

Barcelona Nature Plan

2021-2030

Parcs i Jardins



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**ADVANCING THE EDIBLE CITY:
IDEAS, PRACTICES AND SYSTEMS**
The 2nd Edible Cities Network Conference

*Thursday, 16th March 2023,
Casal Mas Guinardó, Municipality of Barcelona*



Montjuïc mountain

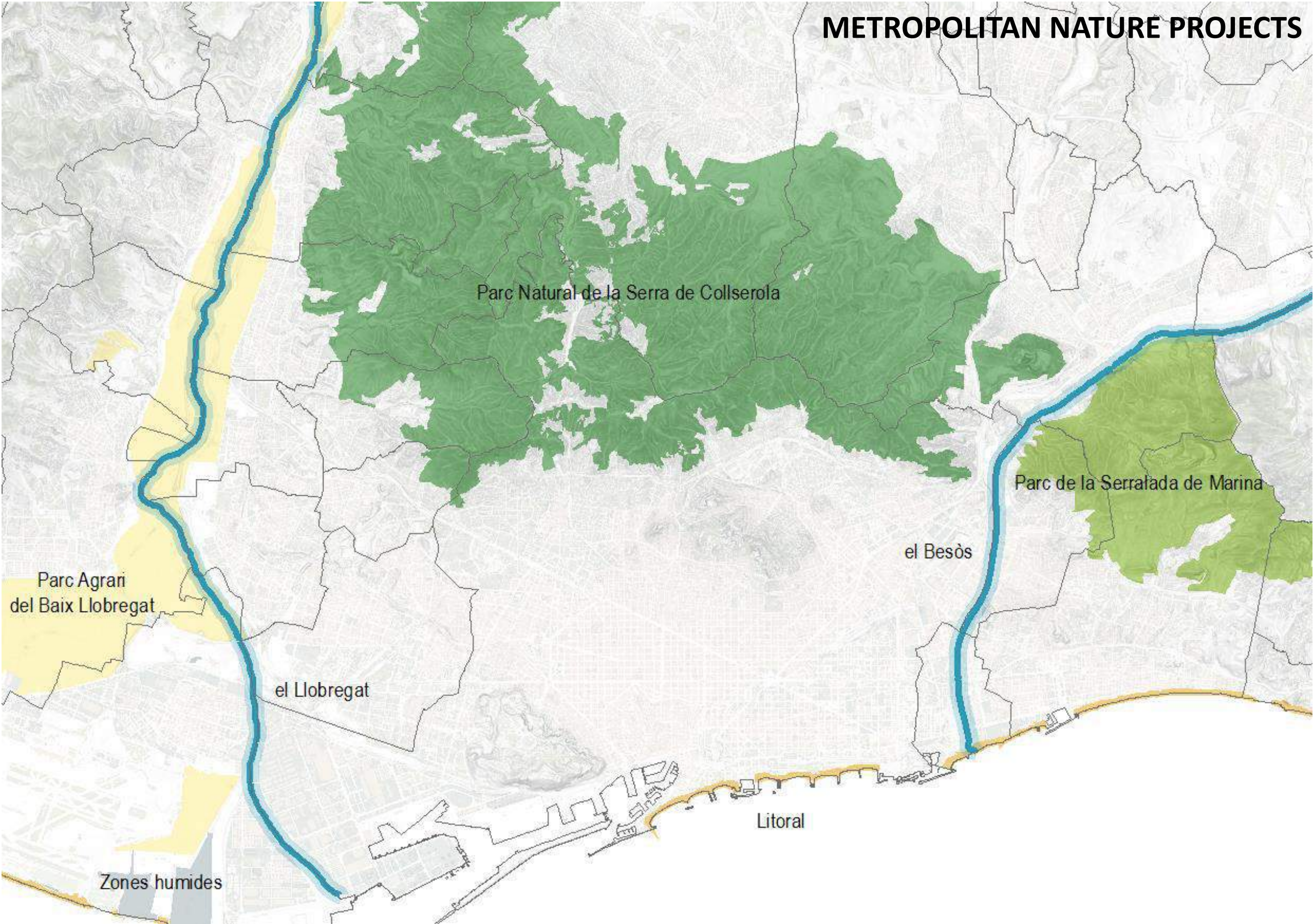
Collserola mountain range



Collserola mountain range

Montjuïc mountain

METROPOLITAN NATURE PROJECTS



TERRITORIAL DIVISION AND OTHER INFORMATION



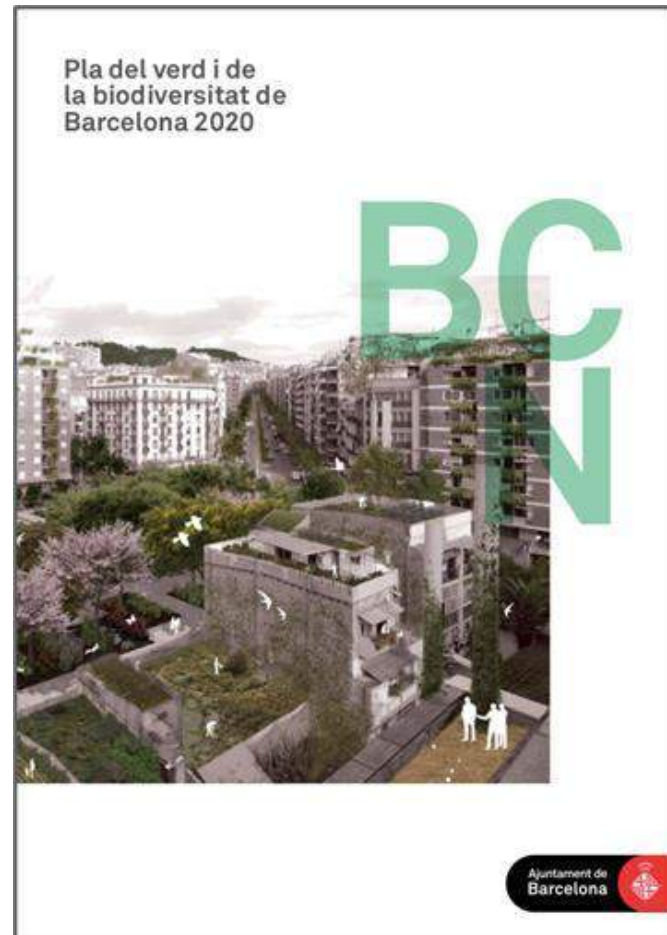
Districte	Barris
Barcelona	73
1. Ciutat Vella	4
2. L'Eixample	6
3. Sants-Montjuïc	8
4. Les Corts	3
5. Sarrià-Sant Gervasi	6
6. Gràcia	5
7. Horta-Guinardó	11
8. Nou Barris	13
9. Sant Andreu	7
10. Sant Martí	10

Nota: seccionat vigent a partir de l'1 de gener de 2014.

Font: Ajuntament de Barcelona. OMD. Departament d'Estadística i Difusió de Dades.

Urban parks (ha)	Urban greenery (ha)	Roadside trees (ud.)	Trees in parks (ud.)	Forest greenery (ha)	Beaches (Km)	Area (ha)	Population (2020)
620,3	1.170,9	157.636	84.190	1.698,7	4,7	10.137,1	1.664.182

WHERE DO WE COME FROM?



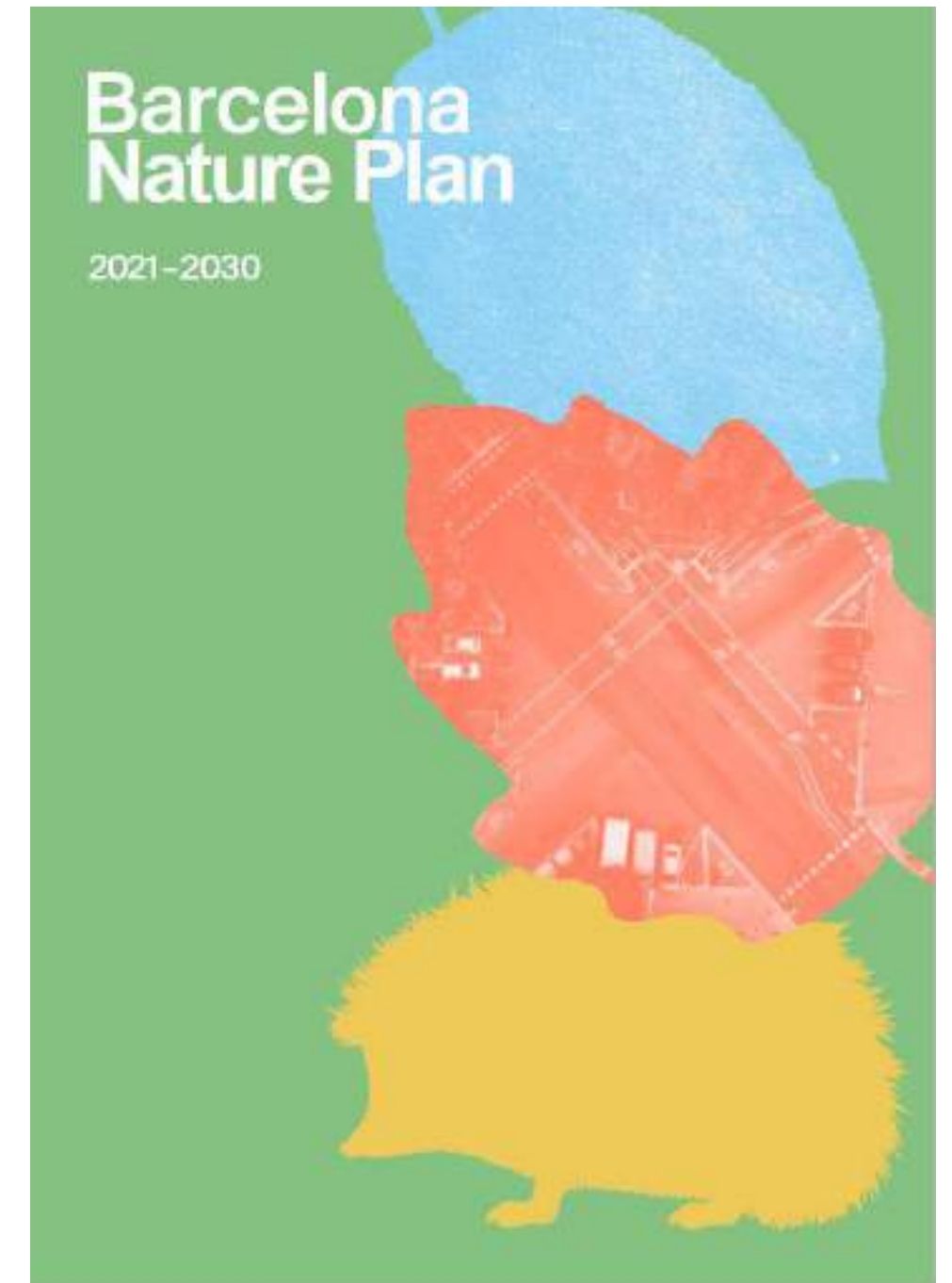
Green Infrastructure and Biodiversity Plan 2013-2020, consists of 10 strategic lines and 68 individual actions.

The current situation for the environment 2020: more serious and better acknowledged.

“Healthy biodiversity is the essential infrastructure that supports all life on Earth, including human life”.
Executive Secretary, CBD.

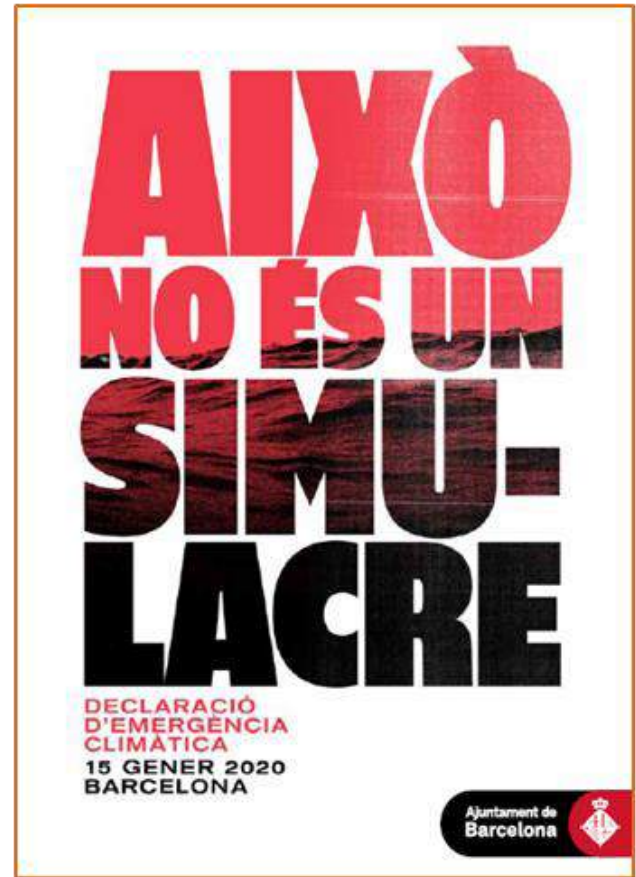
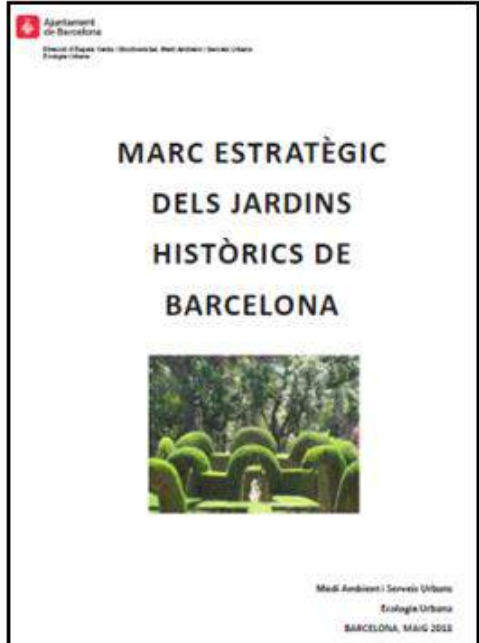
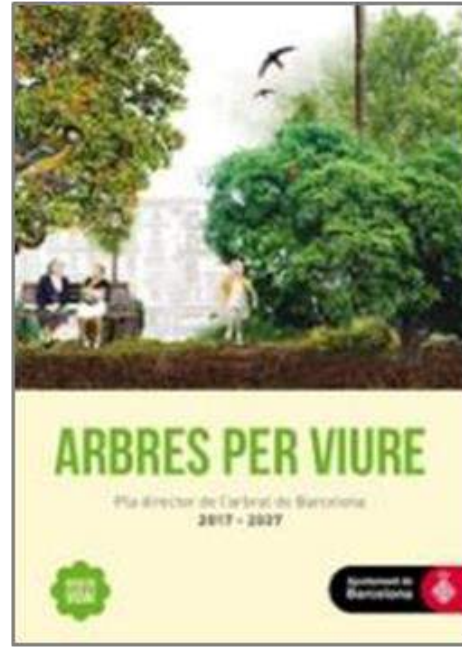
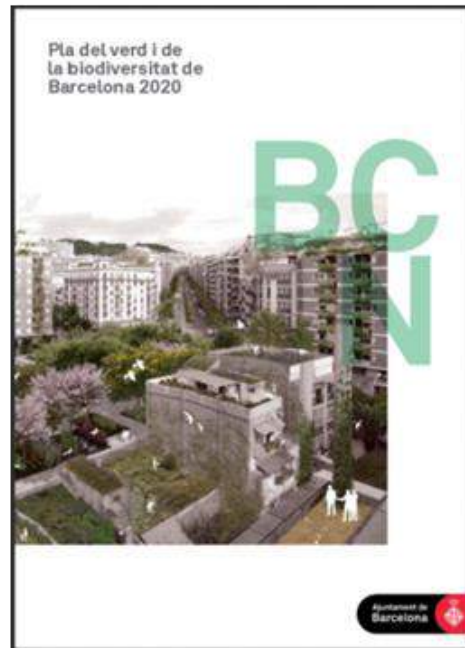


WHY A NEW PLAN?



