

LIVING THE TRANSFORMATION

Adaptive Reuse as strategy for accessible
student housing in Turin





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Living the transformation

**Adaptive Reuse as strategy for accessible student
housing in Turin**

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La inspiración de esta tesis nace de la muchas historias de amigos y compañeros que han tenido que vivir toda clase de aventuras y desafíos al llegar a Turín desde otro país o región. Mi experiencia personal fue uno de aquellos casos poco usuales de suerte al encontrar un hogar incluso antes de llegar a la ciudad. Aun así, pude vivir lo difícil que es para un estudiantes extranjero o de otra region del país a través de experiencias con mis amigos, en donde vivimos juntos en espacios reducidos por algún tiempo porque francamente no había otra opción. De estas vivencias salieron cosas buenas, por supuesto, en donde aprendimos a movernos en un contexto extranjero y a afrontar la vida fuera de la comodidad del hogar, no obstante, lo más importante que salió de esta experiencia fueron los grandes lazos de amistad que surgieron de situaciones que ahora son anécdotas que recordaré por toda la vida.

A mis profesores un especial agradecimiento por el seguimiento de este proceso tan importante para mí.

A Lollo que ha sido mi mejor aliado, este logro también es para ti! gracias por tu apoyo incondicional.

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Abstract:

In the past two decades, Turin has become a magnet for young minds from all corners of Italy and the world, who move to the city to start or continue their university studies. Both the Polytechnic and the University of Turin have gradually acquired a significant role in the city's local urban development due to the student community's growth, which welcomes ever more off-site and international people.

This non-local student enrollment surge has created a compelling demand for affordable and accessible housing solutions. Since traditional housing options often fail to address the unique needs of students, who face financial constraints and prioritize accessibility, security and active participation in the city's dynamic life, the provision of adequate housing supply is always a challenge.

The history of Turin as an industrial city left a considerable number of abandoned structures around the city, some of them located near areas of interest for students. Strategies of adaptive reuse for the renovation of dismissed buildings, combined with financial methods and the participation of both public and private stakeholders could be the answer to the growing demand for affordable student accommodation allowing accessibility and integration in the urban context.

Research Question:

What are the strategies that provide students with accessible accommodation and urban integration?

Keywords:

Student accommodation
Adaptive reuse
Urban integration
Affordability
Accessibility
Off-site student
Hybrid model

Finding suitable accommodation is a major hurdle for many off-site students arriving in Turin for the first time. This uncertainty of securing a place to live that fosters a fulfilling university experience is a common challenge for students globally. As a rising student city, Turin offers both advantages and disadvantages in this regard. Local experience suggests securing accommodation before arrival, due to limited options in the fast-moving private rental sector, but not without the risk of encountering fraud. Others opt to look for accommodation upon arrival, albeit this process may take more than a month because of the lack of reliable sources, such as unverified online listings, and limited options in the market. While private apartments are the most common choice, they may not be the most convenient or cost-effective option. International students face additional struggles, with some landlords hesitant to rent to young adults with limited financial backing, lack of guarantors, or language barriers. This often forces students to prioritize affordability over factors like location, accessibility, and amenities, potentially leading to less-than-ideal living situations that hinder their academic experience. This issue extends to the young population who finish their studies and have to find a new place if they decide to stay in the city when scholarships and student benefits are over.

The research aims to analyze diverse models and strategies currently being implemented in the city or adopted by the student community, to solve the need for temporary accommodation by comparing their characteristics and identifying actions or elements that can be applied to achieve affordability and integration in the urban context.

For future directions, the objective is to apply the best practices and methodologies by designing a hybrid model as a guide for future interventions of this kind.

This document will explore a particular case study to test this model as a prototype, then can forward be studied with the aim of replication or evaluation for future projects.

00 INTRODUCTION



01.1| Turin, from industry to university

This chapter aims to contextualize the process of transformation of Turin and its transition from an industrial city to a major university center. Since the motor of the economy of Turin has drastically changed over the years, the housing demand has shifted according to the needs of each type of population involved, transitioning from a large industrial workforce to a thriving academic community.

The chapter will explore this transformation and how it has impacted the availability, affordability, and type of student accommodation, the life and social dynamics in the city.

Turin, as we know it today, is the product of a series of historical events that have shaped its evolving character and international relevance.

Previously serving as the first capital of Italy (1861-1864), Turin developed a national and international significance that remains within the identity of the city. This significance is demonstrated by its relevance in different fields such as both production and export sectors, its role as a host to major international organizations, its rich cultural offerings with renowned museums and institutions, housing significant diplomatic corps, and adding to its global dimension, its position as a new educational hub with the presence of Turin's two most recognized universities. However, the defining factor that propelled Turin's growth and international relevance was its industrial success. (Marucco, Dora, et al. 2012)

The history of Turin as an important manufacturing pole dates back to the post-second World War period (1950-1960) when the production method of the assembly line was introduced in the Italian context. The adoption of these mass production techniques was pioneered by companies like Fiat¹ and inspired by the success of the Ford model in the United States. This American car factory method was used as a successful example of economic growth thanks to the accelerated production pace and the great number of jobs that the model offered; the serial work was simple and repetitive without specific qualifications required. Many Italian cities were developed in such a direction leading to massive working-class migration from southern Italy and the countryside to the main urban centers of the north due to the vast industrial expansion in this territory. This period solidified Turin's position as a major factory town, particularly in the automobile manufacturing industry and placed the city in the global market of innovation and technology. The Fiat company played an essential role not only in the city's economy but also in its society, where "the factory life and city life coincided" and became⁷ part of Turin's identity. (Marucco, D., et al., 2012) (Barraco, M. V. 2021)

1. FIAT "Fabbrica Italiana Automobili di Torino", founded in Turin on July 11th 1899, is one of the longest-operating automotive brands in the world. Formerly part of Fiat Chrysler Automobiles, and now a subsidiary of Stellantis from 2021. (Media.stellantis.com)

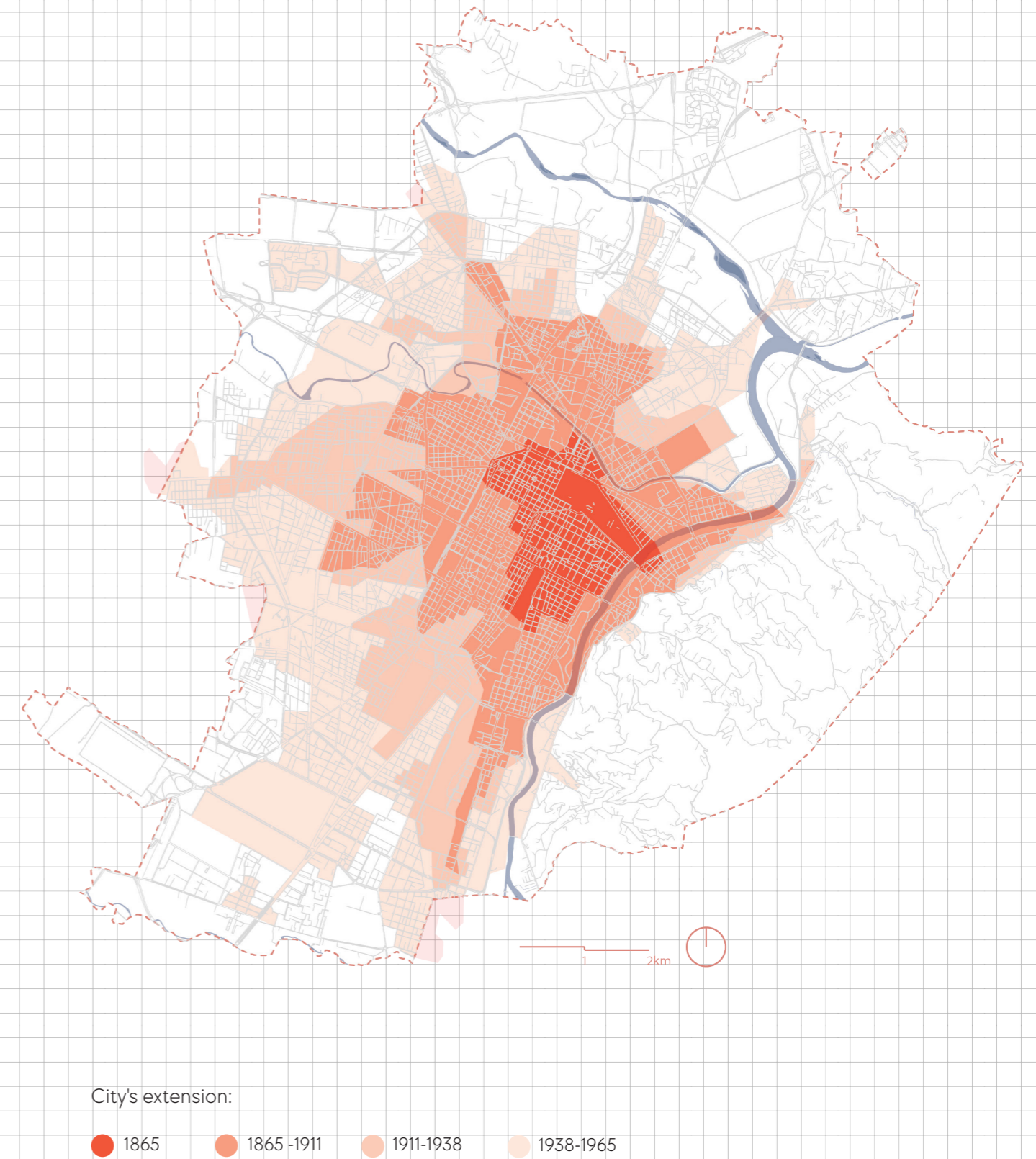
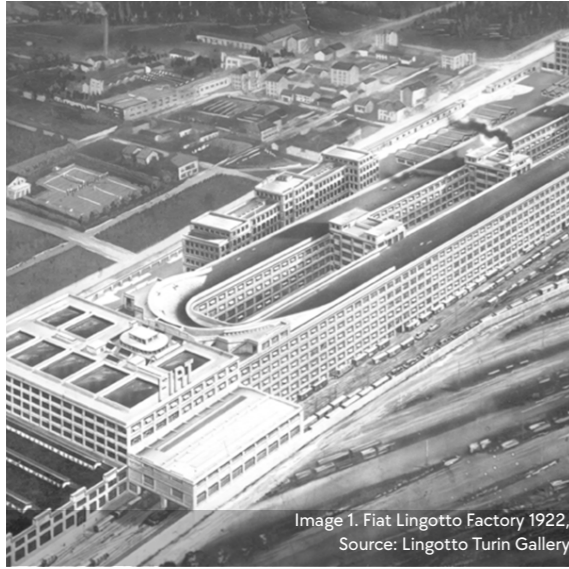
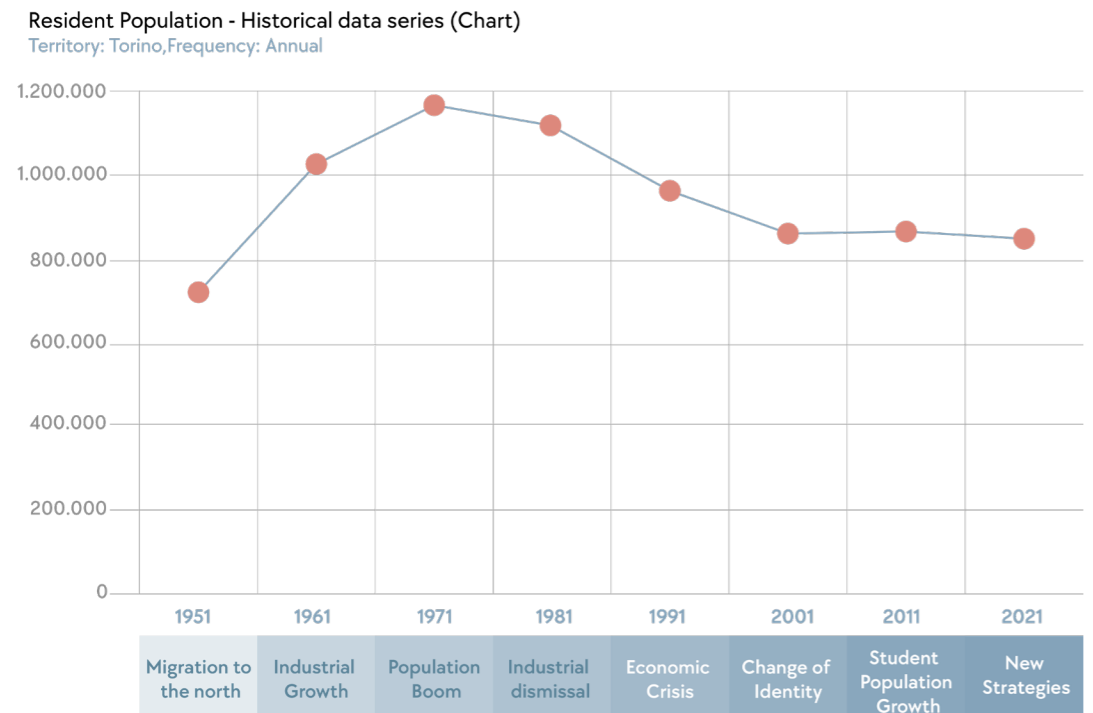


Fig.1 Urban expansion of Turin, self-elaboration 2023 Natalia Zuleta (Adapted from: Marucco, Dora, et al. 2012)

This productive, social, and cultural model fueled Turin's socioeconomic influence and led to an industrial and demographic boom, arriving at circa 1.200.000 inhabitants by the year 1970 (Graph 1), the highest number Turin's ever reached. Between 1951 and 1961 the city grew by approximately 42% (Fig. 1), leading to the need for a regulatory plan to organize the functions, uses and services according to the new necessities of the citizenship. The "Piano Regolatore Generale Comunale" (PRGC) born in 1959 was the first approach to the urban transformation of the city of Turin and became the tool shaping the city's urban development around its industrial character in the following years. It was divided according to two objectives: the Generic theoretical objectives ("Obiettivi teorici generici") aimed at economic growth, social improvement and the projection of transport infrastructure through the organization and division of land uses in specific zones of the city. On the other hand, the Practical objectives ("Obiettivi pratici") (Fig.2) focused on the organization of neighborhoods regarding the number of residents, the distinction of industrial areas, the management of traffic and the urban transformation zones. (Barraco, M. V. 2021)

The significant migration flux led to an increase in accommodation demand and the need for new infrastructure and services. To supply the urgent necessity for affordable housing, the first social housing projects were introduced to the city landscape. New public neighborhoods were created conformed by cheap affordable buildings adopting typologies and styles from prior referents of public housing in Vienna and Amsterdam. These districts were usually located in the periphery of the city in order to allow accessibility and proximity to the working places, and were provided and maintained by the national fund GesCAL association ("Gestione Case per i Lavoratori") from the



Graph. 1 Resident population -self-elaboration 2023 Zuleta, N. Data from: Historical data series (IstatData Istituto Nazionale di Statistica)

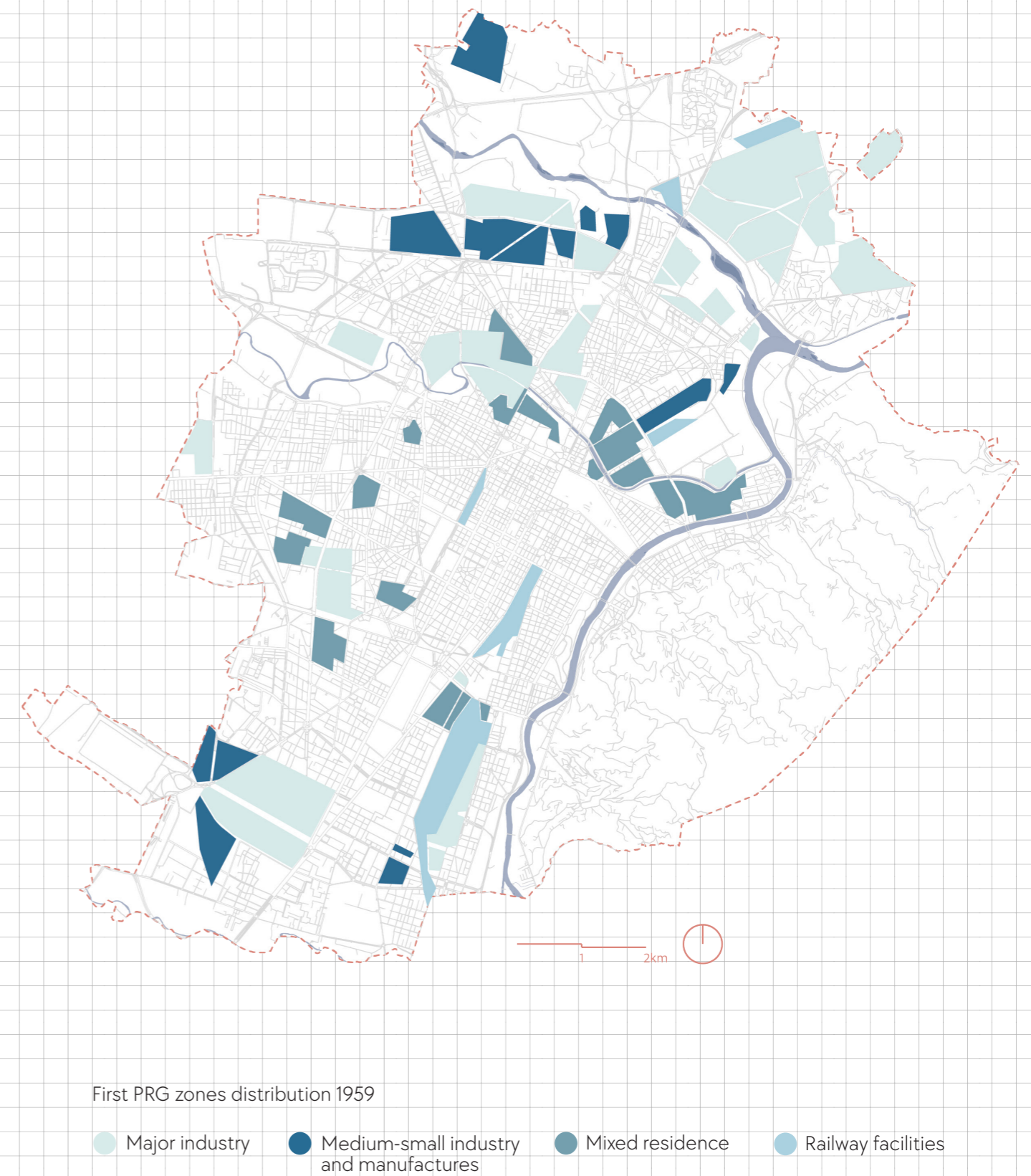


Fig. 2 Industrial and mixed zones PRG 1959, self-elaboration 2023 Natalia Zuleta (Adapted from: Barraco, M. V. 2021)

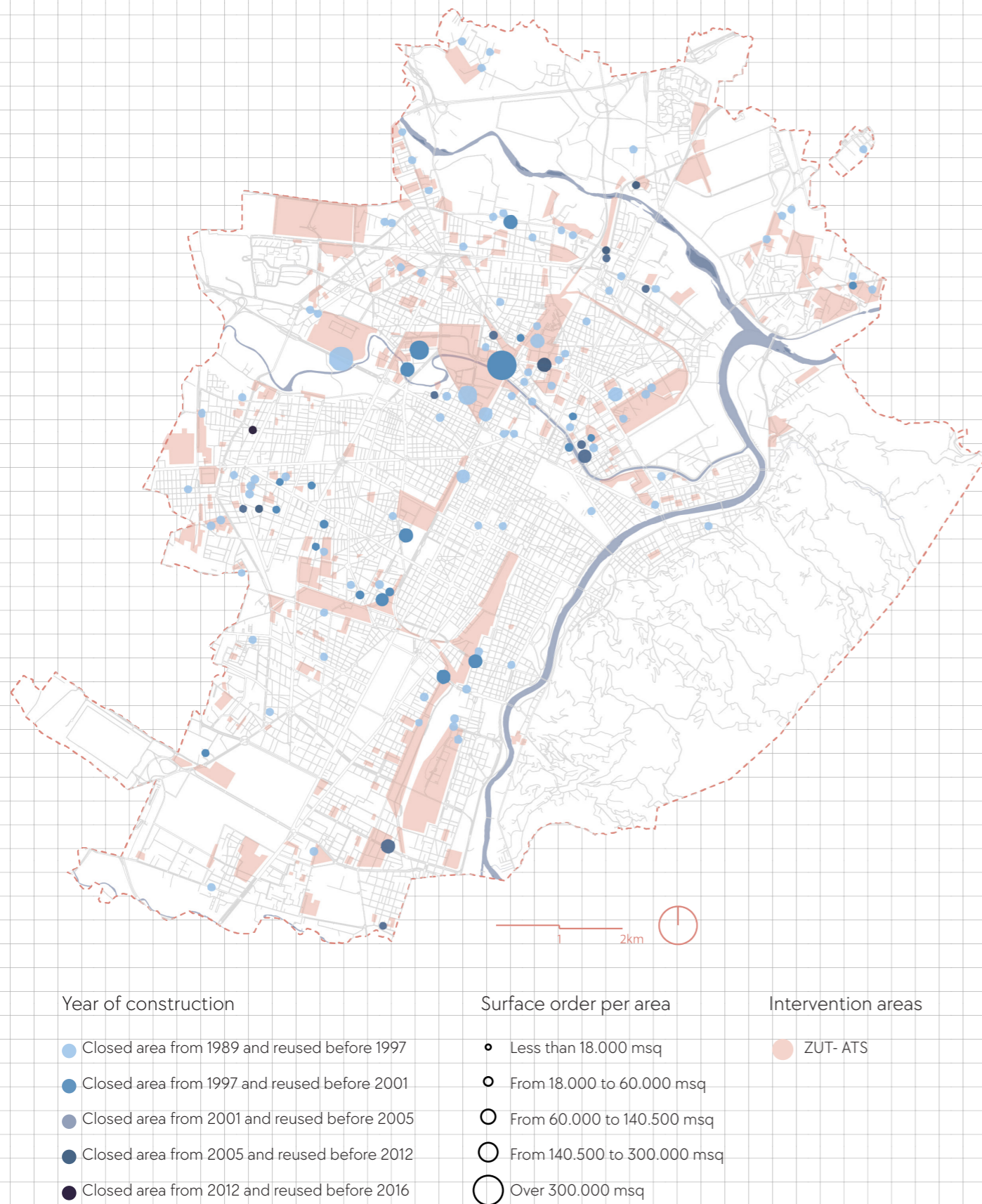


Fig. 3 Abandoned Industrial areas , self-elaboration 2023 Natalia Zuleta (Adapted from: Urban Lab, 2018. Torino Atlas mappe del territorio metropolitano 04)

year 1963 (Lucchi, & Delena, A. C., 2020). However, by 1980, the crisis began. Globalization had significantly impacted the world's economy and challenged the sustainability of the traditional industrial model. The working conditions were poor and the protest for better working conditions started. This shift in economic forces triggered major companies to reduce their reliance on mass production causing a shortening of their activities.

Big industries, including Fiat, faced a significant loss of 44% of its working personnel which led to the closure of the fabric and left a significant industrial void in the city. (Barraco, M. V. 2021)

This decision had a devastating impact on Turin. Consequently, the widespread worker layoffs caused a significant population decline. The city's population shrunk from over one million to around 900,000 inhabitants. These changes resulted in the abandonment of numerous buildings, including large industrial structures. Furthermore, the population drop also discouraged foreign investment, leading to an economic crisis. The public spending on housing steadily decreased throughout the 1980s and beyond, and in 1998 the GesCAL fund was abolished leaving the public districts in a state of abandonment and decadence. These peripheral neighborhoods, already facing exclusion, became known as "slums," suffering from low maintenance and social problems related to racial segregation and stigmatization. (Marucco, Dora, et al. 2012)

The loss of a vast area (10 million square meters) of industrial space and a decline in public funding left an abrupt impact on Turin's urban landscape. Large zones of the city's periphery and former industrial areas became vacant, creating "urban voids." This was to translate into a strong physical and social transformation where structures, from former factories to workers' residences and other service buildings were left abandoned and unmaintained, followed by impoverishment and social problems in specific areas. (Fig...)

The critical situation prompted the city to look for new strategies to attract economic growth and to redevelop the urban quality of the city.

While bringing significant losses, the crisis also presented an opportunity for transformation and a shift in Turin's identity. The city didn't erase its past; rather, it built upon it.



Image 7. Marcia dei quarantamila Source: Il Post



Image 8. Ex Olympic Village
Photograph by the author, 2024

After the '90s, Turin faced a structural transformation thanks to the Olympics of 2006 as part of the strategic plan "Torino Internazionale (2000)", involving stakeholders and experts of different areas such as scientists, sociologists, urbanists, politicians and architects.

In this period, the city budget and the available resources were destined for the elaboration of a strategy to develop the new image of the city, therefore, in the middle of a social and economic crisis, ordinary instruments ("Piano Regolatore") and extraordinary (PUC) were implemented.

The instruments of planning "Programmi Urbani Complessi (PUC)" were created with the "Piano Regolatore" of 1995, and were developed with a new perspective, projecting not only a real estate vision but also involving urban, social and political elements which allow urban balance and more sustainable development.

The PUC were divided in two: "PUC di riqualificazione" (requalifying) and "PUC di rigenerazione" (regeneration). The regeneration program was more complex because both private and public organizations were integrated into the management actions. The instruments are related to the recovery of the dismissed industrial areas and the improvement of the mobility infrastructure with the support of more stakeholders breaking with the traditional ways of urban planning.

Thanks to these new instruments it was possible to requalify deteriorated urban areas with a compromised situation due to the industrial dismissal. (Barraco, M. V. 2021)

Turin remained an industrial center, albeit on a different scale, utilizing vacant structures to host a diverse range of new activities. This shift marked a transformation from a city defined by a single vocation to one increasingly multifaceted, developing strength in the finance and service sectors, a rich cultural offering welcoming a surge in tourism, and of course, the city has further solidified its position as a major university center. Each of these activities contributed to opening Turin to the world and new and broader international relationships.

Once a symbol of decline, 10 million square meters of vacant industrial areas became a strategic asset for urban development. Universities emerged as a crucial force in the city's economic system, attracting young talent and new stakeholders. This broader process of urban socio-economic restructuring (Genere & Mangione, 2023) solidified Turin's position as a major education center while reinforcing its cultural identity. It was an opportunity to rethink the city and make it more accessible by incorporating the railway and metro networks, organizing new university poles and promoting new residences and productive hubs. Additionally, the focus on green areas and services played a key role in enhancing the city's overall quality of life.

This transition also involved a move away from the traditional model of isolated universities. In the 20th century, these spaces functioned as self-contained "islands" for academics, disconnected from the urban fabric and adhering to strict modernist architectural principles. This concept has gradually shifted,

leading to a strong synergy between universities and Turin, integrated within the urban fabric.

The "Politecnico" and the "Università di Torino" as top high education institutions attract a large number of national and international students, fueling urban growth and therefore the creation of new residential areas, study spaces, research centers and leisure facilities alongside soft mobility infrastructures for pedestrians and cyclists dedicated to improving the city dynamics and liveliness.

After the year 2000, the city's declining population reversed thanks to a growing student community. This rise can be attributed to the universities' role as "Turin's urban branding strategy," attracting investments from other regions and countries. The provision of public housing became ever more relevant, and different initiatives of funding plans were evaluated and put into practice. According to the Urban Center Metropolitan, in 2012, the Municipality launched the Turin University City Plan ("Torino Città Universitaria"), aimed to develop university residences within the urban environment. The core idea was to "leverage on universities' capacity to introduce physical, social, and economic changes as partners of urban regeneration initiatives." (Cenere & Mangione, 2023).

The plan involved the subdivision of Turin into 7 districts around different university locations introducing a new model of residence and services. Each district would be developed in order to build a specific "geography" (Urban Center Metropolitan, 2013)

1. Humanistic Branch / Old city center and banks of the Dora: consist in the renewal of the historic buildings of the city center starting from via Po following via Verdi as its main axis and finally unwinding as far as Palazzo Nuovo and reaching the Vanchiglia district and the banks of the Dora. This results in a diffuse campus that blends with the city and reutilizes old industrial buildings into libraries, lecture halls and student residences.

2. Variante 200: since 2008 it's been a process that involves public and private entities working on the renewal of the areas of the "Spina 4" along the urban railway and the former Vanchiglia goods yard which are seen as a big opportunity for the transformation of former industrial areas thanks to the project of Line 2 of the metro and the proximity of the city center and university areas such as the campus Luigi Einaudi. The renovation of the hospital Maria Adelaide joins the development plan for this district along with other student residence projects.

3. Polytechnic Citadel/Spina 2: goes along the urban avenue that crosses Turin from north to south. The adjacent areas of this axis went through a transformation from industrial buildings in disuse to new facilities that support activities related to the Polytechnic of Turin built in 1950. This development created the Polytechnic Citadel, which hosts classrooms, laboratories, student residences and research centers that are connected with a national and international context thanks to the proximity of Porta Susa train station and the urban transport network. Important examples of adaptive reuse such as the OGR (former railway repair workshop) were developed in this

area, welcoming new cultural activities.

4. Scientific hospital and Architecture site/ Between the banks of the Po and the railway: this district enjoys one of the highest environmental quality and functional diversity. On the banks of the Po River, Valentino Park offers a wide range of activities, hosting the botanical garden and the main headquarters of the Turin Polytechnic Faculty of Architecture. This district unfolds along via Nizza and features an important health function with the "City of Health and Science" composed of the main hospital area in the city (Molinette, CTO, OIRM and Sant'Anna) and university activities such as the biotechnologies center. This area represents a great opportunity for development, having examples of adaptive reuse with the Lingotto former factory that hosts commercial, business and university activities and possible renovation projects such as the "Palazzo del Lavoro" restructuration and refunctionalization, Turin Exhibition Center and the Fiat Avio area*.

5. Economics and Design Center/Mirafiori: this area is located in the southwest of Turin, previously hosting the historic site of FIAT Mirafiori. The productive activities continue on a smaller scale together with a potential new university section arising after the transformation of the underused industrial structures such as the Design Center of the Turin Polytechnic and the construction of the Metro Line 2 which is planned to be the location of the south arrival terminus.

6. Scientific branch / Grugliasco: This district is located in the metropolitan west area of the city hosting the Agrarian Science and Veterinary Medicine faculties of the University of Turin. Plans of expansion for more university activities such as the incorporation of more faculties are being developed in this area aiming the creation of a University Scientific Center.

7. Hospital branch / Orbassano: The Hospital San Luigi Gonzaga at Orbassano hosts several services and facilities from the Faculty of Medicine and Surgery. This metropolitan area is also easily accessible since it is connected by the principal by-pass street that surrounds the city. This leads to several plans aiming at the development of Research laboratories.

Fig. 4 'Torino Student City' Geographies, self-elaboration 2023 Natalia Zuleta

Collage 1

Mole Antonelliana. Photograph by author, 2021
 Campus Luigi Einaudi. Source: ArchDaily
 Mummy: Photograph by author, 2021
 Sculpture: Photograph by author, 2021
 Palazzo Nuovo. Source: Moleventiquattro

Collage 2

Historic Maria Adelaide Hospital. Source: Ardito, I. (2021)
 Metro linea 2. Source: Torinonews24.it
 Campus Torino Regio Parco. Source: The Plan
 Spritz: Photograph by author, 2022

Collage 3

Politecnico. Source: MuseoTorino
 Ogr. Source: Zero.eu
 Org Lamps. Photograph by author, 2022

Collage 4

Castello del Valentino. Photograph by author, 2022
 Park lamps. Photograph by author, 2023
 Lingotto Bridge Arch. Source: IPE progetti group
 Fiat Car. Source: Moleventiquattro
 Torino Esposizioni. Source: Damien Boeuf

Collage 5

Politecnico Mirafiori Campus. Source: ICIS
 Faculty of Economics. Source: Biblioteca di Economia e Management
 Factory. Source: La Repubblica
 Archs. Photograph by author, 2023



The Turin University City plan was the basis to create the third Strategic Plan “3° Piano Strategico”, published in 2016 as “Torino Universitaria e dell’Innovazione” where the focus was divided in three aspects: University, business and the public system. The plan foresaw the creation of a diffuse system of residential poles establishing a Master Plan in which transformation and investment opportunity areas were defined. (Mangione, 2018) Several projects from the Strategic plan are already completed while others are in the making process or even adding new elements to promote and accelerate urban development. The realization of this plan resulted in the increment of student population distributed in different proportions around each district therefore causing a strong process of transformation in particular areas, both with positive and negative outcomes. For example, an important university headquarters of the University of Turin, the Campus Luigi Einaudi (CLE), inaugurated in 2012, faced a complete requalification of the area, improving the quality of public spaces, adding greenery and permeable land to enhance environmental services, promoting soft mobility through new walkable and cycle paths and expanding the activities of the sector with new uses and services in a previously abandoned and deteriorated sector. However, the adjacent neighborhoods, where residential land use was predominant, were negatively affected after introducing new social difficulties due to the studentification phenomenon, a process in which new activities and services, in this case oriented for the student population, replace the original ones, displacing the inhabitants and excluding other sectors of the citizenship (This topic will be addressed in the following chapters).

The new geographies spread across the city shaping a comprehensive university system that will continue its development around its cultural and academic character. In this order, a great number of urban and territorial plans are being designed and implemented pursuing goals that could propel a global economy around knowledge, attract young talents, foster innovation and investment, create a healthy environment with sustainable solutions and improve the city's overall quality of life. However, the success of these initiatives hinges on a fundamental aspect that cannot be ignored when deciding the city's future: The voice of people who live and participate within the urban spaces. Addressing the needs of the city's inhabitants is the primary guideline to build an inclusive scenario for the future and avoid negative consequences driven by individual interest.

