GI-8TTO

The following **project** was developed with the aim of redeveloping and making the **Torrent d'Estadella** neighborhood in Barcelona more livable. The goal of the project is to mend the urban fabric between the adjacent neighbourhoods, Sant Andreu and Bon Pastor, redeveloping the area, currently predominantly industrial, to make it a new attractive center in the city, as the area is located at the center of some redevelopment and urban greenery projects.

The name of the project, **GI-8TTO**, derives from this goal, as it aims to create a complete neighborhood focused on the community and on the principles of sustainability, redeveloping spaces in a state of decay and inserting new services and functions, easily reachable thanks to cycle-pedestrian paths, thus giving life back to the area.
Since the name can also be traced back to the famous Italian artist Giotto, we want to associate the concept of a colorful and joyful atmosphere with the final rendering of the neighborhood. In fact in the proposed project the area will take on a more energetic and active character in the community.
Furthermore, the concept GI-8TTO takes up the overall vision of **eight macro-topics** analised in the project, that specialize on different issues related to **10 principles**. The research, in fact, started from the detailed analysis of these basic principles, set out by C40:

1. COMPLETE NEIGHBORHOOD
2. PEOPLE-CENTERED MOBILITY
3. CONNECTED PLACES
4. PLACE FOR EVERYONE
5. CLEAN BUILDINGS
6. SUSTAINABLE BUILDINGS AND ENERGY
7. CIRCULAR RESOURCES
8. GREEN SOLUTIONS
9. SUSTAINABLE LIFESTYLES
10. GREEN ECONOMY

For the final design of the neighbourhood, we started from a careful study of the current status of the area through the **SWOT analysis**, a strategic planning tool which serves to evaluate the strengths, weaknesses, opportunities and threats.

Based on this assessment and the study of the **social and climate situation** of the area, subjected to the climate change effects, strategies were developed to improve the situation of the neighborhood.

Furthermore, from a social point of view, the preferences and issues in the neighborhood was explored with a **survey** direclty sent to the local people, users and residents. Thanks to an accurate analysis we were able to identify the needs and the problems of the area, to then implement improvement strategies in the proposed project.

We then moved on to planning aspects such as:
- **mobility**, reducing traffic and implementing sustainable transportation and public transport services;
- **services**, creating new spaces, encouraging socialization and spreading information on various problems
- **urban spaces**, in which green spaces capable of promoting biodiversity and reducing emissions are preferred
- **construction**, providing for new buildings for the future residents of the neighborhood and the redevelopment of abandoned industrial buildings for the creation of new services and workplaces.

SWOT ANALYSIS

STRENGTHS

- Subway station
- Suburban train station
- Place of worship
- Healthcare service
- School
- Cultural building
- Sports field
- Public green area
- Parking
- Area of transformation
- Mercedes project
- Highway connection

WEAKNESSES

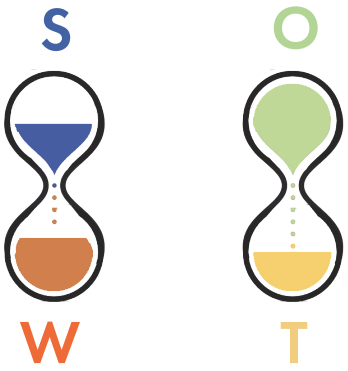
- Industrial fabric
- Railway line as barrier
- Railway height difference
- Closed street

OPPORTUNITIES

- Area of redevelopment for disused building
- Aree of redevelopment and retraining
- Cycle/pedestrian axis
- Landfill area

THREATS

- Industrial traffic and pollution
- Insecurity due to functions





Aereal view of the Torrent d'Estadella neighborhood



Redevelopment project: LaMercedes eco-district



TOPIC INDEX

The project proposed fot the Torrent d'Estadella neighborhood in Barcellona has been developed with the following eight topics.

CLIMATE CHANGE

Adaptation and mitigation
Creating shaded areas to limit the Urban Heat Island effects and increasing permeable and draining surfaces to narrow possible overloading of the sewer system.

SOCIAL SURVEY

Protection of social categories at risk
Promoting subsistence systems and strategies to guarantee service accessibility to categories at risk.

FACILITIES

New facilities, 15-minute city
Integration of new quality services to guarantee a functional mix achievable in a maximum of 15 minutes.

Quality urban areas
Creation of quality spaces for the community (urban squares, markets and exchange places, urban gardens and parks).

URBAN MOBILITY

Green axis and soft mobility
Creation of a connection axis with a cycle/pedestrian path, promotion of sharing services and improvement of the existing public transport system.

Limited vehicle circulation
No passage of heavy vehicles within the area, limitation on the passage of vehicles based on zones and time slots in the district.

URBAN AREAS

Connection and urban continuity
Stitching the urban areas and creating a link between the Bon Pastor and Sant Andreu neighborhoods.

Green areas
Creation of large and high-quality green spaces throughout the area and connected to adjacent green areas (Segrera and Mercedes project).

BUILDING

Materials and life cycle
Use of materials with low environmental impact, life cycle assessment, promotion of recycling and reuse of materials of waste.

NEW SPACES AND FUNCTIONS

Social housing
Construction of new residential buildings with active and passive efficiency strategies.

Redevelopement and recovery
Redevelopment of existing buildings in a state of decay.

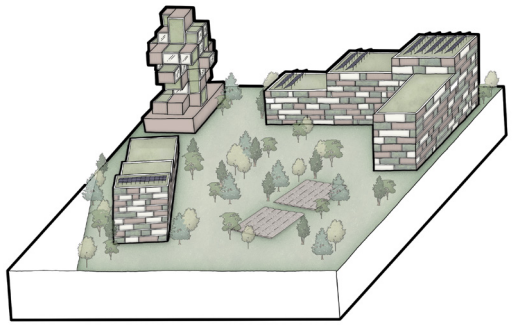
ENERGY EFFICIENCY

Energy from renewable sources
Integration with systems for the production of energy from renewable sources, in public and private spaces, to create an energetic community.

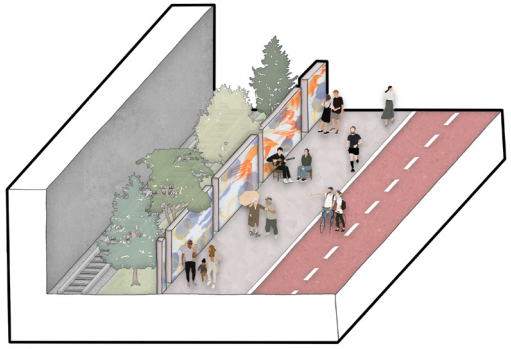
MASTERPLAN



NEW SPACES FOR THE COMMUNITY:



R : RESIDENTIAL AREA, GREEN AREAS AND URBAN GARDENS



S : ART AND MUSIC STREET



M : MARKET AND COLLECTIVE AREAS

CLIMATE CHANGE

CURRENT STATUS

CAUSES AND EFFECTS ON THE NEIGHBORHOOD

The planning of new actions to counteract and mitigate the climate change effects is based on Barcelona's Climate Plan. The main climate issues manifest in:

AIR QUALITY
The air temperature and smog make the environment harmful to respiratory health.

BIODIVERSITY
The alteration of habitats and the change in their life cycle put living species at risk.

WATER SCARCITY
The shortage of drinkable water and urban greenery has a negative impact on the quality of life.

MOBILITY
Flooding caused by intense precipitation and inadequate drainage systems create inconvenience in mobility.

