted mixed walking and cycling paths.
3. Out-of-city bicycle path system and leisure routes. Dedicated tracks and protected reserved lanes will be created, as well as fully signposted mixed cycle and pedestrian lanes.
The current cycling network is although disorganized and divided into individual or mixed routes. But its structure is the same as that of a road network, consisting of some major radial roads and parts of the ring road in the historic centre.

## 5.5 /
## *Cultural and historical buildings*
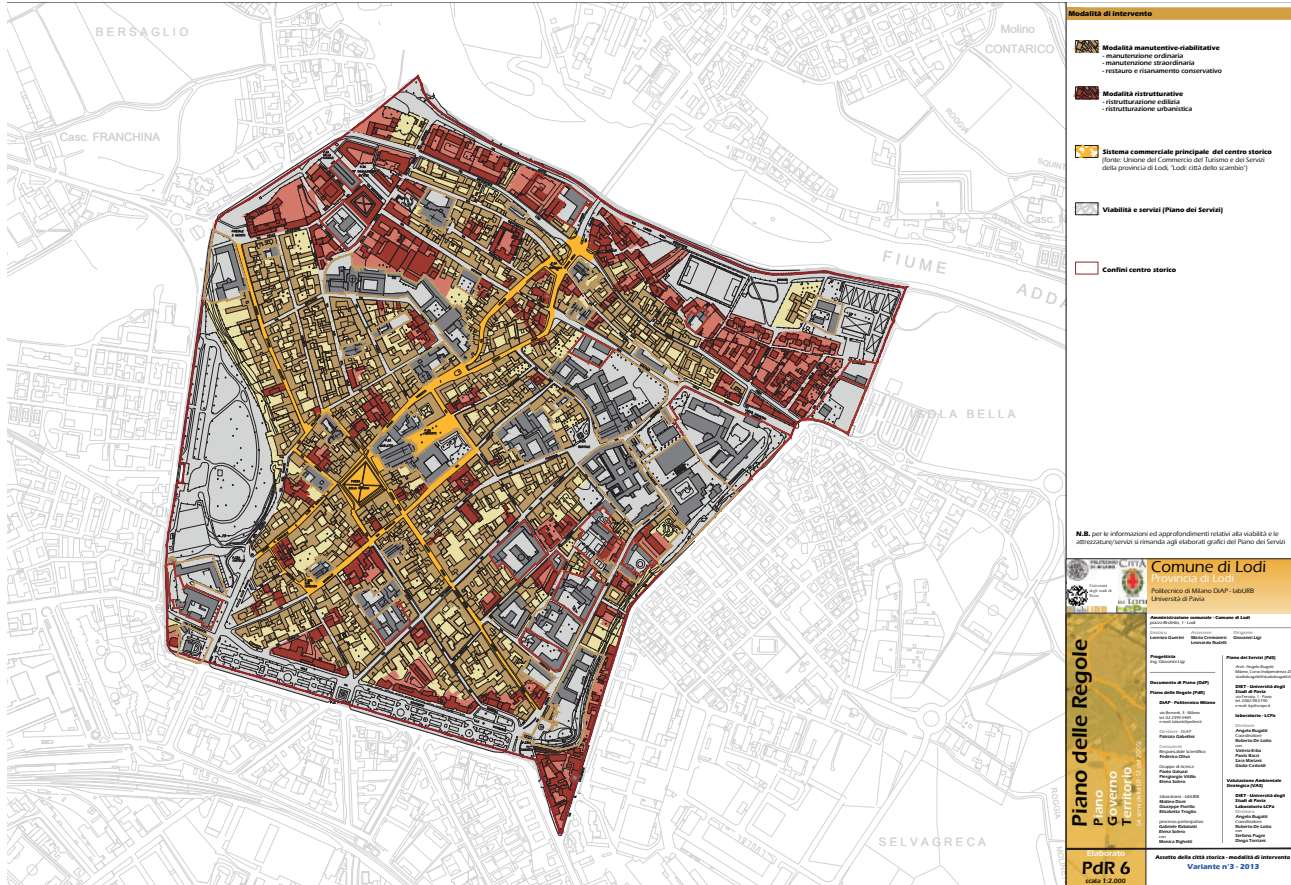


Historically Preserved Buildings Analysis
(Source by https://www.comune.lodi.it/contatti)

First of all, we can see that the historical protection areas are mainly concentrated within the pentagon, that is, the upper city area on high terrain. Bright yellow streets represent areas where major historical and cultural activities take place, as well as areas where residents and tourists are more willing to enter and visit. It can be seen that the streets with a more lively and positive atmosphere are mainly the two main streets in the middle that pass through the central square and a diagonal street in the southwest. The lively streets are centered on the central market and radiate to the surrounding areas. You can see the important influence that the central node has on the surrounding areas. But the problem that comes with it is that the radiation area is limited. If there is only one important activity center, there will be insufficient nodes, insufficient attraction, limited activities and space, and it will not be possible to allow more people to enter the venue. In addition to the lack of important nodes, it can also be seen that popular activity areas are concentrated in the center of the town, and few people are willing to go to the river. Streets also place little emphasis on accessibility and connections to the river. Residents living in the city have become increasingly alienated from the river, and their memory of the river has become increasingly dim.

The khaki areas are protected building areas. There are many beautiful and ancient historical buildings in these areas, and these buildings will be regularly maintained. But after we visited the site, we discovered that many of these buildings are only open at a few times of the year for a few events. In fact, most of these buildings are very well preserved and have beautiful small courtyards. But unfortunately, for most of the year, these buildings sit empty. The upper city area of LODI is mainly divided into protected areas dominated by historical buildings and areas with high building density and many immigrant gathering areas facing demolition and reconstruction. There are also great differences in the living characteristics and cultural beliefs of residents living in the two areas. We can see that the red areas, areas facing demolition and redevelopment proposals, are mainly located at slightly lower elevations along the river. These areas have good views of the river, and many have abandoned and unused yards and lawns.
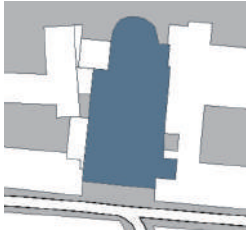
News Museum
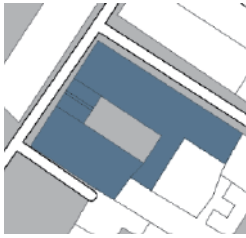
It is an important sector at European level. There are exhibition areas with some art and news themes. One of its important goals is to actively collaborate with schools on projects ranging from guided tours to teaching laboratories.

TheChurch

This is an ancient medieval cathedral and a well-known local cultural landmark.
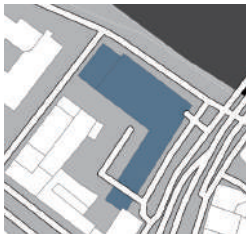
Exhibition area

The former Catholic church is now a short-term exhibition room. But it is only open during specific periods, such as ethical photography festivals or small exhibitions. These activities are well-known local cultural heritage.

Military musem

It used to be a kindergarten and is now a military museum.

School

A local school regularly holds cultural activities and is open to outsiders.

Artists association

A group of artists run various art trends and events and run a contemporary art gallery and exhibit the works of young artists.

Theatre

The former church, now a theater, aims to actively create the cultural landscape of the city. Promoters recommend offering rich performances and interactions. and a square with access to festival theater. These performances are performed for a wide audience including children and their families and schools.
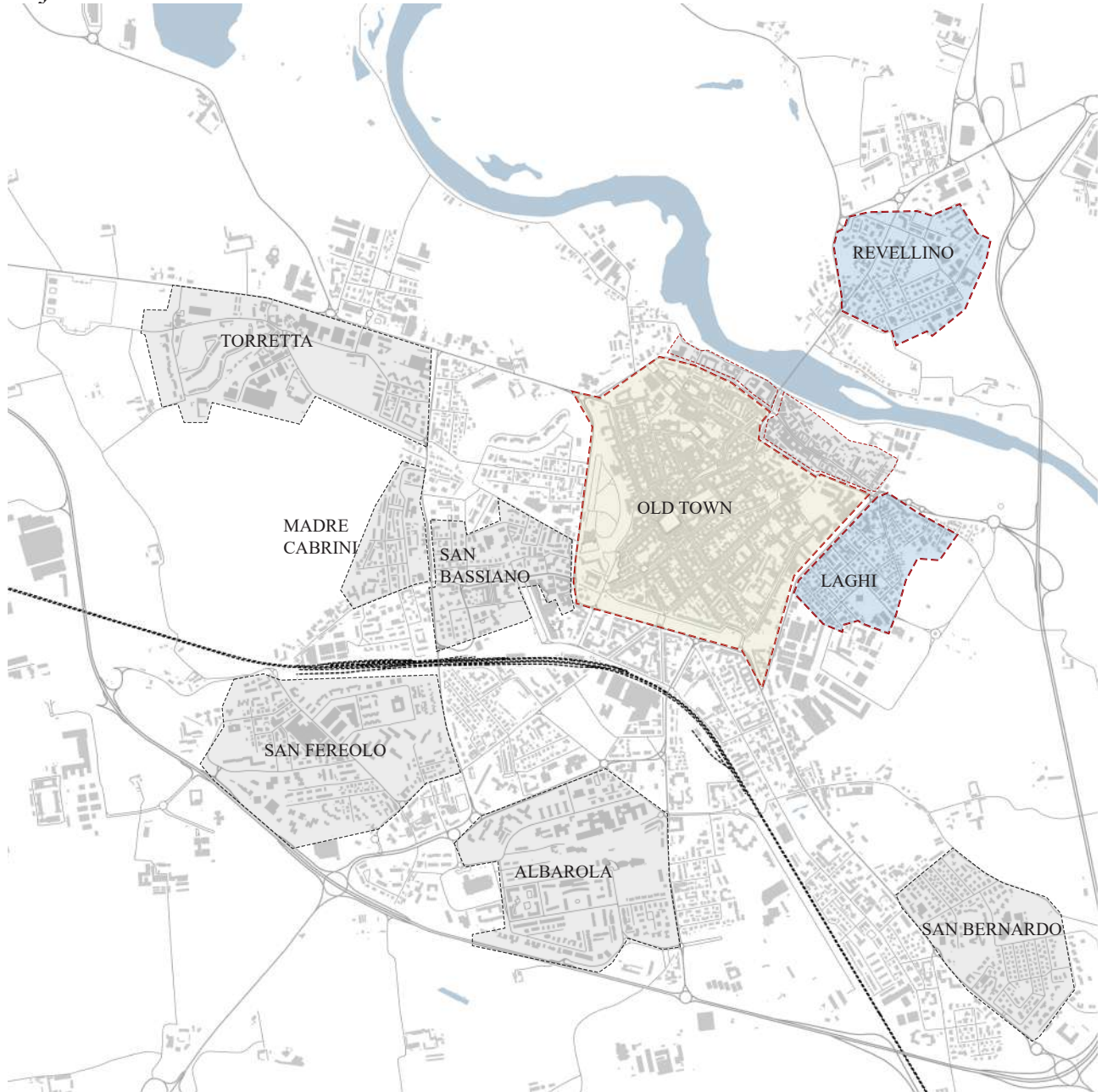
Sculpture group
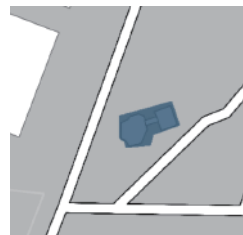
Art works by famous local artists. It was once an important cultural heritage and cultural coordinate of LODI for everyone to visit.

After analyzing the distribution of historically protected buildings and demolished buildings in the entire area of LODI town, we focused on extracting several representative buildings for study. As mentioned earlier, there are many protected buildings in the old city of LODI that have not been fully utilized. These buildings have beautiful appearances and beautiful environments, and have different themes and event atmospheres. These buildings are symbols of the history and culture of the LODI area, and their existence also means that more activities related to history and culture can take place here. These historical buildings are scattered in every corner of the old city, and there is no unified and complete system for tourists to clearly perceive. And the saddest thing is that most of the time these buildings are not open to visit.

When we classify the functions of these buildings, we can find that they are mainly composed of several types. One is related to art and cultural activities. These buildings can provide space for art creation and exhibition. One is the museum type, including museums with various themes. The museum can not only display local cultural relics and popularize science knowledge, but also showcase the culture of the LODI area to local residents and foreign tourists. One is the theater, which provides a stage for some cultural display activities, and many festivals and important celebrations are also held here. The last one is cultural heritage, including historic landmark cathedrals and sculpture groups created by well-known local artists. These heritage properties themselves serve as important cultural symbols and are an important part of enhancing local cultural identity.

*5.6/*
*City Area*



REVELLINO

TORRETTA

OLD TOWN

LAGHI

MADRE
CABRINI

SAN
BASSIANO

SAN FEREOLO

ALBAROLA

SAN BERNARDO

According to the classification of residential groups in LODI, LODI can be roughly divided into several major areas as shown in the figure. The most important and largest area is the ancient city of LODI. The ancient city is located in the center of LODI. It is also the residential group within the ancient city wall of LODI. It is also located at a higher location in terms of terrain. This residential group has existed for the longest time, and a large part of the ancient buildings are also preserved inside, so there is a part of the ZTL area and relatively narrow streets in this area. It is also one of the most important components of LODI. In addition, the two areas located in the north of the ancient city and close to the river are Borgo Adda and Maddalena. They are two residential groups directly related to the river. Among them, Borgo Adda is also an area with considerable historical and cultural background. Maddalena is now inhabited by mostly foreigners.

Located to the east of the ancient city is the Laghi area. The larger part of this area is a residential area, while the south is an industrial area. We also believe that this area has high research value.

Located on the north bank of the river is the area of Revellino. This area is also a riverside community, but it has a very different style and culture from the ancient city.

