

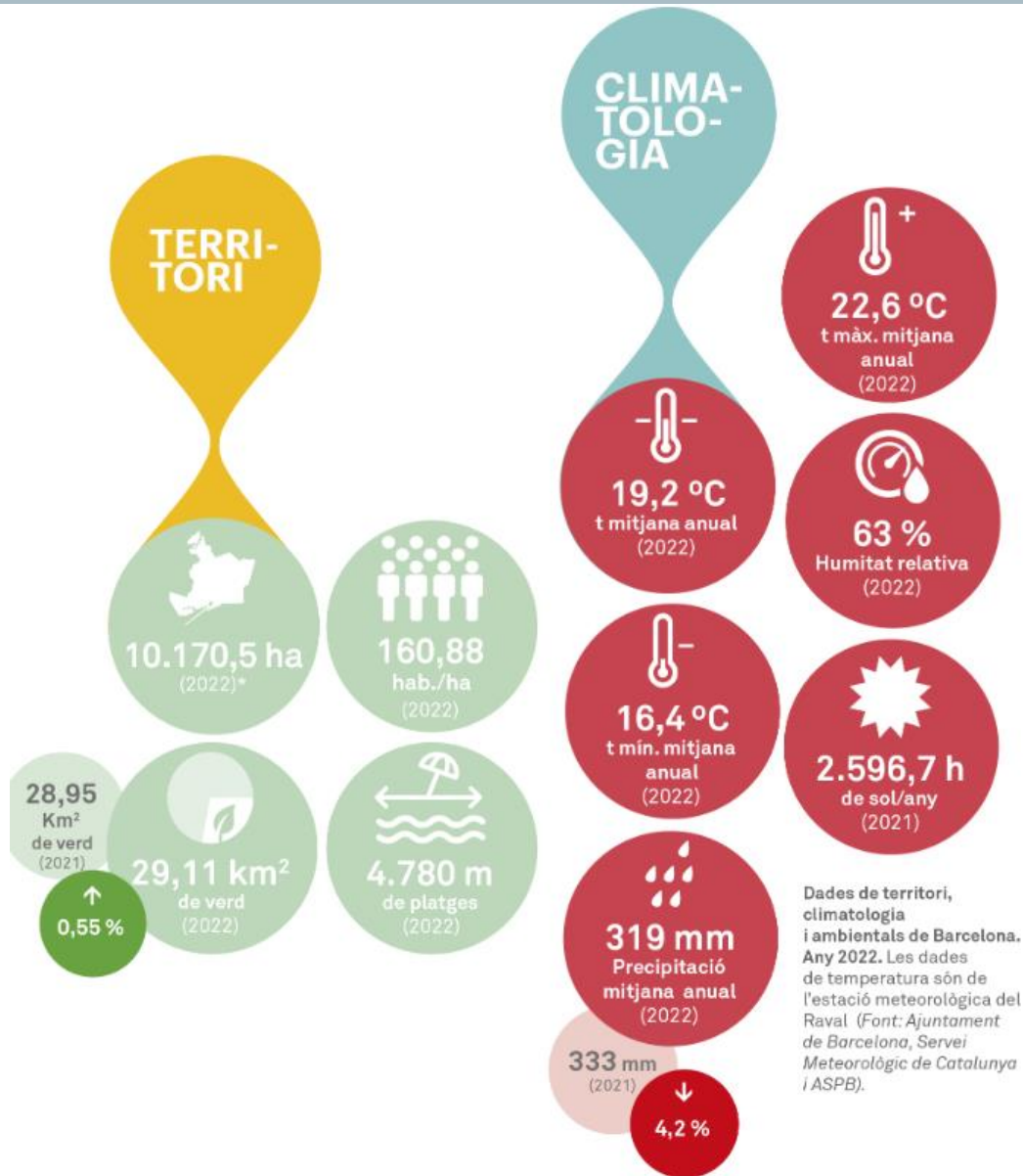
BARCELONA | SPEEDING UP DECARBONISATION



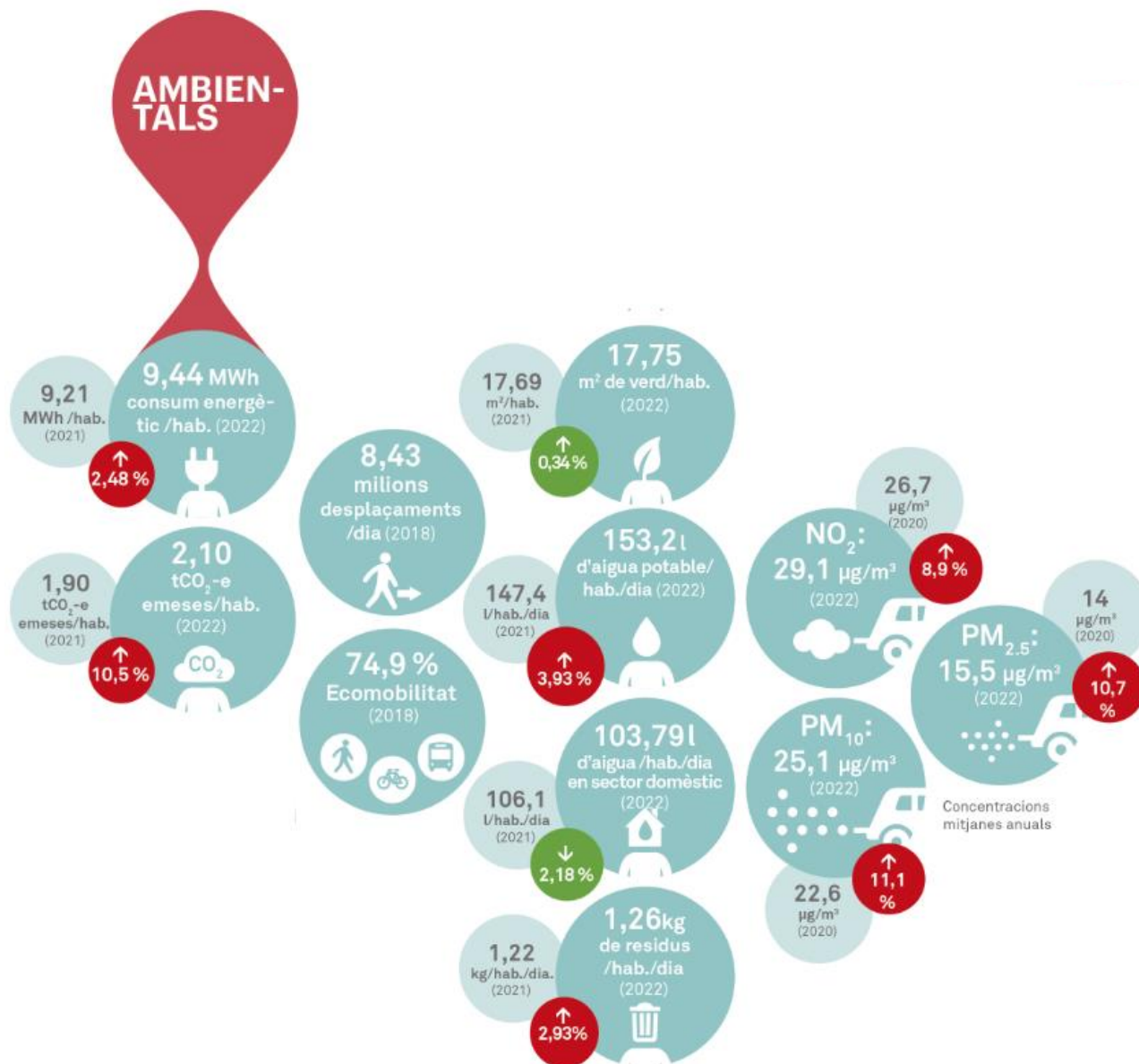
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TERRITORY AND CLIMATOLOGY DATA OF BARCELONA



ENVIRONMENTAL DATA OF BARCELONA



STRATEGIC LINES



Mitigation, because we cannot allow a context of economic recovery to lull us into consuming in an unsustainable way again.



Adaptation and resilience, because we can already see the effects of climate change and we have to prepare ourselves.

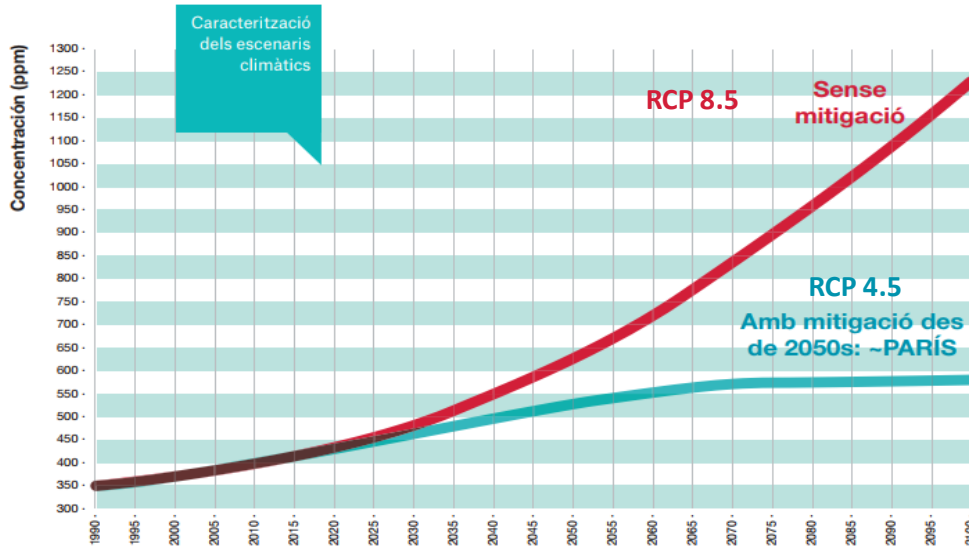


Climate justice, because we need to put the most vulnerable people at the centre of climate policies.



