

# LIFE Programme's contribution to climate action: the experience of Italian projects

Side event at COP28 UAE  
Italian Pavillon  
Dubai, 9 December 2023



Climate change: A global phenomenon to address locally.  
Enhancing climate change adaptation strategies and measures in the Metropolitan City of Milan



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Metropolitan City of Milan



## Starting points

### Paris Agreement of 12 December 2015 – COP 21

The 197 member states of the United Nations Framework Convention on Climate Change adopt what is known as the first universal and legally binding understanding on climate change.

**Common goal:** to contain the increase in global average temperature well below the threshold of 2°C above pre-industrial levels in the long term, and to limit this increase to 1.5°C.



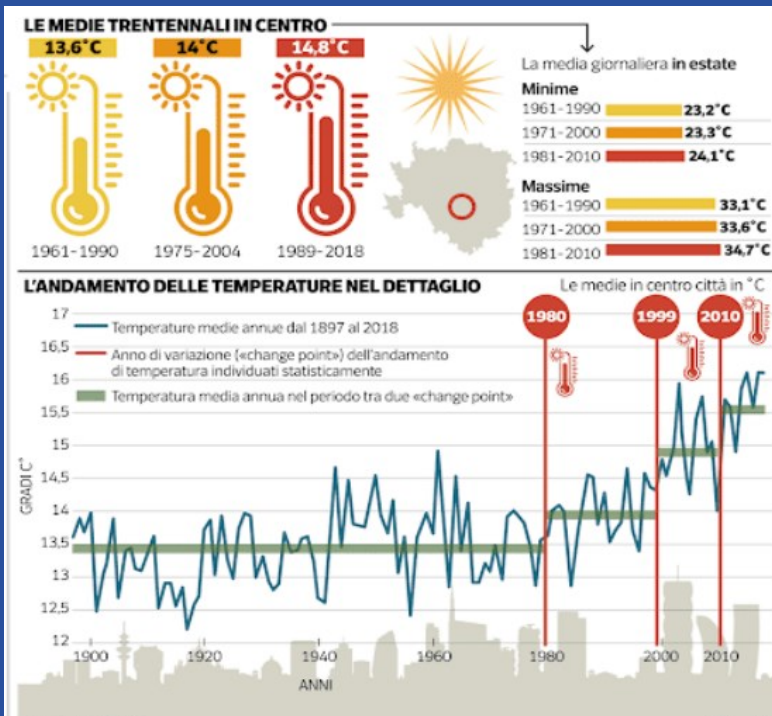
ROLE OF METROPOLITAN CITIES



## Starting points

Milan climatological situation, with ever-closer average temperature change points

Increasingly accurate, shared and free territorial knowledge systems.



## ROLE OF METROPOLITAN CITIES

Decision support systems for the entire territory





## Climate change is «glocal»

Def. - vision, which focuses simultaneously on the global or planetary dimension and the local dimension.

Global warming is not just about melting icebergs or expanding deserts. It is also something that happens in our own backyard.

Rising global temperatures cause phenomena that have a costly impact on basic city services and health.

At the same time, cities are major contributors to climate change, as urban activities are the main sources of greenhouse gas emissions.

Only with a coordinated global and local approach and action can success be achieved. It is therefore essential to make cities an integral part of the solution to combat climate change.



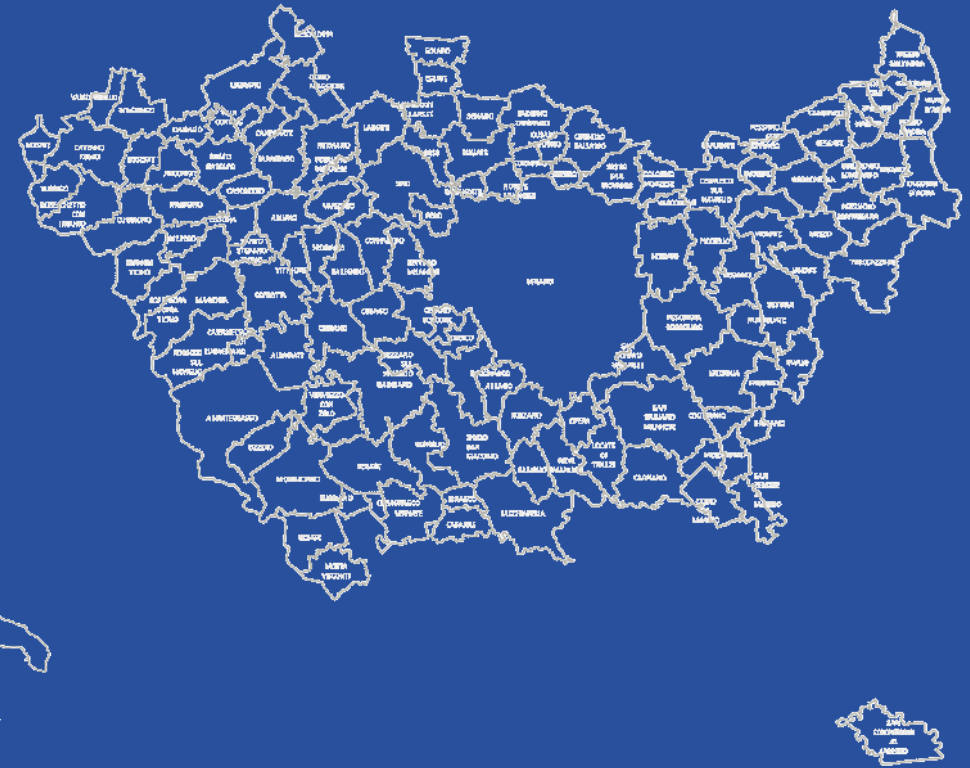
# METROPOLITAN CITY OF MILAN

The entity Metropolitan City of Milan

1 PUBLIC ENTITY

7 HOMOGENEOUS ZONES

133 MUNICIPALITIES



The Metropolitan City of Milan is an intermediate territorial entity that was established in 2015, replacing the province of Milan, to better manage the common interests of the area and allocate resources more quickly and efficiently.

3.284.000

Residents

2.038

Residents /km<sup>2</sup>

41% Built-up areas and infrastructure



50% Productive agricultural areas



8% Areas woodlands

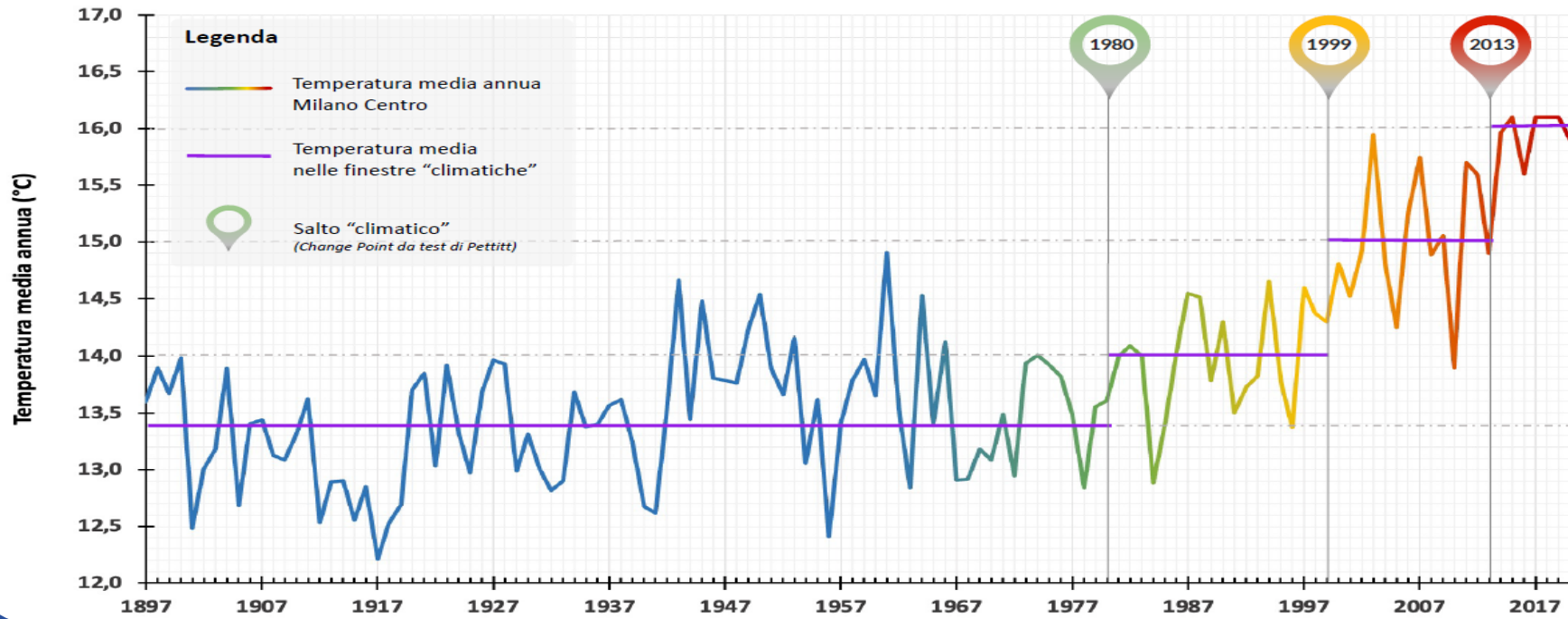


**FUNCTIONS** assigned are aimed at achieving **coordination** of the territory both at the level of planning and infrastructure but also economic and social development.

