



districlima

**A smart solution for a
sustainable environment**

January 2024

CITIES ARE AT THE FOREFRONT OF CLIMATE CHANGE

HIGHLY EXPOSED & HEAVY CONTRIBUTORS

TODAY

>50%

of carbon emissions are produced within cities¹

>50%

of the final energy consumption is due to heating²



TOMORROW

200%

Increase in global cooling demand from air conditioning between 2016 and 2050³

70%

of the population is expected to live in cities by 2050⁴

- (1) UNHabitat, *Global report on human settlement 2011, cifras basadas en la producción de CO₂*
- (2) *Heat Roadmap Europe, 2015*
- (3) *Hotmaps, Heating & Cooling outlook until 2050, EU-28, 2021*
- (4) *Bloomberg NEF – Air Conditioning Heats up Electricity Demand*

WHAT DO CITIES NEED / WANT?

Energy efficiency

CO₂ reduction

Renewable & local energies

Safety & resilience



Costs savings

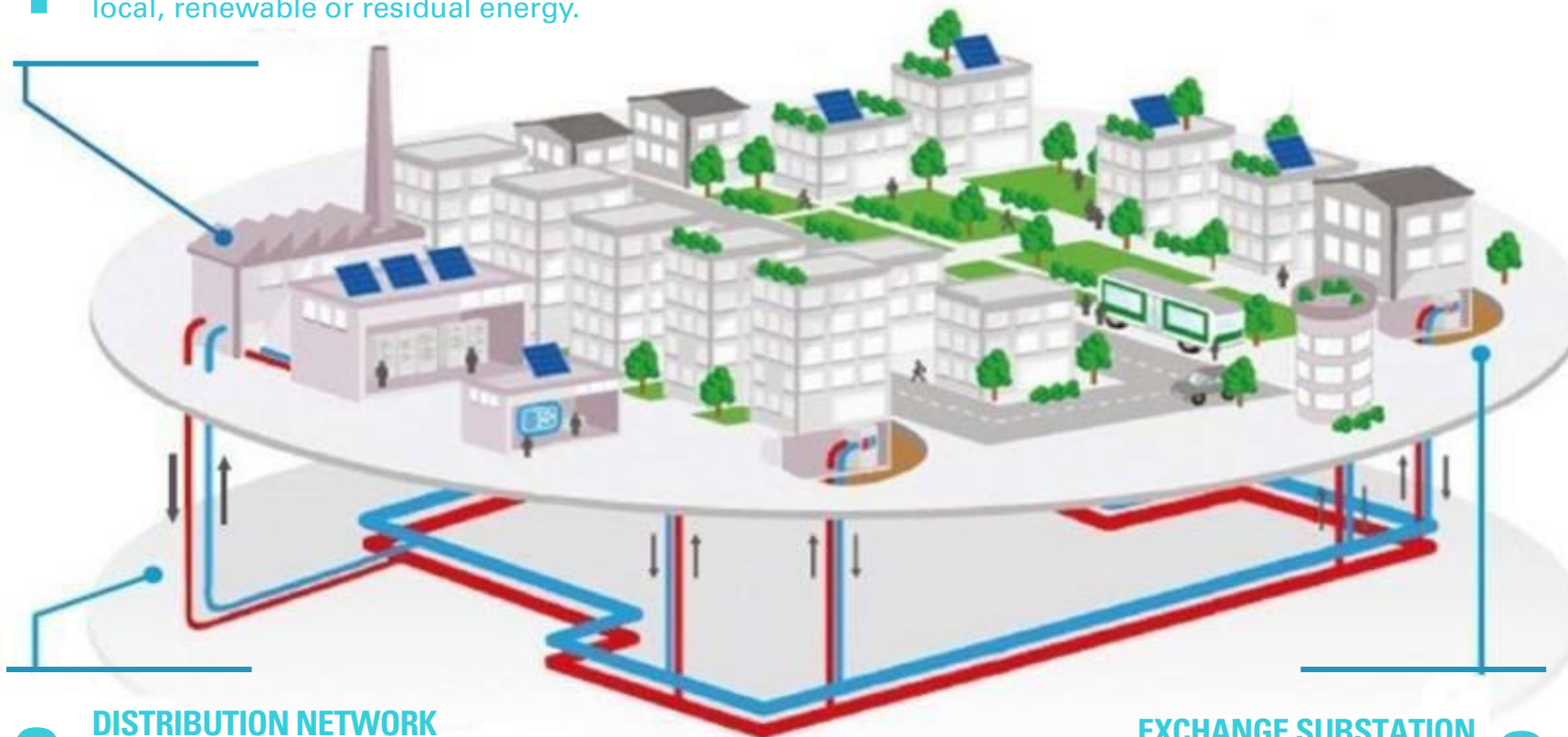
High satisfactions of final customers

Critical digital infrastructures

Key role of nature in the city

WHAT IS A DISTRICT HEATING AND COOLING NETWORK?

