

European Business & Nature Summit

GS7 — Investing in green infrastructure and nature-based solutions at the local level

Investing in green infrastructure and nature-based solutions at the local level

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Programa de Biodiversitat



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#BusinessNatureSummit





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 - Line 3. Corresponsability of the general public in increasing and improving the GI
 - Line 4. Studying, planning and monitoring the city's GI





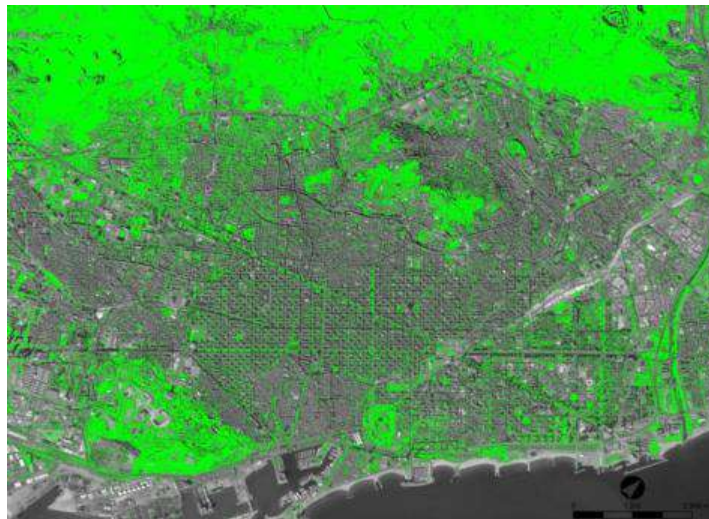
What do we have?

(Data 2018)

1.143 ha of public green areas
240.000 trees in urban areas
1.698 ha in Collserola Park
7 m²/inhabitant
17,62 m²/inhabitant (with Collserola Park)

NDVI

1.866 ha vegetation cover (public and private)
1.597 ha vegetation cover in Collserola Park
11,6 m²/inhabitant
21,6 m²/inhabitant (with Collserola Park)



Schematic representation of the capture of green coverage through flights with multi-spectral sensors (NDVI).

Source: Barcelona Regional





What services does the green urban infrastructure offer and contributes to?





Framework: Climate change and sustainability policies

- **2012: Citizen Commitment to Sustainability 2012-2022**

“Objective 1. Biodiversity: From urban green areas to the renaturalisation of the city”

- **2015: Barcelona's commitment to the climate 2030**

“Reduce greenhouse gas emission 40% by 2030 and increase the city's green areas of 1 m²/inhabitant by 2030, as an adaptation objective”

- **2017: Barcelona: building a resilient city**

- **2018: Barcelona Climate Plan works on 4 main aspects:**

Mitigation, Adaptation and Resilience, Climate Justice and Promoting citizen action

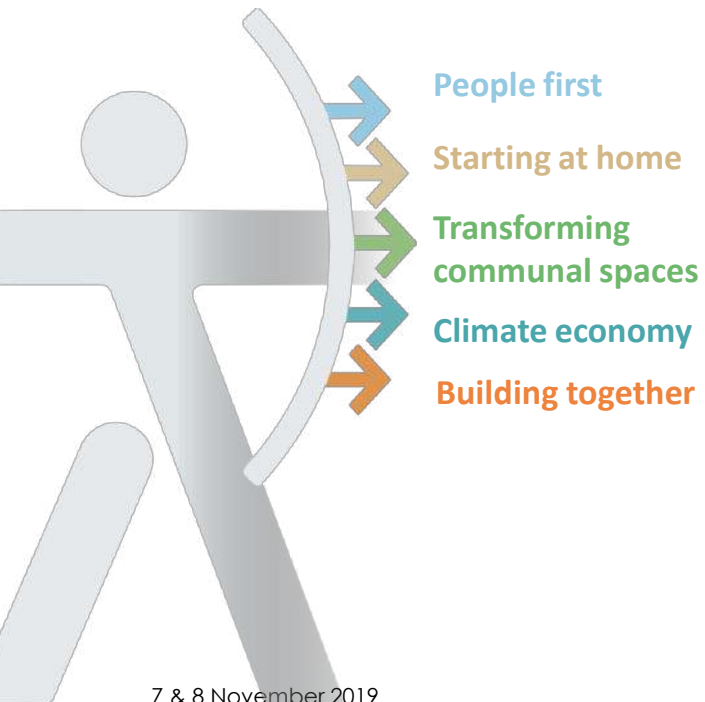
- **Autumn 2019: Climatic Emergency Table. Statement 2020**