# RIVER AWAKENS THE CITY HISTORY PROJECT

3

## 6.1/
### *The river that drives city rebirth, Arno river/Italy, Stefano Pasqualetti*



Masterplan
(Source by https://www.gooood.cn/a-stream-of-ideas-by-stefano-pasqualetti.htm)
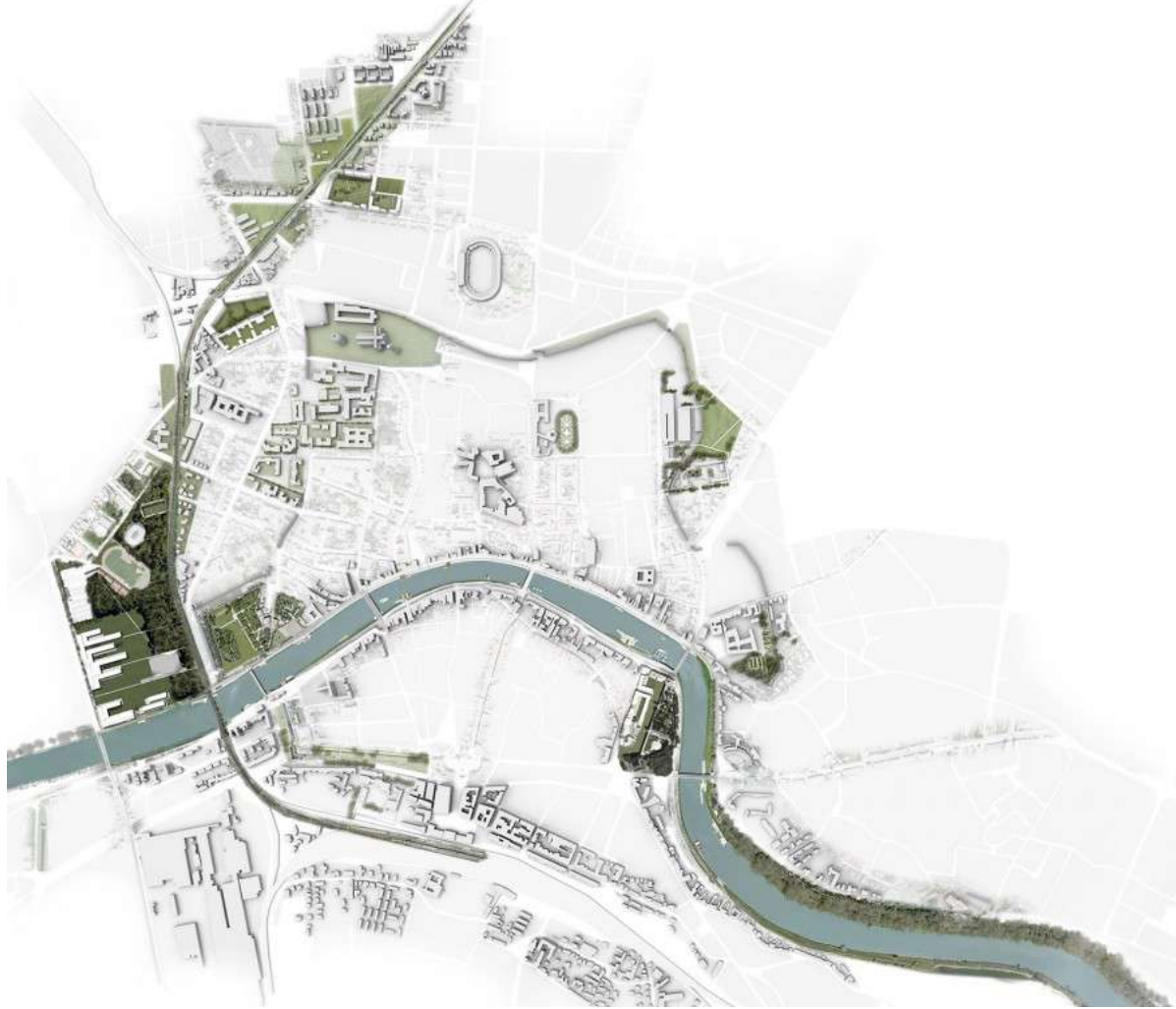
The Arno River flows through the city of Pisa and has been the core area of urban commerce and cultural development since ancient times, displaying the image and characteristics of the city to the outside world. The new urban tour system adopted in this design is inextricably linked with the river, turning the entire city into an organized and dynamic large-scale exhibition space, promoting the development of business and culture, and further promoting tourism.
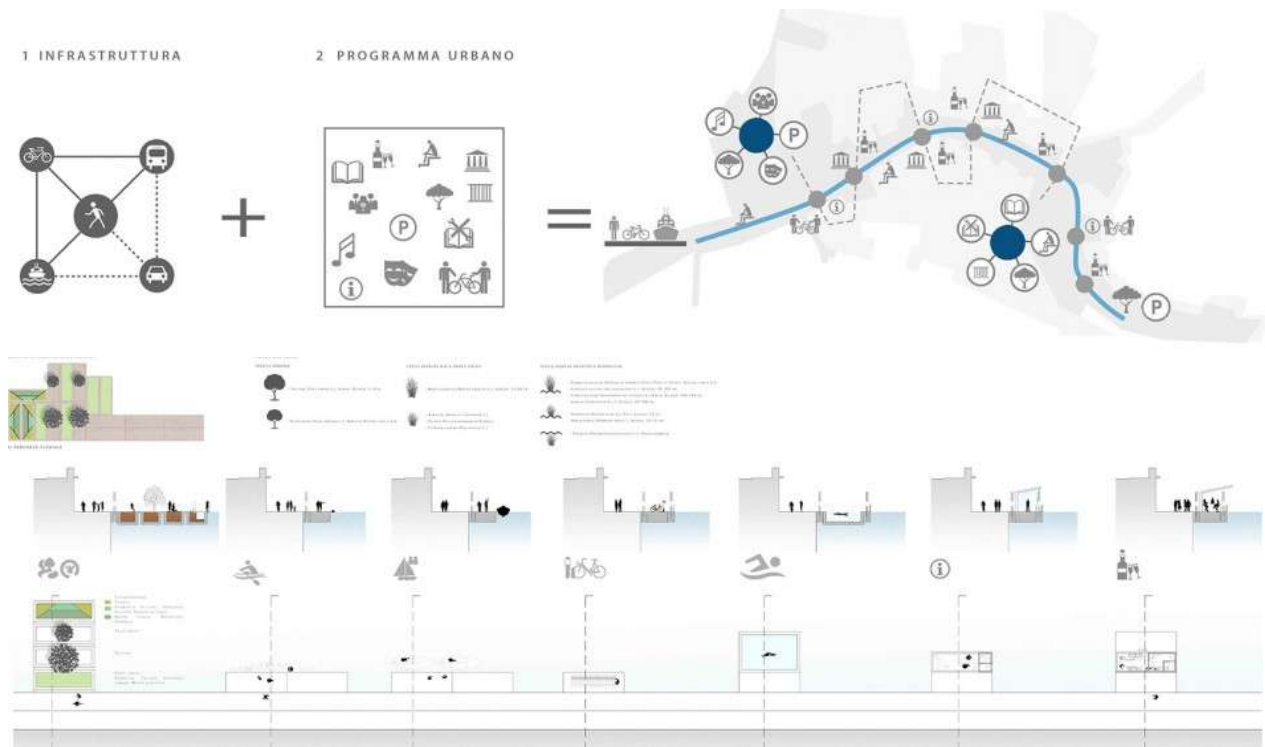
Concept and section diagram
(Source by https://www.gooood.cn/a-stream-of-ideas-by-stefano-pasqualetti.htm)

The spatial node settings of this design will be spread out along the river. The river has become the structural context of the urban recreation system, guiding tourists to wander through the city. At the east and west ends of the river, at the edge of the ancient city, are two nodes representing trade and culture respectively. These two new nodes, obtained through the renovation and transformation of the ancient city, will point the way for the next sustainable development of the ancient city center. While fully respecting the existing texture of the ancient city, the activities and land properties in the city are replaced, allowing them to be used by residents and tourists and revitalize them. At the intersection of important nodes in the city and rivers, landscape designers activate waterways and riverside pedestrian spaces by placing waterfront platforms or transforming old docks and piers. These platforms built with floating boards are lush and green and will become a good place for water activities and leisure. At the same time, the urban bicycle and boat sharing system will also set up parking spots nearby to provide more convenient transportation methods.

## 6.2/
## *The Goods Line, Australia / Sydney, ASPECT Studios*



Scene photo and general floor plan
(Source by https://www.aspect-studios.com/cn/projects/the-goods-line-2)

The opening of The Goods Line in Ultimo brings the vision of a more connected, sustainable and innovative Sydney one step closer to reality. The Goods Line, a NSW Government initiative, is the key strategic link and an important green space for this burgeoning part of the city. It provides a connection through to the Devonshire Tunnel under Central Station and Chinatown and Darling Harbour, as well as tapping into the various cultural, educational, and media institutions such as UTS's Frank Gehry designed Dr Chau Chak Wing Building, the ABC, and Sydney TAFE that border the park.

Render scene graph
(Source by https://www.aspect-studios.com/cn/projects/the-goods-line-2)

This unique elevated park has seen a disused rail corridor running from Railway Square to Darling Harbour reimagined as a leafy, energised civic spine in the heart of Sydney's most densely populated area. Beyond its primary connectivity function, The Goods Line is filled with 'social infrastructure' from bleachers, bench seats and an amphitheatre to fully-enabled wifi, a children's play area, table tennis tables and raised lawns. This new platform for public engagement provides a transformative social and environmental role in the precinct. The space also serves as a powerful metaphor for the city's move from an industrial past to a modern knowledge economy.

*6.3/*
*Reinventing Our Rivers competition, Québec/Canada*



Design analysis drawings
(Source by https://www.gooood.cn/four-rivers-three-winners.htm)

Floating planting device and Render scene graph
(Source by https://www.gooood.cn/four-rivers-three-winners.htm)

The theme of this proposal is the transformation of an urban river into an urban national park "Four Rivers Park". This plan emphasizes in many ways the rights of urban residents to enjoy water resources and the importance of water resources to urban life. The designer designed a series of park planning projects to closely connect urban life with the natural environment through water systems.

Designers place great emphasis on intersections or confluences around rivers, which can be small or large. River Junction is a social platform with the goal of highlighting urban and natural qualities, as well as those characteristics to each river.

Shell huts serve multiple purposes, ecologically providing habitat for freshwater shells that filter sewage and turn it into clean water. And after the water quality is improved, the shells can be safely eaten to provide economic income. The shell huts don't have to remain stationary, but can move across the river and connect to a series of piers.

Provide a digital platform that combines design and technology, where residents can learn more about the river and participate in river activities and landscapes even if they are not near the river.

The circle connects the two banks of the river, and at the same time integrates a variety of sports and sightseeing functions, provides a platform, and allows residents to embrace nature and enjoy the river in all seasons.

**6.4 /**
**Moscow River Competition, Moscow/Russia**



Концепция линейного центра
Linear center concept
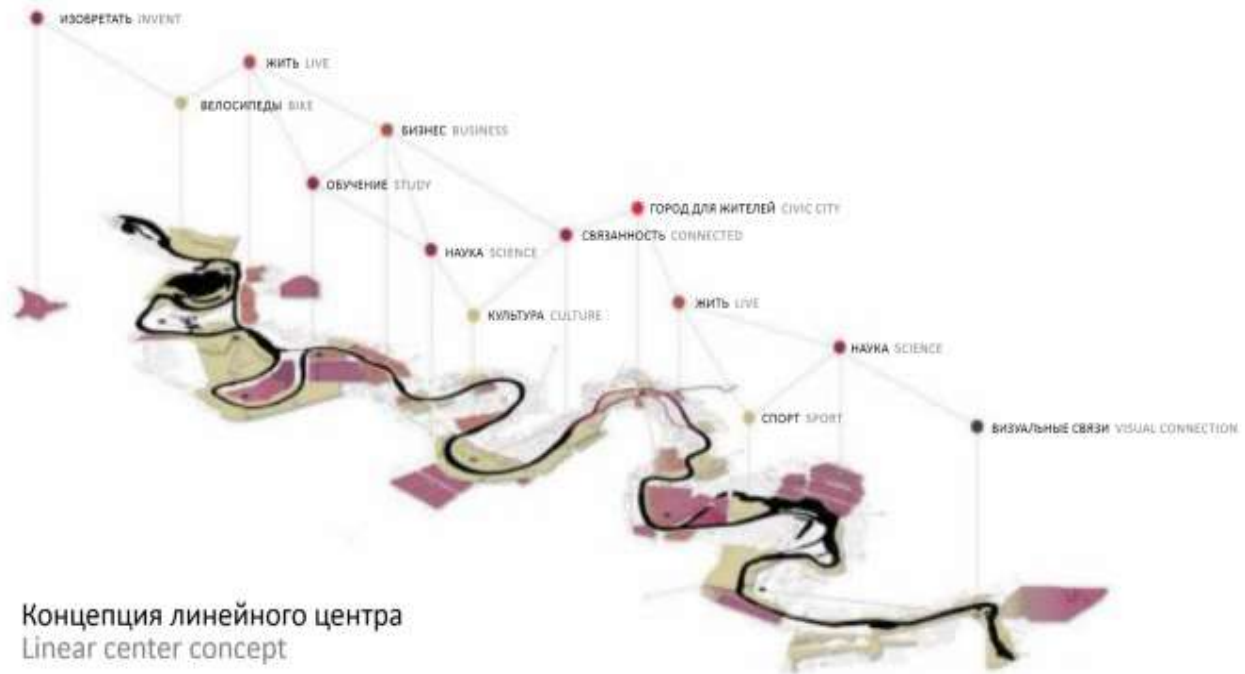
Concept diagram
(Source by https://www.gillespies.co.uk/projects/moscow-river-competition)

The proposal to transform the Moskva River from the city's "barrier" to the city's "link", restoring its historic position as the heart of the city and the most important transportation route. Their masterplan proposal seeks to create a series of linear green spaces while incorporating new cultural and educational spaces along the waterfront and improving surrounding public transport. Gillespies' proposals include studies of future embankment types, creating routes for pedestrians and cyclists, and activating the river with water-level boardwalks between areas of floating reed beds.

Along the Moskva River, a series of linear designs are made and superimposed, including transportation systems, ecosystems, characteristic leisure and entertainment systems, education systems, and more. Different systems actively promote each other to achieve better results. At the same time, doing so can deepen the cultural and regional identity of the people in the region with the river. At the same time, different themes are designed for different blocks along the river.

The river really connects the various nodes and blocks of the city like a link, becoming an important.

The north bank of the river will feature special green islands to purify the water flowing from the floodplain, creating a natural beach in the heart of the city. structural backbone of the city.



Render scene graph
(Source by https://www.gillespies.co.uk/projects/moscow-river-competition)

## 7.1/
### *Public space optimization - the integration of life and ecology*



| | | | | | | |
|---|---|---|---|---|---|---|
| Nature reserve | City parks and gardens | Potential Urban green space | Experience agricultural experimental area | Main axes of urban space | Added green axis | Important activity nodes |

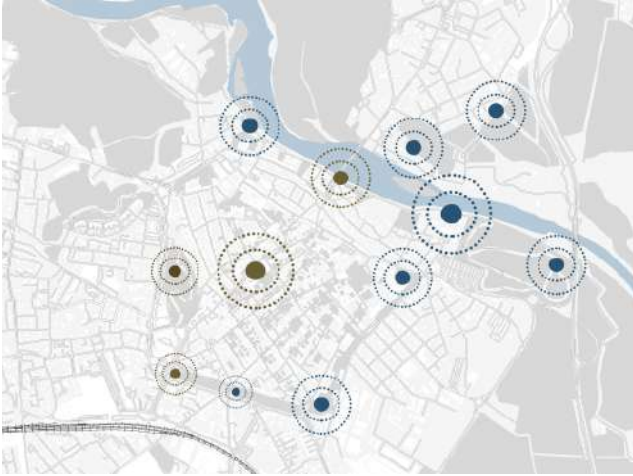Ecology and Public Space Design strategies

In response to the problems discovered in previous research, we proposed some design strategies. 1. Improve the green ecosystem and connect scattered urban green spaces. First, on the basis of the original parks, we redesign the parks and open spaces in the city that lack vitality and design, and introduce new functions and activities to attract people. Set up small green nodes such as corner parks between various parks and green ecological areas to guide people to gradually enter the park.

2. Focus on creating two green ecological axes, one along the river, and one connecting the central railway station and the linear park to the river. These green axes will integrate multiple functions with three different themes: history, culture, ecology, nature, and sports activities, allowing people to improve their quality of life, fully experience the beautiful scenery of the river while participating in a variety of activities, and awaken their appreciation for the local area. cultural identity and awareness of nature protection to achieve ecologically sustainable development.

3. Activate some private abandoned or underdeveloped land on the riverside that exists in the site, use it as a node along the green ecological axis along the river, and create parks with different themes and activities open to residents and tourists. At the same time, a green ecological axis is created around the historical protection block, with the purpose of penetrating into the central town, so that people can feel nature and green plants in every corner of the city, and have space for leisure activities. And these green areas will lead people to the river. Give residents more opportunities to come to the river and experience riverside activities and enjoy the beautiful scenery.

4. We also plan to explore the feasibility of ecological agriculture and experience agriculture. We selected a farmland on the other side of the river from the second axis as the experimental area. This kind of agriculture not only provides a variety of ecologically grown products, but also encourages people to personally participate in and experience the process of growing and cultivating crops. We have also built a series of service facilities including sightseeing and leisure entertainment around the agricultural field experience. This can not only adjust the industrial structure and improve economic efficiency, but also protect the natural environment, allowing people to fully understand and live happily with nature.