1 PRODUCTION PLANT
Efficient heating and cooling production using local, renewable or residual energy.

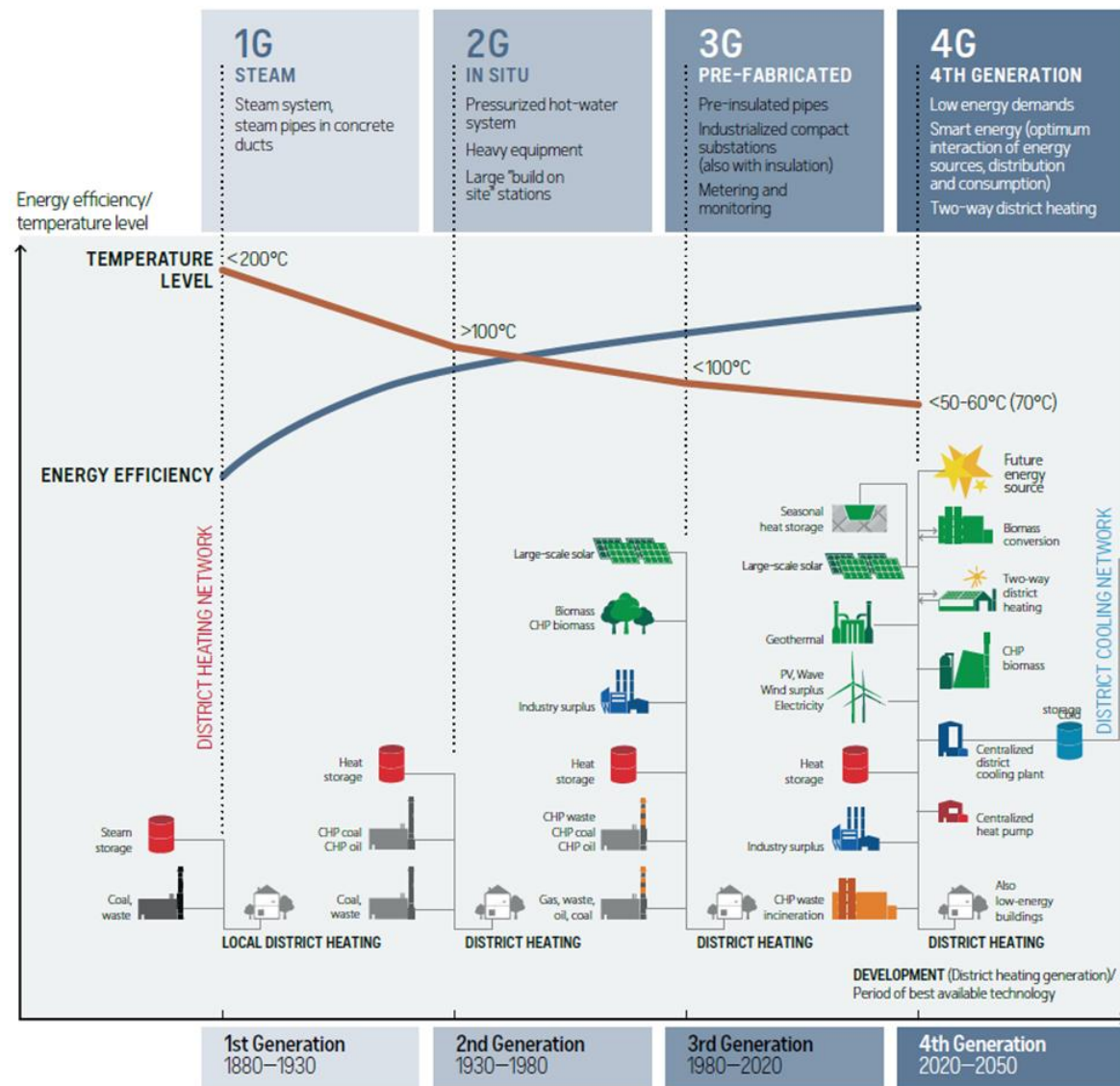


2 DISTRIBUTION NETWORK
Pipes for transporting energy through hot or cold water.

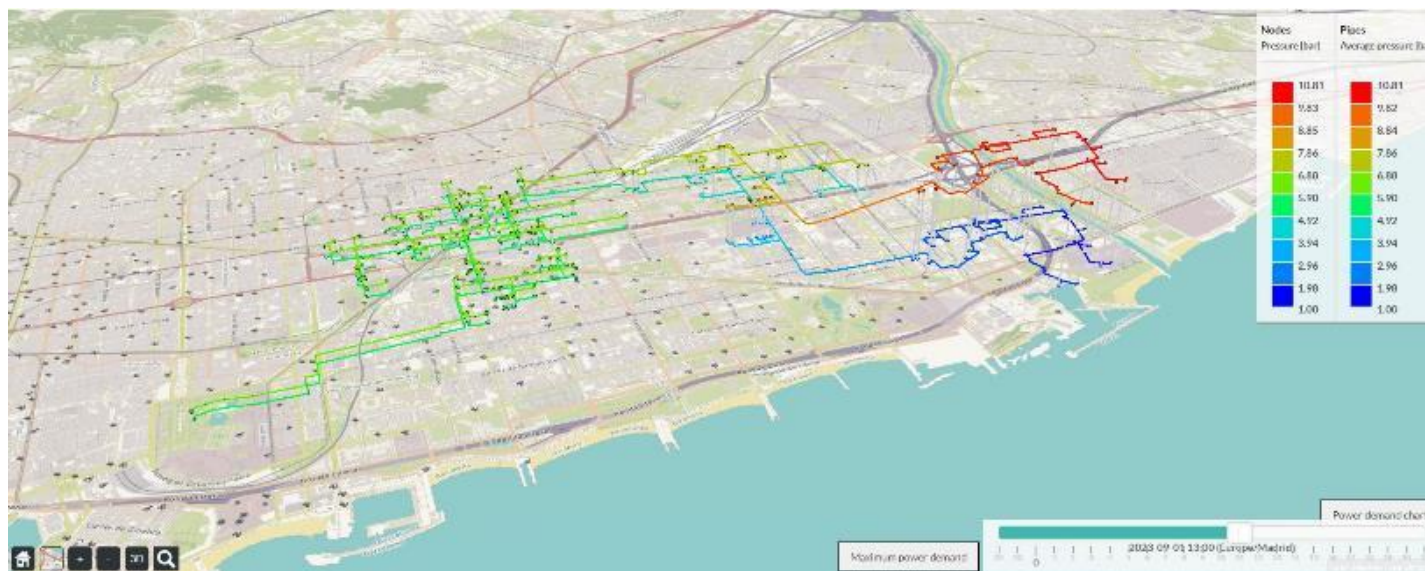
EXCHANGE SUBSTATION
Facility for the exchange, control and counting of energy delivered to customers

3

WHAT IS A DISTRICT HEATING AND COOLING NETWORK?



WHAT IS A SMART DHC NETWORK?



Sustainable solution



Efficient



Digital



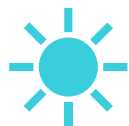
Flexible design

WHAT IS A DISTRICT HEATING AND COOLING NETWORK?

BENEFITS OF DHC NETWORKS FOR CITIES



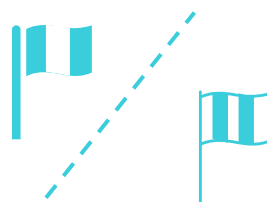
Improved air quality



Use of local renewable or residual energies



Decrease in global electricity consumption



Less energy dependence on the outside



WHAT IS A DISTRICT HEATING AND COOLING NETWORK?

BENEFITS OF DHC NETWORKS FOR CITIES



Elimination of health risks



Reduction of global consumption of water and chemicals



Local job creation



Valuation of the architectural environment



Mitigation of the "heat island" effect

WHAT IS A DISTRICT HEATING AND COOLING NETWORK?

BENEFITS OF DHC NETWORKS FOR USERS



COM PROMESOS AMB EL MEDI AMBIENT

**Edifici connectat
a la xarxa urbana de calor i fred**

www.districtlima.com

Empresa concessionària:  districlima

Impulsors del projecte:  Ajuntament de Barcelona  consorcibesòs



Energy saving



**Absence of noise
and vibrations**



**Elimination of machinery
replacement costs**



**Elimination of faults.
Reduction of
maintenance costs**



**Energy supply
guarantee**



**Elimination of risks
(legionella, explosions,
monoxide poisoning...)**

WHAT IS A DISTRICT HEATING AND COOLING NETWORK?