HEAT ISLAND EFFECT
Heatwaves and high temperaturescause discomfort and health risks for elderly and fragile individuals.

PROJECT

The goal is to make the neighborhood more resilient, sustainable, and inclusive by initiating actions aimed for climate change mitigation and adaptation.

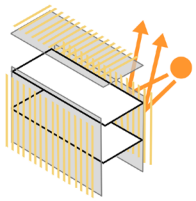
Reducing greenhouse gas emissions by promoting green mobility, utilizing renewable sources, and activating energy efficiency in buildings.

INCREASE IN URBAN RESILIENCE

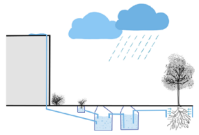
Adaptation to new climate scenarios by implementing **systems for adapting** to new climate scenarios by implementing sustainable urban drainage systems, creating **green areas and green roofs** to mitigate the urban heat island effect.

Strengthening social action and participation by involving citizens in projects and decisions regarding **strategies to combat climate change.**

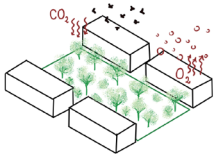
CLIMATE NEUTRALITY ON GREENHOUSE GAS EMISSIONS



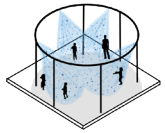
INFRASTRUCTURE EFFICIENCY
Buildings are oriented to maximize shading. Low embodied energy materials are utilized.



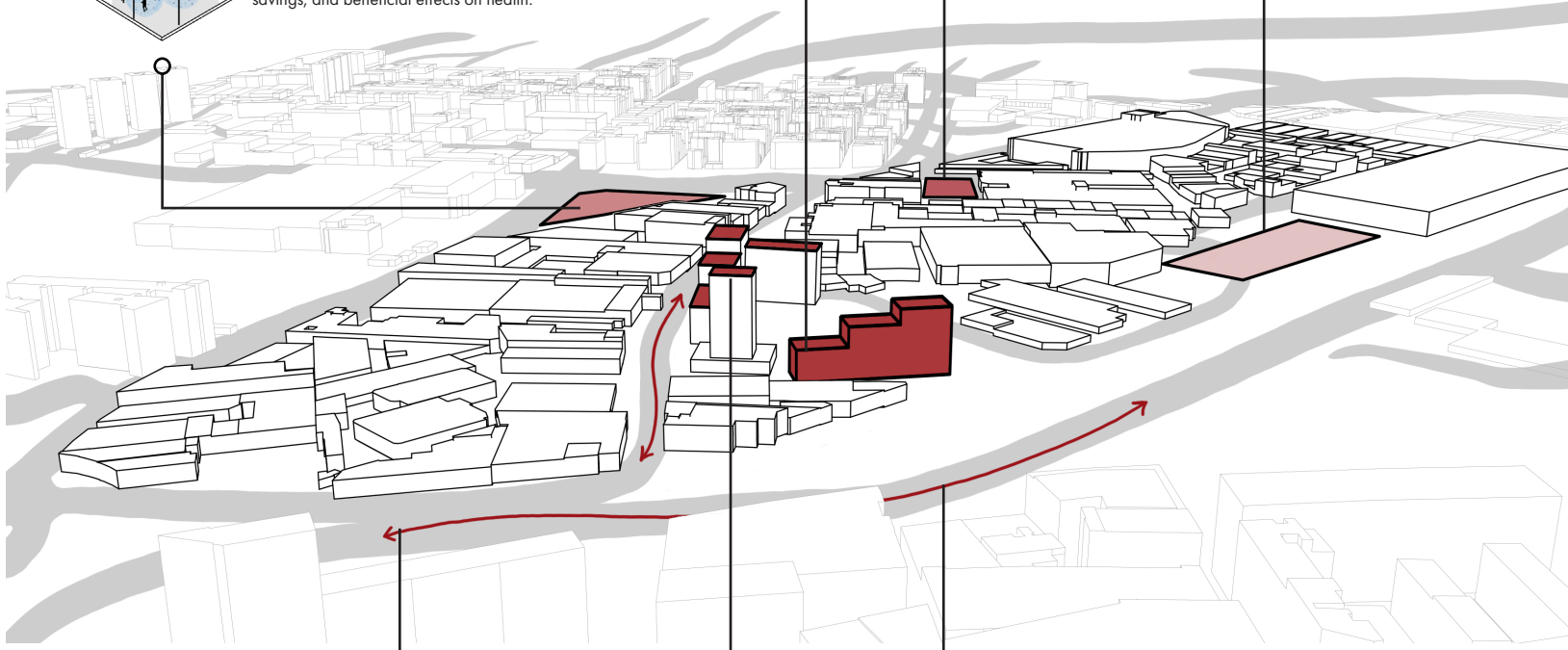
RAINWATER STOCKING
Collecting rainwater reduces the consumption of drinking water for activities like irrigation, and protects the environment from sudden water bombs.

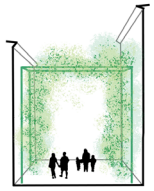


REFORESTATION
Urban reforestation reduces the urban heat island effect, improves air quality, and promotes biodiversity.



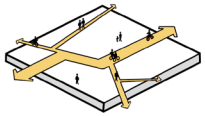
COOLING ZONES
Vaporisers allow for natural cooling, energy savings, and beneficial effects on health.

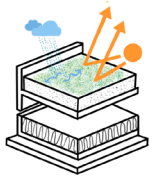




URBAN GREEN SPACE
Green corridors to improve air quality, promote biodiversity, and regulate the climate.

ACTIVE MOBILITY
Sustainable mobility reduces air and noise pollution, decreases dependence on fossil fuels, creating a healthier and more livable environment for neighborhood residents.





SUSTAINABLE TECHNOLOGIES
Green roofs promote the reduction of air pollution and the increase of biodiversity.

GOALS:

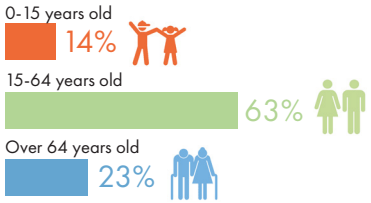
- *Reducing greenhouse gas emissions by **40% by 2030***
- *Creation of permeable surface areas: **66,850 square meters***
- *Percentage of **20%** of shaded areas along urban paths and public spaces*
- *Collection of **80%** of rainwater in storage tanks*

SOCIAL ANALYSIS

POPULATION

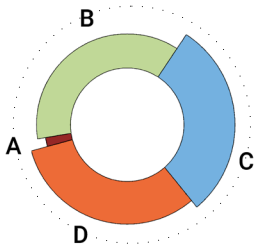
The analysis of the population data shows that Sant Andreu presents itself as a very heterogeneous district, with large segments of population of all ages and levels of education. It has a population of around **150 thousand persons**, but with a birth rate that is giving way to a mortality rate, which are **0.6% versus 0.9%**. The majority of the population, over **60%**, is of working age and a good **30%** are university students. On the other hand, only **6%** are unemployed and **2%** are uneducated, although this percentage is decreasing. It also appears to be a district capable of attracting a large foreign workforce, especially Italian ones, who are well mixed with the population.
In conclusion Sant Andreu is a study and working district characterized by working and studying users, with good opportunities to become a center of attraction and a complete neighbourhood.