Promoting action by the general public, promoting co-creation projects.

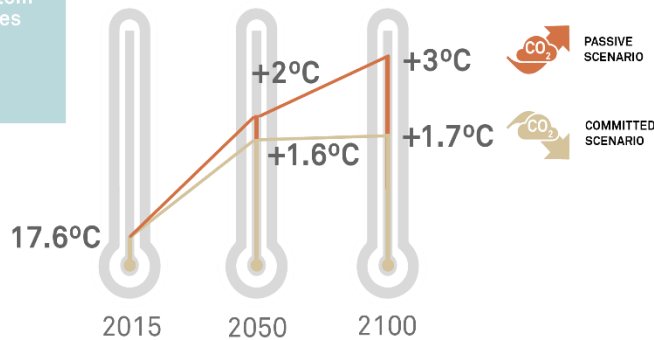
THE EFFECTS OF CLIMATE CHANGE IN BARCELONA



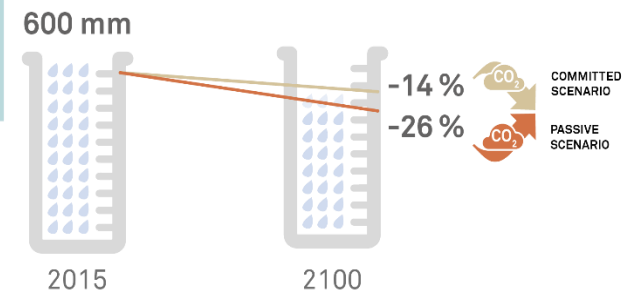
ESCENARI	Possible equivalència	Mesures de mitigació?	Tendència del forçament radiatiu	[CO ₂] en el 2100
Compromès (RCP 4.5)	COP21 Paris	Sí. Des de 2050s	Estable en el 2100	538 ppm
Passiu (RCP 8.5)	Continuar al ritme actual	No	Creixent	936 ppm

- Temperature increase, in all climate scenarios (climate like Málaga in the best scenario, or the North African coast in the worst scenario)
- Precipitation decrease, especially at the end of the century
- More frequency of dry periods
- More intensity of rainfall and concentration of extreme episodes

Rise in temperatures



Fall in rainfall



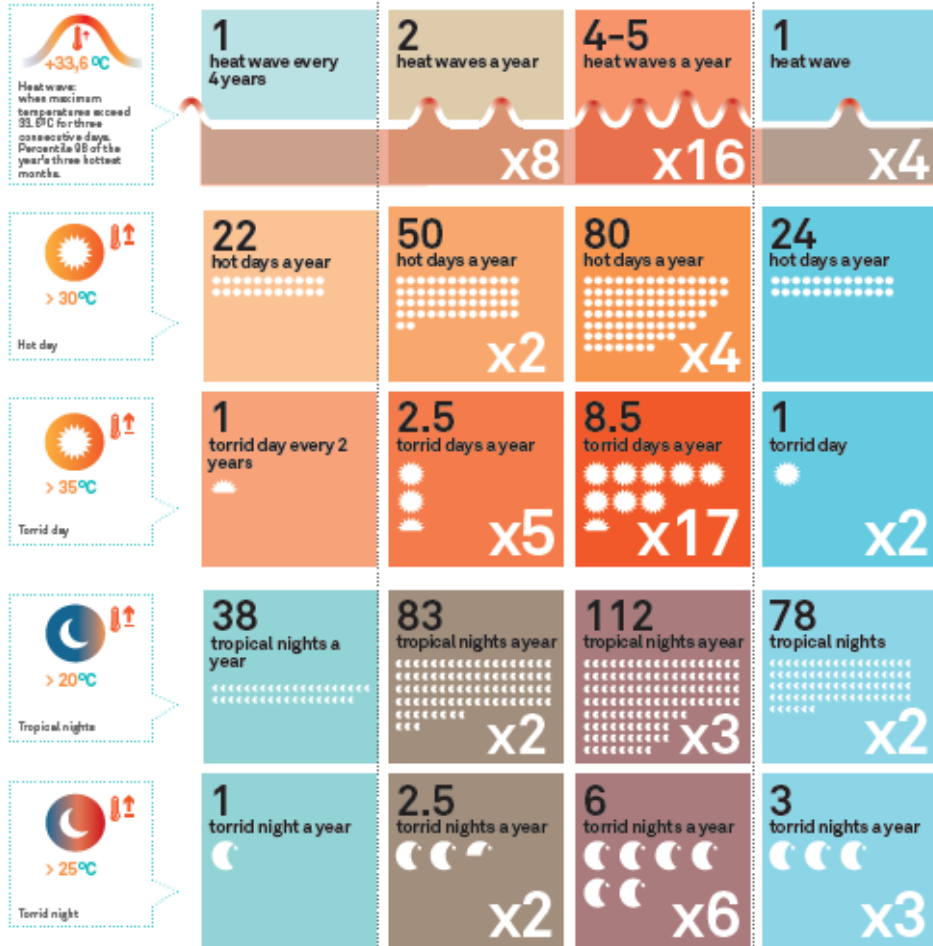
GENERALIZED HEAT INCREASE

Starting data. Result of the average for the period 1982-2015

End of century Projections

COMMITTED SCENARIO  PASSIVE SCENARIO 

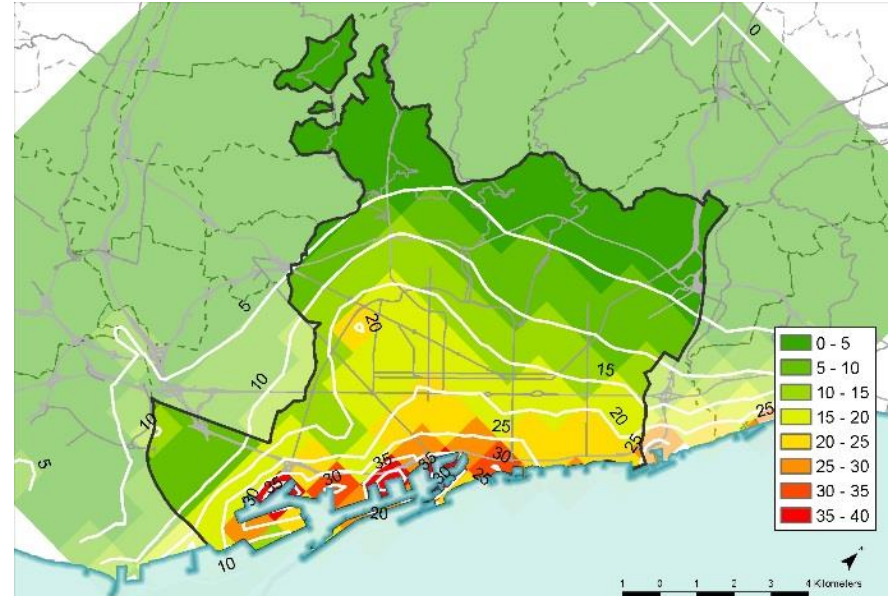
Today (2019) Observed data



Future situation:

- By the end of the century, 2 heat waves are expected each year in the committed scenario and up to 4-5 heat waves per year in the passive scenario.
- Night temperatures will have effects on the health and well-being of the population, which will prevent a good night's rest.