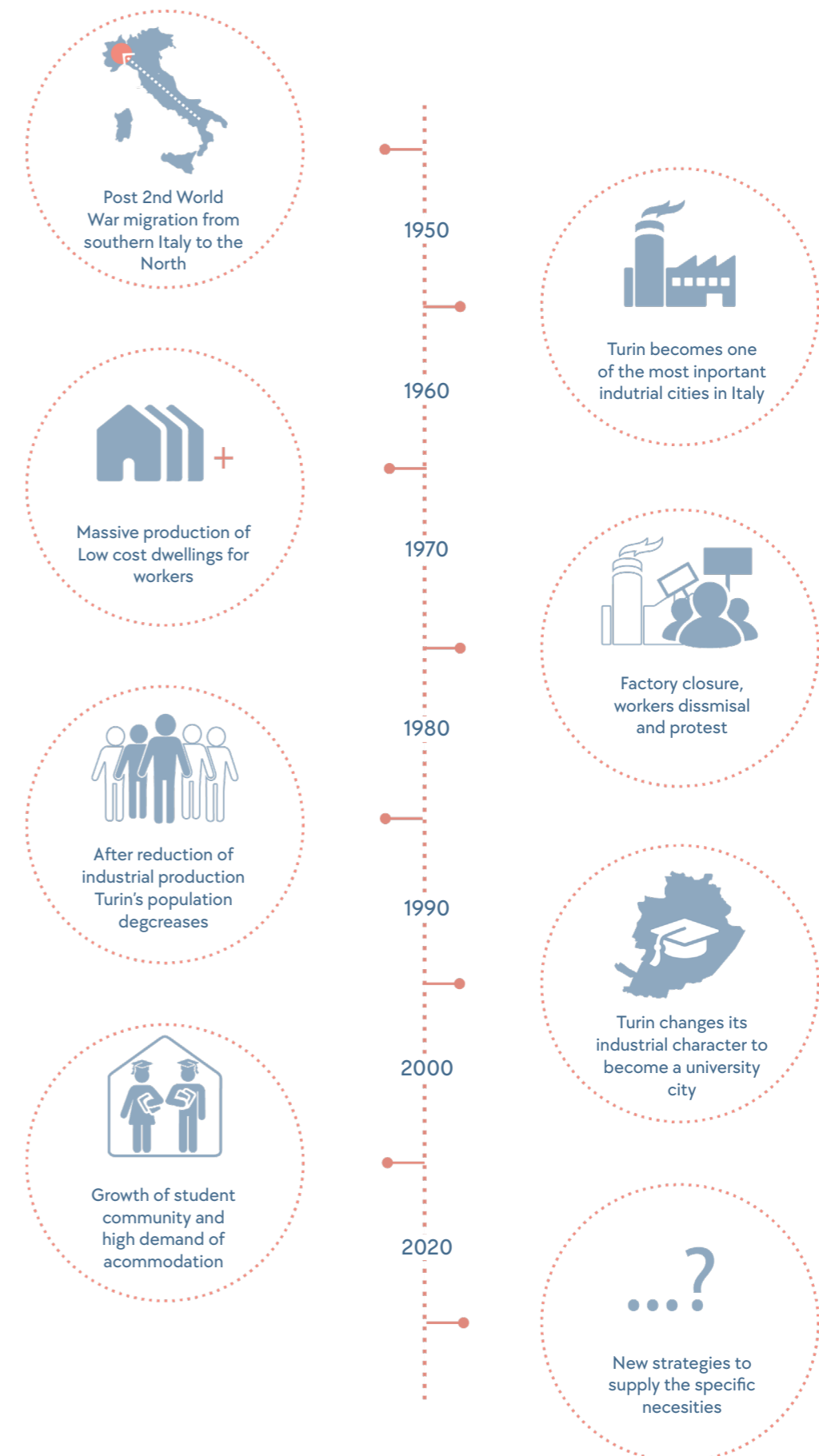


Fig. 5 Timeline affordable housing demand in Turin, self-elaboration 2023 Natalia Zuleta

01.2| Turin University City



Image 9. Architecture Faculty, Politecnico di Torino
Photograph by the author, 2024

This research aims to get closer to the students' living experience in Turin to understand the best practices for rethinking student accommodation and how it relates and affects other aspects in life. In order to contextualize the current situation of the University city plan and participation of their main users, this document collects quantitative data related to universities, students and their living situation, as well as firsthand information about the experiences of a diverse group of young people from different contexts to develop a qualitative analysis from a social point of view.

Capturing the vision of students and their situation by investigating the challenges and opportunities that they face, this study seeks to develop strategies for creating accessible and inclusive student accommodation that enhances the overall student experience and contributes to the city's sustainable development.

Turin's identity as a student city is multifaceted, reflecting the diverse backgrounds of its young population. Some students view the city as a temporary academic hub, while others see it as a starting point for their professional careers. A growing number even envision Turin as their long-term home. This heterogeneity of perspectives enriches the city's cultural and intellectual landscape. Turin presents unique qualities that make it appealing for studying as well as for living. Over the past two decades, Turin has experienced a significant influx of students, with the university population soaring by over 113,000. (Cenere, S. et al. 2022)

The vast offer of academic programs and the level of high quality education in the city are one of the main appealing factors, since its universities and post diploma schools are among the most prestigious at a national and international level.

Turin has more than 15 high education institutions, both public and private, specialized in diverse formative programs:

Public Institutions:

- **Università degli Studi di Torino (The University of Turin):** Is one of the most ancient and prestigious universities of Italy founded in 1404. It offers 71 undergraduate degree programs, 87 postgraduate degree programs and 65 PhD programs. (Unito.it, 2024)
- **Politecnico di Torino (The Polytechnic of Turin):** Was the first Italian Engineering School founded in the wave of the technical and scientific innovation that gave rise to the most prestigious European polytechnic schools in the mid-19th century. It specialized in engineering, architecture and design and has 25 Bachelor's degree programmes, 37 Master's degree programmes and 18 Ph.D programmes. (Polito.it, 2024)
- **Conservatorio Statale Giuseppe Verdi:** dedicated to the artistic and musical formation.
- **Scienze infermieristiche e ostetriche:** Turin headquarters of the Catholic University of Rome, the Cottolengo Hospital Institute houses the Master's Degree in Nursing and Midwifery Sciences.
- **Scuola Superiore per mediatori linguistici Vittoria:** It offers different educational choices in the language area and an officially recognized degree is issued at the end of the Linguistic Mediation (mediazione linguistica) courses.
- **Scuola di Studi Superiori of the University of Turin:** is a school of excellence affiliated to the University of Turin educating in leadership and government for addressing the world's most urgent problems and challenges.
- **Archiving Keeping, Paleography and Diplomacy School:** Archiving keeping, Paleography and Diplomacy School are public institutions that mainly aim to give an academic and professional education to archivists and paleographers and to develop the research in its sectors.

Private institutions:

- **Accademia Albertina di Belle Arti:** with a long tradition it represents the highest level of education in visual arts.
- **IED – Istituto Europeo di Design:** is a design institute that belongs to an international Network with headquarters around Europe.
- **IAAD – Istituto di Arti Applicate e Design:** Specialized in design and communication post degrees education.
- **ESCP Europe:** ESCP is the oldest business school in the world and has six urban campuses, located in Berlin, London, Madrid, Paris, Turin and Warsaw.
- **IUSTO – Istituto Universitario Salesiano Torino Rebaudengo:** offers core theoretical, methodological and technical education in different disciplinary areas of psychological sciences.
- **Unicollege:** it offers a wide range of bachelor and master's degree programs.
- **Scuola Holden:** It's an academy specialized in the formation of creative writing founded by the writer Alessandro Baricco.
- **Collegio Carlo Alberto:** is a foundation created in 2004 at the joint initiative of the Compagnia di San Paolo and the University of Torino fostering research and education in social science.

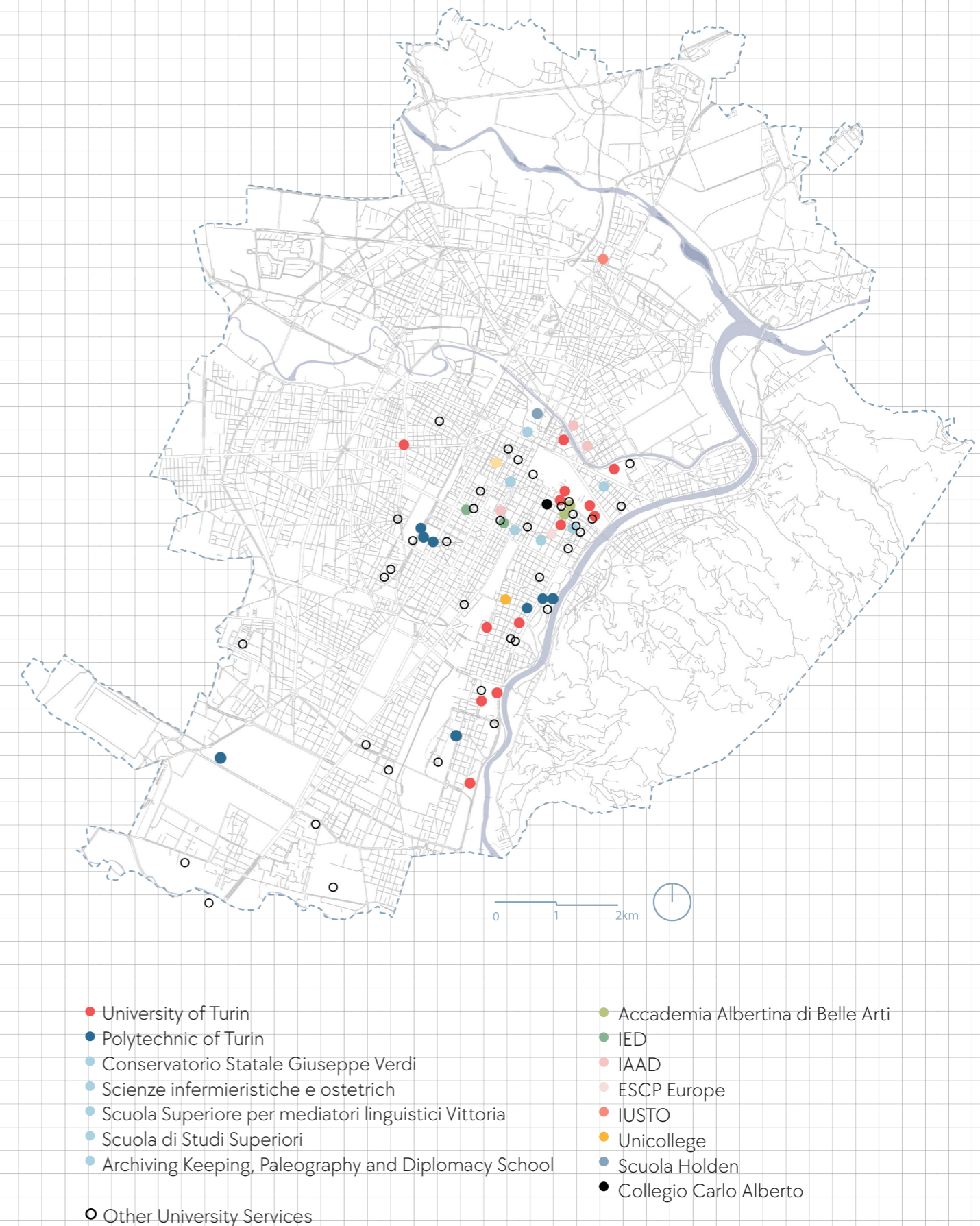


Fig.9 Turin's Universities, (Data from: Urban Lab, 2018. Torino Atlas mappe del territorio metropolitano 08, Sistema Universitario)

In the urban context, the university system plays an important role in the city's development. It determines the distribution of services, the fluxes of mobility and the economic development of the real estate market around it. Most departments and faculty buildings in Turin belong to the University of Turin and the Polytechnic, which, together with the other institution's headquarters, create a particular urban landscape. The structures spread around the city almost individually, rather than forming a central campus. The result is an urban system that works as an open campus serving the whole academic community along the city.

The relationship of both major institutions of Turin with the city, evidence different modalities of development that have been changing over time. The University of Turin has followed a diffuse conformation within the urban territory while the Polytechnic has opted for a much similar to campus modality. This modality is reflected on the Cittadella Politecnica for the engineering departments along the Spina 2 and now with the redevelopment of three pavilions of the Torino Esposizioni complex as teaching spaces for the architecture faculty pole at Valentino's Park together with the Valentino Castle. Both configurations, however, present a spread organization as result of the necessity of expanding the facilities to host a growing academic community combined with the lack of construction land inside the urban territory that is almost completely built. The two models evidence several advantages but also can face their own flaws. On one hand, the diffuse organization was part of the answer to the urgent need of building facilities taking old, abandoned or underused buildings and transforming them into learning halls and libraries. These adaptive reuse strategies allowed to save time and resources by refunctionalizing existing structures. Nevertheless, the fragmentation of the university buildings creates a disconnected panorama that makes the organization, management and accessibility more complex and difficult. On the other hand, the compact campus allows the concentration of activities in a single area, simplifying the organization of this function. However, in a city like Turin (and in the European context in general) where the university role has a fundamental relevance, the academic system cannot be constructed by independent structures isolated from the rest of the city. Instead, it should surpass the limits of the building and integrate itself within the urban territory. (Mangione, 2018)

The university system of Turin is not only composed of the campuses, student residence and services, but also the public and green spaces shared with the city and the transportation network that connects it. In this order, the key to achieve an efficient organization and functionality for this system is by integrating each academic pole through a diverse mobility offer to guarantee an easy and inclusive accessibility and support each area with adequate spaces and services. In the past, universities' headquarters such as the Lingotto's Architecture Faculty from the Polytechnic or even the Campus Luigi Einaudi, were collocated in spaces where little to none adjacent development was accompanied with the early construction of the projects, which lead to a lack on connection and accessibility. The city has been working on this topic dotating always more zones with soft and hard mobility routes and adding public spaces both allowing permeability in previous hard pavement areas



Fig.9 University System, (Data from: Urban Lab, 2018, Torino Atlas mappe del territorio metropolitano 08)

and increasing the participation within the city's dynamics. Today, Turin has 258 km of bicycle paths ("Muoversi a Torino" MATO, 2024) a metro line (Linea M1) and a public transportation network connecting almost every university pole, together with the projection of the second metro line (Linea M2) that will connect the south of the city starting in Mirafiori with all the northern area which is currently neglect from the networking system but that has already several plan for its urban development.

The academic opportunities summed with the improvements in accessibility, the cultural and recreational services and the lifestyle that the city offers, have propel the attractiveness of Turin appealing to the youth.

The University of Turin and The Polytechnic of Turin stand out as the leading institutions in the city since both have the national and international recognition of high level rankings in several teaching programs and have the capacity to welcome a great number of students each year. This encourages a significant number of young people to choose Turin as the preferred option to proceed their educational path.

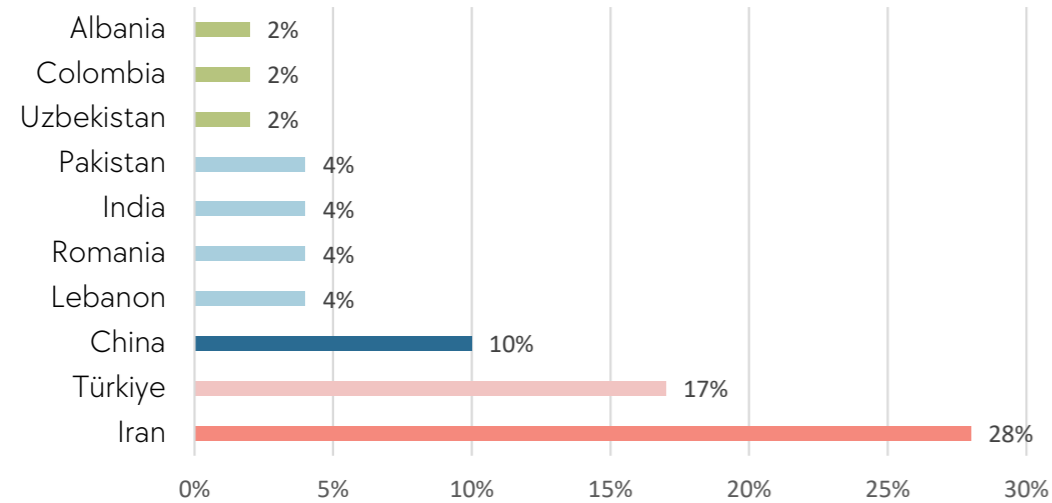
The latest data reports of the academic year 2023 and 2024 provided from the official websites of the two main high education institutions, shows that the University of Turin has roughly 81,000 students, with 24.1% coming from outside Piedmont and 6.6% from abroad (about 3,500 international students). Notably, 62.1% are women, and there are 1,082 disabled students and over 2,900 with learning disabilities. (UniTo in figures, 2024) The Polytechnic of Turin has approximately 39,700 students, with 50.5% coming from outside Piedmont, 19.5% international students (about 7.130 international students), and 27% women. Combined, these institutions house over 120,700 students, with 32.8% from outside Piedmont and 10.8% being international. This translates to over 43.6% of the total student body needing off-campus housing, representing nearly half of all students (Politecnico at a glance, 2024). Adding to these numbers, the Accademia Albertina di Belle Arti, IED and IAAD together arrive to almost 3.000 students (Mangione, 2019). All together, the student population of Turin is close to 123.700, a significant portion of the total student population of Piedmont, estimated at 143.000 students enrolled in a third level course. (IRES Piemonte, 2024) This data confirms the magnitude of the off-site student population enrolled in the high education system of Turin, which represents a significant percentage of the international population coming to the city.



The international dimension of both the Polytechnic and the University of Turin is comparable with the offer of mobility programs and international agreements that the institutes manage. The 2024 data of the international context of the Polytechnic shows an offer of 200 International Agreements, 337 Erasmus + Programme Countries, 70 Erasmus + Partner Countries and 133 Double degree and student mobility agreements. This programs opened the doors to 7.130 students enrolled

In the academic year 2023/2024 from 115 different countries of origin: Europa 13%, America 7%, Asia 74%, Africa and other countries 6%. (graph ...)

In the other hand, the international landscape of “UniTo” puts forward over 30 international double-degree programs/joint degree programs, over 150 doctorates in joint-supervision, 1 international PhD course, over 1,500 agreements for Erasmus+ mobility for students, trainees, researchers and teachers , 145 positions for Visiting Professor (2023-2024) and over 520 academic cooperation agreements with universities and research institutions.



Graphxx. International students Politecnico di Torino (a.y. 2023/2024)



Image 9. Lingotto Renovation
Photograph by the author, 2024

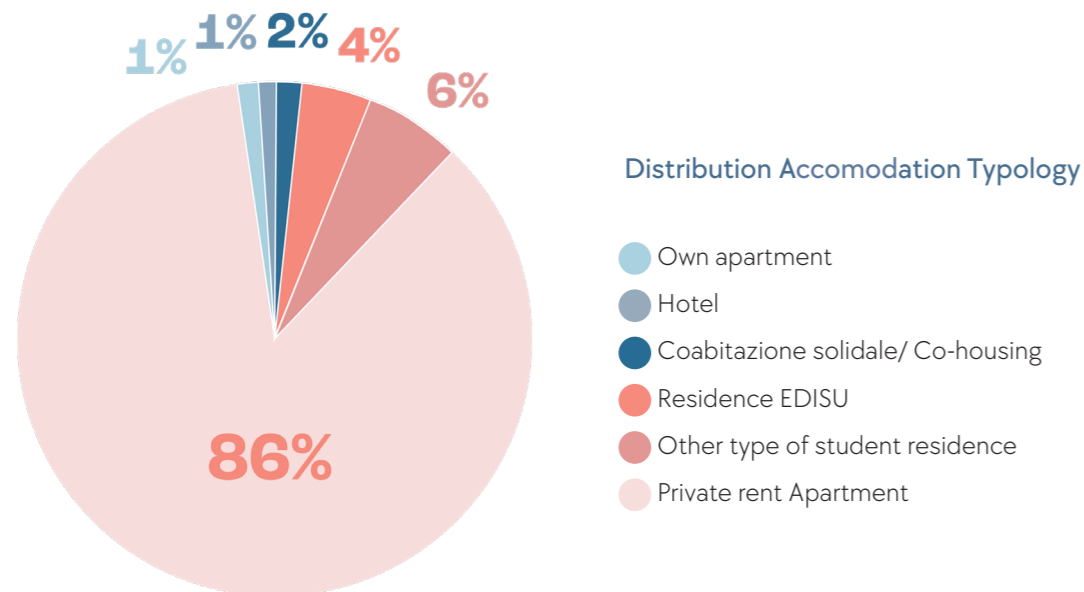
01.3| Students' accommodation demand

While new departments and services for universities and the academic community were intensified, the increasing demand of student housing continued to grow at a faster pace, leading to a shortage in the offer of accommodation for this sector of the population. Offsite students come from different economic backgrounds but moving to the city surely represents a high expense in terms of accommodation costs and self maintenance. The highest expense item for an off-site is linked to rent, which takes away 26.3% of the monthly budget. (La Stampa, 2019)

In 76.8% of cases, this expense item is covered by the student's parents (while in 13.4% it is paid thanks to a job). Scholarships, on the other hand, cover 5.3% of the expenditure intended for housing for students arriving from other countries or other regions.

The average cost of accommodation is 312 euros per month and 88% of non-residents live in rented private accommodation which is shared with friends (46%), strangers (39%), with nobody (11%), and with partners (4%). (La Stampa, 2019)

The criteria for choosing accommodation follow a common trend: the central aspect relates to the affordable price, followed by the proximity to the university, and the easy access to public transport. Security is also an important topic when choosing a place to stay, so neighborhoods characterized by social degradation are usually avoided.



Graph 2. Distribution by accomodation typology (Cenere, Mangione, Santangelo, Servillo 2022)

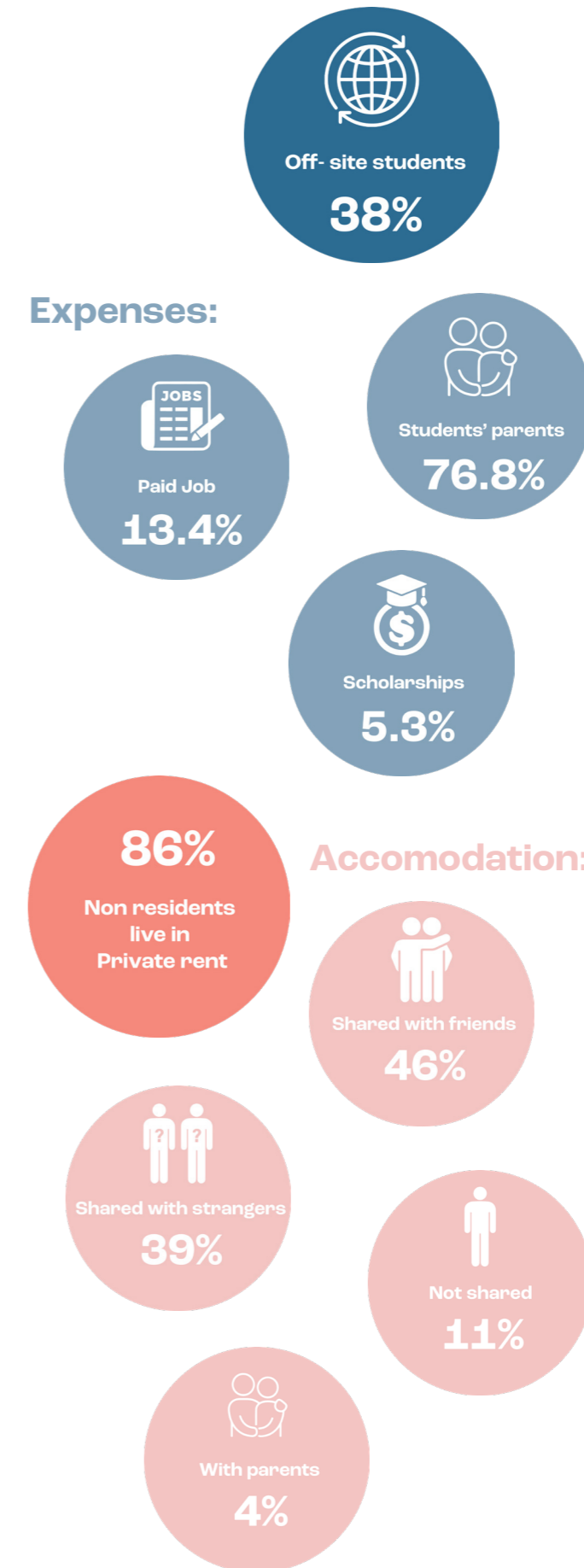


Fig. 6 Students accomodation, self elaboration 2023 Zuleta, N. Data from: Cenere & Mangione, 2022 and Callegaro, F. 2019

Student Population Variation (%)

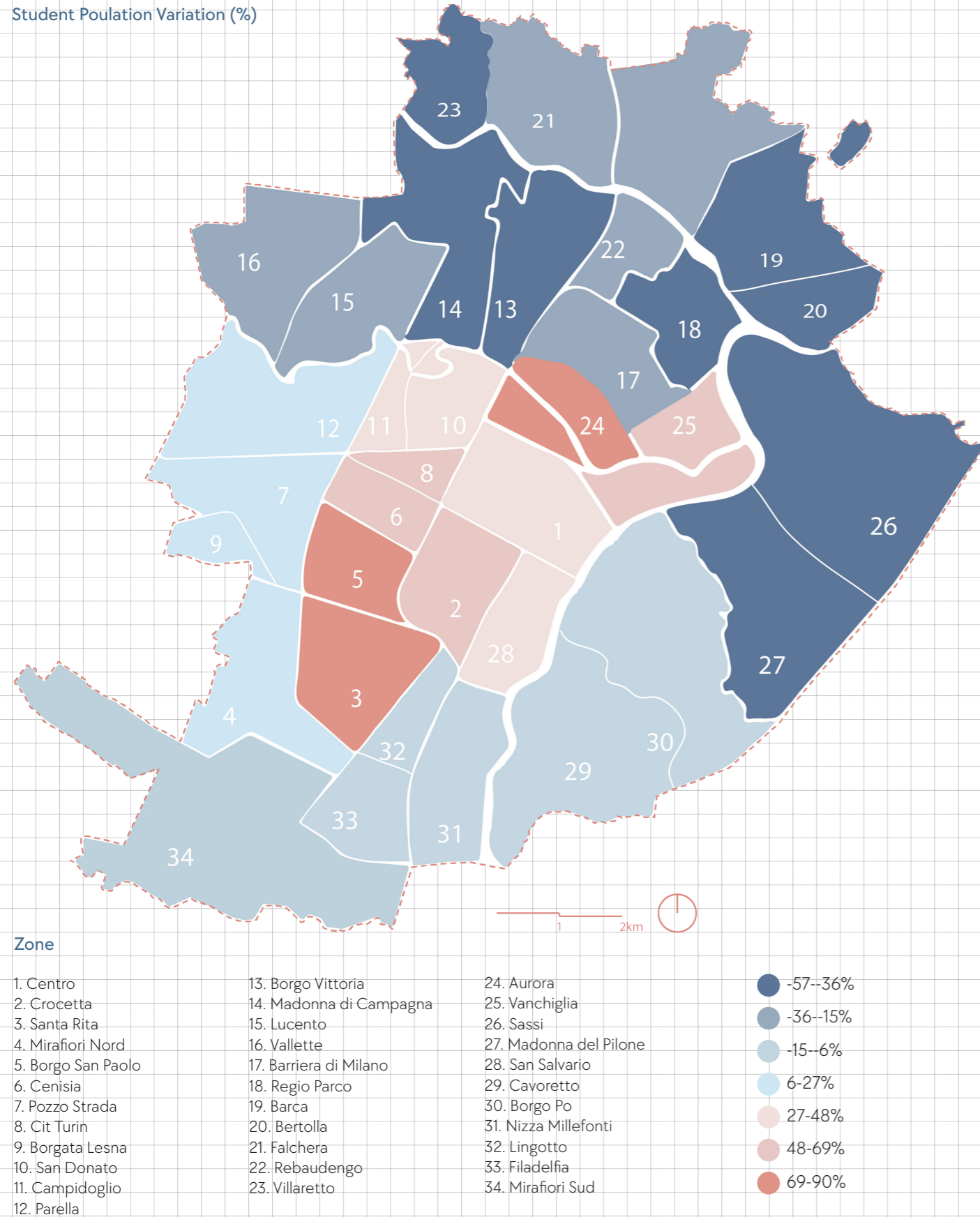


Fig. 7 Variation of students' concentration between 2010/11 and 2017/18. (Adapted from: Cenere, Mangione, Santangelo, Servillo 2023)

The Turin areas with the highest concentration of students are Cenisia, Crocetta, Vanchiglia, and Centro while areas such as Barriera di Milano, are usually not contemplated.

Other areas that are being developed following the university city urban plan acquire a new market value since they become attractive areas for students due to proximity and university services, welcoming a new distribution of students that vary according to the development of each neighborhood.

(Fig. 7)

One study of the market dynamics around the Campus Luigi Einaudi shows how this distribution works.

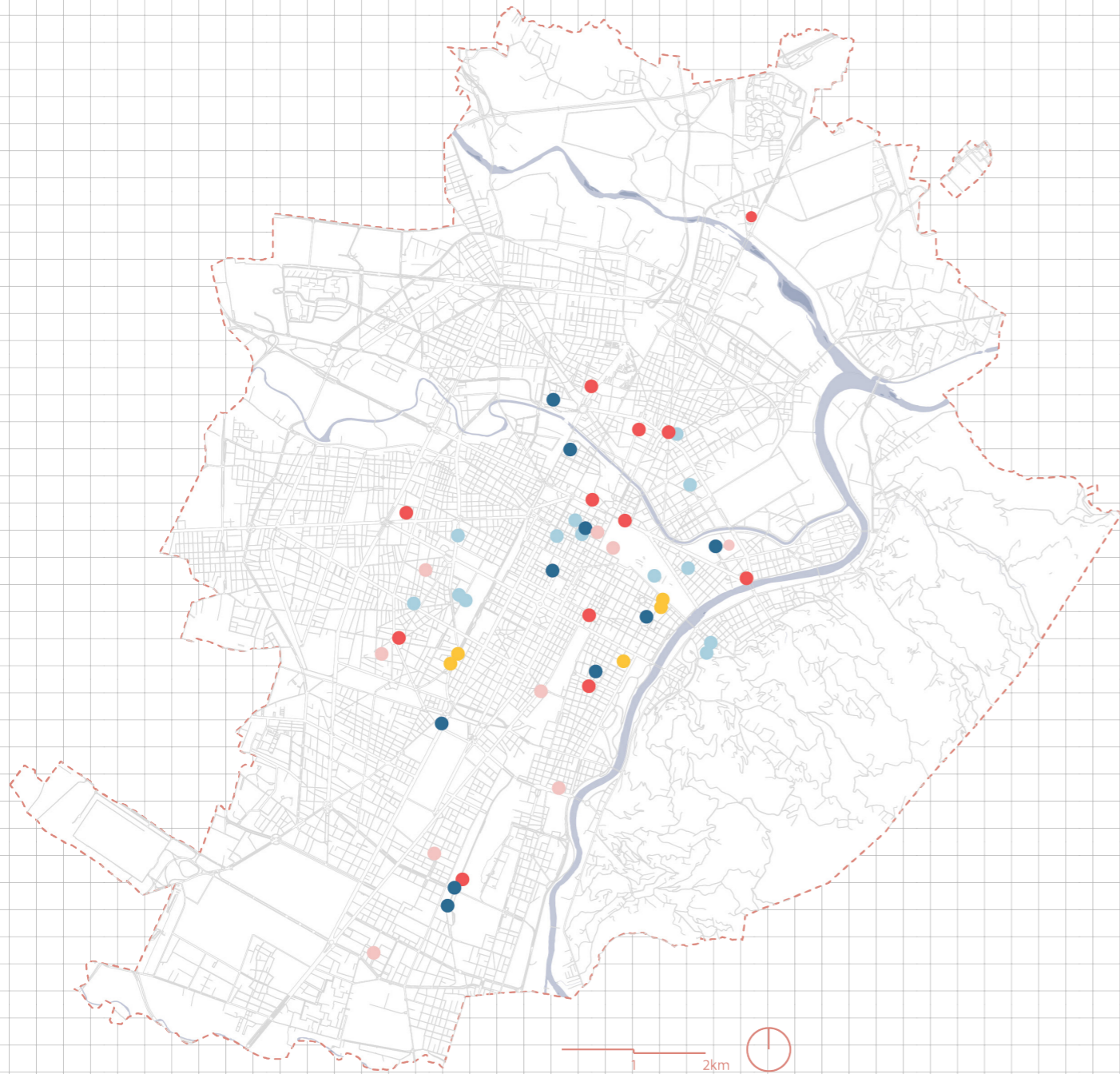
The presence of the CLE has mainly influenced the real estate market of the locations, mostly to its nearby area, the neighborhood of Vanchiglia. On the other hand, the zone of Barriera di Milano, even though its proximity to the center, presents noticeably lower prices in comparison because of the low demand due to its degradation situation. The presence of the campus has not benefited this area. The units more frequented are of mid dimensions 40-70m² with a monthly rate of 300 and 400 euro. The characteristics that according to the interview influence the price the most are, first, price and second the state of conservation of the dwell. Mostly in the rent than with the selling. In the case of rent, an important factor in choosing an apartment is the distance to the CLE. (Benedicenti, F., 2015)

The traditional offer of student accommodation is mainly based on private rent, which no longer fulfills the current necessities of the young student generation.

However, due to the lack of housing supply, new ways of living are put into practice in Turin as part of the development to achieve a university city character and also are explored in other countries that have responded to the same issue with creative architectonic models of student accommodation and social strategies to live in an affordable way.