<http://hdl.handle.net/11703/123630>

ONGOING STRATEGIES



WHO PROMOTES AND MANAGES THE CITY'S NATURE?

**Barcelona City Council
and other public bodies.**

Area of Urban Ecology, especially:
Parks and Gardens, Municipal Institute
BCASA (Barcelona Cicle de l'Aigua, SA)
Urban Planning
Municipal Institute of Urban Landscape and Quality of Life
Department of Communication and Participation
Department of Sustainability Strategy and Culture
Department of Animal Rights
Districts
Museu de Ciències Naturals de Barcelona - Jardí Botànic
Institut Botànic
BSM (Barcelona de Serveis Municipals, SA) - Zoo
ASPB Barcelona Public Health Agency)
Parc Natural de la Serra de Collserola
Besòs Consortium
Barcelona Regional
AMB (Barcelona Metropolitan Area)
Barcelona Provincial Council
Government of Catalonia

**Individuals and organisations (private
greenery).**

STRUCTURE OF THE NATURE PLAN 2030



The plan consists of 20 actions which consider the context and the big concepts and strategies for acting under and which are deployed through projects.

A total of 100 projects are planned for 2021-2030, of which 10 are lead projects, and they will be carried out between 2021 and 2025.

LINE 1. MORE GREENERY AND BIODIVERSITY



Gardens of Dr. Pla and Armengol

Barcelona is working on a model for planning the increase in greenery and ensuring a fair distribution of all the services and benefits that greenery and biodiversity bring. This “Greenery Model” provides for the strengthening of the green infrastructure bearing in mind the scale of the green spaces and seeking their connectivity with one another and with the metropolitan environment’s nature spaces: Collserola, the spaces of the River Llobregat and the River Besòs and the sea. In sum, a greenery model based on fairness, size, connectivity and metropolitan connection.

Besides quantity, the quality of this green space is very important. The “Greenery and Biodiversity Charter” is a tool that shows how to design cities and green spaces while taking account of socio-environmental services and incorporating pro-biodiversity and pro-sustainability criteria. Green spaces improve air quality, regulate temperatures, reduce noise, regulate water flows, improve biodiversity, enhance the urban landscape and promote a more pleasant version that is closer to nature and are therefore key to health and well-being. For all the above, their conception and design need to be at the service of these benefits in order to strengthen them.

VALUES, FUNCTIONS AND FEATURES OF GREEN SPACES IN BIODIVERSITY

[Values]

Environmental

NATURE
DIVERSITY
COMPLEXITY
CONNECTIVITY

Sociocultural

HEALTH
BEAUTY
CULTURE
WELFARE
RELATIONSHIPS
LANDSCAPE

[Features]

HABITAT QUALITY

Surface
Soil quality
Topographic diversity
Permeability
Presence of water

BIOLOGICAL QUALITY

Species richness
Wealth of habitats
Autochthonous/allochthonous index
Density
Stratification
Health of flora and fauna
Representation
Uniqueness

ENVIRONMENTAL QUALITY

Acoustic comfort
Climate comfort
Air quality

SENSORY QUALITY

Olfactory quality
Acoustic quality
Colour quality
Visual quality
Seasonal and temporal variability

RECEPTION CAPACITY

Proximity
Accessibility
Calm traffic
Miscellaneous uses
Socialisation opportunities

CULTURAL INTEREST

Identity
Historical interest
Artistic interest
Educational interest

[Functions]

- Ensures the presence of nature in the city
- Preserves nature
- Preserves soil
- Produces organic matter and food
- Reduces air pollution
- Sequesters and stores carbon
- Reduces noise pollution
- Regulates the water cycle
- Provides moisture
- Moderates temperatures
- Saves on heating/cooling costs
- Creates landscaping
- Improves livability in the city
- Opens up pockets of space and contributes to -pacifying the city
- Contributes to physical and mental wellbeing
- Creates environments for life and sensory enjoyment
- Creates environments for social interaction
- Provides spaces for leisure, recreation and physical activity
- Provides opportunities for cultural, educational and research activities
- Generates tourist appeal
- Promotes contact and interaction with nature
- Generates added value
- Generates business opportunities

[Types of Spaces]

OPEN NATURAL SPACE
RIVER AREA
COAST
FOREST
PARK
GARDEN
VEGETABLE GARDEN
POND
SQUARE
TREE-LINED STREET
LANDSCAPED STREET
GREEN ROOF
GREEN WALL AND/OR VERTICAL GARDEN



TYPES OF SPACES THAT MAKE UP THE GREEN NETWORK IN BARCELONA



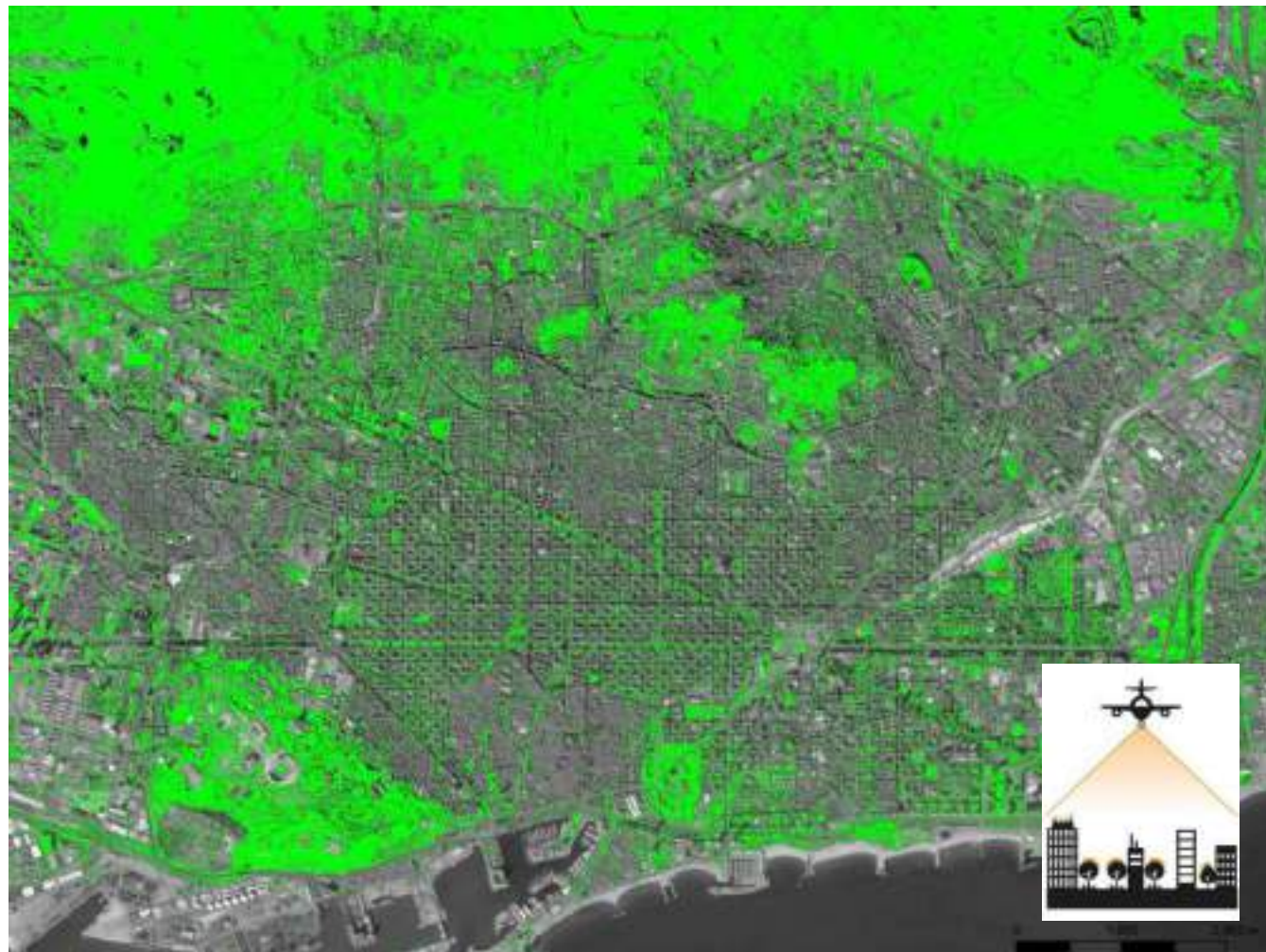
IDENTIFICATION OF THE GREEN INFRASTRUCTURE

Normalized Difference Vegetation Index (NDVI)

1.866 ha vegetation cover (public and private)
1.597 ha vegetation cover with the Collserola Park

11,6 m²/person

21,6 m²/person



Fuente: Barcelona Regional

Natura Espais Verds (NDVI)