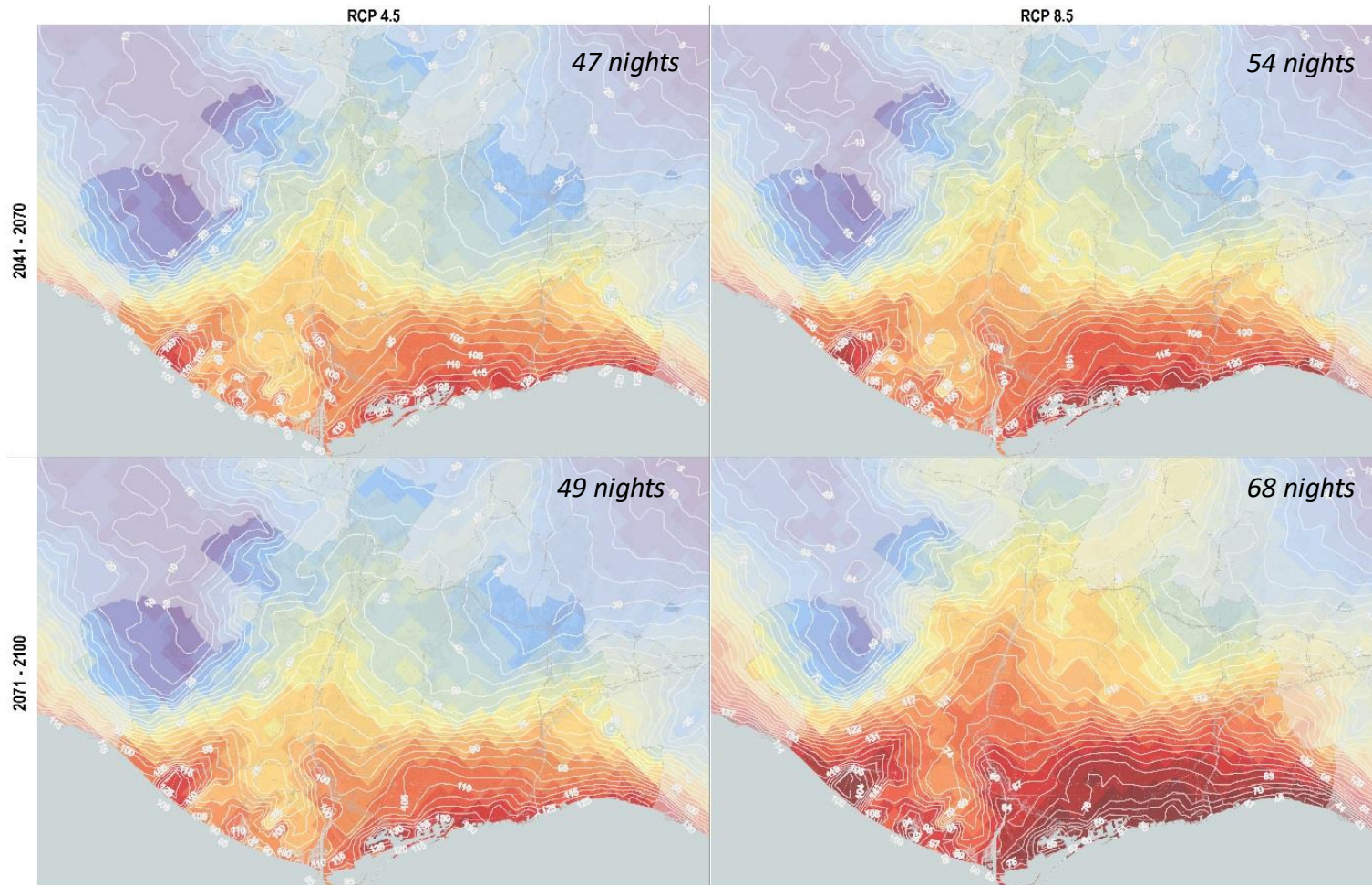
INCREASE OF TORRID NIGHTS (Tn>25°C)
AT THE END OF THE CENTURY, PASSIVE SCENARIO



GENERALIZED HEAT INCREASE

TROPICAL NIGHTS (TN > 20°C) – FUTURE SCENARIOS (Nº OF NIGHTS)

Current situation: 24 nights



Nombre de nits 0 6 18 36 60 70 90 110 130 > 140

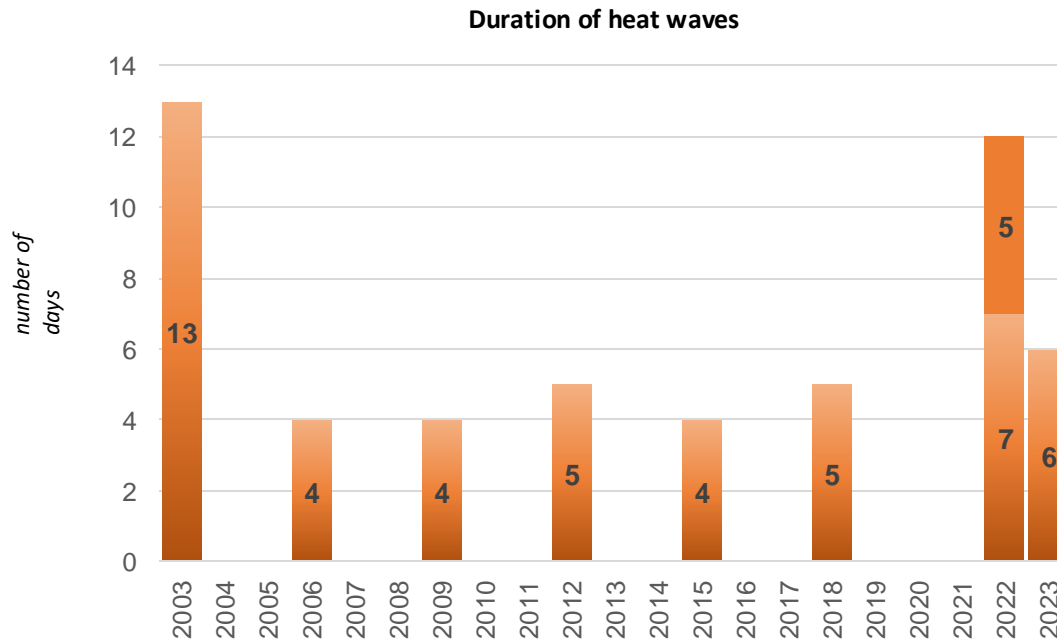
Nits tropicals finals a mitjans de segle
en els escenaris RCP4.5 i RCP8.5 a mitjans
de segle (2041-2070) i a finals de segle (2070-2100)



0.0.0

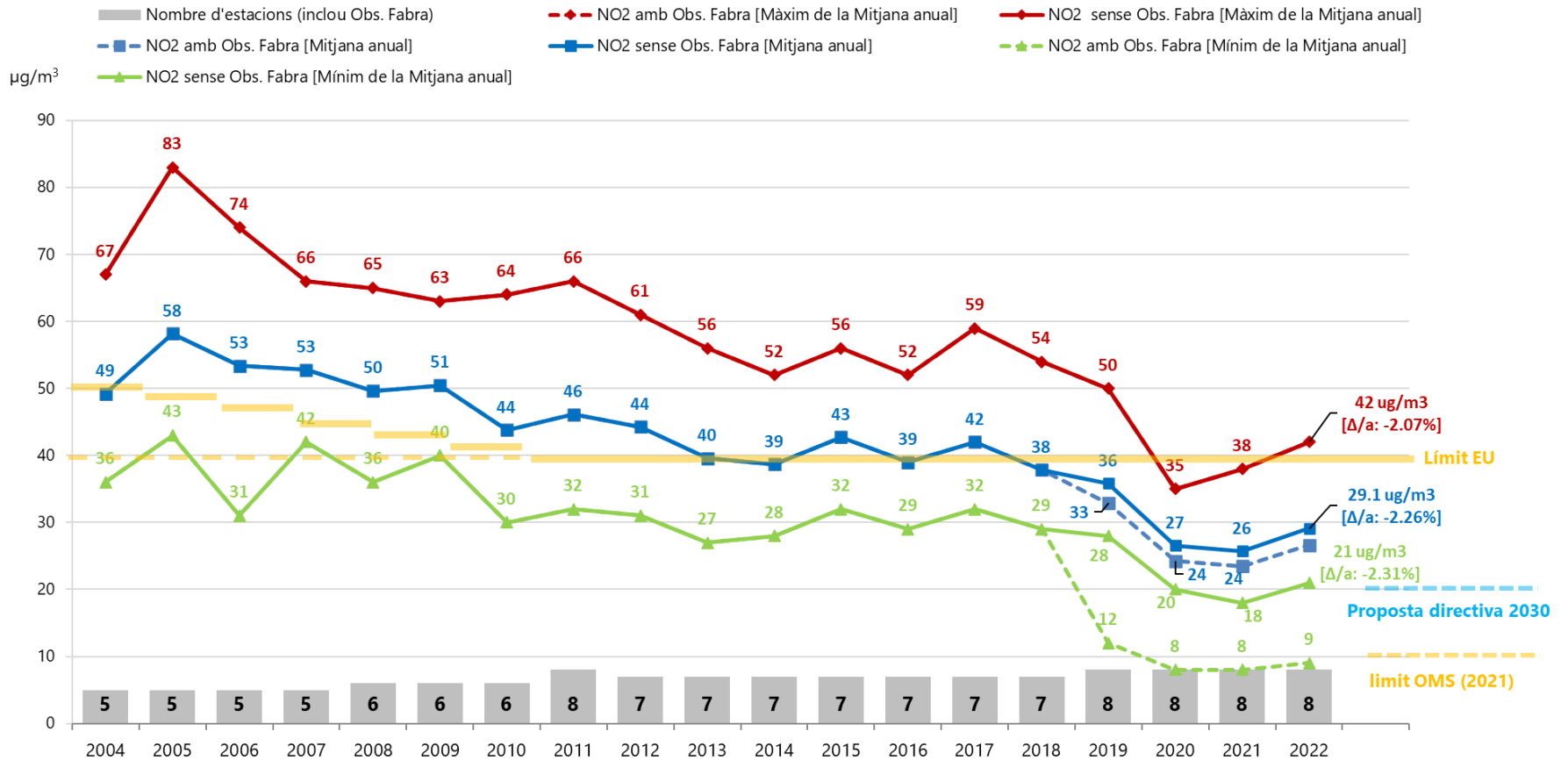
HISTORIC HEAT WAVES

- 8 heat waves since 2003
- The most intense was 2003 but 2022 was quite similar, with 2 heat waves almost in a row
- 2022 broke records for extreme heat: an average summer temperature of 26.2 °C was reached. This is 4.4 °C higher than the average between 1961 and 1990



