# New Green Possibilities:
# Nature based solutions to urban issues

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# The context

## Milan in transition

Nowadays, public administrations face more than ever the so-called *'wicked problems'* , complex and articulated challenges among which climate change stands out.

**Milan is therefore learning to act in a practical and tangible way**, through innovative tools and actions to develop a **new framework for growth and development**.

Milan is experiencing a period of profound renewal that has demonstrated the **great level of adaptation of the city.**

# Urban Resilience

It is the **ability** of individuals, communities, institutions, businesses to **survive, adapt and grow** regardless of what chronic stress and acute shocks they suffer
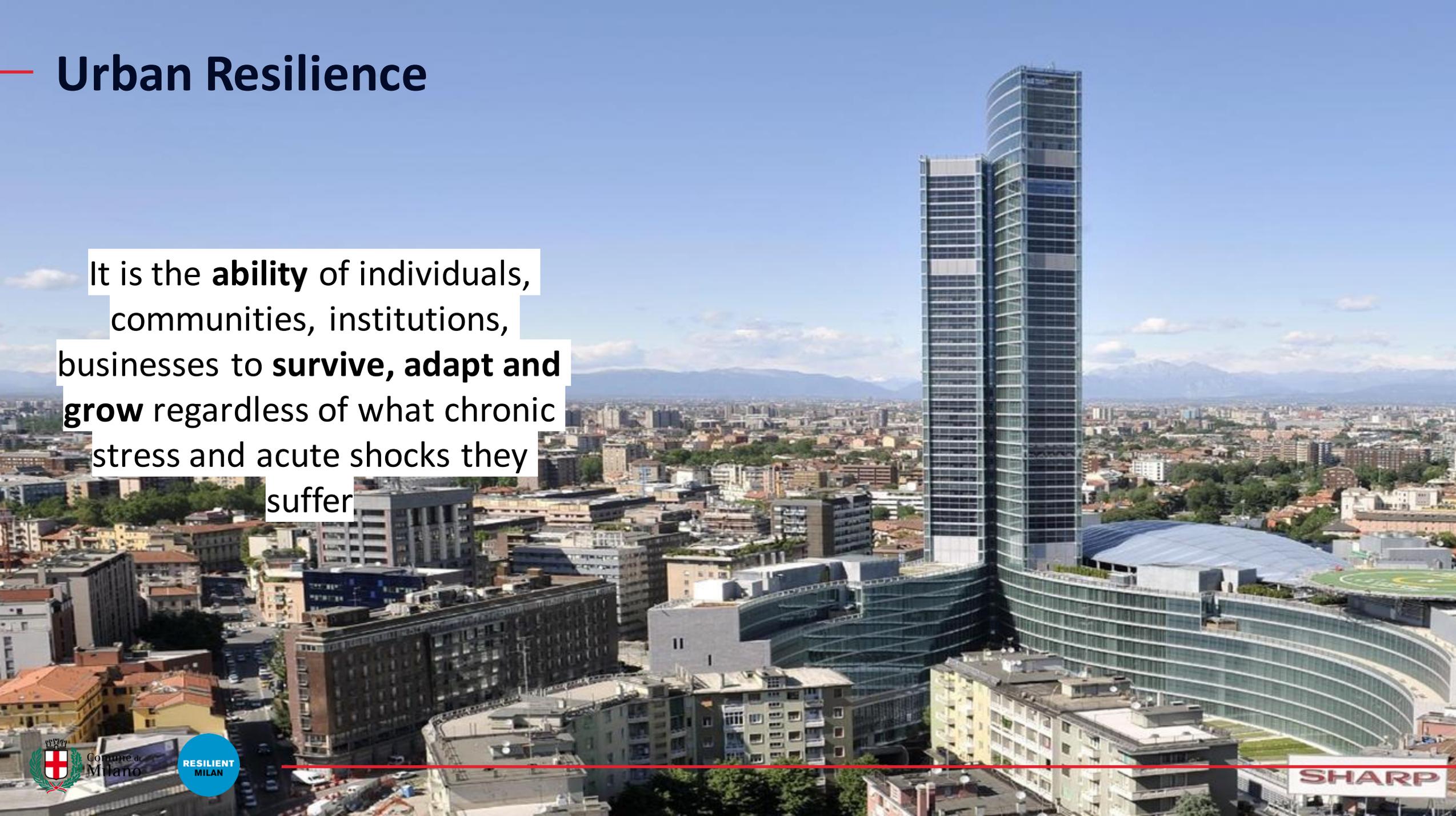
# The Environmental Transition Department

## UNITS INVOLVED

**City Resilience Department**

**Climate and Energy Area**

**Water Resources and Environmental Hygiene Area**

## RESPONSIBLE FOR:

- The implementation of environmental and energy policies;
- Resilience issues;
- Functions in the field of environmental protection and the fight against pollution