### MAIN TASKS

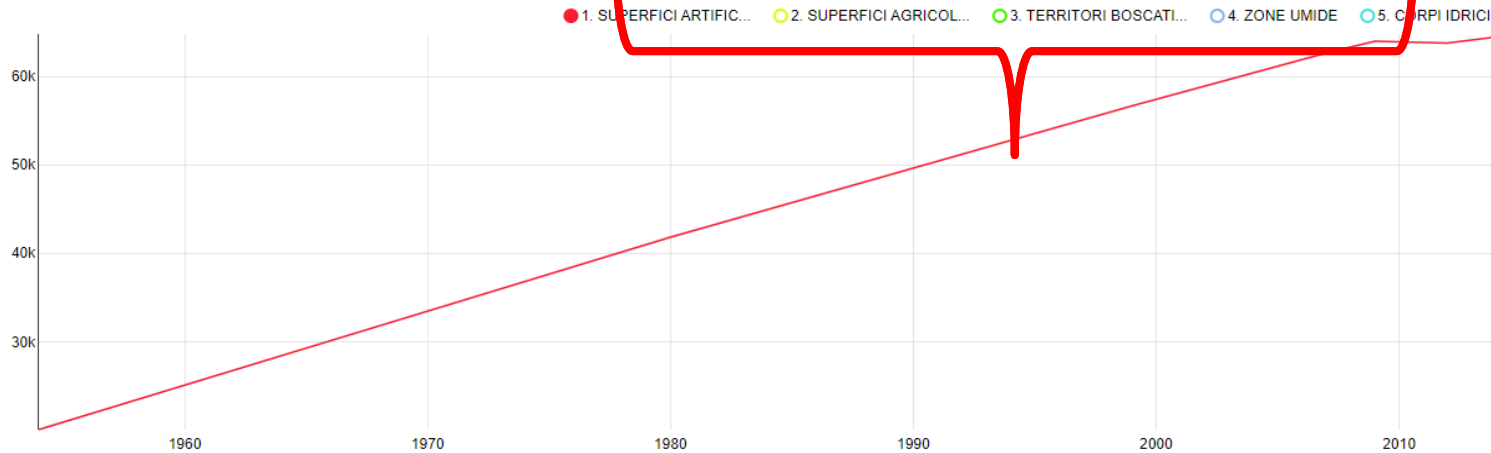
- Spatial and strategic planning
- Land Mobility and roads
- Land and environmental protection
- Economic and social development

In order to exercise these functions, the entity has been organized into **directorates, areas and sectors**. These include the Environment and Land protection Area which has been entrusted with the construction of the Metropolitan Agenda for Sustainable Development.



**Average annual temperatures in Milan city centre over the last 120 years**

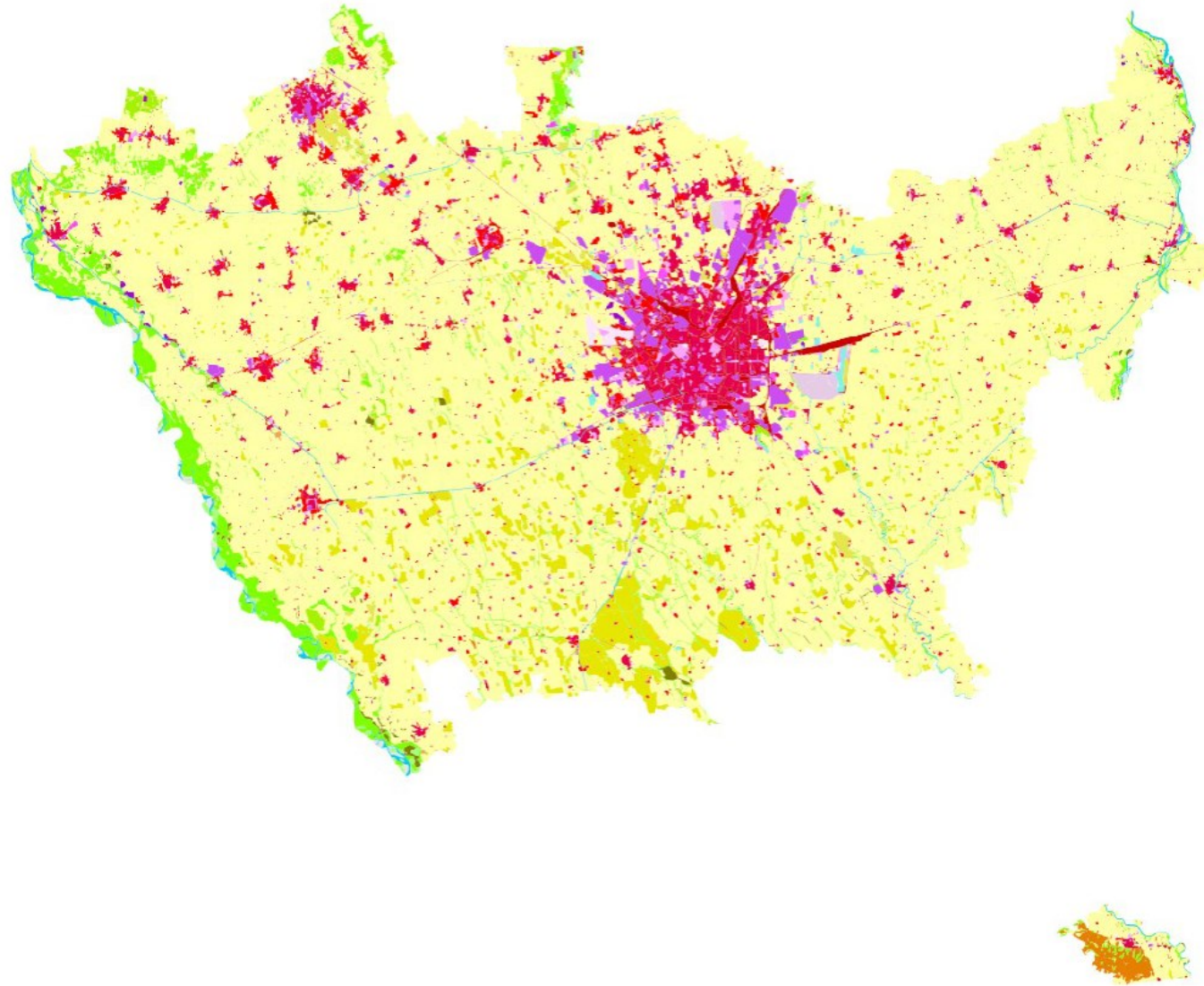
evoluzione storica dell'uso del suolo DUSAF al livello 1 dal 1954 al 2015