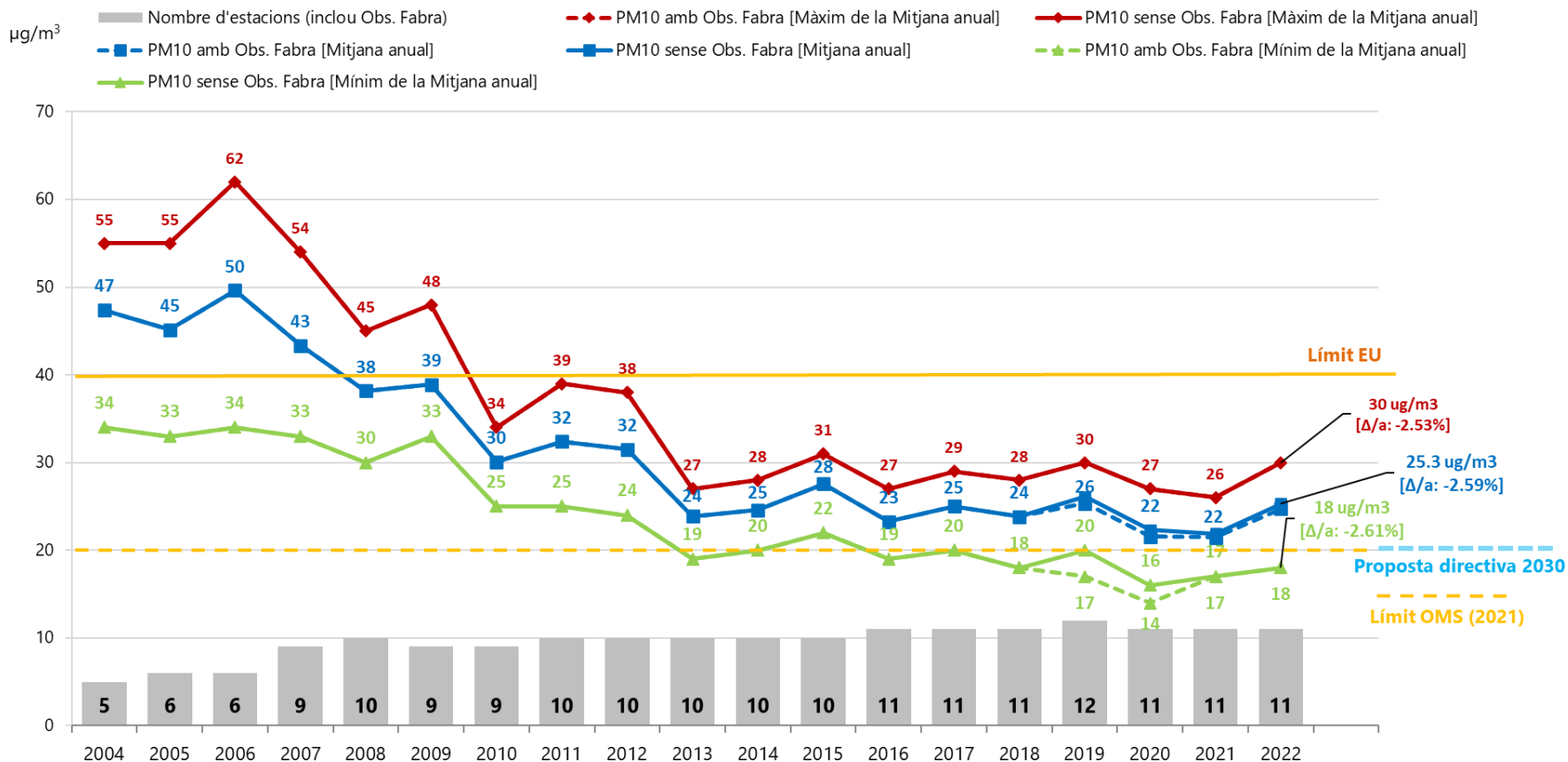
AIR POLLUTION – NO₂

Evolució de la immissió anual d'NO₂ de la mitjana de les estacions de la XVPCA de Barcelona



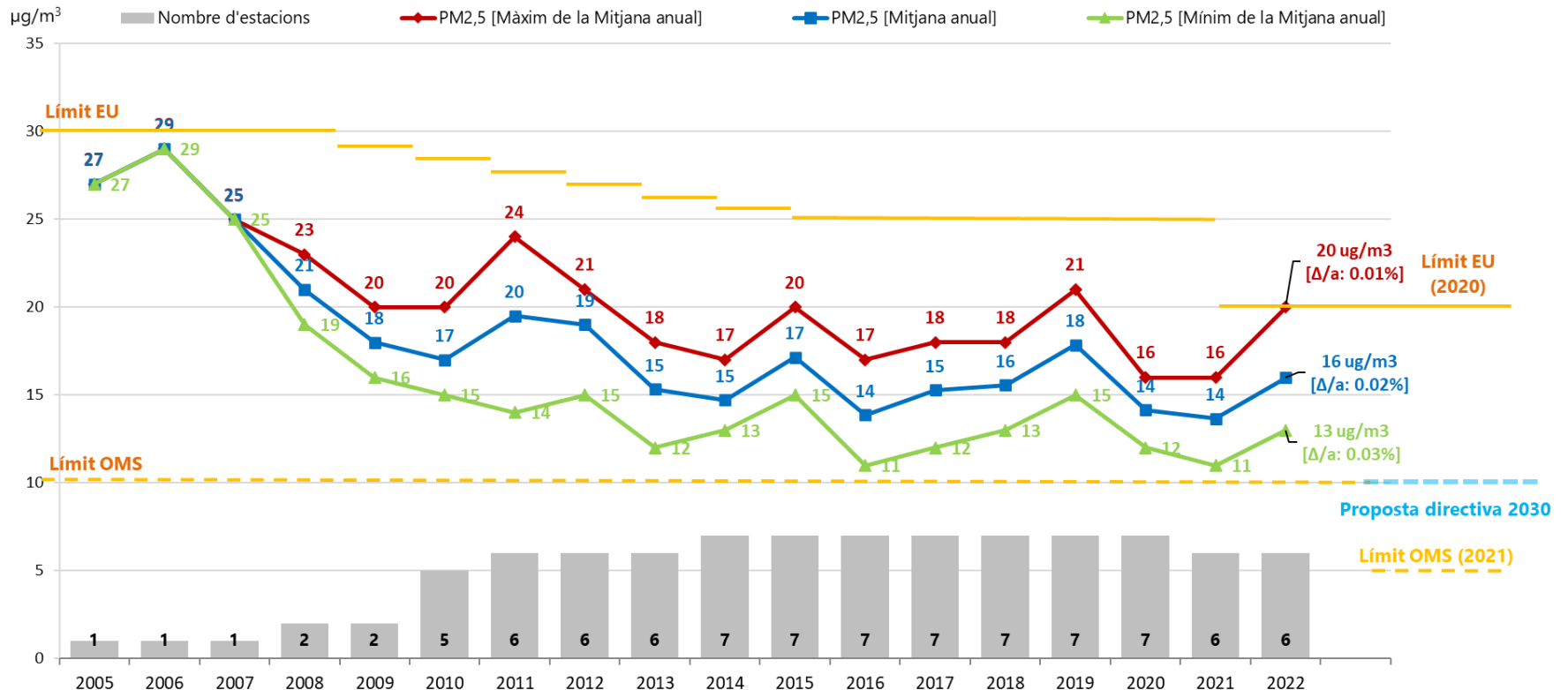
AIR POLLUTION – PM₁₀

Evolució de la immissió anual d'PM₁₀ de la mitjana de les estacions de la XVPCA de Barcelona