1.135 ha public green areas
240.000 urban trees
1.698 ha Collserola Park

7 m²/person

17,62 m²/person

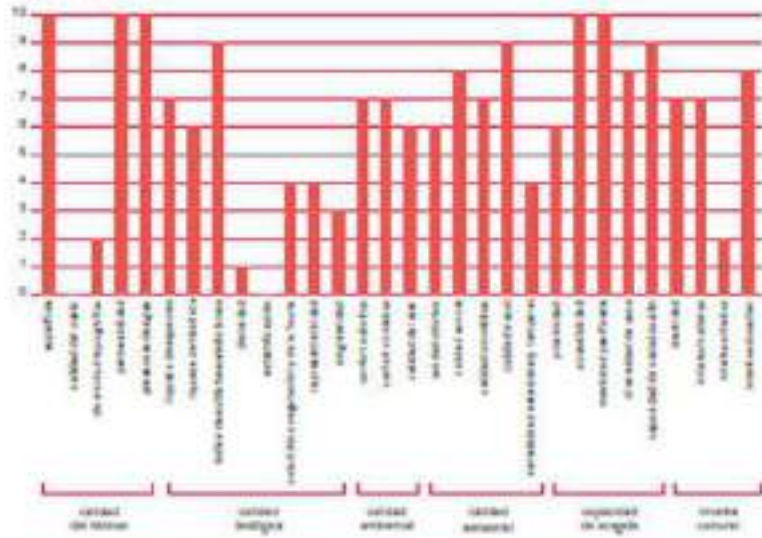


Fuente: Parcs i Jardins de Bcn

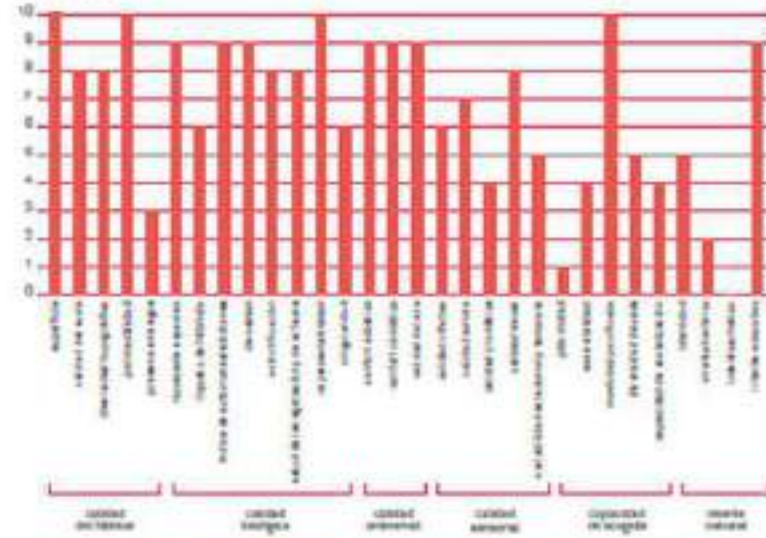


ASSESSMENT OF FEATURES IN EACH TYPE OF SPACE

Lám. 9.
Valoración de los atributos y aportaciones más destacadas.
Litoral

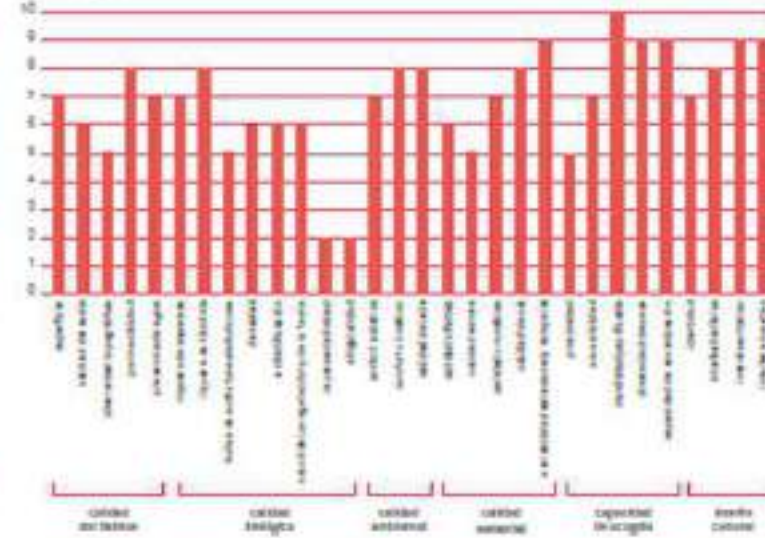


Lám. 10.
Valoración de los atributos y aportaciones más destacadas.
Bosque



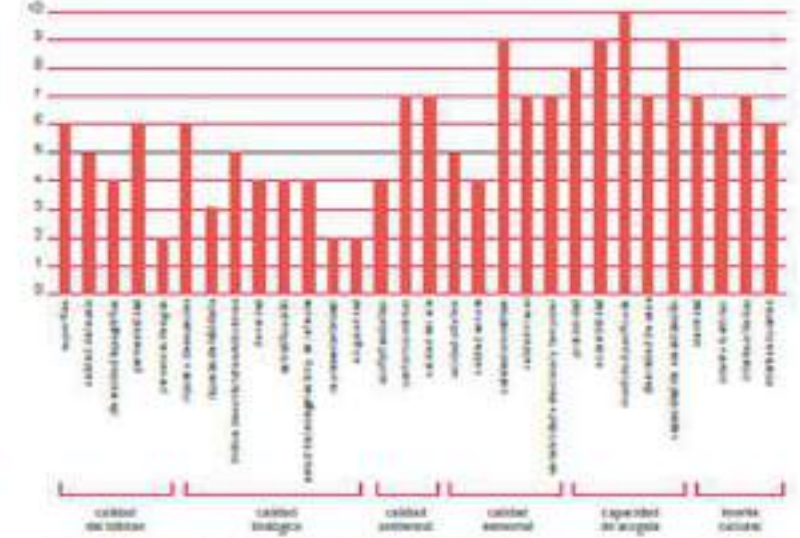
Park Green

Lám. 11.
Valoración de los atributos y aportaciones más destacadas.
Parque



Park de la Chelada

Lám. 12.
Valoración de los atributos y aportaciones más destacadas.
Jardín



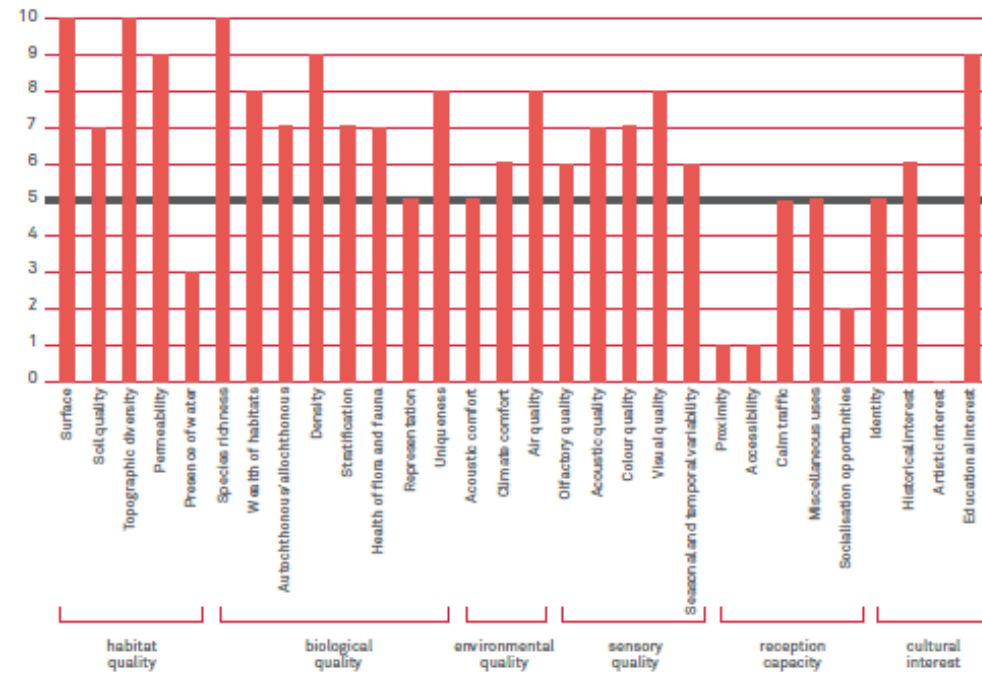
Jardín de la Alameda



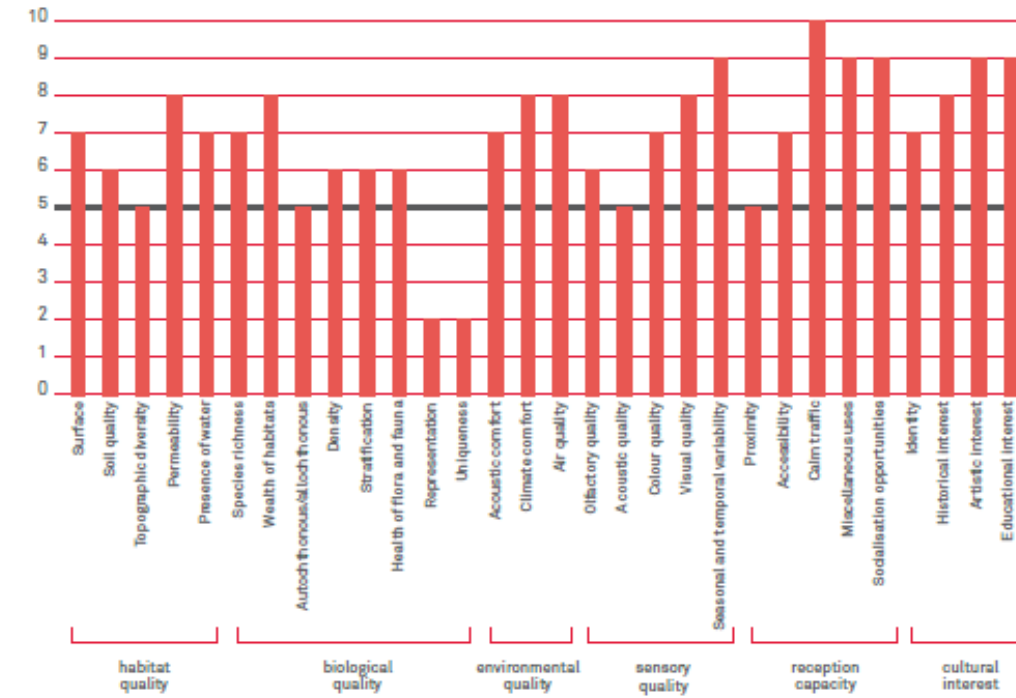
Playa de la Mar de Oro

ASSESSMENT OF FEATURES IN EACH TYPE OF SPACE

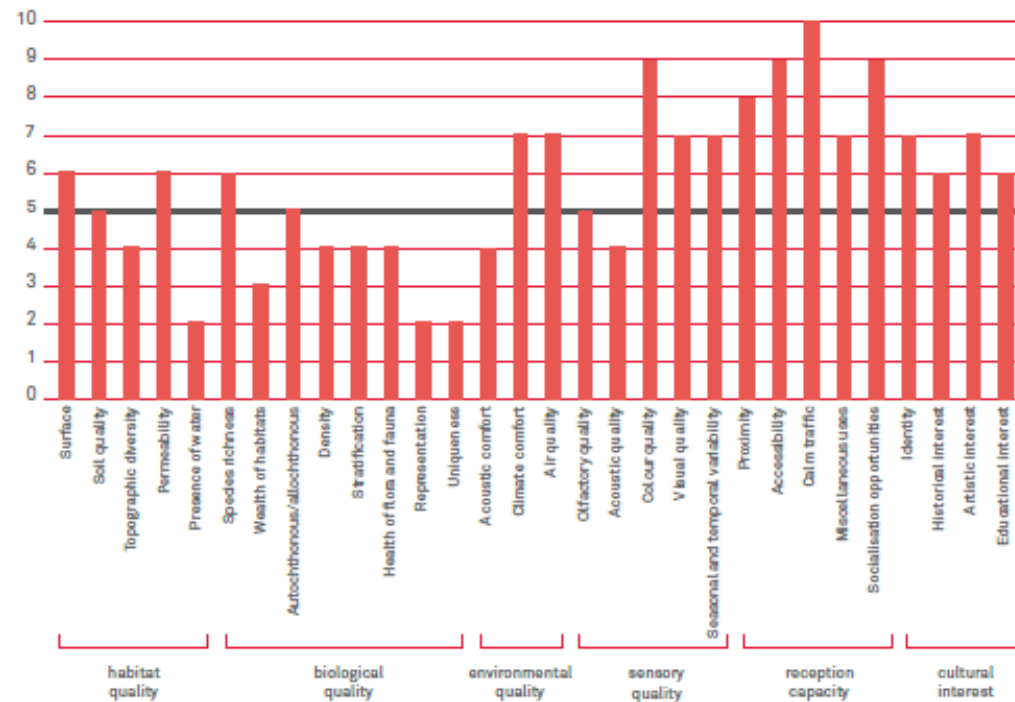
NATURAL SPACE



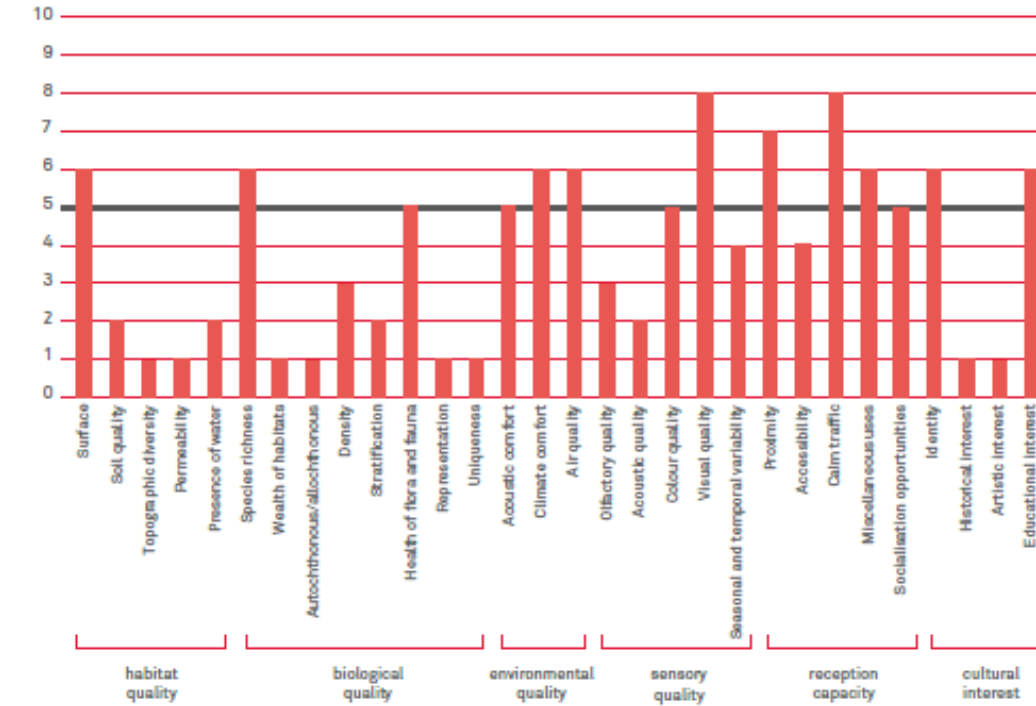
PARK



GARDEN

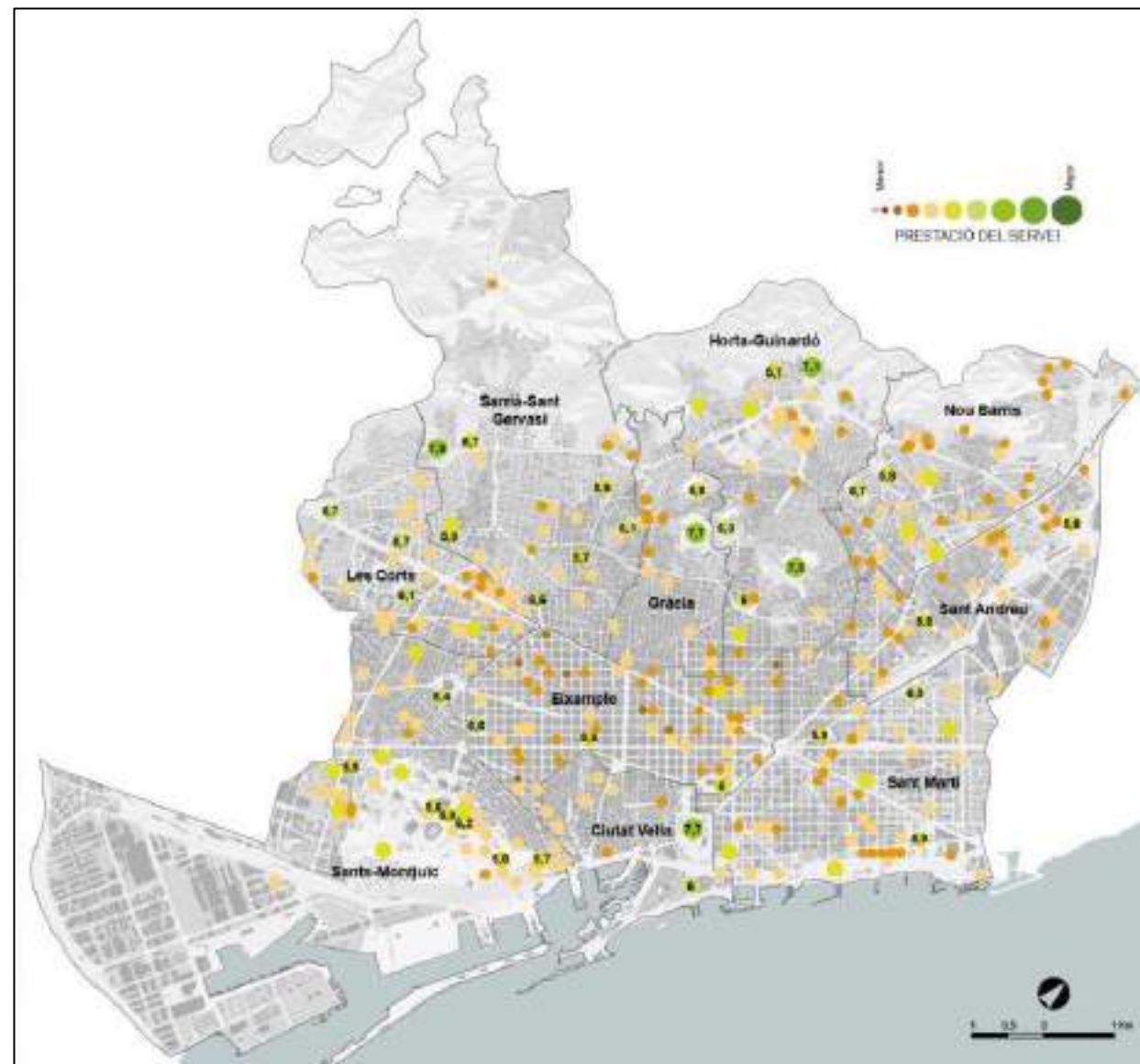
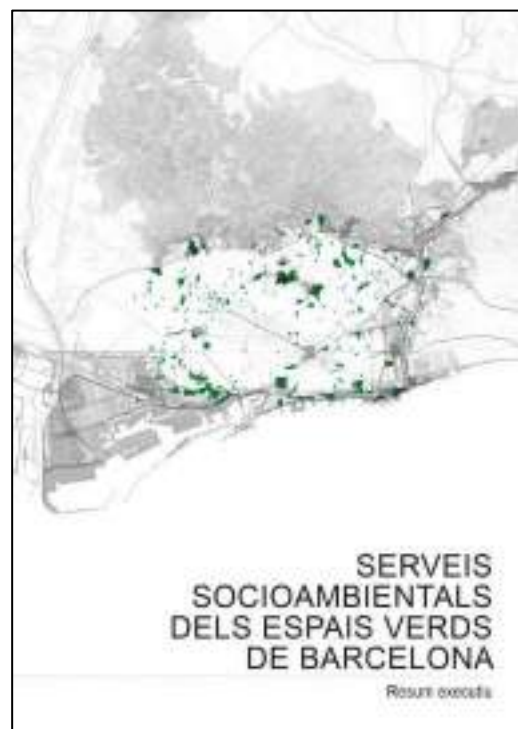