**Urbanised area**

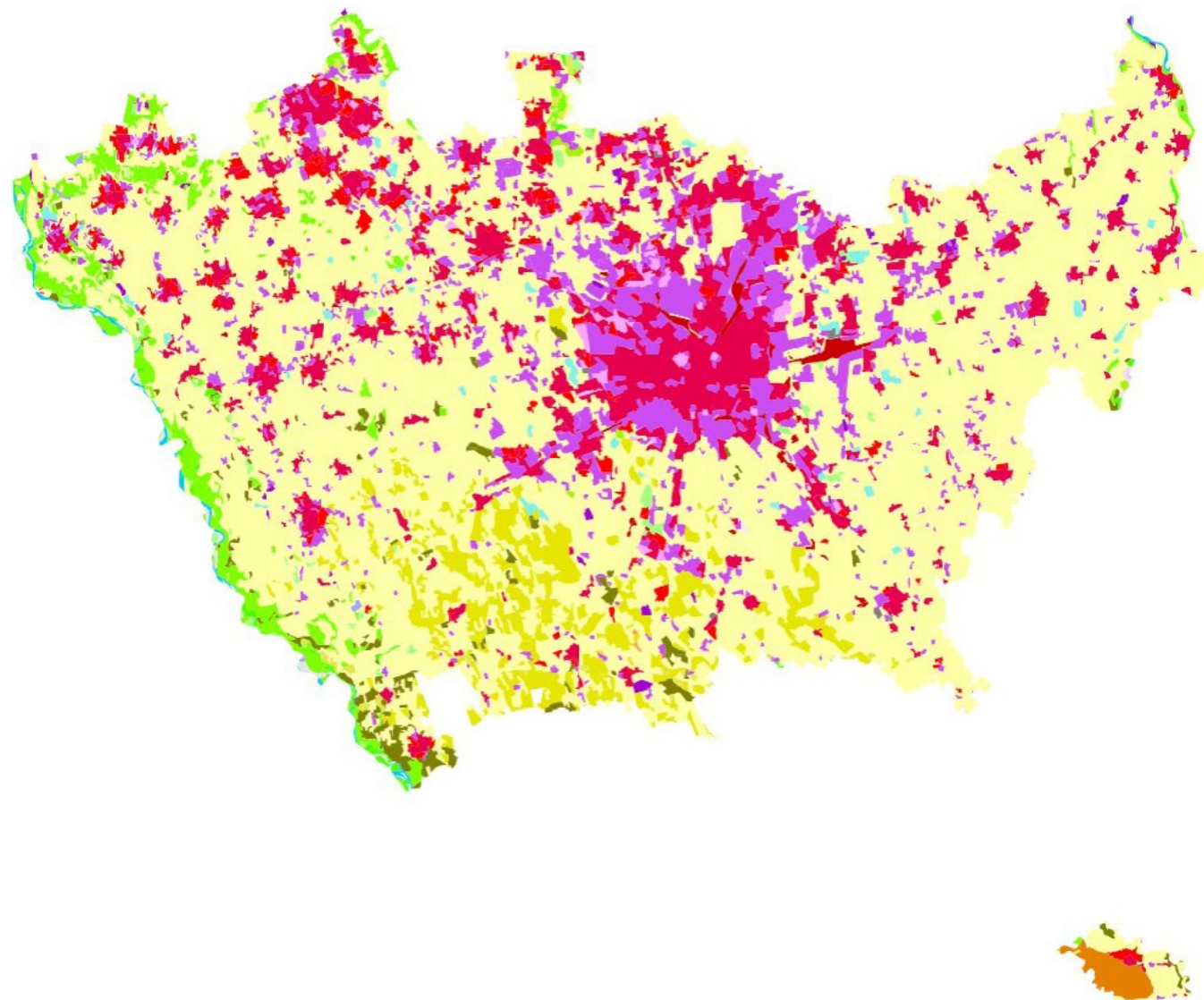


1954

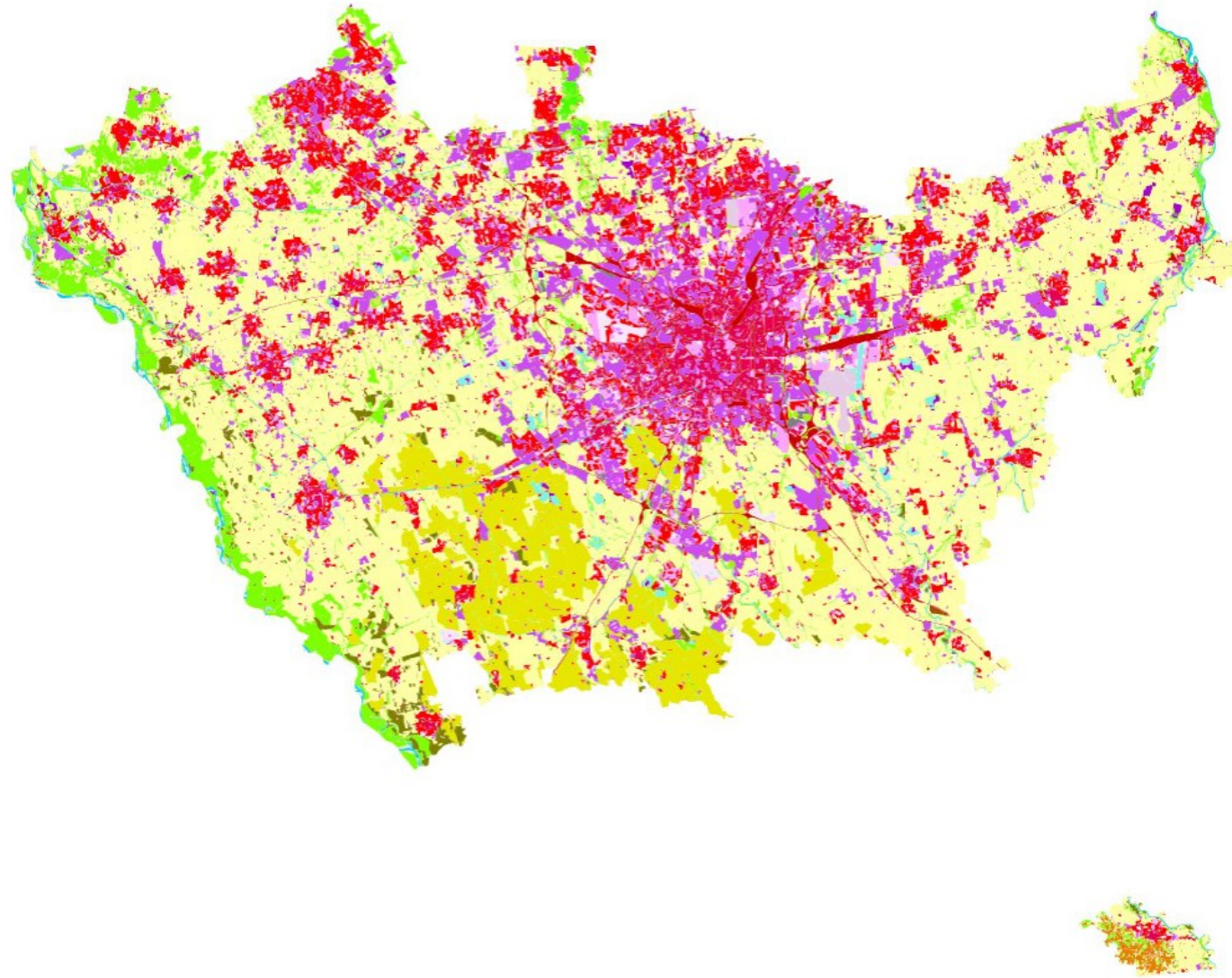




1980

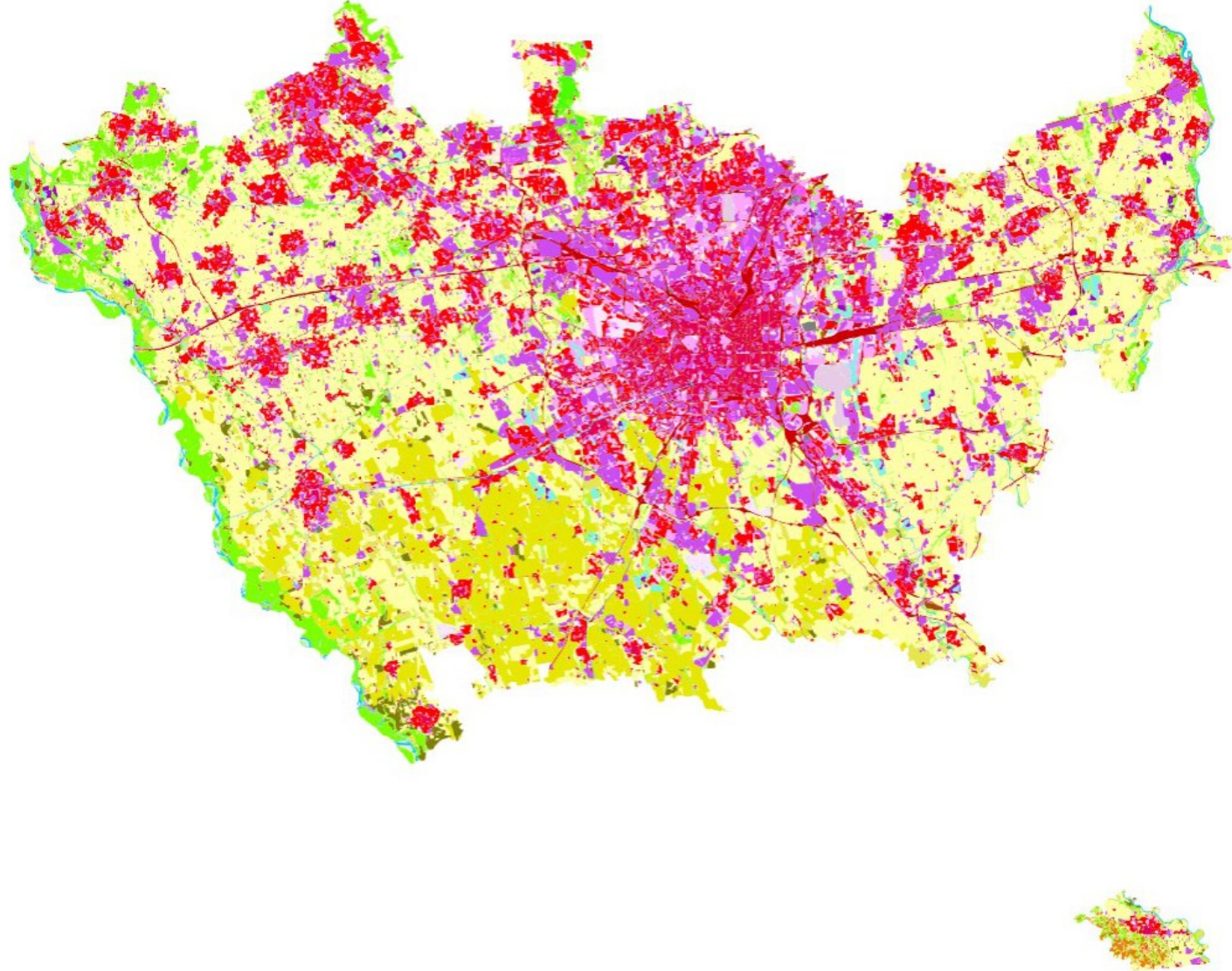


1999





2015





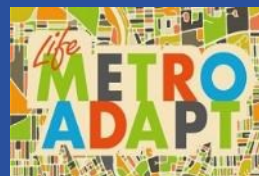
## Starting point in MCM: The problems

In MCM we have this situation:

- long dry periods and severe flooding when there are intense rainy weather phenomena
- overheated urban parts with consequent social, health and energy consumption problems
- increasing loss of biodiversity
- high land cover use



To understand the severity of these phenomena and to learn about measures to reduce the vulnerability of the area, we resorted to extraordinary projects by seeking extraordinary financial resources.



# Life METRO ADAPT

## When?

Between 3rd September 2018 and 30th September 2021

## What is Metro Adapt in short?

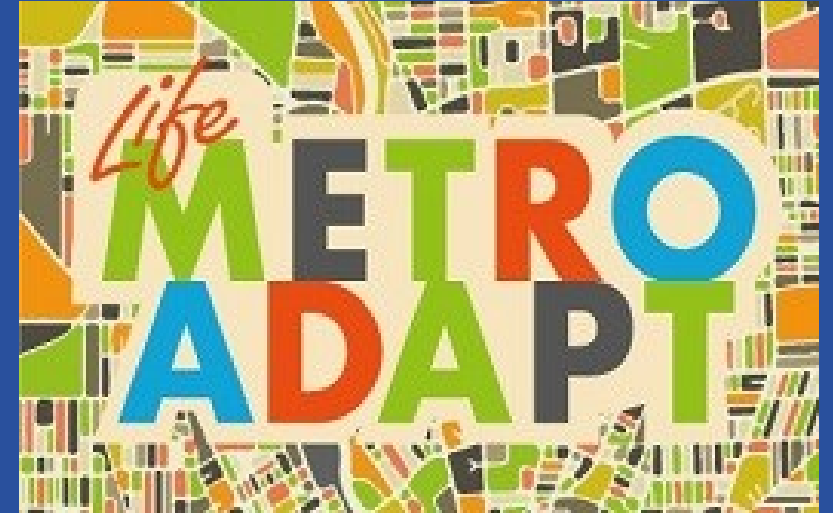
Metro Adapt aims at mainstreaming climate change adaptation strategies in the Metropolitan Area of Milan (CMM). More specifically, the project aims at fostering the creation of a common well-structured governance related to climate change adaptation among the local authorities and produce tools that allow local authorities to implement cost-effective climate change adaptation strategies and policies adapted to the local context.

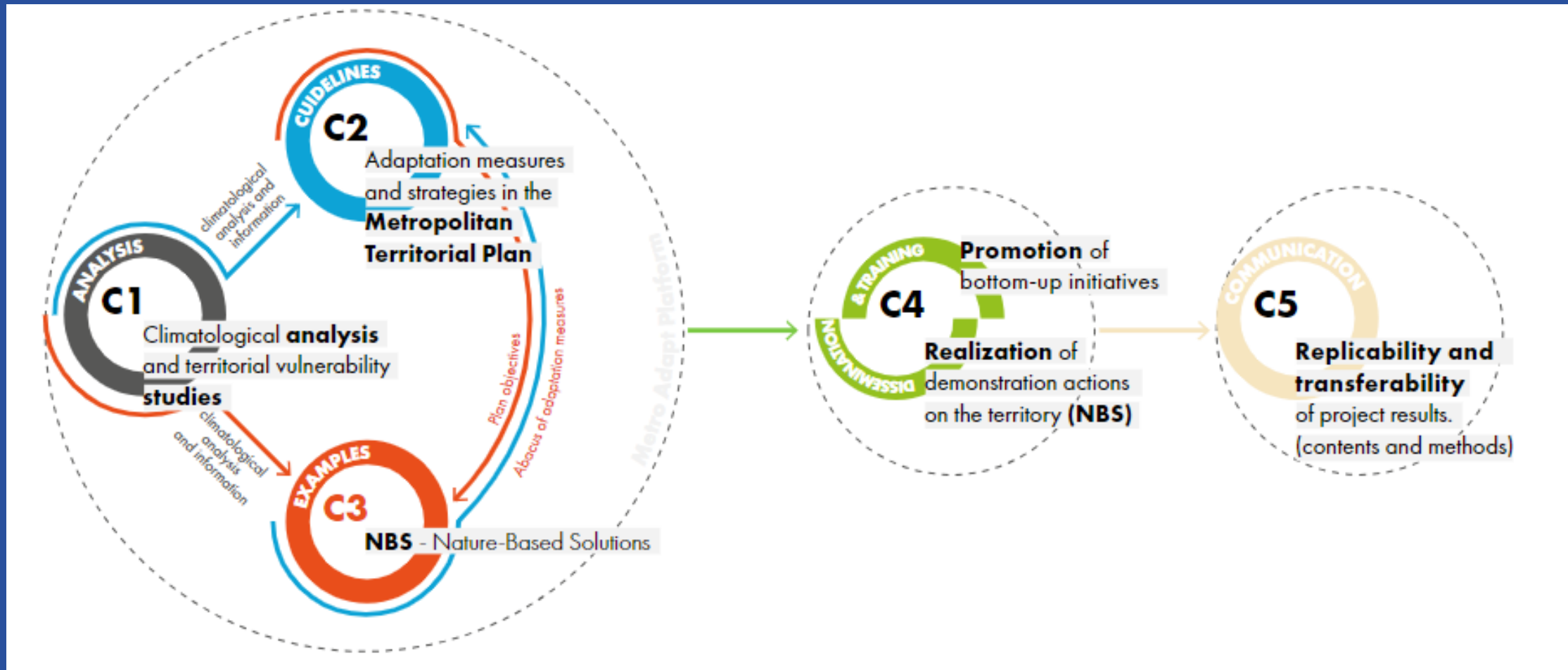
## DONORS

European Commission – Executive Agency for Small and Medium-sized Enterprises (EASME).

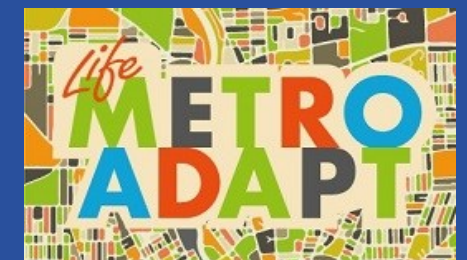
## PROGRAMME

Programme for the Environment and Climate Action (LIFE).





# Life METRO ADAPT: outline of project actions







## Analysis of climatic factors in the territory

Calculating risk

CMM mainly studied two variables :

Thermal anomalies

Potential rainwater runoff

An analysis of the area was based on these to highlight climatological risks



# Thermal anomalies

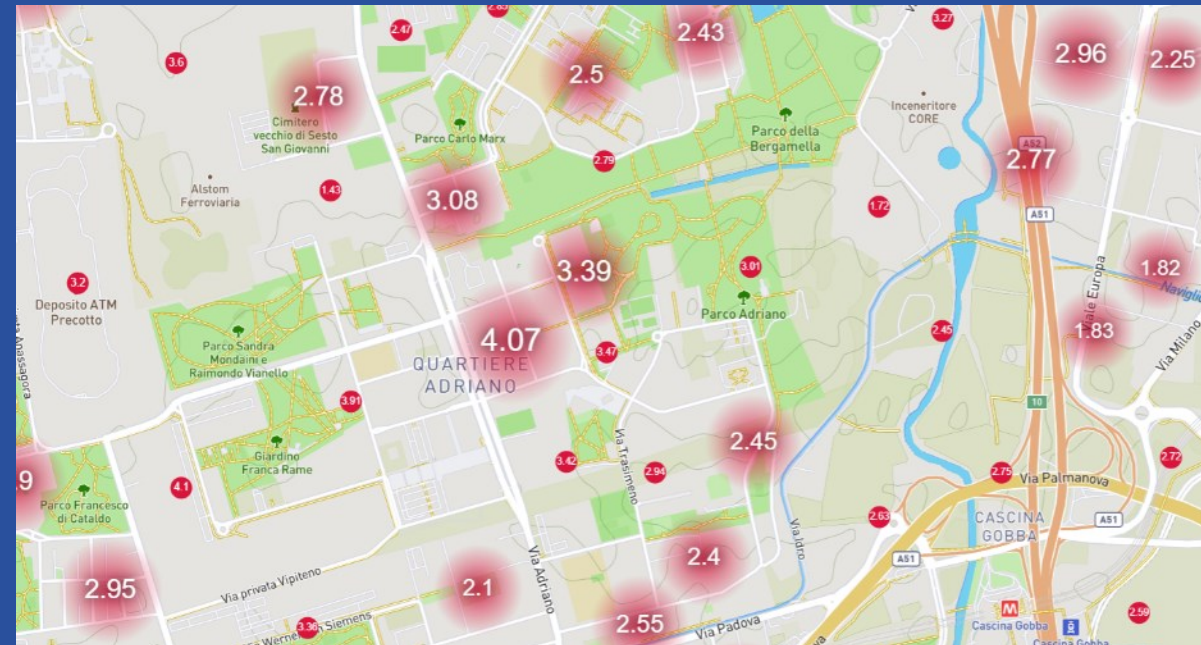
The phenomenon of urban heat islands, i.e. urban areas where heat disperses with greater difficulty, analysed by climatologists on a global scale, is also being studied in the Metropolitan City of Milan.