New city function node



Two new green axes
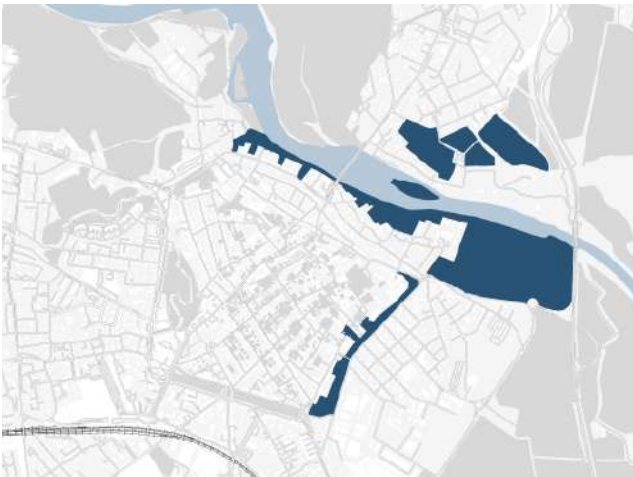


Main research areas



Ecological reserve

(Source by: https://geoportale-provlodi.hub.arcgis.com/apps/ba2051e9a6d24229ba127e6c79d7fd29/explore)

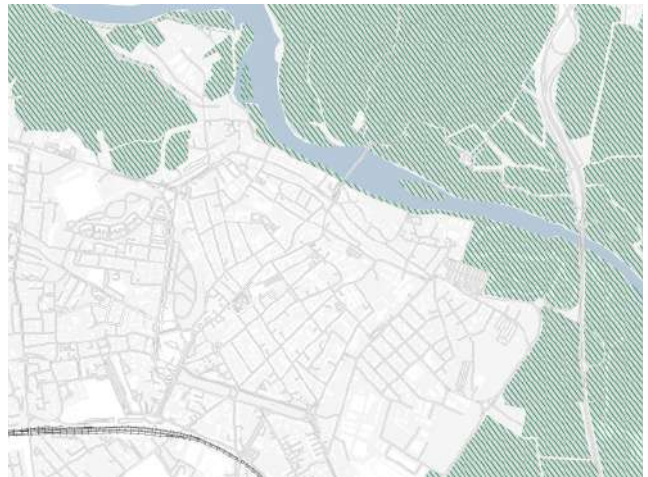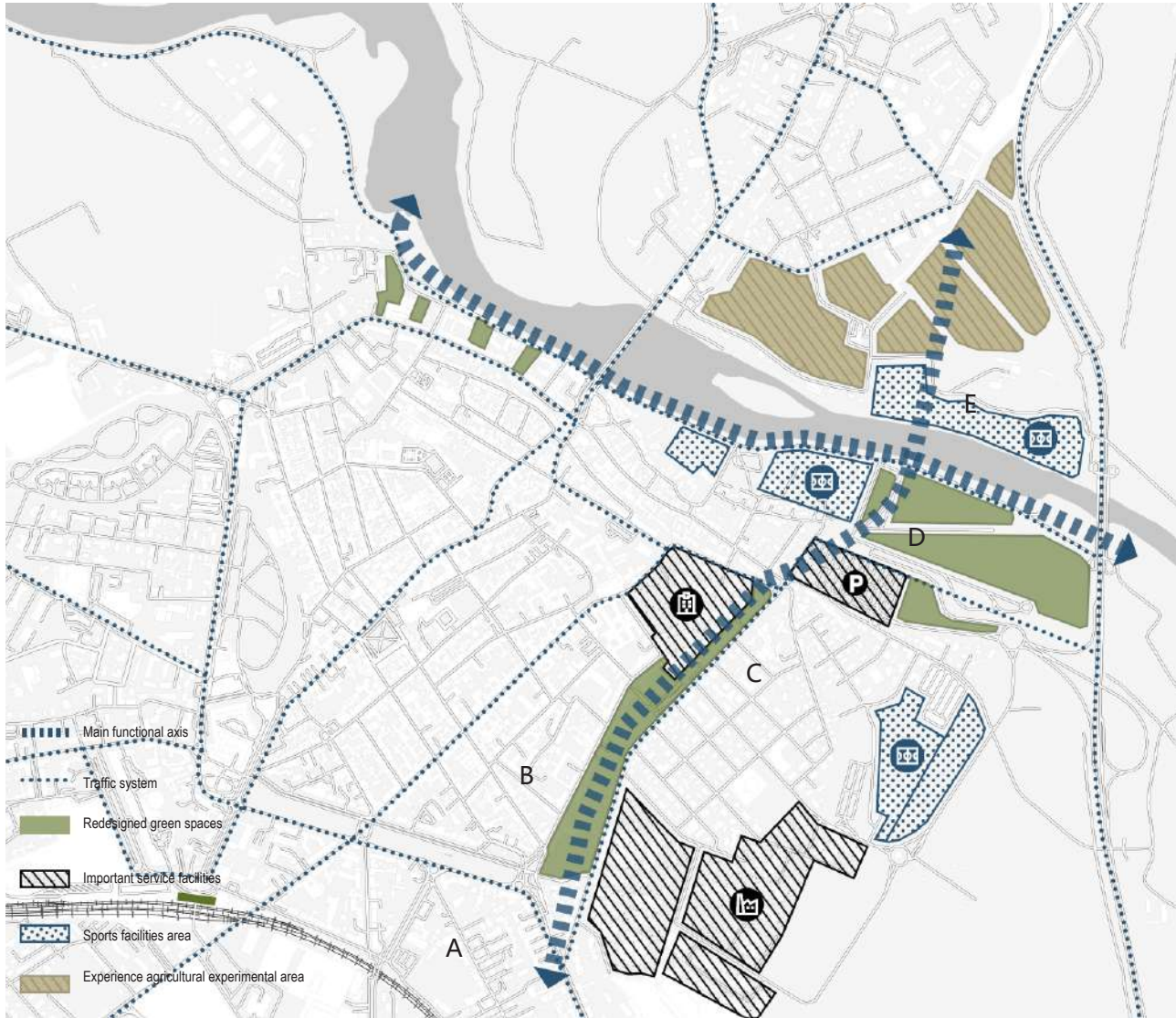We have added multiple green ecological nodes based on the original nodes. The purpose is to improve the green ecological network, attract people to enter various gardens and urban spaces, and guide people to the river to experience the various landscape spaces we have created and enjoy the scenery along the river. The nodes we create include street corner parks and activity platforms, sports and cultural activity parks, ecological planting platforms and leisure resort islands, experiential agricultural experimental areas, etc. These nodes connect various urban spaces and strengthen the connection between people's work, study, life and the river.

The previous article mentioned the penetration of two green ecological axes into urban life. The specific penetration method is to use LODI's small and medium-sized urban public green spaces as well as private gardens and courtyards in the old city to create landscape sight corridors, enhance the accessibility of sight, and attract people to various urban parks. At the same time, a wealth of activities and functional nodes are set up in these areas to enhance the influence and attraction of the two axes, and then activate the entire area through the two axes.

After determining the preliminary design strategy, we delineated key research areas. Through analysis, we selected areas that are located on important axes and lack vitality or have development potential. We want these areas and our design to act as a trigger. After taking the first step in activating the vitality of the site, improving the industrial structure, and enriching riverside activities and space design, we will expand to the surrounding areas on this basis to achieve the goal of harmonious coexistence between man and nature step by step.

The fourth picture shows the ecological nature reserve around the area. It can be seen that except for the old city of LODI and some farmland in the southeast, most of the area is located within the nature reserve. During the design process, we should fully consider the wild animals and plants in the reserve and create an ecological space where humans, animals and plants coexist harmoniously.

Main functional axis

Traffic system

Redesigned green spaces

Important service facilities

Sports facilities area

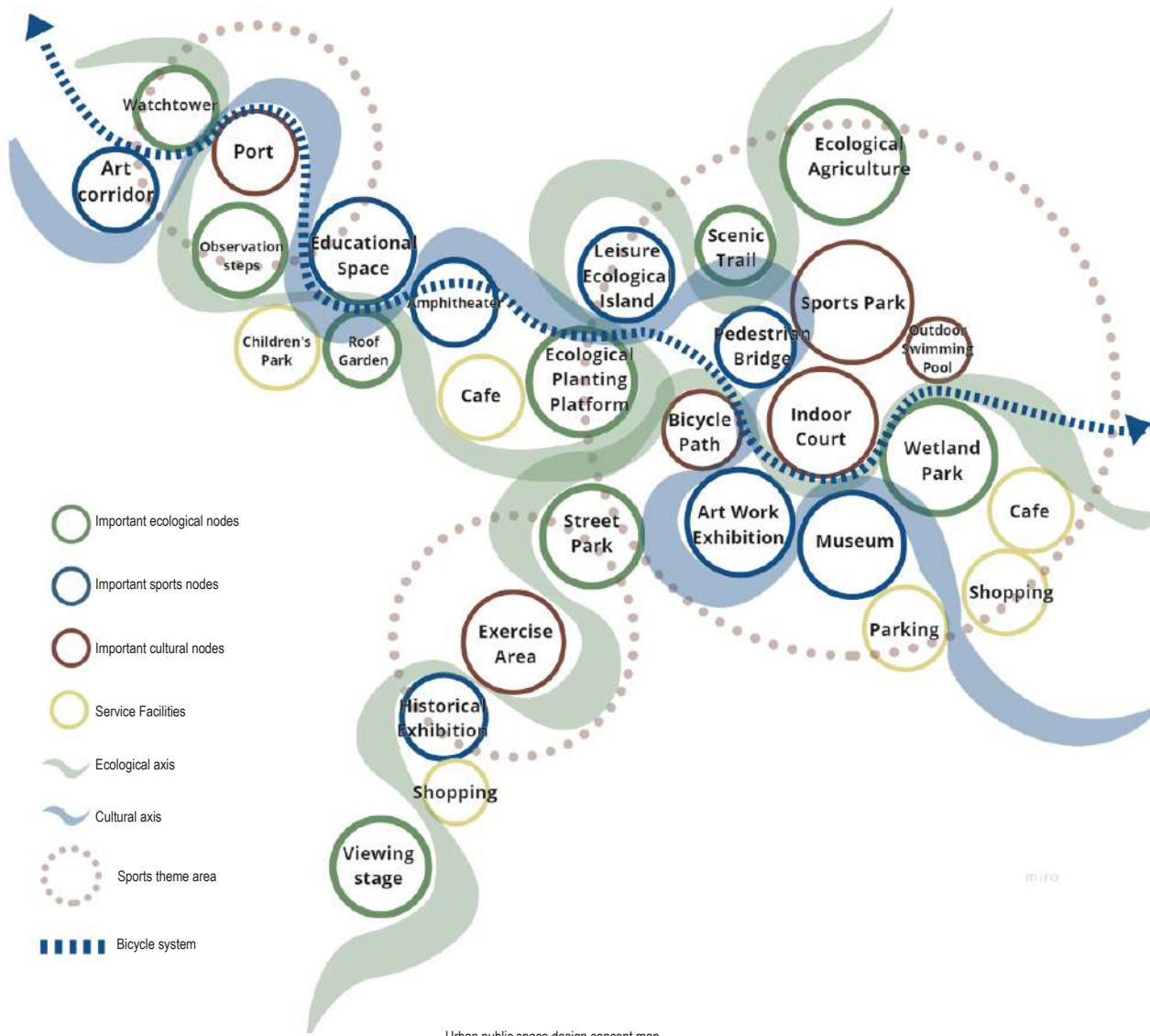Experience agricultural experimental area

Urban public space design strategies

In addition to studying urban spaces that need to be developed or abandoned private courtyards, we analyzed important service facilities and functional nodes around the study area. We found that there are many sports facilities or stadiums around the area, located along the river or near schools. We believe that sports activities can be connected with the river space, and various sports facilities and venues can be integrated to create a sports-themed activity area. This area will integrate various types of sports activities, allowing people to fully exercise and experience various sports activities.

We found that there is also a large factory building scattered around the site. As one of the historic buildings in the LODI area, the factory building is also a symbol of local culture and economic development. We believe that this can be used as an opportunity to explore the possibility of coexistence of industrial development and the natural environment, so on the green axis, we will set up some nodes related to cultural entrepreneurship functions as a response to the factory building. In addition to the factory building, there is also a hospital located near the Green Axis. This requires us to consider the needs of special groups such as patients when designing axis functions and landscapes. For example, we have designed some relatively quiet parks and ecological spaces for patients and small town residents. In addition, there are some service facilities such as parking lots. We have adjusted the location and increased the parking area to make it more convenient for users.

As mentioned before, we have built some experimental bases for agricultural experience on the other side of the river, as well as sightseeing tours, leisure entertainment and other functions. In addition, there are sports activity areas and parks. But whether it is a green ecological space or a sports activity park, we hope that both sides of the river can form a closely connected system. So we planned to set up a new bridge at the junction of the second axis and the river. This bridge does not allow vehicles to pass. Compared with the existing LODI bridge, it is more oriented to vehicles or solves the transportation needs of local people. This newly built bridge is to facilitate residents or tourists to fully experience the two sides of the river. Ecological natural environment and various rich functional activities. This will make people more willing to come around the river and make the ADDA River play an increasingly important role in the hearts of LODI residents.

Watchtower

Port

Art corridor

Observation steps

Educational Space

Children's Park

Roof Garden

Amphitheater

Cafe

Leisure Ecologica Island

Ecological Planting Platform

Scenic Trail

Ecological Agriculture

Sports Park

Pedestrian Bridge

Outdoor Swimming Pool

Bicycle Path

Indoor Court

Wetland Park

Cafe

Art Work Exhibition

Museum

Shopping

Street Park

Parking

Exercise Area

Historical Exhibition

Shopping

Viewing stage

Important ecological nodes

Important sports nodes

Important cultural nodes

Service Facilities

Ecological axis

Cultural axis

Sports theme area

Bicycle system

Urban public space design concept map

To sum up, the design of function and space consists of three themes, two major axes, four types of functions, and one route. The three themes are ecology/culture/sports. The first is ecology. We have set up linear green areas along the river and in towns, like two green ribbons crossing each other. In these linear areas, there are various green nodes represented by green circles. These ecological nodes combine the height difference of the site to create various ecological areas where you can experience nature, protect wild animals and plants, and relax. The second theme is culture. We project important historical buildings and cultural activities in the old city onto the riverside, and use new architectural language combined with the site topography to create historical and cultural activity nodes. At the same time, we will design an art exhibition corridor with different sections and themes. This corridor will connect cultural and artistic nodes along the river. The third theme is sports. We set up richer activities based on the original sports venues and facilities and connected them with the river landscape. It can be seen that sports nodes are mainly concentrated in three areas, and have different scopes of influence according to differences in scale and quantity. The two axes refer to the green ecological linear park and the cultural and art exhibition corridor. These two types of linear spaces with different themes are intertwined and closely integrated with the river. The four types of functions are ecological/cultural/sports/other entertainment and leisure industries and supporting service facilities. In addition to the two intertwined themed spaces of ecology and culture, we have also set up a supporting slow-travel system, including bicycle lanes and pedestrian trails. We hope to enhance the accessibility of the site while attracting people from all regions to come to this place and enjoy living in harmony with the river and nature.