POPULATION BY AGE



FONTE: Ajuntament de Barcelona

EDUCATION LEVEL



1.6% UNEDUCATED (A) 41.1% MIDDLE SCHOOL (B)
29.2% HIGH SCHOOL (C) 29.1% UNIVERSITY (D)

SOURCE: Ajuntament de Barcelona

GENDER



55% MALE
45% FEMALE

CITIZENSHIP



9.7% FOREIGNERS
90.3% SPANISH

AVERAGE AGE



SOURCE: Ajuntament de Barcelona

JOBS

Sant Andreu is one of the districts with the **lowest per capita income in Barcelona**, with around 10% less than the city average. This condition can be explained by its very uneven and segregated character. At the same time it does not show all its potential, ending up becoming a satellite area of the larger central districts, towards which the population moves for work. All these factors lead to a lower concentration of capital in the area.

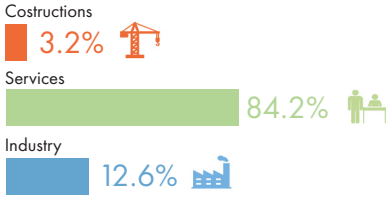
AVERAGE INCOME



BARCELONA 33.837€ SANT ANDREU 30.326€

SOURCE: Ajuntament de Barcelona

PRODUCTIVE SECTORS



SOURCE: Ajuntament de Barcelona

Although Sant Andreu is a functionally heterogeneous district, its's surrounded by many neighborhoods of mainly residential nature and others, such as Torrent d'Estadella, almost completely dedicated to **industrial activity**.
This lack of a good **functional mix** effectively leads to the monofunctionality of activities and the segregation of functions in the various neighborhoods. All this, added to the fact that the area in analysis is **degraded and disconnected**, separating two large residential neighbourhoods (Sant Andreu and the nearby Bon Pastor), limits the potential of the area.

SURVEY

A survey was conducted on the Torrent de Estadella neighborhood to collect information and opinions on how to intervene in the project area. The goal of the survey was to gain a better understanding of the **needs and priorities of stakeholders**, so that an effective intervention plan could be developed. A total of **25 people** responded to the survey for the intervention in the project area. First, the survey collected socio-demographic data on the participants. T
his data is useful for better understanding the profile of the stakeholders and for calibrating the intervention based on their specific needs. The results showed that the majority of participants are in the **25-64 age group** followed by 18-25 years and work as employees, or are students. Furthermore, the majority of participants go to the Sant Andreu district to live, work or study and get there mostly by private car and public transport but also on foot or by bicycle.
These are the most relevant problems resulting from the survey:

Poor offer of cultural and recreational initiatives
Buildings in bad conditions **Few services** Insufficient meeting places
Bad viability Lack of commercial areas
Degradation of public spaces

From the analysis of the answers, the **three worst problems in the neighborhood** are:

- **Few services**: the neighborhood lacks essential services, such as grocery stores, pharmacies, schools and nurseries.
- **Bad viability**: traffic in the neighborhood is problematic due to dead-end streets, insufficient parking and heavy vehicle traffic.
- **Poor offer of cultural and recreational initiatives**: the neighborhood offers few opportunities for recreation and socialization for citizens

In addition to the questions on the main neighborhood issues, the survey also included some targeted questions on key topics for designing a good neighborhood.





QUESTION: Do you think that green areas in the Torrent D'Estadella district are sufficient?
ANSWER: The majority believes that the neighborhood is not sufficiently equipped with public green areas.
GOAL: The main proposals to improve public green spaces include the creation of new urban gardens and public areas, easily reachable with a cycle/pedestrian path.





QUESTION: Do you think that the Torrent D'Estadella neighborhood is safe?
ANSWER: Citizens do not feel safe in the neighborhood, due to the lack of attractive spaces and a mix of functions that attract people to frequent these places.
GOAL: We will create a safe neighborhood, promoting social cohesion, intervening with the recovery of abandoned buildings, creating recreational areas and inserting new services.





QUESTION: Do you think that the Torrent D'Estadella neighborhood could become a center of attraction for the city?
ANSWER: Citizens believe that the neighborhood can become an attractive hub, especially if investments are made in urban redevelopment and the promotion of cultural and recreational events.





QUESTION: If you worked in this neighborhood, would you be willing to walk or cycle to work if new residential buildings were created in the neighborhood?
ANSWER: A significant part of citizens would be willing to go to work on foot or by bicycle if new residencial spaces were created in the neighborhood and the infrastructure for a sustainable mobility was improved, as the proximity between residence and work is considered an added value.
GOAL: We will propose a neighborhood that respects the 15-minute city principle.

PROJECT

The Torrent d'Estadella neighborhood must pursue the goal of becoming a complete neighborhood, capable of providing not only residences, but also more opportunities for work, study and, in general, essential services, with a view to the "**15-minute city**".

The aim is to populate the neighborhood with both **students, workers and families**, with a view to housing variety. All this requires various types of residences, from one/two-room apartments for students and off-site workers to three/four-room apartments for families, to be organized in identified areas.

It is considered necessary, in order to achieve the goal of a complete beighbourhood, that all connected services correspond to the residential quota.
This also implies providing **commercial areas** and areas intended for **personal services**, also specifically identified.

It is also planned to expand the offer of **jobs**, diversifying it compared to the current industrial type, also including spaces for **offices, co-working**, etc.

COMPLETE NEIGHBORHOOD

By creating a **greater functional mix** between residences, work/study areas and services with the complicity of a welcoming and pleasant environment, more people will be encouraged to live in the neighborhood and work there, effectively increasing its active population. This will only promote the entire district by retaining more of its workforce and human capital.

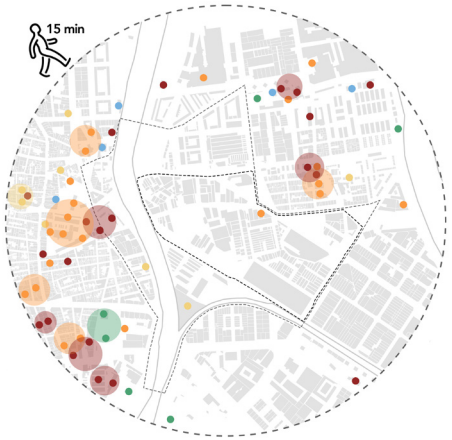
SERVICES

CURRENT STATUS

After a careful analysis of the already present services in the Torrent d'Estadella neighborhood, located between the districts of Sant Andreu and Bon Pastor, **a picture of insufficient local resources** has emerged. However, in the surrounding area, particularly in the Sant Andreu zone, the main services are concentrated along Carrer Gran street, which runs through the area from North to South.

Here, a variety of functions can be found:

- educational institutions including kindergartens, primary schools, and secondary schools;
- cultural services such as libraries, theaters, and civic centers;
- administrative services;
- personal care services;
- physical activity and leisure services.



CURRENT STATUS
Services reachable by foot within 15 minutes from the Torrent d'Estadella neighborhood

ADDITION OF NEW SERVICES FOR A COMPLETE NEIGHBORHOOD

The goal is to create **new services in the Torrent d'Estadella neighborhood**, which are currently very scarce or entirely absent, and **accessible by foot or bicycle within a maximum of 15 minutes**. These services should meet the needs of residents, workers, and visitors.
This will include services from both the **secondary and tertiary sectors**. The industrial intervention area will be divided based on the proximity of the recipients to different activities, to ensure adequate coverage for all categories of users.
In the **westernmost area**, neighborhood services will be provided, mainly for **new residents and students**; while in the **eastern area**, close to businesses and industries, services dedicated to **workers** will be established.
These new initiatives not only contribute to **diversifying the commercial offer** but also **improve the quality of life of the population** by providing a wide range of **essential functions** right in the heart of the neighborhood.