Structure of the Climate Plan

AREAS AND LINES OF ACTION



			1. Taking care of everyone 	2. No cuts 	3. Preventing excessive heat
			4. Better than new buildings 		5. Recovering terrace roofs
6. Planning with a climate focus 	7. Many more green areas 	8. Not a single drop wasted 	9. Renewables in public areas 	10. Getting around easily 	11. Conserving the seafloor
		12. Virtuous circle 	13. Responsible consumption 	14. Zero Waste 	15. Food sovereignty
			16. Cultural action for the climate 	17. Climate cooperation 	18. Let's get organised



Main areas and goals

Transforming communal spaces

GOALS AND TARGETS FOR 2030



Reduce GHG emissions per capita by 45% compared to 2005.



Achieve 1.6 km² more green space and infrastructure.



Increase tree cover by 5% (2037).



Increase adapted tree species from 30% to 40%.



Reduce private motor vehicle travel by 20%.



Increase solar power generation fivefold.



Reduce domestic drinking water consumption to 100 l/inhab/day



Increase the use of underground water by 2.7 hm³.



Achieve 18 hm³ additional potable water in collaboration with other authorities (2050).



100% procurement of low-carbon public transport buses, taxis and municipal fleets (2025).



Have 95% of the population at less than 300 m from a bike lane (2018).





GI. Instruments for the municipal management of biodiversity



Polices: PAM (Municipal action plan), plans, government measures, strategies, programs, instructions, declarations, commitments

Financial: PIM (municipal investment plan), grants, prizes

Regulations and/or legal: ordinances, MGPM, planning, licenses, regulations, administrative procedures, tenders, green sustainable procurement protocols, purchase order, special plans, bases and regulations

Environmental: Instructions, ISO, EMAS, purchase

Others: technical criteria documents, good practice manuals, procedures, protocols, education and awareness initiatives and stewardship agreements



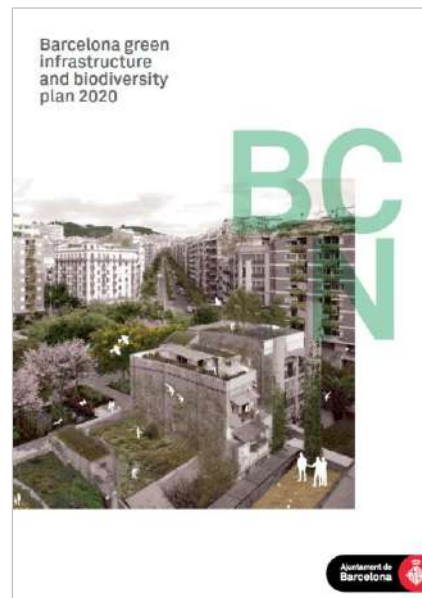
BARCELONA GI AND BIODIVERSITY PLAN 2013- 2020