By analysing four summers, an average minimum night temperature was established. Positive variations from this reference temperature are referred to as 'thermal anomalies'.



All metropolitan city

30 metres

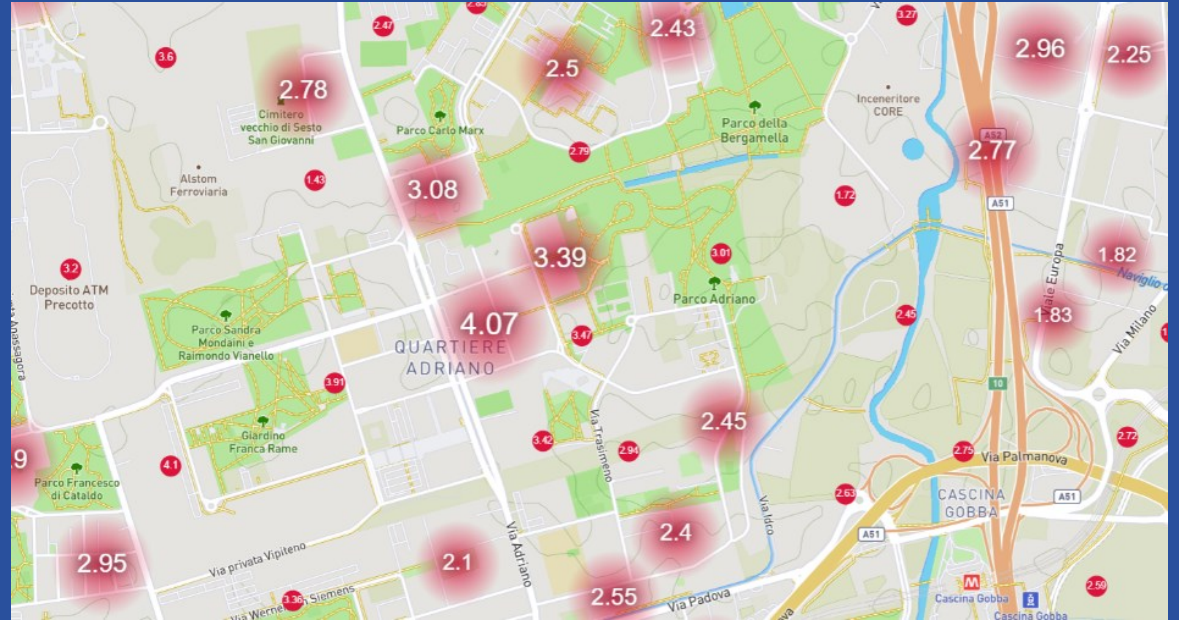


# Risk for the population

The susceptible population corresponds to the number of people under the age of 9 and over the age of 70 who, according to the World Health Organisation, are the most health-sensitive demographic groups.

Risk Index relates the sensitive population to the presence of heat anomalies. Census sections are identified in which there is a high density of sensitive population in whose territory heat islands are most significant.

The figure is expressed from 1 to 5 where 5 is the class in which the risk is greatest in CMM.





## What is the phenomenon of runoff?

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Using the definition from hydrology

Surface runoff is the phenomenon that occurs when, especially after heavy rainfall, rainwater can no longer penetrate the ground, flowing over the soil surface and possibly causing damage.



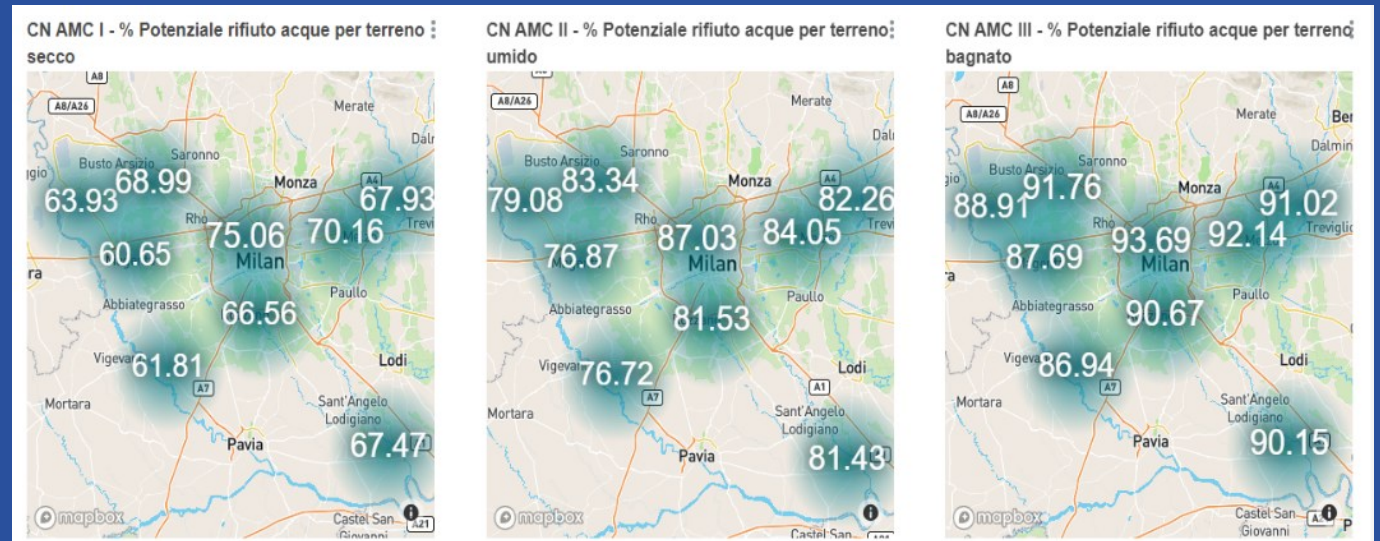
# Potential Run-off

## Hydraulic risk calculation

The capacity of the soil to retain rainwater was taken into account, based on soil use/cover and soil characteristics. The value calculated here, and mapped, estimates the volume of rainwater potentially runoff following a rain event.

Potential runoff was calculated according to the Soil Conservation Service (CN-SCS) method of the U.S. Dept. of Agriculture, Soil Conservation Service, 1972 al Politecnico of Milan (2020).

### Average theoretical response to rain 2018



**71%**

**85%**

**92%**

**Percentage of water not directly absorbed by the land**

# Strategies for adaptation



**Agenda Metropolitana Urbana  
per lo Sviluppo Sostenibile**





# Metropolitan Agenda for Sustainable Development

In the Metropolitan sustainable development agenda, approved in late 2022, we included the **Resilient Trajectory**.

The objective is to make the metropolitan territory capable of managing extreme climatic events through the implementation of widespread and technologically advanced interventions, paying attention to the impact not only on the environment but also on social vulnerability.