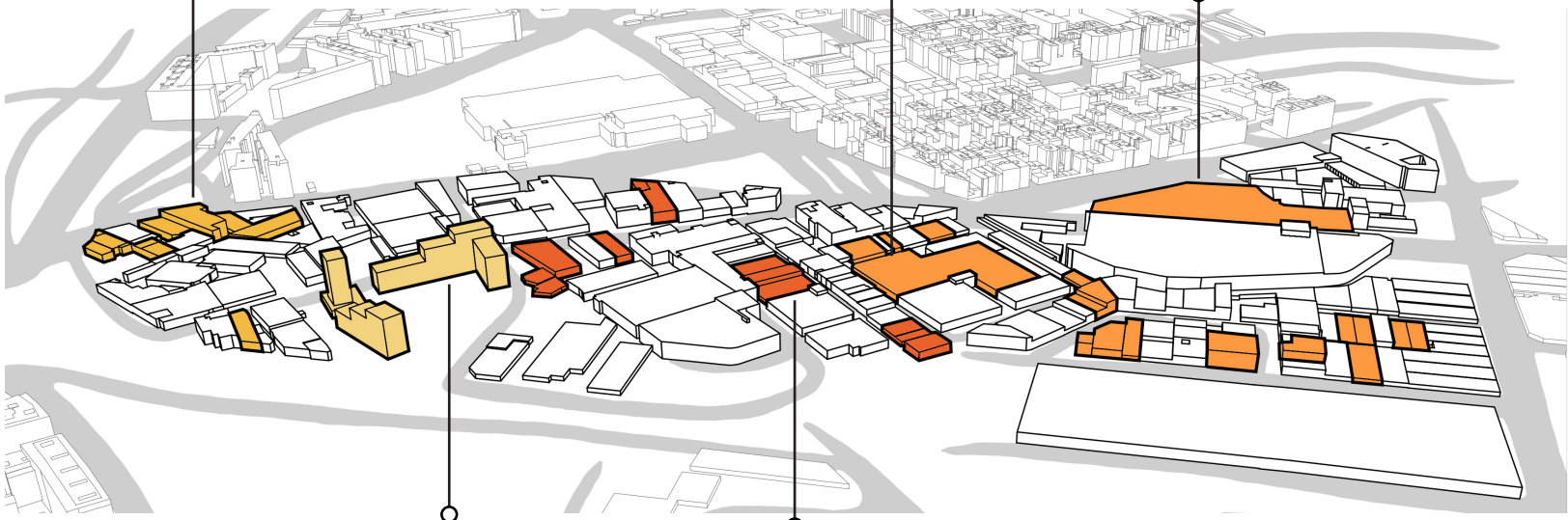
PROJECT

SPACES OF CO-WORKING AND SMART WORKING
Creation of **flexible and technological** spaces that allow students and workers to come together to work collectively or independently.

ECONOMIC ACTIVITIES AND NEW ASSOCIATION SPACES
Integration of:
Catering services/canteens available for workers and visitors of the neighborhood. The idea is to create spaces that offer these services during the day, transforming into gathering places in the evening with recreational and leisure activities such as workshops, cooking classes, etc., that people can participate in.

Local production shops, handicrafts, and second-hand stores that also offer workshop activities. Participants can directly experience the process of creating typical products, enriching their knowledge of local culture and traditions.

Information office for sustainable waste management, **hub for organizing events and cultural activities** in the neighborhood, support for tourists and visitors, and **storage area**.

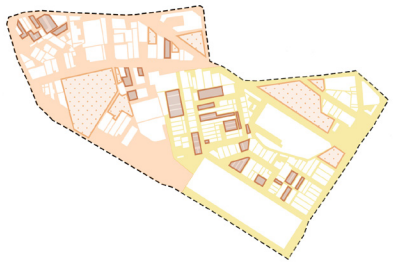


RESIDENTIAL SPACE
Construction of new **residential buildings** intended for new residents, workers, commuters, and occasional users of the neighborhood.
The ground floor can be adapted to accommodate various services including a nursery, gym, common areas... where children can be left in complete safety and new relations can be engaged in the community.

COMMERCIAL ESTABLISHMENTS
Introduction of **new commercial activities** including a **dedicated market area**, sale of essential goods, personal care services necessary to meet the needs of the local community, and provide a comprehensive and accessible environment.

SPORTS SERVICES
SERVICES FOR INDIVIDUALS
CULTURAL SERVICES
COMUNITY
EDUCATION SERVICES
ADMINISTRATIVE SERVICES

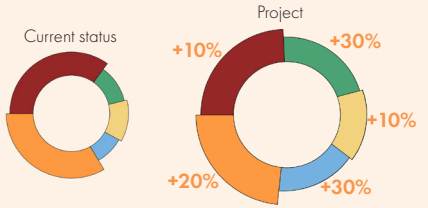
PROJECT PLAN - Division of the neighborhood into two areas



FUNCTION RECIPIENTS AND USERS
- Services intended for new residents and students
- Services intended for industry workers

AREA CLASSIFICATION
- Open areas - Newly constructed areas/urban squares
- Inactive industrial areas - Redevelopment areas

GOALS:



- *Increment and homogeneous distribution of services in the neighborhood*
- *Complete neighborhood*
- *Accessibility, inclusion, and participation*
- *Safety*

MOBILITY

CURRENT STATUS

Modal share

In the Torrent d'Estadella neighborhood in Barcelona, there is a **high dependence on automobiles**, unique within the city. This is primarily due to the **isolation of the neighborhood** from its surroundings, making the adoption of sustainable mobility solutions difficult.

CURRENT SITUATION	BARCELLONA	40%	34%	26%
	TORRENT D'ESTRADELLA	22%	10%	68%
PROJECT	GOAL	40%	40%	20%

SOURCE: Plan de Mobilitat Urana Barcellona

Flows

Data from the Sant Andreu Combal station highlights an **intense commuting flow** towards the city center, typical of peripheral areas of large cities. However, due to local work activities, there is also a significant flow in the opposite direction.

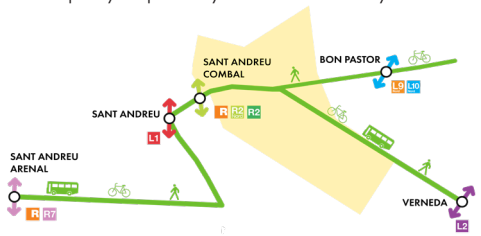


SOURCE: Renfe Cercanias

PROJECT

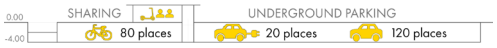
New green axis

To promote sustainable mobility to the neighborhood, the development **of a green infrastructure** is proposed, connecting various nearby public transportation systems by **interconnecting** four metro lines, three suburban services, regional trains, and two major green areas, named the Besos river area and the Sagrera area.
Spaces for pedestrians and cyclists are planned, with priority given to gentle mobility, as established by the mobility plan.
Furthermore, optimizing public transportation service is planned, particularly for the **133 bus line**, to make it faster and more reliable, with a frequency of up to every 8 minutes on weekdays.