APPROVED
IN
JANUARY
2013

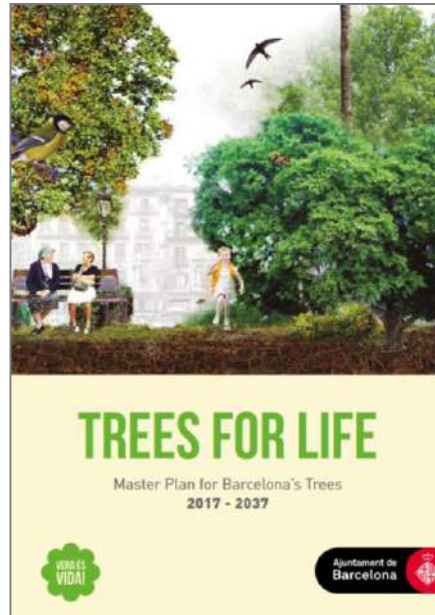
5
OBJECTIVES

10
LINES

68
ACTIONS



TREES FOR LIFE. MASTER PLAN FOR BARCELONA'S TREES 2017-2037



APPROVED
IN
JANUARY
2017

5
OBJECTIVES

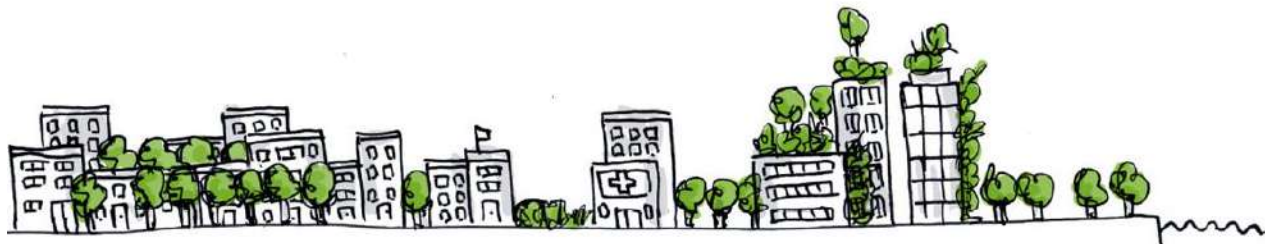
5
CHALLENGES

10
LINES

50
ACTIONS



STIMULUS PROGRAMME FOR THE CITY'S URBAN GI 2017-2030



APPROVED
IN **MAY**
2017

4
OBJECTIVES

4
LINES

25
ACTIONS





The Stimulus Programme for the city's urban GI. Goals and programme

MAIN GOALS

- To increase the city's GI in benefit of the general public's health
- To improve the city's GI in order to develop more services
- Public involvement in increasing green areas and biodiversity



MAIN LINES OF THE PROGRAMME

LINE 1. INCREASING THE GI

LINE 2. IMPROVING THE EXISTING GI

LINE 3. CORRESPONSABILITY OF THE GENERAL PUBLIC IN
INCREASING AND IMPROVING THE GI

LINE 4. STUDYING, PLANNING AND MONITORING THE GI





Line 1. Increasing GI

1.1. Creating new public parks and gardens

2015-19

40 interventions

24,46 ha

PARC DE LES
GLÒRIES



Line 1. Increasing GI

1.2. Recovering city block interiors in built-up areas in order to gain new public green areas



Dolors Piera square

2015-19
31 interventions
3,9 ha





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Line 1. Increasing GI

1.3. Installing temporary gardens in empty building sites

ESPAI DEL NINOT-CLINIC

Urbanització temporal del
carrer de Provença, 164-182



L'Ajuntament de Barcelona ha signat un conveni amb l'Hospital Clínic per fer un espai temporal d'una part del solar i fins que l'ampliació del centre hospitalari es dugui a terme.

Aquesta urbanització temporal ofereix un espai d'estada re-naturalitzat per a la comunitat i el lleure dels veïns.

El projecte recull les traces dels ruïnes de l'antiga caserna de bombers, que defineixen la forma dels parterres, i presenta aquests recintes organitzats i arbrats perquè es gaudeixi d'un espai que aporta bellesa, salut i confort als veïns.