This is achieved through a number of pivotal actions:

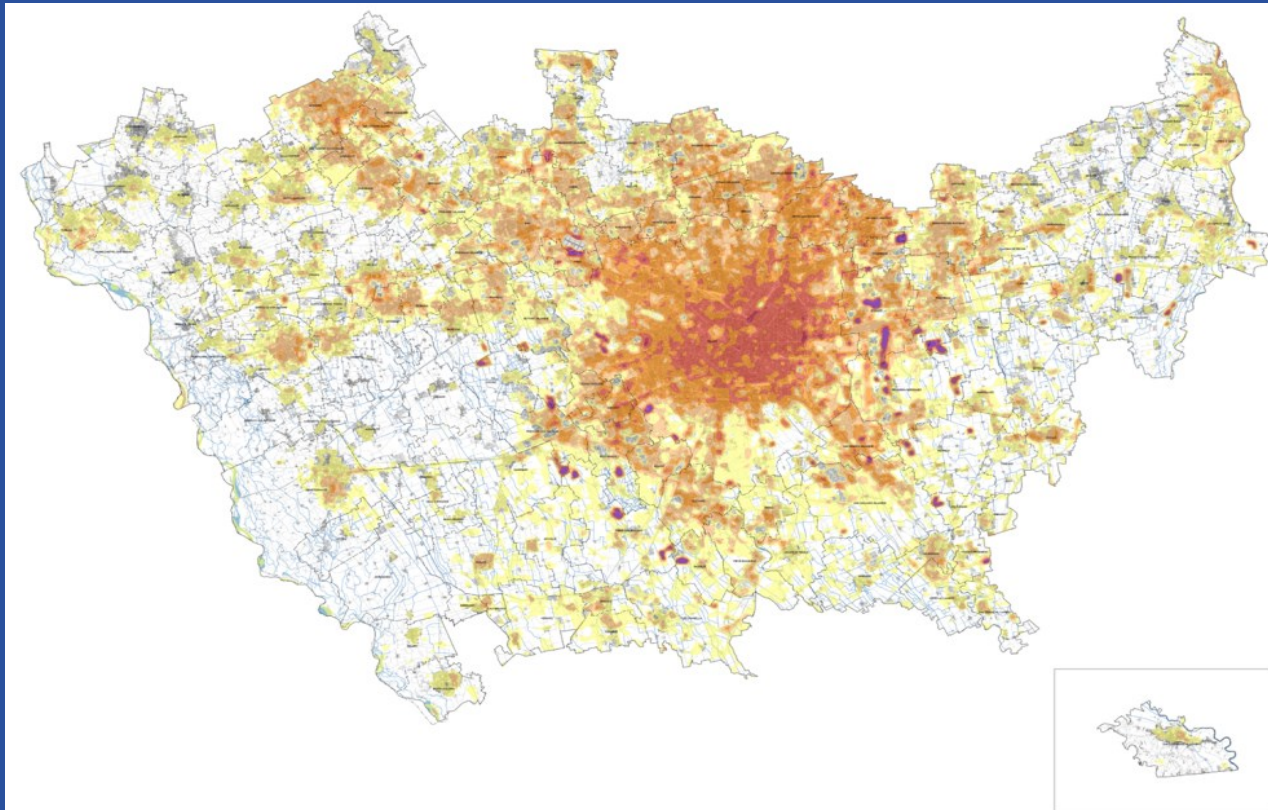
- Metropolitan Sponge City Strategy
- Research and Development
- Use of Nature Based Solutions



## Metropolitan Territorial Plan: what is it?

The MTP is the overall territorial plan of the Metropolitan City of Milan.

For the first time in Italy, we designed a **territorial plan for large areas contening an innovative part dedicated specifically to the government of environmental emergencies** with a specific section reserved to climate change that includes rules enhancing resilience measures in the local planning tools.



Climate Change Life Metro  
Adapt Analisis

Urban Heat Island

Water Run  
Off

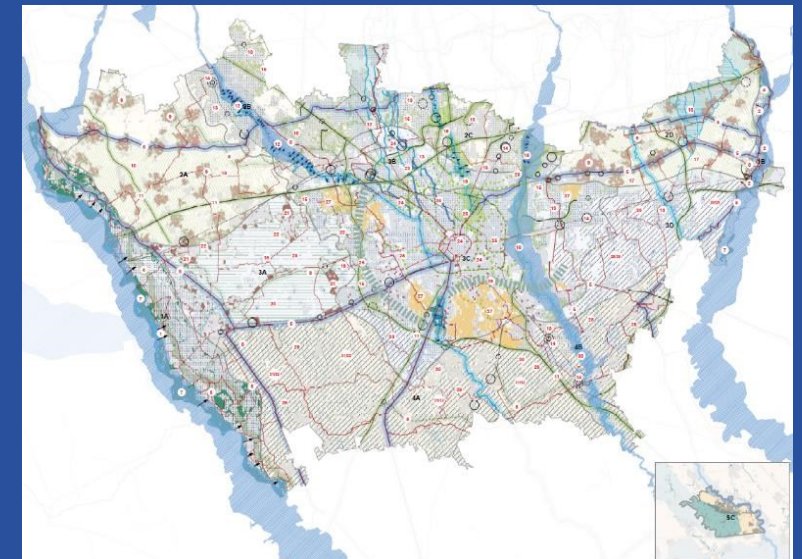
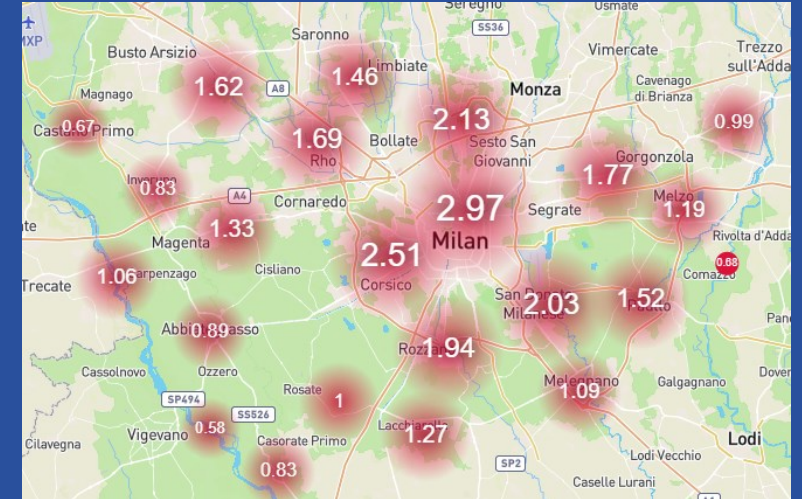
## MTP and climate change : legal rules for Municipalities

Municipalities with areas with night values exceeding the reference value considered in the “**map of thermal anomalies**” by at least 3 degrees centigrade are required to develop a specific action to reduce this thermal anomaly.

For these areas the **MTP provides guidance on the actions that Municipalities have to implementate to mitigate the thermal anomalies** and to integrate in municipal plans and regulations.

The Metropolitan Green Network project is based on the intrinsic characteristics of the different metropolitan landscapes, their structure and functions.

Specific planning priorities are defined for each part of territory. The planning priorities are articulated in actions to be implemented with the priority use of Nature based solutions.





# Nature Based Solutions

## Nature Based Solution in a nutshell

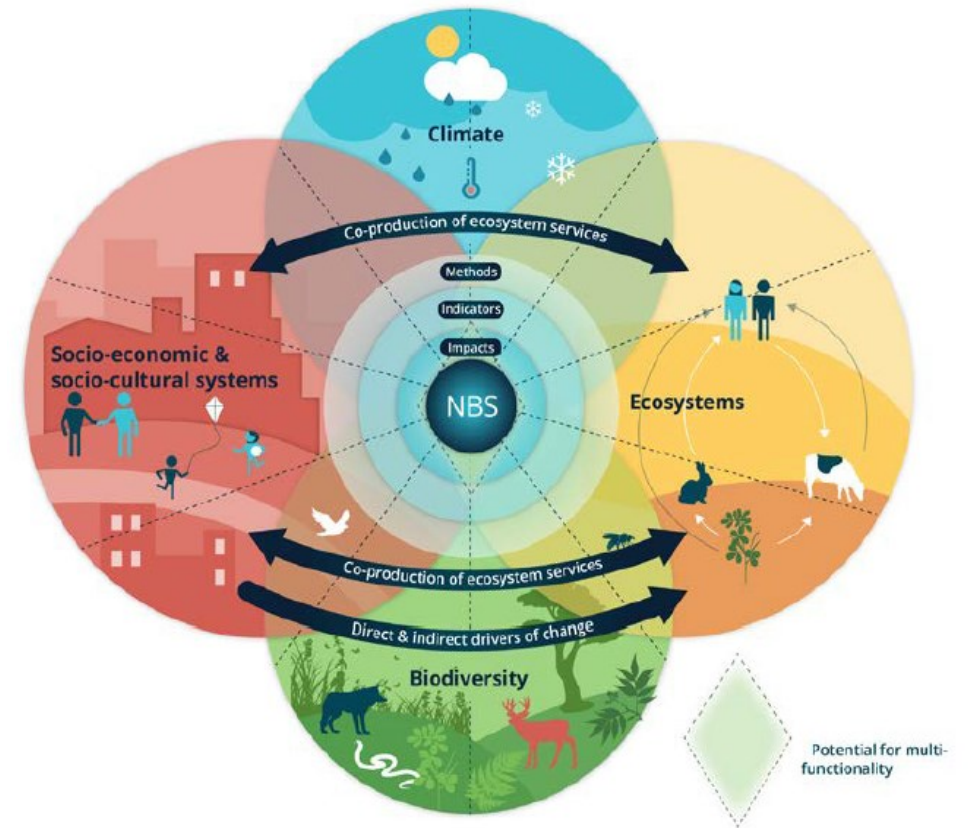
These are solutions with characteristics of **complex ecosystems** that use or are inspired by nature's processes.