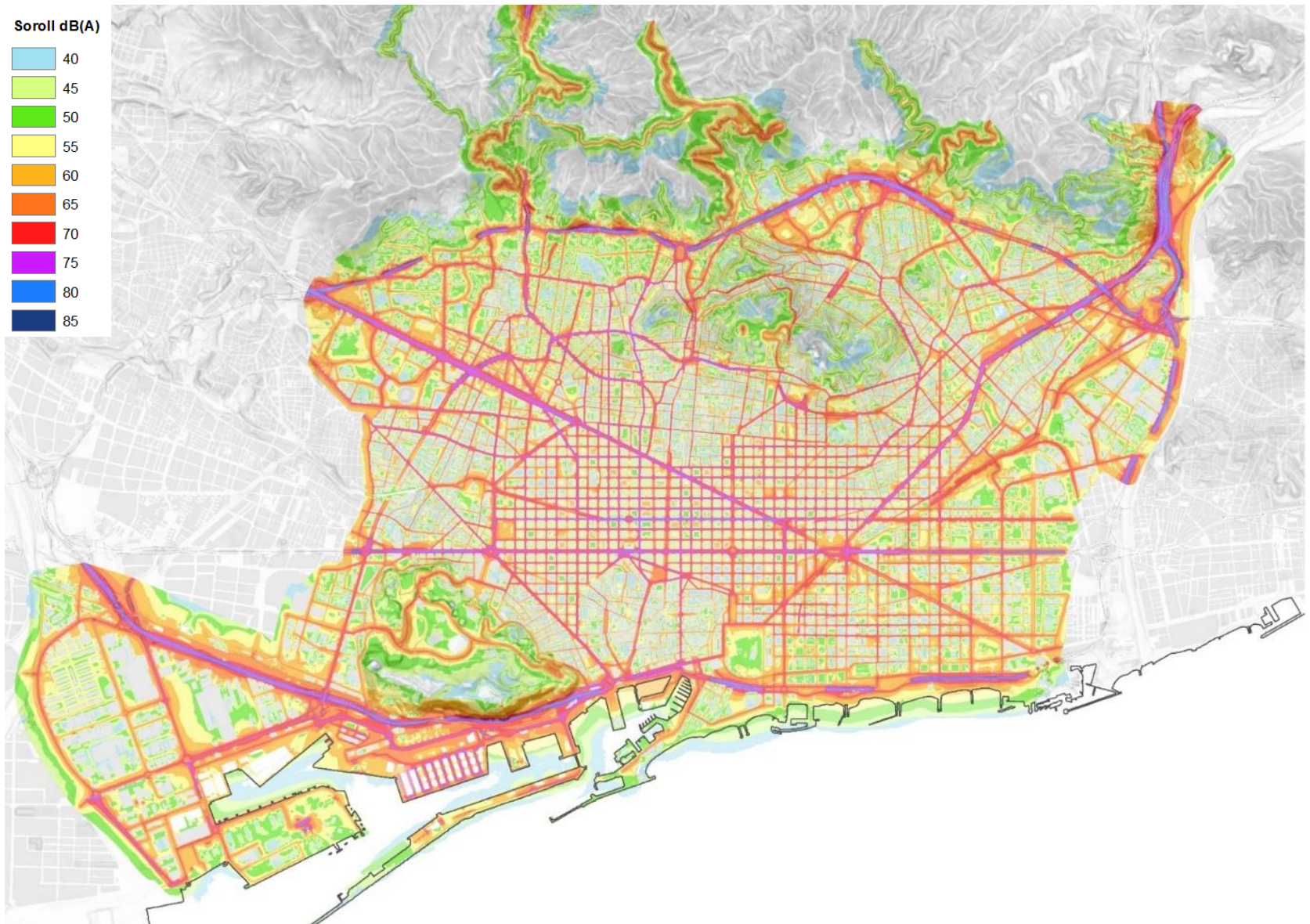


AIR POLLUTION – PM_{2,5}

Evolució de la immissió anual d'PM_{2,5} de la mitjana de les estacions de la XVPCA de Barcelona

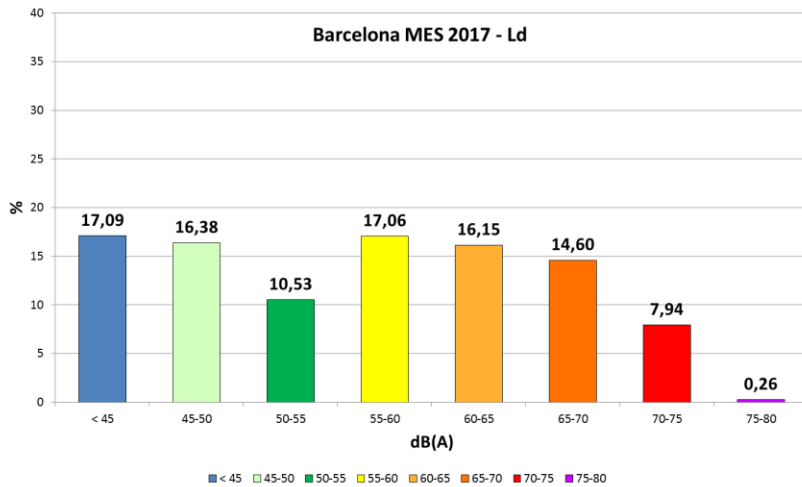


NOISE POLLUTION

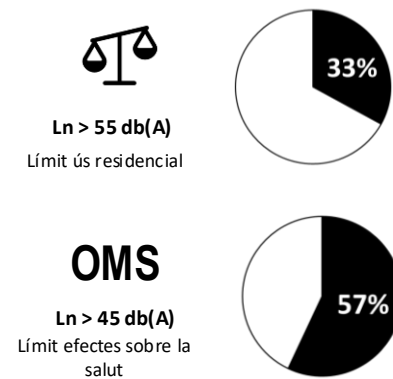
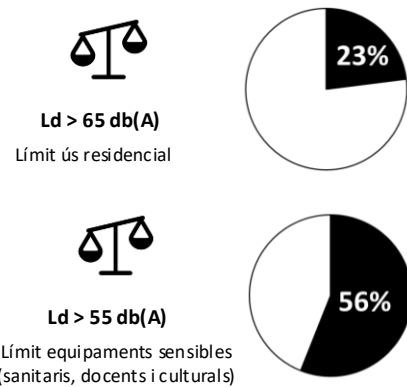
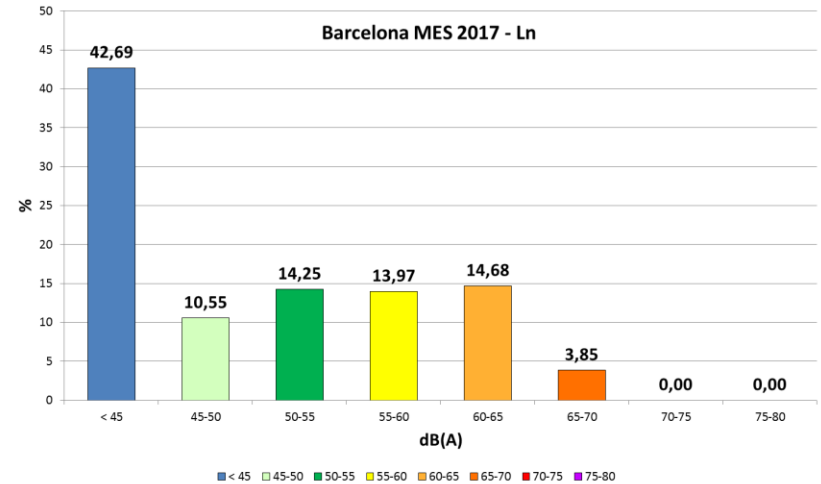


NOISE POLLUTION – EXPOSED POPULATION

DAY



NIGHT



WE ARE NOT STARTING FROM ZERO

The city of Barcelona has been working for the climate emergency for more than two decades

2002

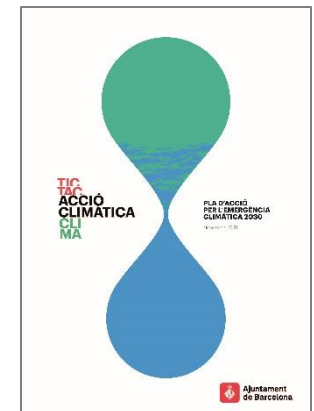
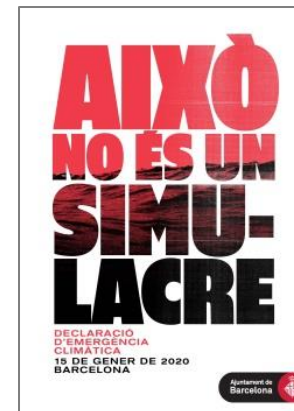
2011