El projecte posa èmfasi en la presència de la vegetació. Una combinació, majoritàriament, de graminies i plantes vivaces genera aquest nou espai verd.



Hospital Clínic

2015-19
13 interventions
3,27 ha





Line 1. Increasing GI

1.4. Interventions in roadways to increase green features



2015-19
70
interventions
8,24 ha





Line 1. Increasing GI

1.4. Interventions in roadways to increase green features

Superblock
Programme
2015-19
80,000m²

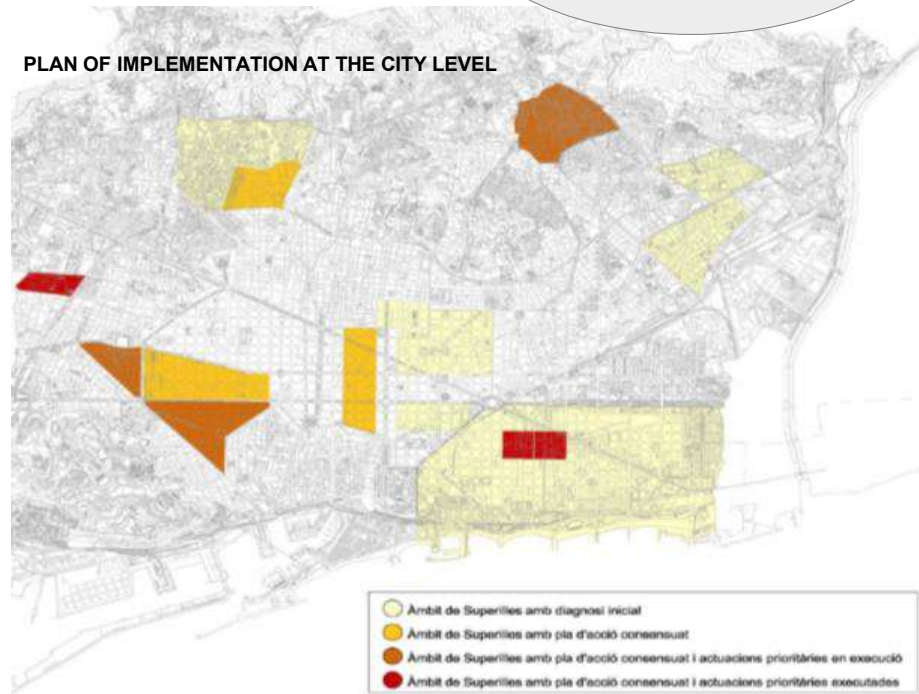


Superilla de Poblenou



Superilla de Sant Antoni

PLAN OF IMPLEMENTATION AT THE CITY LEVEL





Line 1. Increasing green infrastructure

1.5. Greening rooftops, terraces and courtyards



Green roof in the Museu Ciències Naturals- Forum

2015-19
16 interventions
1,1 ha





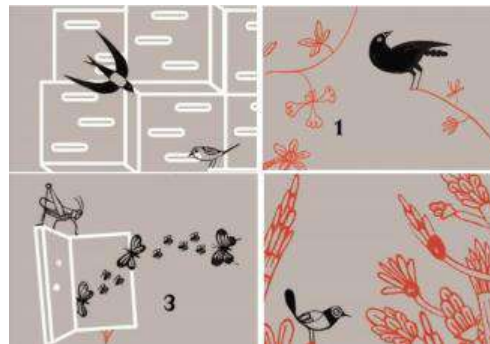
Line 1. Increasing green infrastructure

1.6. Greening walls and dividing walls



Mur Berlin

2015-19
27 interventions
0,58 ha





The Stimulus Programme for the city's urban GI. Increasing GI 2015-19

Table summarising increase in green areas up to 2019	DONE 2015-2016	DONE 2017- 2018	DONE IN PROGRESS 2019	TOTAL
Initiative 1.1. Creation of parks and gardens	7,46	4,7	12,3	24,46
Initiative 1.2. Recovering city block interiors	1,18	2,4	0,32	3,9
Initiative 1.3. Creating temporary gardens in empty building sites	1,59	0,08	1,6	3,27
Initiative 1.1. Interventions in streets and squares	3,28	2,62	2,34	8,24
Initiative 1.5. Creating green rooftops	-	0,16	0,93	1,1
Initiative 1.6. Creating green walls and dividing walls	0,06	-	0,52	0,58
TOTAL	13,57	9,96	18,01	41,54