# Plans and projects for a greener Milan

# The ecosystem of Plans, actions and projects

Greening Plan

PAC
Air and Climate Plan

City Masterplan 2030 - PGT

FORESTAMI-Forestation Program

Geoportale

Veg Gap

Green roofs mapping

Clever Cities

Resilience Strategy

NRG2peers

Depaving Program - De-pavimentazione

Milano School Oasis

Adaptation Strategy - Milano 2020

Sharing Cities

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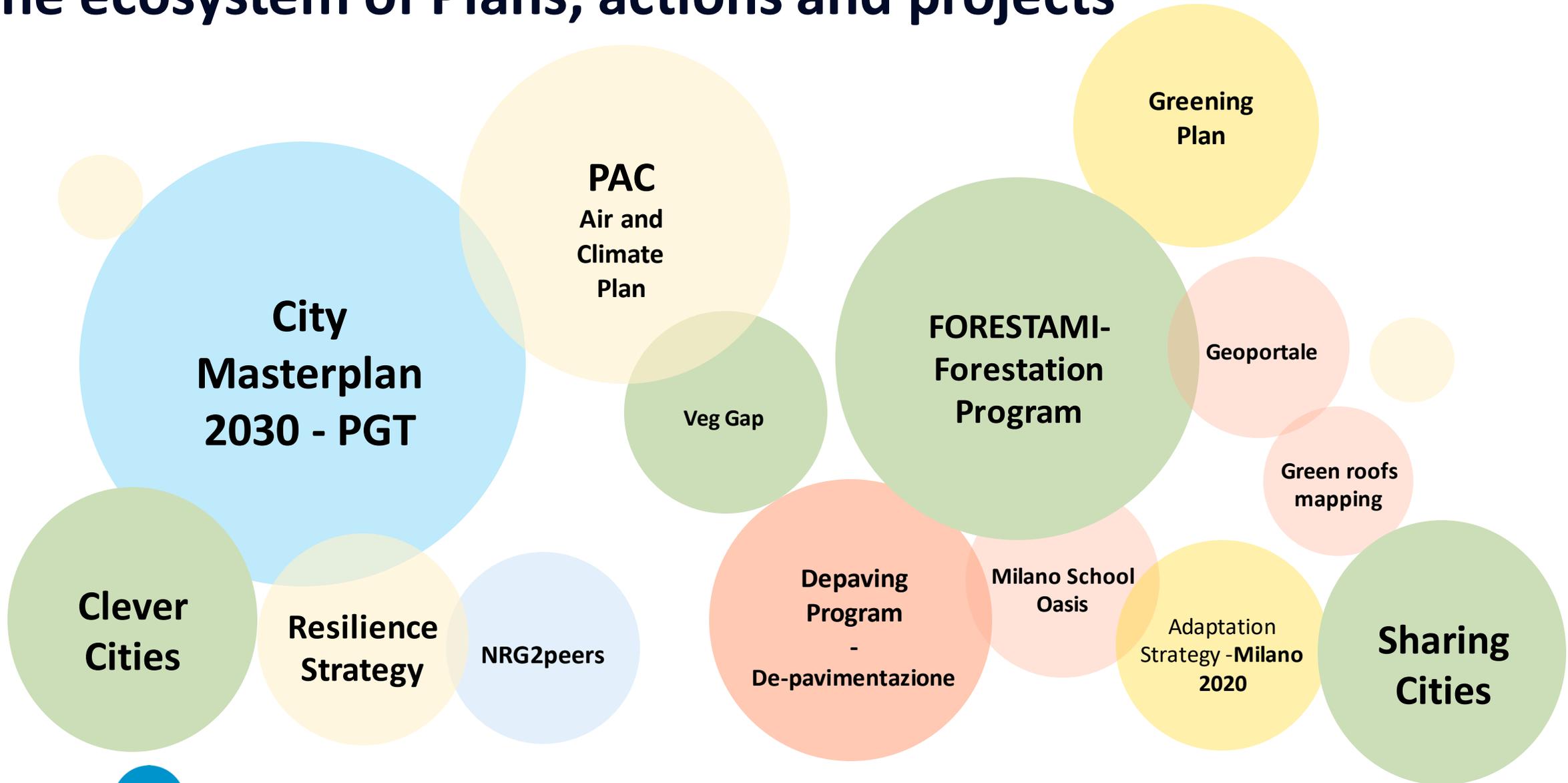
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# PGT MILANO 2030

## City Masterplan Milano 2030

## A Green, Livable, Resilient City

Milan 2030 wants to give itself a green footprint. To this end, the PGT has downsized land use forecasts for building, thus reducing land consumption.

Water is once again the protagonist, thanks to the reopening of the Navigli (canals) and the plans for Lambro and Seveso rivers.

The green belt which will connect twenty new city parks eventually becoming the urban threshold of the Metropolitan Park.