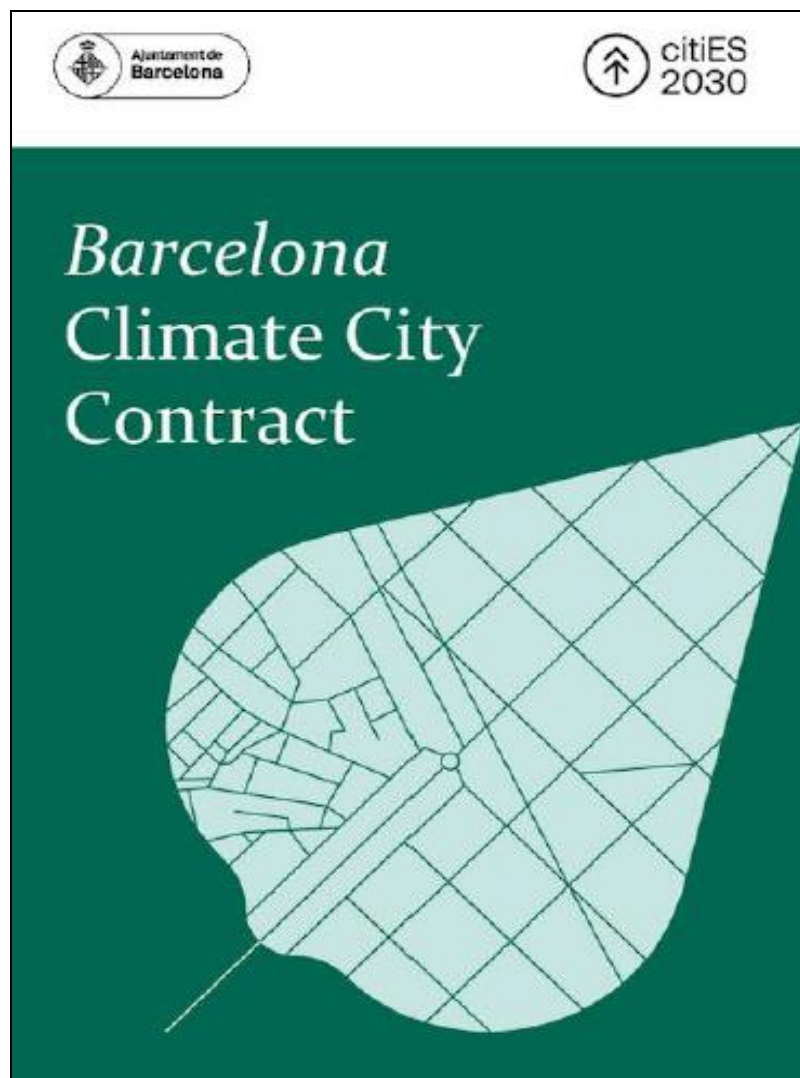
2015

2018

2020

2021





ESCENARI MISSIÓ

80% reducció
(sense port i aeroport)

Reducció 60% emissions respecte 1992

Rehabilitació de 38.000 habitatges/any

Reducció 44% emissions

Mix elèctric zero (descarbonitzat)

1.080 MWp de solar fotovoltaica

PLA CLIMA



Canvi estructural en la generació i consum d'energia

- Acceleració en la generació d'energia fotovoltaica a la ciutat.
- Enfortiment del pes de l'Ajuntament en el sector.
- Increment de les ajudes i bonificacions.
- Millora en l'acompanyament i reducció dels obstacles administratius.
- Facilitació de la creació de comunitats energètiques.
- Modernització en clau climàtica dels polígons industrials de Barcelona.

Model de mobilitat de baixes emissions

- Noves centralitats urbanes i metropolitanes.
- Ampliació de les capacitats i la qualitat del transport públic.
- Increment dels carrers pacífics i dels carrils bici.
- Remodelació grans eixos urbans.
- El desplegament de les zones de baixes emissions.
- Regulacions favorables als vehicles elèctrics.
- Acceleració de l'electrificació de les flotes.
- Regulacions favorables a camions elèctrics.
- Regulació i taxació del comerç electrònic.
- Desplegament d'una xarxa de punts de recollida logística.



Parc d'edificis rehabilitat i eficient

- Renovació energètica dels edificis amb qualificació energètica baixa.
- Construcció de nous edificis energèticament eficients.
- Canvi a sistemes d'il·luminació i electrodomèstics eficients.
- Descarbonització dels sistemes de climatització i producció d'aigua calenta sanitària (ACS).
- Acceleració de la renovació i climatització dels equipaments municipals.

Residu zero, emissió zero

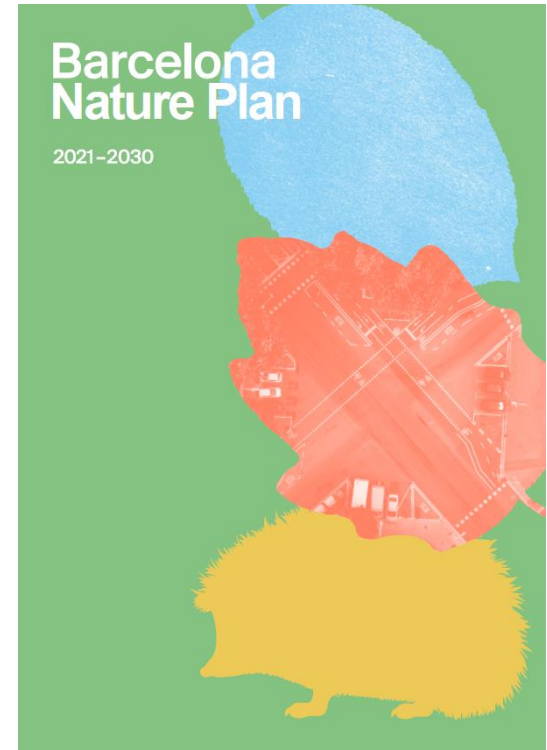
- Consciència sobre l'impacte que generen les decisions de consum.
- Coneixement sobre l'impacte d'un producte o servei al llarg del seu cicle de vida.
- Recollida selectiva i generació de consens.

Una acció municipal neutra en carboni

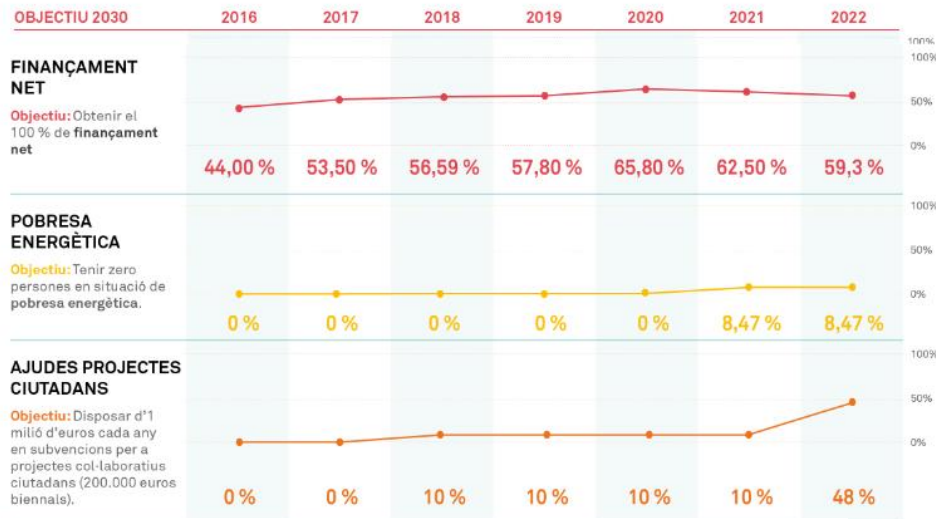
- Electrificació de flotes.
- Electrificació de climatització i la maquinària.
- Increment de les cobertes verdes.
- Reducció de les emissions d'abast 3.
- Limitació de la col·laboració institucional amb els sectors especialment vinculats als combustibles fòssils.



BARCELONA NATURE PLAN



PROGRESS WITH RESPECT TO THE 2030 STRATEGIC OBJECTIVES

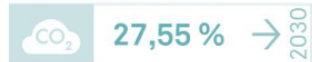


% D'ASSOLIMENT DE L'OBJECTIU:



Reduir les emissions de GEH un 50 % respecte l'any 1992.

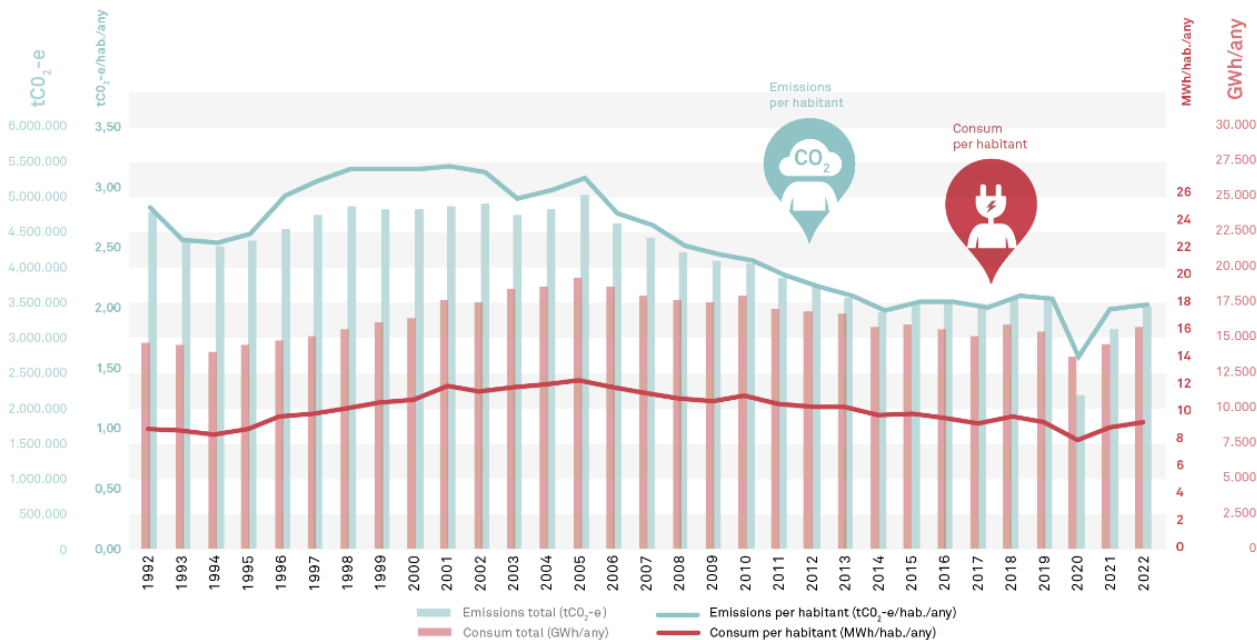
% DE REDUCCIÓ D'EMISSIONS RESPECTE L'ANY 1992:



Situació actual:
3.436.600 tones totals d'emissions (2022)

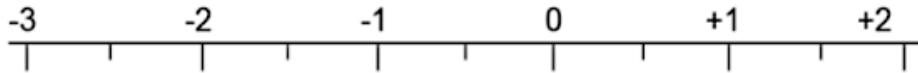
EVOLUCIÓ DEL CONSUM D'ENERGIA I EMISSIONS DE GEH A BARCELONA

Font: Agència d'Energia de Barcelona. Desembre 2022.



WHAT ARE WE DOING?

COOLING ← Local effect on temperature (°C) → WARMING



City geometry
Building density, city layout, height and size



Heat from human activities
Domestic/ industrial heating



Heat-retaining properties
Buildings and road materials



Water
Sea, river, lakes, irrigation



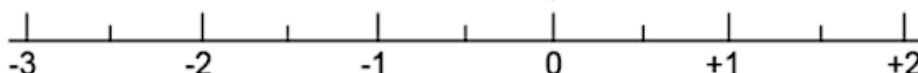
Variations across different climates



Vegetation
Parks, forests, gardens

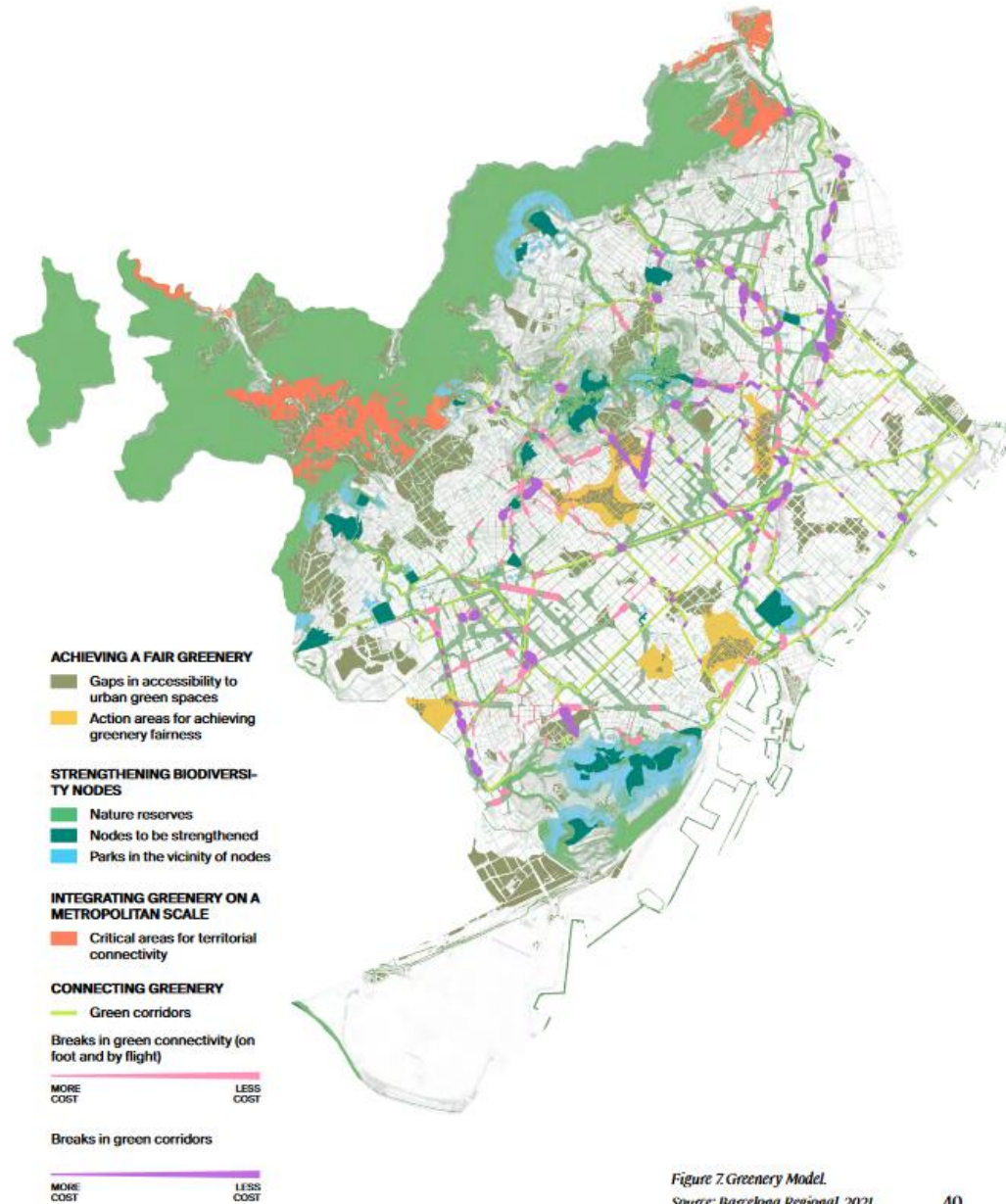


Cities often lack vegetation and water

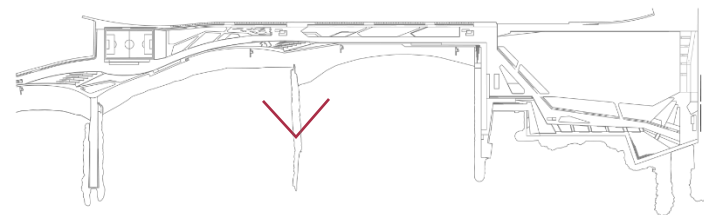


COOLING ← Local effect on temperature (°C) → WARMING

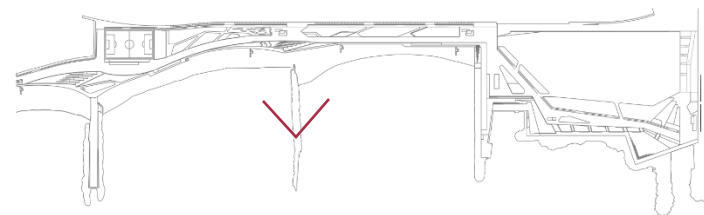
GREENERY MODEL



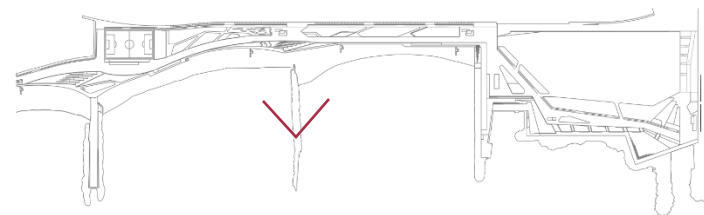
PASSEIG MAR BELLA



PASSEIG MAR BELLA



PASSEIG MAR BELLA



GREEN ROOFS

The Barcelona “Green Roof Competition” is an initiative to promote green spaces in buildings. The second edition had 33 projects selected, five of which were executed in 2022. These new green spaces increased the green surface by 1,091.51 m², including solar collectors and elements for biodiversity, in addition to improving thermal insulation and environmental noise.



VERTICAL GARDENS

At the end of 2022, a new Maintenance Plan was launched for 34 vertical gardens located in various parts of the city and involves the improvement of 5,800 square meters of urban green. Garden walls contribute to strengthening the thermal insulation of buildings and are a source of biodiversity in spaces that do not allow the installation of conventional gardens.