Line 2. Improving the existing GI

2.1. Naturalising green areas

How are we doing it?

- ✓ Transforming lawns into natural meadows or grassland
- ✓ Sowing meadows with flowers that are interesting for biodiversity
- ✓ Planting bushes with flowers that attract fauna.
- ✓ Creating areas of special interest for biodiversity
- ✓ Enriching the borders of vegetable gardens with plants that enhances biodiversity
- ✓ Planting stands of fruit bushes and trees in lawns
- ✓ Eliminating invasive plants
- ✓ Creating ponds that can self-regulate with their own biota



Anax imperator

- ✓ Installing structures to provide biodiversity shelters:

insect hotels, dry-stone spirals with aromatic plants, rockeries, muddy areas for swallows, wooden pyramid, nesting towers or boxes for bats, nests for hedgehogs, leaving dried-up trees standing



Insect hotel. Joan Miró



Line 2. Improving the existing GI

2.1. Naturalising green areas

How are we doing it?

- ✓ Eliminate the purchase of invasive plants, peats...



Buddleia (Buddleja davidii)



Vitex agnus-castus





Line 2. Improving the existing GI

2.1. Naturalising green areas



Planted meadow in Montjuïc

2015-19
Naturalisation
22 spaces
3,7 ha

16.890 m² planting flower meadows (with native-species seeds) to encourage biodiversity





Line 2. Improving the existing GI

2.2. Increasing the city's biomass, especially in terms of trees and bushes in parks, gardens and public areas, favouring their growth



Tipuana tipu

2015-19
Increase of
1.525 trees

- ✓ Actually more than 240,000 trees
- ✓ Reduction of pruning volume





Line 2. Improving the existing GI

2.3. Preserving and improving biodiversity in urban sites



Lasiommata megera (Wall brown butterfly)



Grassland in urban site

28 ha
classified as
park or garden,
but not
executed





Line 2. Improving the existing GI

2.4. Conserving and improving natural and semi-natural areas, especially open ones



Natural meadowland in Montjuïc



*Natural meadowland in Tres
Turons*





Line 2. Improving the existing GI

2.5. Favouring structures for the shelter, feeding and reproduction of urban fauna: fauna corridors, beehives, insect hotels, nests, boundary walls, promontories, etc.



Installation of nesting towers for bats

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*Construction of wooden pyramid in El Polvorí,
Montjuïc*



*Bio-trunk Installation in the Petra Kelly Gardens,
Montjuïc*

2015-19
+ 150 structures
for urban fauna
50 nests in parks





Line 2. Improving the existing GI

2.6. Naturalising ornamental ponds

10 parks with naturalised ponds:

- ✓ Parc de la Tamarita
- ✓ Turó Park
- ✓ Palau de Pedralbes
- ✓ Laberint d'Horta
- ✓ Teatre Grec
- ✓ Jardins de Laribal
- ✓ Jardí d'Aclimatació
- ✓ Mossèn Cinto Verdaguer
- ✓ Can Cadena
- ✓ Viver de Tres Pins



Mossèn Cinto Verdaguer Garden

2008-18

82 naturalized ponds

112 monitoring ponds
(public and private)

4 species of amphibians
(common midwife toad,
tree frog, Iberian
waterfrog and
salamandra)