BENEFITS OF DHC NETWORKS FOR FOR REAL ESTATE DEVELOPERS



**Sustainable buildings
with a high energy
rating**



**Lower initial
investment in
facilities**



**Offer
differentiation**



**Lower future
maintenance
costs**

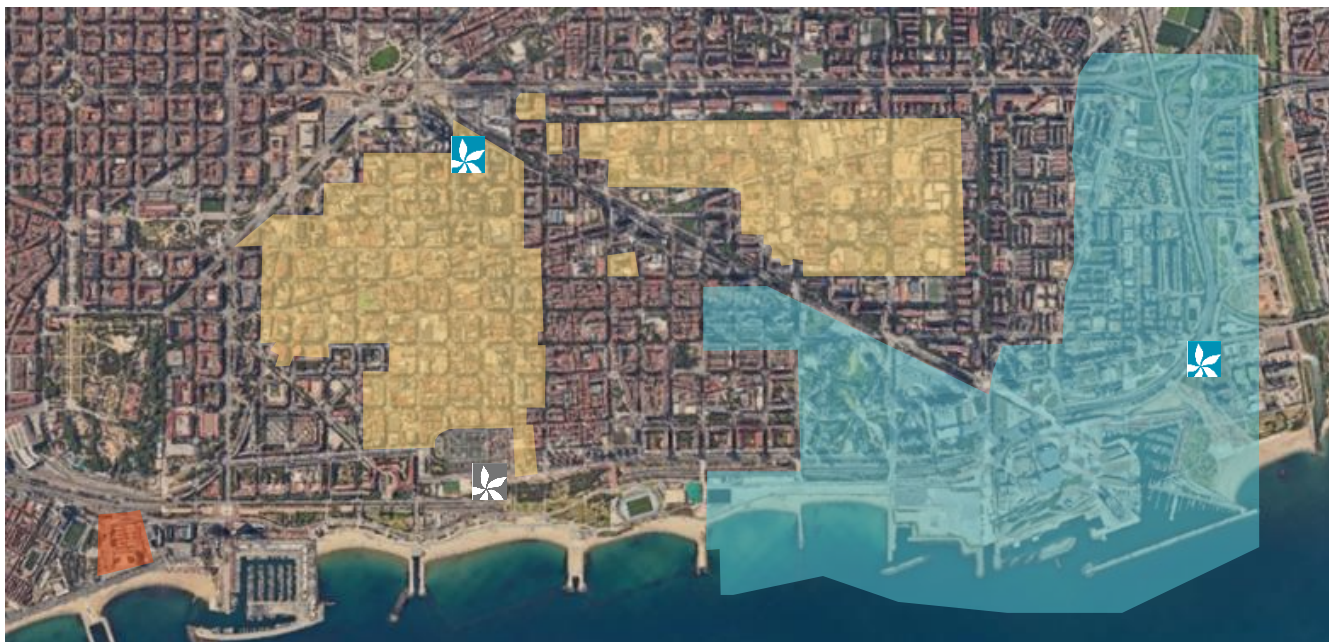


**More useful
marketable space**



WHO ARE WE?

Districlima was established in 2002 to carry out, **for the first time in Spain**, a district heating & cooling network to provide thermal energy in Barcelona.



The project was initially located in an area of Barcelona that had been remodeled in terms of urban planning to host the 2004 **Forum of Cultures**.

In 2005 and after the award of a public tender a second stage begins with the extension of the network to the **new technological district 22@**.

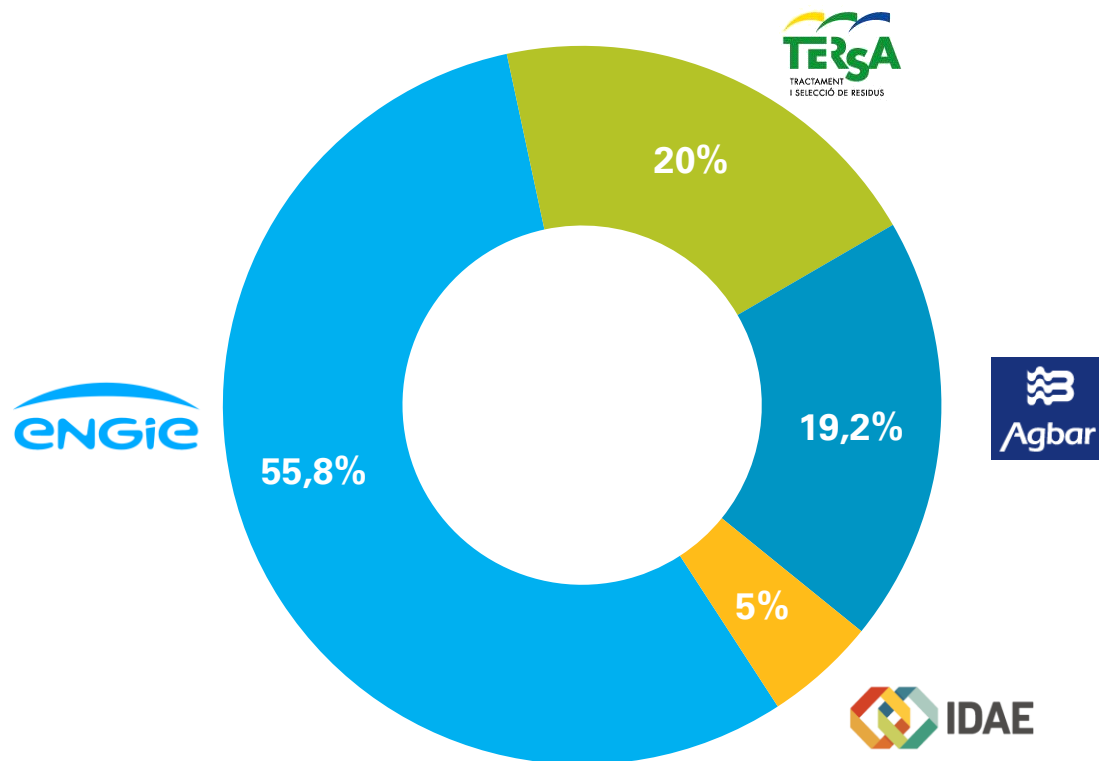
In 2016, the network expanded, following a new concession contract, to supply the **Hospital del Mar**.

There is a **power plant in the Forum area** - which uses steam from waste recovery and condenses the equipment using seawater - and a second power **plant in the 22@ district**, next to Glorias place. In the next few years, a **third plant** will come into operation in order to supply the growing customer demand.

WHO ARE WE?



DISTRICLIMA'S STAKEHOLDERS:



KEY FIGURES

180

Connected buildings



1.700.000 m²

Climatized roof surface



25,5 km

Network length



≈84 M€

Total investment



32.533 Tn

CO₂ emissions savings



-97%

Fossil fuel consumption reduction



46,8 MW

Installed heating power



49,1 MW

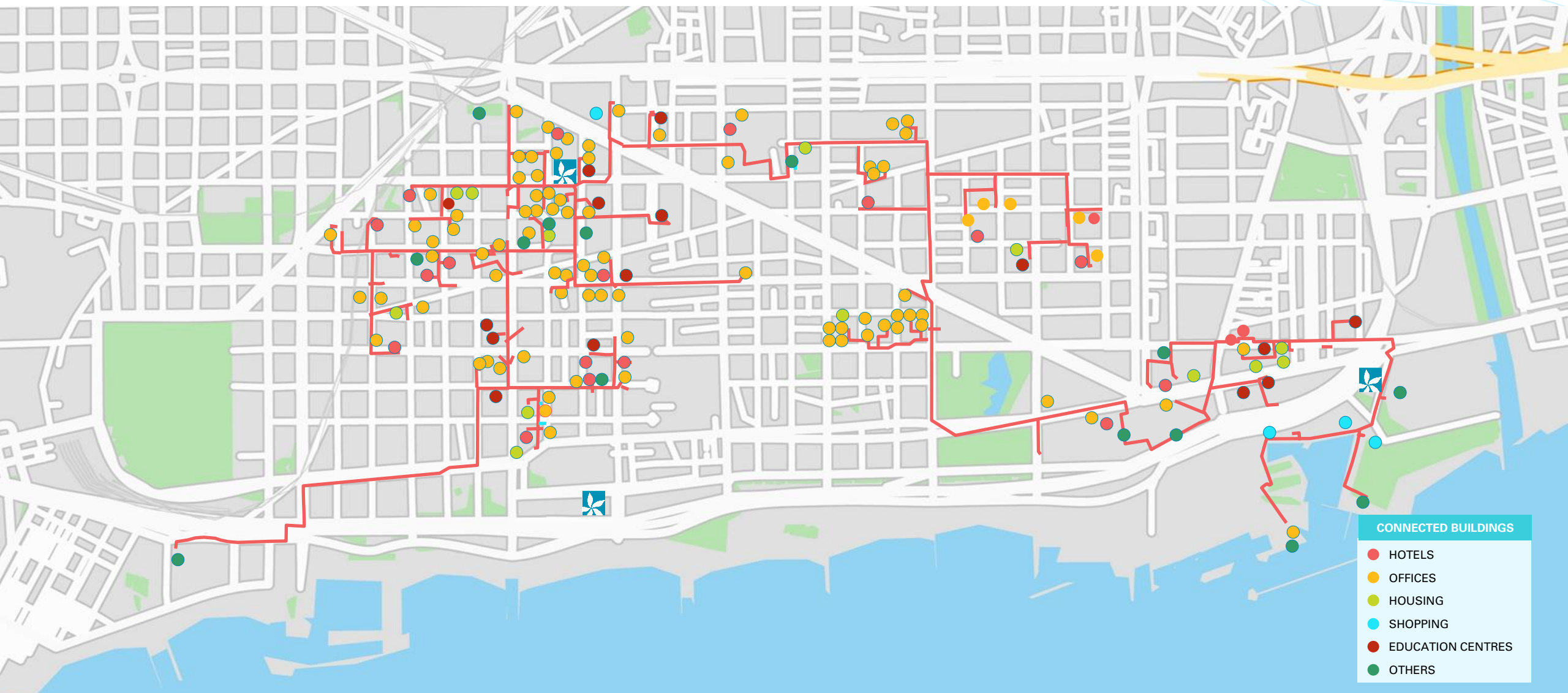
Installed cooling power



+ 40 MWh water storage tank
+ 120 MWh ice storage tank

Data as of December 2023

DISTRICLIMA'S NETWORK



DISTRICLIMA'S NETWORK



FORUM PLANT

Heat and cold are produced by using **the steam generated in the combustion of municipal solid waste** (MSW) from the neighboring TERSA recovery plant.

The production equipment is **cooled by seawater**, obtaining high efficiency without the use of cooling towers.

Energy management is optimized by using a 5,000m³ chilled water storage tank.



FORUM PLANT

EQUIPMENT

Cooling production:

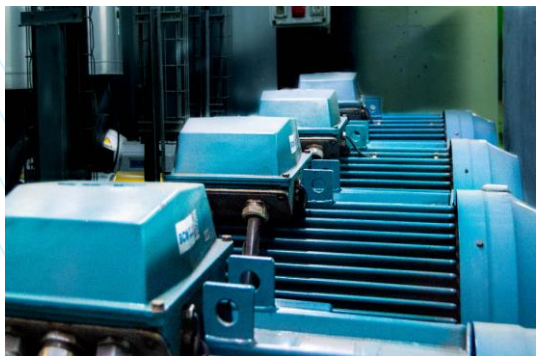
- 2 absorption equipment – Broad - 3,5 MW each one
- 1 cold-water storage tank of 5.000 m³ (5.000.000 liters)
- 2 electric chillers - Mc Quay - 4 MW each one
- 2 electric chillers - Johnson Controls - 7 MW each one

Refrigeration system:

- 3 seawater/cooling water exchangers - 12,5 MW each one
- 1 seawater collection station of 5.000 m³/h

Heating production:

- 4 steam/water exchangers - 5 MW each one



FORUM PLANT



TANGER PLANT

Initially conceived as a peaker plant, its goal is to guarantee energy supply in periods of high demand or in case of any contingency.

It has an advanced **ice storage system** that allows producing energy in periods of low demand and store it until it's needed, in periods of higher demand.

The combustion gas from the boilers is exhausted by the **historical chimney of the ancient textile factory "Ca l' Aranyó" (1872)**.



TANGER PLANT

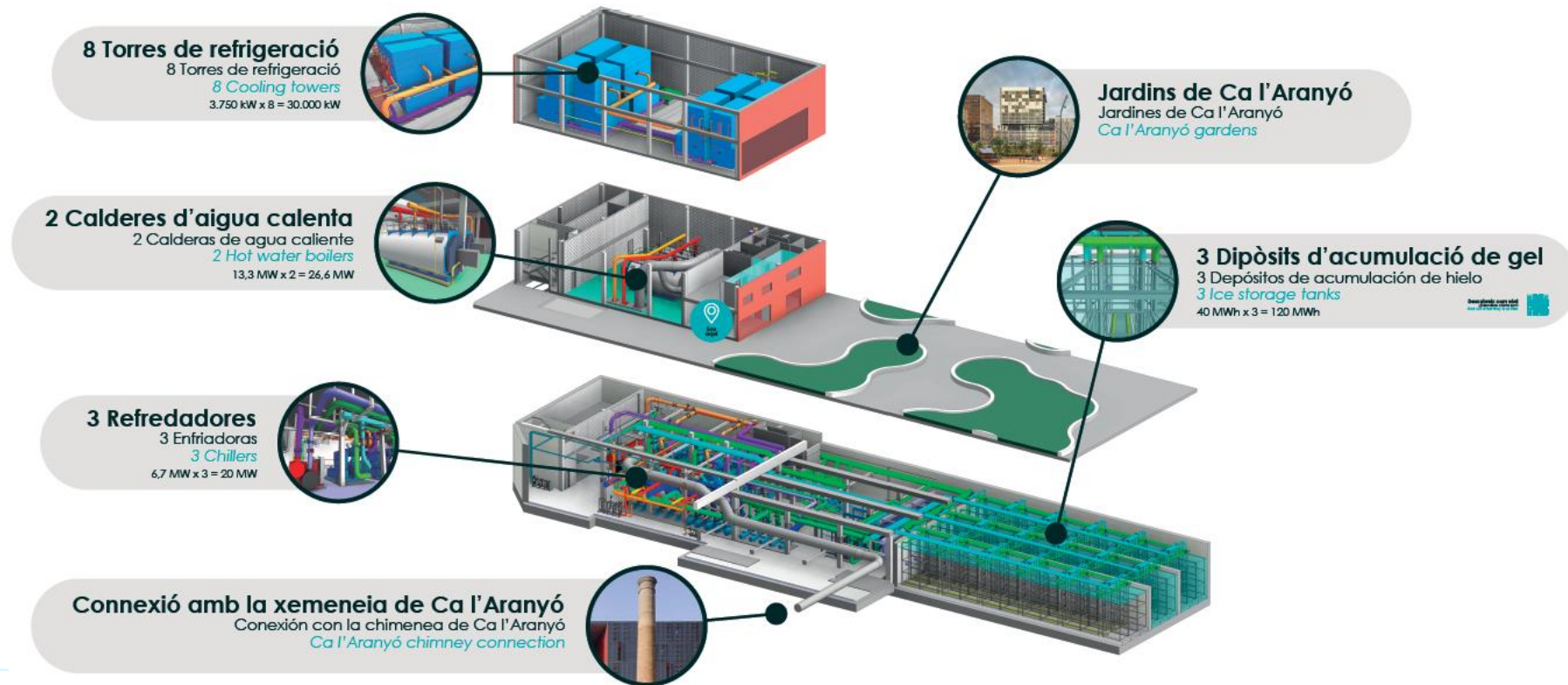
EQUIPMENT

Cooling production:

- 2 Friotherm compression chillers of 6,7 MW – glycated water production (negative cold -7°C / positive cold +4°C)
- 1 Quantum compression chiller (10 magnetic levitation compressors) of 6,7 MW – production of cold water (positive cold +4°C)

Heating production:

- 2 gas boilers of 13,4 MW each one



TANGER PLANT



FUTURE BOGATELL PLANT

TECHNICAL SOLUTION

A CARBON FREE SOLUTION

- 100% of energy consumption will be covered by green certificates or a Green PPA

COOLING PRODUCTION PLANT WITH A NOMINAL CAPACITY OF 56 MW_c

- Direct production capacity of 42 MW_c
- Production capacity with cold water tanks: 14 MW_c
- 6 electric machines of 7 MW_c each one
- Cold water storage tank of 112 MWh (14.000 m³)

SEA WATER COLLECTION

- Implementation: marine outlet behind the beach dikes
- Pumping station(11.100 m³/h) with a collection line ND 1600 (inside) and 2200 (outside)
- Seawater pumping network 2 x ND 800

SEA WATER POURING

- Implementation: Bogatell breakwater

CONNECTION WITH THE EXISTING DISTRICT COOLING NETWORK

- Main connection: 650 m of pre-insulated double pipe (diameter DN800)
- Secondary connection: 360 m of pre-insulated double pipe (diameter DN400)



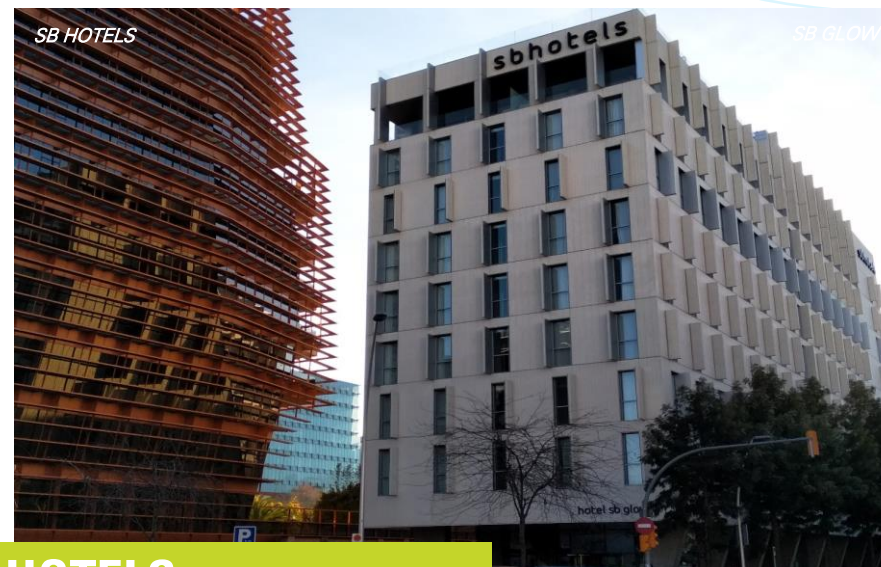
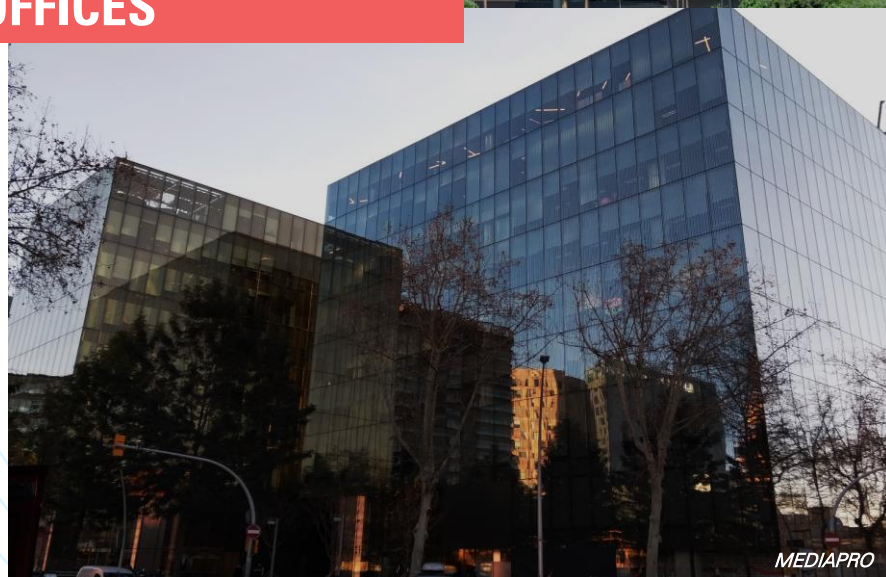
FUTURE BOGATELL PLANT