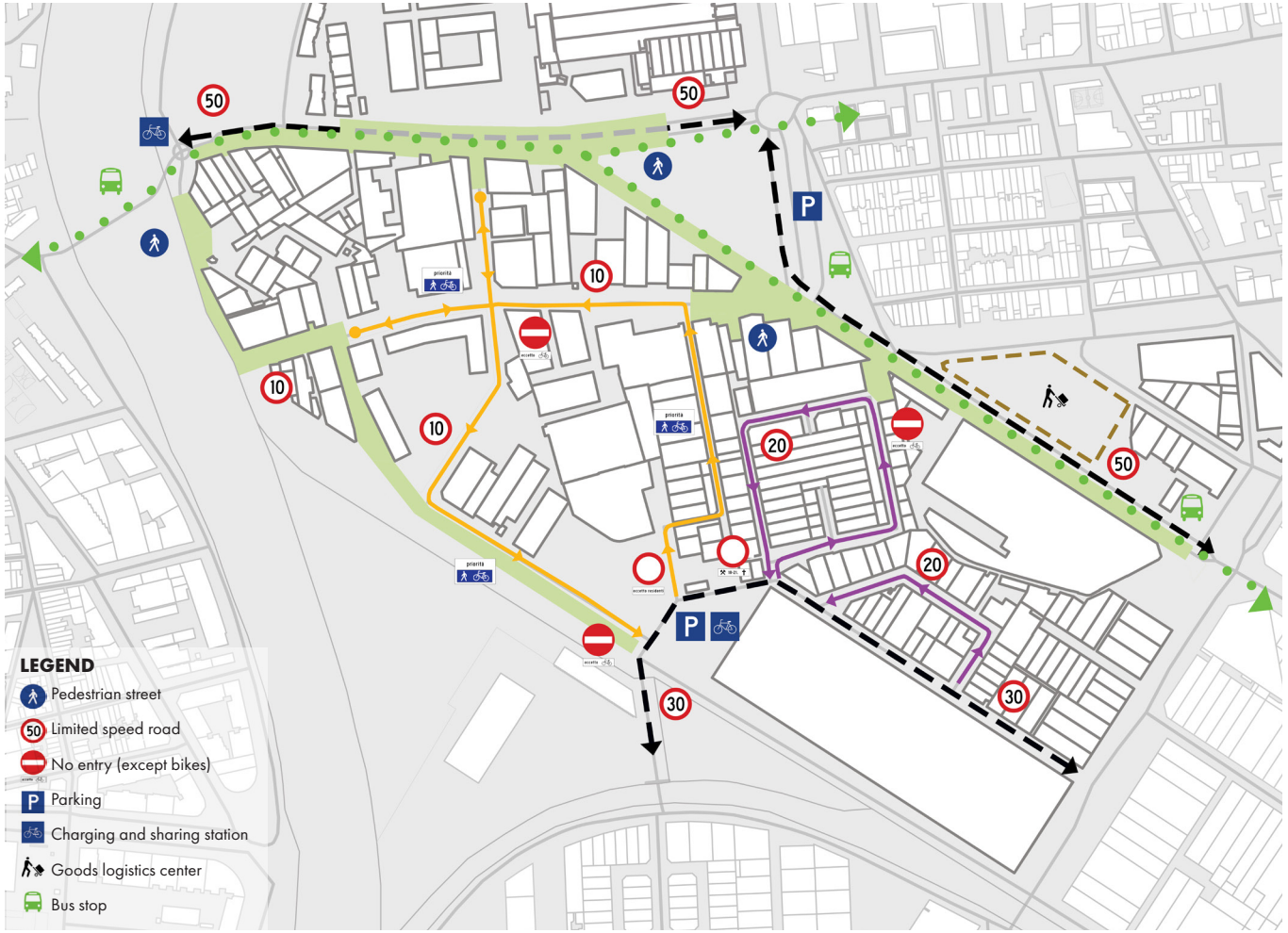


Parking and logistics

In order to limit the circulation of cars within the area, based on **zones and time slots**, **two parking** lots are planned, one existing and one underground, located in the Amazon warehouse area.
Sharing stations are also planned to promote active mobility, as well as charging stations.



The proposal is to **ban heavy vehicle traffic within the area**, for which a **logistics center** is planned for goods storage, subsequently distributed within the area via **smaller electric vehicles**, during established time slots.



AREAS WITH DISTINCT TRAFFIC REGULATION

- Optimization of public transportation services
- Traffic restricted to emergency vehicles only
- Free circulation, with priority for pedestrians
- Free circulation
- Allowed for residents and loading/unloading vehicles at 10 km/h, with priority given to cyclists and pedestrians
- Free circulation, with priority for pedestrians
- Free circulation
- Traffic restricted to 20 km/h on weekdays
- Free circulation, with priority given to pedestrians
- Free circulation, with attention given to circulating vehicles
- No entry for heavy vehicles within the area
- Free circulation, limited to 30 or 50 km/h
- Circulation paying attention to circulating vehicles
- Pedestrian traffic only, paying attention to circulating vehicles



Section A-A' pedestrian and cycling area



Section B-B' driveway

GOALS:

- Addition of **114,975 km/year** of bus line
- Addition of **23,987 m²** of pedestrian area
- Addition of **1,870 m** of cycling priority road
- Addition of **120** spaces reserved for bicycles
- Addition of **30** car charging stations

URBAN SPACES

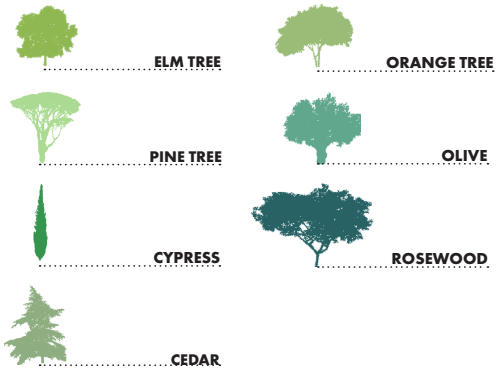
CURRENT STATUS

The Torrent d'Estadella neighbourhood, due to its purely industrial character, has always been characterized by a lack of quality urban spaces, including both urban squares and green areas. However, in recent years, the city has undertaken a series of projects near the area, which has the **potential** to become a new attractive centre, creating a connection axis between the new green areas that will be created: **La Segrera** linear park, the **Parc Fluvial del Besos** and the new **Ecodistrict laMercedes**.



The idea is to create a **connection** between these future projects; to do so, it was decided to design a long tree-lined cycle-pedestrian avenue that crosses the entire area, facilitating the **movement** of users within the neighborhood by creating shaded paths.
Furthermore, green common areas have been designed near the new residential areas which include flat green roofs, intended for the creation of spaces for users and for the creation of urban vegetable gardens, as well as for the exploitation of thermal inertia as a passive construction strategy. These public spaces, together with green urban squares distributed throughout the neighborhood, serve as **meeting and socializing places** for users of all ages.
In these areas, urban reforestation is proposed, inserting various local types of trees, to safeguard biodiversity, creating new habitats for living species.
The increase in green surfaces allows us to increase the share of highly permeable surfaces, so as to allow a gradual flow of water during heavy rain events due to the climate change effects.
In high-traffic urban spaces, the inclusion of paved surfaces with the integration of piezometric floors is proposed, producing energy from the simple trampling of passers-by.
Furthermore, the inclusion of photovoltaic pergolas is proposed and this, in addition to producing energy, will create more shaded paths for users and residents.