New environmental standards favor the reduction of greenhouse gas and carbon emissions and help mitigate climate events

**STRATEGIES 5 and 6**

# strategy 5 _
# MAKE WAY FOR THE ENVIRONMENT

## Green and Blue infrastructure

**Azioni capillari**

☐ Ambiti di rigenerazione ambientale

▨ Ambiti prioritari drenaggio urbano sostenibile (tramite NBS)

Aree per forestazione/piantumazione

■ Aree pubbliche da forestare/piantumare

▨ Spazi per la sosta da depavimentare e piantumare

Aree da depavimentare in parte e piantumare

■ Spazi per la sosta

■ Piazze

•••••••• Connessioni verdi lineari esistenti

•••••• Connessioni verdi lineari da realizzare

▮▮▮▮▮▮ Infrastrutture blu

▪ ▪ ▪ ▪ Infrastrutture blu - corsi d'acqua tombinati da valorizzare

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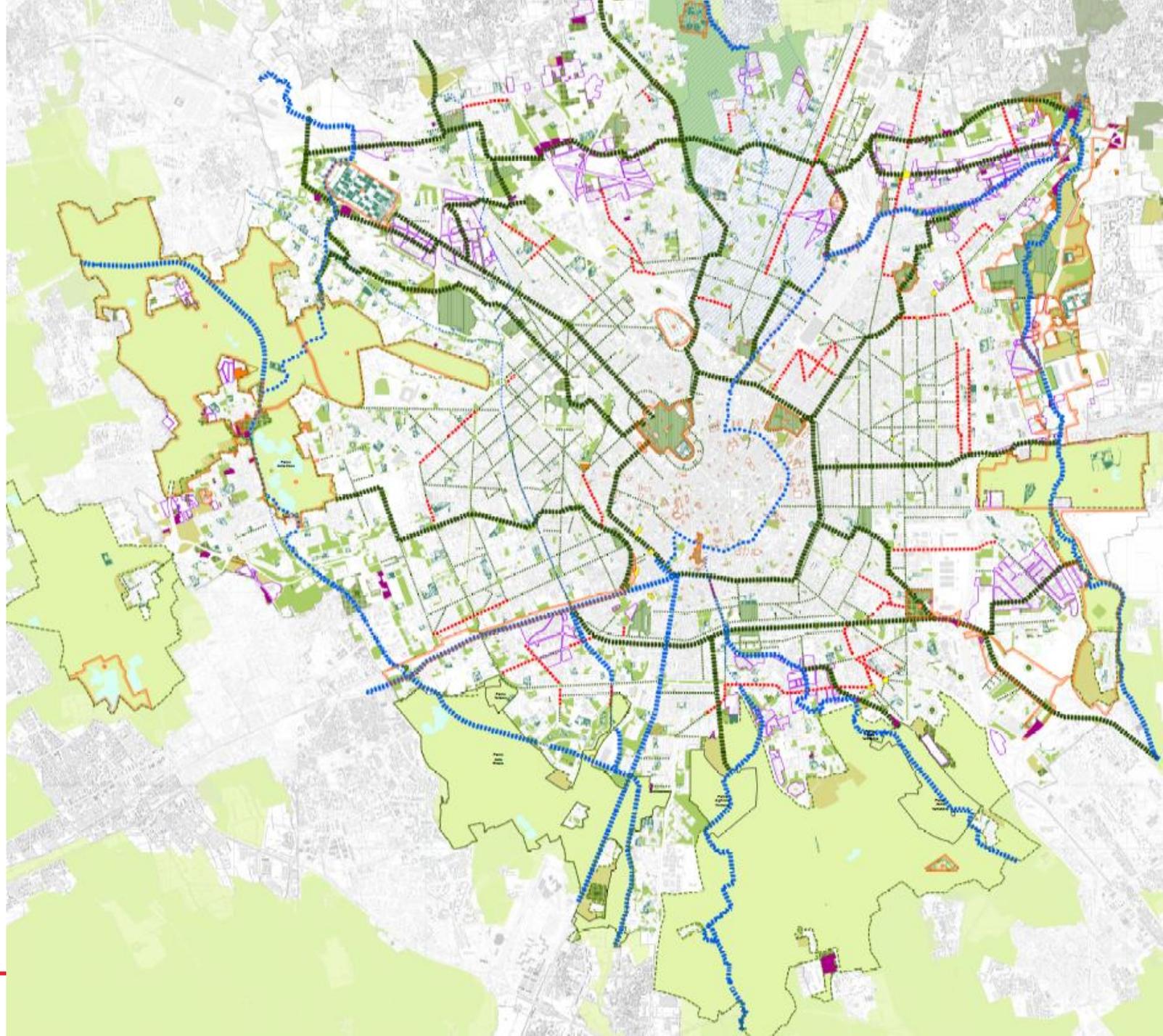
# Art. 10 of PGT

## New quality standards for all buildings

**Minimizing energy consumption, re-naturalizing and maximizing the city's permeable surface, reducing the carbon footprint of both new buildings and in the regeneration of the building stock.**

Shocks & stresses
- Floods – flooding
- Air and water pollution
- Heat waves and extreme heat

Stakeholders
Direzione Generale, Urbanistica, AMAT

Status
Approved

# Emissions reduction and climate impact reduction index (CCPI)

**Reduction of CO2 emissions**
Reduction of emissions for the requalification of the existing buildings;
Carbon neutrality for new buildings

Design elements that can be used in an alternative or composite way
- Solutions with high energetic performance;
- Re-naturalizing interventions, also through green integrated in buildings;
- Technologies for a reduced hydric consumption and for a reuse of rainwater;
- Use of sustainable materials and/or with recycled content;
- Adoption of surface finishes with a high coefficient of solar reflectance;
- Solutions for sustainable mobility.