180 LARGE BUILDINGS CONNECTED



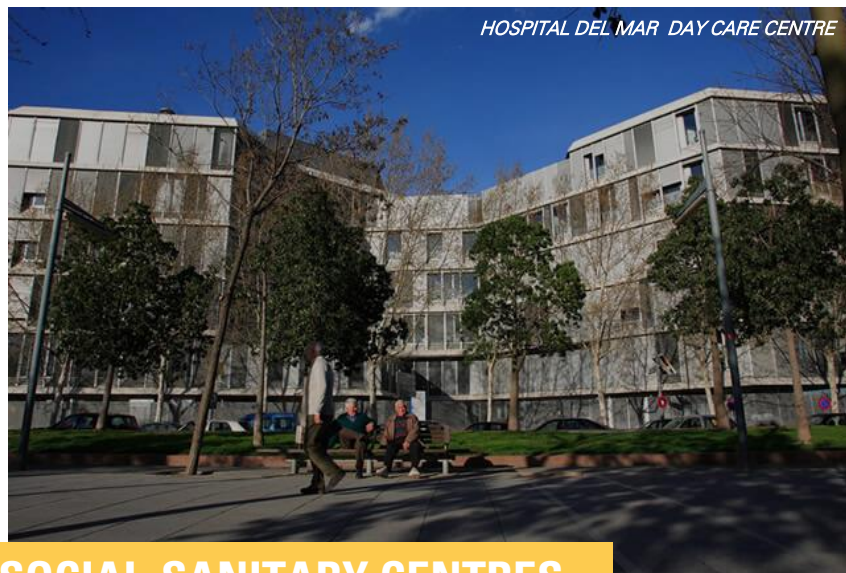
OFFICES



HOTELS



180 LARGE BUILDINGS CONNECTED



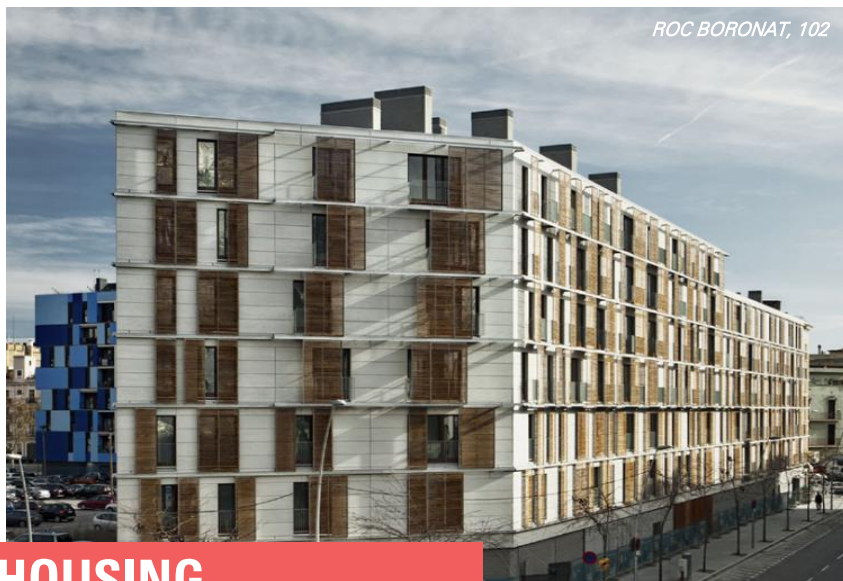
SOCIAL-SANITARY CENTRES



EDUCATIONAL CENTRES



180 LARGE BUILDINGS CONNECTED



HOUSING

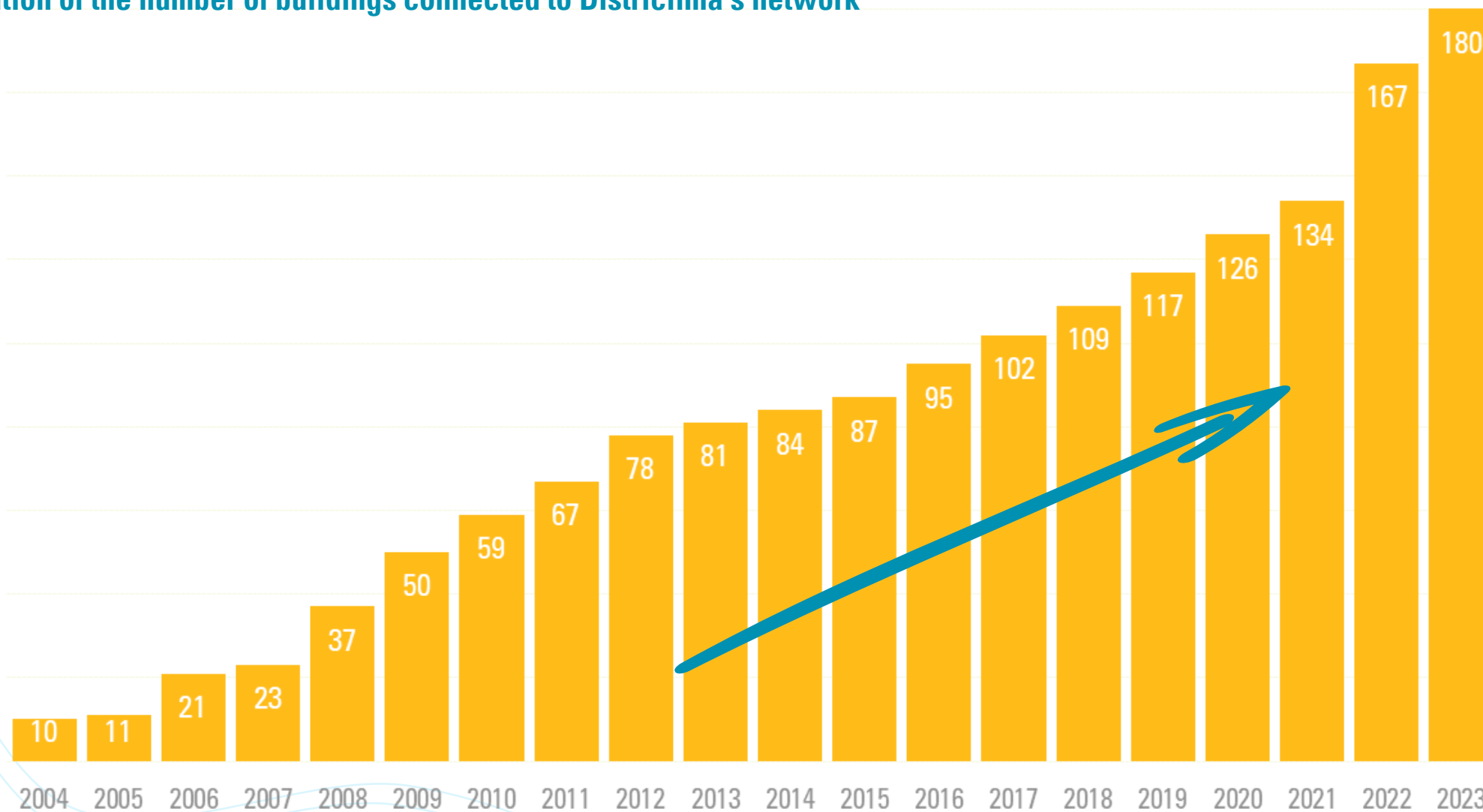


PUBLIC FACILITIES



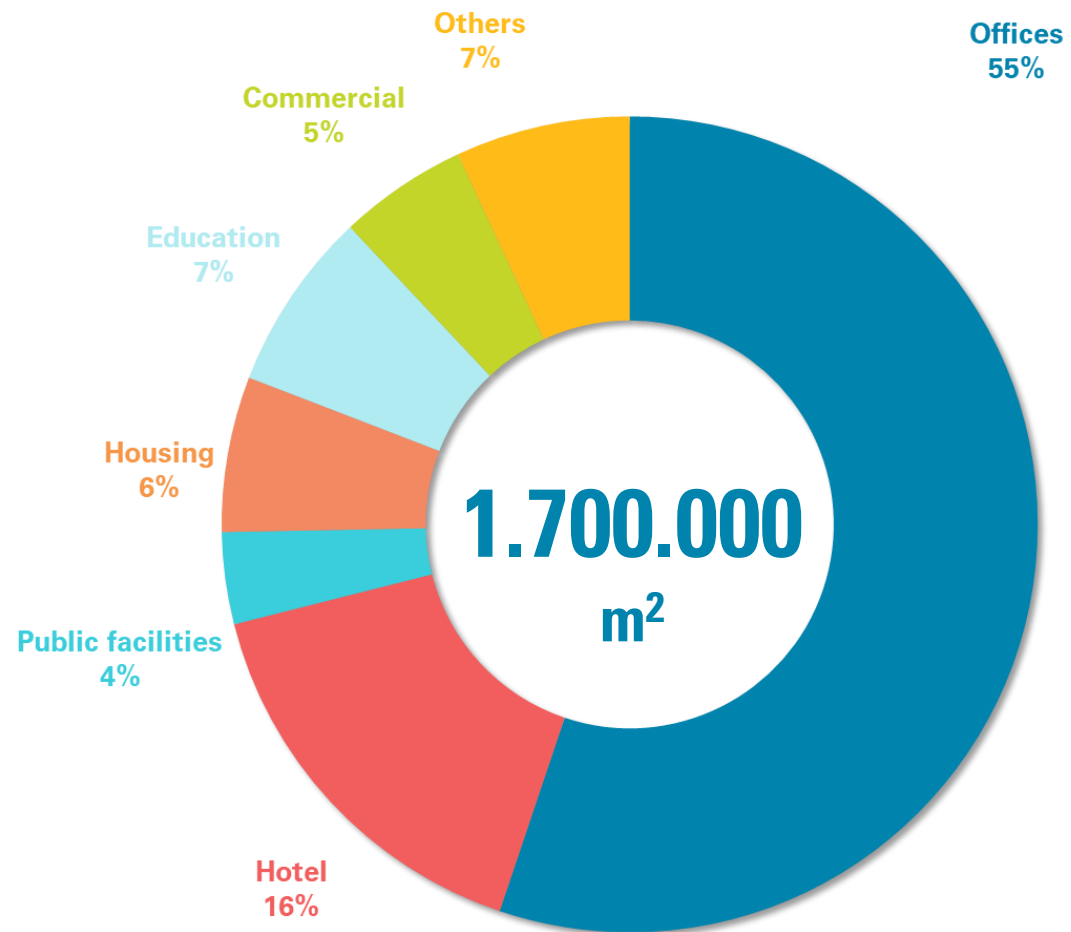
180 LARGE BUILDINGS CONNECTED

Evolution of the number of buildings connected to Districlima's network

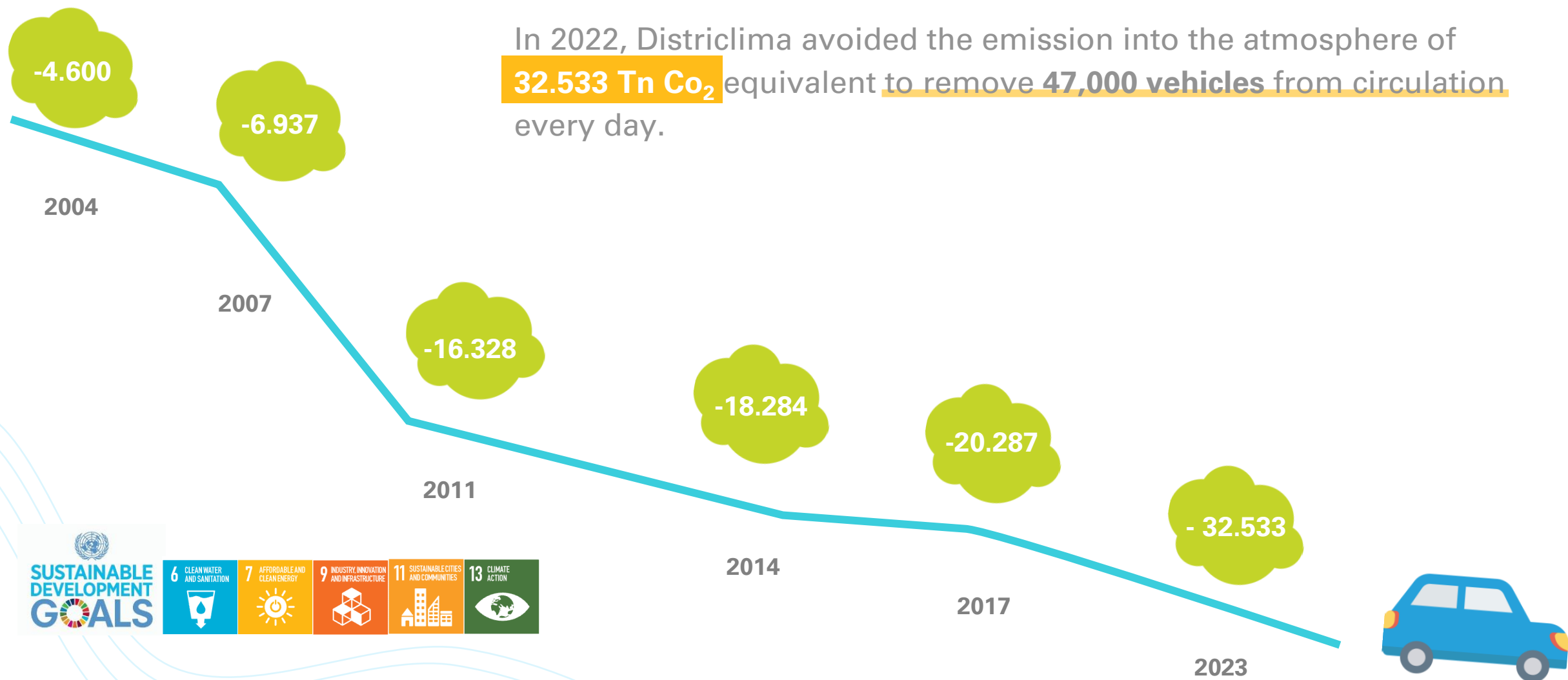


180 LARGE BUILDINGS CONNECTED

Typology of surfaces supplied by the distribution network



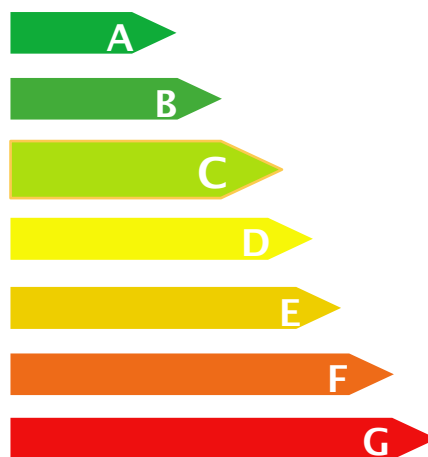
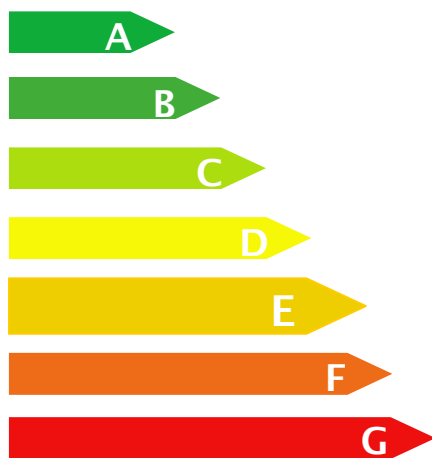
9. THE CLIMATE EMERGENCY, A RESPONSIBILITY OF EVERYONE



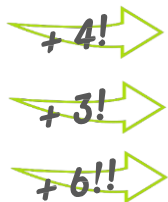
9. THE CLIMATE EMERGENCY, A RESPONSIBILITY OF EVERYONE

BUILDING ENERGY CERTIFICATION (example of a real client connected to the Districlima network)

Conventional solution



Heating demand	22,11 kWh/m ²	G