TREE TYPES ANALYSIS



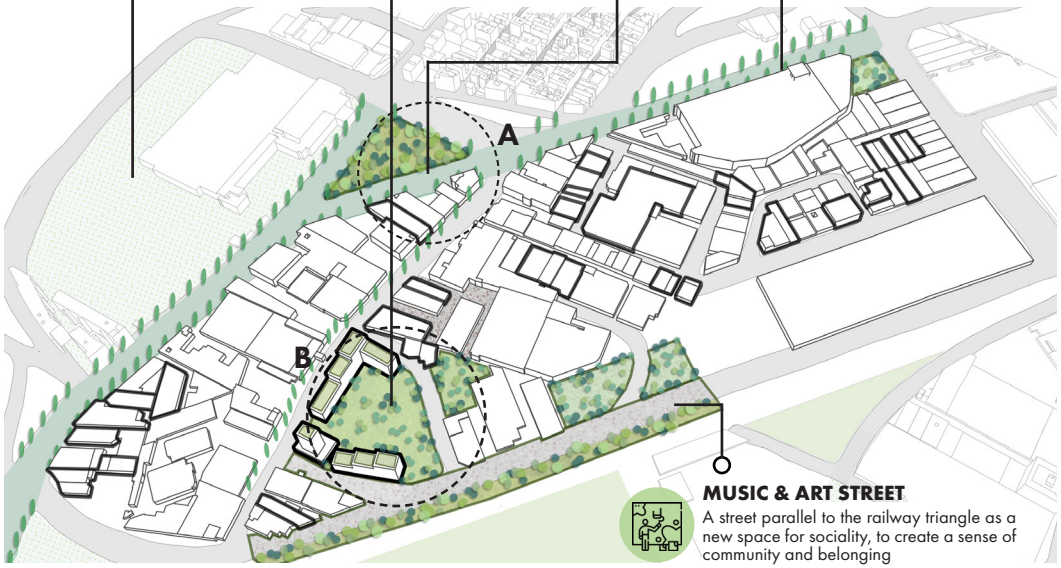
PROJECT

FUTURE PROJECTS
Creation of projects (the Segrera and the Ecodistrict on the site of the former Mercedes factory) that aim to create sustainable, green and modern environments

URBAN SQUARES
Creation of spaces for the community, such as leisure and physical activity areas, to preserve biodiversity and to improve life quality

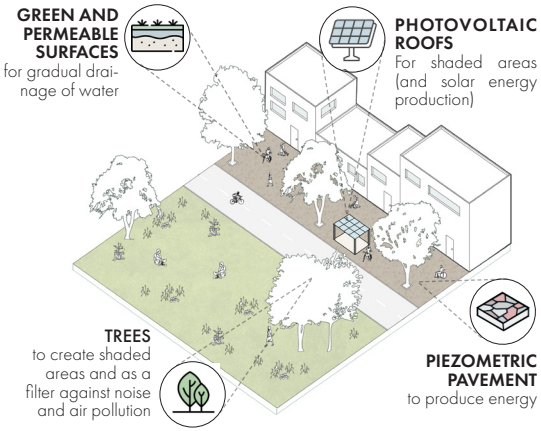
GREEN PLAZAS
Areas to create a sense of community and belonging in residential areas and the market area, inserting quality green areas such as urban gardens and allotments

TREE-LINED CYCLE AND PEDESTRIAN PATH AVENUE
Useful to facilitate movement within the neighborhood and to create shaded paths, to limit the heat island effect

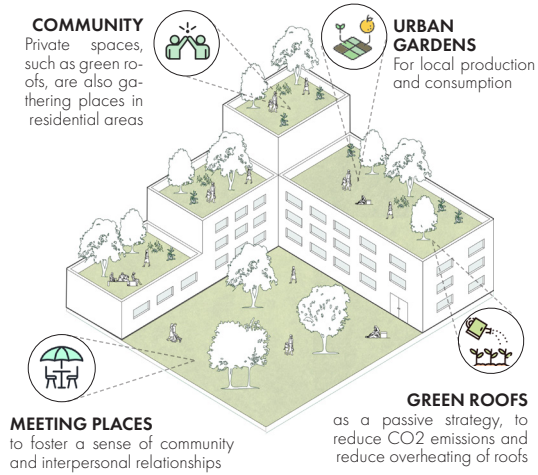


MUSIC & ART STREET
A street parallel to the railway triangle as a new space for sociality, to create a sense of community and belonging





A. FOCUS ON URBAN PUBLIC PLACES



B. FOCUS ON URBAN PRIVATE PLACES

GOALS:

- *Safeguarding biodiversity*
- *Planting of* ***700 trees***
- *Absorption, per tree, of* ***50 kg of CO_2 annually***
- *Surface of urban gardens:* ***1 hectare***
- *Surface of urban green:* ***6,8 hectares***
- *Surface with a high permeability:* ***66.850 m²***
- *Piezometric pavements:* ***2.100 m²***

BUILDINGS

MATERIAL ANALYSIS

The proposal of intervention in the Torrent d'Estadella neighborhood aims to follow the principles of sustainable construction in accordance with the objectives of the **2030 Agenda**.
The buildings in the following project are proposed and studied in order to allow their future conservation and possible refunctionalization in a long term analysis.

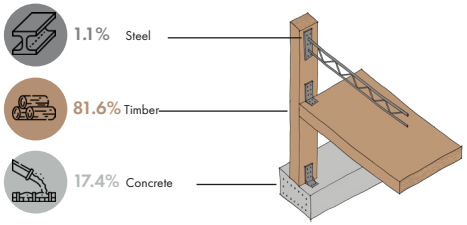
The **sustainability of the construction materials** influenced the choice of construction technologies: a material that minimized the release of CO_2 into the atmosphere as much as possible was preferred. For this reason the **GWP** (global warming potential) for structural materials was taken as an indicator. This value represents an approximation of the "**carbon footprint**" of the material over its life cycle. In particular, **carbon emission into the atmosphere** is considered in the **production phases** (supply of material, transport ation and processing), **construction** (transport to the construction site and construction process), **management** (use, maintenance, energy and water consumed) and **end of life cycle** (demolition, recycling and disposal) for each material.

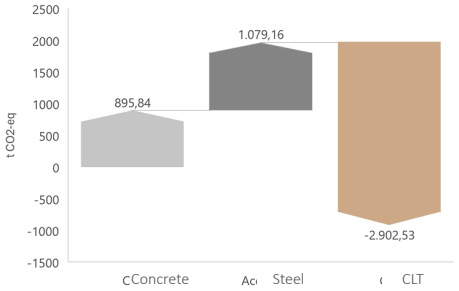
PRODUCTION AND LIFE CYCLE



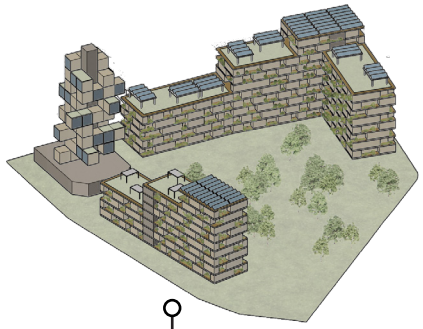
From transportation to construcion to dismantling

The large use of CLT provides a great environmental advantage linked to the accumulation of carbon inside the material, during its life cycle (which leads to a negative value of carbon dispersed in the atmosphere) which in total brings the balance to a positive value of almost a thousand tons of carbon equivalent.