Different types of student accommodation in Turin:

- Private Rent
- Apartment ownership
- Students residence
- Student Hotel
- Coabitazione giovanili solidali/co-housing
- New hybrid models
- Accommodation with independent seniors



Camplus

- Camplus residence
- Camplus Torino Regio Parco
- Camplus Torino Palestro
- Camplus
- Camplus Apartments Torino - Ufficio Commerciale
- Camplus Torino Corte D'Appello
- Camplus Torino Sabotino
- Camplus Torino Aosta
- Camplus Torino Lanfranchi
- Camplus Torino Bligny
- University Residence Verdi
- University Residence
- Borsellino
- Camplus Torino Bernini

Collegio Einaudi

- Collegio Universitario di Torino R. Einaudi Sezione Crocetta
- Collegio Universitario di Torino Renato Einaudi, sezione San Paolo
- Collegio Universitario di Torino Renato Einaudi Sezione Mole Antonelliana
- Collegio Universitario di Torino Renato Einaudi Sezione Valentino
- Einaudi University College - Section PO

Student Hotel

- CX Turin Belfiore Student & Explorer Place
- CX Turin Regina Student & Explorer Place
- Turin Metro Young - Hostel
- Ostello Alfieri 2
- Ostello Alfieri
- Attic Hostel
- Ostello Torino
- Bamboo Eco Hostel
- Combo, Torino
- Open011
- CStudio
- Sharing Torino

Co-housing

- Condominio Solidale
- CoAbitare srl
- Asai
- Casa Solidale
- Cooperativa Giuliano
- Accomazzi
- CoAbitare
- Filo Continuo
- Comunità dei Tessitori
- Il cortile
- Via Carlo Bossoli, 89
- Comunità Sorgente

Student Residence

- Taurasia Living - Student Accommodation Torino
- SPH Torino - Residence appartamenti per studenti
- Residenza Universitaria Paoli EDISU
- Residenza Universitaria San Liborio 1
- RESIDENZA UNIVERSITARIA CAPPEL VERDE
- Residenza Universitaria EDISU Turati
- Residenza Universitaria EDISU Fondazione Saracco
- Residenza Universitaria EDISU Villa Claretta
- Campus Sanpaolo
- Residenza universitaria Olimpia EDISU

Fig. 8 Student Accommodation Offer , self-elaboration 2023 Natalia Zuleta



Image 10. Student Residence EDISU Verdi
Photograph by the author, 2022

01.4| Accommodation accessibility-off-site students

The distribution of off-site and international students in Turin is a key concern, as highlighted by Cenere & Mangione's report "Torino da Fuori", a research report showing student demographic data from the year 2021 held by the research group from the 'Dipartimento Interateneo di Scienze', Progetto e Politiche del Territorio (DIST) inside the research european project of Horizon 2020 SMARTDEST. The data published in the report was collected from the repository from both the University and the Polytechnic of Turin and submitted to a selection process. The report information was supported with a survey conducted with a group of 1539 participants, mostly from Polytechnic students, focusing on the topic of outside students as a temporal and mobile population, both living in the city or as commuters. Their analysis reveals a student population concentrated near universities, particularly in the central and southern areas, showing a pattern that reflects the dispersed nature of university campuses in Turin mentioned before. As a result, student housing plays a crucial role in enabling accessibility and proximity to academic and social spaces.

Finding suitable accommodation in Turin, however, can be a significant challenge for many students. The search process often exceeds a month, and available options frequently fall short of the expectations of young people relocating from other regions or countries.

To gain first-hand insights into student experiences with finding accommodation, this study conducted 71 interviews in a survey format with students from both Politecnico di Torino and Università degli Studi di Torino following the example of "Torino da Fuori" research report.

While the number of participants may not be statistically representative in comparison with the entire student population, it offers valuable individual perspectives that can be used as guidance for the design of the future of the student accommodation.

The survey was divided into three different sections where the first part is focused on demographic and punctual data such as the age and the country of the participants, then the second part is focused on the experiences that each individual had in the process of looking for accommodation and their living conditions once they found it. The last part focuses on the preferences and needs from the participants in terms of accommodation and living.

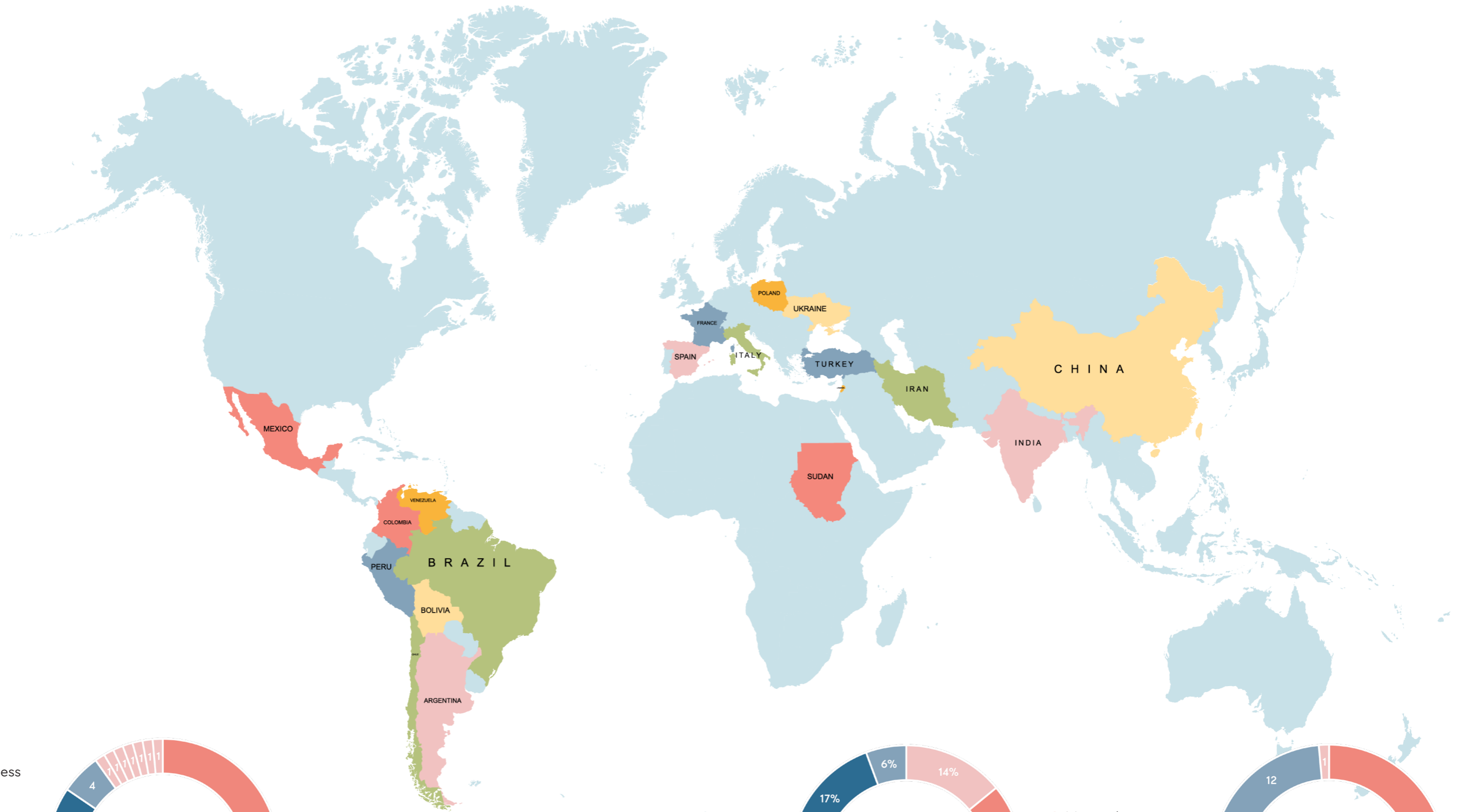
By knowing the needs, preferences, and difficulties encountered by students, especially international students who often face major challenges in finding suitable housing, we can gain a deeper understanding of the student housing market and its impact on accessibility.

The survey was distributed to young people between 18 to 30 years old from 19 different countries who study or studied in Turin. All respondents except 6 were from counties or regions outside Turin, evidencing the need for a place to live in the city or make daily use of the mobility system to arrive home. This last case applies for the commuter population (5 of the participants), who live in the provinces near Turin and enter and exit the city on a daily basis.



Image 12. Adaptive Reuse Workshop Urban Lab, Torino
Photograph by the author, 2022

- 24 Colombia
- 23 Italy
- 5 Turkey
- 3 Argentina
- 2 Poland
- 1 Brazil
- 1 Bolivia
- 1 Chile
- 1 China
- 1 France
- 1 India
- 1 Iran
- 1 Lebanon
- 1 Mexico
- 1 Perú
- 1 Spain
- 1 Sudan
- 1 Ukraine
- 1 Venezuela



- Architecture
- Engineering
- Economics and Business
- Management
- Law
- Political science
- Regional and Urban Studies
- Psychology
- Design
- History
- Medicine

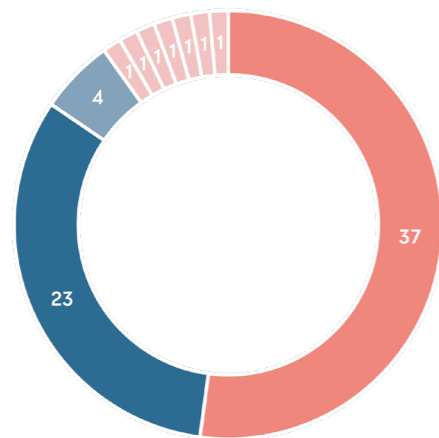
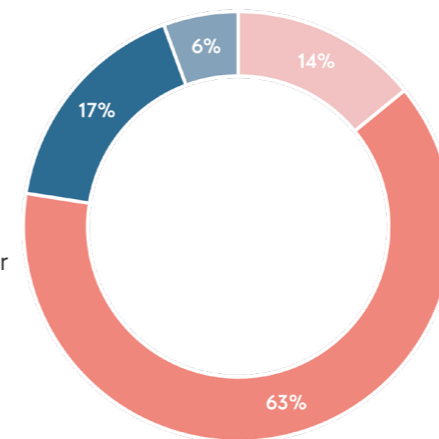


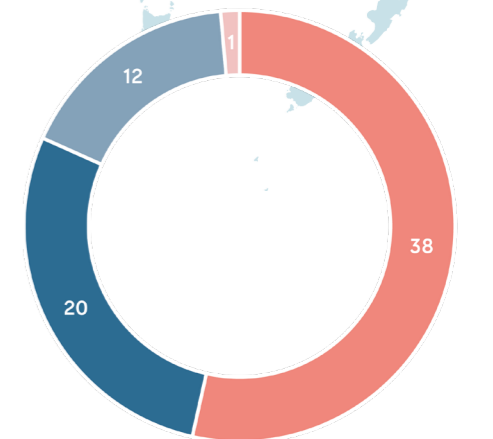
Fig xx. Where are you from? (2024) Modified by the autor .Original graphics design by Freepik.com

Graph xx. What is your major field of study?

- 18-22
- 23-26
- 27-30
- 30 or older



- Master degree
- Bachelor degree
- Studies completed
- University Professional degree



Graph xx. How old are you?

Graph xx. For which degree, diploma, or certificate are you currently studying?

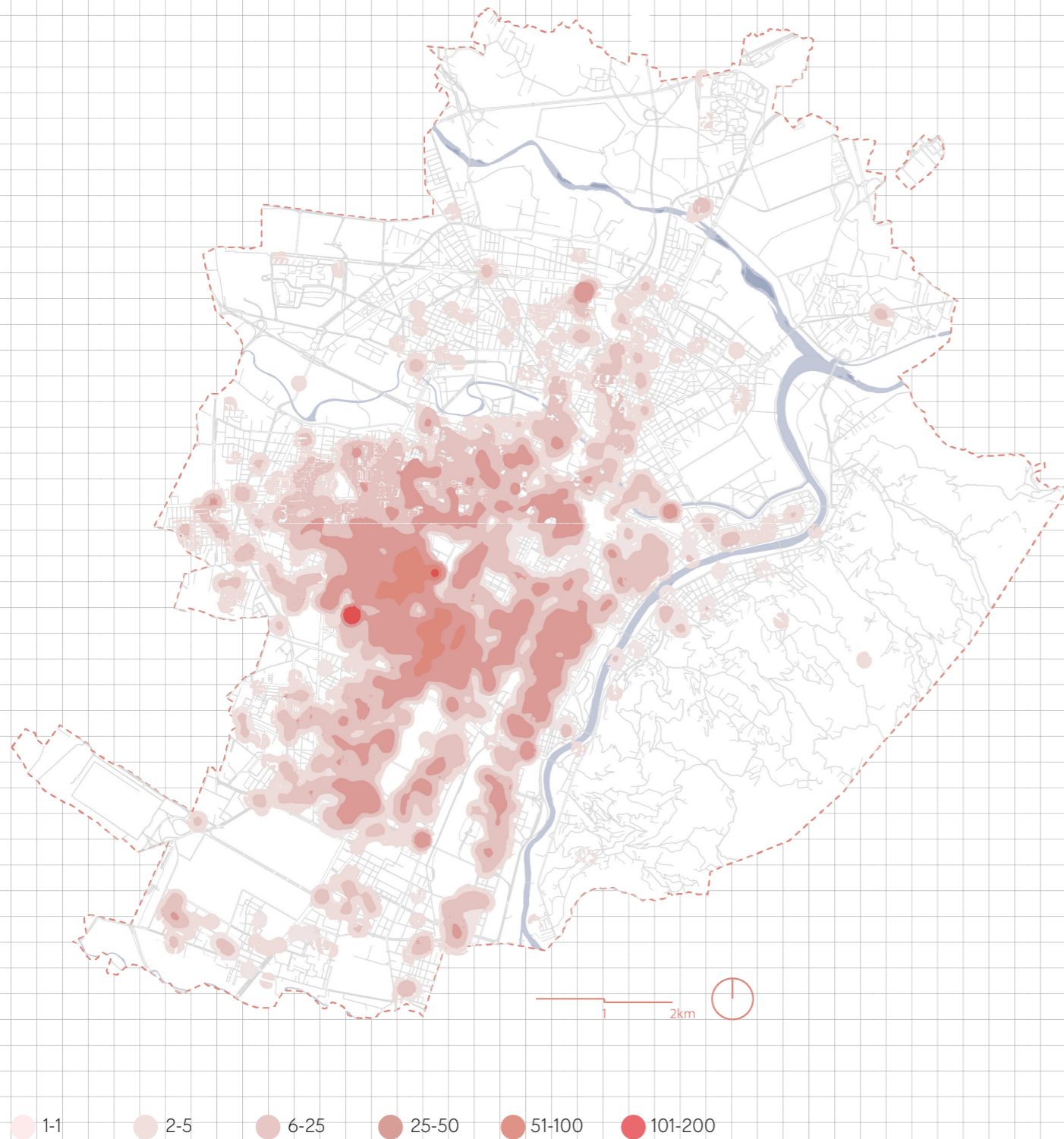
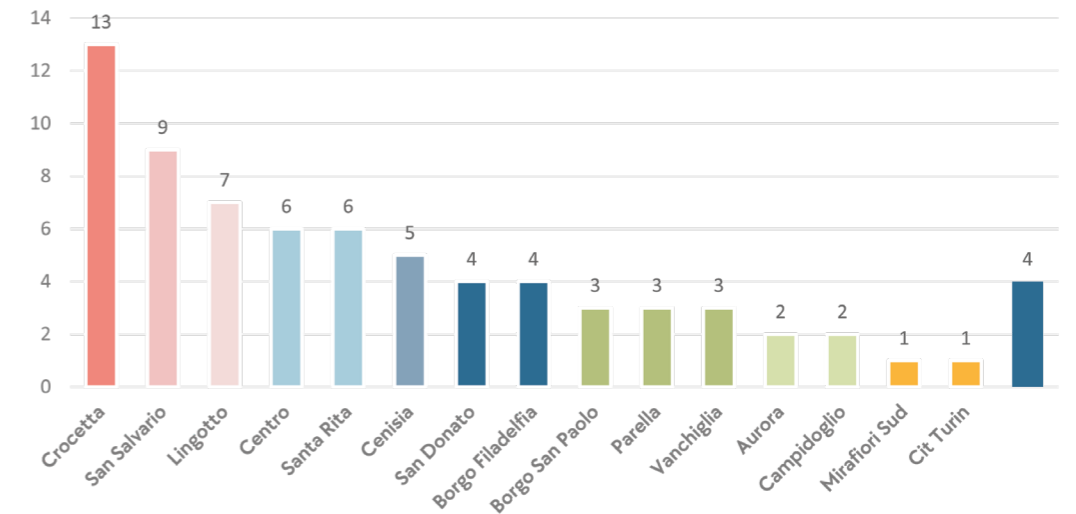


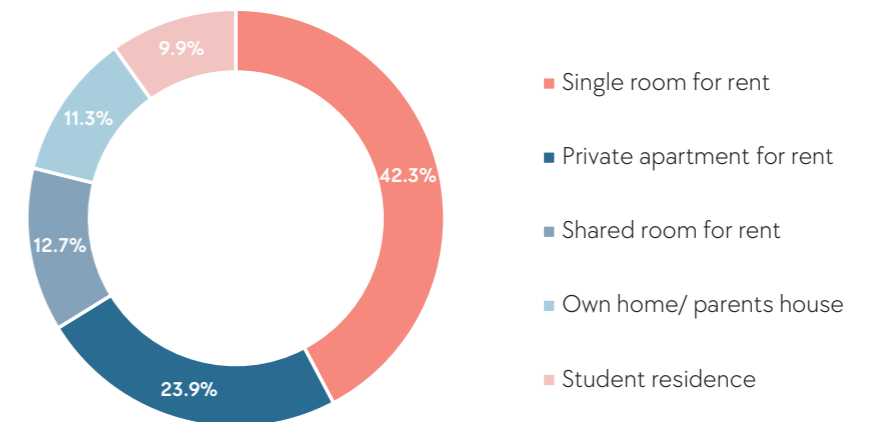
Fig. 10 Number of Polytechnic students in the range of 200m, between 2020-2021. (Data from: Cenere, Mangione, Santangelo, Servillo 2022)

More than half of the respondents have lived in Turin for more than 2 years and they are mostly distributed in the Crocetta, San Salvario and Lingotto neighborhoods. This data remains coherent with the research from "Torino da fuori" where the map (fig...) represents the distribution of the students of the Polytechnic of Turin that concentrates mainly in the central areas of the city and the south, zones where the three main campuses of the institutions are located.



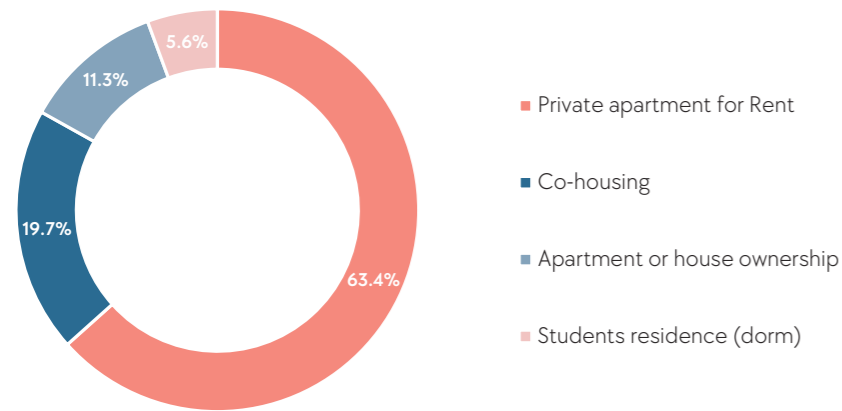
Graph xx. Which neighborhood do you live in?

The most common type of accommodation is the single room for rent with a percentage of 42.3%, followed by renting a private apartment (23.9%). The results for those who shared a room for rent and the ones who own a home or live with their parents are similar. The percentage of respondents living in a student residence is the lowest with 9.8%



Graph xx. Which accommodation type do you live in?

In terms of preference, the typology that most of the participants would choose to have is by far the private apartment for rent with 63.4% of the answers. The main reasons behind this choice are the privacy, comfort and freedom of management and self organization that this option allows.



Graph xx. In the moment of looking for accommodation which is your preferred option?

"I'd like to stay in a quiet place and I'd like to have my privacy."

"Preferisco uno spazio privato da poter gestire e vivere come voglio. (I prefer a private space that I can manage and live as I want)"

"According to what can be found in Torino, it is the most comfortable option without sharing the space with a lot of people as is the case of residences, however it's a more expensive option and it's not easy to find it."

"it's like "your" apartment and there are no rules to follow such as inviting someone to stay"

In some cases a private apartment for rent is also preferred thanks to the easier accessibility to legal documentation.

"It is easier in terms of the required documentation for the processes of permesso di soggiorno and it feels more like an actual home rather than a temporary accommodation"

Some respondents highlight the advantages of living in a private apartment contrasting with the constraints of the students residence type of accommodation:

"It's less expensive compared to residence and also the dorms in the residences are smaller."

"More freedom than a residence."

Nevertheless, some others prefer sharing the living space as co-housing since it is a most cost convenient option, it has a broader availability in the market and it's seen as an opportunity to meet people and learn about sharing spaces with others.

"It's cheaper and easy to find"

"Cheap, meet people, create bonds, learn to cohabit, share responsibility"

"Perchè semplicemente a 22 anni mi piace l'idea di condividere la casa con più persone purché ci sia un ambiente di tranquillità e un'aria familiare"

"The pleasure of sharing experiences with roommates and learning from them"

Others prefer the student residence for several reasons such as security and socialization.

"it's more safe in my opinion and more fun as well, also you don't get as lonely when you can share and meet people"

"My accommodation could be provided by my university"

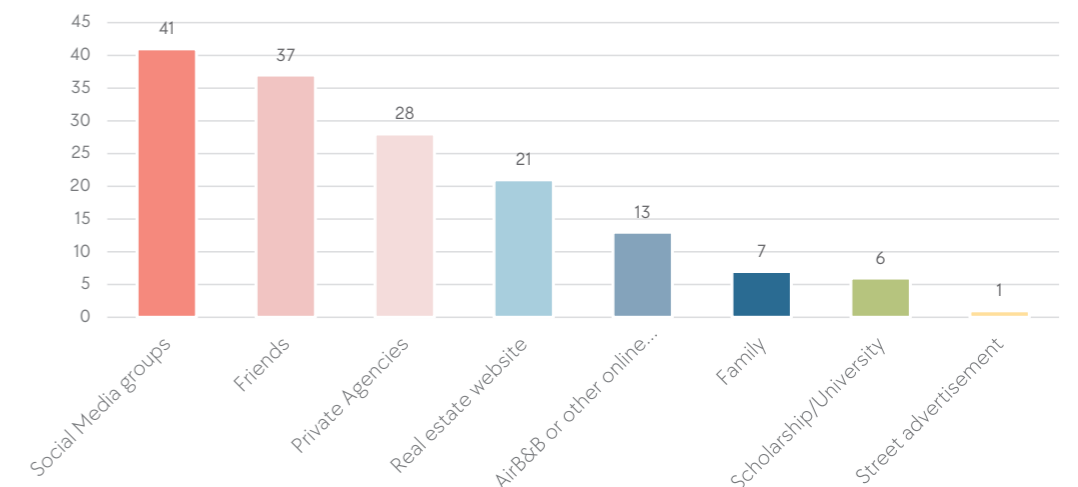
Lastly the ones preferring home ownership look forward to the future looking for an option that would secure an investment but due to the high costs this modality is not a contemplated option for most.

"Because of long term investment"

"I'd like buying a house to live and then for investment if I would change house in the future"

About the methods to find accommodation in Turin the most used according to the survey are firstly the social media groups and secondly by friends. The third most used method to find a place is through a private agency, which sometimes is not a favorable solution since some of them are scams or do not guarantee the results of finding an appropriate place even though they usually charge a significant amount for the service.

"In my personal experience I knew someone that helped me find a house and it was relatively easy but I had to settle for this option regardless of my preferences because finding a house on my own would have been extremely difficult"

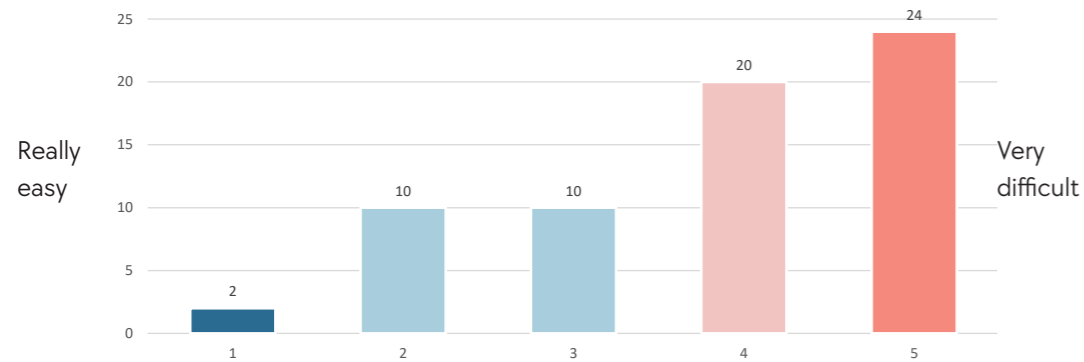


Graph xx. Which methods did you use to find accommodation?

This results evidence the lack of an efficient and secure system for students to find accommodation in the city, provided by the institutions since the majority rely upon searching in unofficial or non trustworthy sources.

The following section of the survey asks students about their experience of finding accommodation and the level of difficulty that this task represents through a scale from 1 being "really easy" and 5 being "very difficult"

The majority of participants ranked the experience as "very difficult" having 36,4% respondents choosing the 5th level of difficulty and 30.3% choosing the 4th. Common reasons that prompt this problem are the lack of housing offer and its complicated access, the unbalanced price quality ratio and the excessive requirements that some landlords demand.



Graph xx. Was it easy to find accommodation in Turin?

"It was so difficult that I ended up in the student dorm. Most difficult part was to have a contract with the owners when I did not have an European residence. Also they asked for a lot of money in advance, plus, many times, the money for the real estate agencies."

"Low quantity of available apartments for students, high demand, and demanding owners that need a lot of warranties."

"Everything was full, even I had to pay for an agency that never helped me and I lost my money"

"The period after the pandemic the demand was huge, additionally some of the flats have some requirements that excluded by different reasons for example students, foreigners and age"

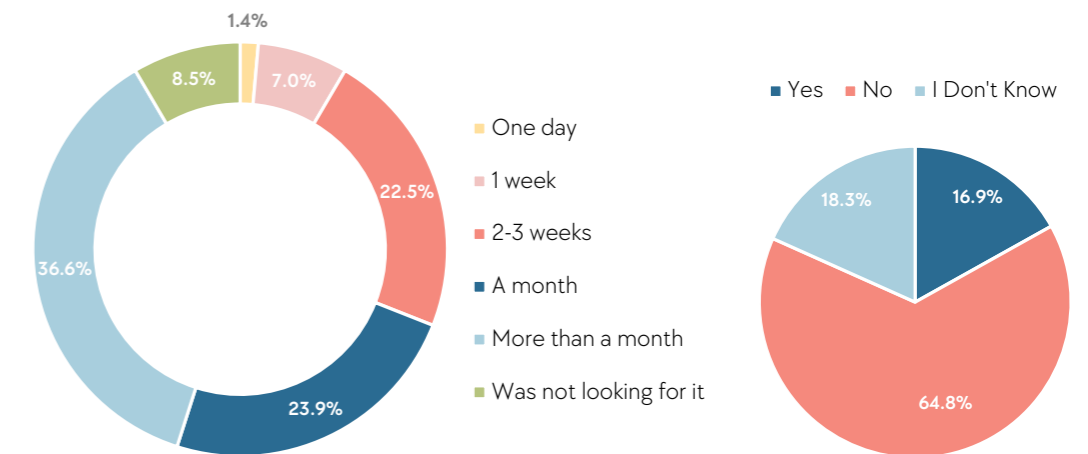
"The available places require a person as a guarantee who has to be from Italy, this makes an obstacle for people who are not from here. It is hard to find nice apartments or in better areas, and as there are many students searching for a place the options are just a few. Moreover, private agencies are very expensive"

Adding to all these obstacles, the situations worsen for those that are not Italian speakers since and the disponibility of information on other languages is limited.

The duration of the process of finding accommodation can vary depending on the period of the year since the beginning of the academic year (september/October) is the peak of housing demand. However, the data shows that most

people spend more than a month finding a place to live in the city and this is both because of the low disponibility of housing offer, but also because of the lack of pertinent information available to find an adequate living space according to the majority of respondents.

The students often struggle not only finding a home, but for some of them, this becomes the first experience dealing with contracts legal paperwork. In the case of the foreign students, this process is particularly important since it is directly collegated to other necessary documents such as the residence permit "permesso di soggiorno " and the access to national health service. Therefore adequate information about these topics becomes fundamental.



Graph xx. How long did it took for you to find accommodation?

Graph xx. Do you think there is enough information for students to find accommodation in Turin?

"There is almost no official information on housing opportunities and there are many scam and fraud agencies."

"In my specific case I had to search a lot to find information about scholarships and the possibility of having a room in a dorm."

"There are so many types of contracts, arrangements, etc, and there isn't a well-structured ad clear source of information (for example a housing service from the university)."

"There is not a reliable organization or structure to guide students and provide acceptable information to also avoid tricks"

Several respondents claim that there are in fact many sources of information for finding accommodation:

"By Facebook, friends and agency is enough information"

"Yes there are options in many social media groups and websites"

However, only for some, they were actually effective, while for a big majority, the real estate websites or the online publication were not reliable and without enough english information:

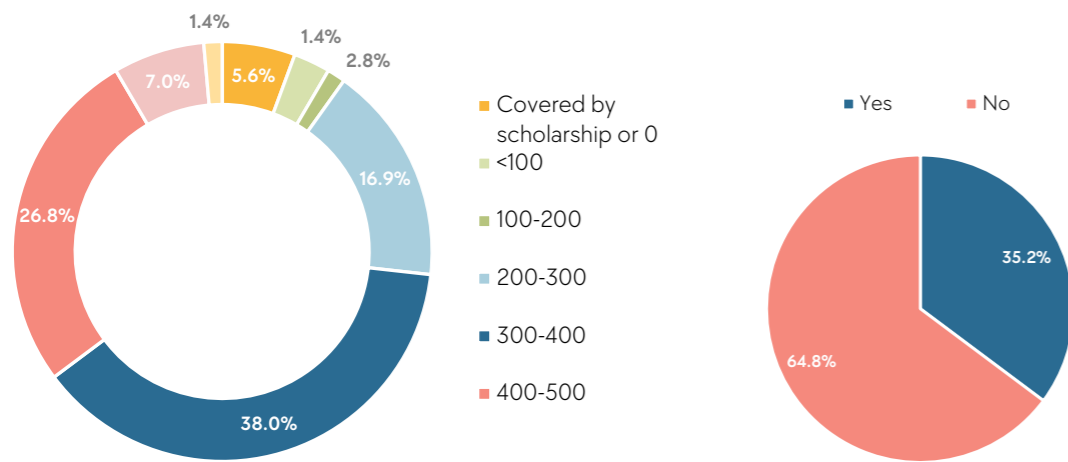
"Even though there are lots of ways to find a place, most of them are not useful at all and do not match the requirements."

In many cases this process is done almost autonomously and without any help of the academic institutions. Some argue that the universities don't offer direct help for finding accommodation but instead they limit themselves to just sharing the popular real estate websites used for this matter.

"The University didn't show any offers, and since there were a lot of people looking for an apartment nobody was willing to tell you anything."

"Even though the university website has certain sites listed, they aren't completely reliable. Too complicated a system to achieve a scholarship."

The participants were asked about the price they pay for accommodation and for more than half of the participants (64,8%) the price adjusted to their budget. According to the answers, the majority (38%) pays between 300 to 400 euros for monthly accommodation followed by the 26,8% that pays between 400 to 500 euros.



Graph xx. How much do you pay monthly for your rent in apartment, residence or accommodation?

Graph xx. Does the place you live in adjust to your budget?

Once they found a place to live, the majority of the respondents did not change their new homes, because they were happy with the place or because looking for a new one that fits their expectations was too difficult.

However, 35.2% of the respondents claim they needed a change of accommodation due to several reasons, but mostly because of the bad conditions of the original place where they were staying.

"First I arrived to and Airbnb and due to difficulties to find a place I had to live in a friend's apartment."

"[...] the place that I lived in before was awful. The owner of the 'flat' (a bed in a kitchen and a bed in a corridor with a bathroom in a basement) was getting all the time into the place without asking."

"[...] the first one was too far away and I didn't like the room, the second one my agency said I had to leave because the owners daughter will come to study (it was a lie)"

"The first apartment was expensive for the type of apartment, the second one was great but we were graduating and it was only for students so we had to change"

The participants were asked if they faced difficulties or discrimination for their nationality, ethnicity or gender. The answers were equally divided. For those who answer yes, the difficulties and discrimination came mostly due to their origins and nationality and their economic status as being students.

"The owners have some preconceptions about people out of the EU."

"Many places directly assume that if you are a student you don't have enough money for certain apartments and many owners just don't rent to students without even looking at their case. [...]"

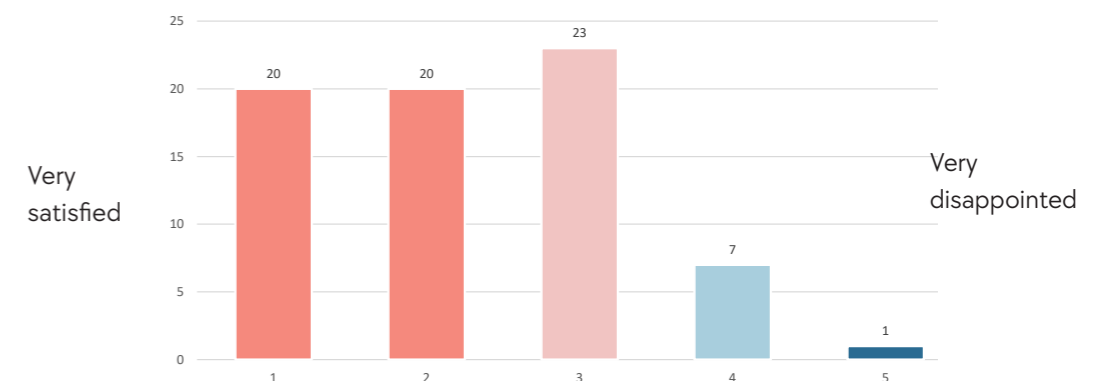
"Yes, a lot of times they asked for my nationality and after that hang on the phone just because they don't rent to foreigners."

"[...] if you are a foreigner is not easy to find a place, the tenants could have trust issues and is harder to have a contract without a person that sign as a guarantee."

"[...] people judge and define the economical capacity of a person because of their color or race, also the gender, as male I had less opportunities of finding a room."

"My Colombian friend and I (Ukrainian) were rejected by one landlord because of "unstable situations in our countries"."