**7.2/**
*Transportation and Cycling – the integration of landscape and public transportation*
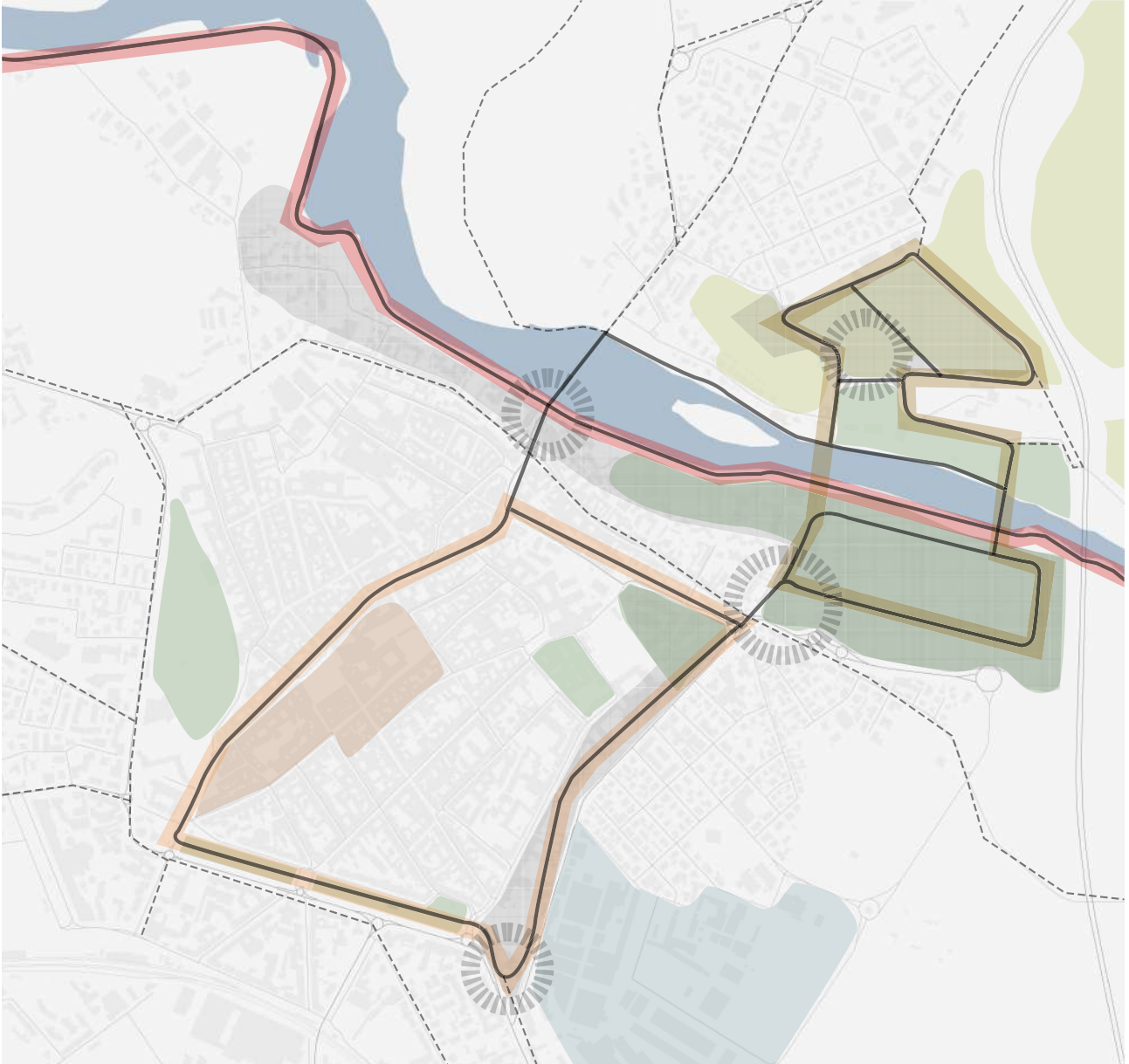
After investigating LODI's urban public transportation, especially the bicycle system, we partially optimized its bicycle road system.

We mainly divide the bicycle routes within the urban area into three different themes. Different themes have different routes, and there will be overlap and intersection in some areas. To facilitate people to experience cycling with different themes.

The first is the route inside the ancient city, which we show in orange on the map. This route is a closed loop. On this road, you will pass through the busiest central street in LODI. On this street are the oldest squares and churches in LODI, and there will be some ancient buildings and dilapidated ancient city walls along the street. At the same time, it will also pass through our newly designed linear park to experience the daily life of LODI residents in different scenarios.

The second is the route along the river, which is shown in red in the picture. The ADDA River can be seen along the entire route. It starts from the west of LODI, goes all the way through LODI, and goes east. It will pass through our newly designed cultural corridor along the river and pass through some newly designed points, such as small theaters.

Finally, there is the ecological route, which is shown in yellow in the figure. It mainly passes through a large hiking ecological park and an urban farm area on the north bank of the river. This route is mainly themed around green ecology, allowing you to experience different park and farmland landscapes.

7

## 7.2/
## *Transportation and Cycling – the integration of landscape and public transportation*



Line One
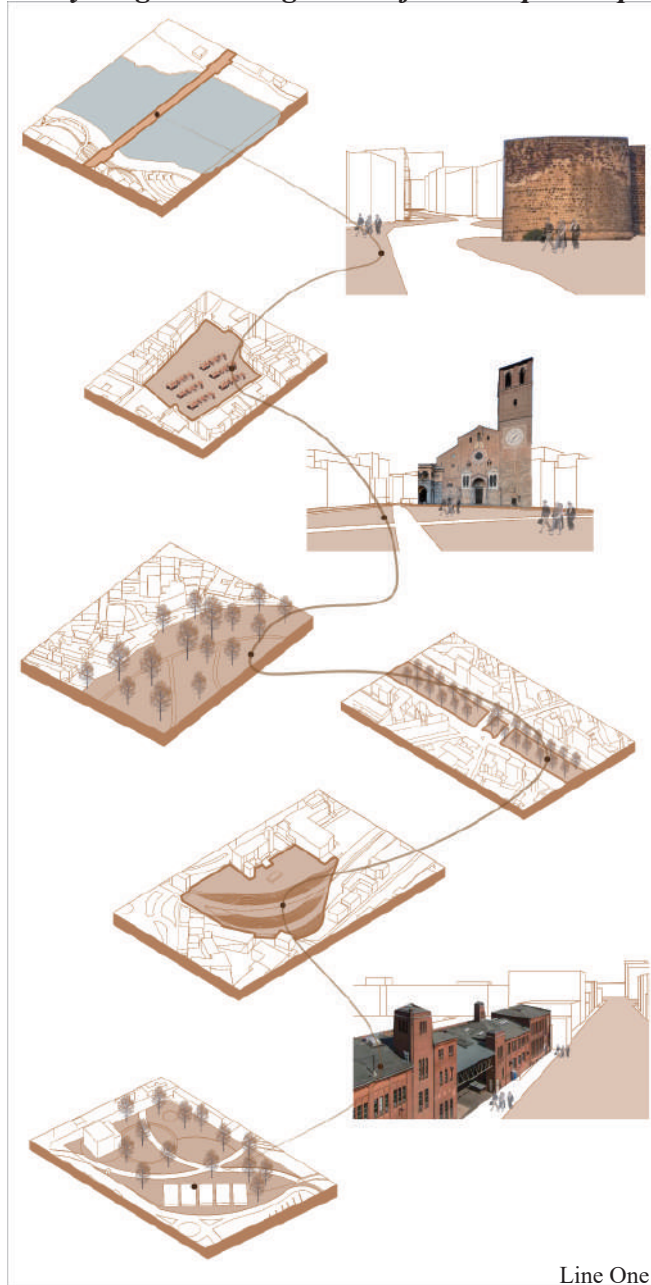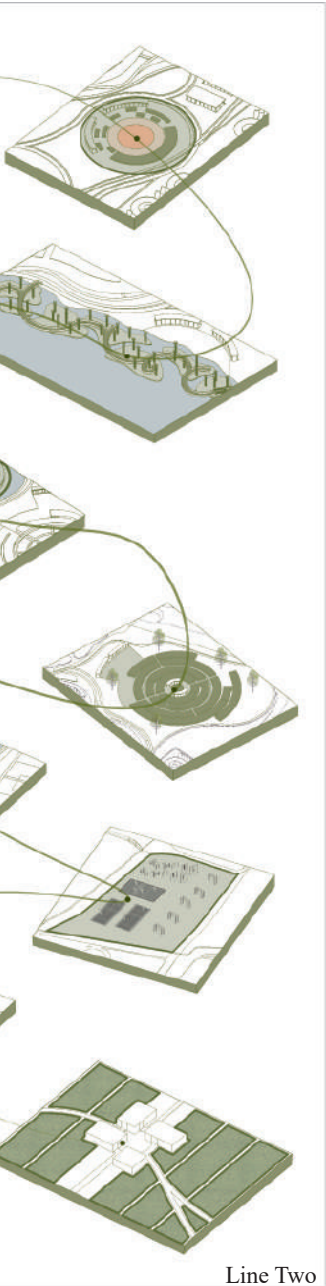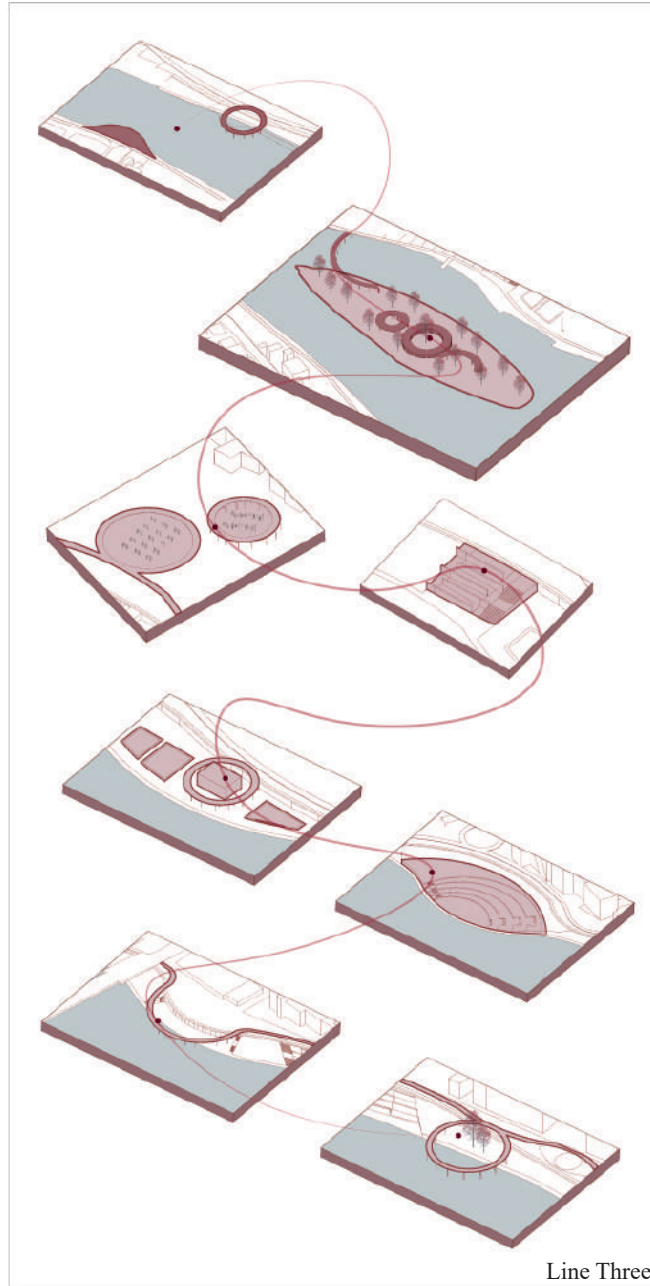
Line Two



Line Three

**7.3/**
*Activation of historical building nodes - the integration of ancient and modern memori*



Theater
Exhibition
School
Church
Museum
Exhibition
Art block
Environmental organizations

Cultural nodes · Ecological nodes · Ecological sightseeing routes · Cultural experience routes · Projection · Important functions

Historical and cultural design strategies

Regarding the integration of historical buildings and modern memory, we mainly have two strategies. First of all, the first aspect is about the buildings in the old city of LODI. We mainly advocate repurposing. We will set up permanent activities and short-term activities (including local original photography festivals and exhibitions, etc.), introduce more activities and functions on the original basis, and attract more people to the LODI area. At the same time, historical buildings can be revitalized with more possibilities and vitality. At the same time another aspect of our strategy was that we extracted the functionality of the historic building and projected it onto the river. These spaces are reinterpreted and translated in a new architectural language. We hope that people can experience these cultural activities by the river and recall the historical river culture of LODI urban area while enjoying the river view.

In addition to introducing activities and spaces related to history and culture, we have also added a series of new activities along the river. These activities are mainly ecological leisure, focusing on experiencing all aspects of river-related activities and atmosphere. Because the current space around the river is relatively negative, people are reluctant to come to the river. Activities introduced include boating/fishing/viewing/swimming/picnics/leisure and entertainment, etc. We can know that in the 1980s and 1990s, there were a lot of leisure and entertainment activities along the ADDA River. However, with the development of the town, residents lived farther and farther away from the river. Our purpose is to restore the scene where people could fully enjoy the riverside space and hold various rich activities in the past. At the same time, we will project the cultural activities in the town to the riverside and create a riverside that integrates culture and ecology, leisure entertainment and sports. river ecoregion.
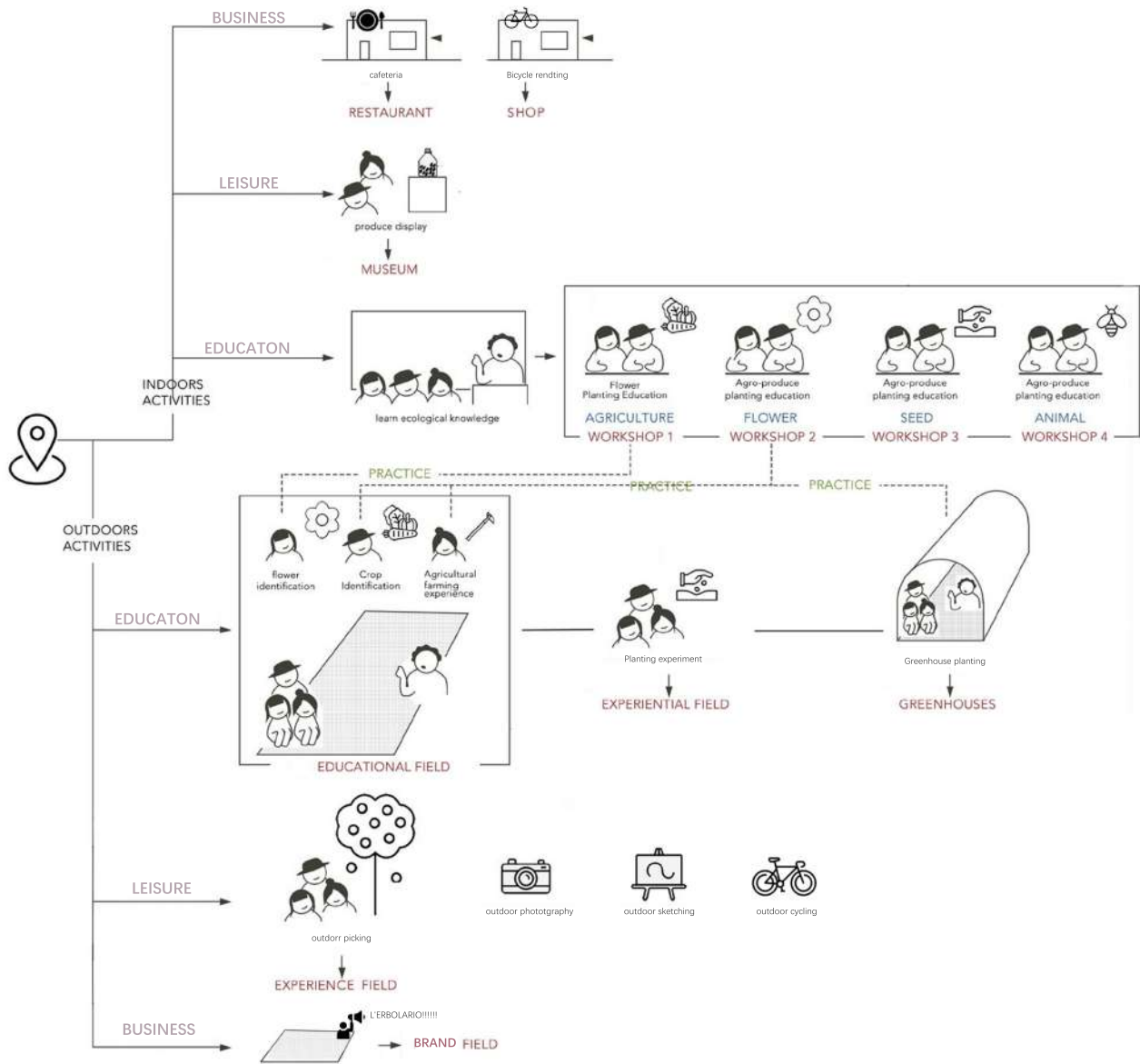
## 7.4/
### *Industrial Optimization - Integration of Industry and Planting Industry*
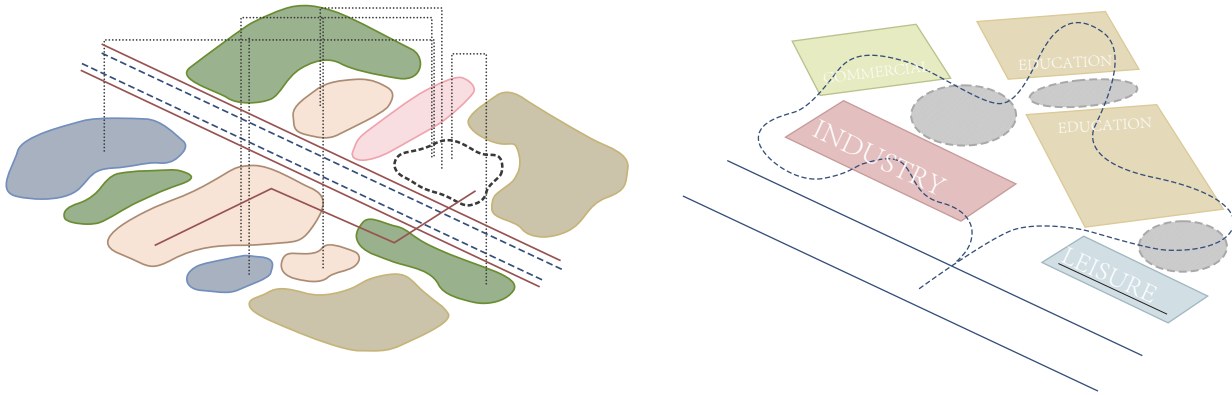