GREEN



PUBLICATION OF THE STUDY "SOCIOENVIRONMENTAL SERVICES OF GREEN SPACES IN BCN"

Socio-environmental services or ecosystem services are the benefits that humans obtain from ecosystems, which contribute directly or indirectly to human well-being. In the urban environment, parks, gardens and squares are the main spaces for the provision of socio-environmental services.

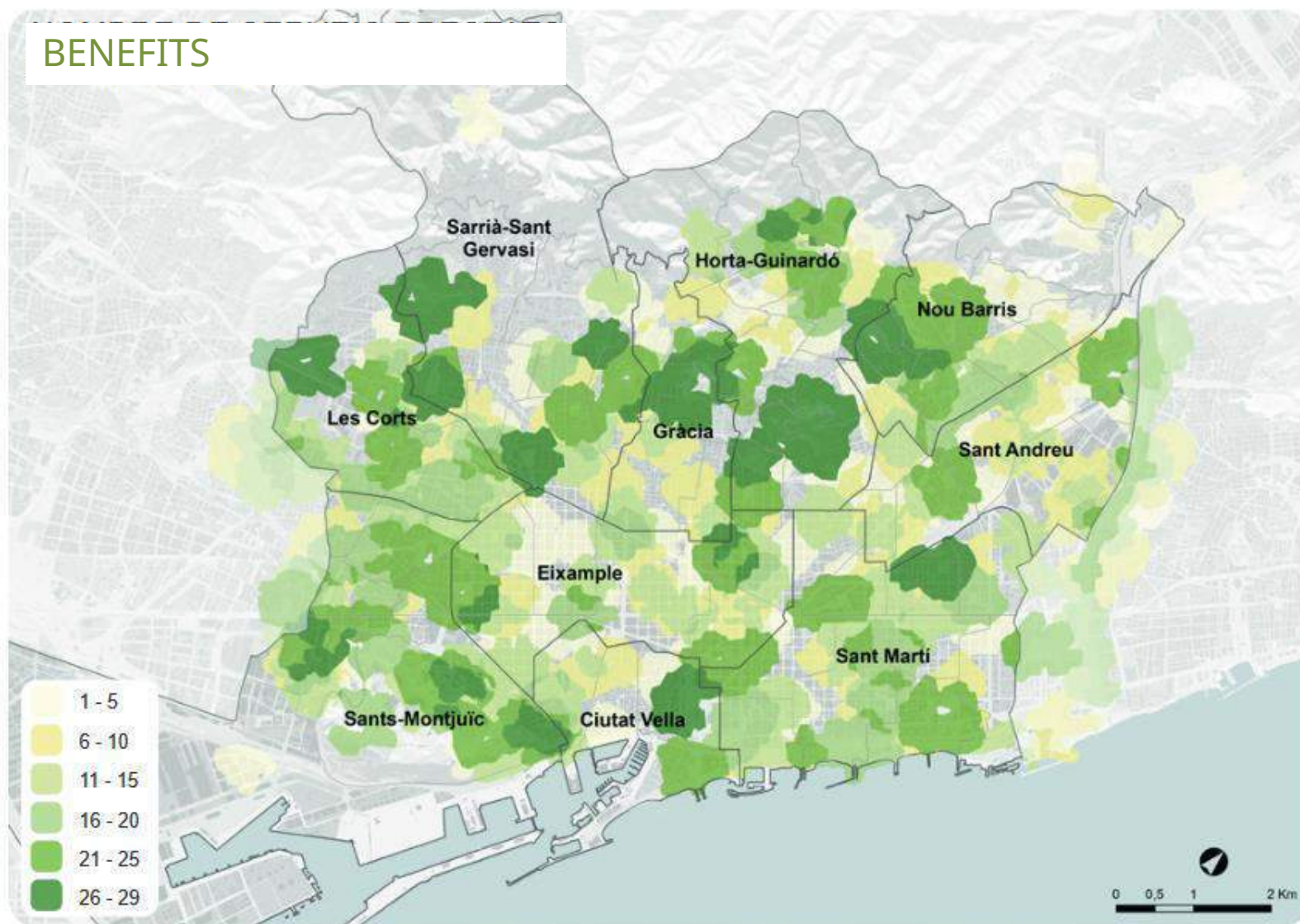


Goals

- Evaluation of the environmental services of urban parks, squares and block interiors in different districts of Barcelona, to be taken into account in future measures for the management, planning, promotion and design of this type of spaces.
- Evaluation of accessibility to environmental services in urban parks.
- Evaluation of this accessibility by neighborhood
- Evaluate the benefits and deficits of services by zones.
- Evaluation of the complementarity of services
- Enhancing the value of urban parks through environmental services

Valoración media de cada uno de los servicios por cada espacio verde
Fuente: Barcelona Regional

BENEFITS AND DEFICITS OF SOCIO-ENVIRONMENTAL SERVICES



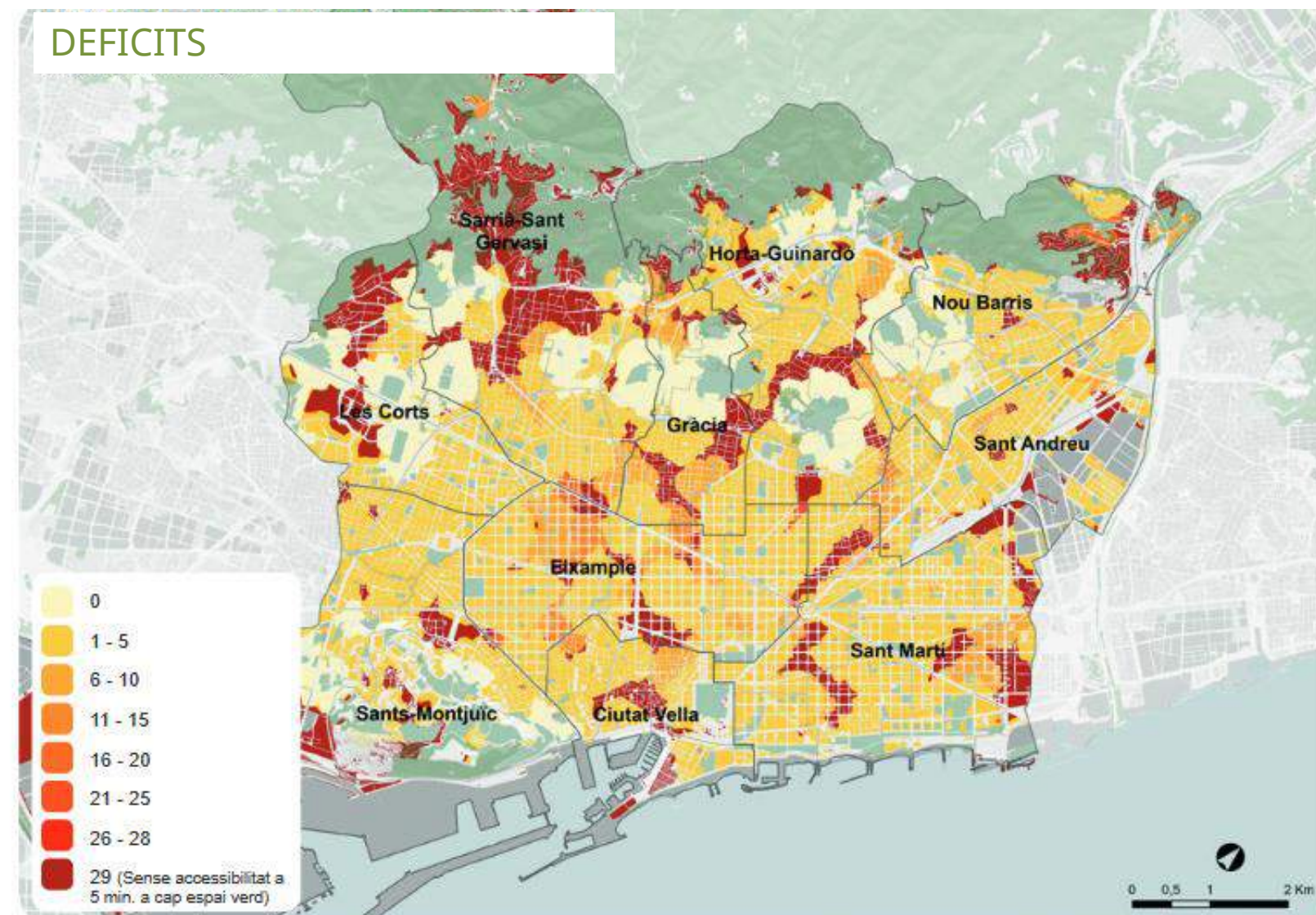
Serveis prestats	Població
0	151.977
1 a 5	183.225
6 a 10	229.486
11 a 15	300.106
16 a 20	269.836
21 a 25	262.070
26 a 29	212.046
	1.608.746



A partir dels serveis prestats per a cada un dels espais verds es creuen les dades per obtenir la quantitat de serveis prestats segons la zona de la ciutat.

Es considera que un servei està prestat quan té una valoració igual o superior a 5.

La quantitat de serveis prestats per zona permet tenir una visió territorialitzada dels serveis que s'ofereixen a cada zona del teixit urbà, de manera que esdevé un instrument per saber quines zones tenen més serveis i quines menys.

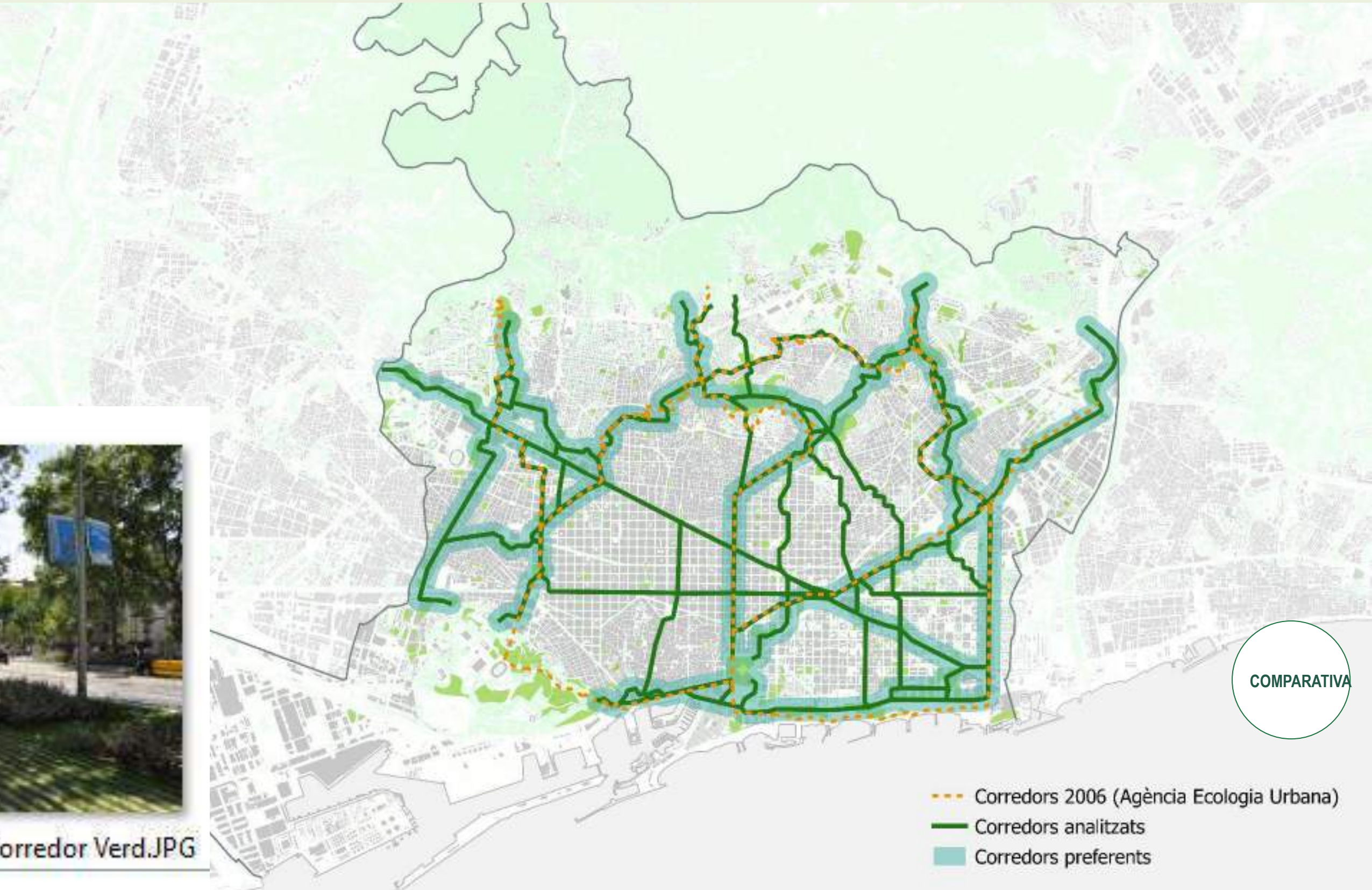


Serveis deficitaris	Població
0	195.812
1 a 5	1.106.214
6 a 10	120.610
11 a 15	35.241
16 a 20	6.777
21 a 25	2.186
26 a 29	141.906
	1.608.746



Es considera que un servei és deficitari quan té una valoració inferior a 5.