Line 2. Improving the existing GI

2.7. Taking care of natural water present in the urban environment: channels, springs, groundwater, etc.



2015-19

33 applications for
SUDS (*Sustainable
Urban Drainage
Systems*), as a solution for
regulating water based on
natural processes



Line 3. Corresponsability of the general public in increasing and improving the GI

3.1. To promote the general public's corresponsability and shared responsibility in conserving and increasing GI in parks, gardens and other green areas of the city

Participation processes linked to urban transformations 2015-19

- ✓ Parc Güell - Governança
- ✓ Cobertura Ronda de Dalt
- ✓ Superilles
- ✓ Espai Barça
- ✓ Sagrera
- ✓ Meridiana
- ✓ Glòries. Projecte Canòpia
- ✓ Tres Turons
- ✓ Rambla del Carmel
- ✓ Dr. Pla i Armengol
- ✓ Rambla Verda Vallcarca
- ✓ MPGM Can Soler
- ✓ MPGM PEPNat Collserola
- ✓ Feixes de Trinitat Vella (Pla de Barris)
- ✓ Cobertura de Sants
- ✓ MPGM la Clota
- ✓ MPGM Marina del Prat Vermell
- ✓ Parc de la Ciutadella
- ✓ MPGM Font de la Guatlla
- ✓ La Model
- ✓ Av. Príncep d'Astúries
- ✓ Pi i Margall
- ✓ Montjuïc





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Line 3. Corresponsability of the general public in increasing and improving the GI

3.2. To promote urban responsibility in the expansion and conservation of the city's GI, through the city's social and community organisations



Land stewardship in La Foixarda, Montjuïc



Aula ambiental Bosc Turull



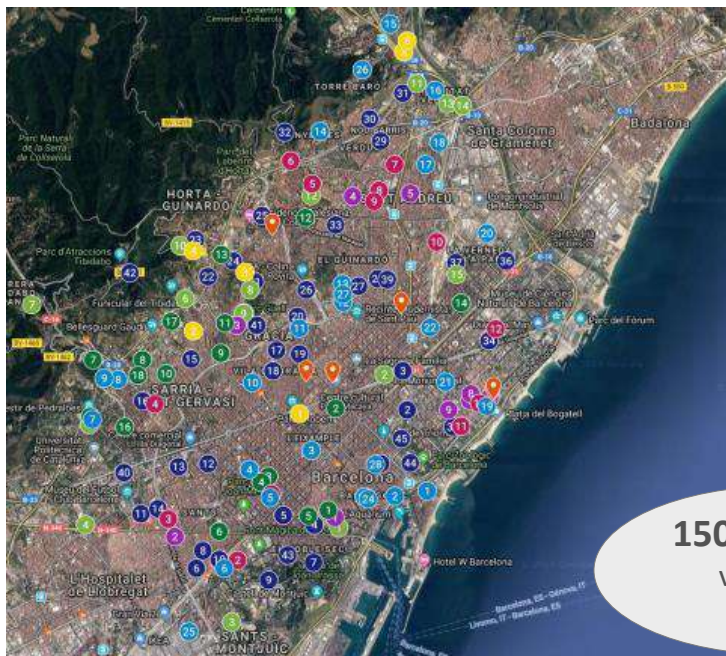


Line 3. Correspondability of the general public in increasing and improving the GI

3.3. Promoting ecological agriculture in urban and peri-urban areas and sites

LLEGENDA

- Horts municipals gent gran
- Horts Pla Buits / Mans al Verd
- Horts comunitaris
- Horts socials
- Horts a precari
- Horts privats singulars
- Futurs horts
- Horts desapareguts



15 municipal
urban vegetable
gardens
398 users

**Strategy Urban
Agriculture:
5 participatory
sessions**

150 inventoried
vegetable
gardens





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Line 3. Corresponsability of the general public in increasing and improving the GI

3.4. Fostering privately-owned green areas through the promotion of vegetable gardens, and gardening on balconies, terraces, roof terraces, rooftops, walls and courtyards