❯ **Achievement of a climate impact reduction index -RIC**
as the relationship between green areas and the territorial surface of the intervention

Design elements that can be used in an alternative or composite way
- Permeable surfaces on the ground;
- Greened permeable surfaces on the ground;
- Paved permeable surfaces on the ground;
- Green roofs architecturally integrated and equipped with a drainage layer;
- Green covers for buried artifacts equipped with a drainage layer;
- Green walls architecturally integrated in buildings.

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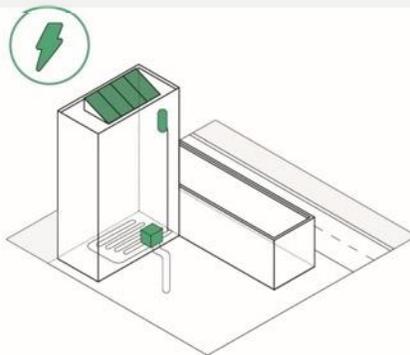
**ENERGY EFFICIENCY / RENEWABLE ENERGIES**
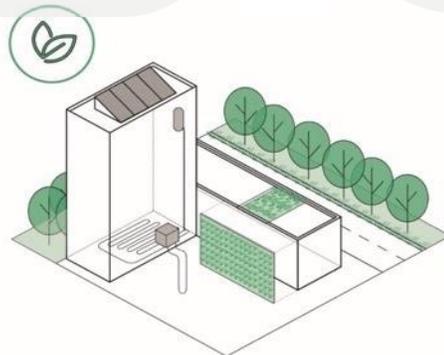
**RENATURALISATION**