GREEN CORRIDORS INFRASTRUCTURE



Inici PasseigStJoan Reformat-Corredor Verd.JPG

LINE 1. MORE GREENERY AND BIODIVERSITY

Action 1. To deploy the Greenery Model to increase and connect the urban green infrastructure

ESTABLISHING A GREEN MODEL

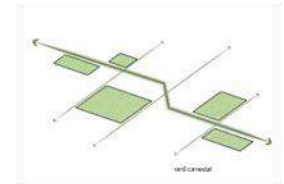
A fair greenery.

We need to have our own quality green spaces accessible to all city residents, so their environmental services can be enjoyed to the full.



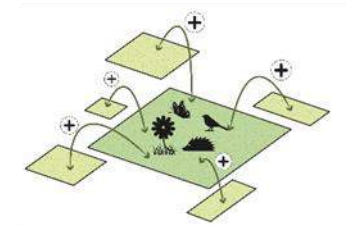
A connected greenery.

We need a system that establishes a network, a true green infrastructure that is complex and connected, designed by reconnecting the city's various green spaces.



A greenery reinforced in biodiversity nodes.

We need to preserve and improve the spaces that contribute greater diversity and complexity to the urban green infrastructure to enrich the entire system.

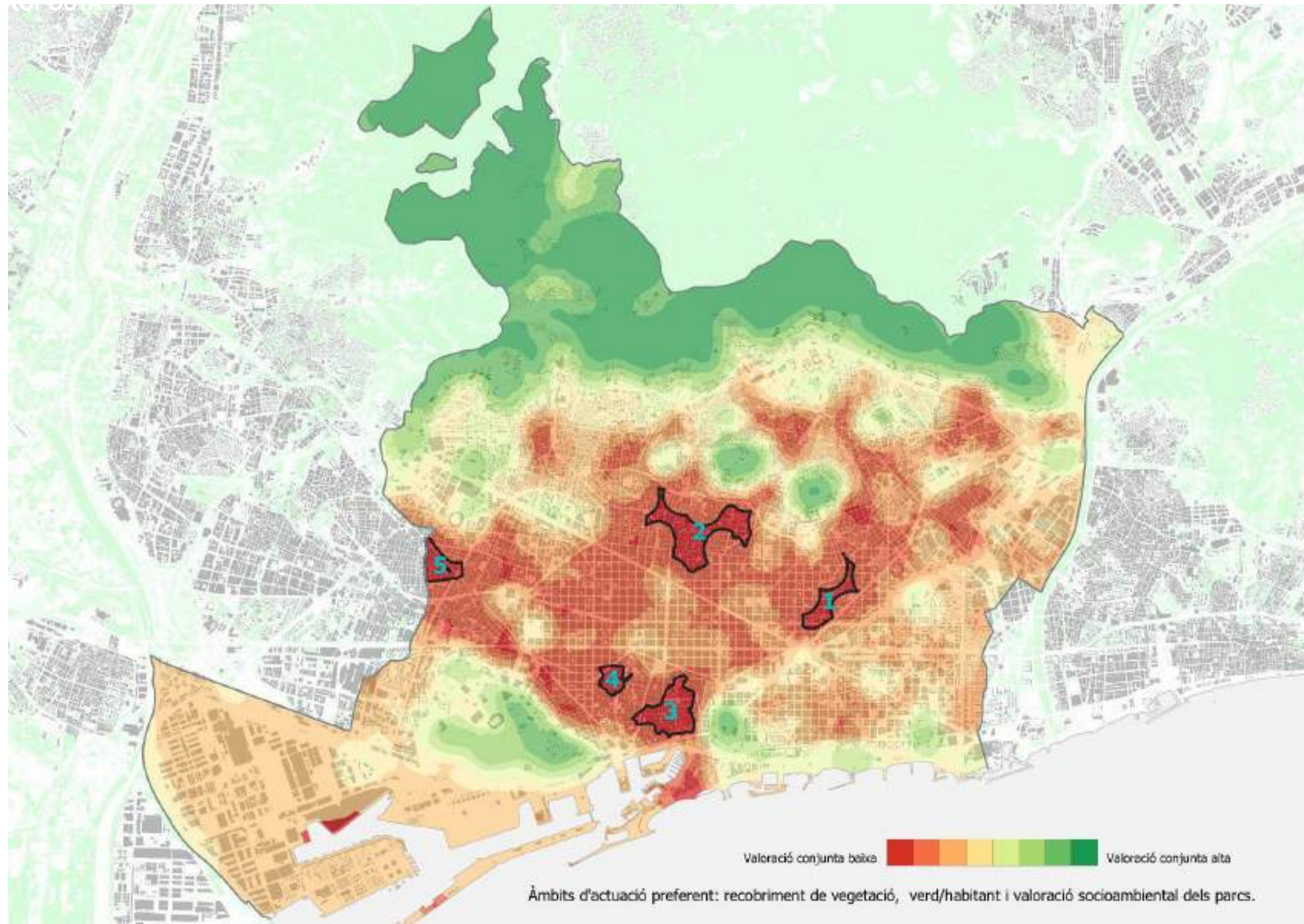


A metropolitan greenery.

We need to interconnect the green infrastructure from within the city with metropolitan-scale structural elements.



PLACES WITH LESS ACCÉS TO GREENERY



GREEN WALKABILITY

Rutes calculations

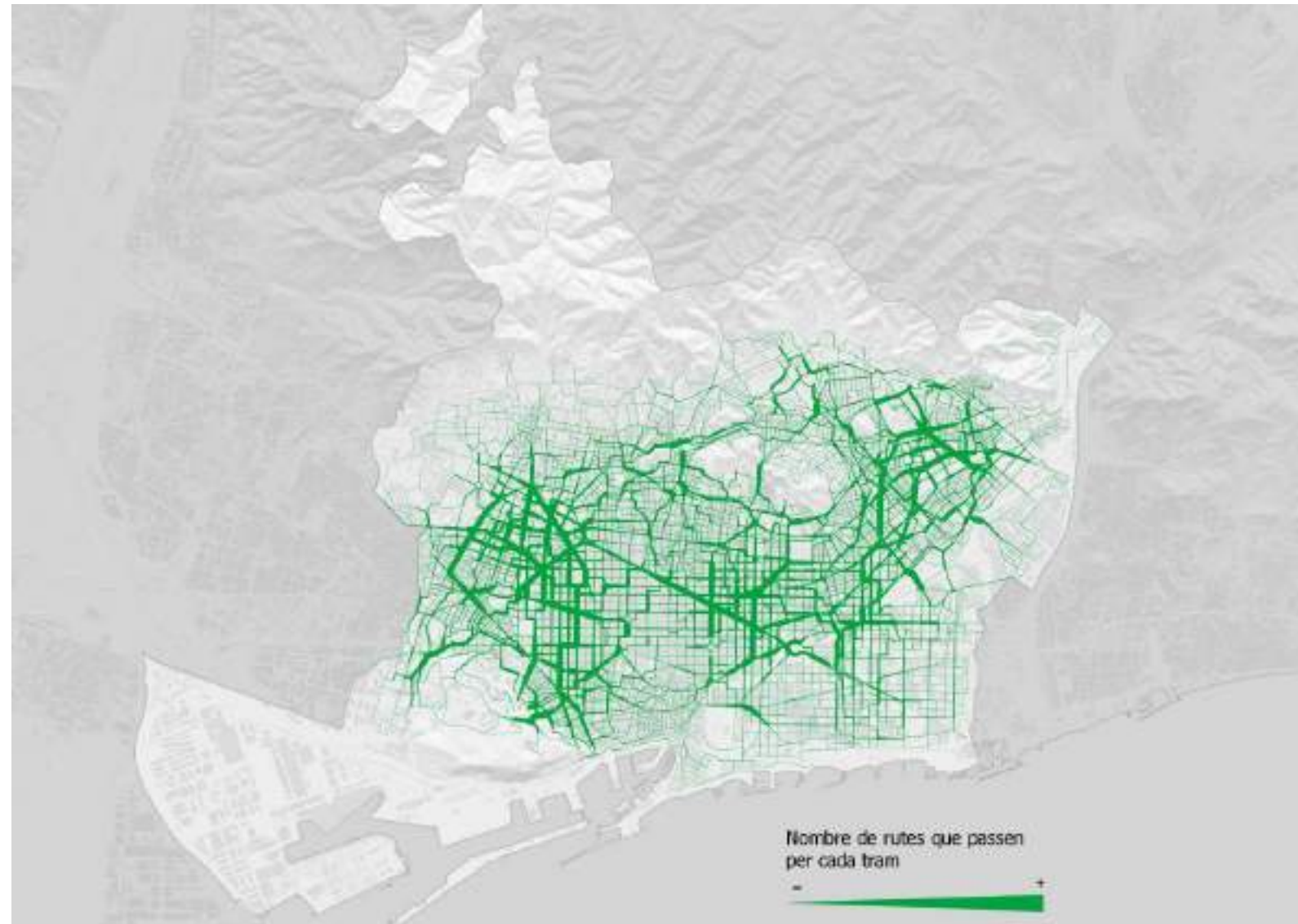
44.000 rutes,
distància més curta a
parcs propers per carrers
arbrats



Ruta generada en funció
de la distància més curta



Ruta generada tenint en
compte l'índex de
caminabilitat



Jardins de Celestina Vignaux, Sant Joan de Vilatorrada



Jardins de V-la Florela, Sant Joan de Vilatorrada



Plaça de la Vila de Madrid, Vilanova i la Geltrú



Jardins de la Indústria, Sabadell



Jardins de Sant Joan de Déu, Sabadell

"FLYING CONNECTIVITY BETWEEN PARKS"

Rutes calculation



Parc de Can Rígal

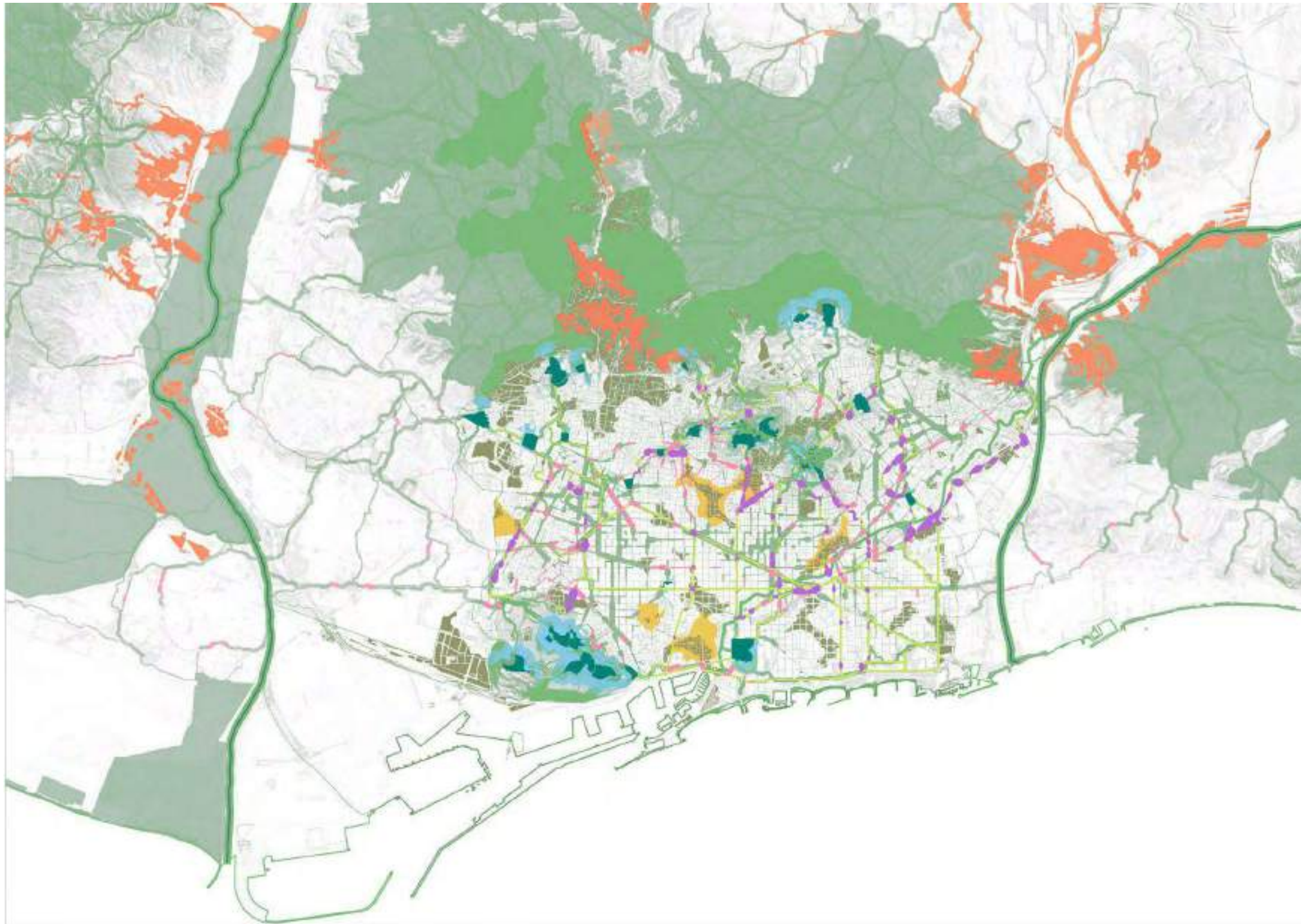
Cost de les rutes: +
-

Nombre de rutes: +
-

● PEIN
● Verd Urbà
● Ribera



This legend block defines the symbols and line styles used in the map. It includes the title "Parc de Can Rígal" and three categories: "Cost de les rutes" (Cost of routes) with a color gradient from blue to red, "Nombre de rutes" (Number of routes) with a line thickness gradient from thin to thick, and three park types: "PEIN" (yellow circle), "Verd Urbà" (red circle), and "Ribera" (blue circle).