They have the ability to bring the characteristics and processes of nature into urbanized environments.

They use nature as a technical instrument.

They are **multi-objective solutions: climatological environmental, social, economic.**

Using natural flows of matter and energy, they tend to be low-resource solutions that, if developed properly, can be more efficient than others.



# Nature Based Solutions

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Metropolitan City of Milan has selected for its territory an NBS system that is applicable and useful in urban settings in a Po Valley and Mediterranean context such as ours.

Vegetated canals  
Vegetated bioretention areas  
Detention basins  
Permeable pavements  
Vegetated walls  
Greened street furniture





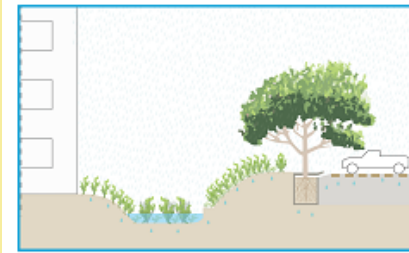
# Milan metropolitan Area

## Solutions implemented



The challenge for metropolitan cities has been to find NBS systems that fit into an already highly built urban environment.

We chose NBS structures that could be integrated with historic and urbanized centers, to transform them while maintaining their use and function.



**GESTIONE  
ACQUE**

MISURE DI ADATTAMENTO



**VERDE  
TECNICO IN  
AMBIENTE  
COSTRUITO**

MISURE DI ADATTAMENTO



**VERDE  
URBANO A  
SUOLO**

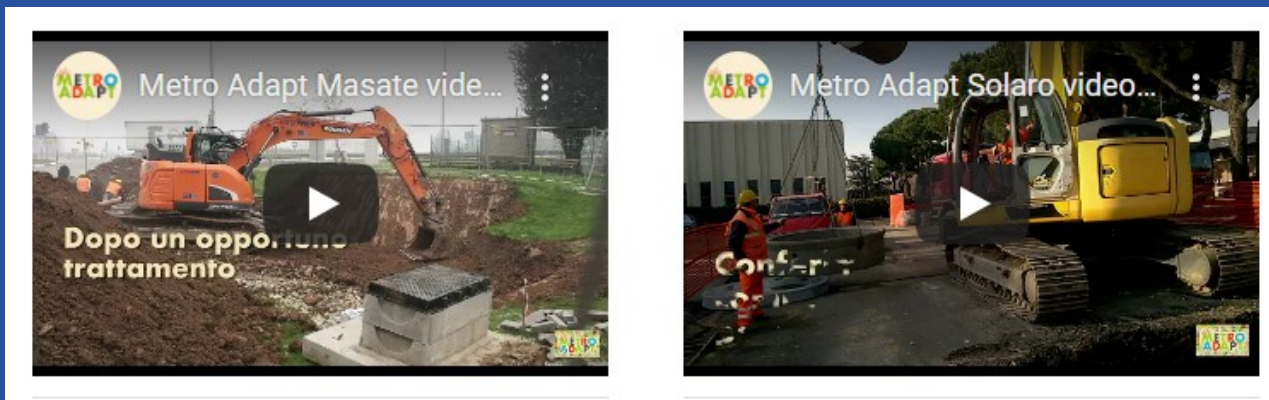
MISURE DI ADATTAMENTO



# Overcoming uncertainty and barriers to adoption of Nature Based Solution in an urban context

## Tools:

- Catalog of 20 NBSs that can be used in the urban area.
- Analysis and feasibility studies of Nature-Based Solutions.
- Construction of 2 demo sites in small municipalities in the metropolitan city in order to make the territory more resilient to storms. Development of these projects with Gruppo CAP, the investee company of municipalities and metropolitan city that manages the Integrated Water System on behalf of the territory.



# Partecipazione

## Climate Knowledge Network

9 organisations represented  
15 meetings

4 meetings  
On climate change adaptation in urban areas  
(75 municipalities)

8 meetings preparatory to the approval of the PTM  
(133 municipalities)

## 7 workshops

For citizens to raise awareness of project issues  
(406 people)

9 theatre performance  
(1191 people)

## 3 webinar

Project dissemination in European countries

2 workshop  
With other European metropolitan cities  
(110 people)

## 3 workshop

With other Italian metropolitan cities

## 3 training online

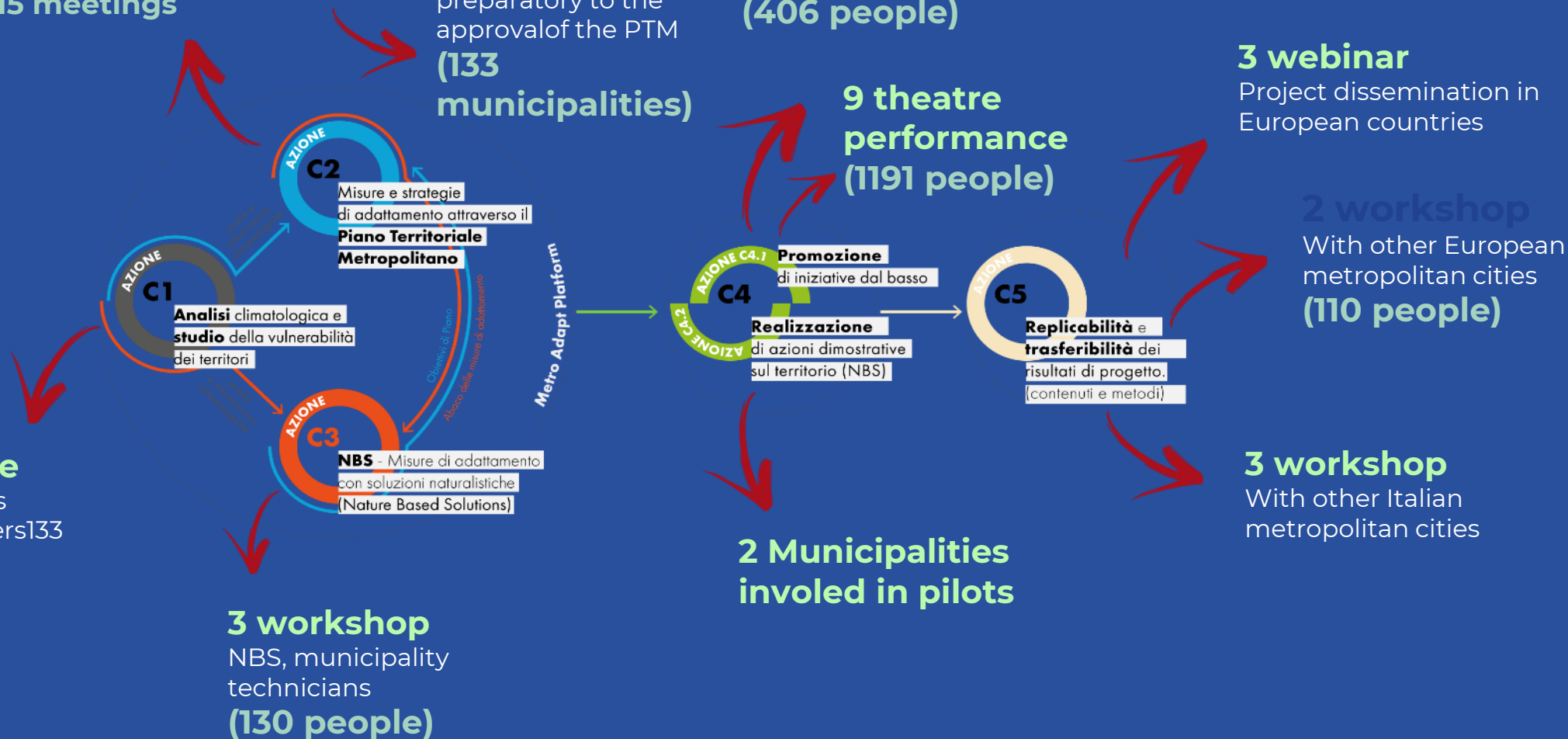
1. CMM technicians
2. Order of Engineers 133
3. Municipality Technicians

(120 people)

## 3 workshop

NBS, municipality technicians

(130 people)