10 greening
rooftops

Municipal
Subsidy
Program



Green roof. Porxos d'en Xifrà





Line 3. Corresponsability of the general public in increasing and improving the GI

3.5. Fostering the opening of non-municipal green areas to the public



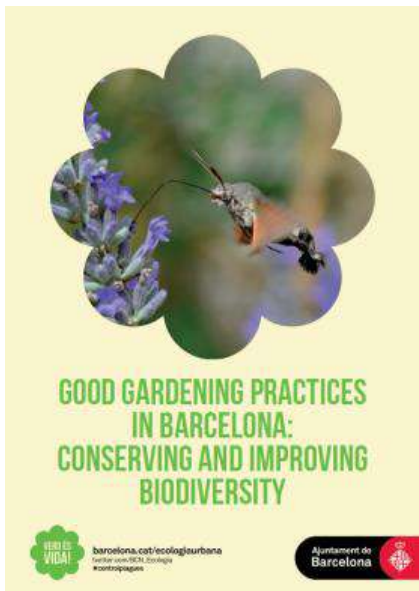
Jardins del Rectorat. Torre Girona





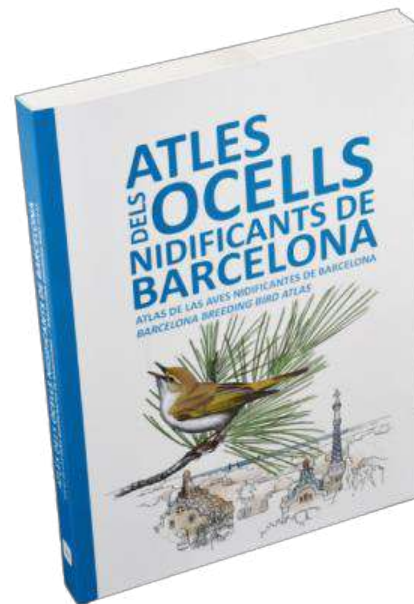
Line 3. Corresponsability of the general public in increasing and improving the GI

3.6. Disseminating knowledge about urban nature and the value of conserving it



Bioblitz 2016, Montjuïc

2018:
766 participants
366 species



Line 4. Studying, planning and monitoring the city's GI

4.1. Planning Barcelona's GI as a system, including the green corridor network, taking social-environmental services into account & 4.2. Reviewing the areas recognised by planning as leisure areas with potential for increasing the percentage of plant life and permeable areas