LINE 1. MORE GREENERY AND BIODIVERSITY






GREENERY MODEL


ACHIEVING A FAIR GREENERY

-  Gaps in accessibility to urban green spaces
-  Action areas for achieving greenery fairness

STRENGTHENING BIODIVERSITY NODES

-  Nature reserves
-  Nodes to be strengthened
-  Parks in the vicinity of nodes

INTEGRATING GREENERY ON A METROPOLITAN SCALE

-  Critical areas for territorial connectivity

CONNECTING GREENERY

-  Green corridors

Breaks in green connectivity (on foot and by flight)

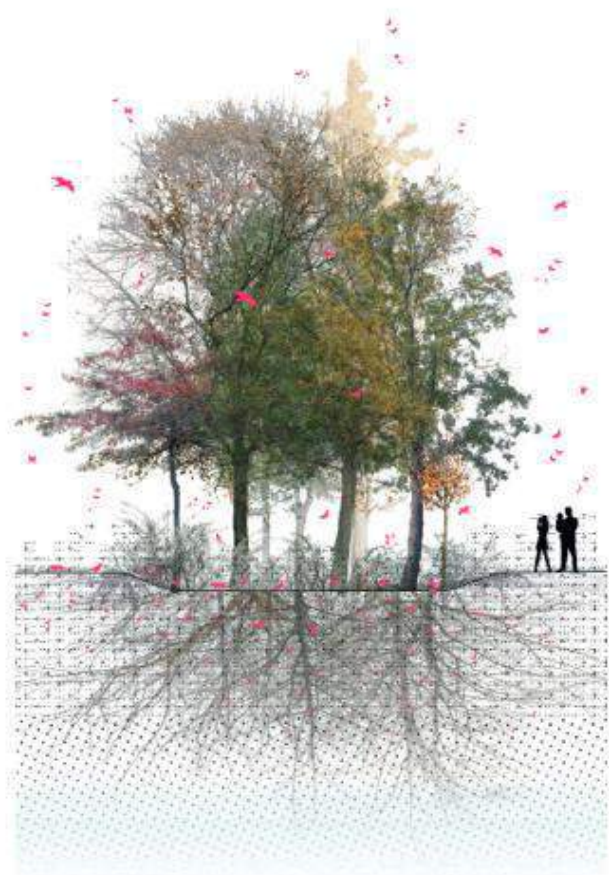
 MORE COST LESS COST

Breaks in green corridors

 MORE COST LESS COST

LINE 1. MORE GREENERY AND BIODIVERSITY

Action 2. To implement the Greenery and Biodiversity Charter



Carta del verd
i de la biodiversitat

Índex

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Per què una Carta del verd i de la biodiversitat?	6
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LINE 1. MORE GREENERY AND BIODIVERSITY

Action 3. To promote the creation of new green spaces and the renovation of existing ones, in line with the criteria of the Greenery Model and the Greenery Charter

**TO INCREASE
GREENERY
2015-2030 =
160 ha**



LINE 1. MORE GREENERY AND BIODIVERSITY

Action 3. To promote the creation of new green spaces and the renovation of existing ones, in line with the criteria of the Greenery Model and the Greenery Charter



Plaza de les Glòries



LINE 1. MORE GREENERY AND BIODIVERSITY



Projecto Canòpia



LINE 1. MORE GREENERY AND BIODIVERSITY



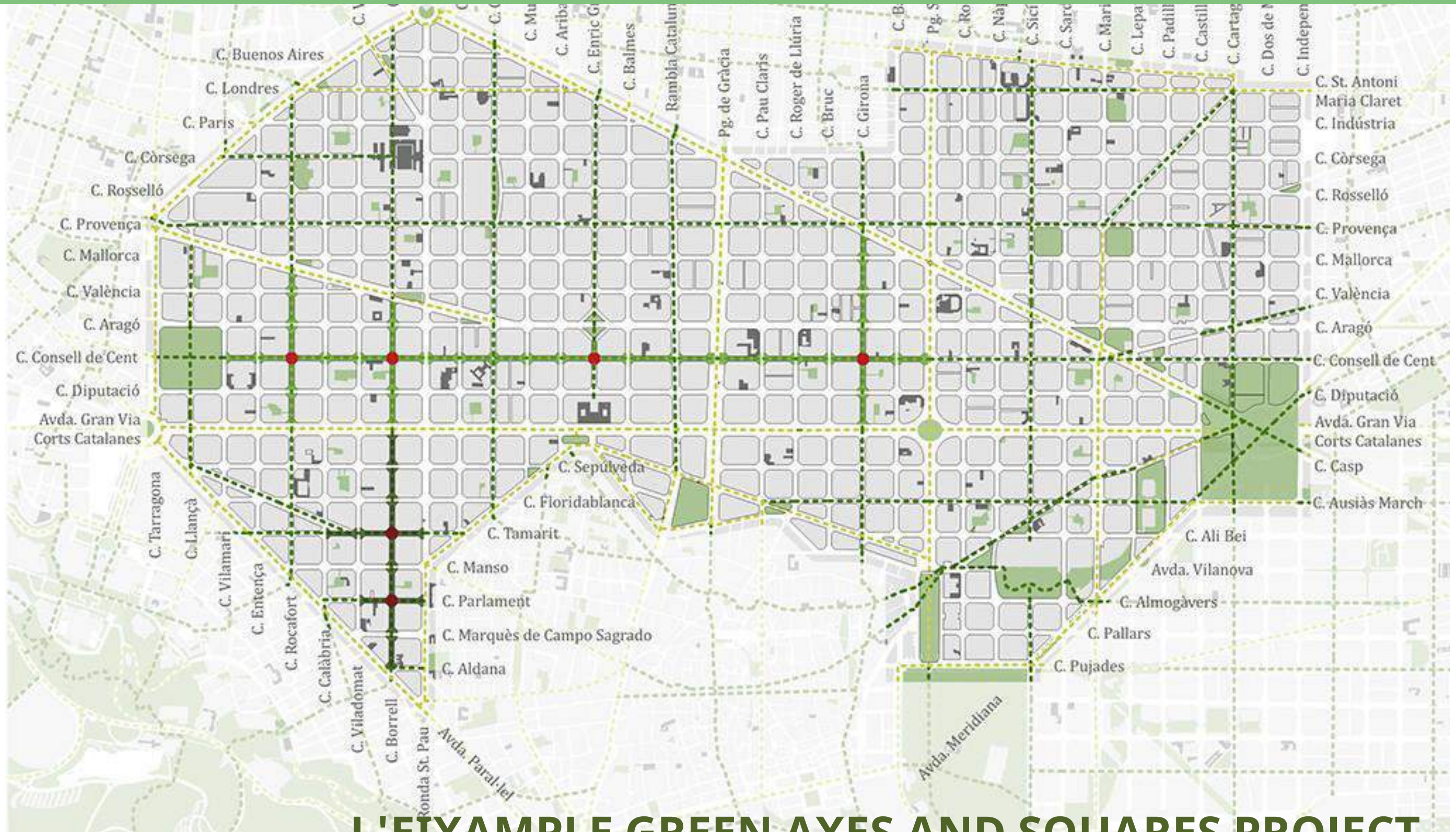
Calle Bolivia

LINE 1. MORE GREENERY AND BIODIVERSITY

SUPERMANZANA SANT ANTONI
2015-2019



LINE 1. MORE GREENERY AND BIODIVERSITY

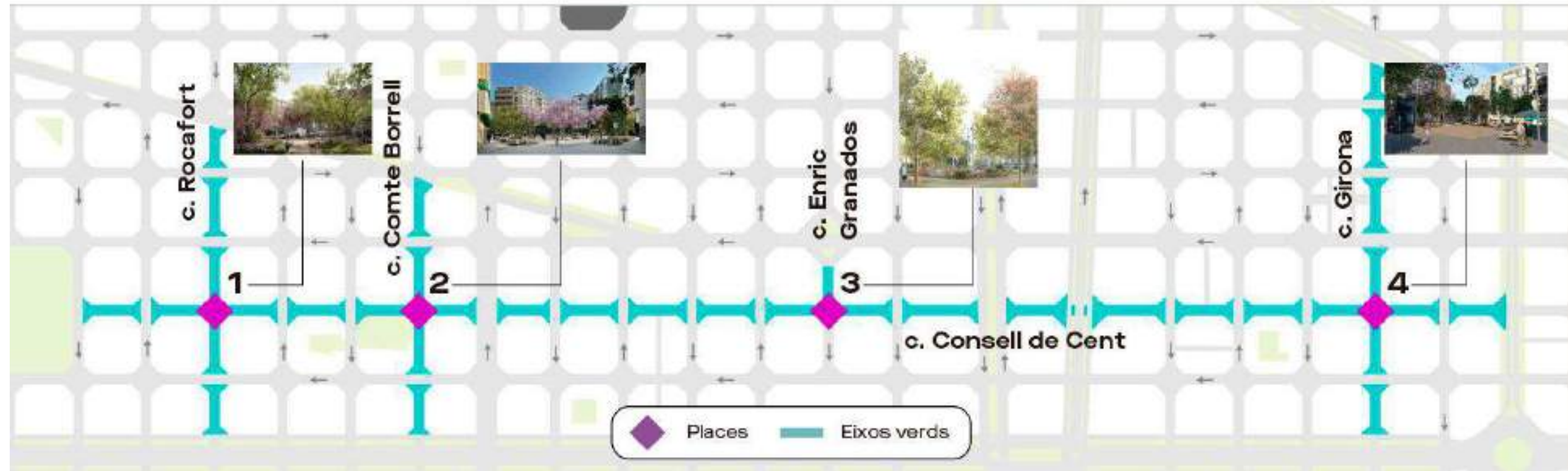


L'EIXAMPLE GREEN AXES AND SQUARES PROJECT

Work began on August 16, 2022 and will last 8.5 months.

LINE 1. MORE GREENERY AND BIODIVERSITY

ÀMBIT D'ACTUACIÓ: 4 EIXOS VERDS I 4 PLACES DE L'EIXAMPLE



LINE 1. MORE GREENERY AND BIODIVERSITY



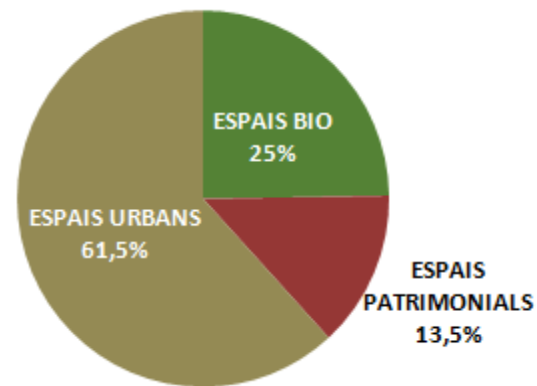
LINE 2. TO CONSERVE AND IMPROVE GREENERY AND BIODIVERSITY

Conservation of the natural heritage of the Earth is one of the main challenges of sustainability. This challenge in the city is specifically to conserve and improve nature and to prevent the loss of species and habitats.

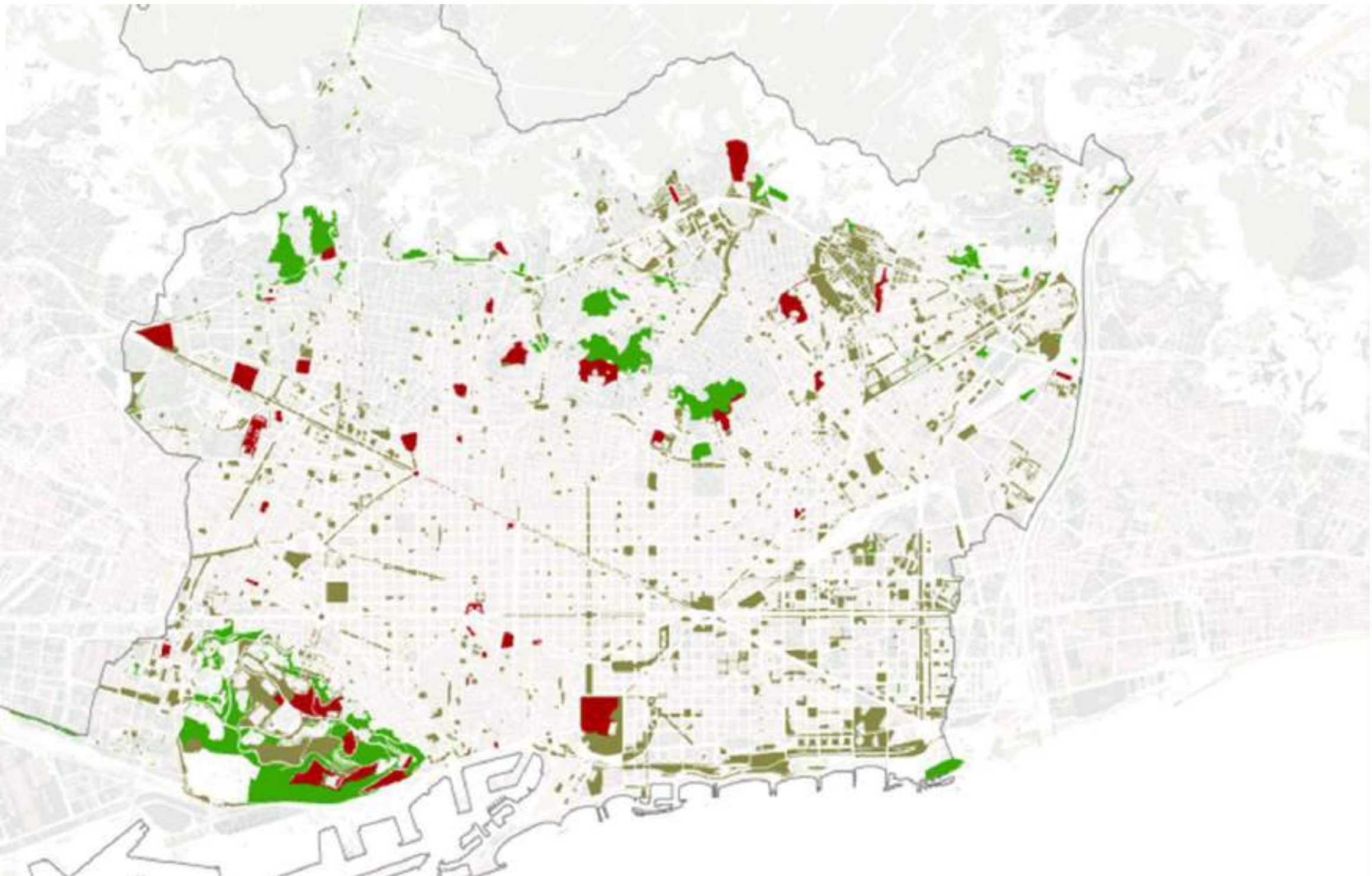
As for the management of green spaces, the city is applying ecological management and promoting naturalisation. The aim of ecological management is sustainable use of resources, protection of the natural heritage and environment and, therefore, health, and applies to greenery throughout the city, attending to the special features of every park and garden, including biodiversity and heritage parks and gardens. Naturalising urban green spaces means transforming them by managing more in favour of ecological processes and spontaneous entry of flora and fauna, without losing aesthetic quality and by gearing them towards a social and health benefit and the conservation of biodiversity, and is applied in several green spaces.