Participants were asked to qualify their level of satisfaction with the place they are living in though a scale from 1 to 5 being 1 "very satisfied" and 5 "very disappointed". The majority of the respondents (32.4%) remained in a neutral position qualifying their satisfaction on level 3. However, in general terms, most people are satisfied with their accommodation since the result of the sum of both positive percentages (levels 1 and 2) represents more than half of the participants (56,4%).



Graph xx. How satisfied are you of the place you live in?

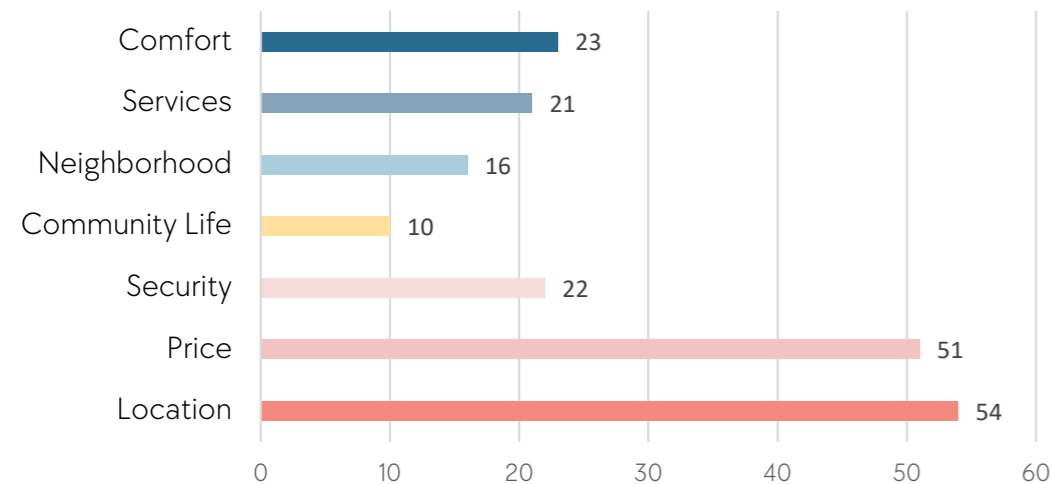
In the following section, the main focus was to investigate the reasoning behind the student choices, guided by their interests and needs, with the aim of building a concept of what an ideal (although realistic) updated student accommodation should be like.

They were asked to rate 7 different aspects when looking for accommodation on a scale of priority being 1 the main aspect and 7 the less relevant one. According to the results, the order of the aspects from the most important to the less relevant is the following:

- 1: Price
- 2: Location
- 3. Comfort
- 4. Security
- 5: Services
- 6. Neighborhood
- 7. Community Life

As students usually have a limited budget, it is logical that the affordability of their accommodation would be the main priority. The location is the second most important factor, as evidenced on the map of the student distribution around the city (fig...), which shows the proximity of students' living place to the university campuses. Comfort is positioned as the third main aspect. Since the concept of comfort encompasses a broad pallet of definitions, the interviews are taken as a guideline to define what students understand for this concept. The comfort in this case could be related to the size, functionality and calm that spaces and equipped services could offer to the users. This is the factor that mostly fails to fulfill the students requirements as seen in the next figures.

The following two questions were intended to highlight the positive and negative aspects that the participants find in their current homes to understand the current situation of an approximate view of the housing in Turin.

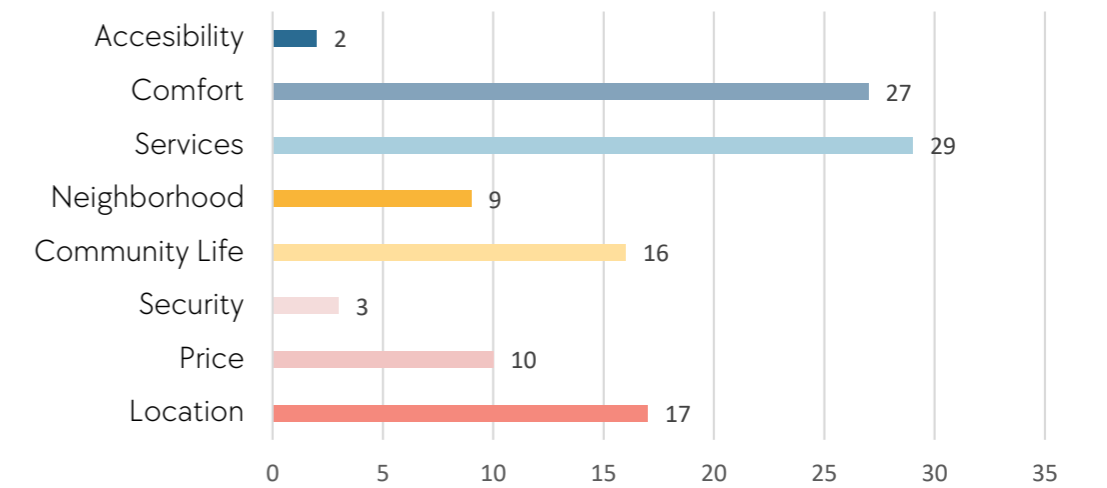


Graph xx. What are the characteristics you value the most about the place you live in?

In the first question the participants were asked about the characteristics that they most value about the place they currently live in.

The majority answered that the location was what they valued the most and secondly the praise, meaning that in general people are satisfied with the location of their homes and the cost of living on it. As shown in the report of Torino da Fuori, Turin has a satisfactory opinion of the living cost for students in comparison to other cities in Italy or in Europe, where the average cost of monthly rent and other services is significantly higher.

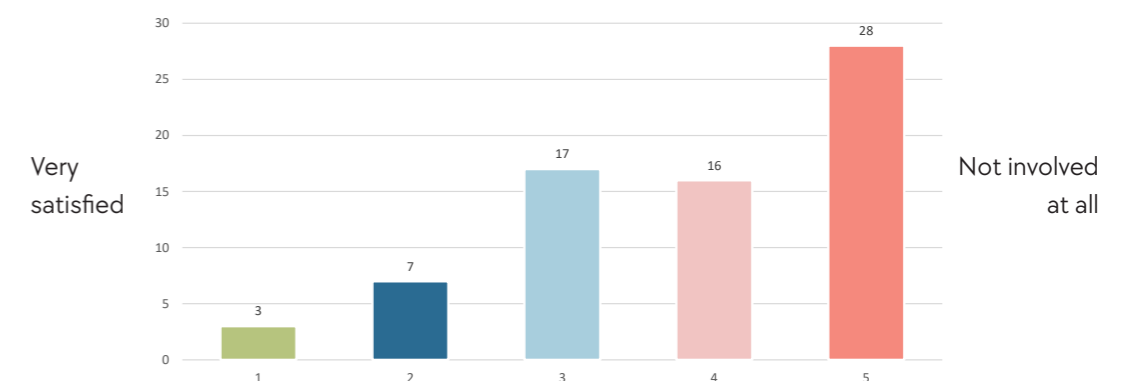
For the next questions the participants were asked about what could be improved about the place they live in and as mentioned before, the principal aspect that was highlighted was the comfort followed by the services.



Graph xx. What could be improved about the place you live in?

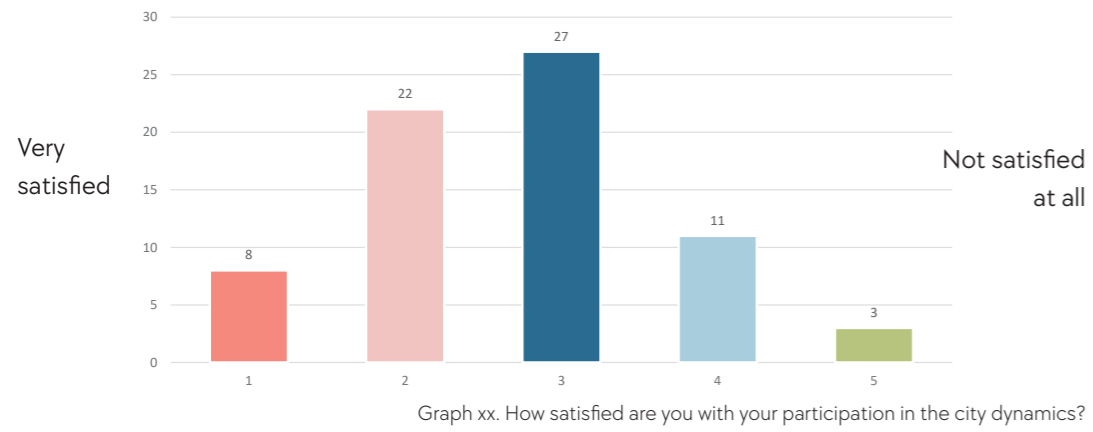
The last three questions focus more on the life outside the living place since the accommodation could also condition the social environment and the activities in which students participate.

The following question proposes the participants to qualify how involved they feel with the local community activities in their neighborhood. The majority of respondents qualify their experience as not involved at all.



Graph xx. How involved do you feel with the local life or community's activities in your neighborhood?

For the next question, the participants were asked about their level of satisfaction with their participation in the city dynamics and the majority were neutral about this aspect but also having mostly a positive perception.



"I do not feel too much involve but also not excluded, sometimes I don't participate of the city dynamics as a personal choice."

"I'm always curious about what's happening."

"I enjoy on going to some activities on a park next to my place."

"I really like this city and feel part of it."

Lastly, the participants were asked about their satisfaction with their level of socialization and most of them are satisfied with it.

"Could be better but is not that bad"

"My flatmates make me feel like living with my family."

"I try to go out and understand new social dynamics from other cultures."

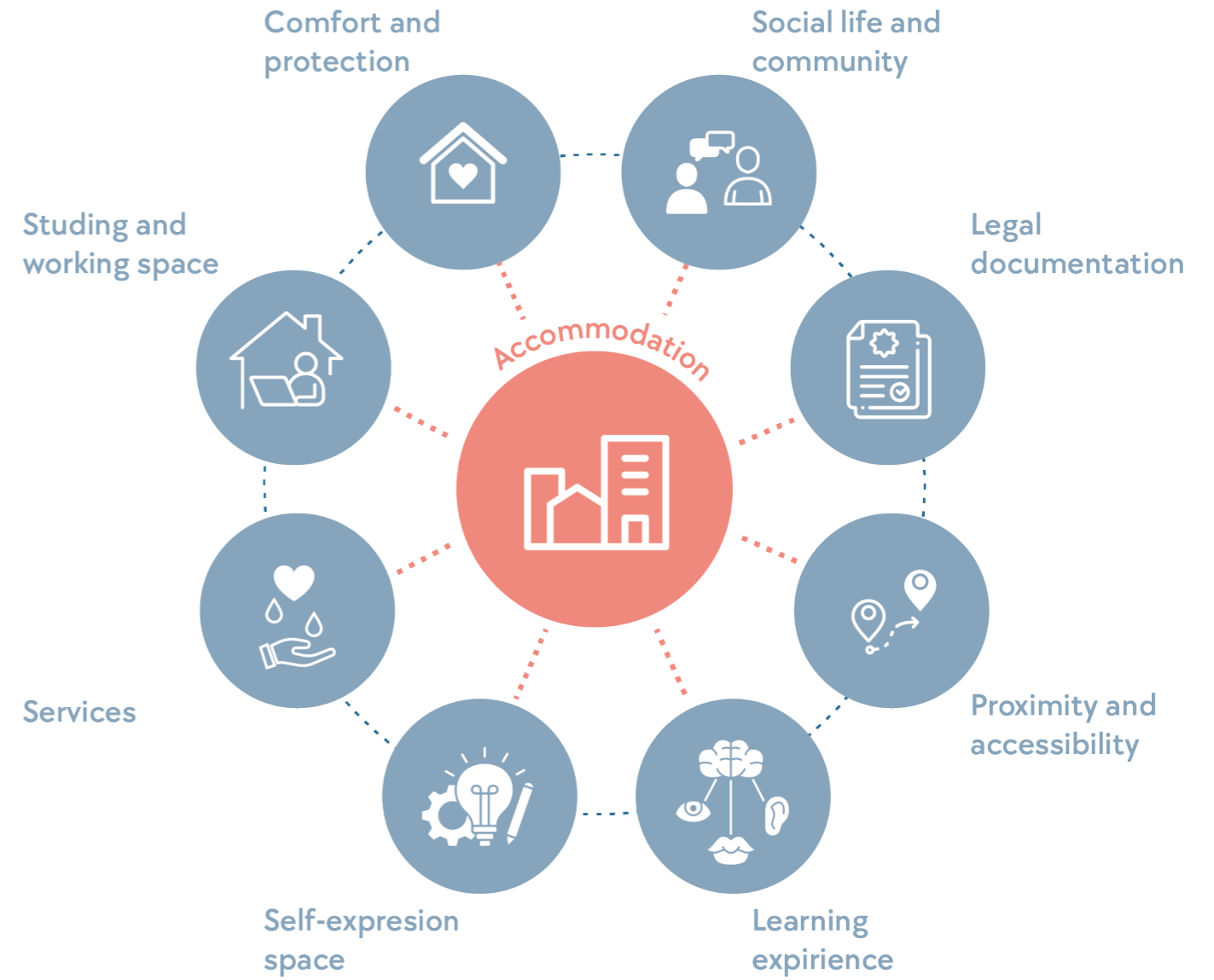
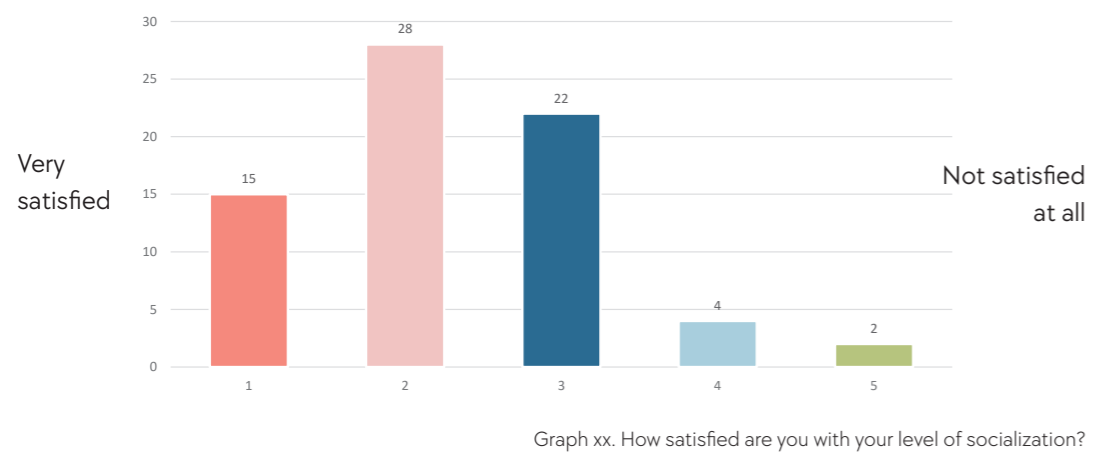


Fig. xx. Diversity of topics related to accommodation derived from the survey

01.5| Identification of the problem

This chapter has explored the challenges faced by students seeking accommodation in Turin. Through the contextualization of Turin's transitioning character from its historic and significant industry to university city, which led to quick changes in the city's dynamics, we can understand its rushed development on student housing and its continuous efforts to improve the living situation for outside students. Thanks to the data gathered from university repositories and city statistics, we could understand the student population behavior in terms of accommodation choice and distribution around the city seeking proximity to university hubs. Through the survey and the participation of young people studying in the city, we gained valuable insights into their experiences, which led us to conclude that the housing availability continues to fail fulfilling the current necessities of students moving into the city. The real estate market is not regulated nor organized, making it difficult for newcomers to easily find an adequate place that matches both their expectations and their budget in a short period of time. The offer of student residences at the moment is also in short supply and according to several opinions, it exceeds or resembles the cost of private apartments. Most of the residences have agreements with scholarship programs from organization such as EDISU Piemonte* in order to support meritory students with limited economic conditions to fulfill their studies and their living experience in the city, making accommodation accessible to many non-resident students. Nevertheless, this possibility just covers a portion of the student population and for those who don't benefit from the scholarship, the full price of the residence is rather inconvenient.

On the other hand, the absence of the institution's assistance in this topic becomes a struggle in the first month of residency in the city, especially for international students who often encounter more difficulties with the accommodation research and acquisition due to discrimination and a language barrier.

The key findings that highlight a significant mismatch between student needs and the current housing market can be summarized main challenges which also led to thinking of possible consequences affecting the students wellbeing.

Main Challenges:

- **Limited Affordability:** Students prioritize affordability, but the real estate market offers few options within their budget. Student residences are often expensive and do not necessarily offer better living conditions compared to private apartments.
- **Difficulty Finding Accommodation:** Finding accommodation is a major hurdle for students, with a lack of transparency in the market and unreliable information sources. Many rely on unofficial methods, leading to difficulties and potential scams.
- **Discrimination:** Many students experience discrimination based on nationality, ethnicity, or student status. Landlords may be hesitant to rent to them or impose unreasonable requirements.
- **Limited Institutional Support:** Universities offer little to no direct assistance in finding accommodation, leaving students to navigate the challenges on their own.
- **Unsatisfactory living conditions:** Many students are dissatisfied with the comfort and amenities offered in their current accommodations.
- **Location and Socialization:** While location plays a significant role, some students struggle to balance affordability with proximity to university and amenities. Socialization varies, with some feeling disconnected from the local community.

Consequences:

- **Stress and Anxiety:** The difficulty and uncertainty of finding accommodation can significantly impact students' well-being during their first months in Turin.
- **Social Isolation:** Limited access to suitable housing options can hinder students' ability to integrate into the local community. This is especially true for international students who may struggle with language barriers.
- **Compromised Academic Performance:** The stress and anxiety associated with housing insecurity can negatively affect students' academic focus and performance.

These findings highlight the urgent need for a more student-centered approach to housing in Turin. The next chapter will examine the potential of adaptive reuse as a strategy to address this challenge.

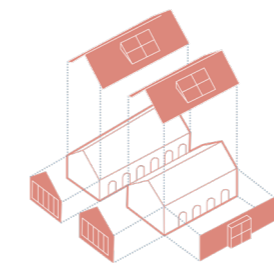
*EDISU Piemonte was established by Regional Law no. 16 of March 18, 1992 (amended by Regional Law no. 10 of September 29, 2014) with the aim of promoting access to and the continuation of university studies in favour of capable and deserving students, even if without economic means, within the framework of the competences attributed by the Italian legislator to the State, Regions and Universities in the field of the right to university study (Legislative Decree no. 68/2012). source: www.edisu.piemonte.it

This chapter explores three different approaches which this research will follow in order to respond to the problem previously addressed. The first approach analyzes the concept of adaptive reuse as the methodology to achieve sustainability and reduce construction cost. The second approach focuses on the economic and financial feasibility introducing the Public-private partnership as the methodology to organize the development and management of the project and allow affordability for the users. Lastly, the final approach will be analyzing the contemporary structures that are in charge of developing student housing projects exploring the market behavior and the social integration and the main necessities of the student population, the Purpose Built Student Accommodation (PBSA).

For all these approaches, several case studies were chosen as examples of strategies implemented for student housing. They all correspond to different criteria regarding the main topics of analysis in this report.

Most of these case studies are located in Turin as a direct reference to the context of intervention, but also some other projects from the European context are chosen to explore innovative solutions put into practice in university cities around the globe.

These projects could have one or more focuses related to the three following topics:



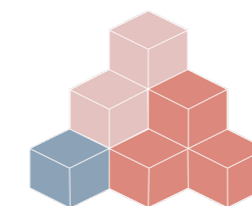
Adaptive reuse:

This focus is explored in the case studies as guidance to develop a design that adapts to the original structure reconnecting with the local history and enhancing the economic and social potential.



Economic approach:

Some of the chosen case studies approach the economic model as the main reference to understand the methodologies applied to achieve the feasibility of a low-cost student housing project.



Hybrid function:

These typologies consist of mixing uses with different purposes, either financial, to guarantee access to profit from an activity that can support another non-profitable one included in the same project, or to support the main use with complementary functions.

02 METHODOLOGY

02.1| Sustainability approach: Adaptive Reuse

Adaptive reuse is a design practice that consists of the revitalization of existing buildings that are no longer suitable for their purpose, so new activities, and restructuring must be defined to maximize their value, by adapting new uses, enhancing their context, and reducing their environmental impact.

It is applied to underused, dismissed, or abandoned structures that are submitted under an evaluation of their current conditions to minimize new construction activities. This practice functions as a strategy to reduce cost and soil consumption, as also generate a positive impact on the territory.

An adaptive reuse project can have multiple benefits from environmental, social, and economic points of view.

From an environmental point of view, reusing an existing building reduces the embodied energy of construction, reduces the number of demolition, therefore, waste, and reduces urban sprawl which in this case, is crucial to provide students with proximity to the central areas and university districts and allow integration with the urban context.

The social benefits include the revitalization of abandoned or decadent neighborhoods and the recognition of the historical value of the building and the original character of the place. This practice generates a revalorization of existing buildings both in a cultural and economic perspective.

Additional economic benefits are highlighted by the reduction of costs in different factors such as infrastructure and new materials but also benefit the management “[...] for a developer who owns an old building, changing the uses and destination in an adaptive way could mean immediate liquidity through a cost reduction with respect to the new construction, and on the other hand, for the municipality, means obtaining more property taxes on the land.” (Ingaramo, R. et al. 2022)

Motivated by sustainability, this approach not only conserves potential energy consumption associated with construction by reusing an existing building, but it also enables the preservation of the original land-use and the introduction of additional uses that align with the evolving needs of the city's dynamic environment.

In the '90, the topic of urban requalification started defusing in the European and national background involving a modernization of urban planning tools suitable for redesign parts of the city, through the recovery and reuse of the pre-existent.

In Turin's context, following the closure of numerous industrial facilities and sites, the city faced a significant challenge of abandoned and underutilized spaces.

The abandoned areas located in the center and periphery of Turin such as Barriera di Milano, San Salvario e Porta Palazzo started becoming conflict zones that required the provision of more security measures and a controlled urban development.



Image 12. Adaptive Reuse Workshop Urban Lab, Torino
Photograph by the author, 2022

Nevertheless, what started as a problem was soon to become an opening to a significant change of paradigm. “The industry dismantling process was one of the most important urban transformations [...]” (Barraco, 2021)

The city plan intended to apply the strategies of adaptive reuse not to requalify each independent building but rather as an approach focusing on a complete vision of redesigning an entire city area. (Barraco, 2021). These projects would become drivers of urban regeneration and instead of creating a disadvantage for the city, the urban voids would represent an opportunity based on their potential use.

The concept of urban void has been understood as a space without identity and excluded from the urban territory, however, in this case, urban voids should not be seen as areas that can be utilized following a tabula rasa approach. Instead the recognition of Turin's history is what grants value to the new coming projects giving a sense of identity and testimony of its past.

Nowadays, Turin has a long history of successfully adopting adaptive reuse practices to revitalize the city and promoting sustainable development. One notable example is the restoration of the Lingotto building after the closing of the famous Fiat factory, which has been transformed by the architect Renzo Piano between 1999 and 2003, into a multi-functional complex housing a shopping mall, hotel, art gallery, companies headquarters, congress center and even a campus of the Polytechnic of Turin. (Museotorino)

A more recent example could be the “Officine Grandi Riparazioni” (OGR), a former repair workshops for rail vehicles that in 2019 opened its doors to the public as a cultural center and an innovation research hub for business and startups acceleration. (Ogrtorino.it)

For this research, the case studies that are being analyzed respond to the topic of student accommodation and present particular characteristics that are valuable to take into consideration. The first one is located in Turin and has an innovative organizational approach while the second example, located in Paris, demonstrates the capacity of transformation of an entire area enhancing the original features of a former industrial site.



Image 11. Lingotto Renovation
Photograph by the author, 2024

Luoghi Comuni Porta Palazzo

The project consists in the renovation of a degraded building that upgrades the entire urban context providing new services and public spaces that reactivate the area which meant a benefit not only for the tenants but for the whole community.

The project spaces are flexible and modular and adopt innovative technologies with sustainable solutions that involve social and economic criteria.

It manages a mix of uses having commercial spaces on the ground floor and apartments on the upper ones.


“Elements that oriented technological choices were: the reduction of energy consumption (low heat dissipation of the housing, use of renewable energy sources); the introduction of equipment able of producing energy (thermal energy through solar panels, electrical energy through photovoltaic); the choice of materials produced with the minimum expenditure of energy (recycled and coming from close areas) and that would allow the disposal in an easy and sustainable way.”

The rent of the apartments is 40% lower compared to the market value

 **Location:** via Clemente Priocca 3, Torino

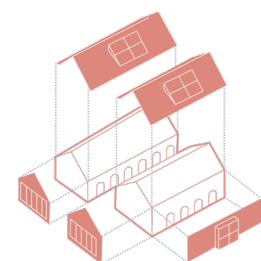
 **Year:** 2013

 **Gross floor area:** 1.750 m²

 **Cost:** 3.325.485,12 €

 **Architects:** Pier Matteo Fagnoni per Fagnoni & Associati, Gpa Ingegneria srl, Galliano Habitat

Adaptive Reuse



Hybrid Model

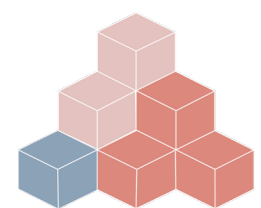



Fig. 11 Project Location, self-elaboration 2023 Natalia Zuleta




Image 14. Porta Palazzo Luoghi Comuni, 2017

Halle Pajol

This project uses adaptive reuse as a strategy to add value to an abandoned building by the retrofitting of the building structure and also the surrounding public spaces. The project allowed a transformation of the neighborhood through its cultural and social proposal. Through the re-functionalization and recovery of a steel building which was originally a railway depot for storage belonging to the 19th-century industrial heritage, the architect Françoise Hélène Jourda (one of the first to deal with bio-architecture and ecological design) was able to completely transform and renovate the neighborhood, enhancing the ecological aspects and the relationship between architecture and citizens, with the aim of improving the quality of life and promoting awareness of eco-sustainable architecture.

 **Location:** Paris, France

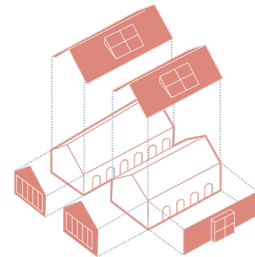
 **Year:** 2008-2014

 **Gross floor area:** 11.800 m²

 **Cost:-**

 **Architects:** JAP Jourda Architectes Paris

Adaptive Reuse



Hybrid Model

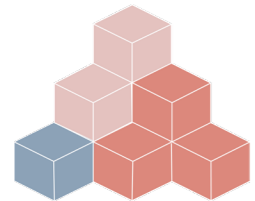


Fig. 12 Project Location, self-elaboration 2023 Natalia Zuleta

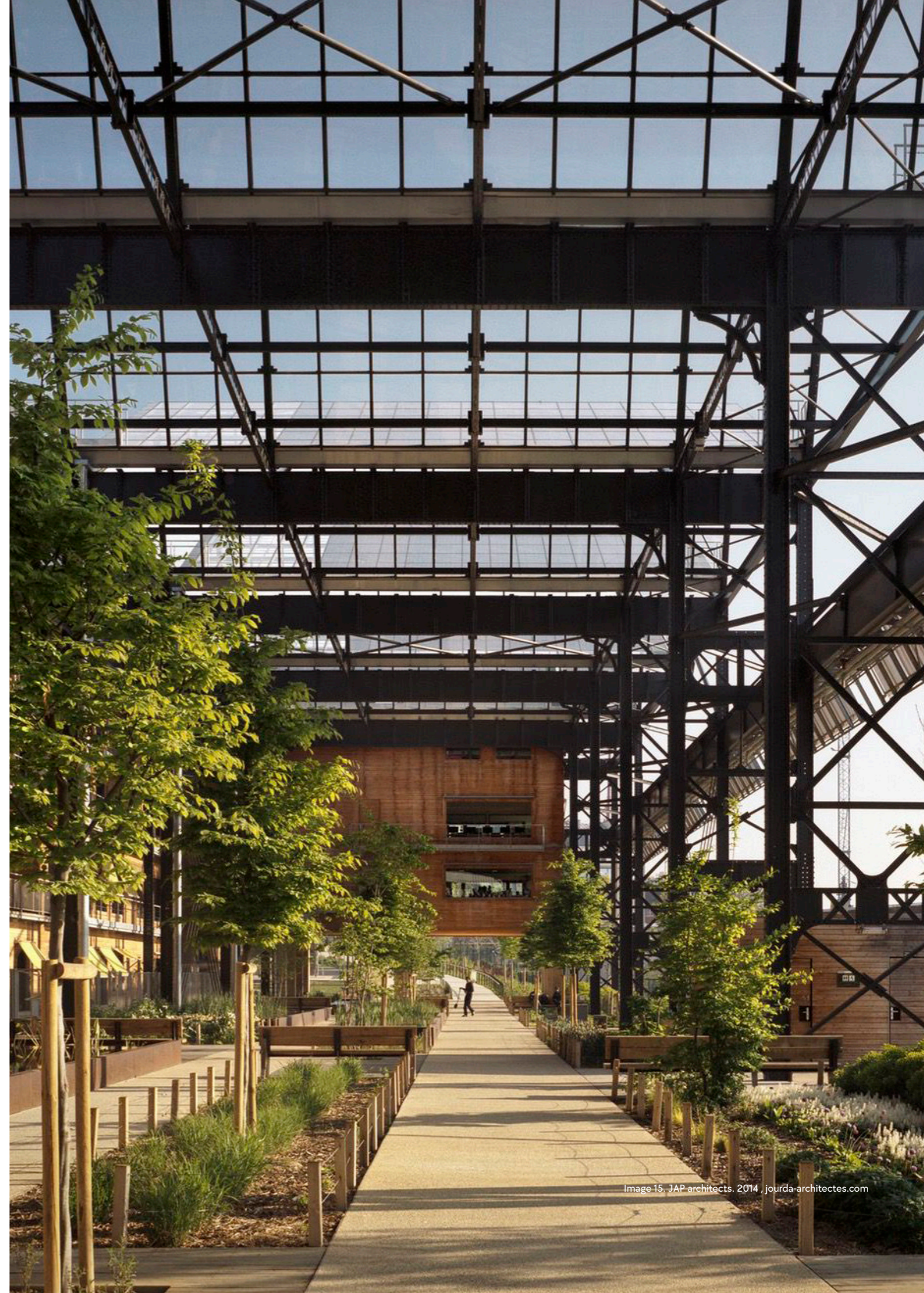


Image 15. JAP architects. 2014 / jourda-architectes.com

02.2| Economic approach: Public-Private Partnership (PPP)

Going back into analyzing the building process of "Turin University City", a key point to consider are the economic strategies that allowed the development, finance and management of the projects involved in the city's transformation. The transition of Turin from an industrial city to a university hub has been shaped by a complex interplay of public and private interests. The introduction of private entities in the city plans for the provision of student housing projects was an attempt to find a suitable strategy to address the overdemand that could not be totally covered by the public and residential services (mainly EDISU) due to scarce regional and national funding. (Mangione, 2018)

As discussed in previous chapters, three Strategic Plans have guided this urban transformation and in relation to the economic topic, each plan has emphasized the importance of public-private partnerships in financing and development of student accommodation projects. The first resolution granted concessions to private developers to restructure and reform abandoned buildings and sites into university residences and other temporary housing services. The second plan focused on "[...] the total inadequacy of public resources, or of the availability of the "Ente Regionale per il Diritto allo Studio Universitario del Piemonte", financed by the Piedmont Region, and to meet the growing demand, entrusts the construction of numerous university residences to private individuals." (Mangione, 2018) Additionally, a masterplan was designed with the support of the Urban Center with the aim of identifying areas intended for public purposes near to the university campuses for the development of student residences. In both plans, Public-private partnerships (PPPs) have proven to be an effective strategy for increasing the supply of student housing, however these approaches also raise criticism about the particular interest behind these initiatives from both the privates and the municipality. (Mangione, 2018) This section will delve deeper into the concept of PPPs, explaining how these agreements work and analyzing their benefits and challenges. It will examine the financing mechanisms employed to support these projects, the motivations of both public and private actors, and the challenges involved in balancing competing interests. Moreover, we will explore the implications of these economic strategies for students, who are often at the forefront of calls for affordable housing and accessible public spaces.

According to the "Organization for Economic Cooperation and Development" (OECD) PPP is defined as "long term agreements between the government and a private partner whereby the private partner delivers and funds public services using a capital asset, sharing the associated risks." It typically involves private capital financing government projects related to infrastructure assets (such as bridges, roads), social assets (such as hospitals, utilities, prisons) or public services (such as water and energy supply), which will later generate the revenues from taxpayers, users or both of them for profit during the

validity of the ppp contract. (OECD, 2012) "The terms of a PPP are typically set out in a contract or agreement to outline the responsibilities of each party and clearly allocate risk." (The World Bank, 2022)

Nevertheless, PPP is used for a wide range of contracts between private entities, corporations and governments to ensure funding for the construction, renovation, management, or maintenance of infrastructure or service. In general terms, PPP can be understood as a shared service delivery, in which public-sector entities collaborate with private firms or non-profit organizations providing citizens with a service that both parties invested in and both obtain future benefits from the joint activity. (Hilvert, C. et al. 2013)

Its essential characteristics are:

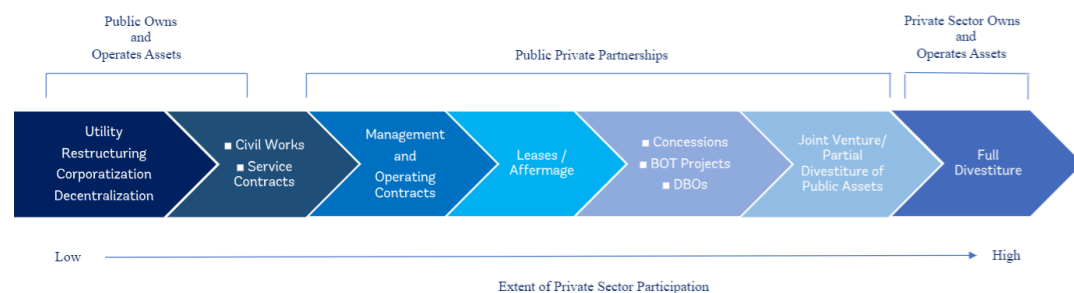
1. Long-lasting relationships
2. Investment cost sharing
3. Risk transfer from the public to the private sector (each risk shall be assumed by the subject who is identified as more able to control it). (Copiello, 2015).