Cooling demand	59,17 kWh/m ²	D
Heating emissions	23,93 kg CO ₂ /m ²	G
Cooling emissions	23,22 kg CO ₂ /m ²	D
Sanitary water emissions	10,92 kg CO ₂ /m ²	G
Lightning emissions	34,43 kg CO ₂ /m ²	C



G	Heating demand	22,11 kWh/m ²
D	Cooling demand	59,17 kWh/m ²
C	Heating emissions	6,64 kg CO ₂ /m ²
A	Cooling emissions	0,25 kg CO ₂ /m ²
A	Sanitary water emissions	0 kg CO ₂ /m ²
C	Lightning emissions	34,43 kg CO ₂ /m ²



9. THE CLIMATE EMERGENCY, A RESPONSIBILITY OF EVERYONE

SUSTAINABLE BUILDINGS OF GREATER VALUE AND PRESTIGE

LA VANGUARDIA

CATALUNYA.-Un edificio del 22@ de Barcelona supera los 100 puntos del Leed Green Building internacional

- Barcelonesa de Inmuebles invierte 70 millones en "el único proyecto del mundo" con esta puntuación

Un complejo de oficinas del distrito 22@ de Barcelona ha alcanzado 101 puntos del Leed (Leadership in Energy & Environmental Design) Green Building, una medición por puntos sobre edificios sostenibles que emite el US Green Building Council.