LINE 2. CLASSIFICATION OF GREEN SPACES IN BARCELONA

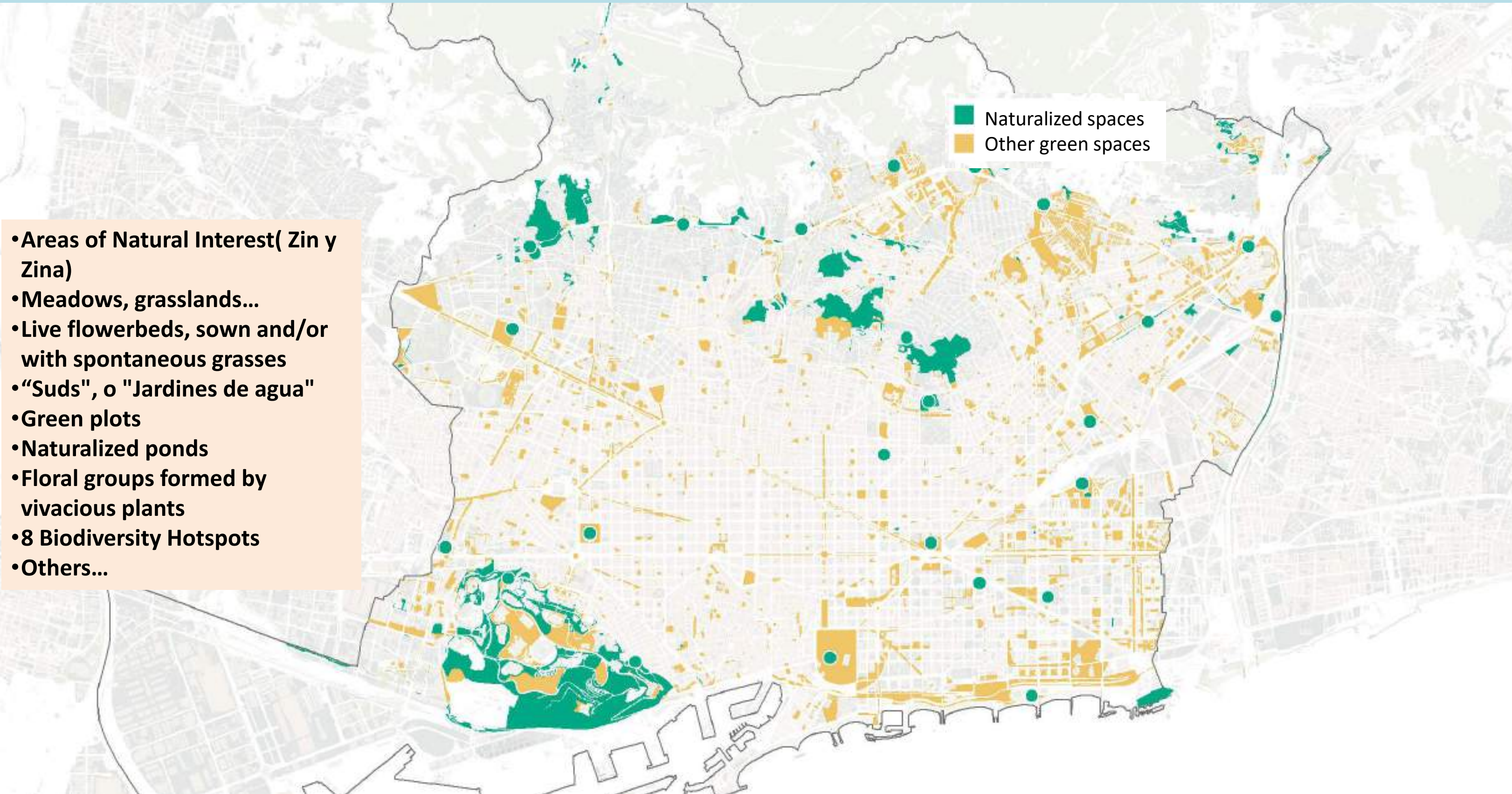


Heritage spaces	Biodiversity spaces	Urban spaces
134,1 ha	256,1 ha	631,7 ha



NATURALIZATION PROGRESS MAP

- Areas of Natural Interest(Zin y Zina)
- Meadows, grasslands...
- Live flowerbeds, sown and/or with spontaneous grasses
- "Suds", o "Jardines de agua"
- Green plots
- Naturalized ponds
- Floral groups formed by vivacious plants
- 8 Biodiversity Hotspots
- Others...



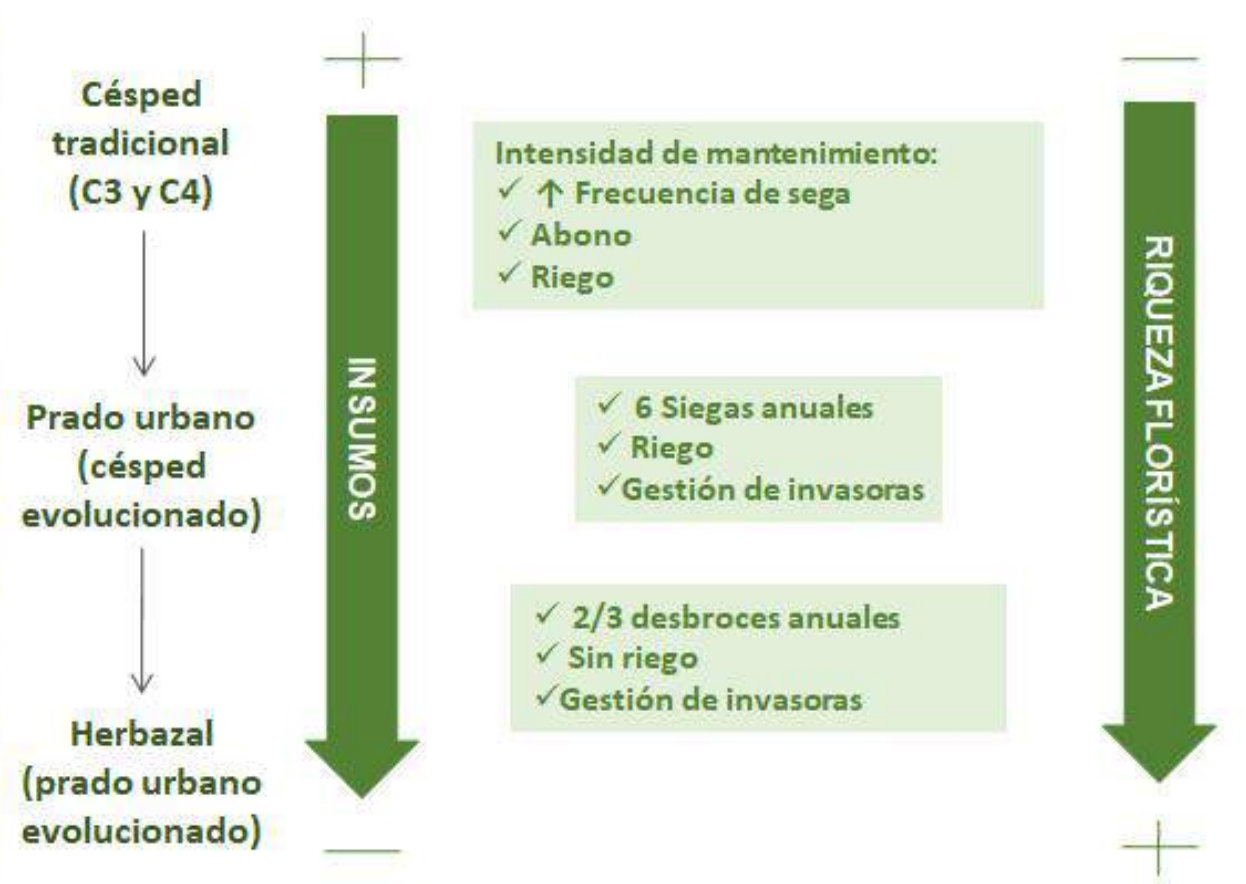
The map displays a city grid with green spaces highlighted. A legend in the top right corner identifies two categories: 'Naturalized spaces' shown in dark green and 'Other green spaces' shown in orange. The dark green areas are scattered throughout the city, often in irregular shapes, while the orange areas are more widespread and often form larger, more contiguous blocks. The map also shows a network of streets and some larger open areas.

■ Naturalized spaces
■ Other green spaces

HERBICIDE-FREE MANAGEMENT OF TREE PLOTS



EVOLVED MANAGEMENT OF HERBACEOUS PLANTS



Herbácea	Superficie m ² (2020)	Tendencia
Césped tradicional	1.629.118	↓
Prado urbano	203.600	↑
Herbazal	218.453	↑
Prado de flor sembrada	9.423	↑

ENHANCEMENT OF SPONTANEOUS FLORA



Caps blancs (*Alyssum maritimum*)

Margaridoia (*Bellis perennis*)

Borrajta (*Borago officinalis*)

Boixac de camp (*Calendula arvensis*)

Corretjola (*Convolvulus arvensis*)

Ravenissa blanca (*Diploctaxis erucoides*)



INSTALLATION OF WILDLIFE STRUCTURES



TREES FOR LIFE: Master Plan for Barcelona's Trees 2017 - 2037

THE 10 STRATEGIC LINES

1. TREE HERITAGE AND BIODIVERSITY

Conserving the tree population, making it more sustainable and turning it into a biodiverse habitat

2. KNOWLEDGE

Increasing knowledge about trees and their values and services

3. COMMUNICATION AND PARTICIPATION

Inform the general public about the services and disservices provided by trees, encouraging them to participate in their conservation

4. PLANNING AND CONNECTIVITY

Planning the tree population as a more powerful, more interconnected green infrastructure which can provide more services

5. PRESERVATION AND PROTECTION

Preserving the tree population and its heritage and identity values, ensuring its protection

6. TREE HEALTH

Caring for the health of the trees, considering biodiversity and the general public

7. PLANT MATERIAL AND PLANTING

Working towards a good supply and appropriate planting of trees

8. PRUNING AND SAFETY

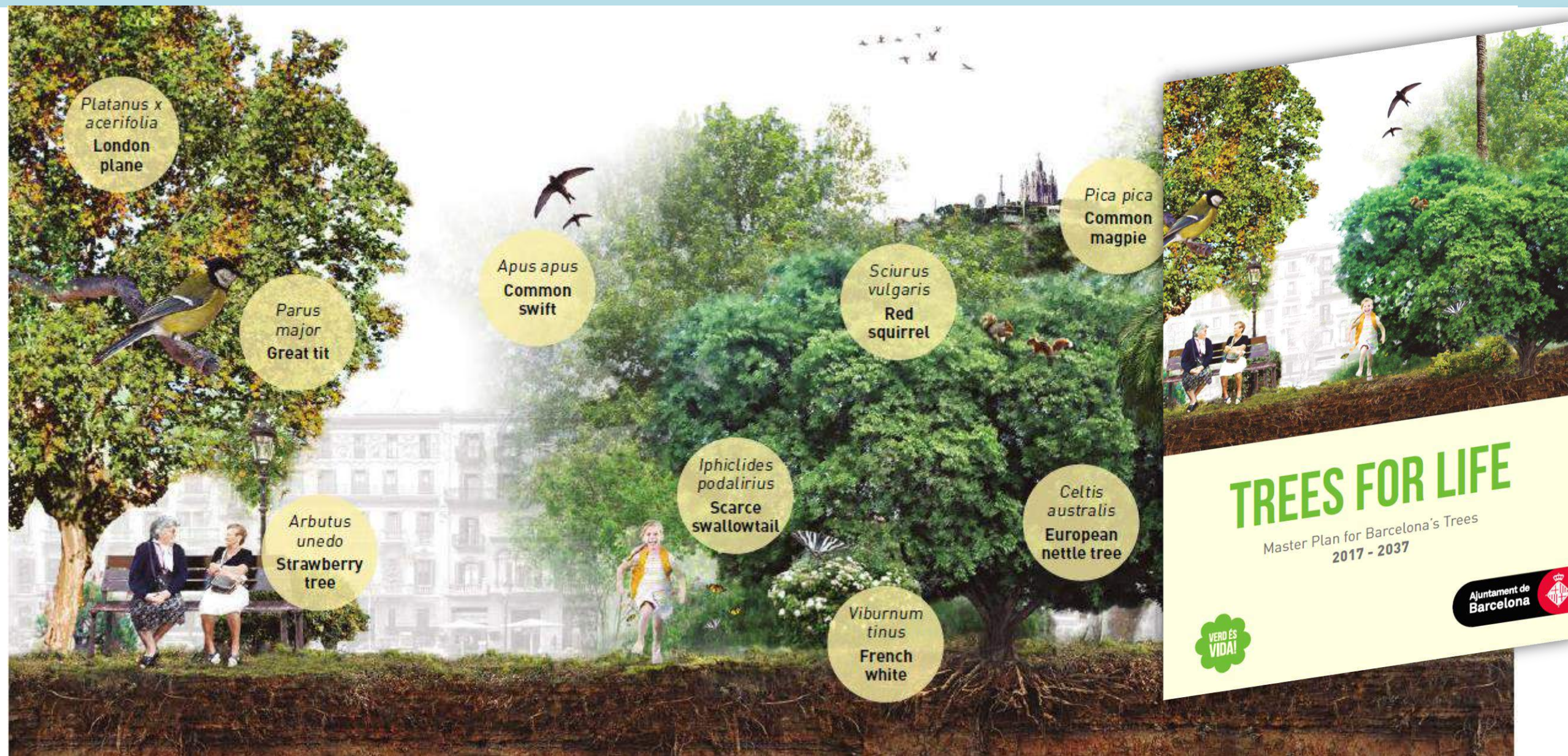
Pruning as little as possible while ensuring people's safety and tree growth

9. THE SOIL

Providing trees with a greater volume and higher quality of soil, developing strategies that make urban surfaces more permeable.