PROXIMITY AND INTERIOR SPACES PROGRAM

program

2024-2027

150

M €

357

actions

100

ha potential spaces

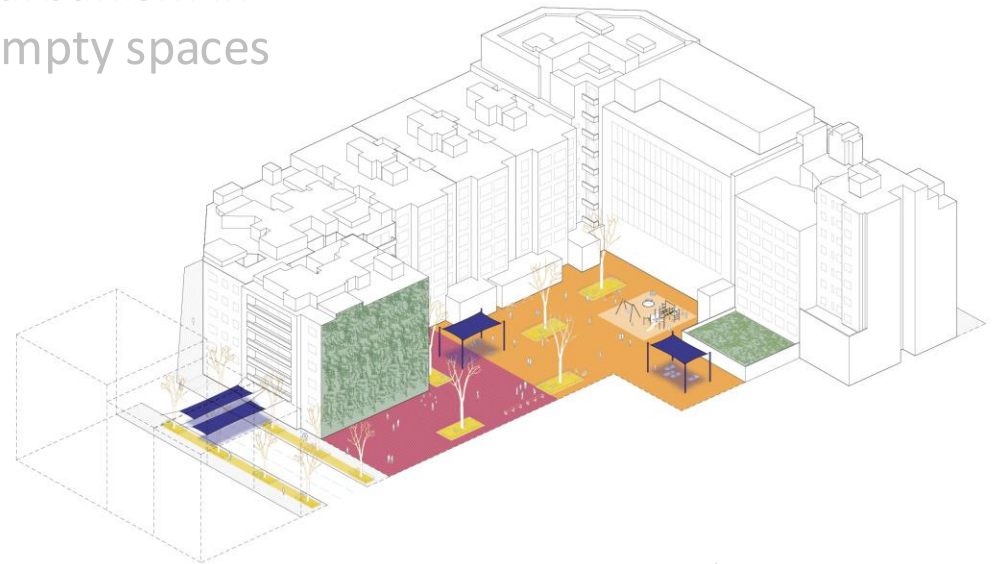
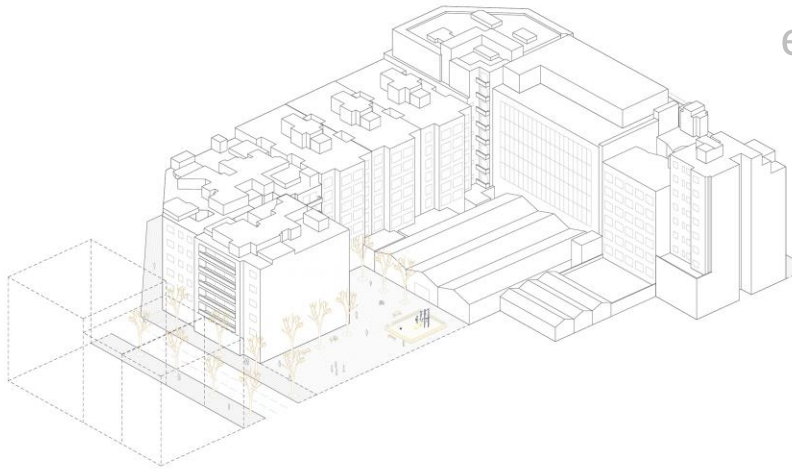
22.3

ha + green spaces

216

shaded spaces

Climate urbanism in empty spaces



Improving urban spaces

- Action in not urbanized public spaces
- Intervention with common criteria



Improving permeability

- Acquire new soil
- Planning tools



Increasing urban spaces



Shading

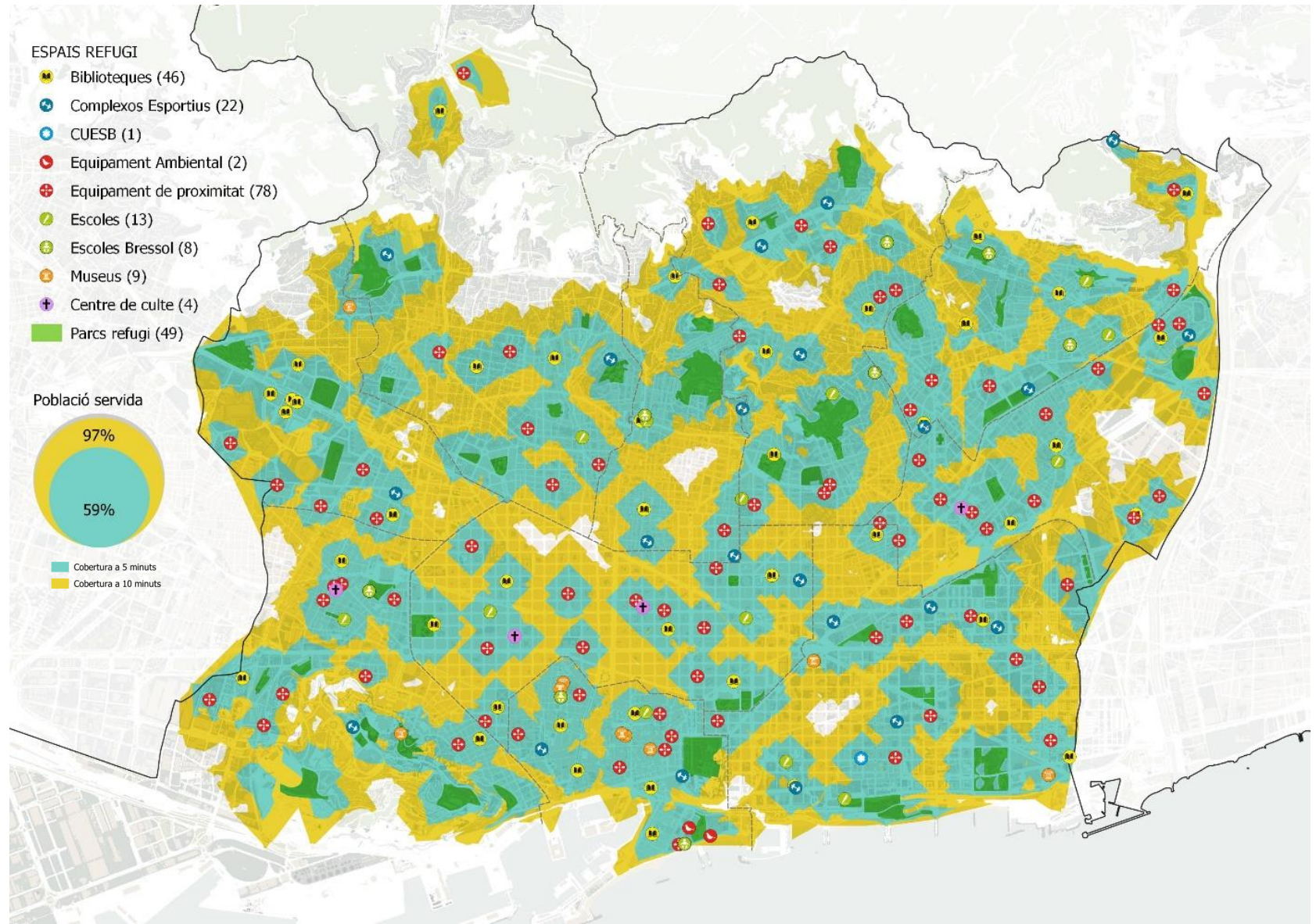
- 2030 all children playground shaded
- 60 streets and squares
- Seasonal shading system



Improving and greening roofs and facades

- International competition
- Green roofs in municipal buildings
- Grants

CLIMATE SHELTERS



SHELTERS SCHOOLS



- Project financed by the European program Urban Innovation Action (UIA).
- Budget: 5 million euros (FEDER grant of 4 million euros + 1 million euros municipal contribution). Horizon 2019-2022.
- Interventions in 13 schools with a package of blue measures (incorporation of water points), green (shadow spaces and vegetation) and gray (actions on the buildings to improve their insulation).
- Users: school students and citizens (courtyards open in summer).

SCHOOL CLIMATE PLAN

School Climate Plan (170 schools): mitigate the effects of climate change in schools, especially during heat waves, and expand the city's ecological transition pathways by decarbonizing educational equipment.



GRANTS FOR REFURBISHMENT

Barcelona City Council opened a call for grants for the energy rehabilitation of the city's housing stock. 71 million euros will be allocated to these grants, with 41 million coming from European Next Generation grants. The aim is to reform 15,000 homes in the city of Barcelona before June 2026 to improve energy efficiency and reduce CO₂ emissions.



GOVERNMENT MEASURE – ACCELERATING THE GENERATION OF PHOTOVOLTAIC ENERGY

The goal is to triple the municipal solar power potential between now and 2027, rising from 117 installations in 2023, generating the equivalent to the consumption of 3,178 households a year (5,848 kWp), to 384 installations and a potential of 19,244 kWp, the annual consumption of 10,450 households, saving 8,660 tones of CO₂.

Individuals and companies looking to add solar power generation to their buildings have two options available to them for support:

- MES Barcelona: this public-private collaboration initiative invests in the installation of solar paneling and in energy renovation, with the administration providing up to 30% of the investment.
- Moment Solar Barcelona: a project to support owner/tenant communities in the entire process and with decisions relating to the installation of solar paneling on buildings.



Fes de casa teva
una font d'energia.

Aprèn-ne més i suma-t'hi.



ELECTRIC VEHICLE MASTER PLAN

Barcelona City Council is promoting a strategic plan to introduce electric vehicles in the city, encouraging sustainable mobility and improving air quality by reducing fossil-fuel emissions and encouraging locally sourced consumption. Measures undertaken include the LIVE Platform, which is open to all public and private entities with links to sustainable mobility, basically electric and CNG vehicles, for the purposes of implementing projects, strategic policies and new business models, and creating a knowledge network.





BARCELONA
REGIONAL
AGÈNCIA
DESENVOLUPAMENT
URBÀ

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