Green corridors planning

Source: *Barcelona Regional*



Green urban planning

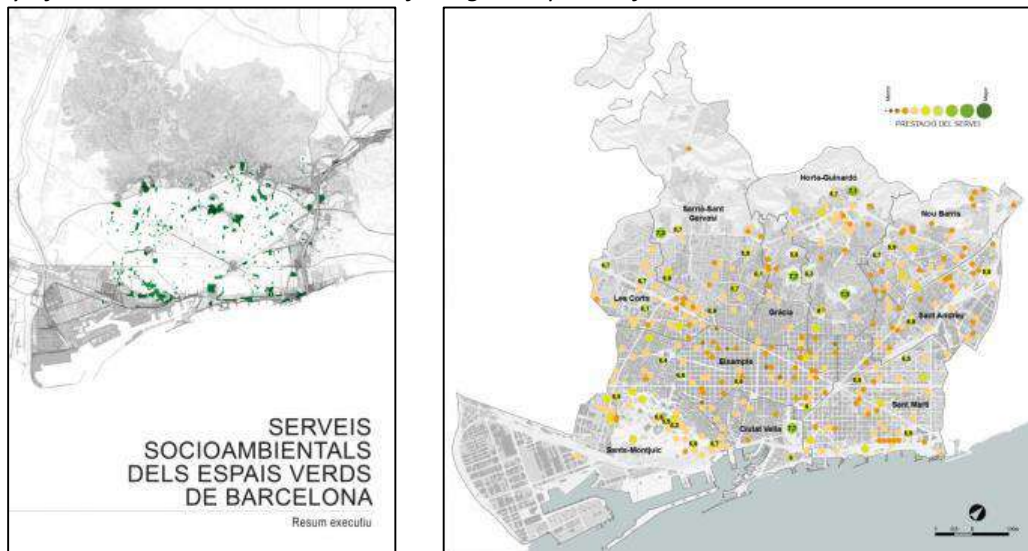




Line 4. Studying, planning and monitoring the city's GI

4.3. Completing the study of ecosystem services in Barcelona's green areas for the whole city

Published the study of socio-environmental services of the green spaces of Barcelona



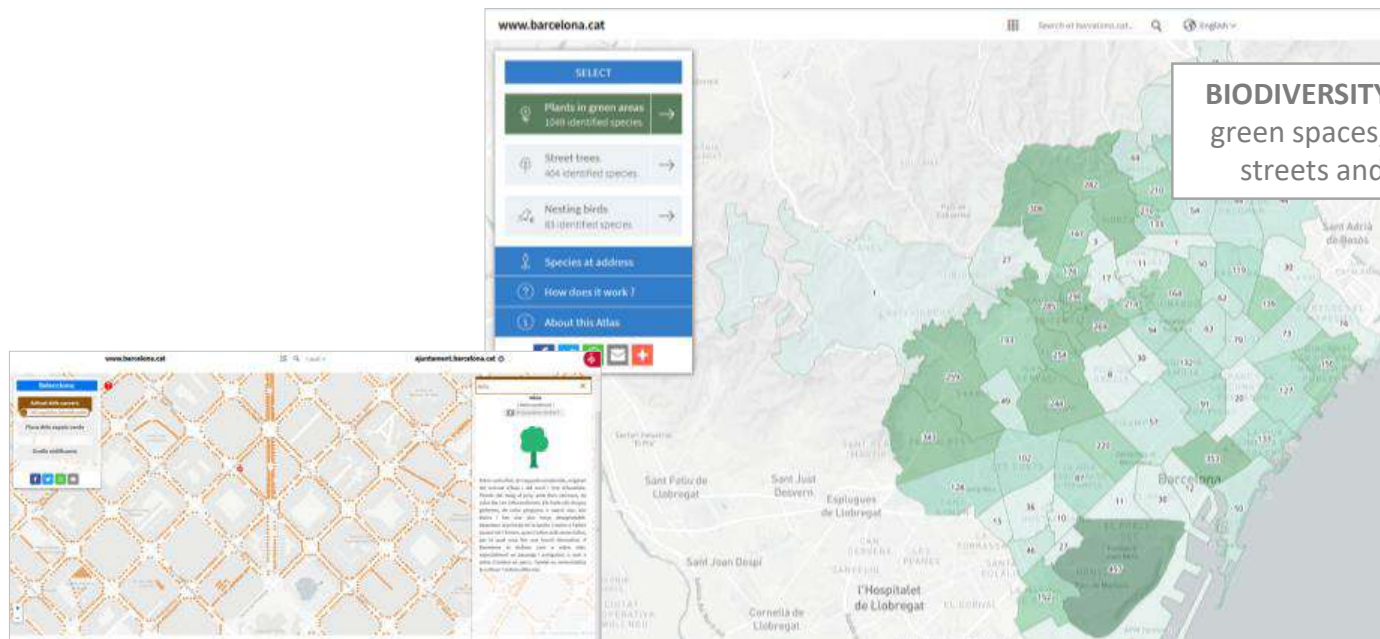
Average valuation of the services for each green space. Source: Barcelona Regional





Line 4. Studying, planning and monitoring the city's GI

4.4. Creating an information system on GI, green areas and biodiversity





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Thank you very much!
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