**CARBON FOORPRINT REDUCTION**

# Air and climate plan

**ADAPTING to**
**1** Climate Change

Flooding
Extreme Heat

**Resilient Cities**
**Department**

Cliamate Change
**2** **MITIGATION**

Decarbonization
CO2 Storage

**Energy and**
**Climate Area;**
**AMAT**

**3** **AIR QUALITY**

Reduction of concentration
of Nox, PMx and Ozone

# Air and climate plan

**Focus 4 : Cool Milan** ❯

**4.2**
Urban cooling and reduction of the heat island effect in the city

**4.3**
Milan Sponge-City

# Piano Piantumazioni of Milan Municipality

Tree-planting Plan
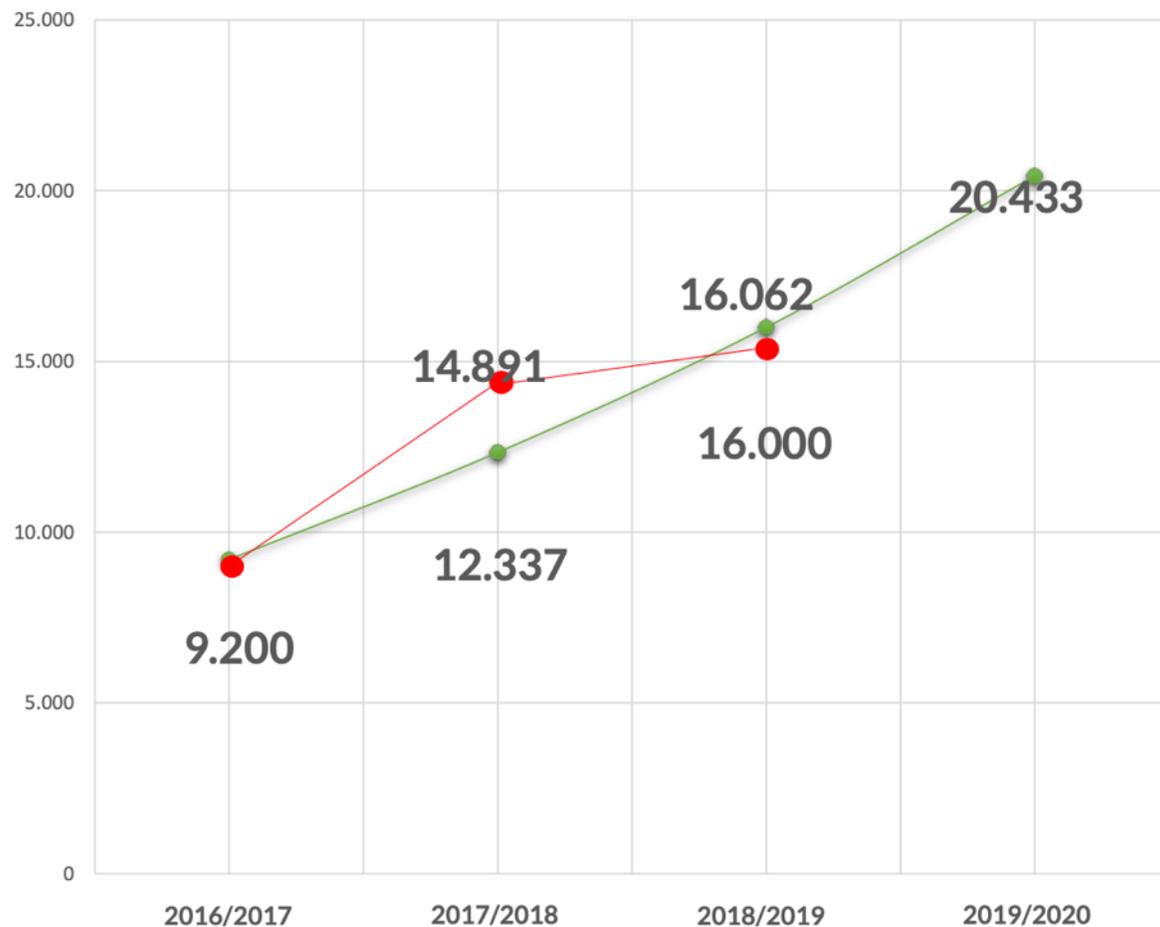


**+ 122%**

**in three years**

**2020/2021**

**27.721 plants**

**20.120 trees**
**7.621 shrubs**

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# Care and adopt public green

**Milan Municipality**

The City of Milan starts **collaboration agreements** or **sponsorship contracts with privates** to help the Administration to improve the green management in the city.

**Who?**
public or private, individual citizens, associations, condominiums, institutions, universities, schools, companies, stores, professional firms ...

➤ In ten years sponsorships increased by **900%,** from 50 to **504** green spaces given to privates
(update at 2019)

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# ForestaMI
## Forestry Program

Planting of **3 million trees by 2030** in the metropolitan area.
**+5%** increase in tree canopy cover
Absorption **of 5 million tons of CO2** per year

Shocks & stress
- Air and water pollution
- Heat waves and extreme heat
- Degradation of urban spaces

Memorandum of Understanding between:
Comune di Milano, Città Metropolitana di Milano, Parco Nord, Parco Agricolo Sud, con il coordinamento scientifico del Politecnico di Milano

Status
Ongoing (2018-2030)