Since ancient times, LODI has developed based on agriculture along the river, gradually growing into a city. From the map we can see that the urban area of LODI is surrounded by large agricultural areas. However, the development of LODI currently does not take agriculture as its main industry. However, after analyzing the economic industries of Lodi, it can be found that the manufacturing and industry on which this city depends for survival have shown a downward trend, so the diversified development and transformation of some industries cannot wait.

Therefore, in the process of urban design, we want to combine LODI's agriculture with some well-known corporate industries, so as to promote agriculture while also saving LODI's declining manufacturing industry. So the concept of organic high-end agriculture was born from this.

When designing the agricultural area, we mainly considered the industrial brand and education sector. The farmland is divided into educational areas and commercial areas. And the design of bicycle lanes and pedestrian paths will more closely integrate this area with the urban area.
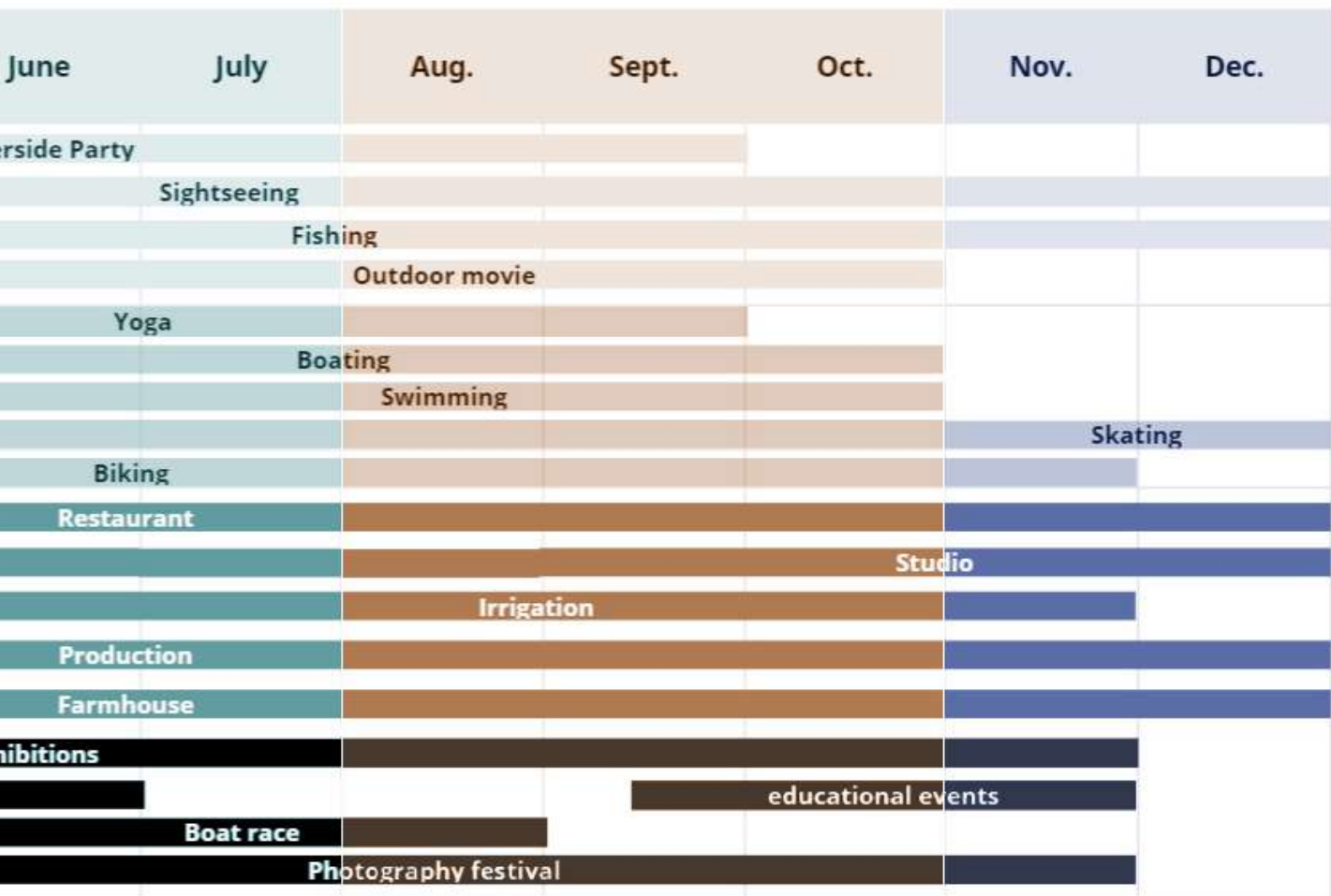
BUSINESS

cafeteria
RESTAURANT

Bicycle rendting
SHOP

LEISURE

produce display
MUSEUM

EDUCATON

learn ecological knowledge

INDOORS ACTIVITIES

Flower Planting Education
AGRICULTURE WORKSHOP 1

Agro-produce planting education
FLOWER WORKSHOP 2

Agro-produce planting education
SEED WORKSHOP 3

Agro-produce planting education
ANIMAL WORKSHOP 4

OUTDOORS ACTIVITIES

PRACTICE          PRACTICE          PRACTICE

EDUCATON

flower identification
Crop Identification
Agricultural farming experience

EDUCATIONAL FIELD

Planting experiment
EXPERIENTIAL FIELD

Greenhouse planting
GREENHOUSES

LEISURE

outdoor phototgraphy
outdoor sketching
outdoor cycling

outdorr picking
EXPERIENCE FIELD

BUSINESS

L'ERBOLARIO!!!!!!
BRAND FIELD

7.5/
*Cultural projection—Integration of the city and river's memory*

| | Jan. | Feb. | Mar. | Apri. | May |
|---|---|---|---|---|---|
| **LEISURE** | | | | | Rive |
| **SPORT** | Skating | | | | |
| **LIVING** | | | Studio | | |
| **CULTURE** | | educational events | | | exh |

Four Seaso

We have sorted out the past activities along the ADDA River, retained the activities we think are meaningful, and
scenery in different seasons. So we listed a table and divided the table into four parts according to seasons to ensure th
categories, namely leisure/sports/life/culture, so that these activities can also meet people's different needs and purpos

| | June | July | Aug. | Sept. | Oct. | Nov. | Dec. |
|---|---|---|---|---|---|---|---|
| riverside Party | | | ▮ | | | | |
| Sightseeing | | | ▮ | | | | |
| Fishing | | | ▮ | | | | |
| Outdoor movie | | | ▮ | | | | |
| Yoga | | | ▮ | | | | |
| Boating | | | ▮ | | | | |
| Swimming | | | ▮ | | | | |
| Skating | | | | | | ▮ | |
| Biking | | | ▮ | | | | |
| Restaurant | | | ▮ | | | | |
| Studio | | | ▮ | | | | |
| Irrigation | | | ▮ | | | | |
| Production | | | ▮ | | | | |
| Farmhouse | | | ▮ | | | | |
| exhibitions | | | ▮ | | | | |
| educational events | | | | | ▮ | | |
| Boat race | | | ▮ | | | | |
| Photography festival | | | ▮ | | | | |

ns Event Schedule

added some new ones. We hope that the river can attract people to visit it all year round and experience the river
that there are rich and interesting activities in each season and month. In addition, we have divided activities into four
ses.

Four Seasons Intention Scene
*(Source by https://www.napoleon-empire.net/en/battles/lodi.php)*

In spring, people can feel the soft spring breeze, the tender green grass, listen to the chirping of birds, and come to the ADDA River for picnics and outings. From time to time, tourists on bicycles pass by, and they can stop to take a rest, browse the art in the exhibition area, take some photos, and learn about the local culture. Teachers take students out to get in touch with nature, allowing children to learn about various wild animals and plants and the local history of LODI.

In summer, the sun becomes even brighter. Many fishermen sit under the big trees by the river and wait quietly for the fish to bite. From a distance, you can see many people running to the river to play, some swimming, some diving, and some rowing in the water, preparing for the rowing competition to be held in the near future. On the sandbank by the river, many people lay on it and bask in the sun leisurely.

In autumn, the leaves gradually turn yellow and the weather becomes cooler. The crops in the surrounding farmland are gradually maturing, and the farmhouses by the river are often filled with tourists who come here to taste the local ecological and green organic agricultural products and experience the joy of picking crops for themselves. In the evening, an outdoor movie was set up by the river, and many people gathered by the river to watch.

In winter, the surface of the river freezes and the surrounding lawns are covered with snow, making it a great place for skiing. People have entered the riverside cafes, workshops, or art classrooms to experience the local culture while admiring the beautiful snow scenery outside the window.

## 7.6/
### *Filling urban gaps—Integration under height differences*
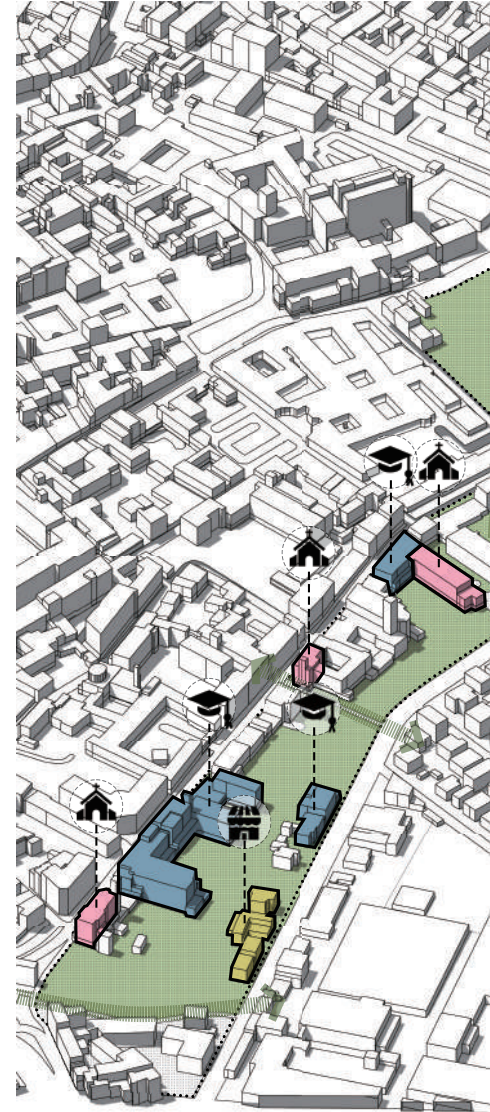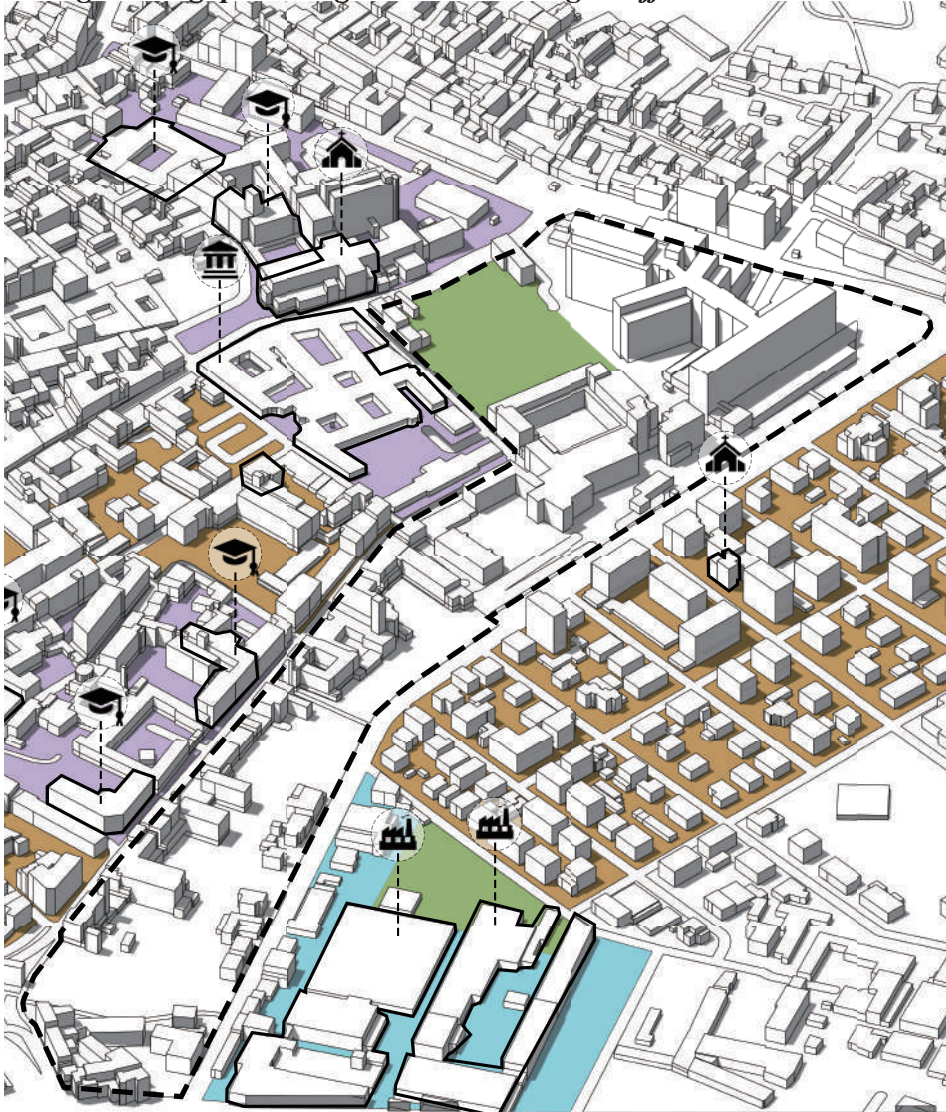