PROJECT

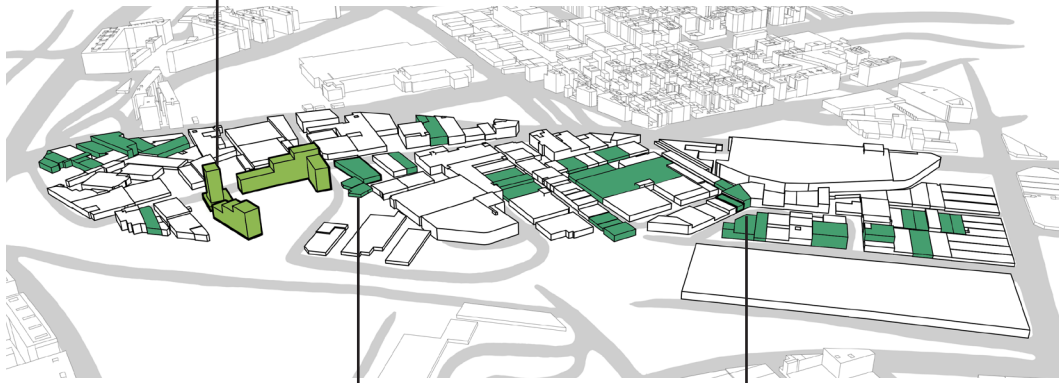


RESIDENTIAL BUILDINGS

Structure in **CLT** panels for both the floor slabs and some internal partitions (preferred option compared to a steel frame structure due to its environmental impact) stiffened by the three **concrete cores** of the stairwells. The **flat roof** is partly green, designed as a space that can be used by condominiums, and partly intended for the **photovoltaic system**.

TOWER BUILDING

It is intended for **non-permanent users**; **modules** of 32 m² are inserted around a central core (four per floor) made from elements prepared in the factory and simply assembled in site. The intent is to extend the life of the building by allowing **rapid replacement** of the modules over time. In this case, the vertical surface of the building is used to capture solar energy.



20% New construction
80% Renovation

MARKET

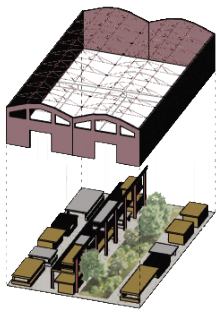
The new **market** was designed not only as a **commercial** place, but also as a space for **sociality** and **aggregation**. Large **green areas** and relax areas with wooden benches and tables invite you to linger and converse, creating a welcoming and lively atmosphere. The choice of sustainable materials such as **timber**, in addition to being eco-friendly, helps to create a warm and natural environment, in harmony with the principles of bio-architecture.

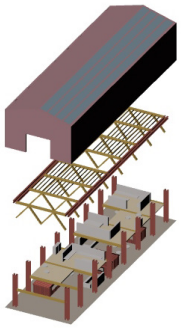
SERVICES AND ECNOMIC ACRIVITIES

The tertiary activities, such as those linked to the social, recreational and commercial activities of the citizens, have been created in the spaces of part of the **inactive buildings**, using **elevation steel structures** inside the existing masonry, with horizontal slabs in **cross laminated timber** beams to exploit the buildings in their vertical extension (which varies from 10 to 15m). This results in floors without fixed partitions, on which it is possible to easily install **temporary light structures** depending on the use of the room.

20% Residential
25% Co-working and study areas
30% Tertiary activities
25% Commercial acrivities









GOALS:

ACTIONS

- *High energy class buildings*
- *Reduce GHG emissions associated to energy consumption of buildings and their construction*
- *Recover existing buildings*

RESULTS

- *Timber structures* **80%**
- *Green roofs* **2.160 m²**
- *Tons of captured carbon* **927 tCO-eq**

NEW SPACES

A SPACE FOR EVERYONE

In order to achieve the ideal of a "**complete neighbourhood**", the proposed project involves the inclusion of a **functional mix** intended for residents, commuters, workers and occasional users of the neighborhood in the intervention area, which is distributed over an existing purely industrial area.
The residences are located in newly built buildings in the cleared area between Torrent d'Estadella and Carrer de Cordelles in the North-West of the project area.

To ensure social differentiation and **prevent gentrification** phenomenons in the area, **one-room, two-room and four-room apartments** alternate along the floors, and different types of apartments are considered based of the residents' income. In fact 15% is destined to public housing, 15% to social housing and 70% to private housing.
The condominiums also include **common spaces** intended for all tenants, including the open spaces on the roofs, partly treated as green roofs.

14% One-room apartament
23% Two-room apartament
43% Four-room apartament
6% Micro-apartament
14% Common spaces



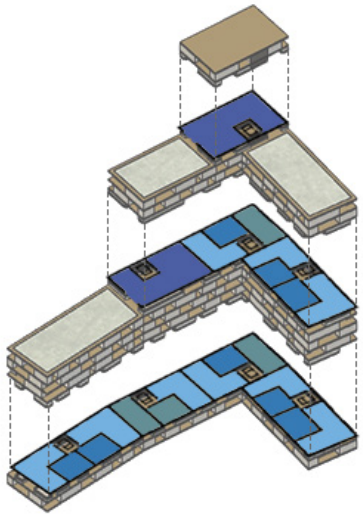
A **tower** building designed as a superposition of **micro-apartments** to be used for rent by commuters and temporary users of the neighborhood is distinguished from residential buildings, aimed at the ideal of optimizing the spaces and resources of "**microliving**". Each room is equipped with a bed and a private bathroom, with small terraces that open to the outside. The kitchen, laundry and all the common areas are concentrated on the larger ground floor.

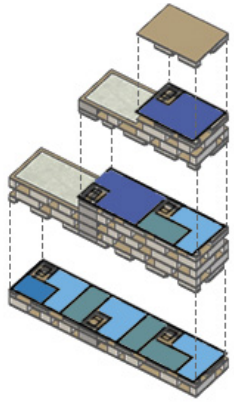
FLEXIBLE SPACES

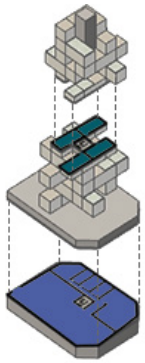
The public activities intended for the neighborhood community are located in the abandoned industrial buildings and provide for the **diversified use** of the same spaces at **different times** of the day. In particular, we tried to exploit the **space** also **vertically** with multi-level structures that guarantee floors free from clutter on which any separators or prefabricated boxes can be freely arranged to isolate the individual activities hosted by the building.

Among the new functions inserted in the area there are a **covered market** which can supply the neighborhood by food but which is also an attraction for the people coming from neighborhoods close to Sant Andreu and from the rest fo the city.
The structure is created from two adjacent abandoned industrial lots, positioned centrally in the project area (along the Correr de Cordelles road) to create a unitary space that also includes a small **green area**.