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Forestami

**ForestaMi_**
# Focus on planting

**Schools**

**Productive areas - industrial**
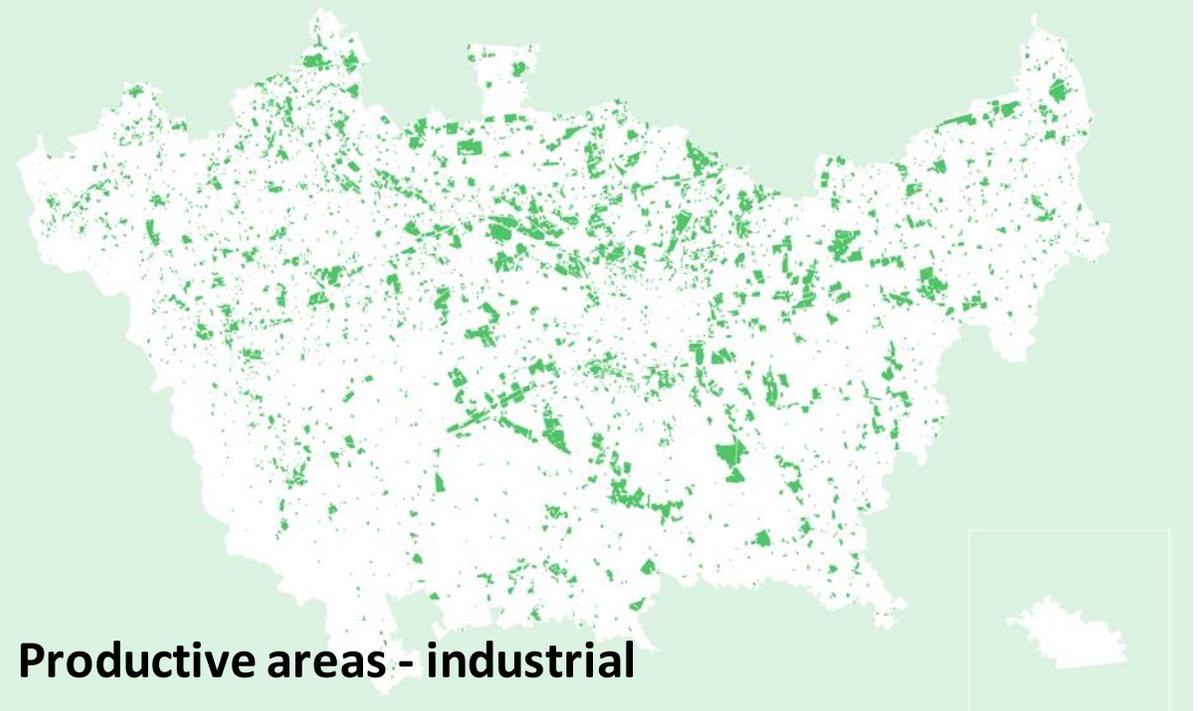
**Areas to be reclaimed**
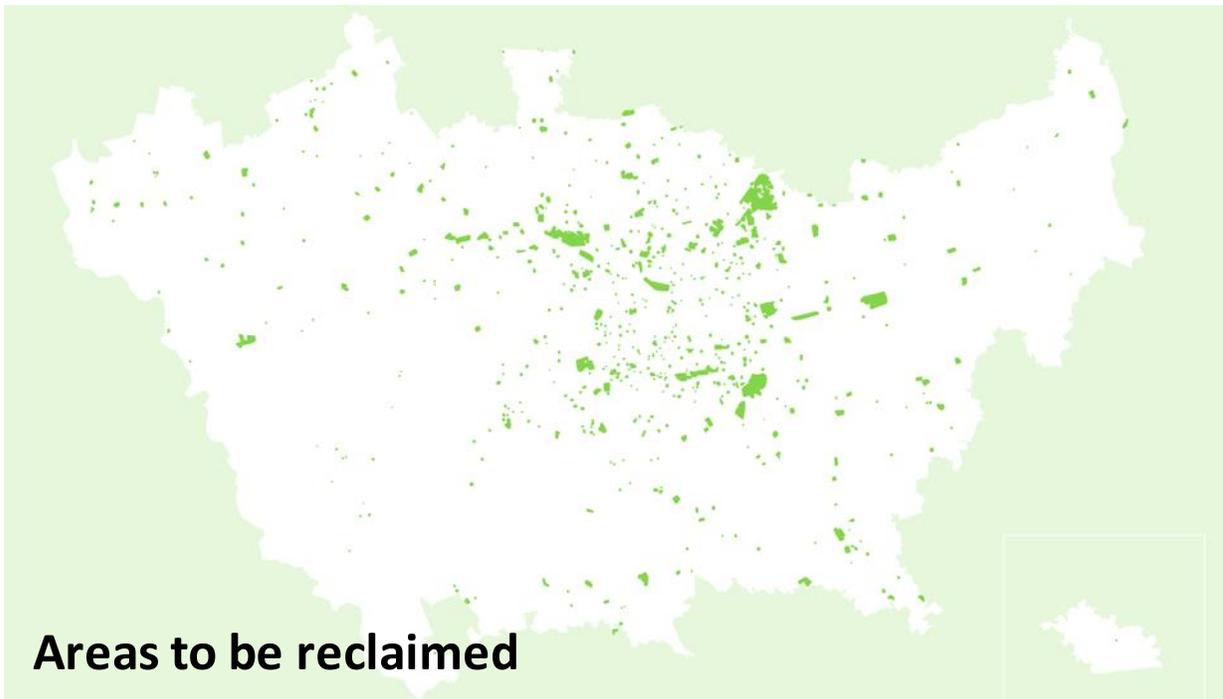
**Uncultivated green**
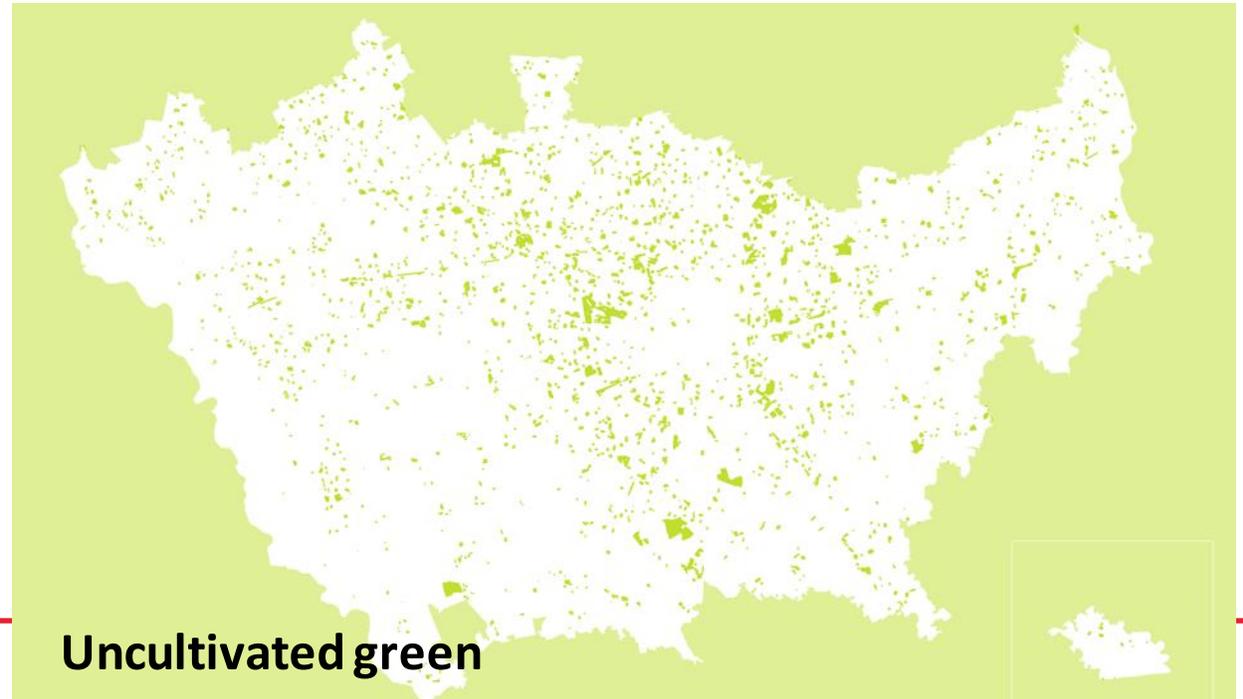
# LIFE VEG-GAP