Due to the height difference within the LODI urban area, the higher area is the ancient city area. However, as the city
between the old and new urban areas. This narrow open space has a height difference of 10 meters. The surrounding
First, we analyzed the functions of its surrounding buildings and plots, and identified available plots. While designing
different functions at different nodes to enrich the functions of the land and attract more people to stay. At the same
south sides.

continues to develop, new parts have also emerged around the ancient city. The area in the picture is the connection
building functions are very rich, so we want to explore the potential of this area in a deeper way.
the linear park, we also emphasized the connection between the old and new urban areas, and designed squares with
time, we also designed a bicycle and pedestrian system here to organically connect with the parks on the north and

## 9.1 /
## Design intent and concept
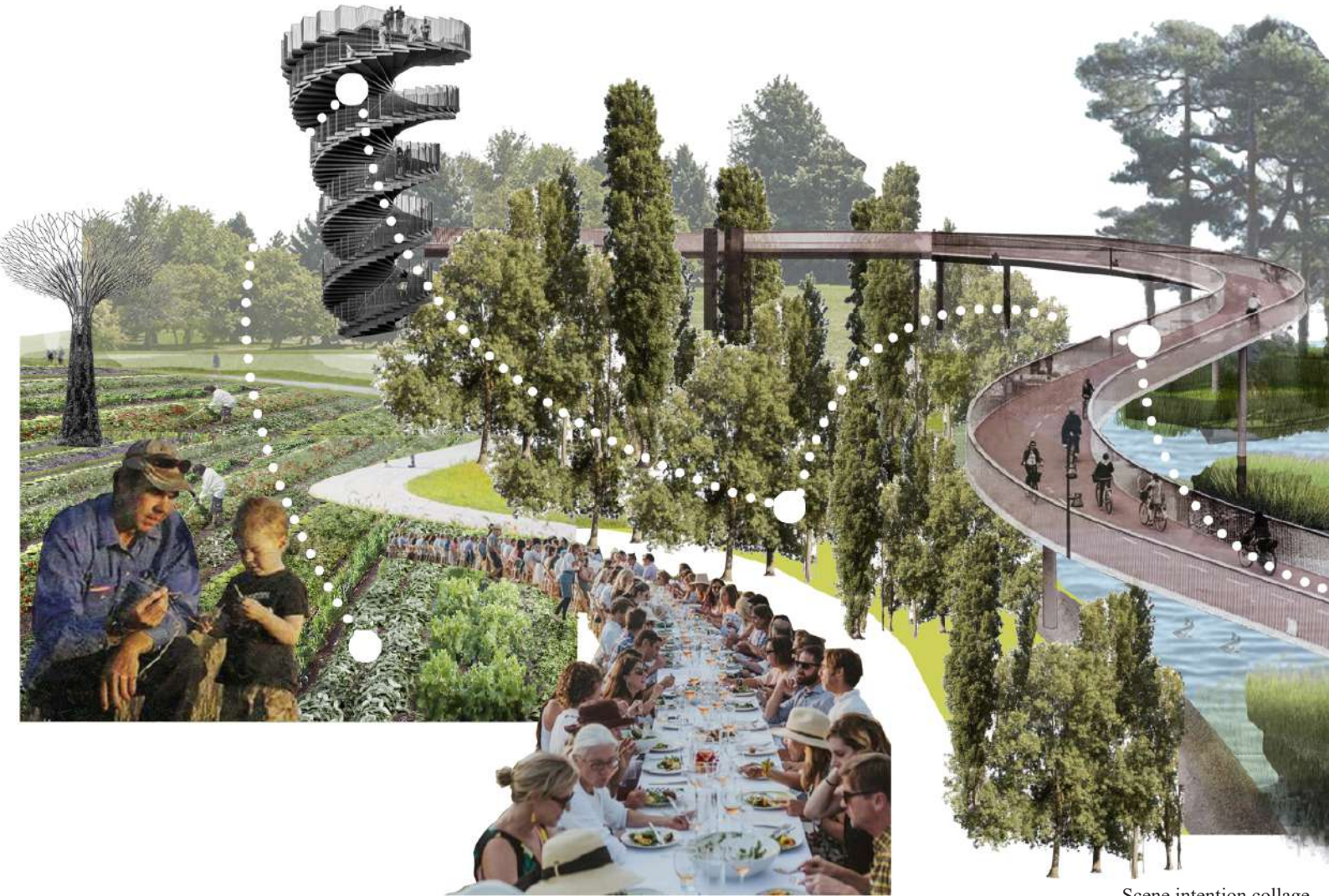


Scene intention collage
*(Images from the Internet)*

We took key scene images and collaged them together in what we hope will be a rich and varied set of experiences. Including observation towers in the middle of the forest/experience farmland/ecological trails/ floating islands/aerial corridors, etc. People who come here will fully experience the close connection between the ADDA River and human beings from different dimensions of time/space/activity, and understand the history and culture of LODI towns, awaken people's memory of the place and awareness of protecting the ecological environment, so that the river and Human beings live in harmony.

We hope that residents or tourists who come to the river can interact with the river in different ways. We have improved the slow-travel system and landscape along the river, making the experience of strolling along the river more comfortable. At the same time, the setting of the corridor allows visitors to experience spaces full of change and interest at different heights when visiting local cultural exhibitions related to LODI. You can also have close contact with the water from different angles, including above the ADDA river. In addition to the rich spatial experience, we also hope that there will be different activities along the river throughout the year to keep it alive and active.

*9.2 /*
*Design analysis*



Important functional nodes

Height difference relationship

Green spaces

Art corridor
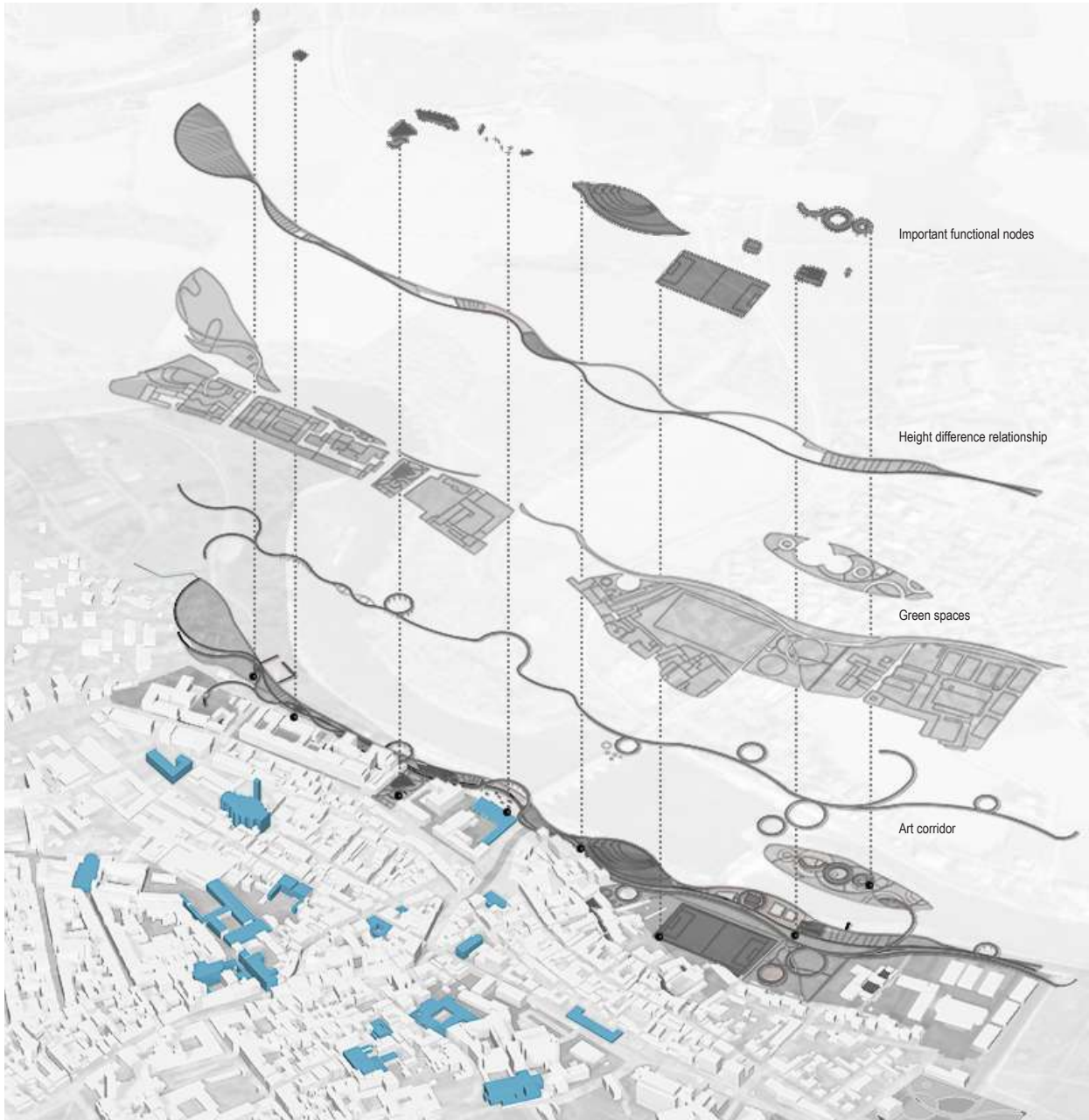
Axonometric decomposition analysis diagram

A. Creation of activity nodes (projection of historical urban areas)

Because our original intention is to bring people closer to the river and awaken the memory of the place. Therefore, we analyzed the important historical and cultural functional nodes in the town and tried to project them to the river, using new architectural language to create a series of cultural activity nodes along the river.

B. Dealing with height differences (embracing the river view)

There is a height difference of about 7m along the river. We took advantage of this nearly two-story height difference to create a series of rich spaces such as exhibition ramps, roof gardens, and amphitheaters. We hope that a variety of activities can take place along the river, so that local residents and tourists can embrace the ADDA River and appreciate and experience events around the river at different heights.

C. Reactivate public space

We noticed that there were many abandoned and unused sites and public spaces with a bad atmosphere along the river. We intend to redesign these areas and make them several nodes along the river. And these public spaces will have different themes, including sports parks/children's parks/wetland parks, etc.

D. Create a cultural corridor along the river

We inserted a 2-4m wide art corridor along the river. Most of this corridor is on the ground, and a small part is elevated and extends above the river. This art corridor is also integrated with some architecture and landscaping. Therefore, the corridor has different experiences and themes in different areas, connecting various spatial nodes along the river.

E. Walking and cycling systems

A walking and cycling system is set up along the river, which is also part of the slow traffic system of the entire site. Visitors from other places can bike to the LODI river and participate in these rich experiences. This area will also become an important node in the Lombardy region's cycling network.

**9.3 /**
**References**

## The Bicycle Snake，Copenhagen/Denmark, Cykelslangen

Copenhagen has a new piece of bicycle infrastructure. The so-called "Cykelslangen", the "Bicycle Snake", is a cycle superhighway that increases the ease and efficiency of daily commutes in the city. It not only marks another step in Copenhagen's vision of becoming an eco-metropolis, it also allows a glimpse into the complex structure of a modern city.

Situated between a clumsy urban mall and a sleek hotel, sweeping from a highway overpass down to the harbor front, is one of Copenhagen's latest infrastructural gems, epitomizing an ease and efficiency of everyday urban life. The striking and heavily hyped Copenhagen Cykelslangen, the "Bicycle Snake" delivers cyclists along a 280-meter-long bicycle bridge – or extended ramp – from a first-story-level, heavily-trafficked highway overpass to the ground-level, car-free harbor front.



Case photos and detailed drawings
(Source by https://dissingweitling.com/en/project/bicycle-snake)
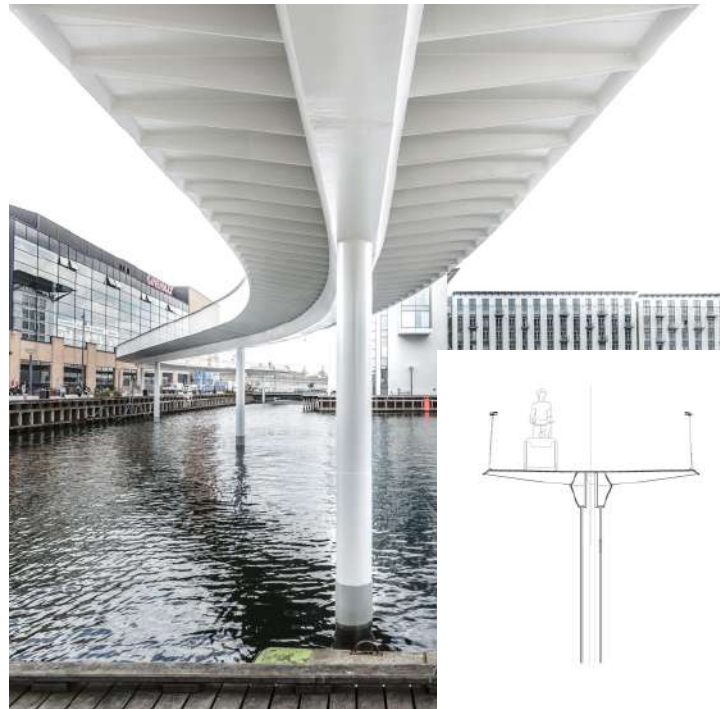
## Arno River Competition, Florence, Italy

The original site was a abandoned wetland, without suitable conditions for plant growth and leisure space, and also faced high temperature and flood problems. By building an ecological grid that connects people and nature, the project aims to create an oasis in a crowded city, and at the same time provide many new activities, with open and semi-open spaces. In addition to providing a wealth of activities, this ecological platform can also produce many products, and it has also become a landmark.



Planting platform renderings
(Source by https://uni.xyz/competitions/crested/info/about)

There is a famous cosmetics brand L'Erbolario in the LODI region of Italy. At the beginning, it was just a small laboratory located in the center of Lodi. They began manufacturing natural beauty and skincare products, reinterpreting formulas that have been passed down from the family and have long been tested in rural traditions.L'ERBOLARIO's business philosophy is to provide customers with a full range of completely natural herbal products, which can be combined with ecological planting to create an important node in the riverside ecological economy.



L'Erbolario brand
(Source by https://www.lerbolario.com.tw/)

**Old Navy Pier revitalised ,Chicago/USA ,James Corner Field Operations and nArchitects**

Kiosks with stainless steel canopies and a towering glass and chrome sculpture are among the recent enhancements made to Chicago's Navy Pier, one of the largest public piers in the world. Called Pierscape, the project was designed by James Corner Field Operations, the landscape studio behind Manhattan's High Line, with architectural elements by nArchitects. Both firms are based in New York.