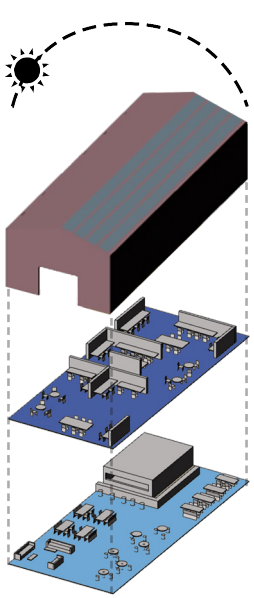
PROJECT

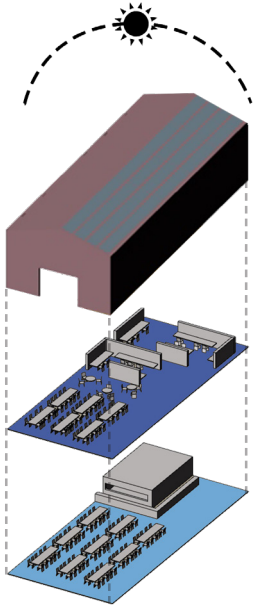


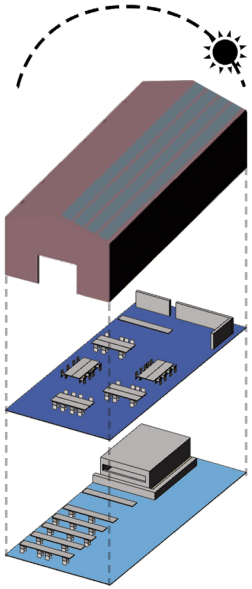




15% Public housing → Familiy income < 18.000 €
15% Social housing → Family income > 15.000 €
70% Private housing







CO-WORKING
CAFE
STUDY ROOM
CANTEEN
EVENTS SPACE
WORKSHOP



ENERGETIC EFFICIENCY

PROJECT

The proposed model aims at creating an **energetic community** in the neighbourhood, to **reduce the levels of CO2 emissions** and to produce **energy from renewable sources**, in the context of a circular economy that aims at the optimization of resources and a responsible consumption.
Given the risks posed by climate change on access to basic energy and water services, a series of interventions are proposed to **guarantee services and universal access** to the continuity, especially to the most vulnerable categories at risk of social exclusion.

ENERGETIC EFFICIENCY

The objective is to propose the **massive energy requalification** of existing buildings and the promotion of newly built ones, designed to be almost **zero consumption buildings**. We propose the installation of high-efficiency systems and **control and monitoring** systems of energy consumption, to evaluate the impact of the measures adopted, as well as integrating the use of **smart technologies**.

TRANSPORTATION

Reduction of CO_2 emissions from the transportation sector

Ecological transition
Reduce the number of fossil fuel vehicles on the road, transition towards electric vehicles

Public collective transport
Promotion of public transport, collective transport (car pooling)

Green transportation
Promotion of soft mobility, accessibility to charging stations, rental and sharing stations

RESPONSIBLE CONSUMPTION

Community education and promotion of activities based on a social and solidarity economy.

Exchange market
Promotion of exchange and reuse of material of waste within the community

Reference and info hub
Creation of a reference space for citizens that offers information and resources

Local businesses
Promotion of local businesses with principles of sustainability and introduction of environmental criteria in taxation

MATERIALS AND LIFE CYCLE

Use of materials with low environmental impact and reduction of waste

- choice of materials with low CO_2 emissions
- cycle analysis and evaluation based on different materials

Recycling and reuse
Promotion of recycling and reuse

Zero waste
Decrease in waste production, increase in waste sorting and recycling

Circular economy
Promotion of workshops of production and reuse of materials

NEW BUILDINGS

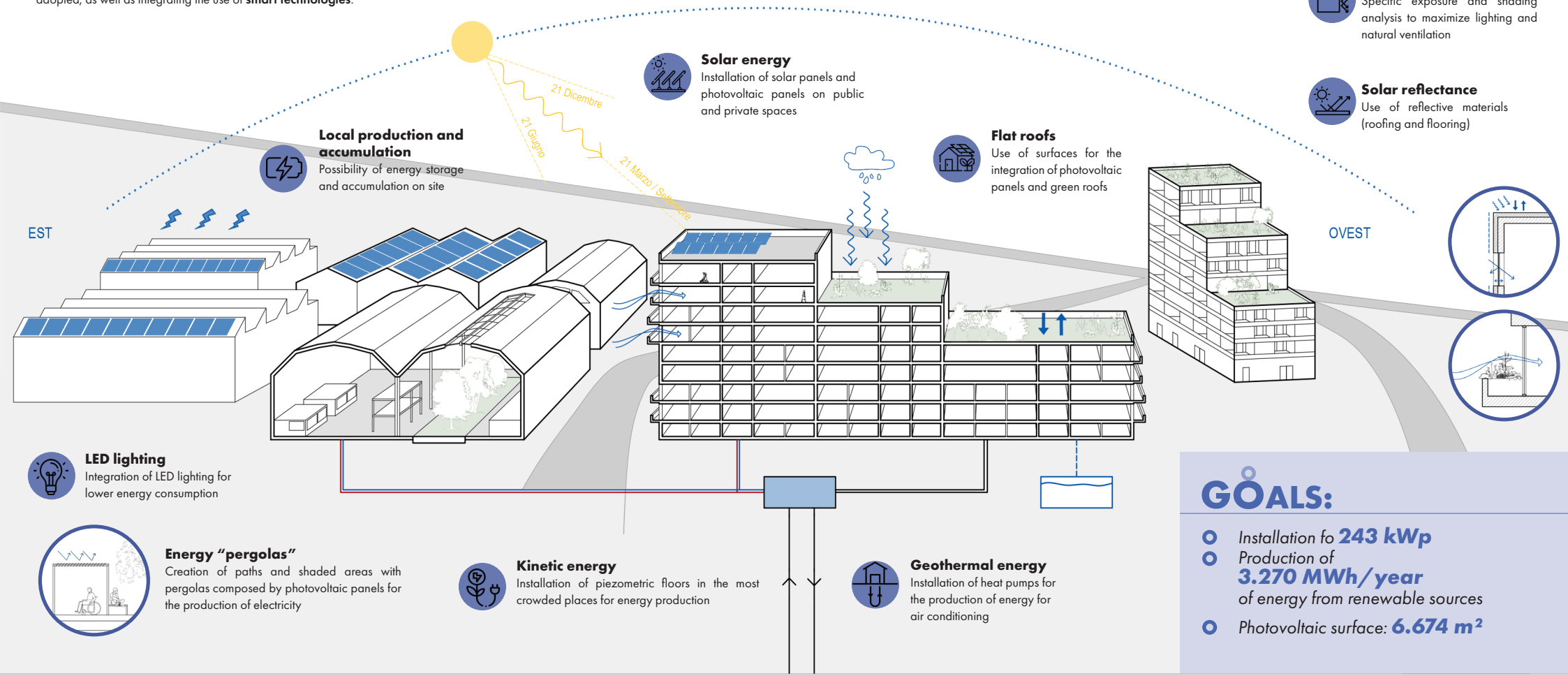
Integration of architectural and urban planning solutions that maximize the use and integration of renewable energy in an efficient manner.

- bioclimatic optimization
- solar optimization
- design of buildings with passive strategies

Bioclimatic optimization
Reduction of heat losses through optimized stratigraphic packages and integration of greenery as a shield against heat, noise and pollution

Solar optimization
Specific exposure and shading analysis to maximize lighting and natural ventilation

Solar reflectance
Use of reflective materials (roofing and flooring)



Solar energy
Installation of solar panels and photovoltaic panels on public and private spaces

Local production and accumulation
Possibility of energy storage and accumulation on site

Flat roofs
Use of surfaces for the integration of photovoltaic panels and green roofs

LED lighting
Integration of LED lighting for lower energy consumption

Energy "pergolas"
Creation of paths and shaded areas with pergolas composed by photovoltaic panels for the production of electricity

Kinetic energy
Installation of piezometric floors in the most crowded places for energy production

Geothermal energy
Installation of heat pumps for the production of energy for air conditioning

GOALS:

- *Installation fo* ***243 kWp***
- *Production of* ***3.270 MWh/year*** *of energy from renewable sources*
- *Photovoltaic surface:* ***6.674 m²***