## Vegetation for Urban Green Air Quality Plans



- Evaluation of **direct and indirect effects of vegetation** on **air quality**, **temperatures** and human **health**

- Identification of the **most suitable tree species** for the city of Milan according to the meteorological, climatic and air quality components.

Shocks & stress
- Air and water pollution
- Heat waves and extreme heat
- Degradation of urban spaces

Stakeholder
Comune di Milano, ENEA, ARIANET, CREA, Ayuntamiento de Madrid, Città metropolitana di Bologna, MEEO S.r.l., Universidad Politécnica de Madrid

Status
on-going (2018-2021)

# CLEVER Cities Milan



To keep heatwaves at bay and bring nature into the everyday lives of residents, the **CLEVER Cities Milan** team is advancing its plan to spread **green roofs and walls throughout the city**, while applying innovative business, finance and governance models to engage private actors in their design and implementation.

**CLEVER Cities aim to**:

- increase and improve **local knowledge of nature-based solutions**,
- demonstrate that **greener cities work better for people and communities**,
- contribute data and information to EU policy-making, and ultimately,
- **promote and enable the uptake of nature-based solutions** in urban planning world-wide.

# Sharing Cities

The Sharing Cities programme is a proving ground for a better, common approach to making smart cities a reality.

By fostering international collaboration between industry and cities, the project seeks to develop affordable, integrated, commercial-scale smart city solutions with a high market potential.

**District smart city development focus on:**
• Co-design: Citizen engagement in co-developing innovative services incentivising positive behaviour change
• Building retrofit
• Shared e-mobility
• Sustainable energy management service
• Urban sharing platform
• Smart lamp posts
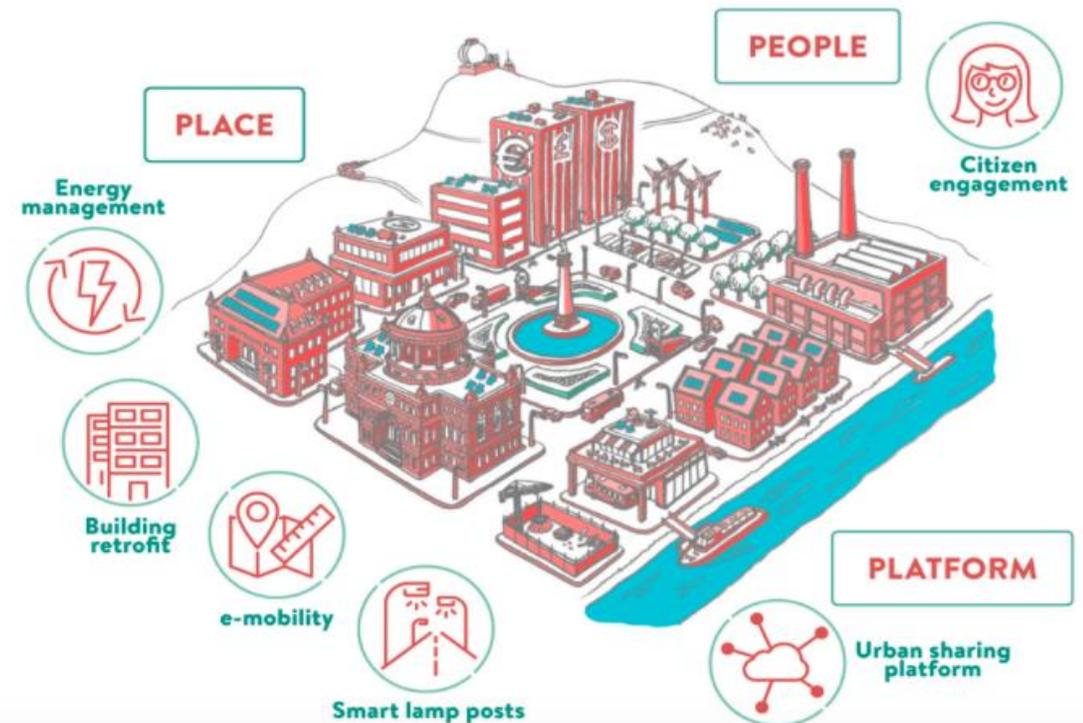
# Depaving Program

> **DEFINE A GOAL FOR THE DEPAVING PROGRAM** of the city of Milan

© **TO EXPERIMENT INNOVATIVE PROJECTS** of high environmental value, as pilot cases for the city.