"We have reimagined South Dock as a new green spine that extends all the way from Lake Michigan back into the city and anchors a series of plazas, museums, theatres, restaurants, and social destinations that exemplify the vitality of Chicago life and culture," said James Corner, who founded his eponymous firm in 1999.



Case photos and detailed drawings
(Source by https://www.dezeen.com/2016/10/07/pierscape-navy-pier-renovation-james-corner-field-operations-narchitects-chicago/)

## Design Orchard ,Singapore, WOHA

Poised at a prominent junction of Singapore's famous Orchard Road – Asia's most iconic shopping avenue – Design Orchard aims to nurture emerging Singaporean creative talent. Combining a retail showcase with an incubation space, the building was conceived to combine all stages of design from concept to production and from showcase to retail.

The stepped rooftop public space opens to the streetscape, creating a theater above the city surrounded by pocket parks. A large concrete planter filled with lush greenery provides shade to the roof. As a civic space, the terrace theater will provide a complementary stage for various activities in the building, such as fashion shows, performances and concerts, and sometimes pop-up ice cream stalls will be set up. The vibrant roof forms an interesting interaction with the unique backdrop of the shopping street.



Case photos
(Source by https://www.gooood.cn/design-orchard-by-woha.htm)
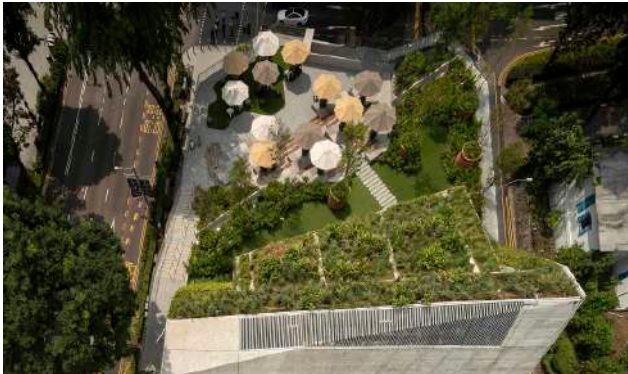
*9.4 /*
*Design nodes*
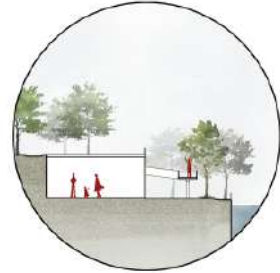


Leisure lake center island

First of all, we selected curves and circles as architectural elements along the entire river because we thought curves were more fluid and more consistent with the design theme around the river. And the circular elements allow people to maximize the view of the river. We built a curved bridge connected to the cultural corridor, and the bridge itself is also part of the exhibition corridor. We referred to the Danish snake road for the detailed design of the bridge. On the island in the middle of the river, we set up a semi-open circular pavilion, a circular cafe and a retail souvenir shop. It has an excellent view on the island in the middle of the lake and is far away from the other shore. This small island also provides people with an area to relax away from city life.

Water planting platform & cafe

On the opposite bank of the island in the middle of the lake, three grid-shaped water planting platforms and a building containing comprehensive commercial and entertainment functions have been opened on the riverside. These ecological planting platforms can provide growing areas for local animals and plants, and can also obtain economically beneficial agricultural and sideline products. At the same time, the platform also provides a venue for people's activities and entertainment. The roofs of the buildings next to the square are connected to the cultural corridor, which can attract more people.
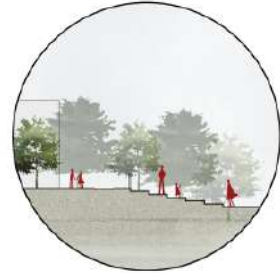
Riverside park

We have re-improved the environment of the public space along the river and designed a series of sports-themed parks. In addition to the original football fields, we have added new squares and sports facilities for sports activities. At the same time, there is an elevated circular corridor in the square, which is connected to the art exhibition corridor.

Open air stage

Along the cultural corridor, we set up an open-air stage by the river near the LODI Bridge. The stage's stepped seats face across the river. When there are no activities, it is a good place for viewing and communication. People can chat and rest in this place and enjoy the view of the ADDA River. In the evening or when there are special events, it will become an open-air cinema or theater, or a stage for performances.

Cultural Exhibition Corridor
We took advantage of the height difference of the river bank to design four gradually downward ramps. On both sides of the ramps, display boards with local historical and cultural propaganda knowledge or some art works were placed. The ramp is not only a vertical means of transportation, but also an important cultural exhibition space.

Children's theme park
In a deserted area facing the river in a residential neighborhood, we designed a children's theme park, including some play equipment and large stairs that can be climbed. The grand staircase offers a good view of the river.

Roof Garden&Education Space&Plaza
On the other side of the LODI bridge is an indoor educational space with a large plaza. These classrooms are mainly open to students from nearby schools. Above the educational space is a roof terrace and garden, with several skylights to provide light to the classrooms below. Both the roof terrace and the plaza provide ample space for students'extracurricular activities.

Scenic steps & sky bridge
We set up a large viewing step facing the river at the height difference of the river, and an art corridor passed through the top of the step. The art corridor is divided into multiple sections with different widths. Various cultural or exhibition activities will be held in the corridor.

Port
A small port is set up near the watchtower, which can provide a docking area for some fishing boats and sightseeing boats. Visitors can take a boat trip on the ADDA River here, and can also go to the island in the middle of the lake or other areas through it.

Watchtower
There is a 10m observation tower at the northwest starting point along the river. From here, you can not only see the cultural corridor and the landscape along the river, but also the scenery on the other side of the river. In addition to being a viewpoint with panoramic views, the watchtower is also an important landmark

**10.2 /**
**Concept Diagrams**

This riverside park is located at the intersection of the two axes of the design, so the park also serves the function of connecting different axes of the city.

It not only continues the cultural function of the cultural corridor, but also contains natural and ecological elements. Since the site is surrounded by sports-themed activity venues, the theme of the park is also more hiking-oriented. It can be seen that this park connects the sports fields on both sides of the river and our design plot. And these axes divide the site into different functions.

The central part has a museum with the theme of river culture, and there are activity venues around it that are convenient for citizens of different ages. As well as some circular squares, it is convenient to hold various themed activities in the park. In the part close to the river, we also arranged Mauri's vegetable forest installation to pay tribute to him.
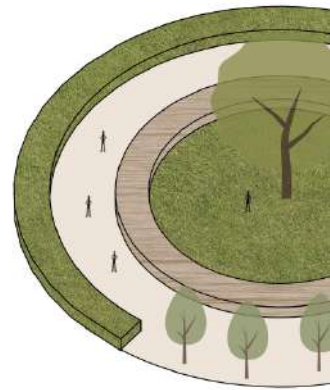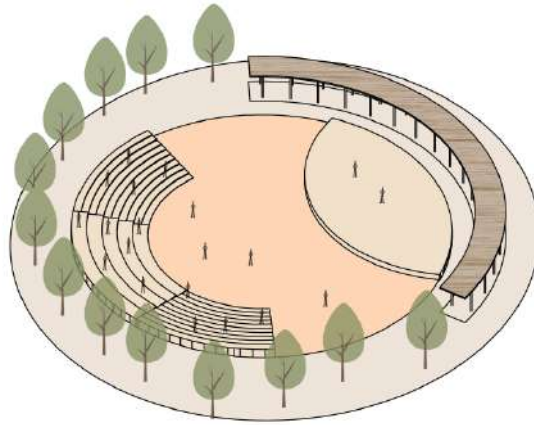
Fountain Square
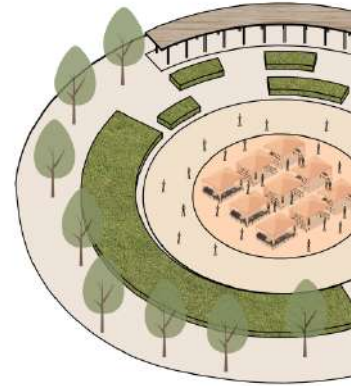
Market Squ
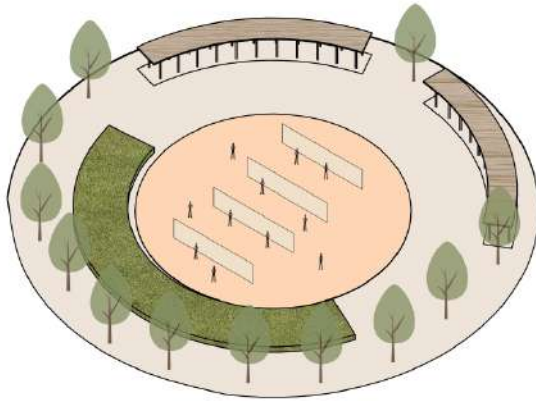


Movie Square

Forest Squa
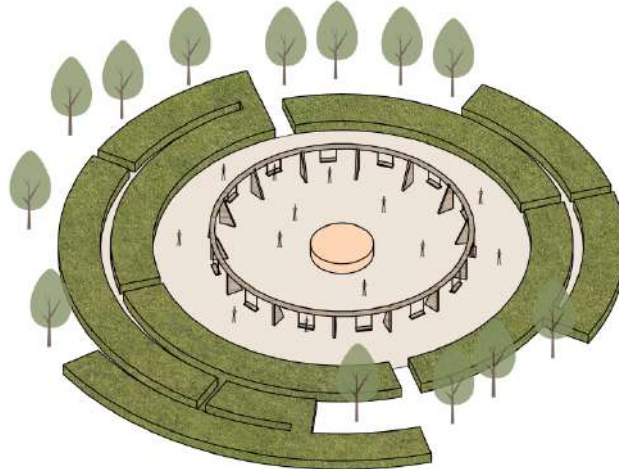
are



Theatre Square



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Maze Square
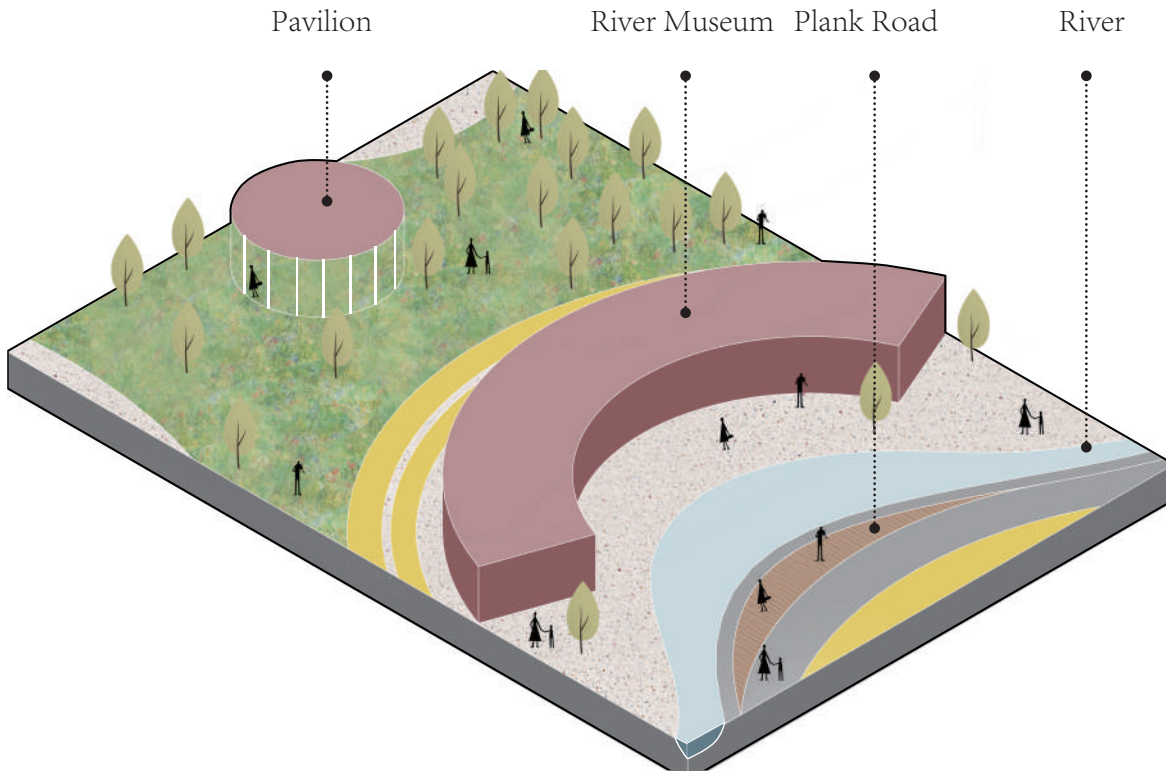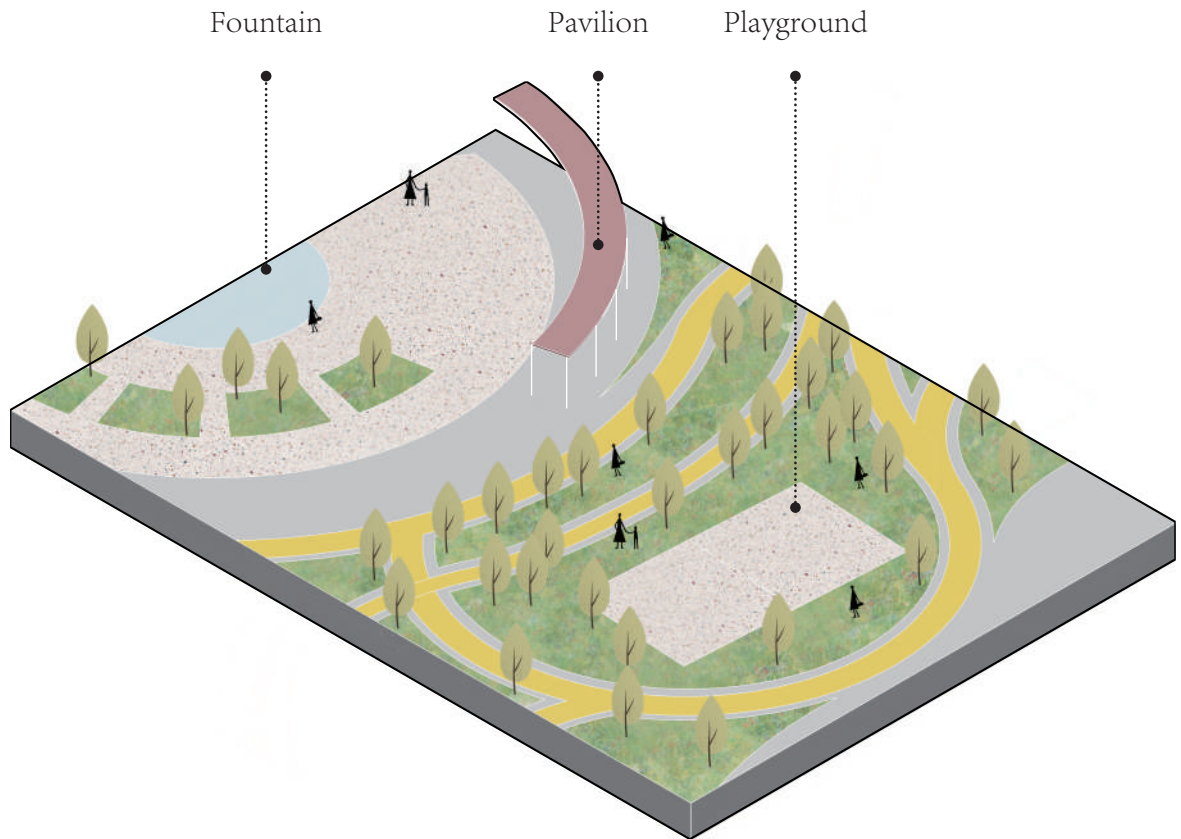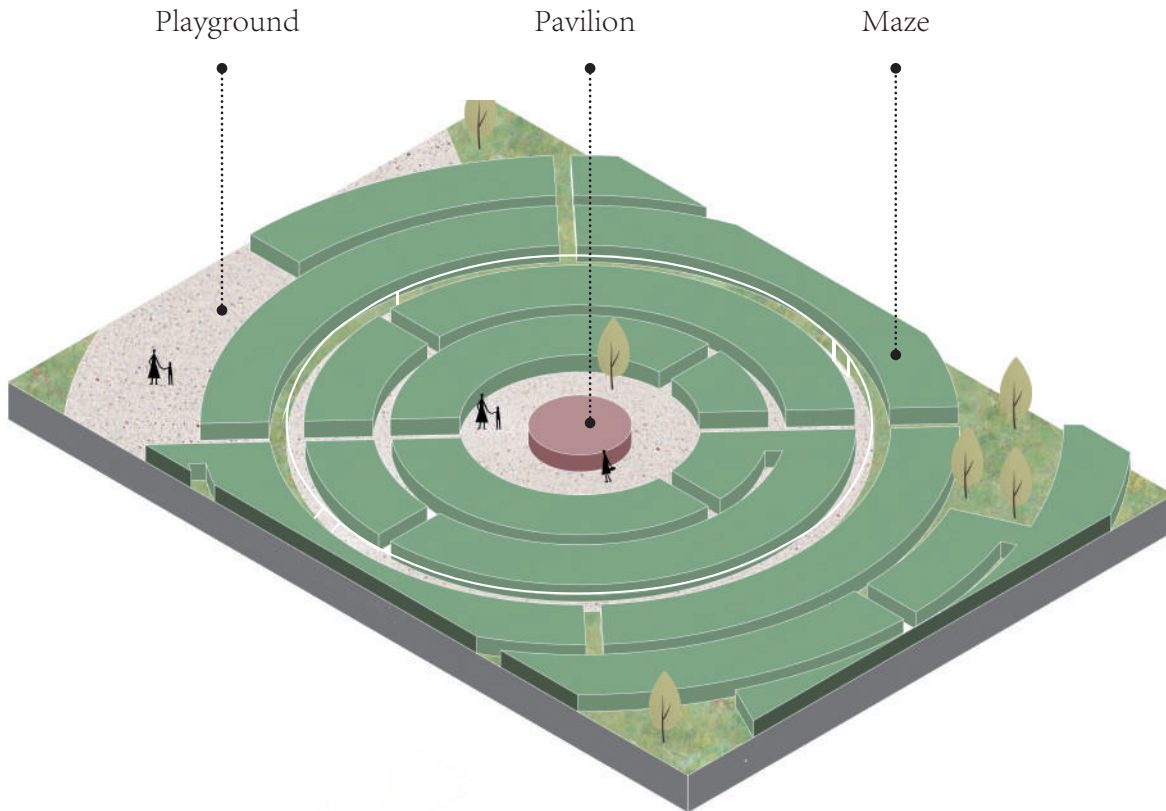
**10.4 /**
**Analysis of Nodes**