# Life Metro Adapt Legacy



# If you want to replicate

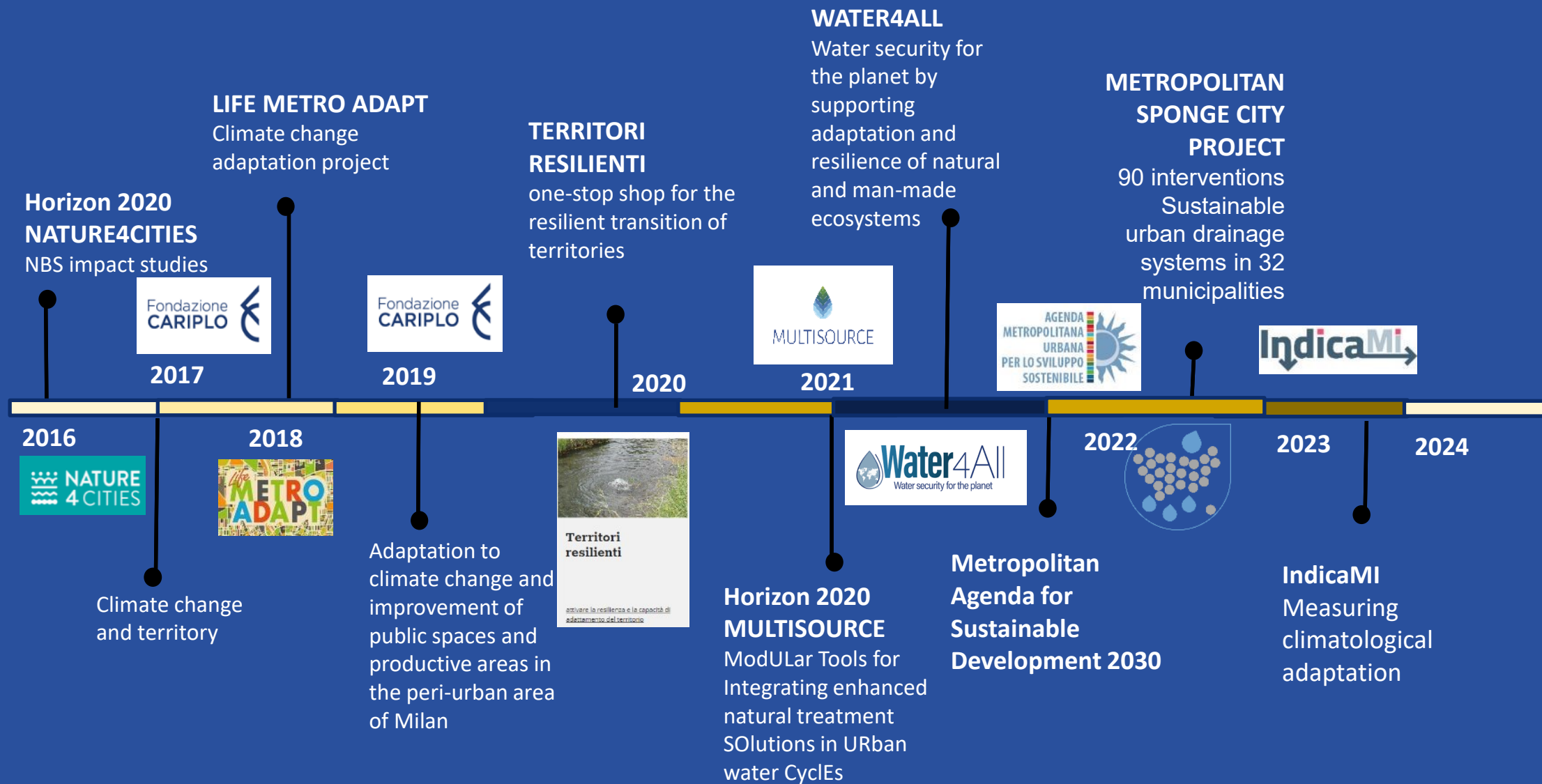
We realized a support tool for creating and evaluating an urban adaptation plan.

This is divided into 6 general steps, which are the basis for creating an adaptation process in line with local and municipal urban planning.

The proposed process is based on already-available information and guidelines to generate more useful information which can then be used to determine critical issues and establish planning and monitoring mechanisms to face Climate Change-related challenges, starting from local adaptation plans.

This tool also aims to increase awareness and understanding of problems related to climate change within urban areas, and to gain further support for adaptation from local authorities.





We have been working on this topic for a long time now, and we need to continue to consistently work in this direction in the future



# Sources of founding

From Bruxelles to Masate

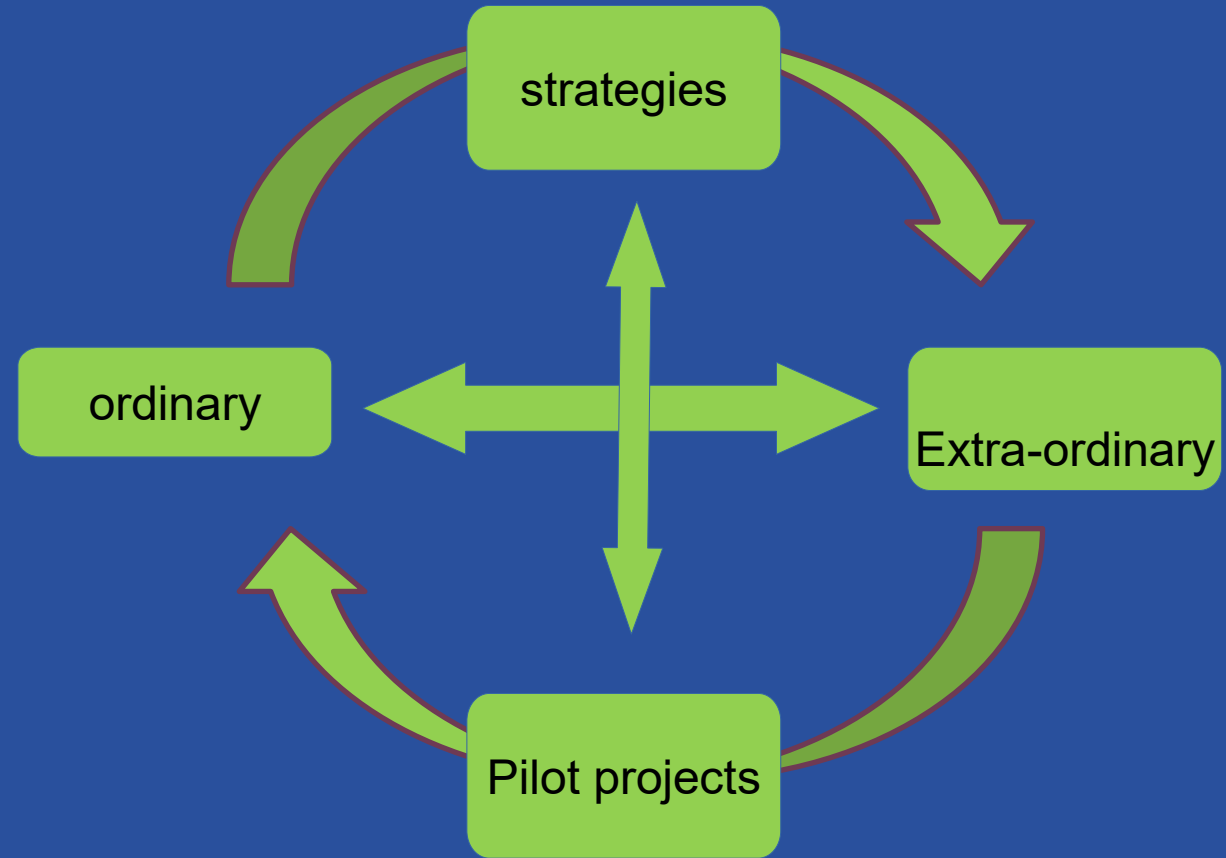
24 Projects Presented in 8 years

16 Won and Managed Projects

Project budget 70,000,000€

Budget brought directly to CMM  
1,800,000€

International Partners 185



# National Recovery and Resilience Plan

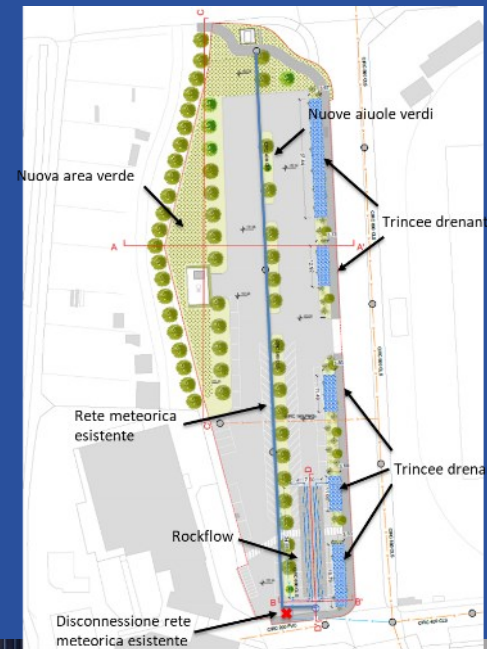
## example of use of funds



90 construction sites  
32 Municipality  
Construction sites opening: november 2023  
End march 2026  
Budget 51 milioni €

12 squares  
50 car parks  
2 sports areas  
1 paved road  
25 disconnected roads

2.000 new trees  
12 tons of oil equivalent saved every year



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Thank you for your attention



Cinzia Davoli

Metropolitan City of Milan

Linkedin: Sustainable development and decision support system service