10. WATER

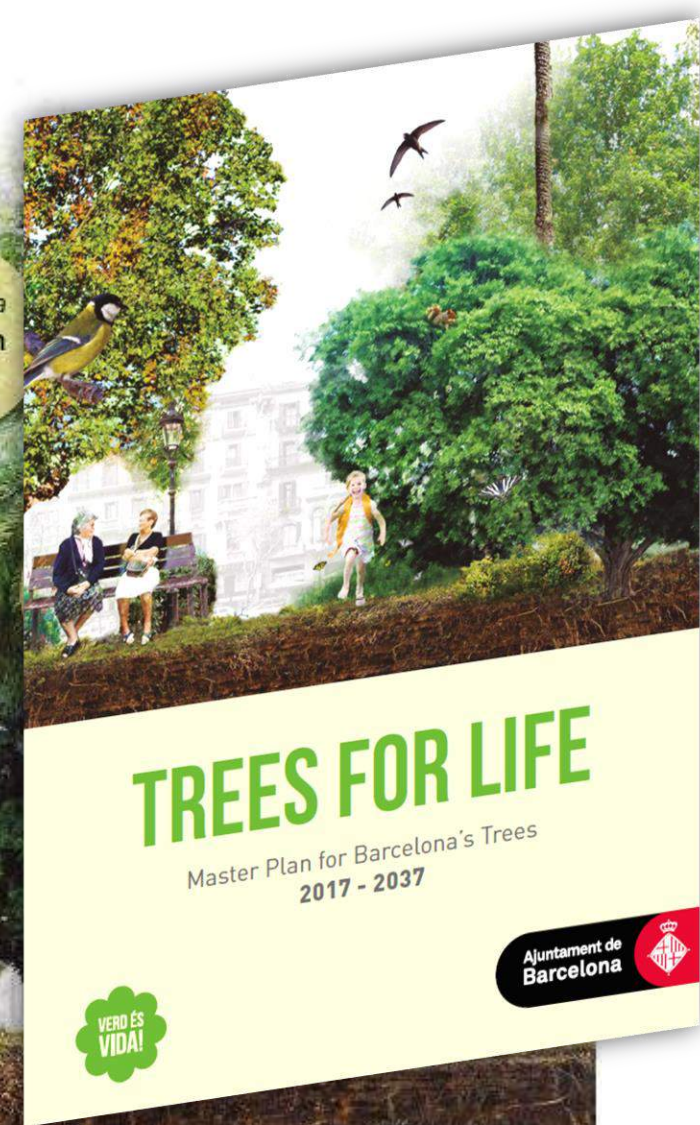
The sustainable management of irrigation water, while obtaining maximum services



1,4 millions
of trees is the estimated arboreal
patrimony of Barcelona

25,20%
is the area of the city covered by
trees

50 years
is the average life span of a tree in
an urban environment



LINE 3. WITH AND FOR CITY RESIDENTS

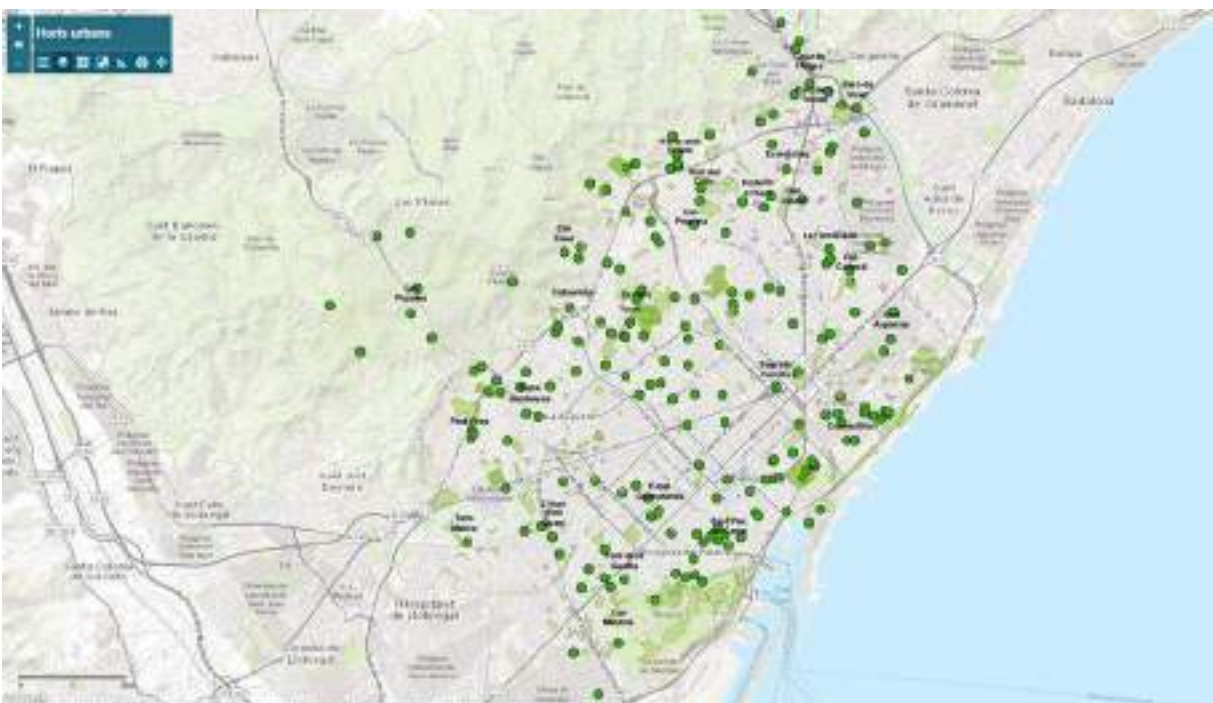
Parks, urban gardens and beaches are the only possibility available to many people for enjoying nature. Green spaces contribute to the interaction between people and to positive community life and are the ideal framework for activities that strengthen the recreational and social values of urban nature and promote knowledge of biodiversity.

We need to include and facilitate citizen initiatives and also offer specific proposals for communication, training, education and involvement so that city residents, organisations and all the other players can have an active role in promoting and conserving urban biodiversity, working actively to protect and therefore improve diversity in both public and private areas.



LINE 3. WITH AND FOR CITY RESIDENTS

“Mans al Verd” program, is a strategy for urban agriculture, awareness-raising activities and co-responsibility on the beaches. It carries out citizen involvement projects for nature actions in the city and promotes volunteering.



CROSS-CUTTING AREA 1: KNOWLEDGE

Conservation of biodiversity in the urban environment and the relationship between nature and health are two aspects that are being considered by local governments around the world and regarding which we need to make progress in both theory and applied knowledge. Planning, managing and maintaining the natural heritage on a rigorous scientific and technical basis **requires deep knowledge of greenery and biodiversity, studies into the behaviour and needs of species in urban environments and the environmental and social benefits that they generate. Meanwhile, we will need to be diligent and follow the transformation process that climate change is bringing about in the natural environment both on land and in the sea.**

Likewise, **the relationship between urban nature and health is a central issue where we need to delve deeply if we are to apply the conclusions at the service of a healthy life to cities which promote greenery accessibility and fairness.**



BIODIVERSITY ATLAS OF BARCELONA

The screenshot displays the 'Atles de Biodiversitat' website for Barcelona. The browser address bar shows 'ajuntament.barcelona.cat/atlesbiodiversitat/ca/'. The website header includes the URL 'www.barcelona.cat' and a search bar. A navigation menu on the left lists various biodiversity categories with their respective species counts:

- SELECCIONA
- Plantes dels espais verds: 1191 espècies identificades
- Arbres de la ciutat: 454 espècies identificades
- Ocells que fan niu: 83 espècies identificades
- Papallones: 39 espècies identificades
- Vertebrats: 30 espècies identificades
- Basses naturalitzades: 52 espècies identificades
- Comunitats vegetals: 28 comunitats identificades

Below the menu is a slider for 'NDVI - Cobertura de verd' ranging from 0% to 100%. Further down are links for 'Espècies a adreça', 'Com funciona?', and 'Sobre aquest atles', along with social media icons for Facebook, Twitter, WhatsApp, Email, and a plus sign.

The central map shows the city of Barcelona and surrounding areas, with green areas representing vegetation. The map is overlaid with a grid of numbers, likely representing species counts per grid cell. Labels on the map include 'Santa Coloma de Gramenet', 'BADALON', 'Sant Adrià de Besòs', 'BARCELONA', 'L'HOSPITALET DE LLOBREGAT', 'Cornellà de Llobregat', 'Sant Joan Despí', 'Esplugues de Llobregat', and 'Sant Just Desvern'.

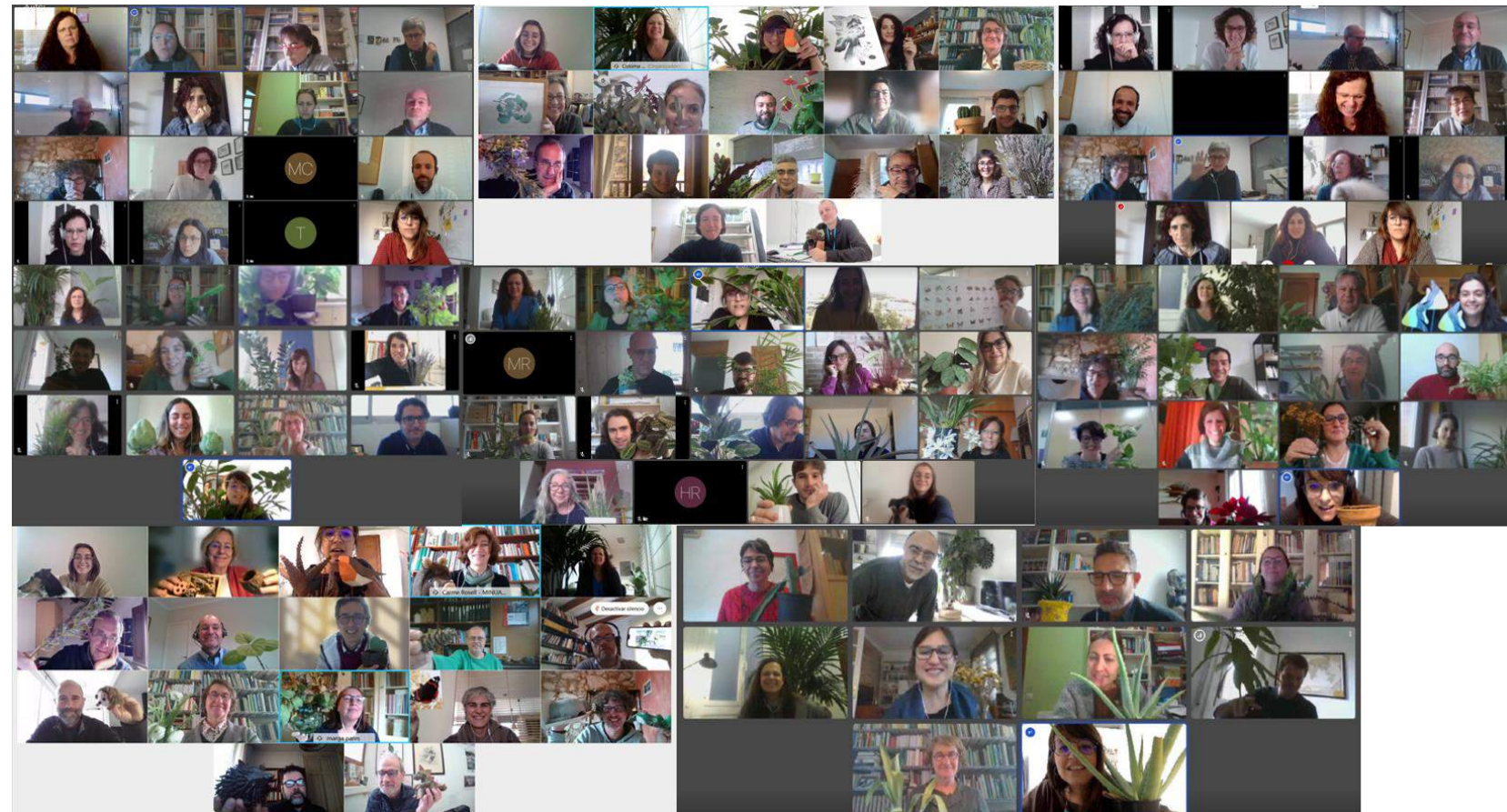
On the right side, there is a detailed panel for 'Papallones' (Butterflies), showing '39 espècies identificades'. It includes a search bar 'Cerca una espècie' and a list of species. The first species shown is 'Atalanta Vanessa atalanta', accompanied by a photograph of the butterfly. Below the photo is a descriptive text: 'És la papallona migradora per excel·lència: a la primavera es mou en grups cap al centre i el nord d'Europa, buscant temperatures més baixes. Quan'. A 'VEURE MÉS' button is located below the text. Below this are sections for 'On la podem trobar?' and a list of other species: 'Aurora Anthocharis cardamines', 'Barrinadora dels geranis Cacyreus marshalli', and 'Blanca de la col'. At the bottom of the panel are buttons for 'INFORMACIÓ', 'CRÈDITS', and a download icon.

The footer of the website shows 'Leaflet | OpenStreetMap © CARTO' and the Windows taskbar at the bottom of the screen with the search bar 'Buscar cualquier cosa' and the system tray showing the time '18:39' and date '25/05/2021'.

CROSS-CUTTING AREA 2: GOVERNANCE

The plan needs to work in a shared and cross-cutting way with the municipal authority itself and with city residents. The Nature Plan's challenges must be promoted and work on exchange and innovation beyond the municipal arena. **A network needs to be created and institutional relations bolstered with the organisations involved in the conservation of biodiversity and greenery and the natural heritage in general.**

Working in the city with these challenges means working for the natural heritage of humanity as a whole and for a full life for city residents, because the city's footprint is having an impact on nature well beyond the municipal boundaries.



QUANTITATIVE GOALS 2030



To increase the area by 160 hectares from 2015 and honour the 2015 Climate Commitment: 1 m² more greenery per resident (equivalent to 40 new hectares during this term of office).

To double the number of participants in nature activities.

40 new projects under the programme “All hands to greenery”.

To add an extra 100 hectares to the naturalised area.

To create 10 biodiversity shelters.

THANK YOU SO MUCH FOR YOUR ATTENTION!



Jardins de Mossèn Costa i Llobera

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