Vegetable Cathedral Island    Carridor    View Square  Pavilion

Pavilion    River Museum    Plank Road    River

Fountain        Pavilion      Playground

Playground  Pavilion  Maze
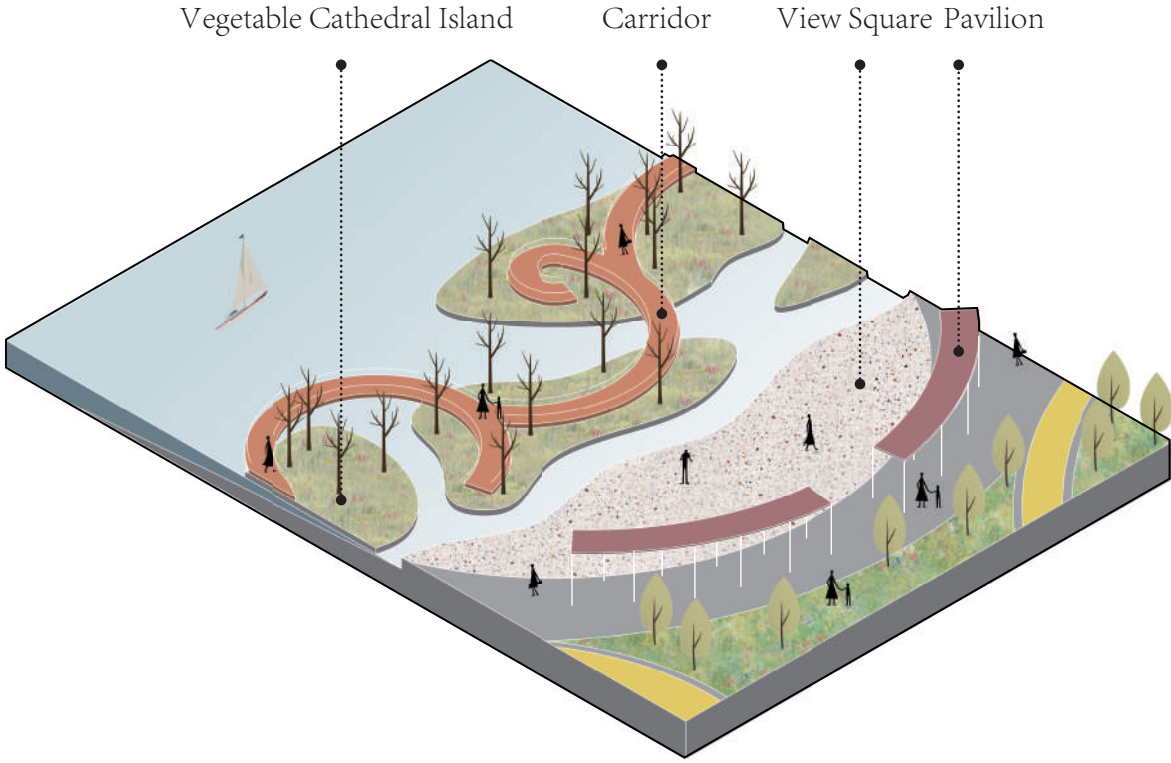
**11.2 /**
*Analysis of Functions*

●············ Picking Area

●············ Studio Field

●············ Studio Classroom

●············ Service Point

●············ Glass House

●············ Experimental Field

●············ Brand Display Area

●············ Pedestrain

The design of the urban farm area is mainly dedicated to the agricultural development of LODI City, so the activities on this site involve cross-disciplinary activities. Combining agriculture with LODI City's commerce and manufacturing, the brand's testing area and display area are separated, as well as a picking area for tourists to experience. In addition, an educational experimental area combined with schools has also been set up in the farm area. There are some teaching areas and practical farm areas here, as well as indoor and outdoor places for scientific research.
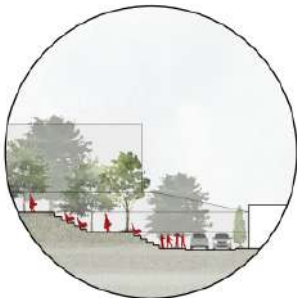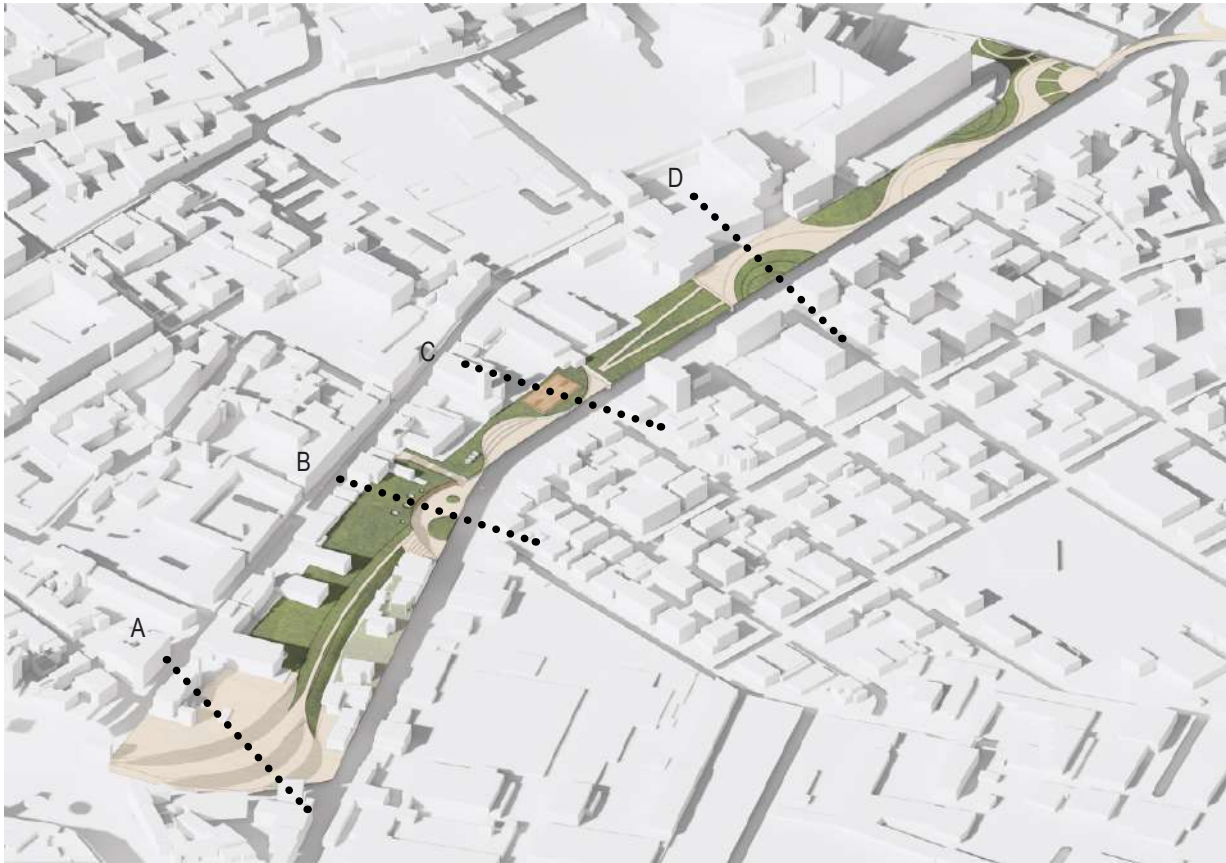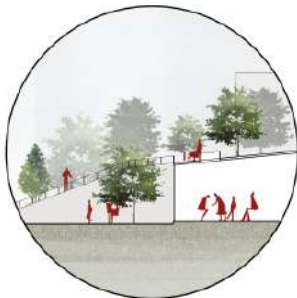
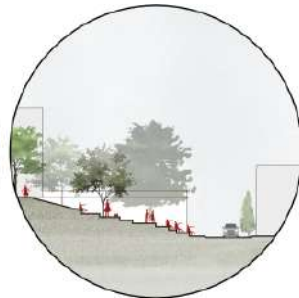**11.3 /**
**Analysis of Nodes**

***12.1/***
***Design overview***



Aerial view and scene section

After systematically analyzing the unused or abandoned public spaces and green ecological spaces within the site, we hope to form an ecological public space network system. One linear space has attracted our attention. This linear space has a height difference of 5-7 meters and is located at the boundary between the old town and the surrounding urban area. At the same time, this area is connected to the linear park in the south, and directly leads to the river in the north. We plan to create a multi-node important river landscape belt with various elements such as ecology, culture, and sports in the riverside area here. So this linear area is equivalent to a connecting area in a public system space, guiding people from the town center, from the train station through the linear park all the way to the river. There is already a main road in the old town of LODI leading to the LODI Bridge and the ADDA River. We hope to add a more ecological and interesting axis to connect to the river, and we also set up a new bridge at the end of this axis.

In this area, we took advantage of the height difference to set up a series of rich and interesting spaces, which also host a variety of functional activities. This area is not only a transition area that guides people to the river, it also provides more activities and communication places for local residents and tourists. For example, after design, this area has several small squares, a coffee bar, two platforms and large steps for viewing or performing, as well as some sports facilities. There are also some new tree-lined trails for people to walk, and a small landscape park has been set up. Behind the park is a hospital. Whether patients, surrounding residents, or tourists, all can enjoy these spaces, which greatly improves people's quality of life.

## 12.2/
### Design nodes



Street corner steps

We set up a large step at the street corner with a small square on top. We divided the original height difference of nearly two stories into three platforms of different heights. This design makes it easier for people to get from the high platform to the low street. The large staircase is also an area for rest and communication.



Forest trails

Connected to a platform in the middle of the large steps is a walkway. There is a height difference of 3-4 meters between the walkway and the upper building and lower residential area, and these areas are planted with plants. We tried to create a beautiful and comfortable boulevard while also protecting the privacy of the surrounding residents.



Café + roof garden

At the end of the avenue is a staircase that leads down to the lowest level. Next to the steps is a cafe with several skylights for lighting. Above the cafe is a rooftop garden. In front of the cafe is a small square. People can drink coffee in the square and enjoy the street view and sunshine.

Sports facilities

We set up a small stage next to the cafe to take advantage of the height difference, where some performances can usually be held. Next to the large steps of the stage are sports facilities such as basketball courts and table tennis courts located on the highest platform.



Slopes and lawn

We maintained the original ramp as a vertical transportation system connecting the building above to the street below.



Corner garden

We designed a small street garden in the area next to the hospital. We used elements of circles and arcs, and these elements run through our entire design. The garden provides a relaxing and comfortable public space for nearby residents and hospital patients.

## *13 /*
## *Conclusion*

In the study of rivers and cities, we found that the culture of rivers is always closely related to the development of cities. A river flows quietly in the long history, and has also witnessed the life, death, rise and fall of cities.

After focusing specifically on the city LODI we studied, we found that the birth of LODI cities is closely related to the ADDA river. But as time went by, the city became estranged from its mother river. At the same time, the city also has its own pain points, such as limitations in industrial development and problems with city-related land planning. Faced with such a problem, we believe that the city should also face this disconnect with river culture while solving its own problems. Only by remembering where we came from can we better navigate the future.

All the measures and designs we have undertaken are to strengthen the connection between the city and the river. We first established two axes, one along the river and the other through the two parts of the city divided by the river. The part of the river located in the center of the city should not be a sharp blade that separates the city, but should become the glue between the two parts of the city. Only when people truly focus on the river itself can the city be complete.

The two axes of our design solidify our concept and reinforce the presence and influence of the river. We projected many cultural memories scattered in the ancient city into the cultural corridors along the river, and built installations and platforms at many nodes along the river. While strengthening the relationship between people's activities and the river, these designs also provide a platform for people to rest and have fun. On the axis perpendicular to the river, we emphasize the connections between different areas of the city, strengthen communication between different areas, and provide people with more attractive installations and landscapes. Our axis also deeply implements the influence of river culture into the city center.

We built a hiking park at the intersection of the two axes, and also placed a museum of river culture inside the park. Memories must be recorded in order to be passed on forever. And on the other side of the river, we emphasized the agricultural development related to the river, integrated agricultural development with local business, economy and industry, and carried out educational innovation pilot attempts. In order to carry forward the river culture and integrate multiple industries to promote the development of LODI city.

And we have also optimized the city's infrastructure, not only public green spaces, but also some ingenious designs in transportation. These designs not only connect the various plots we designed, but also connect the ancient city, the new city and the river, making the entire city more closely connected. Our design has come to an end, but the development of LODI City is still opening up more possibilities as time goes on. We hope that our project can bring new ideas to the urban development of LODI, and we also hope that the ADDA river will flow quietly and carry more beautiful memories.

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