There is not a defined categorization of all types of PPP contracts because of their extensive variation of characteristics. However, The Reference Guide of PPP contract types and terminology of The World Bank explain three general parameters that influence this variations:

1. Type of asset: they can be divided according to the project phase:
 - Development of new assets
 - Already existing assets that require upgrading or management.
2. Private responsibilities (functions): the functions of which the private entity is responsible for can vary according to the asset typology:
 - Design
 - Build, or Rehabilitate
 - Finance
 - Maintenance
 - Operation
 -
3. Payment mechanism: Privates can obtain revenues from PPP under three different mechanisms:
 - User-pays PPP
 - Government-pays PPP
 - Combination of both

Nevertheless, they also present common parameters that allow to identify and differentiate the main agreements following an spectrum that divides each type of contract according to the level of participation and responsibilities of the public and private party and the risk that they issue. (The World Bank, 2022)

Typologies:



Graph. 13 PPP Typology Spectrum. (Source: OECD)

1. Management and operating agreements:

- Public party contracts a private company for implementing certain services or actions; private party is paid by a fixed fee
- Generally short term (2-5 years)
- Public party bears risk of asset condition
- Agreements can be performance-based, oblige the private party to maintain the assets and to take over some operation risks
- Commonly used in Europe for waste water management, waste disposal etc.

2. Leases contracts:

- Public entity as owner of the assets contracts a private company as operator. A part of the income out of the operation is paid back by the private company to the public contractor, the remains are retained by the operator.
- Usually the fee for lease is fixed, the private operator takes risk on income collection (e.g. changing of customers)
- Public contractor remains responsible for financing and managing investments in the assets.
- Usual contracting durations of 8-15 years
- Commonly used in Middle Eastern Countries and Africa for water and sanitation services

3. Concessions:

- Public party gives a private “concessionaire” the long term right to use all utility assets conferred on the concessionaire, including responsibility for operations, maintenance and some investments.
- Concessions can be given for existing assets, an existing utility, or for extensive rehabilitation and extension of an existing asset
- Concessionaire takes risk of condition of asset and risk on income collection
- Usual contracting durations of 25-30 years (possibility to amortize major initial investments)
- Concessions are usually given for infrastructure services e.g. operating a road, a railway network, etc.

4. Build Operate Transfer (BOT) – type of concession:

- Private contractor receives a concession from the public entity to finance and construct the utility or system and operate it commercially until the end of the project period. Afterwards the public contractor takes over

the facility.

- Private operator obtains its revenues usually by charging the public contractor
- Private entity bears a substantial part of the risk
- Long-term contracting durations of 25-30 years (possibility to amortize major initial investments)
- Typically used to develop a generally new (greenfield) discrete asset

Italian context:

In Italy, the increasing demand for student accommodation is a recurrent problem affecting the whole country. A 2023 report by Jll, a company specialized in services and investment management for the real estate sector at an international level, highlighted Italy's critical shortage of student accommodation, noting that the country has one of the lowest ratios of potential demand to available student beds in the Europe, Middle East, and Africa (EMEA) region. The report revealed that only 65,500 student housing units are currently available in Italy, with 61% managed by regional structures, 20% by private operators, 12% by universities, and 7% by public-private partnerships. An article of “La Stampa” journal titled “Torino attira studenti in fuga da Milano: “Ma i costi delle case salgono anche qui” (Turin attracts students fleeing from Milan: “But housing costs are rising here too”) explains the situation that students in Turin and also other university cities of Italy such as Bologna and Milan are facing in relation with the high cost of student accommodation and the difficulties to find a proper place to live. According to the article, Turin's demand coverage is approximately 30% of the requested, which confirms its insufficiency. This increasing demand is a factor which leads to the reising prices of the city's real estate market. Moreover, the growing popularity of short-term rental platforms like Airbnb has further reduced the availability of long-term rentals for students.

In response to these challenges, students in Turin have taken to the streets, protesting and camping out in front of university campuses to demand better housing conditions and affordable rent. These demonstrations highlight the urgency of the situation and the need for more effective solutions to address the student housing crisis.

In order to find a solution to this problem, the city found alternatives to support the financing and management of new student accommodation projects. The cooperation between the public and private sectors was an alternative that has increased in Italy over the last decades. It has been successfully implemented mainly for public projects of social housing, student accommodation and other projects involving a public asset development. Access to dwellings became one of the main needs in the cities, therefore strategies for achieving affordability with funding methods such as public-private partnerships (PPPs) were and still are being implemented to ensure housing accessibility at lower costs.






One of the instruments that made possible the development of these projects is the “Piano Nazionale di Ripresa e Resilienza” (PNRR). As its name states, the National Recovery and Resilience Plan is a financial tool implemented by the European Union for the recovery of its state members from the Covid-19

pandemic crisis and the development of a more sustainable future. It presented a program called Next Generation EU (NGEU) aiming at the acceleration of an ecological and digital transition by shifting to a more sustainable economy and improving digital infrastructure and skills, and the promotion of social equality addressing issues like poverty, inequality and gender gaps through funding investments and reforms. Italy is the major recipient of the “NGEU” funds since it was severely affected by the pandemic. These resources are to be used in the period 2021-2026. (Piano Nazionale di Ripresa e Resilienza, 2021)

Being an opportunity for addressing the economic and social challenges, the PNRR includes a component for strengthening the provision of education services through a University Housing Reform. The goal of this reform is to build new student accommodation facilities and to encourage private investments and public-private partnerships for the development of university housing supply while guaranteeing the highest environmental standards. This process has been divided into milestones for every year within the established period of the agreements's validation. In 2021 the goal was to support the renovation of existing structures, present and select projects, redefine accommodation spaces such as reducing the common areas and “change the taxation regime to ensure the sustainability of private investments”. (Italiadomani, 2024) For 2022, the goals focus on the creation of additional beds for student accommodation and continue with the objectives of the previous year. For 2023 the subsequent step was to grant the initial contracts for the accommodation projects and finally from this year until 2026, the target is to create at least 60.000 beds following the new legislation “Law No. 338/2000 revised in August 2022 and the new legislative scheme adopted under Step M4C1-29, Reform 1.7.” (Italiadomani, 2024) The reform 1.7 “Alloggi per gli studenti e riforma della legislazione sugli alloggi per gli studenti” (Student accommodation and reform of student accommodation legislation) aims to incentivize public and private entities to create new student housing through the advance coverage by the Ministero dell'Università e della Ricerca (MUR), of the operating cost corresponding to the first three years of management of the structures. Additionally, in terms of regulatory changes, the existing laws governing student housing will be revised to make it easier for private entities to build and operate these facilities, however the initiative aims to reduce social inequality by providing more affordable housing options ensuring that an increased number students have accessible and quality housing, thereby promoting education and wellbeing. (Ministero dell'università e della Ricerca, 2024)

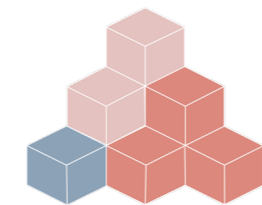
Prior to the PNRR initiatives, Turin experimented with public-private partnerships (PPPs) to develop affordable student housing. These projects often incorporated innovative strategies like building retrofitting and adaptive reuse to reduce energy consumption and lower costs. One successful PPP project, focused on social housing for students and low-income families, demonstrated the potential of this approach to deliver significantly more affordable housing compared to the market rate. However, despite its economic success, this project faced limitations in terms of its architectural design. The housing units were not optimally located near university campuses or other essential services, and they lacked the quality spaces that students prioritize.

Sharing Torino

-  **Location** Via Ribordone, 12, 10156 Torino
-  **Year:** 2008-2011
-  **Gross floor area:** 9.890 m²
-  **Cost:** 13.4 million euros
-  **Architects:** Studio Costa & Partners - Roma Studio Costa & Partners - Roma



Economic Model



Hybrid Model



Fig. 14 Project Location, self-elaboration 2023 Natalia Zuleta



Image 16. (Giuseppe Rotella, LABAA 2019, SHARING HOTEL RESIDENCE - Torino, 2011)

This case study is a limited-cost temporary social housing project developed as a retrofitting of what previously was the post office building that has been transformed into a residence and adapted into a hybrid model of social housing and student hotel. It is consolidated to respond to the housing demand of the population in need of temporary accommodation and also characterized to implement energy efficiency measures to allow controlled cost in the rental price.

The building is eco-sustainable and includes a photovoltaic system, solar thermal system, rainwater recovery system for irrigation of the gardens, use of photocatalytic paint for external plasters, to help improve air quality surroundings, low-consumption condensing boiler, separate waste collection in all spaces, creation of an internal coat to improve the thermal insulation of the building, low-consumption lighting systems, and other energy efficiency systems.

Presented in detail by the article “Achieving Affordable Housing Through Energy Efficiency” by Sergio Copiello, the case study is principally analyzed as an economic model which evaluates the successful integration of PPP and energy efficiency in a low-income social housing project, in which affordability is the main objective. The rent results are higher than social rent-protected tenancies due to the energy efficiency measures, but they are slightly lower than the market rents. This allows the achievement of an equity yield rate satisfyingly from the perspective of a venture philanthropy investor.

Methodological background

A Special purpose vehicle (Spv) was implemented for the development of the project and the company's cash flows (investments, expenses, and revenues) were published on a balance sheet later used to perform a valuation based on the Discounted cash flow (DCF) method.

Project framework

The intervention is located in a northern suburb of Turin and is composed of two almost abandoned buildings formerly intended for house-hotels, for employees of the Italian mail group coming from other regions.

The project resulted in a refurbishment for accommodations of low and middle-income households including families waiting for protected tenancies, young families, posted workers, students, and immigrants in a range of low-income households.

Refurbishment interventions:

The concrete structure and exterior cladding were in sufficiently good condition to reuse it. The main adjustments were based on the insulation solutions where expanded polystyrene was used and changing health-harming materials such as asbestos fibers.

new installations such as photovoltaic panels and other innovative elements were adopted.

The refurbishment intervention represents not only a new way of accommodation and housing but also different services for the district, such as commerce, educational activities, medical services, and bike sharing, all at

controlled prices.

Organizational aspects:

In terms of organization, new kinds of stakeholders play a lead role of developers and managing entities on the private side of the PPP.

The role of the promoter is held by both the municipal authority and a bank foundation, while a property fund contributes as a financial sponsor.

There are three shareholders involved in the project:

- The Turin Savings Bank (CRT Cassa di Risparmio di Torino): It was in charge of the acquisition of the property and the implementation of the Sustainable Housing project from a social entrepreneurship perspective.
- Oltre Venture Plc: aimed at investing venture capital on behalf of new social enterprises
- DOC Coop: A social enterprise with experience in facility management such as hotels and hostels.

For the PPP scheme a local building company, Studio Costa Architects, was commissioned for the construction work.

Sharing Ltd. is the facility-managed company delegated to provide apartments at fair rents directly to users within the legal framework of regulated tenancies, while other flats are made available to the Turin municipality to be provided at social rents within the legal framework of protected tenancies.

Management

initially most of the users were student representing a 58% of the tenants.

The other representative portion (22%) was reserved for dwelling as protected tenancies with social rents from Turin municipality, 13% for posted workers and 7% for young families.

“The municipality benefits from about twenty housing units in order to accommodate evicted households, paying an annual fee up to about three hundred and sixty thousand euros” (Copiello, 2015).

The refurbishment intervention represents not only a new way of accommodation and housing but also different services for the district, such as commerce, educational activities, medical services and bike sharing, all at controlled prices.

The management then pass to the administration of a closed end property investment fund from 2012.

Financial sphere:

The financial tool that is used in the case study for the economic evaluation of the project feasibility is the Discounted Cash Flow (DCF) analysis.

To understand why this methodology is implemented in this specific case it is important to define the DCF concept:

The Discounted Cash Flow is a tool that evaluates the economic viability and

potential income of an investment, in this case, in energy efficiency measures. DCF provides an accurate model to appraise the value of the investment in projects involving the real state.

The DCF evaluation is applied during the briefing and planning phase of the project and it can follow different scenarios:

Whether a project is a new construction or a retrofitting investment instead, and whether it is planned to be sold or intended to be rented. In this last case, a management scenario must be applied to evaluate the cash flows during the operating time until reaching the payback period which is the moment when the investment is recovered. (E. Fragonara, 2017)

It uses a discount rate to convert a future monetary amount into a present value.

DCF analysis can:

- separate the single totals of costs and incomes at various time intervals based on a layout of cash flows
- Identify the amount of capital required
- Ascertain if the income will be enough to recover the capital and pay the interests or dividends due
- Deal with the risk/uncertainty components
- Adapt to the variety of the real estate development projects

It has three indicators:

NPV: Net Present Value is the sum of all ingoing and outgoing cash flows once they have been discounted.

IRR: internal rate of revenues/return is the particular rate of revenues when the NPV is equal to zero. This represents the situation in which there's no longer any convenience in investing further capital

PBP payback period: Measures the time needed to recover (repay) the investment done on a project (E. Fragonara, 2017).



Image 17. (Giuseppe Rotella, LABAA 2019, SHARING HOTEL RESIDENCE - Torino, 2011)

This case study carries out an investment for retrofitting and applies both management and selling scenarios.

The key financial figures can be summarized in the following table:

Gross floor area m ²	Investment cost mln euros	Equity mln euros	Purchase price mln euros	Refurbishment cost mln euros	Unit cost of refurbishment euros/m ²	Furnishings cost mln euros
9890	14.6	14.4	6.0	7.6	771	0.9

Table 1: Project Key Figures (Copiello, 2015)

The first step of DCF is to extract the time and date of investments, operating costs, expenses, revenues and incomes, and of course, funding sources. Then data is processed by two types of cash flows, unleveled and levered cash flows

Unlevered cashflows: Takes the project as a whole considering the operating revenues as incoming flow and the operating cost and investments as outgoing flows. This type of cash flow does not include financial changes (Debt).

Levered cashflows: it also considers operating revenues as inflows while operating cost or repayment as outflow. This type of cash flow does include the percentage of debt.

The first year's investment costs are fundamental due to the purchase of the property and also the third year because of the ending of the construction works. The main funding source is the developers' capital (98%) the remaining fund is held by debt capital (2%). After the retrofitting was finished a company was contracted for the management of the rents, which reached a high occupancy very quickly, generating revenues and incomes six times higher than the operating cost and expenses. This gap allows the investment to recover in an expected payback period of 25 years. Nevertheless, the buildings were sold the next year to a closed-end property investment fund (Sharing Ltd.) which resulted in two outcomes:

In the first place, the profits of the sale allow to repay more than half of the debt capital, and the remaining cash overcomes the amount of money invested in the first year. However, the financial rate of return of the whole investment is equal to zero, and the equity yield rate is just a bit higher (3%), which means that it doesn't represent any loss but neither a significant profit. "The venture philanthropy approach adopted by the developers is not profit-oriented, nor purely non-profit.

The reason the yield on equity is moderately low but still positive is due to the agreed rents, which can be slightly increased (10%) when there is a refurbishment. Even if the rental price is higher, the tenants benefit from less running costs than those characterizing conventional social dwellings thanks to the building's energy performance.

“Rents adopted in the Sustainable Housing initiative are higher than the above-mentioned regulated rents—to foster project feasibility—but still mildly lower than market rents.” (Copiello, 2015).

This project is a successful example of an efficient financial and economic organization which achieved its goal of delivering lower rents. Since the project was not completely student oriented, it fails to be an adequate option for students since its location is significantly distant from the university districts. However, it became one of the first examples in Turin demonstrating that Public-private partnerships could be a promising solution for the development of temporary housing projects.

One of the main challenges of PPP is the conflict of interest between stakeholders.

The interests of public and private actors may not always align, leading to potential conflicts and trade-offs.

As Erica Mangione stated in her thesis “Torino città universitaria Strategie urbane e popolazione studentesca”, the construction of university accommodation projects represents particular interest for both the private entities and the municipal authority. “The interests of the municipal administration are to be found in the advantages that derive from the activation of urban transformation processes” these opportunities are related to redevelopment of abandoned areas or unpopular neighborhoods bringing new real estate value and the additional gains such as the good image publicity for the administration. On the other hand, private actors are commonly driven by profit motives. The balance between these competing interests has often been a subject of debate, particularly in the context of student housing since the repercussions of decisions made out of particular interest affect the main users of the projects, the student population itself.

Nevertheless, student organizations have played a crucial role in advocating for the interests of students, particularly in terms of affordable housing. Through activism and negotiation, these groups have successfully influenced public policy and secured commitments from municipal authorities. While the impact of these efforts may be limited in scale, they demonstrate the potential for student-led initiatives to shape the city's development. (Mangione, 2018)

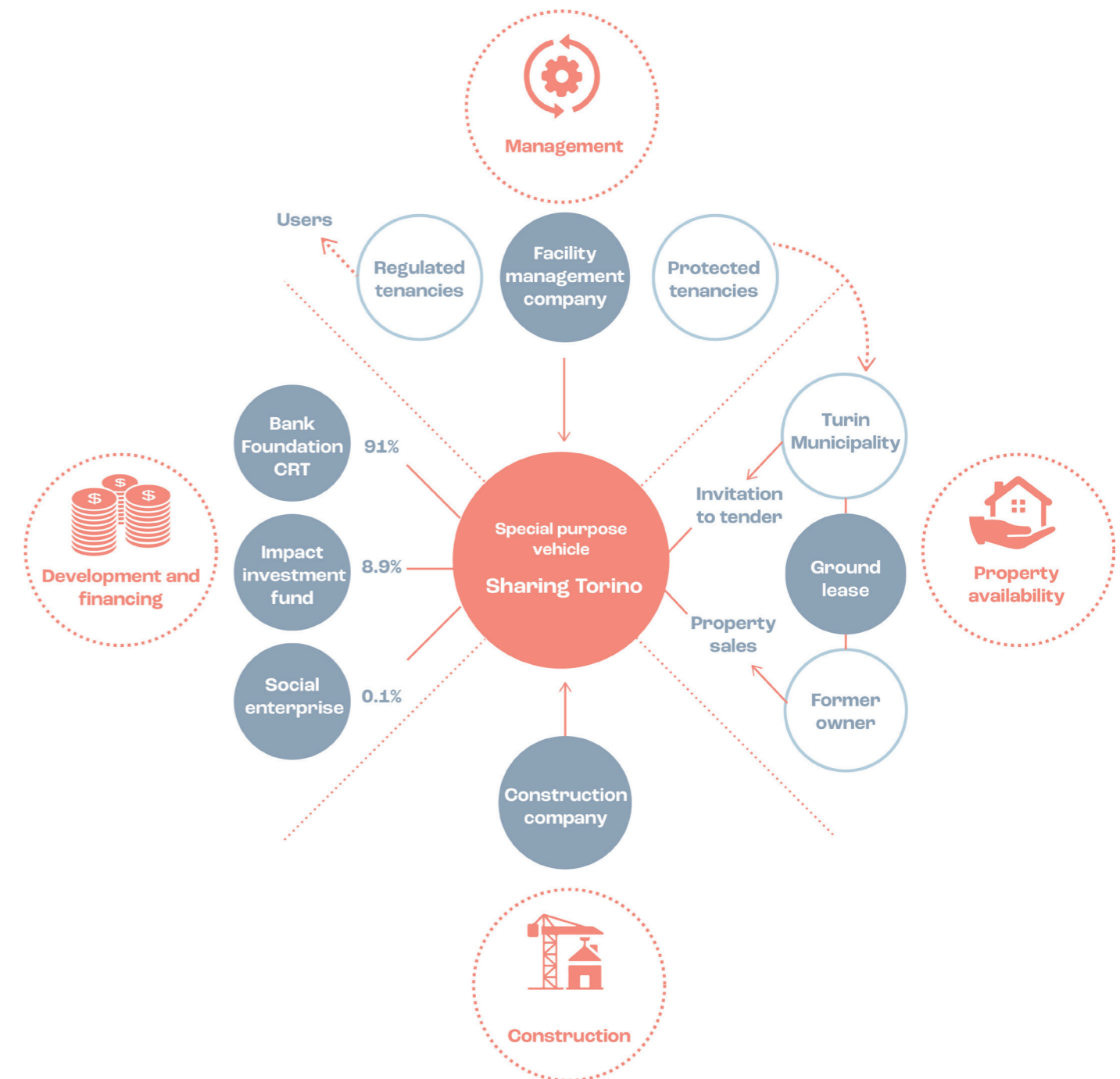


Fig. 15. Public Private Partnership (Adapted from: Copiello, 2015).

02.3| Social approach: The conflict between urban regeneration and gentrification

Since institutions struggled to provide enough housing for the student demand, innovative approaches have led to the creation of partnerships with private operators to develop and manage new student accommodation options. “A relatively new alternative for student accommodation has emerged from the private sector as investors and developers have seen the imbalance between the demand and the supply for housing and focused on delivering purpose-built facilities for students.” (Ince, 2019)

“Purpose Built Student Accommodation” (PBSA) is the term referring to “accommodation specifically designed, built or adapted for the purpose of housing students.” (Scottish government, 2022) although it could be provided from both the public or the private sector, PBSA has become an investment asset primarily for private developers. This concept of student accommodation has gained popularity around the world since it aligns with the global trends and the updated students preferences, demanding quality and comfort spaces, that allow a more private and independent lifestyle. The sector evolves rapidly and the new student generations represent an international community with different interests and needs. Therefore PBSA proposes flexible accommodation with a hybrid concept integrating different functional spaces that supports the learning experience abroad. This sector offers innovative solutions for temporary housing with students at its principal user target but not exclusively, combining “[...] hybrid spaces where people can stay for an hour, or a year or longer, to work, relax, learn and have fun. Pure student-only models are not the way forward - the future is about blending spaces and diverse communities under one roof.” (MacGregor, 2020) PBSA is mostly appealing for international students since it is a reliable option when looking for accommodation before coming into the host university city, contrasting the untrusting private real estate market.

The model of PBSA has been used recurrently in countries with a growing student migration flux such as the UK or Netherlands where the demand of student housing is an urgent topic that needs to be quickly addressed.

The Student Hotel, located in Delf is being one of the first examples of PBSA that worked as forerunner for its model replication all over the world, mixing a diversity of users and functions and transforming the surrounding urban area into a lively student district.

Diving into the Italian context, the outstanding global education rankings from institutions in the country are attracting a growing number of international students. Therefore, PBSA has also been studied and applied in university cities, mostly in Milan, where student housing is a major necessity.

In Turin, there are now several examples of PBSA and thanks to the financial support from the NGEU new projects are in line for its construction within 2026 according to the PNRR.

As a representative case, CX (CampusX), a student housing company, is in

change of the management of two PBSA projects in the city.

Both case studies are worth of analysis because of their innovative proposal of hybrid facilities that not only serves as a place to sleep but rather blend a mix of spaces and functions that allows the integration of not only students but other sectors of the population that could benefit from them.

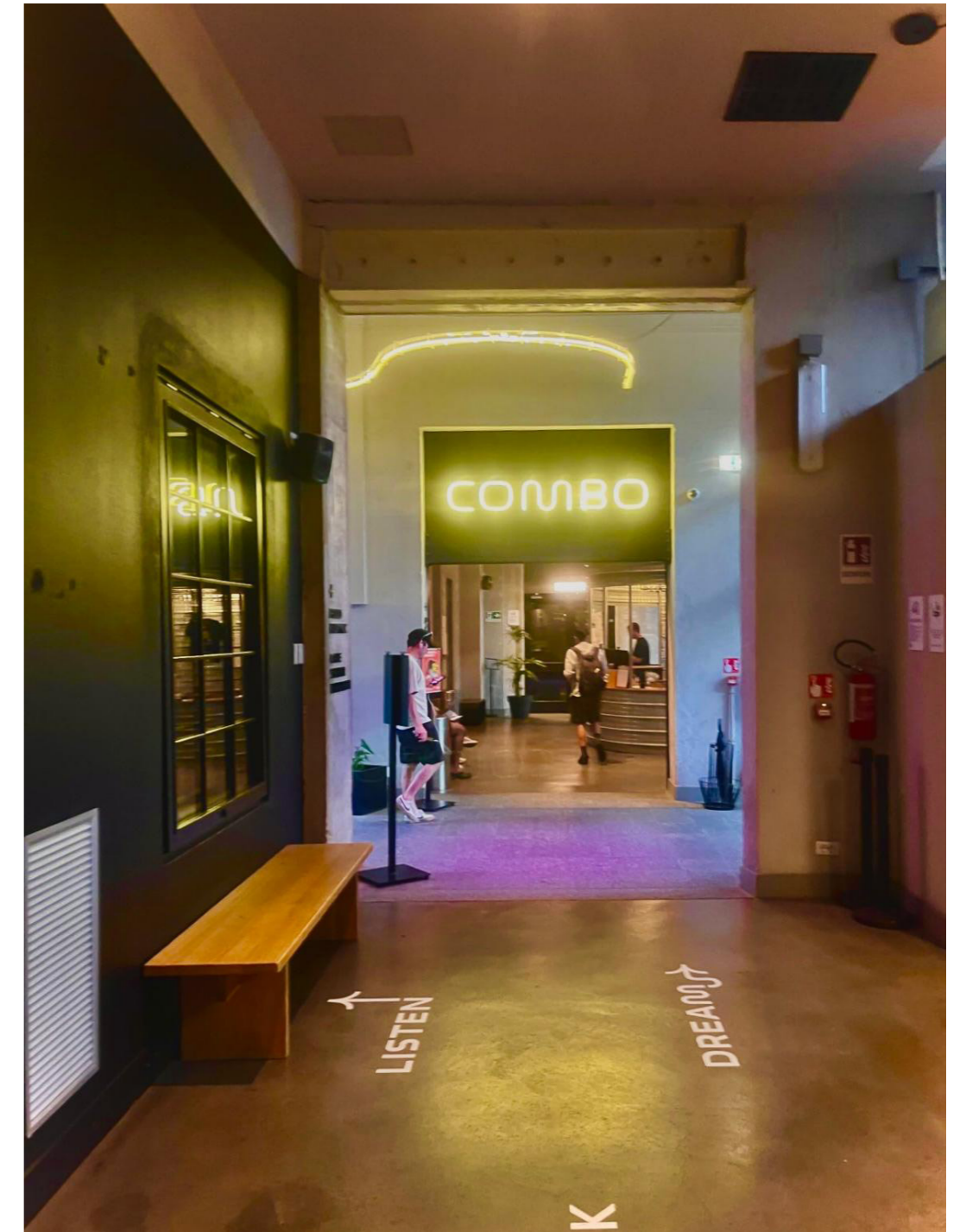


Image 19. Student Hotel Combo in Turin. Photograph by Lorenzo Bono, 2024

The Social Hub Delft

The Student Hotel offers a vivid meeting place for tourists, business travelers, students, young professionals it is described as a new meeting place in the city to live, work, and study. The Student Hotel is part of the development Nieuw Delft, a new district located centrally within the city.

The diversity of functions contributes to the dynamics of the station area. The new building connects with the bus square, the old station building, and the new intercity station hall with municipal offices. Dialogue and openness towards the urban context were crucial for designing the latest destination of The Student Hotel (TSH) in The Netherlands. Bringing neighbors together and connecting the community is central to The Student Hotel and it is the design's task to stimulate this

The hybrid hotel concept combines high-end hotel functions with extraordinary short- and long-stay facilities for students.

contributes to a lively neighborhood and fosters togetherness in a unique dialogue between the students, hotel guests and the city of Delft. The different functions are combined in a composition of a base-volume, counting five or six layers, with two towers on top.

During the design process, The Student Hotel placed great emphasis on circularity, with less-is-more as the motto. The public areas of TSH Delft have been given a circular design, which means that reuse, preservation of value and reduction of the carbon footprint are central. All areas are entirely constructed from recyclable materials.

 **Location:** Delft, Netherlands

 **Year:** 2016-2020

 **Gross floor area:** 13.500 m²

 **Cost:-**


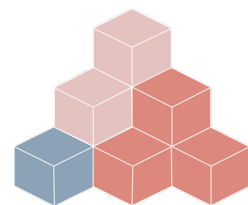
 **Architects:** Architect: kcap architects, The invisible Party



Fig. 18 Project Location, self-elaboration 2023 Natalia Zuleta



Hybrid Model



Image 19. (Kcap architects, 2020)

CX Torino

CX Belfiore is a hybrid building model which works both as a student housing and hotel. It is placed in the vibrant and dynamic urban context of the San Salvario district, the most dynamic neighborhood of Turin, that enables students and guests easy access to restaurants, leisure spaces, and study and works areas. The structure originally housed offices in the Piedmont region and was transformed into a flexible, functional, and distributive design with colorful and dynamic spaces enhancing the young atmosphere of the community that it host. This project was taken as a case study due to its ability to host a diverse community that goes from students and young professionals who live in the structure every day, and also occasional travelers or residents of the neighborhood that use the common spaces of study or coworking. It gives a mix of long-stay and short-stay options where different generations and experiences can meet in shared areas. In this order, The space is set up according to different levels of privacy to allow a mix of private and public activities inside the building.

The ground floor is a single open space in which various functions find space: welcoming, restaurant, and workspaces.

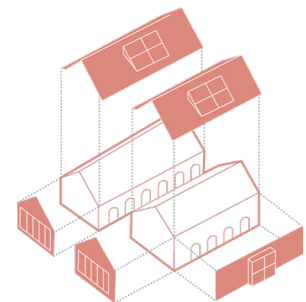
Location: Via Belfiore, 23, 10125 Torino TO

Year: 2021

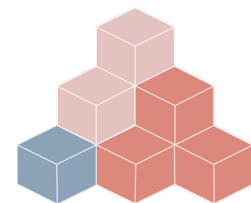
Gross floor area: 11783 m²

Cost:-

Architects: CampusX, RIZOMA ARCHITETTURA



Adaptive Reuse



Hybrid Model



Fig. 16 Project Location, self-elaboration 2023 Natalia Zuleta

Hybrid Model

- Hotel Rooms
- Student Rooms

Program distribution

- Play Zone
- Rooftop
- Gym
- Study Room
- Parking lot
- Coworking
- Shared Kitchen
- Restaurant

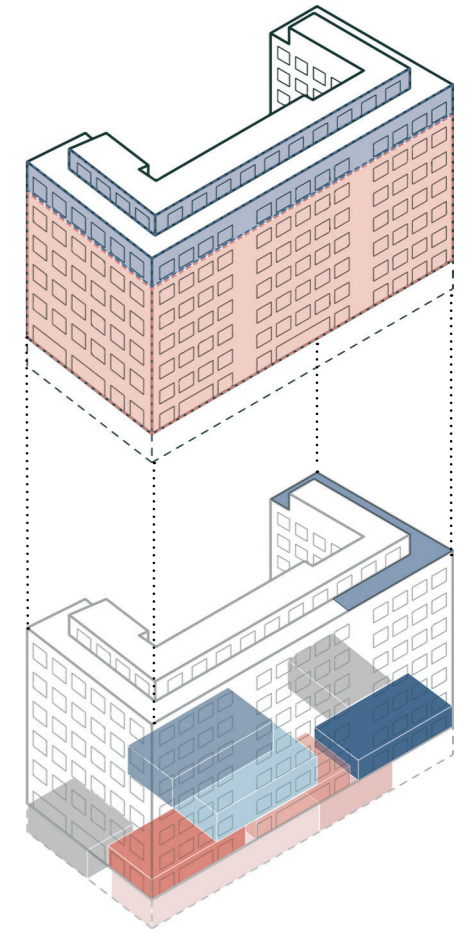


Fig. 17: Program CX Belfiore, self elaboration 2023 Natalia Zuleta, Adapted from: <https://www.cx-place.com/cx-turin-i-belfiore.html>



Image 18. (Program CX Belfiore, 2021) <https://www.cx-place.com/cx-turin-i-belfiore.html>

Nevertheless, although it has been a common strategy that seems to have relieved the urgent demand of student accommodation at a certain level, this model has a clear limitation. PBSA is an option that surpasses the levels of affordability for a wide portion of the student population.“[...]Due to high construction costs, the monthly rent of PBSA units are typically higher in the private sector compared to the HEI (High Education Institutions) provided housing as well as the private rental sector.” (Ince, 2019)

The main challenges that this model faces are related to accessibility and affordability and as inclusive as it claims to be, this model is criticized for promoting market exclusivity for a high social class.

The critical implication of this model can also be reflected in the urban territory. The Insertion of PBSA in a specific area or neighborhood usually results in an urban transformation due to the real estate speculation produced by the economic fluxes and new activities that the student population dynamics create. This phenomenon is known as “studentification” a process that “[...] links with new ways in which capital is circulating through the urban environment, seeking new markets or lifestyles for commodification” (Cenere, S. et al. , 2023)

The negative impact behind the studentification lays on the consequences that the transformation of several areas in the city induce new economies that replace the original dynamics held in the area: ‘students vs. residents’.

The critic in the document “Setting up a University City” presents PBSAs as a business hiding behind a philanthropic aim, which invests on knowledge and education but in reality supports the creation of products that serve investors and the construction of urban capital accumulation.

In this sense, the student rental market is mainly oriented to accumulate private profit other than benefiting students. PBSA is addressed as an exclusionary solution for student housing demand since it leaves aside students who cannot afford this type of accommodation and produce speculation in some areas increasing the market prices.

Cities that face urban problems unsolved, such as the case of Turin, a post-industrial city, see university-driven urban development as an opportunity to solve economic and social crises. High education institutions and the knowledge economy are tools to develop the city and shape the urban planning decisions in order to increase the economic flow.

After the creation of the Campus Luigi Einaudi, areas such as Borgo Rossini faced what is called “gentrification” -a displacement of the original inhabitants of the area due to new externalities such as the increment of real estate prices (economic speculation), the insertion of new activities and services, and the interest from different groups to a new developing area- Becoming a fashionable area with increasing cultural and leisure services for cosmopolitan middle class people to live in.

The problem of studentification is the displacement of the population currently living in an area rather than its integration and the conformation of an area that segregates due to exclusiveness.

Three case studies are taken into consideration and the hospital Maria Adelaide is one of them.

To assess this case studies there were held 35 semi structured interviews with different groups of interest such as residents associations, public

institutions in the HE field (EDISU) local policy makers, organizations working in the students rental market (landlords representatives and local rental platforms), and the participation of 3 meetings of Turin City Council related to the transformation of the area.

The Maria Adelaide hospital was one of two public hospitals in Turin serving about 90.000 inhabitants until it was closed by the region in 2016 when centralizing the health services and moving the activities to the CTO. The facility has been only used to host temporary cultural events.

This dismissal of the hospital has brought controversies and discontent to the neighbors since they claim to have lost an important landmark for the area, accessibility to health services, and it also affected local businesses that benefit from the past affluence of the hospital. This has led to the creation of associations conformed by local residents and former hospital staff members that plead for the restoration of the hospital and its sanitary activities.

The regional administration refused to reopen the Maria Adelaide even during the covid-19 emergency where healthcare was an urgent necessity. The final verdict and lost of all hopes for the reopening was in 2021 with the new PRG that declare the change of function of the area and the city plan to realize residences for athletes supported by the university association EDISU and the University Sport Center after the designation of Turin as host city to the “Universiade” of 2025, an international sports event that represents an economic opportunity for the city. The Municipality proceeded with the sale of the hospital to a private investment company REAM SGR with plans to restructure the hospital as a private student residence, raising concerns about the actual accessibility of accommodation for low income students due to the lack of public facilities and the transformation of the sector into a financial asset.

“[...] The investigation of the transformations in and around Aurora shows the heterogeneous and contingent ways in which socio-spatial exclusion emerges as an unintended effect of these transformations.” (Cenere, S. et al. , 2023)

The main concern is that Aurora neighborhood, which shares both an increasingly attractive area, and also a problematic sector where a vulnerable segment of the population is being transformed with exclusionary urban plans and politics to favor the privatization on previous public areas displacing local communities and its residents with the argument of the development of a competitive urban growth.

“The region’s decision to pursue austerity politics in the health sector that provoked the hospital closure and, on the contrary, to promote urban development projects having at the core the provision of a PBSA results in the exclusion of residents’ interests and needs from the local political agenda.” (Cenere, S. et al. , 2023)

Finally this approach indicates that the exclusionary practices of studentification are a process of urban change produced by different actors that is pursued by post industrial cities that doesn't match with the local needs of the inhabitants. Whether it would create an integral landscape for all citizens, merging with all the activities or rather creating marginal and discriminating situations will determine the success of Turin urban strategies.

Conclusions

Adaptive reuse point of view:

The methodology of reusing an existing building enables the revitalization of an abandoned or detrimental area of the city, recognizing its previous value and history instead of constructing a complete new building from zero, erasing what was there in the first place applying a tabula rasa approach. Moreover, an effective reconstruction and reuse of residual buildings offers additional space which could host many new functions. In terms of sustainability, using the existing buildings as much as possible can bring a reduction of half the needed amount for a new building's construction elements and in some cases reduce costs and time.

For the specific case of Turin, applying Adaptive Reuse strategies is an opportunity to renovate abandoned areas located in central areas or near university campuses within the urban territory, this is especially valuable since most of the central territory of the city is already constructed and finding a spot for new uses is a challenging task.

Economic point of view:

Reviewing the Case Studies we can verify that the joint application of PPP and building energy efficiency arrive to a successful result where, in order to ensure self-sustainability, agreed rents should be considerably higher than fair rents of other regulated tenancies to generate profitability for private developers while also ensuring that energy performance improvement will overcome the monetary constraints to compensate the increased price for tenants.

However, it is important to consider that the rent premium may be insufficient to adopt a profit-oriented approach, so to achieve low-cost public housing a venture philanthropy approach must be adopted otherwise still rely on public no-repayable subsidies.

One of the most important learning outcomes would be the effectiveness of the relationship between stakeholders in order to achieve economic feasibility since the target is to develop a low-cost student housing model that can be both feasible for all stakeholders involved in its development and management and affordable for its users. It is understood that there are no easy, short-term solutions, highlighting the need for thoughtful, long-term strategies to address the complexities of student housing affordability.

Hybrid

In terms of inclusivity, the economic sector has an important role in the creation of balance in the urban territory. The definition of the financing method, determines the interest behind the realization of the projects and therefore its aims for either improving a social concern or searching for investment profitability.

Implementing a hybrid functionality building could lead to two positive outcomes:



Identification of the problem

From the economic point of view, having a mix of uses allows supporting activities with lower or no income with the ones that have a higher incoming flow of money. This is a financial solution for feasibility in terms of the management of the project. On the other hand, from a social point of view, the variety of uses could mean a richer offer of activities and services as well as a higher diversity in the community that participates within the project.

Methodological path:

Since the research aims to analyze diverse models and strategies currently being implemented in the city to solve the need for temporary accommodation for students the Methodology is organized according to this path of actions:

- Evaluate the current situation of student accommodation in Turin and identify the unsolved problem around it.

Users' survey and students interviews

- Get first-hand knowledge about the preferences and needs of today's students using surveys and interviews as tools.

Analysis of strategies

- Analyze and compare their characteristics of the different studied models and identify actions or elements that can be applied to achieve affordability and integration in the urban context applying the best practices and methodologies.

Turin Urban analysis

- Realize an urban analysis taking into account the relationship between students and the urban context.

Cooperative Scenarios

- Apply the Adaptive reuse methodology, the economic insights and hybrid model to cooperative scenarios with the aim of achieving affordability and social inclusion for student accommodation.

Masterplan Proposal

- Develop a proposal for a masterplan for the specific area of intervention

03 URBAN ANALYSIS

03.1| Turin: Building the student city

As explored before in the previous chapters, the strategic plan of the city published in 2016 "Turin University and Innovation" aimed to highlight the knowledge economy as a tool to put the city into a competitive global economic context (Mangione 2018) The municipality opted for higher education as a means of economic development, therefore it has promoted different projects aiming the growth of services and infrastructure for this scope. (Torino Internazionale, 2016)

The city then, without having defined university campuses, becomes a large flexible university space where different types of activities are mixed, however, the city was capable of building a landscape recognized by its citizens and able to continue its future development. The university system defined important landmarks around the city, shaping the identity of each district. These landmarks, more than architectural structures, are the heart and soul of a city, embodying its history, culture, and identity. Areas such as the center of Turin are easily identified by its cultural character with the Mole Antonelliana as a distinctive Turin symbol, not only for its architectural importance but also as a cultural hub, the "Piazze", spacious squares that serve as gathering places for communities and the University campus of several institutions that highlight the connotation of knowledge and education in the city.

The city's mobility offer is also a factor to be highlighted, since in the past the city had an inefficient distribution of the road system that put industrial transport above citizen mobility. For many years, Turin was divided by railroad tracks running through the middle of the city, which complicated the city's mobility. This complicated mobility and obstructed accessibility to relatively short distances, which were completely separated. Increasing emphasis on the importance of urban mobility and connections has led the city to undergo various transformations in order to shorten distances and prioritize the citizen's experience. Today, Turin has a wide range of soft and hard transport options ranging from an extensive road structure, an organized public transport system that will be extended to reach the currently most marginalized areas of the city with the M2 metro line, to a network of cycle paths mentioned above, with innovative technological systems for monitoring the flow of mobility in order to improve the road system in line with the use of the system by citizens.

These systems are fundamental when thinking about student mobility, as it must be inclusive and adapted to different means. The city also has an important environmental fabric as it is crossed by the Dora and Po rivers, which have become ecological axes of the city, but also engines of development around them. The Po Riviera is surrounded by green areas and parks that generate dynamic spaces in the city with multiple uses. On the other hand, the Dora River flows through densely urbanized areas within the city, but like the Po, the river has been an axis of environmental development, giving way to the development of urban parks such as the Dora Park and the Pellerina Park, which have been strategies to recover the river and its ecosystems, previously degraded by industry.

- University Campus
- Student Accommodation
- University services
- 🚊 Train Station
- Railways
- - - Metro Line M1
- - - Metro Line M2 (project)
- - - Metro Line extension
- Metro Station
- Bicycle Path
- Streets
- Sport Center
- - - Natural Parks
- Urban Green areas
- Rivers

The University city system
Landmarks



-  Manifattura Tabacchi
-  Dora Park
-  Nuvola Lavazza
-  Porta Palazzo Balon Market
-  Campus Luigi Einaudi
-  Piazza Castello
-  Mole Antonelliana
-  Valentino Castle
-  Cittadella Politecnica
-  OGR
-  Lingotto
-  Mirafiori

Fig. XX Turin University City, self-elaboration 2024 Natalia Zuleta Data from: Città metropolitana di Torino Geoportale-Mosaicatura PRG e Varianti Urbanistiche, www.torinosiprogetta.it/open-for-business/ and <https://www.muoversiatorino.it/piste-ciclabili/>



Turin is now an expression of resilience and transformation that recognizes its manufacturing history, but also presents the ability to look towards the future and confront today's challenges such as welcoming international businesses and ideas, transitioning into a ecological and digital future, and building the path for a more sustainable and inclusive society. Its continuous dynamic transformation embraces a vision for a more sustainable, innovative, and equitable future with the participation of diverse groups with new initiatives and projects underway, each contributing to a broader narrative of urban renewal and progress. Some of the plans currently underway in the city are described below:

Open for business: "A strategic project of the City of Turin in which development and investment opportunities are presented through the three most significant vocations. City of Industry, Innovation and Research, University City, Tourism City."
<http://www.comune.torino.it/openforbusiness/it/>

Turin Changes: Towards the New PRG

Listening to the city to build the new General Regulatory Plan

In 2023, the City of Turin, together with Urban Lab, launched a path of dialogue and listening to the territory to share working perspectives, gather proposals and ideas on the future of the city, starting with the definition of the new General Regulatory Plan, the main instrument for governing the territory and its transformations.

The year 2023 was first dedicated to listening to stakeholders, intermediate bodies and territorial authorities, in a program of activities that developed in three different moments: a mini-festival in June, October in the Circumscriptions, November with stakeholders.

With the widespread campaign "Neighborhood Voices," 2024 aims to involve those who live, study and work in the city, with meetings, outdoor performances, walks and chats that in the spring and fall will enliven public spaces, parks, neighborhood houses, markets and some of the places most beloved by Torinese. It is precisely the Turinese, the way they live and use the city, their desires and ideas for a better Turin, that will be the protagonists of the various initiatives.

<https://www.torinocambia.it/prg>

Nexto: The Masterplan Project is a strategic vision document for the city's development, in the medium and long term. A document that aims to provide guidelines that are supportive for the establishment of new strategic processes, and for the triggering of concrete transformation actions.

The Masterplan was born as a result of a question: How do we imagine Turin in 10 years? What city do we have in mind when we talk about the future?

The question is not an easy one to answer. However, we might want to live in a city that accommodates major global trends of transformation, with respect to technology and innovation, or with respect to societal change; in a smart city of reference in Europe, with widespread investment networks that drive employment and average incomes; in a city that attracts talent through its cultural circuits.

<https://www.nex.to.it/masterplan/>

<https://www.slideshare.net/slideshow/nexto-masterplan-una-visione-per-torino/250206077#137>

Torinostratosferica: A collective city imaging project to build a powerful narrative in images that enhances the city's potential and its international positioning.

Stratospheric Turin = Turin at its best

<https://torinostratosferica.it/>

A project to map Civic Happiness in Turin. An innovative tool to measure Civic Happiness in every neighborhood of Turin through 10 indicators, in order to create a map of needs in the post-pandemic phase and to define widespread interventions that can improve the well-being of every citizen. The project was supported by Compagnia di San Paolo and sponsored by the City of Turin. <https://felicitaacivica.it/>









ToMove: The "Living Lab ToMove" project is part of the National Complementary Plan "MaaS4Italy - Mobility as a Service for Italy," which promotes the development of new mobility services, based on the adoption of Mobility as a Service (MaaS) paradigms in metropolitan cities to digitize local transportation and provide users with an integrated mobility experience, from trip planning to payments across multiple modes of transport <https://full.polito.it/research/tomove/>

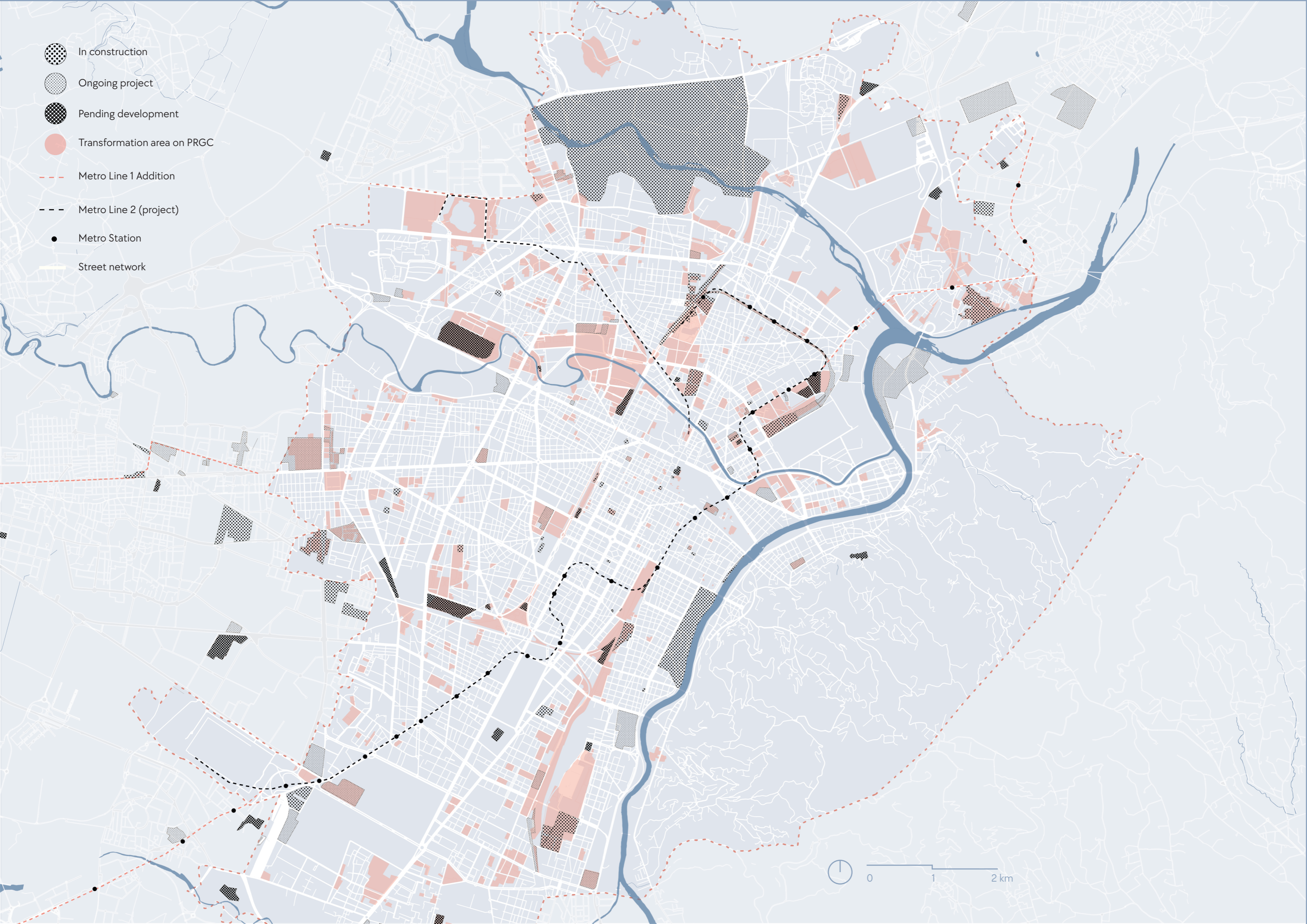
Turin and its rivers: Starting from the development of an analytical framework of Turin's river system, the Turin and its rivers project aims to identify transformative scenarios for the city's river contexts.

These scenarios are intended as a tool capable of revealing design potentialities, translating them into an overall vision capable of directing coherent and coordinated developments.

<https://full.polito.it/research/2238/>

The following are the plans that are underway, are in the process of construction or are awaiting approval to begin development.

-  In construction
-  Ongoing project
-  Pending development
-  Transformation area on PRGC
-  Metro Line 1 Addition
-  Metro Line 2 (project)
-  Metro Station
-  Street network



03.2| Beyond the Dora River

The creation of the CLE campus Luigi Einaudi in a great dismissal area, was the first step of the transformation of the Aurora and Vanchiglia neighborhoods from working class residences to popular areas for students both to live and as nightlife venues. The campus created in 2012, fell onto the neighborhood with little or no contextualisation interventions. These zones are still under development, however, there is a noticeable contrast between the campus area and the north side of the neighborhoods above the river Dora, which has little to no connection to the university context. Some services such as coffee shops and bars are some of the first elements appearing in the neighborhoods aligned with the process of the studentification of the area.

To prevent this phenomenon from growing in a detrimental way, there must be a carefully planned organization of the development of this area to ensure that student necessities are being covered but also creating inclusion to all population sectors to avoid the gentrification of the area affecting the local community.

Nevertheless the this area has a great potential to become one of Turin's most relevant knowledge hubs with a high environmental quality thanks to the banks of Dora River and the requalification of abandoned industrial areas and underused land into public spaces and services for the citizens enhancing the quality of life of the area and rethinking it as a sustainable and accessible neighborhood.

The neighborhoods of Vanchiglia and Aurora, as mentioned above, were traditionally working class neighborhoods due to their proximity to the industrial outskirts of the city. After the decline of industry, some areas of these neighborhoods fell into a deep deterioration giving way to insecurity, poverty and marginality. However, the continued development of the historic center and its surroundings extended to the north, giving way to the urban development of these areas of the city. Gradually a new university character took hold of these areas with the creation and projection of more campuses that could accommodate the growing university student population. Other areas of the economy also began to develop towards these areas such as the Lavazza coffee industry, which opened its headquarters in Aurora paving the way for the development of northern Torino. The investment for this area has been such that more than 12 urban scale projects are being planned for 2026, both public and private, something relatively new for this area since most of the investment was concentrated in the center of the city. The Dora River was almost a virtual boundary that defined the end of the downtown area of the city, leaving two completely different geographies on the south side of the river compared to the north side. The south side is composed of a myriad of cultural, economic, commercial, touristic and educational activities where most of the city's dynamic flows occur, a lively area at different times of the day that represents the city internationally. Beyond the dora, the panorama is different. Large ex-industrial areas, many in disuse and large spaces disconnected from the dynamics of the city, such as the monumental central cemetery of Turin. The land use of this area is mixed, with a predominance of residential areas, with various services and productive areas.

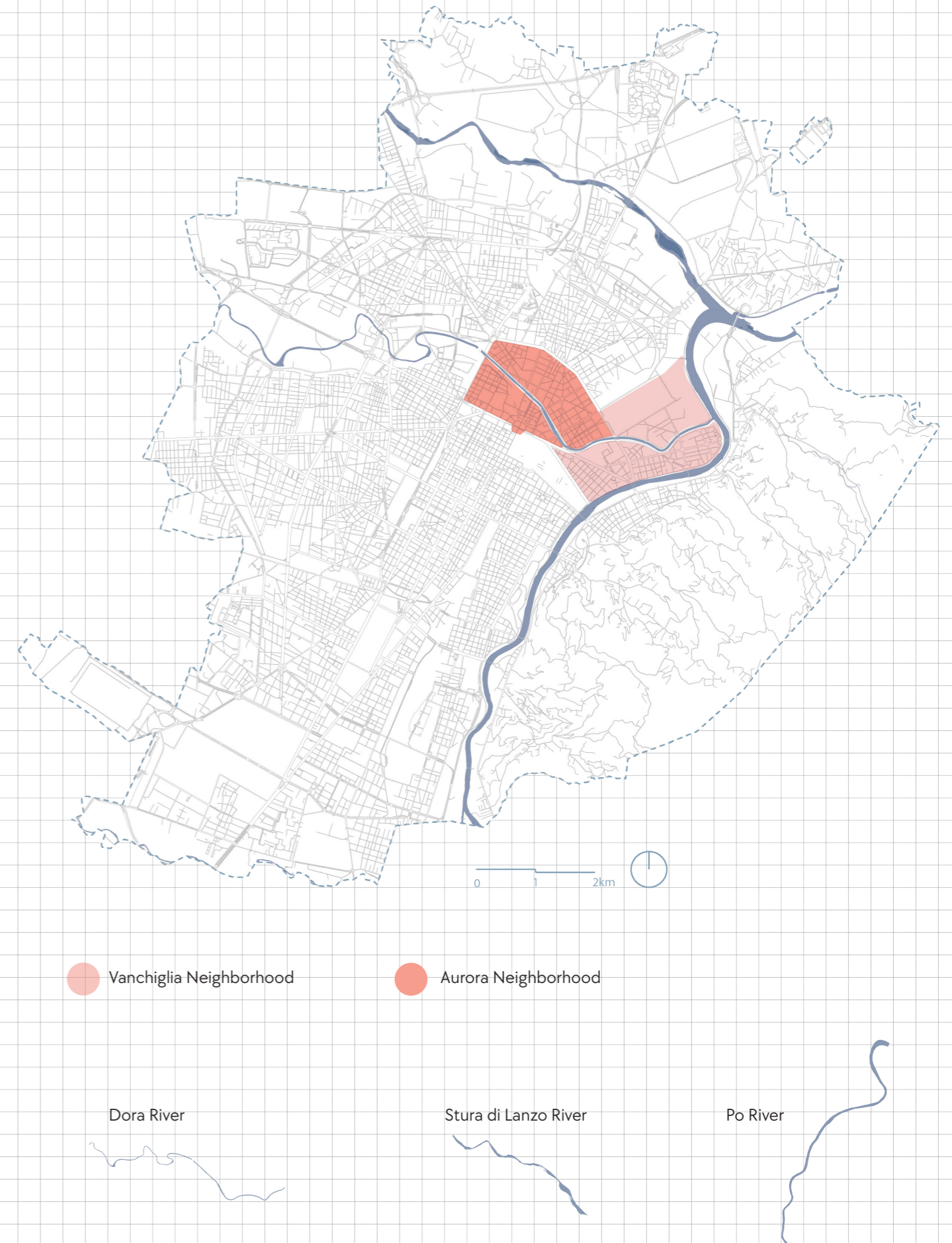




Image 1. Fiat Lingotto Factory 1922, Source: Lingotto Turin Gallery



Image 2. Storia Fiat: nascita della Fabbrica Italiana Automobili Torino, Source: Moleventiquattro



Image 3. Mid '60: Internal View of the Mirafiori Fiat Factory Source: Motor 1



Image 4. Operai in uscita dalla Fiat. Torino s.d. Source: Polo del 900



Image 5. Assembly line of the Topolino after the Second World War (translated) Source: Motor 1



Image 6. Officine Grandi Riparazioni, Torino, 1925 Source: Ricordo quel binario, Alberto Cordara, Calosci-Cortona



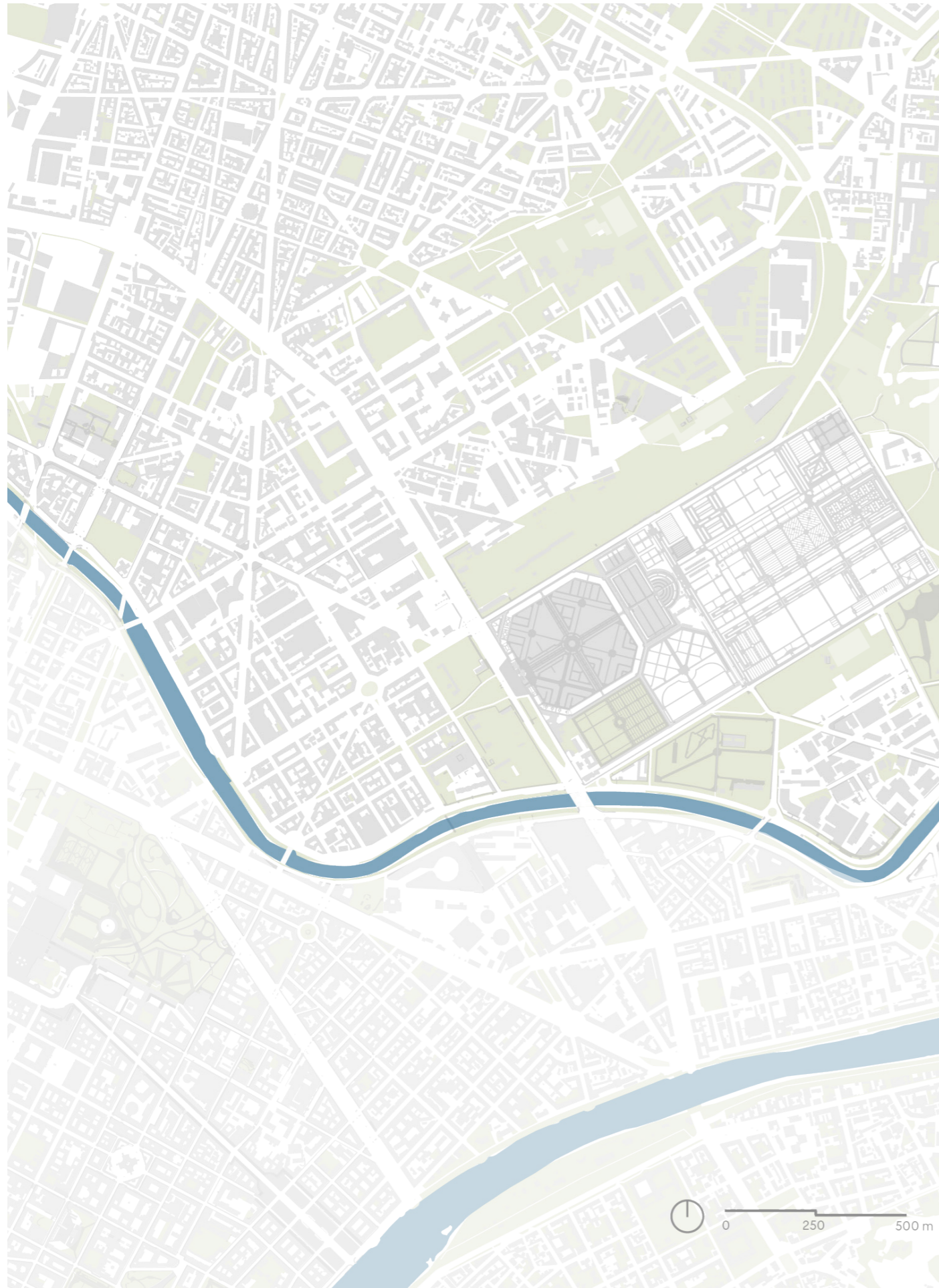


Image 1. Fiat Lingotto Factory 1922,
Source: Lingotto Turin Gallery



Image 2. Storia Fiat: nascita della Fabbrica Italiana Automobili
Torino, Source: Moleventiquattro



Image 3. Mid '60: Internal View of the Mirafiori Fiat Factory
Source: Motor 1



Image 4. Operai in uscita dalla Fiat. Torino s.d.
Source: Polo del 900



Image 5. Assembly line of the Topolino after the Second World
War (translated) Source: Motor 1



Image 6. Officine Grandi Riparazioni, Torino, 1925
Source: Ricordo quel binario, Alberto Cordara, Calosci-Cortona

This marked difference of urban geographies marks the divisional connotation of the Dora river, which demarcates the boundary with an area clearly of university character with the campus luigi einaudi and the other structures dedicated to the university that goes down to the university node of the University of Turin with the Palazzo Nuovo, creating a university geography in the area that lies between the Dora and Po rivers.

The disconnection of these adjacent areas between the river generates a disorderly panorama where there is no clarity of the relationship between the river and the rest of the city. However, little by little the areas of the Po riviera have been gradually restored, equipping the lungo dora with new mobility infrastructures such as the bike path and innovative initiatives by groups interested in urban development with plans to transform this zone into an active area at different times of the day, including at night, that aim to create an attractive area for citizens and tourists. One of the initiatives for the river is ToNight, a plan to improve the safety of the area at night and promote tourism to the areas near the river, highlighting areas of interest and placing new urban furniture. Likewise, another initiative to enrich the area is Qubi Garden, a project that through urban furniture creates an inclusive public space along the river since it does not have well-defined recreational spaces as a park compared to the Po.

Initiatives like this demonstrate the interest of citizens in developing and building community spaces along the river, making it part of the urban fabric instead of recognizing it as a boundary. The interest in developing this area is not only economic, but more than anything, cultural and social, since people are directly involved in the design and shaping of spaces. That is why the inclusion of the opinion of the citizens for the renovation of this area is fundamental for its development.

- Residential
- General Service
- Tertiary Sector
- Infrastructure
- Multifunctional Area
- Green Area
- Productive Area



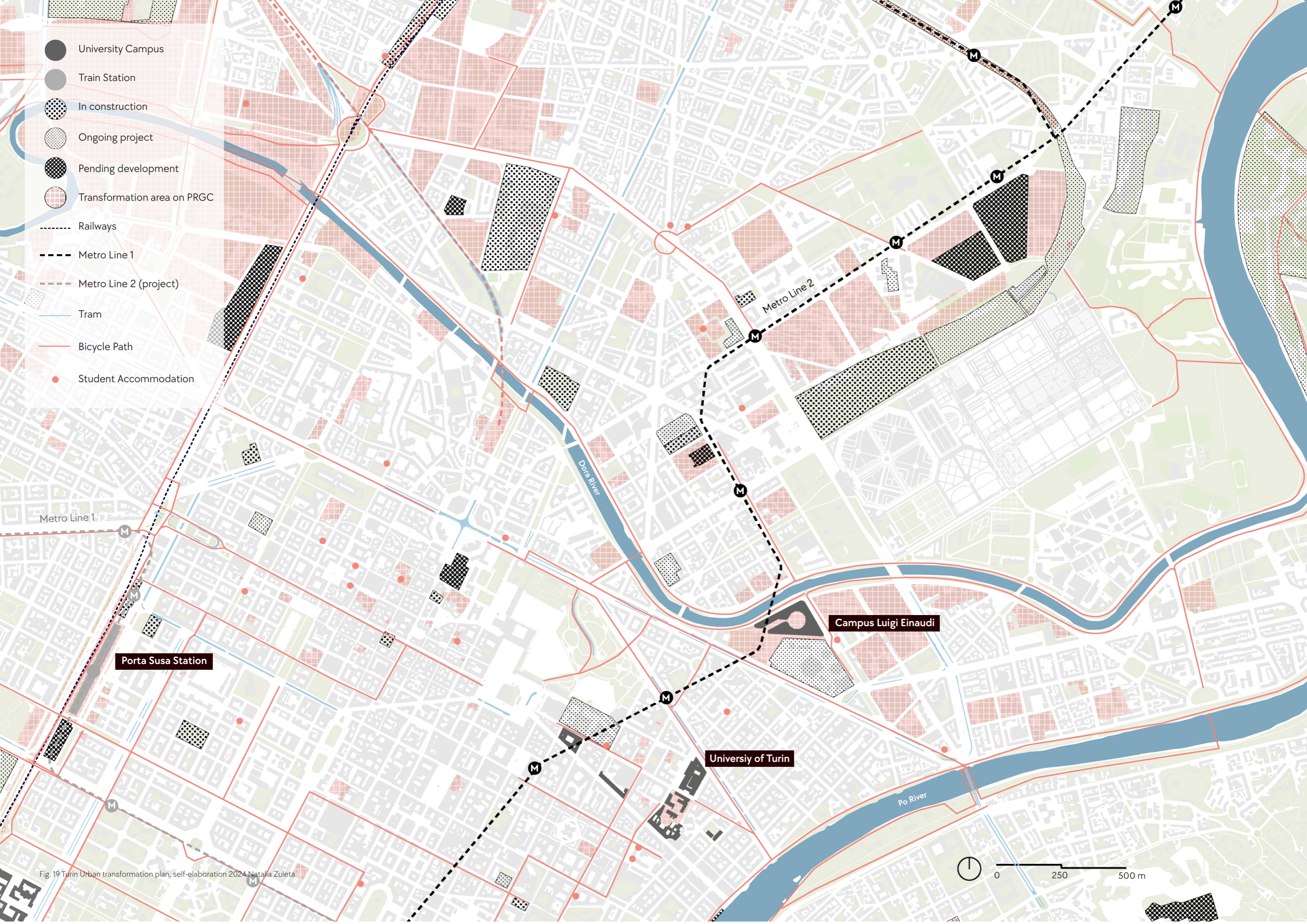
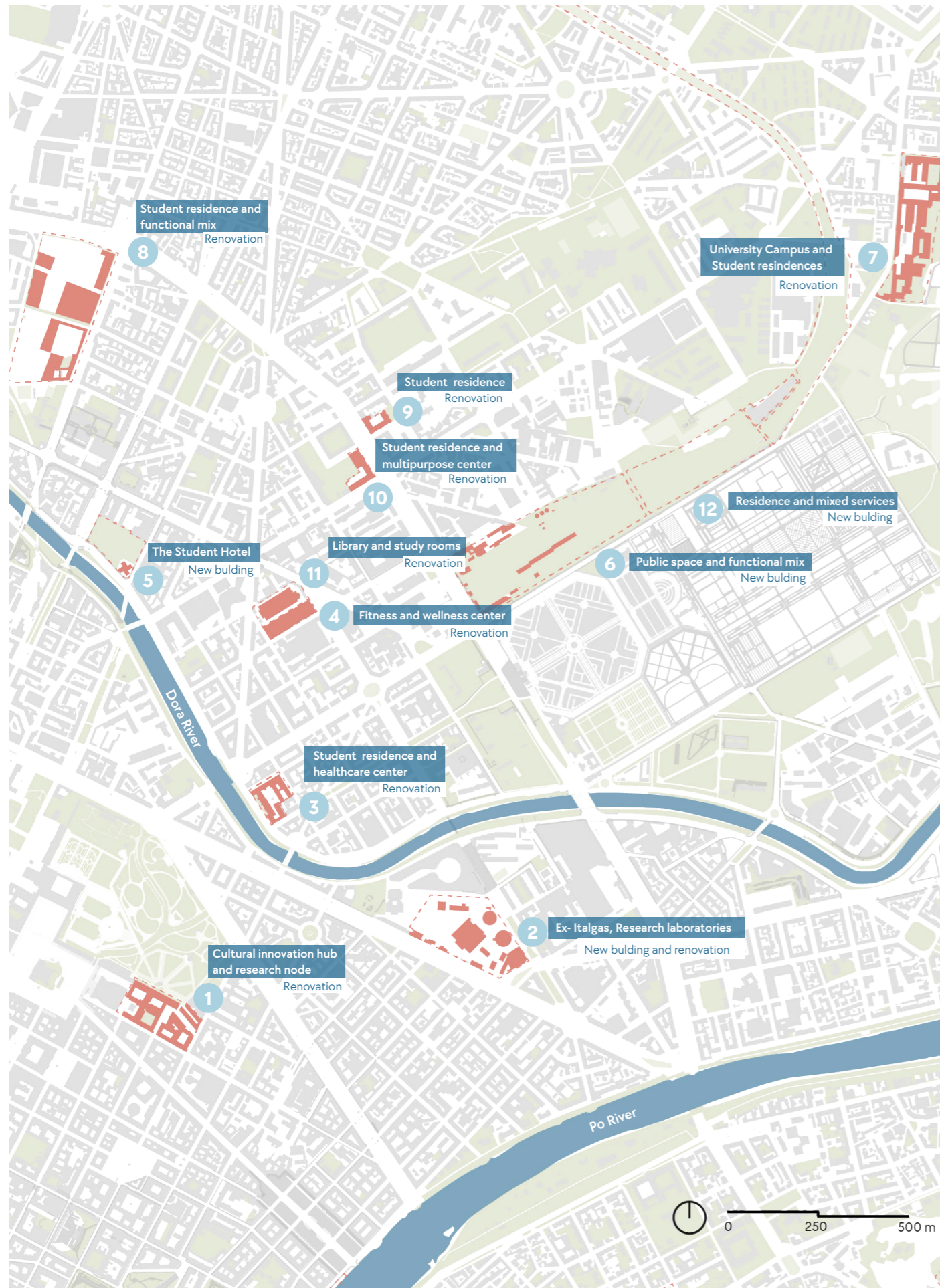


Fig. 19 Turin Urban transformation plan, self-elaboration 2024 Natalia Zuleta



The plans for the northern area of the city, identified before with the project of variante 200 which aimed to revitalize an abandoned sector to transform it into a rich and lively area of the city with a huge ecological potential due to the limit with the Dora River, which instead of divide the city can be thought as a natural landmark and a n element of social integration, recreation and vitality taking the Po in the Valentino Park areas as a proximal example but with its own character since it cross a complete urbanized area.

1. Cavallerizza Reale



2. Italgas



3. Maria Adelaide Hospital



4. Mercato Fior



5. Campus The Student Hotel



6. Regaldi



7. Manifattura Tabacchi



8. Officine Grandi Motori



9. Former Lavazza headquarters



10. Nebiolo



11. Galletificio Militare



12. Scalo Vanchiglia



04.1| Scenarios

Following the Sustainable Development Goal 11 (SDG 11) " Make cities and human settlements inclusive, safe, resilient and sustainable" this steps aims for creating three different scenarios that would contribute to:

- 11.1. By 2030, ensure access for all to adequate, safe and affordable housing and basic services and upgrade slums.
- 11.3. By 2030, enhance inclusive and sustainable urbanization and capacity for participatory, integrated and sustainable human settlement planning and management in all countries.
- 11.4. Strengthen efforts to protect and safeguard the world's cultural and natural heritage.
- 11.b Support positive economic, social and environmental links between urban, peri-urban and rural areas by strengthening national and regional development planning.

These scenarios seek to apply the strategies studied in the Methodology, taking the PRNN funding resource for the creation of structures dedicated to student accommodation and the promotion of culture and education that will finally be inserted in a master plan dedicated to the integration of disconnected areas. the scenarios use the strategies of adaptive reuse as an economic resource and recognition of the existing state. The intervention lots of the scenarios are part of the spaces proposed by the PRG as transformation zones. Each scenario represents different methods of organization and development of different project programs in order to find a balance between the feasibility of their elaboration by the developers and investors and the possibility of achieving low-cost accommodations that are affordable for students from different contexts. In addition, it takes into account the inclusion of the non-student citizen population for participation in these new spaces that seek to implement social justice in a diversified urban context.

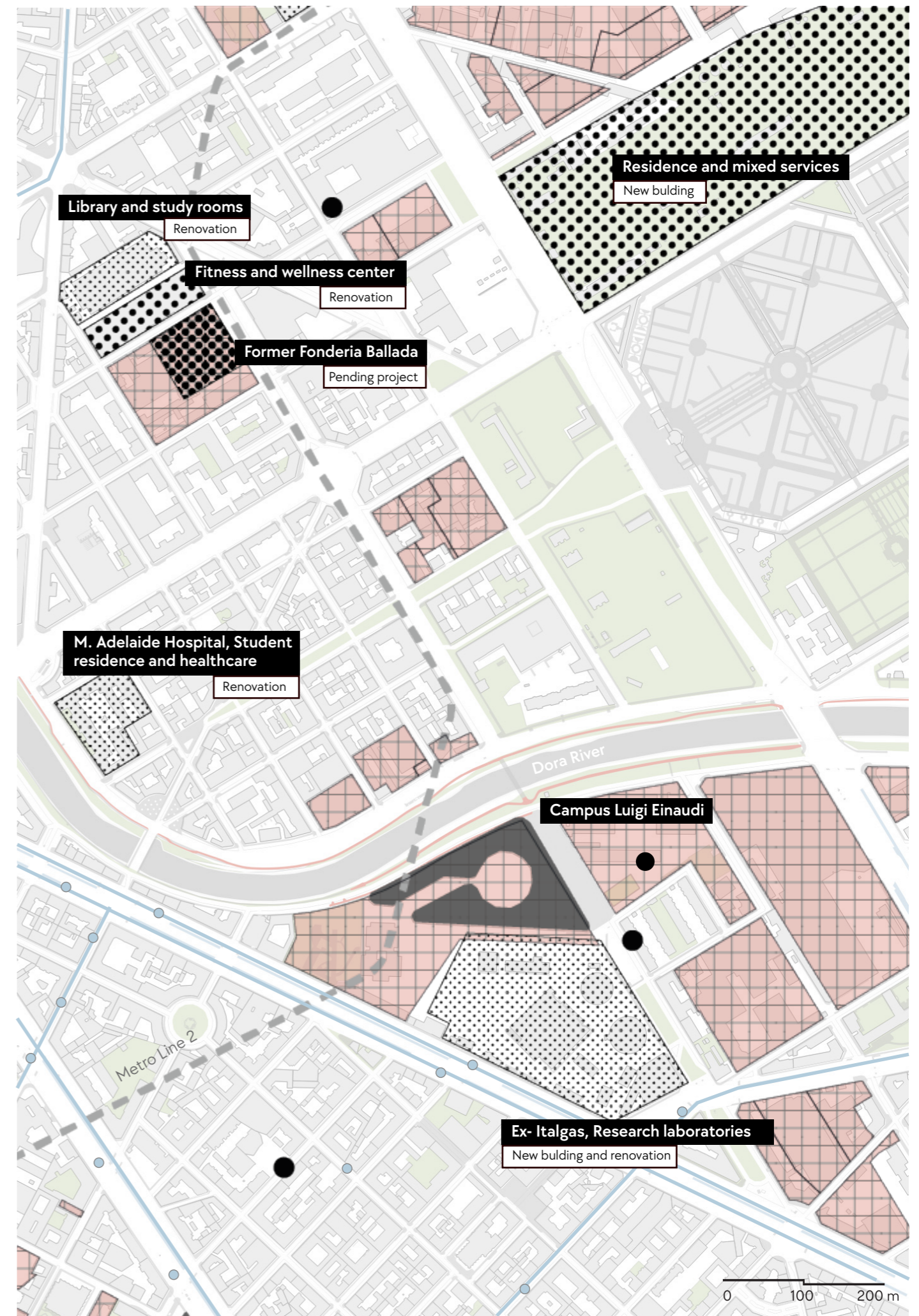


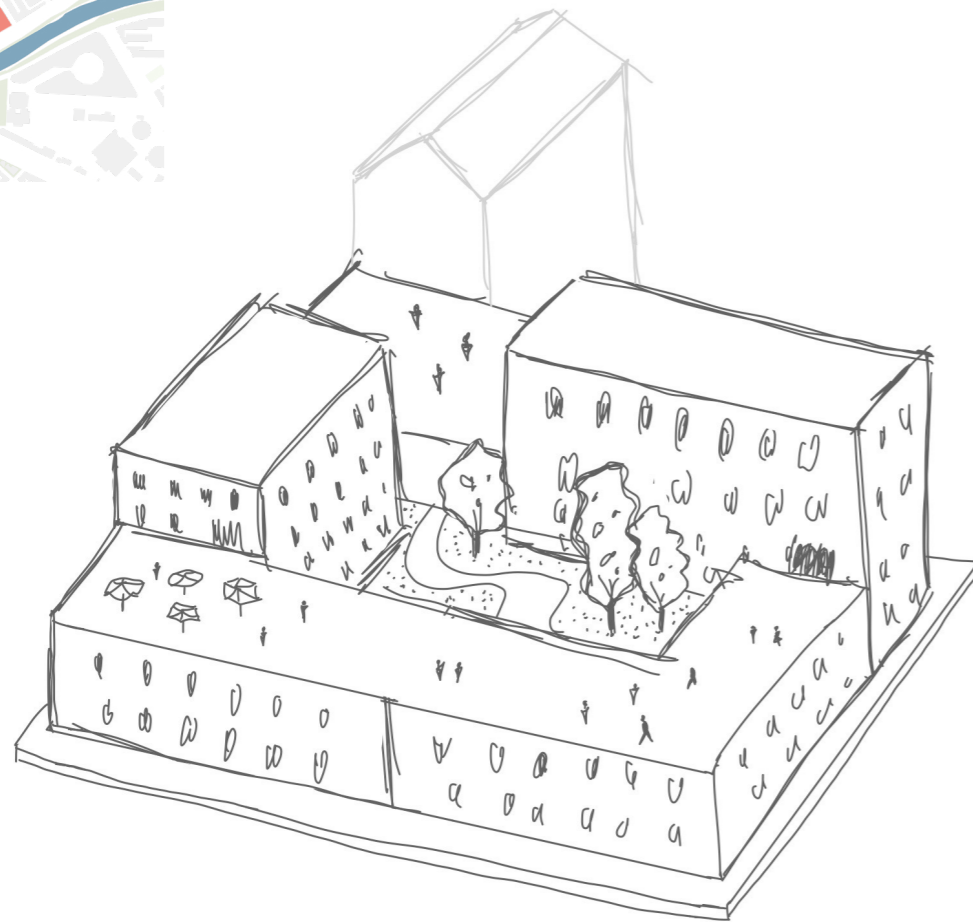
04 PROPOSAL

Image 11. Dora River Banks Campus L. Einaudi
Illustration by the author, 2021

11 SUSTAINABLE CITIES
AND COMMUNITIES



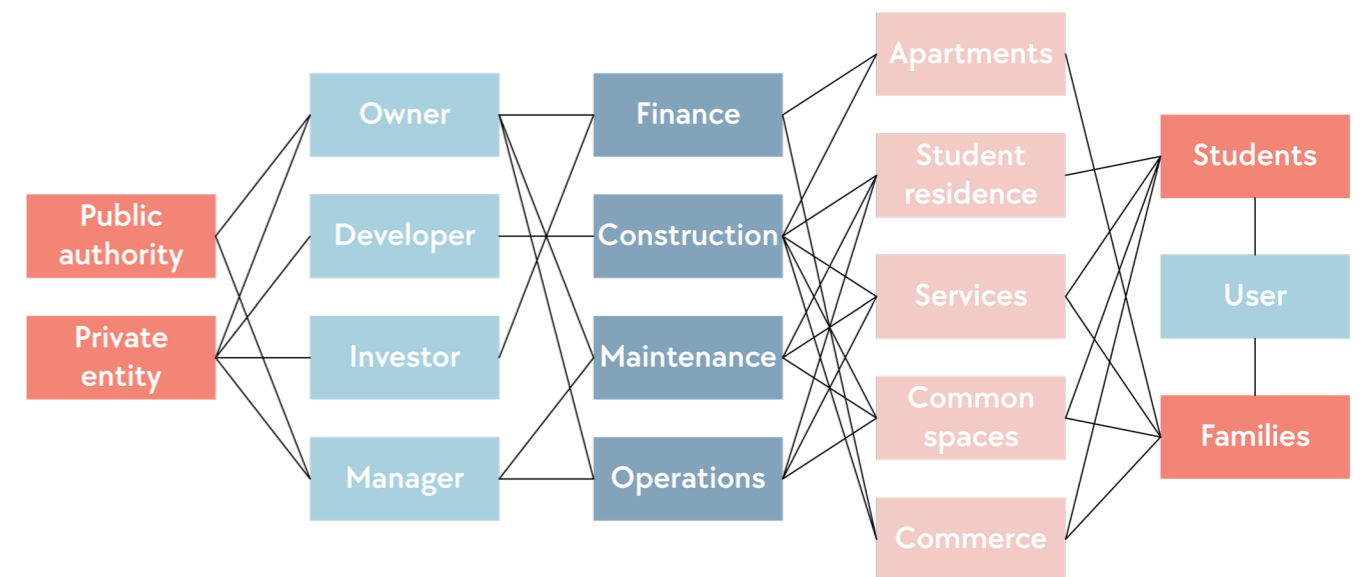
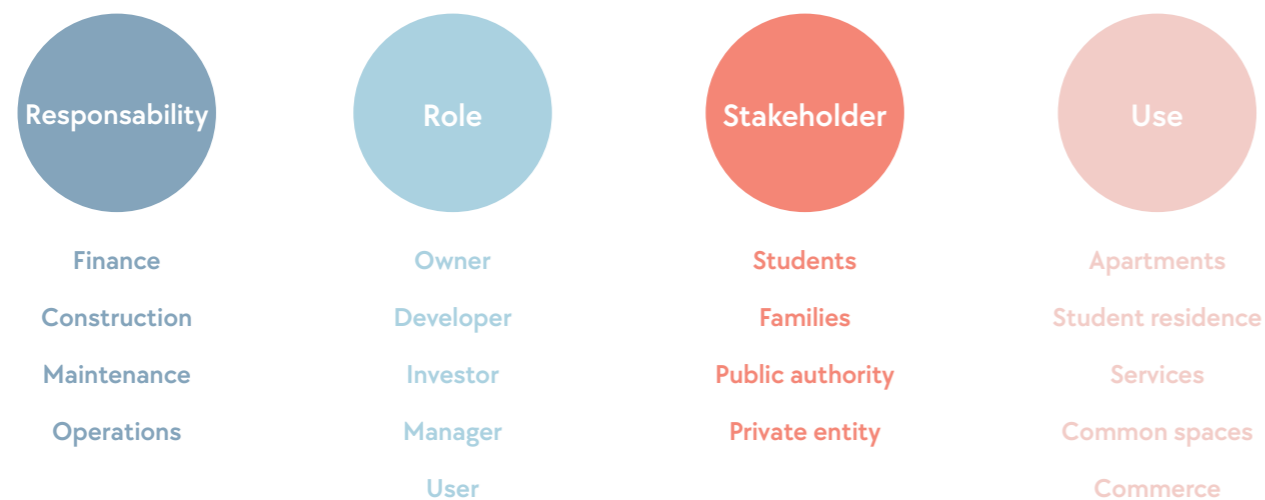


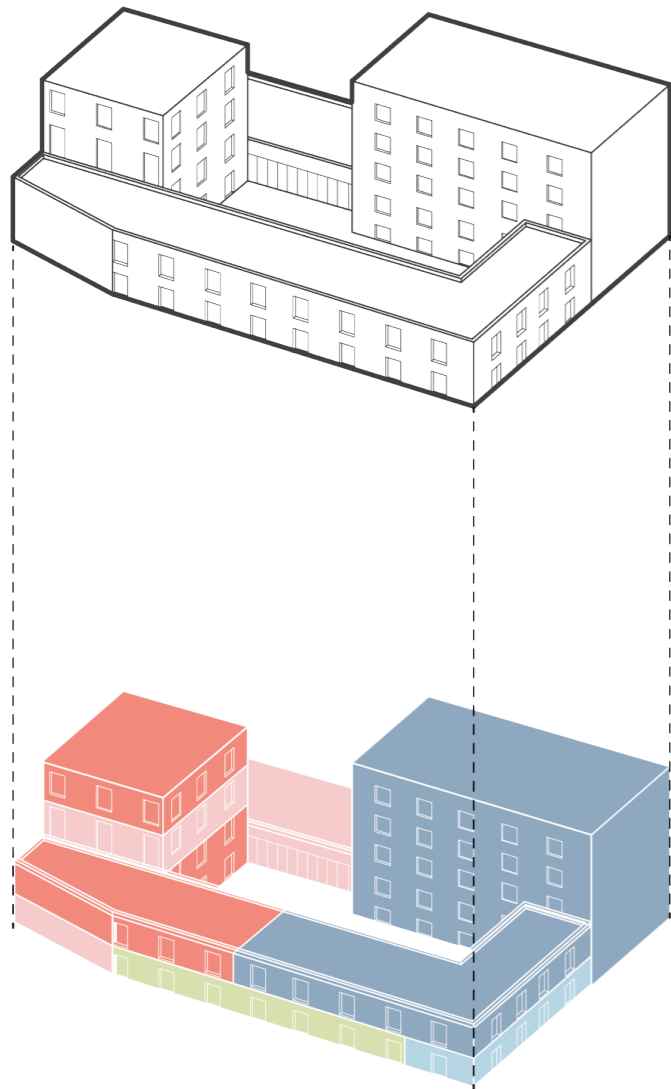


1. Mixture of uses

This scenario explores the possibility of including different uses in the program of the building, including the function of university residence with reduced rents in order to lighten costs for students by offering and apartments within the free market for families or a target population with a regular value within the market, and also including the use of commerce on the second floor of the building. These last two functions are intended to generate a mix of uses that not only serves students but also includes other sectors of the population and also generates an economic balance in which the activities that generate more profit support the reduced rents for students.

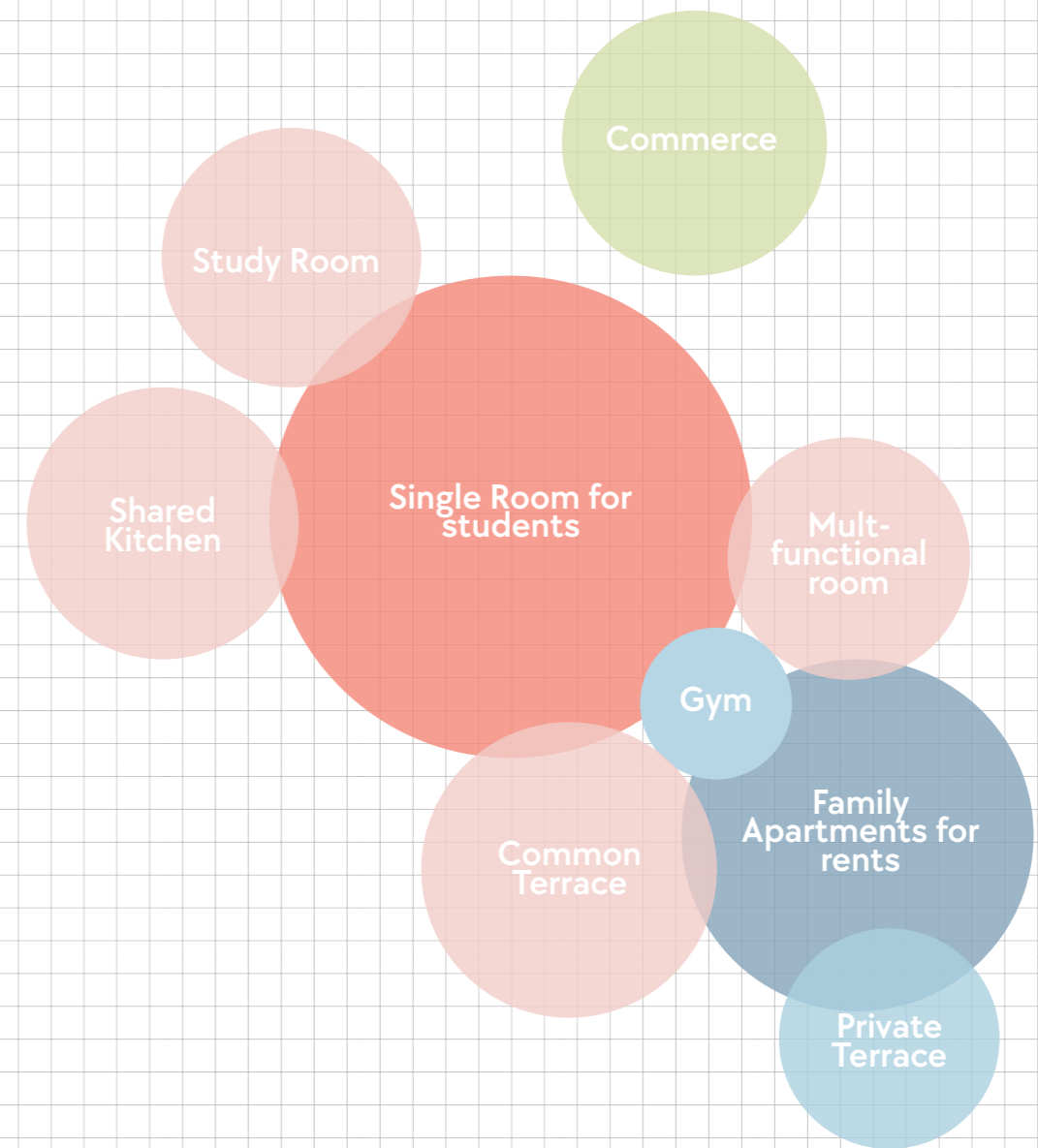
The three destinations have different levels of potential return where commerce would be the most remunerative activity. The apartments for families having a higher economic value also have privileged characteristics compared to the student apartments, such as the position with respect to the river views, without compromising the quality of the spaces for the students. Common areas with the two main users of the project are limited to the common terrace, the gymnasium and the multifunctional room.

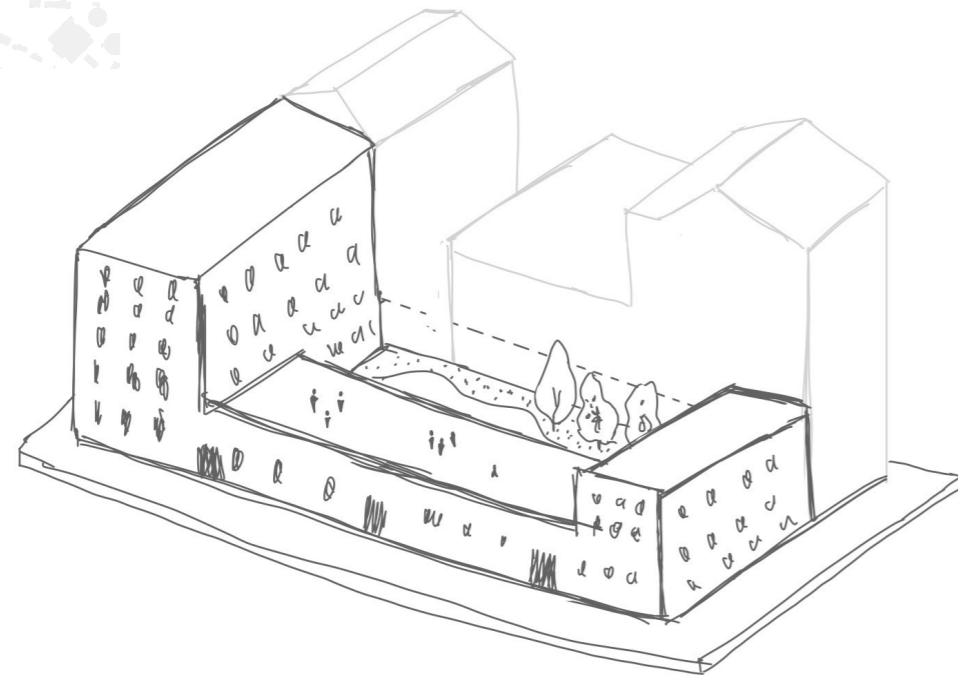




Program

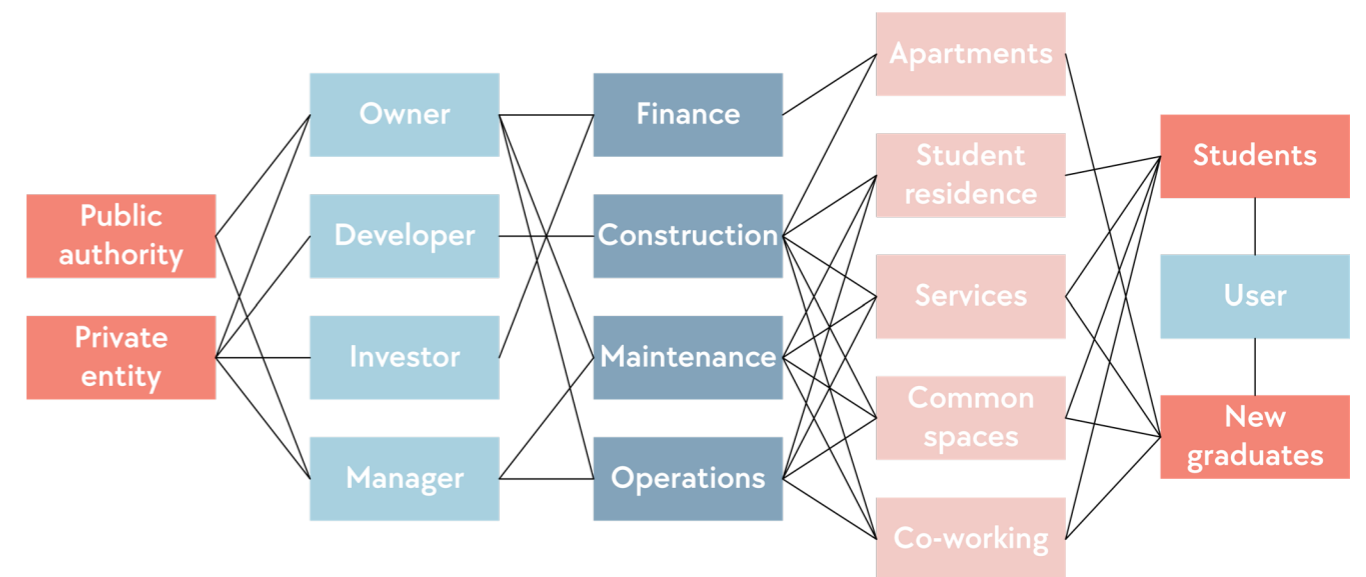
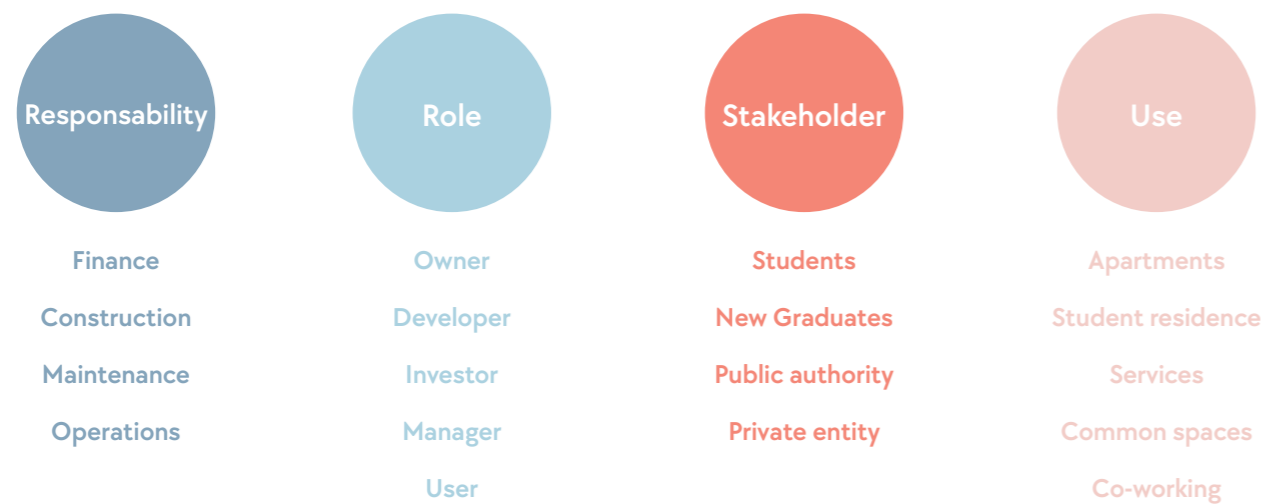
- Single Room for students
- Family apartments
- Common Terrace
- Private Terrace
- Multi-functional room
- Study Room
- Shared Kitchen
- Gym
- Commerce

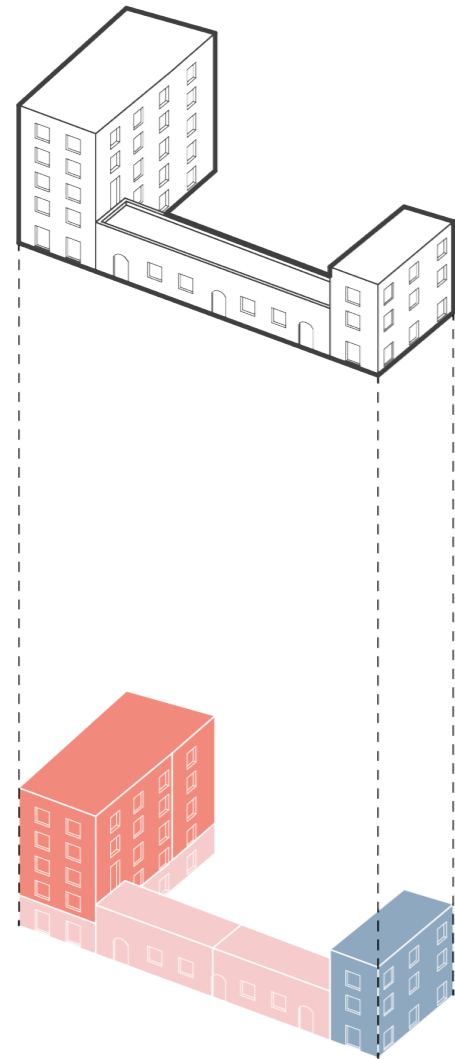




2. Retaining Talents

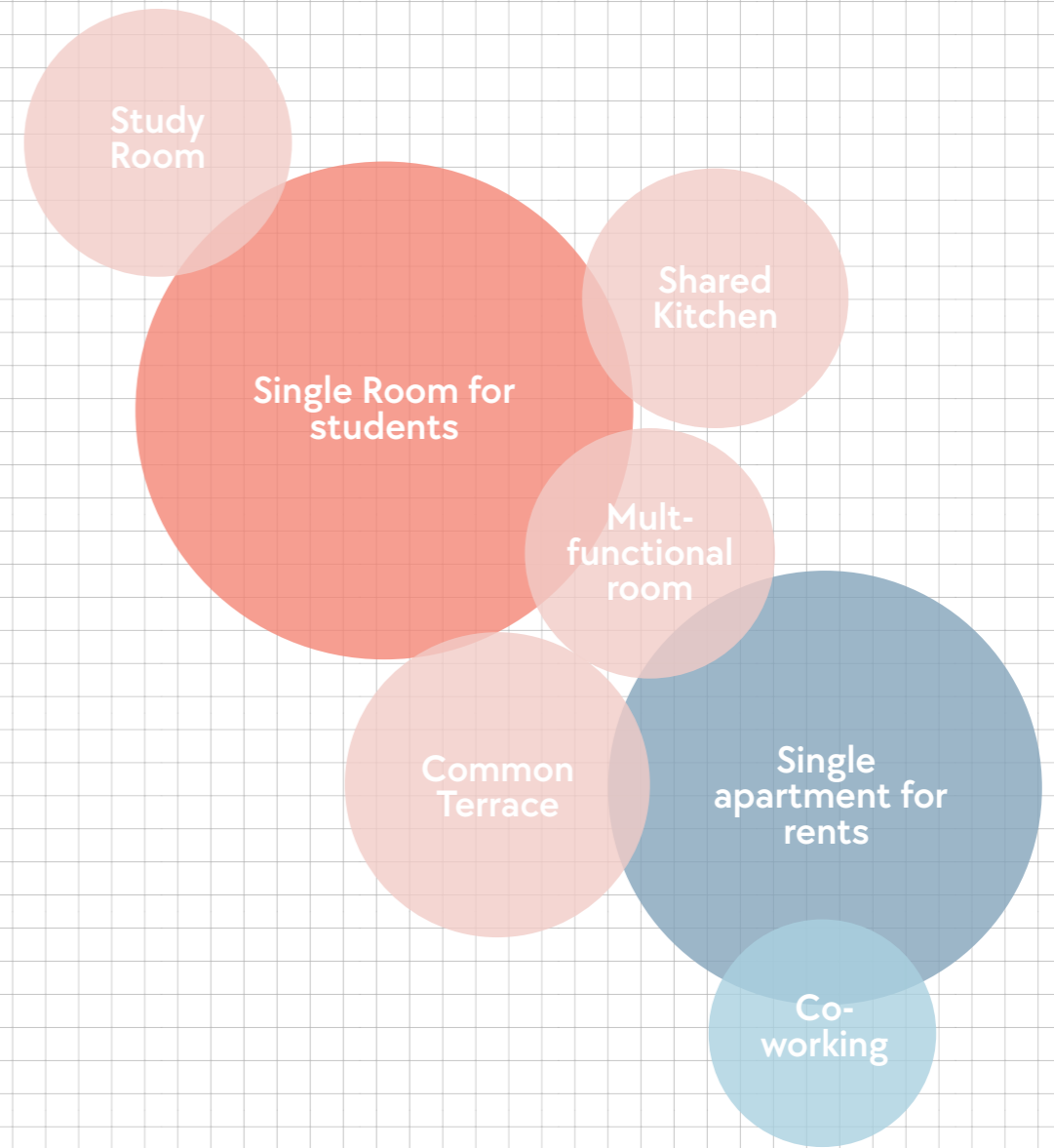
For the next scenario, we thought about the possibility of integrating a population similar to the university population into the project program, which opens a new discussion about How to retain or attract talents from a shrinking working age population for the future regional growth. This scenario seeks to include the population of recent graduates who face the difficulty of finding housing in the city no longer as students but as new workers. This combination of uses seeks to respond to a secondary problem to the main theme of the study in which reduced rents are offered to both main users with the difference of an increase in cost for young graduates, which is nevertheless an option with a lower price than the free market and provides the possibility of staying for a limited period during the transition between student and entry into working life for those who decide to stay in the city. The spaces in these scenarios are mostly shared between the two main users.

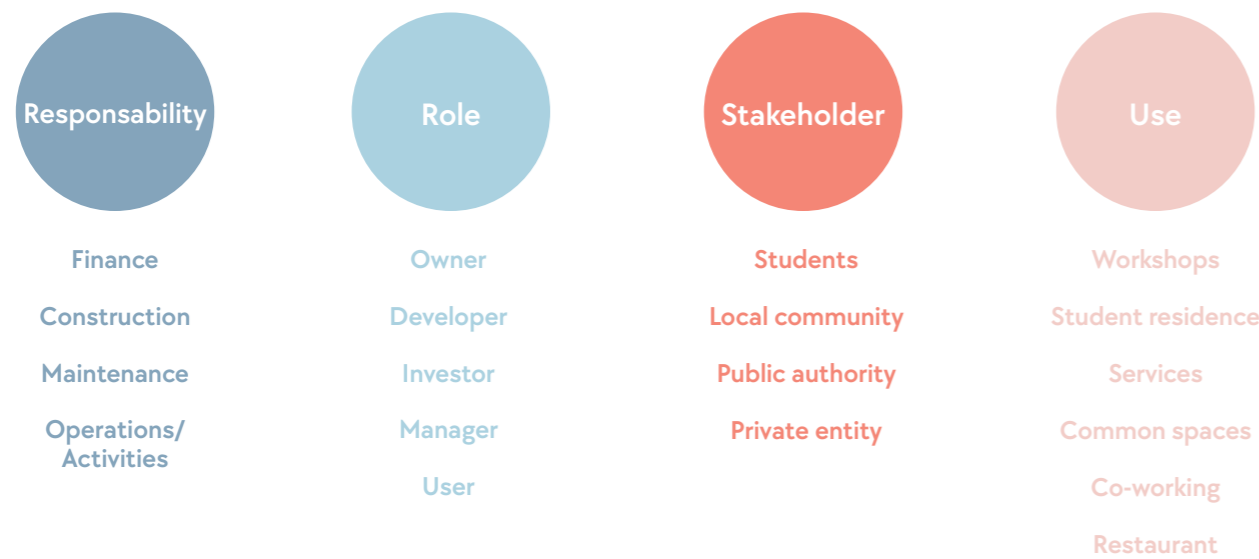
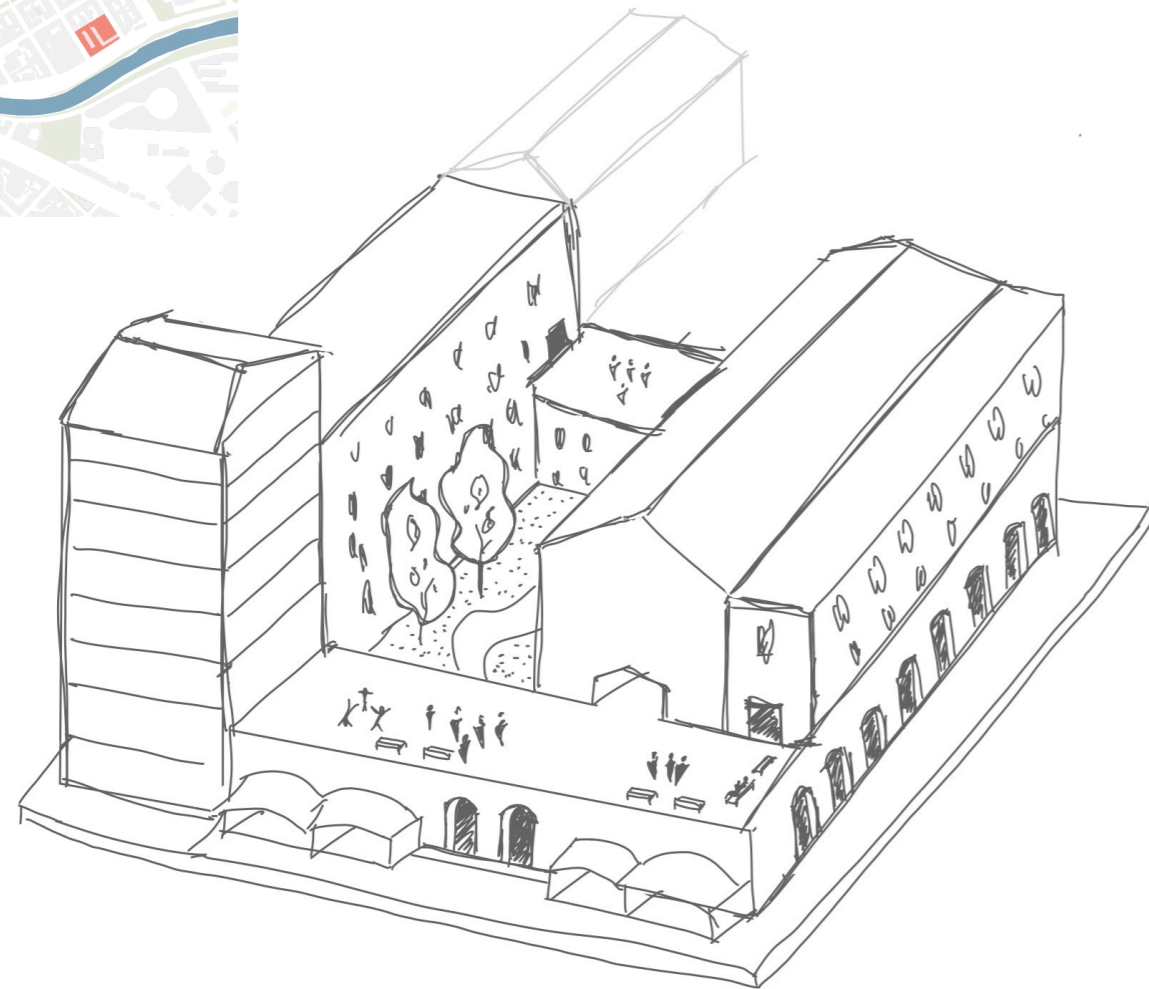




Program

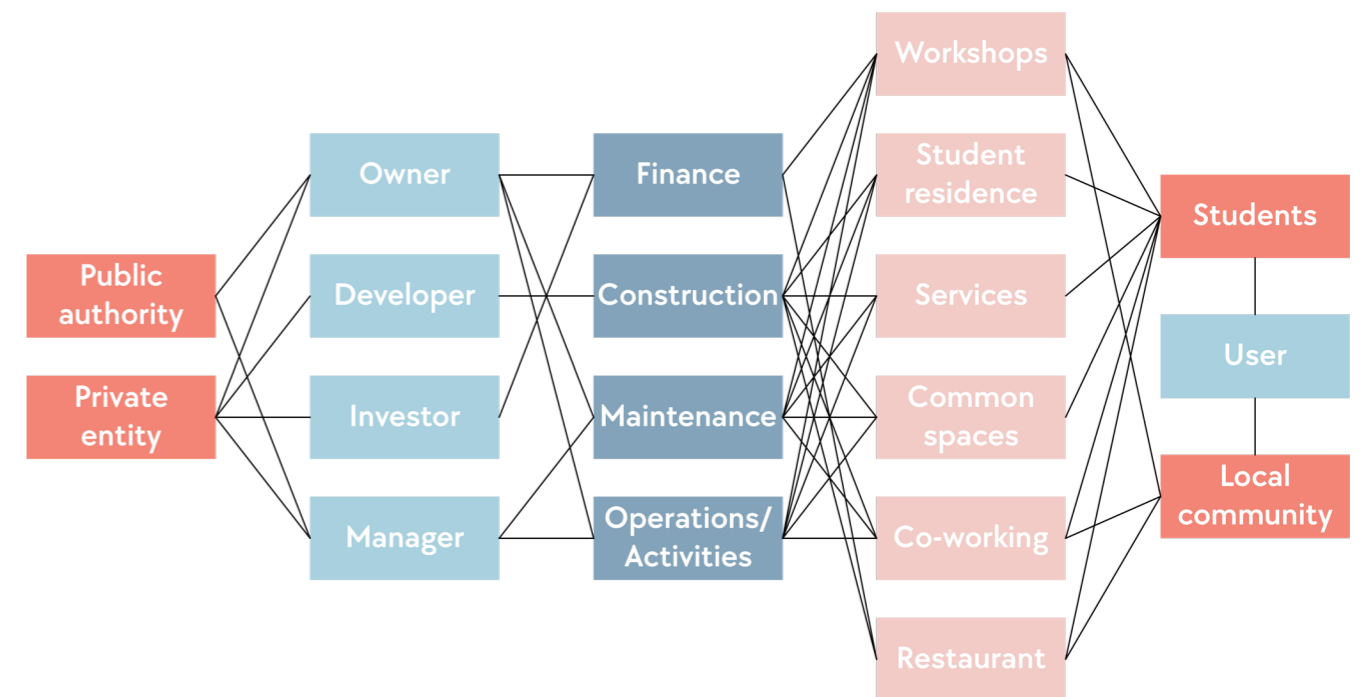
- Single Room for students
- Single apartment for rent
- Common Terrace
- Mult-functional room
- Study Room
- Shared Kitchen
- Co-working

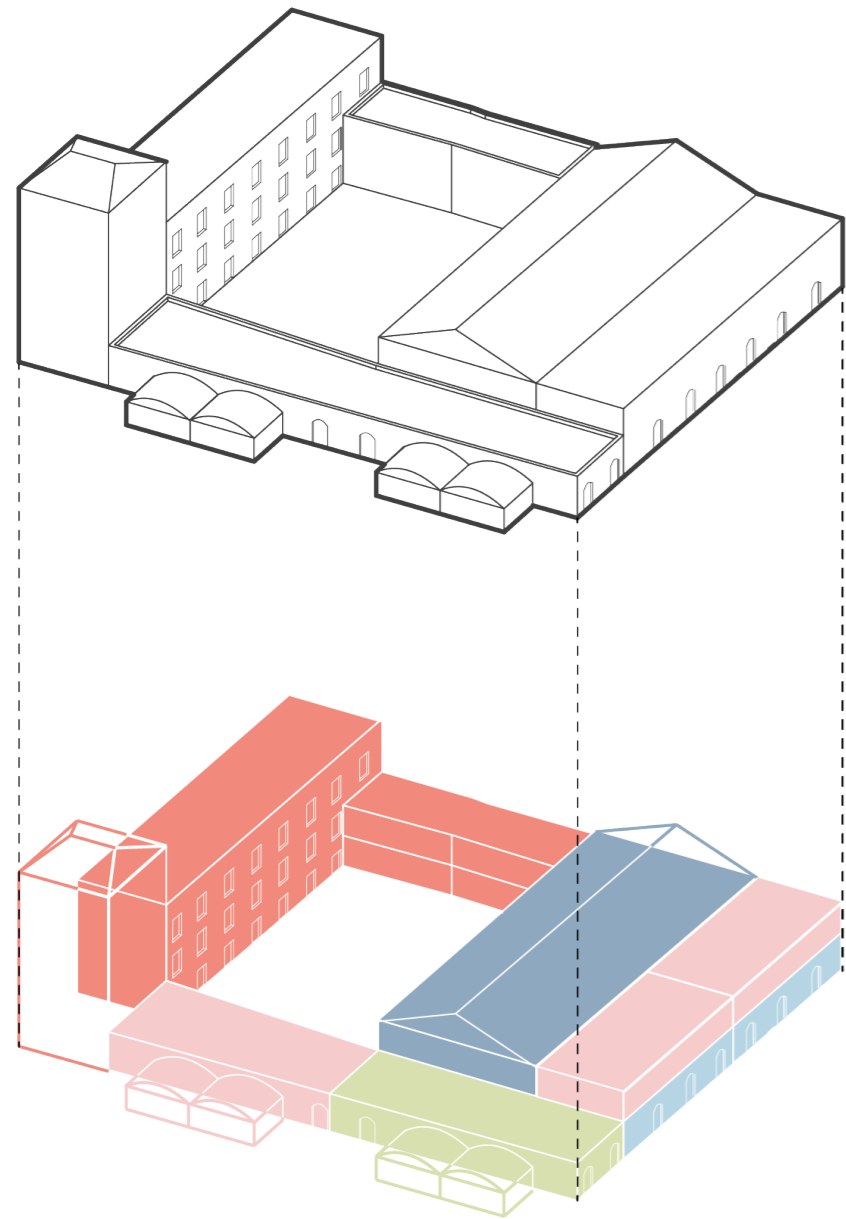




3. Productive and creative hub

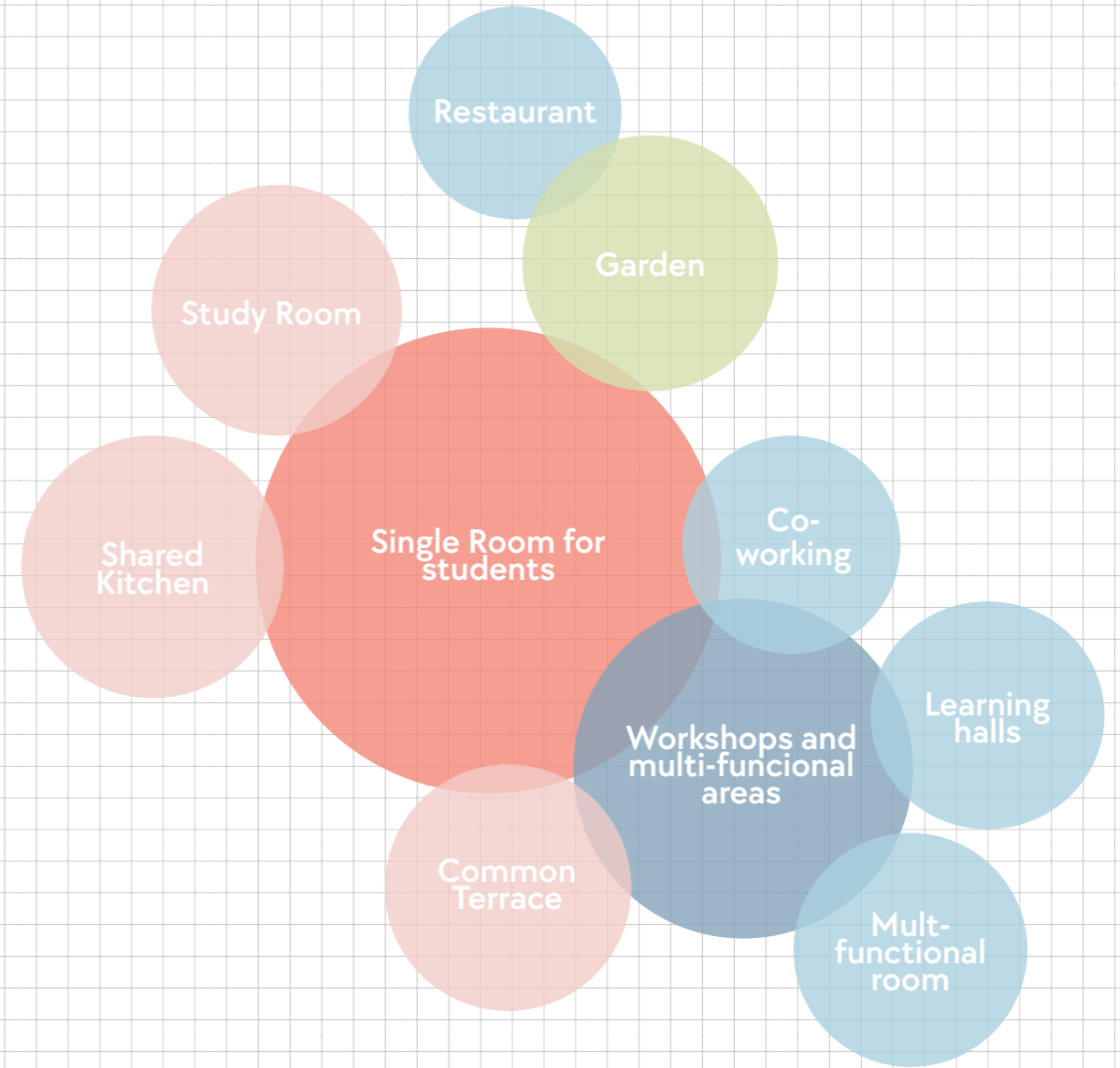
The last scenario presents students as the main user, however, the activities proposed for the project include the participation of the local community in cultural and educational activities. The idea arises from the possibility of generating a cultural value that translates into an economic value for the students where they will have the opportunity to participate in activities and workshops associated with different talents and skills that will provide new knowledge to the community. An example of possible activities could be classes taught by the students or the possibility of working in the different services provided by the project program, such as the restaurant or the urban vegetable gardens. In this way, a remunerative activity is offered mainly to the students housed in the equipment, thus reducing transportation costs for those who wish to look for work in the city and testing a type of productive room that offsets the costs of accommodation. It provides one service in exchange for another as a possibility and also generates value and integration within the local community of the neighborhood.





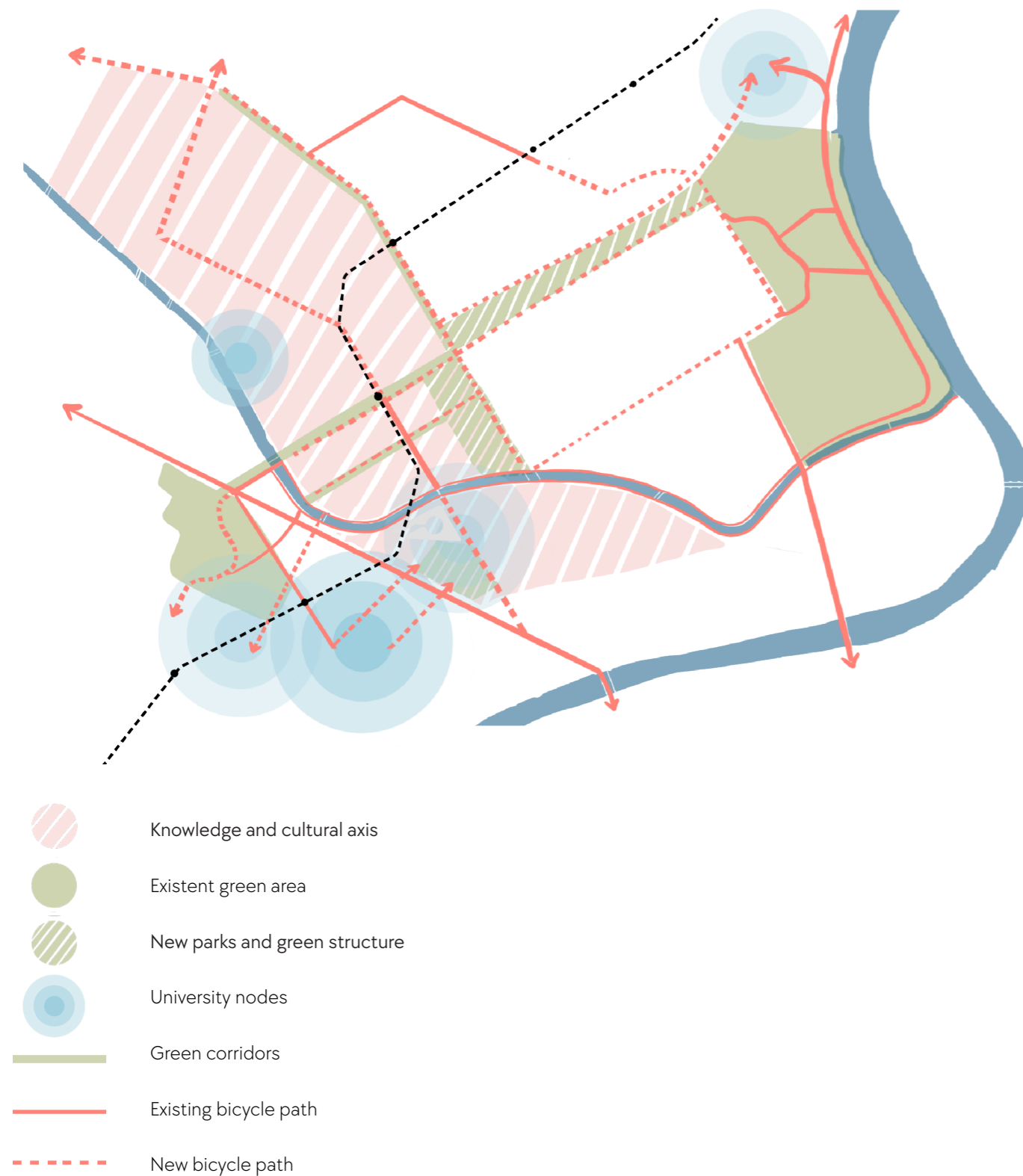
Program

- Single Room for students
- Workshops and multi-functional areas
- Common Terrace
- Shared Kitchen
- Study Room
- Co-working
- Multi-functional room
- Learning halls
- Restaurant
- Garden





04.2| Masterplan



The masterplan for the Dora river riviera zone puts into practice the proposed scenarios within a context that seeks to develop social inclusion and the revitalization of an area of the city in which disused areas are transformed through adaptive reuse strategies.

The masterplan was born as a response to the disconnection of the two areas divided by the Dora river where there are some urban voids and a complicated accessibility to the university poles developed in the north of the city.

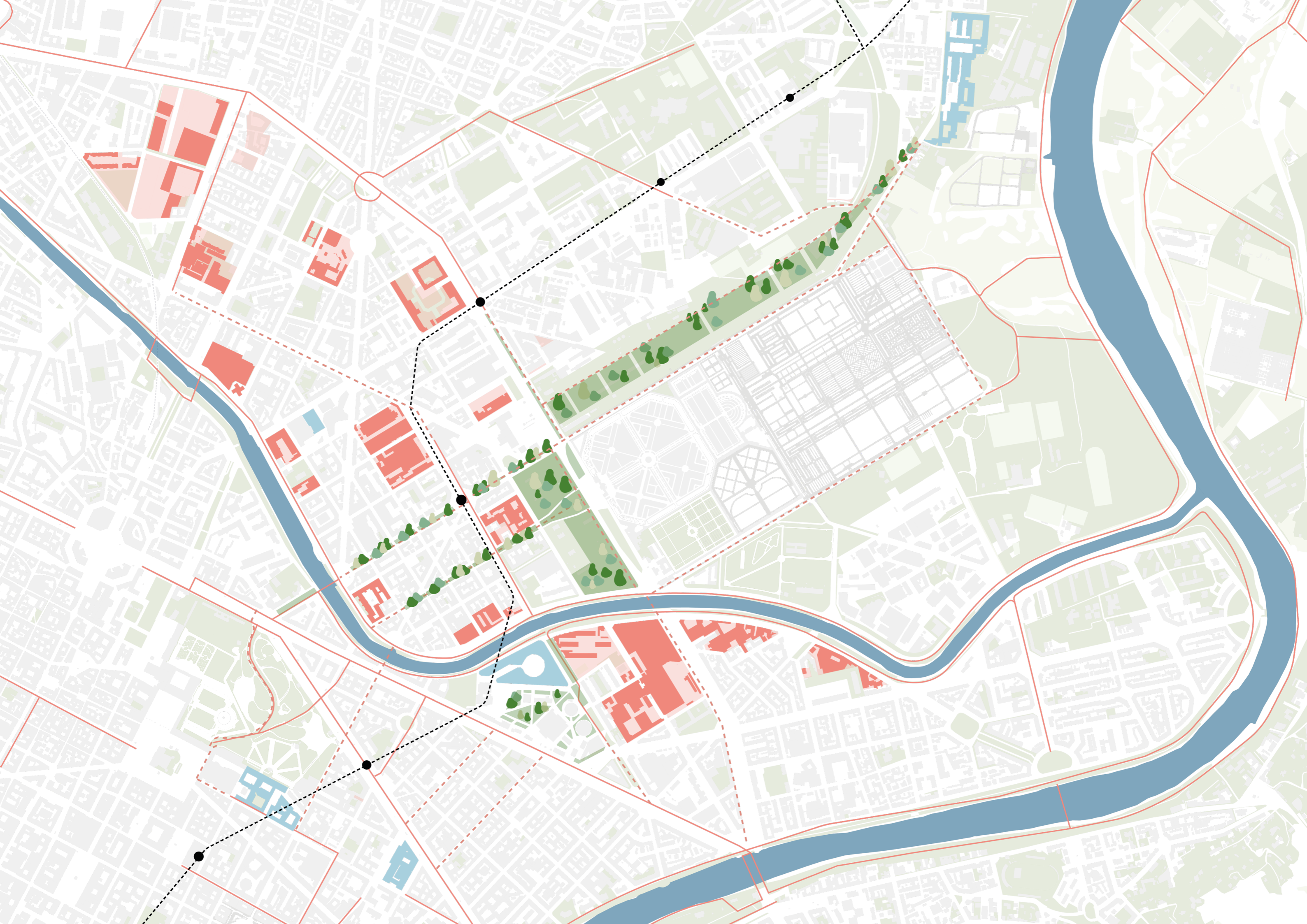
The main proposal is to generate a connection between the two campuses of the University of Torino, Palazzo Nuovo and CLE, and the new campus that will be built from the renovation of the former Manifattura Tabacchi. There are three strategies to achieve the integration of the university landscape where a cultural university axis will unify the areas under the river with the area along the northern riviera. This axis would start from the area near the Luigi Einaudi Campus to the border with the Officine Grandi Motori renovation project.

The second strategy seeks to generate a green corridor that unifies the central area of Giardini Reali up to the new campus of Manifattura Tabacchi by creating a system of parks and environmental corridors, generating a continuity of green spaces.

Finally, the aim is to extend the continuity of the existing cycle paths with new road axes that connect the different structures of the new university-cultural system and the main university campuses by means of a smooth and inclusive mobility.

Strategies:

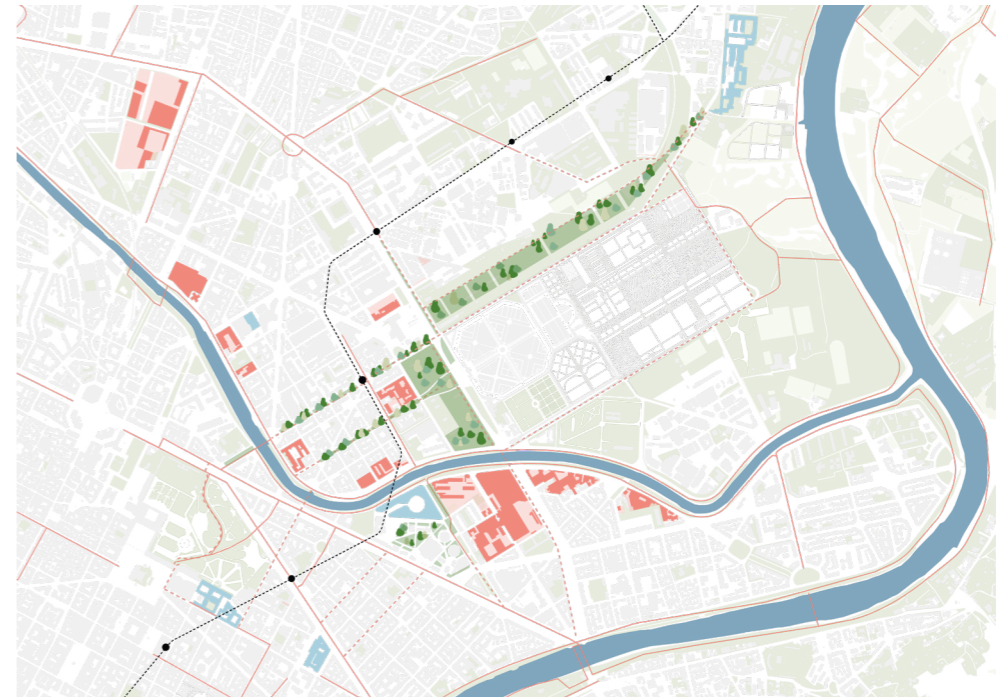
1. Generate a axis composed with new structures dedicated to students and the community using the vacant and underused spaces for transformation along the Dora River
2. Develop a green connection unifying the existing and underuse green and permeable spaces and transform them into public space and creating a continuous environmental axis between the university nodes.
3. Create a continuous soft mobility system of bicycle paths to allow easy and inclusive accessibility to the university system.



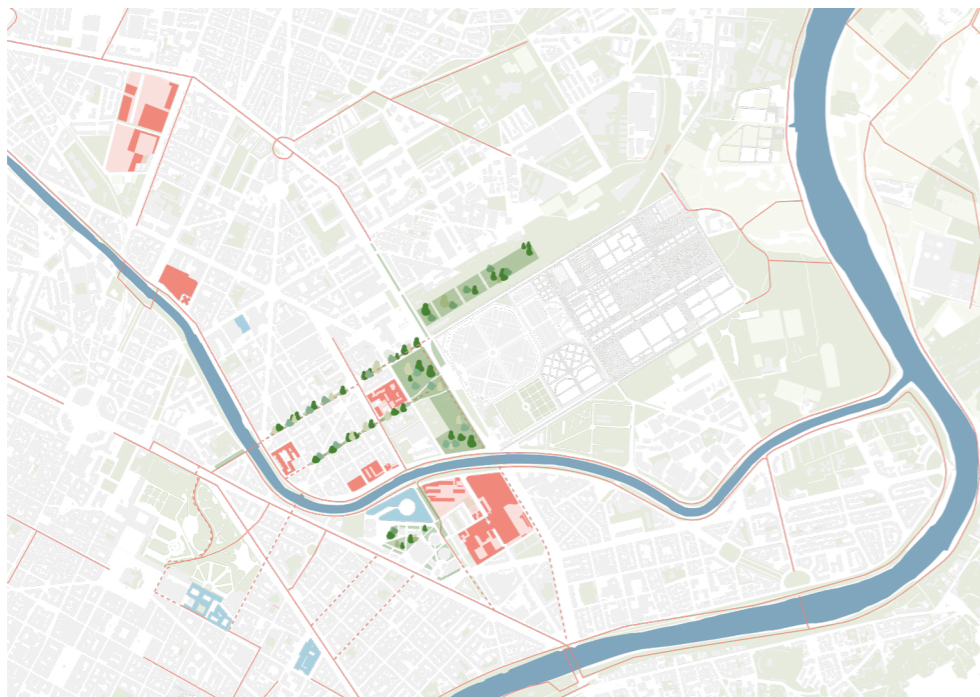
Phase 1



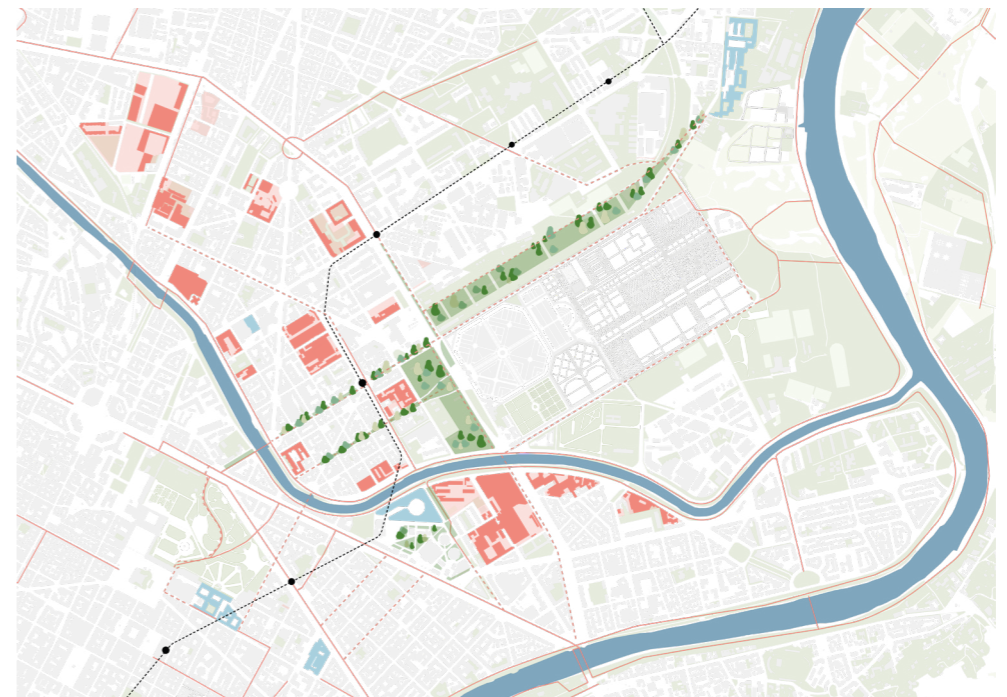
Phase 3



Phase 2



Phase 4





05| APPENDICES

Abitazione giovani solidali:

Small communities of young people who choose to live together temporarily within public housing complexes and, in exchange for sustainable rent, volunteer hours to improve the relations between the tenants of the building, offer support e accompany the most fragile people, and supervise the little one maintenance of common areas.

Annual percentage rate

is the cost you pay each year to borrow money, including fees, expressed as a percentage.

Protected and regulated tenancies

Sometimes also referred to as 'protected tenancies' or 'rent act' tenancies, a regulated tenancy is an agreement which prioritises the tenant over the landlord, providing them with more comprehensive rights compared to what you might find in a more standard rental agreement. (Thompson A. 2023, What is a regulated tenancy?, 16th May)

Fair rent

Regulated tenants pay a fair rent which is lower than a market rent.

A fair rent is set by a rent officer at the Valuation Office Agency. This is the maximum rent your landlord can charge you under the tenancy.

Special Purpose Vehicle

A legal entity that allows multiple investors to pool their capital and make an investment in a single company

Equity yield

(Ye) is the required rate of return on equity capital.

Building energy efficiency

In order to fund social housing by means of ppp its necessary to devise a profitable transaction for the private partners.

One way to achieve this is to take advantage of the opportunities offered by the EU energy policy aiming to achieve efficient energy consumption in a carbon zero economy. European investment bank funding programs such as ELENA (European local energy assistance) or EEEF (European energy efficiency fund) are financial mechanisms that can be suitable for funding in the building sector.

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