Shocks & stress
- Degradation of urban spaces
- floods and inundations
- heat waves
- air and water pollution

Stakeholder
Direzione Generale, Dir. Transizione Ambientale, Dir. Urbanistica, Dir. Quartieri e Municipi, Dir. Mobilità e Trasporti, AMAT

Status
Ongoing

# Depaving Program

## Possible depaving areas

Tav. S03 PGT

**ca. 174.000 mq**

**+**

**mapping***

**ca. 278.000 mq**

> Total
> **ca. 452.000 mq**

> **Assignment of a depaving coefficient for each type of area**

> **ca. 249.000 mq** of possible new depaving areas

Mapping resulting from the identification of possible new depaving areas, identified with the City Council Departments, citizens, municipalities or associations. Still ongoing
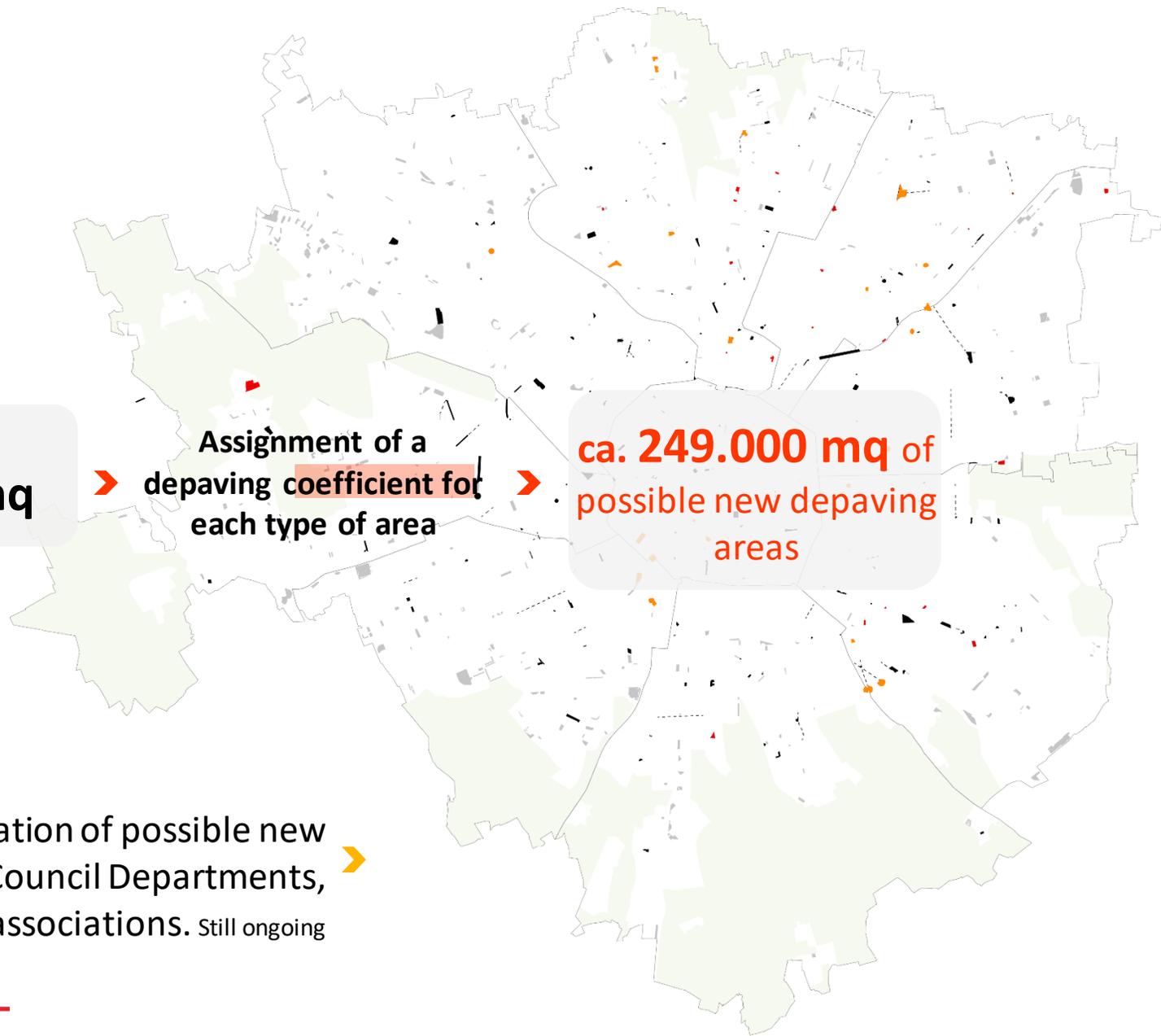
# City mapping and Geoportale

Milan Municipality is moving forward toward the use of **satellite data** and existing **database interaction**. This allows both a real time mapping of the city and it helps supporting **sustainable urban planning and design**.

The advantage of Geoportale tool is being open source and accessible both to **Administration and citizens**.

**Mapping Tool**
The tool collects a set of layers on a map, and is conceived as a **strategic tool** for analysis at the urban scale for internal use of the Administration, both for the **prioritization of interventions** and the identification of **opportunities/criticism**.