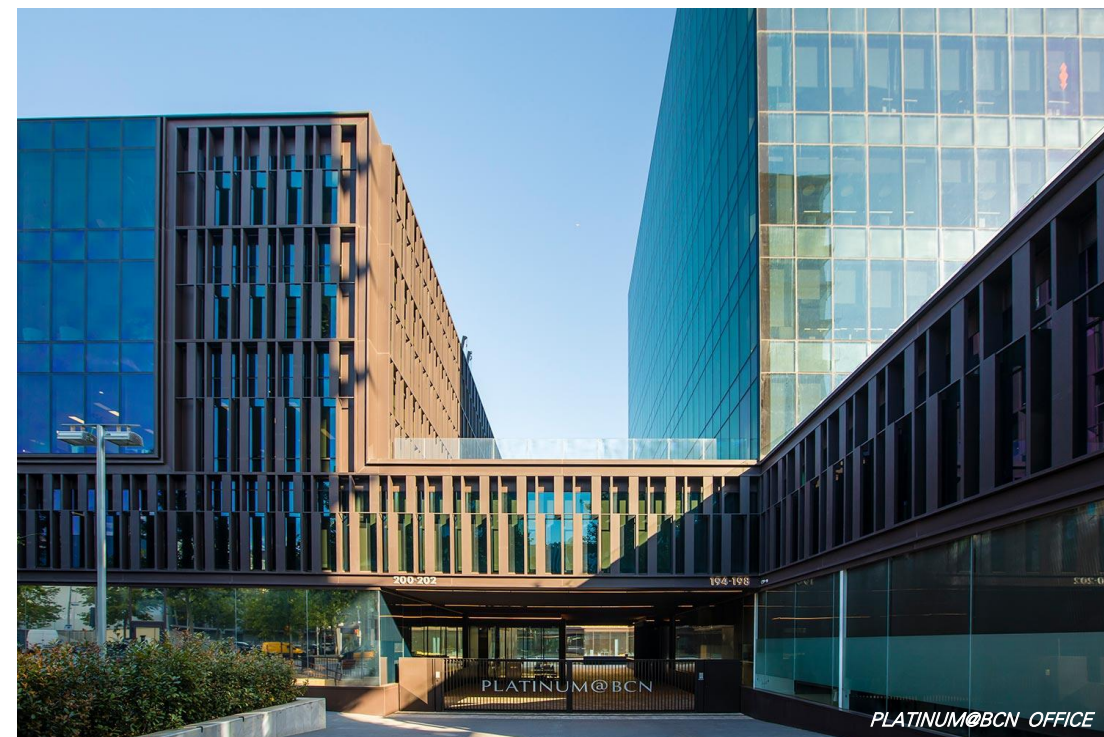
Es el Platinum@BCN, un proyecto de tres inmuebles que suman 24.000 m2 de oficinas y 14.000 m2 de aparcamientos, según un comunicado de la promotora Barcelonesa de Inmuebles.

La ocupación actual es del 100%, y alberga empresas como WeWork, N26 y Glovo, e instituciones como el Instituto Municipal de Hacienda del Ayuntamiento de Barcelona.

Barcelonesa de Inmuebles, que ha invertido unos 70 millones de euros, ha destacado que es "el único proyecto del mundo en lograr esta puntuación, siendo un referente mundial en sostenibilidad e innovación".

Incluye reutilización de aguas grises y aguas pluviales, reduciendo un 46,02% el consumo de agua respecto a otros edificios; equipos de climatización y ventilación inteligentes; luminarias eficientes Led; y conexión a la red urbana de calor y frío Districlima, que ahorra un 44.2% de energía respecto a complejos similares

REDACCIÓN
23/12/2019 10:32



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Empresas y finanzas

Las oficinas más sostenibles del mundo están en Barcelona

(The most sustainable offices in the world are in Barcelona)

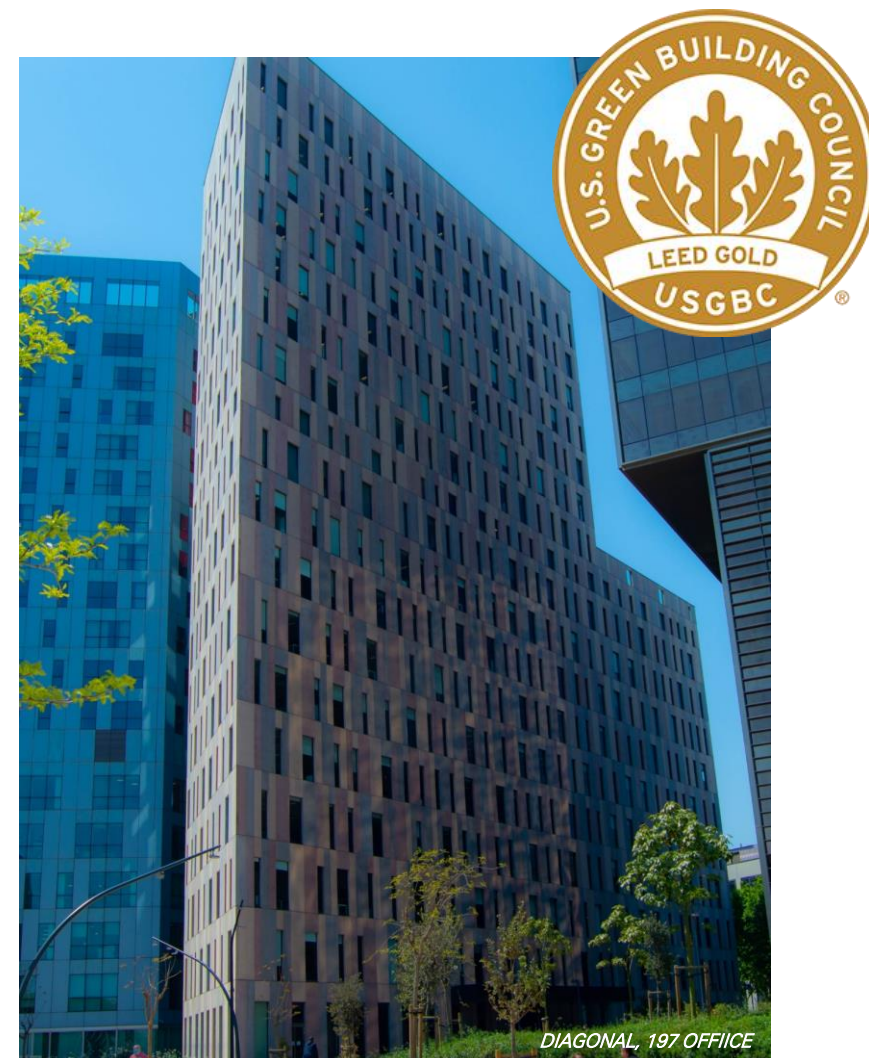
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ISO 9001
ISO 14001
BUREAU VERITAS
Certification



Smart Building
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FOUNDER OF:

