

Strategie e misure di adattamento al cambiamento
climatico nella Città Metropolitana di Milano

Enhancing climate change adaptation strategies and measures in the Metropolitan City of Milan

18th July 2021

Marco Bernardi



The LIFE Programme

The **LIFE** programme is the EU's funding instrument for the environment and climate action created in 1992.

Two sub-programmes:

LIFE sub-programme for Environment:

- Environment & Resource Efficiency
- Nature and Biodiversity
- Environmental Governance & Information

LIFE sub-programme for Climate-Action:

- Climate Change Mitigation
- Climate Change Adaptation
- Environmental Governance and Information



LIFE17CCA/IT/000080



Strategie e misure di adattamento al cambiamento climatico nella Città Metropolitana di Milano



LIFE METRO ADAPT – Climate Change Adaptation



Climate Change Adaptation Measures and Strategies in Milan Metropolitan City

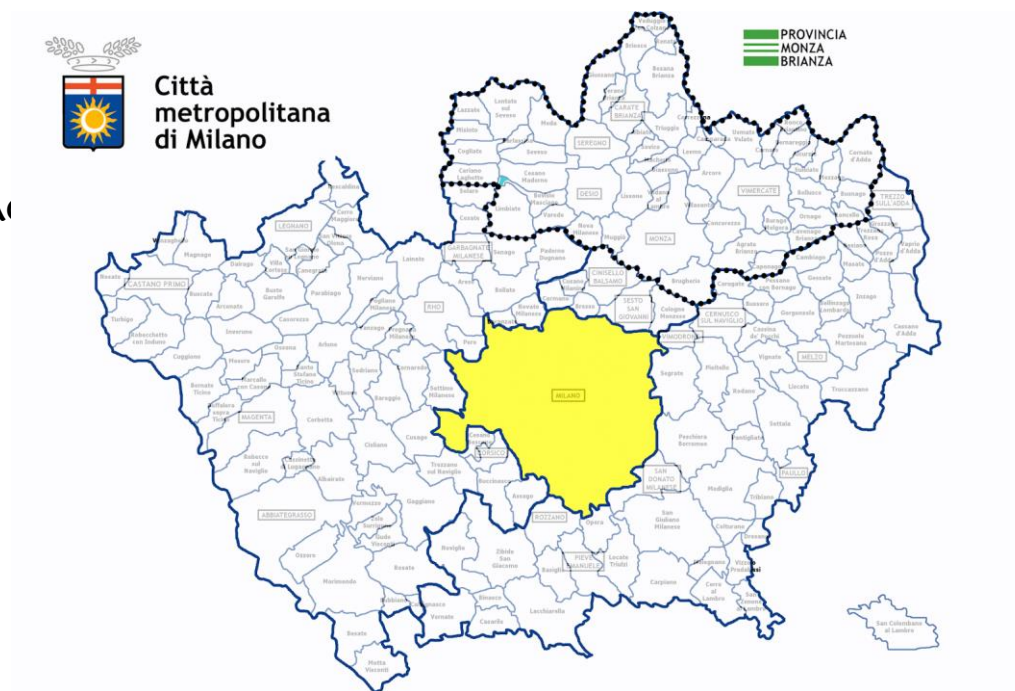
Sub-programme: Climate Action

Priority area: Climate Change Adaptation

Duration: 36 months (September 2018 – June 2021)

Leader: Metropolitan City of Milan

Territory of Interest: Milan Metropolitan Area



For further information please consult the Project website: <https://www.lifemetroadapt.eu/en/>



LIFE17CCA/IT/000080



Strategie e misure di adattamento al cambiamento climatico nella Città Metropolitana di Milano



Project Partners



Città
metropolitana
di Milano

AMBIENTEITALIA
we know green



LEGAMBIENTE

GRUPPO **CAP**

alda 
 European Association
for Local Democracy

e-geos
AN ASI / TELESPIAZIO COMPANY



LIFE17CCA/IT/000080



GRUPPO **CAP**

AMBIENTEITALIA
we know green

alda 
 European Association
for Local Democracy

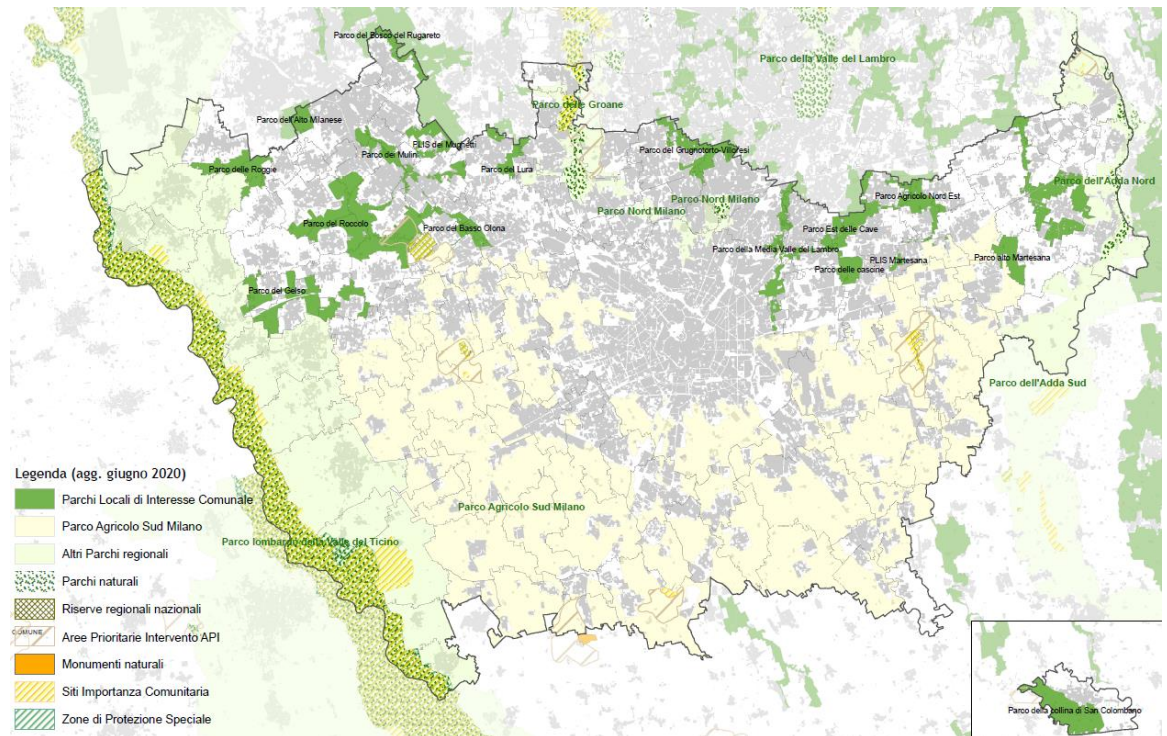
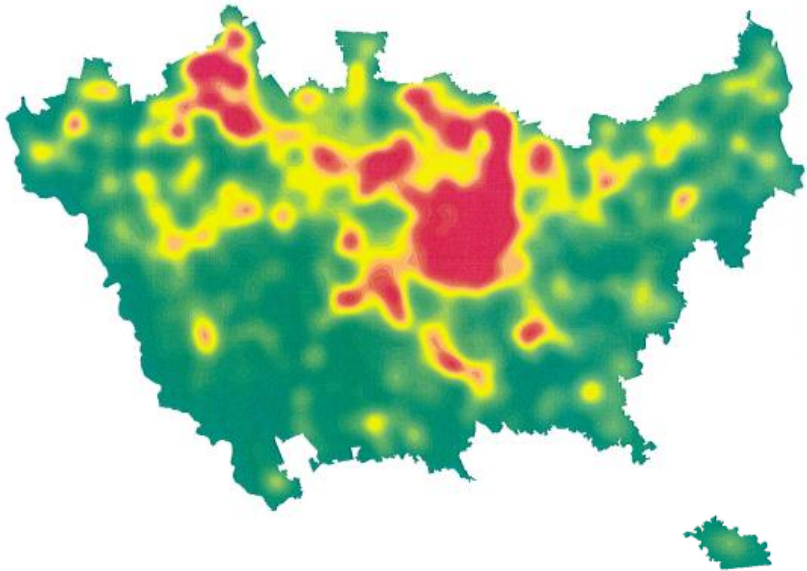
e-geos
AN ASI / TELESPIAZIO COMPANY



Strategie e misure di adattamento al cambiamento
climatico nella Città Metropolitana di Milano

Metropolitan City of Milan : territory and institution

The **Metropolitan City of Milan** is among the most densely populated urban areas in Europe with a density of about **2,038 inhabitants/km2** for a total of **3.2 million inhabitants** (2016) and a demographic structure formed for **22% over 64 years old**. Its territory is about **1600 Km2** distributed over **133 Municipalities, including the city of Milan**, and is about **41%** formed by **build-up areas** and **infrastructures**, **50%** formed by **agricultural areas** and only **8%** formed by **woodlands**.



Metropolitan City of Milan : territory and institution

The MCM is a **medium level local public authority** established in 2014 and governs the vastest metropolitan urban area in Italy.

The MCM implements and coordinates activities of **strategic and territorial planning, sustainable mobility and urban public transports**, including greening issues, digital agenda and has responsibility in environmental field especially for quarries, land reclamations and waste dumps.

The MCM plays a crucial role in the adaptation process, just like all Metropolitan cities authorities.

Its role is fundamental in setting a comprehensive strategy for its wide and whole territory, **enhancing the mainstreaming of adaption measures at all the local levels and coordinating all the different planning and operative tools.**

Actually the whole Metropolitan Area of Milan is prone to **flood risk** due both to the increased peak flow of rivers and to the **runoff generated by the compact, not permeable urban fabric.**

Other critical issues are increased mean **temperatures, frequency and intensity of heat generating urban heat islands** increased demand, sudden and heavy rainfalls, summery waves heat-islands, energy ozone levels exceeding.



LIFE17CCA/IT/000080






Issues tackled by the project



 Intensification of **prolonged heatwaves** in urban areas.

 Increase in storms, floods, droughts and severe **extreme weather conditions**.

 **Lack of coordination** between municipal and metropolitan climate change adaptation strategies.



The objective is to create **shared governance** amongst local authorities in Milan metropolitan area so to promote the changes needed to **adapt to climate change** and generate the means to implement appropriate policies and strategies for the local areas.



LIFE17CCA/IT/000080



Strategie e misure di adattamento al cambiamento climatico nella Città Metropolitana di Milano



Project actions



Environmental governance: Integrating the EU Adaptation Strategies and measures in the Milan Metropolitan Territorial Plan (PTM).



Data Analysis: Developing innovative meteorological satellite data and high precision soil sealing maps supporting detailed vulnerability analysis.



Sustainable interventions: Promoting Nature Based Solutions (NBS) to reduce flood risk and heat-island in regeneration projects of neglected urban space using a multi-objectives approach.



Stakeholders' involvement: Enhancing bottom-up initiatives increasing the citizen awareness and engagement in climate change adaptation;



International Networking: Developing a network of Italian and European metropolitan areas and cities enhancing the mainstreaming of adaptation policies and measures and supporting the implementation of NBS.



LIFE17CCA/IT/000080



Strategie e misure di adattamento al cambiamento climatico nella Città Metropolitana di Milano

Life METRO ADAPT : Policy implications and expected impacts

The project aims to contribute to EU priorities providing a common methodology focused on metropolitan areas role in supporting urban planners and policymakers engaged to establish climate adaptation activities.

METRO ADAPT project will **contribute to:**

- **Developing and implementing local adaptation and mitigation initiatives**, like 'the Covenant of Mayors for Climate and Energy', including cooperation between local authorities;
- **Developing innovative adaptation solutions** in urban areas involving the water, energy and construction sectors and **territorial green infrastructures** to implement climate change adaptation measures;
- **Implementing public-private partnerships** and **enhancing the awareness raising** of public bodies, citizens, political and technical stakeholders through newsletters, handbook reporting, website, events, seminars, conferences and workshops at **national and european level**.

METRO ADAPT project will **realize:**

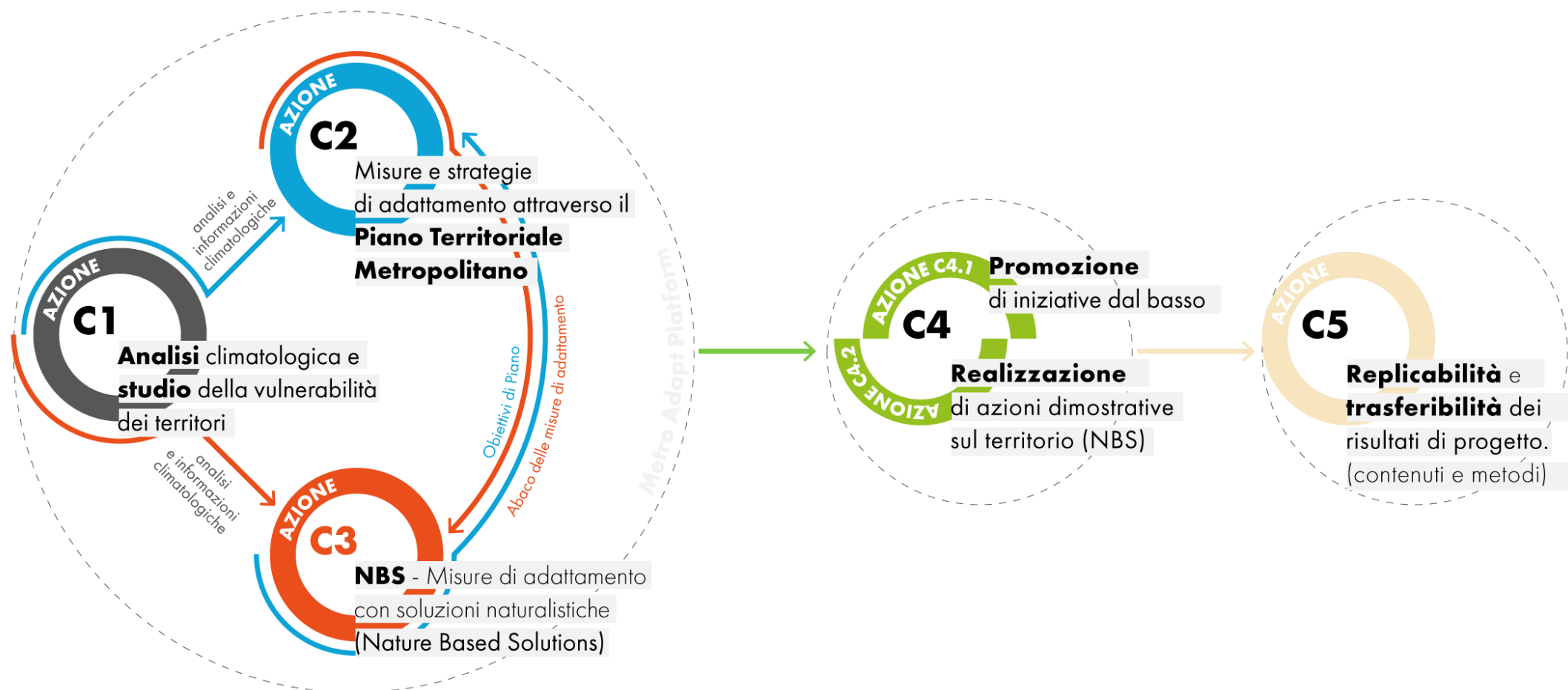
- **133 datasets** for local adaptation and mitigation planning available to all MCM municipalities;
- **Legal standard and rules** enhancing resilience measures in the PTM for local planning tools and **guidelines for vulnerability assessment**;
- Promotion and development of a **Metropolitan Green Network** to reduce **the impact of urban heat islands**, to reduce **urban sealing** and to control the **flooding risk**;
- **Realization of 2 NBS demonstration facilities** in two municipalities to disconnect 8000 m2 by the sewage network and **2 NBS feasibility studies in different Municipalities** focused on small/medium size areas with high multi-level performance.



LIFE17CCA/IT/000080



Life METRO ADAPT : outline of project actions



LIFE17CCA/IT/000080



Strategie e misure di adattamento al cambiamento climatico nella Città Metropolitana di Milano

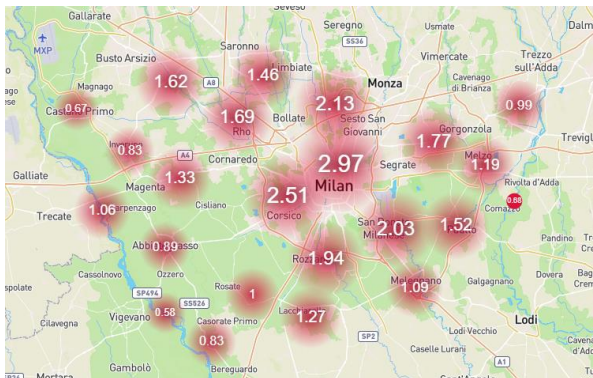
Action C1: Climate analysis and vulnerability assessment at metropolitan level

Objective 1: Development of analysis

- innovative meteorological satellite data
- high precision soil sealing maps
- detailed analysis of soil permeability
- risk analysis (population and hazard)

FREE availability of data and information
on OPEN platform

Availability of **disaggregated data** available to each municipality of the Metropolitan City of Milan



METRO ADAPT PLATFORM

+

THEMATIC MAPS

+

WEB MAP SERVICE



LIFE17CCA/IT/000080



Action C2: Evaluation and mainstreaming of climate change adaptation measures in metropolitan planning

Objective 2: Adaptation strategies and actions

Integration of data, strategies and proposals for adaptation actions in the MTP

Integration of adaptation actions in the urban planning tools of the municipalities of the Metropolitan City of Milan.

Innovative approach intermediate governance entities
(7 homogeneous zones)

METROPOLITAN TERRITORIAL PLAN



LIFE17CCA/IT/000080





Climate Change Adaptation Measures in Territorial Planning Tools



Città
metropolitana
di Milano

For the first time in Italy, the territorial plan for large areas contains 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.



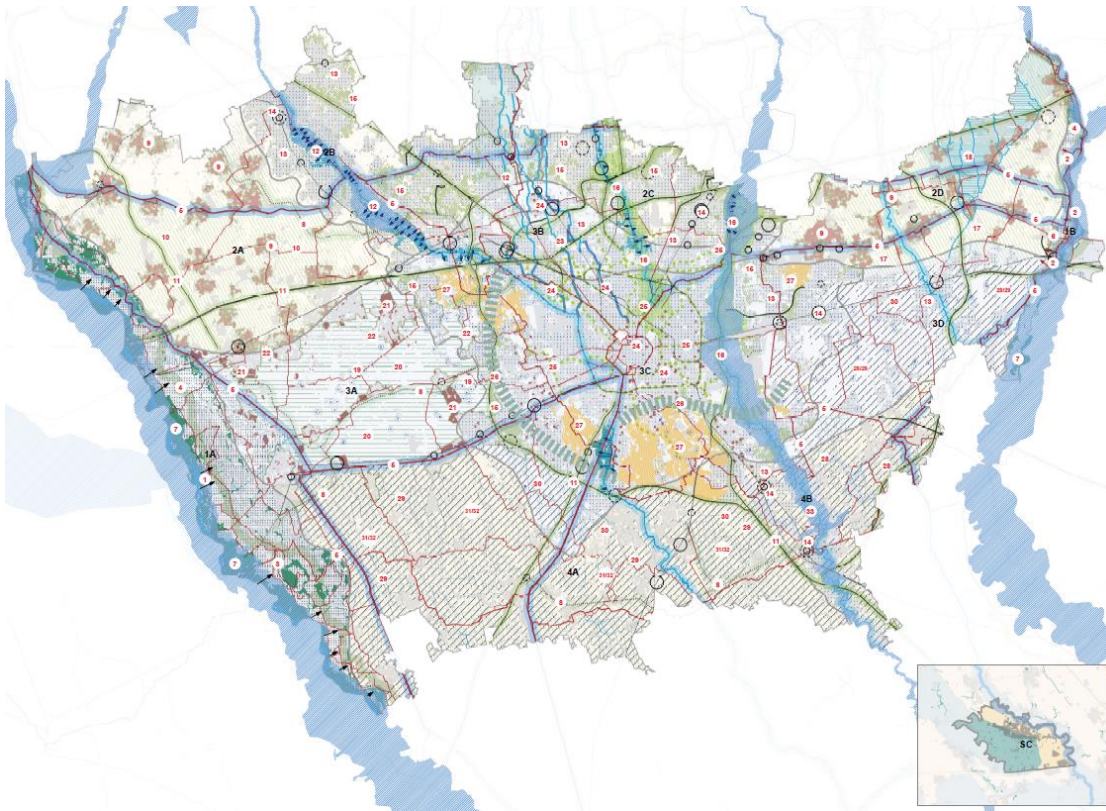
LIFE17CCA/IT/000080



Strategie e misure di adattamento al cambiamento climatico nella Città Metropolitana di Milano

PTM and climate change : the Metropolitan Green Network project

A **Metropolitan Green Network** project was drawn up in the PTM as the **general climate change adaptation strategy**, with particular reference to meteoric water management and heat island mitigation and as a supporting element for the **qualification of non-urbanised territory**.



The Metropolitan Green Network project is based on the intrinsic characteristics of the different metropolitan landscapes, their structure and functions, subdividing the whole territory into **Landscape Unit Environment (UPA)** defined on the basis of overlapping analysis and synthesis evaluations.

Specific **planning priorities** are then defined **for each UPA**. The planning priorities are articulated in actions to be implemented with the priority use of **Nature based solutions** selected according to the different territorial characteristics.



LIFE17CCA/IT/000080



Città
metropolitana
di Milano

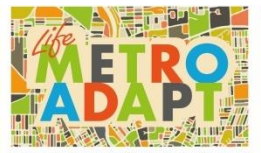


AMBIENTEITALIA
we know green



European Association
for Local Democracy

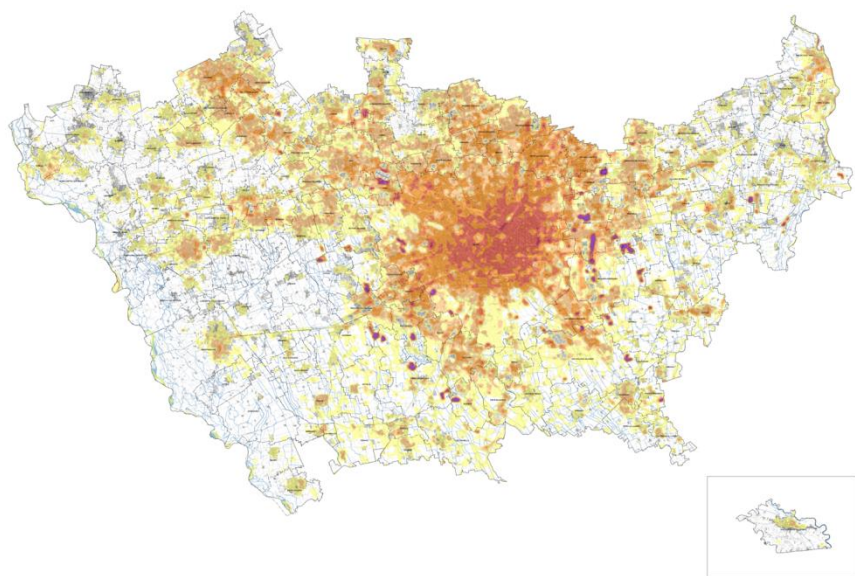
e-geos
AN ASI / TELESPAZIO COMPANY



Strategie e misure di adattamento al cambiamento
climatico nella Città Metropolitana di Milano

PTM and climate change : legal rules for Municipalities

For the first time in Italy, the ACT of a territorial plan for large areas contains 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.



Analysis provided by the METRO ADAPT project has been used to develop a map representing the heat-island phenomenon in summer nights all over the metropolitan territory. 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 study to reduce this thermal anomaly. For these areas the PTM provides guidance on the actions that Municipalities have to implement to mitigate the thermal anomalies and to integrate in municipal plans and regulations (such as Municipal Building Regulation, Green Plan, Urban Traffic Plan, Sustainable Urban Mobility Plan, etc.).

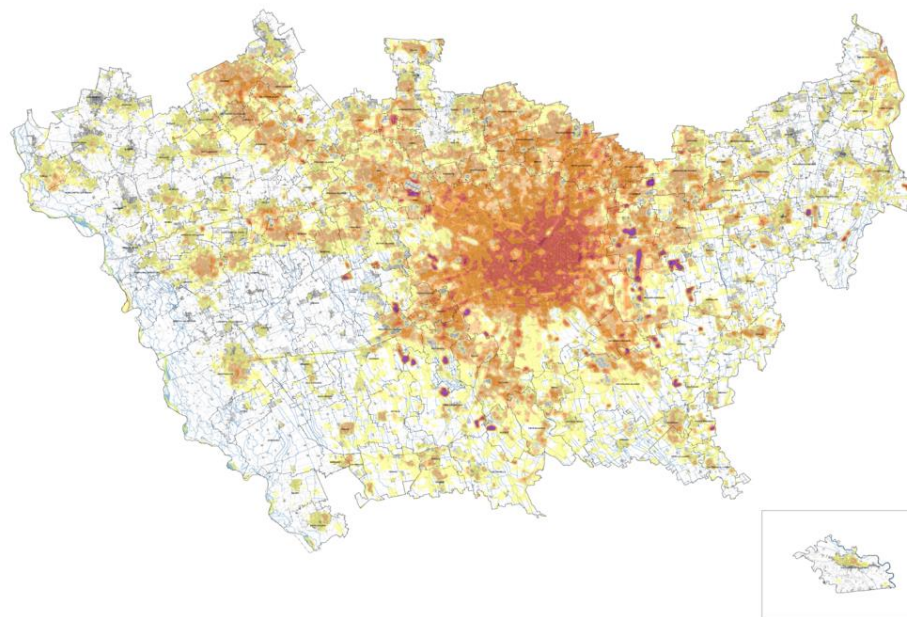


LIFE17CCA/IT/000080





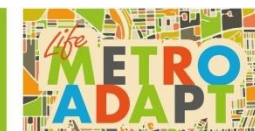
Climate Data Analysis and the Metropolitan Territorial Plan



- Analysis provided by the METRO ADAPT project has been used to develop a map representing the **heat-island phenomenon** in summer nights all over the metropolitan territory.
- For the areas considered at risk the **PTM provides guidance on the actions that Municipalities have to implement to mitigate the thermal anomalies** and to integrate in municipal plans and regulations (such as Municipal Building Regulation, Green Plan, Urban Traffic Plan, Sustainable Urban Mobility Plan, etc.).



LIFE17CCA/IT/000080



Strategie e misure di adattamento al cambiamento climatico nella Città Metropolitana di Milano

Action C3: Overcoming uncertainty and barriers to adoption of Nature Based Solutions in an urban context

Objective 3: Identification of adaptation actions

Analysis and feasibility studies of Nature-Based Solutions (NBS)

Dissemination of technical and design knowledge in the field of NBS

Dissemination of a multi-objective approach among the actors involved in decision-making and implementation processes

NBS CATALOGUE
+
illustrative cards for each NBS



LIFE17CCA/IT/000080



Città
metropolitana
di Milano



AMBIENTEITALIA
we know green



e-geos
AN ASI / TELESPAZIO COMPANY

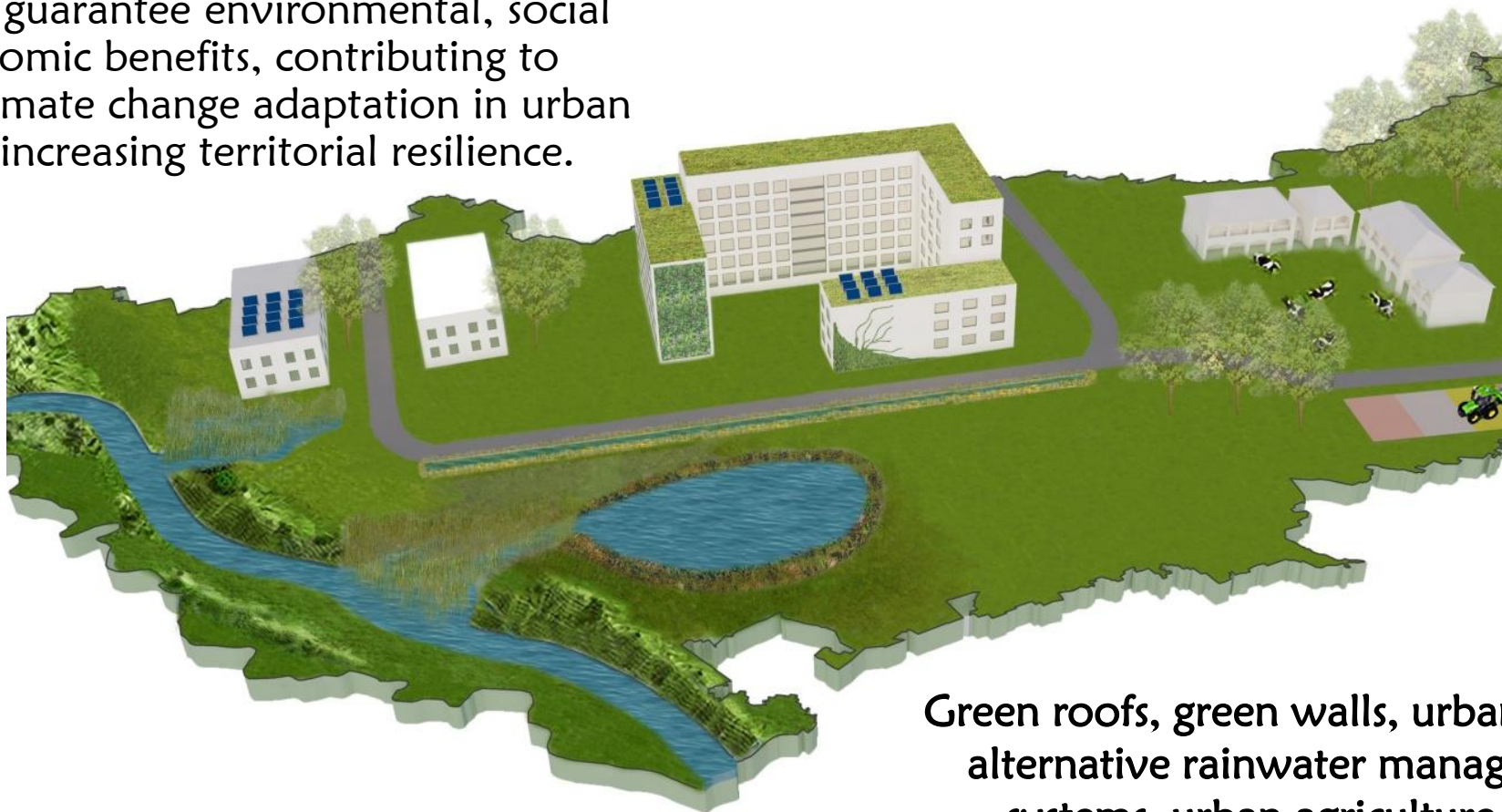




Promoting Nature-Based Solutions



Nature-Based Solutions (NBS) are interventions inspired and supported by Nature that guarantee environmental, social and economic benefits, contributing to improving climate change adaptation in urban areas and increasing territorial resilience.



Green roofs, green walls, urban forests, alternative rainwater management systems, urban agriculture etc..



LIFE17CCA/IT/000080



Strategie e misure di adattamento al cambiamento climatico nella Città Metropolitana di Milano



The NBS Catalogue

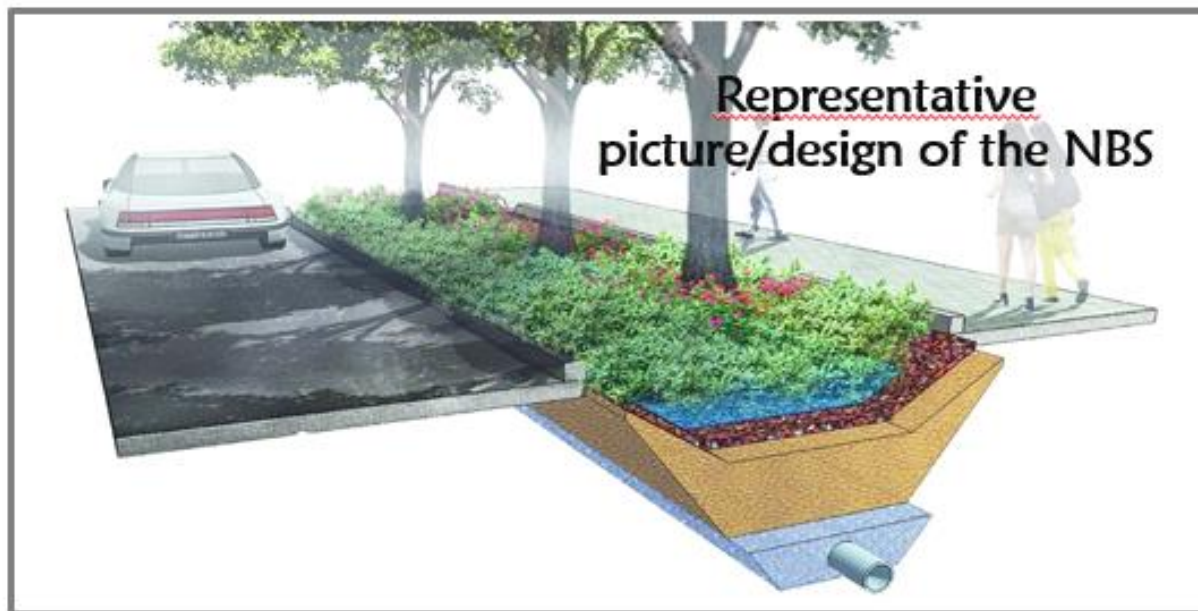


LIFE17CCA/IT/000080



Strategie e misure di adattamento al cambiamento climatico nella Città Metropolitana di Milano

The NBS Catalogue



Representative picture/design of the NBS

I canali vegetati sono progettati per gestire una quantità di deflusso da una vasta area impervia, come un parcheggio o una strada. Assorbono, immagazzinano e filtrano gli inquinanti dalle acque superficiali, oltre a rimuovere inquinanti e sedimenti..

Definition and a short description of each NBS

NBS features

Environmental impact



Socio-economic benefits



Case studies/Best practices related to NBS



Green on Built Environment



Green roofs



Green walls



Fonte: Ambiente Italia 2019©

Pergola paths



Fonte: BAM wegen©

Green barriers



Urban green furnitures



LIFE17CCA/IT/000080



Strategie e misure di adattamento al cambiamento climatico nella Città Metropolitana di Milano



Ground Green Spaces



Community gardens



Urban farming



Street trees



Pocket parks



Urban forestation



LIFE17CCA/IT/000080



Strategie e misure di adattamento al cambiamento climatico nella Città Metropolitana di Milano



NBS for water management



Infiltration trenches/strips



Swales, Bioswales



Bioretention systems



Ponds and constructed wetlands



Detention basins



Permeable pavements

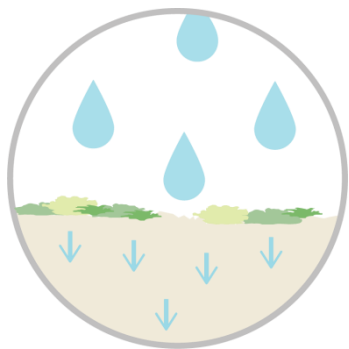


LIFE17CCA/IT/000080



Strategie e misure di adattamento al cambiamento climatico nella Città Metropolitana di Milano

Environmental impact



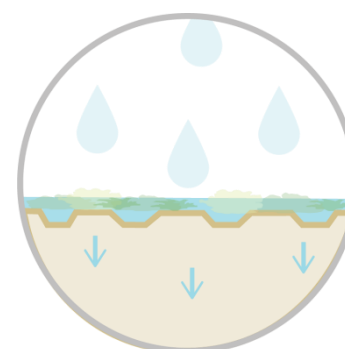
Rainfall infiltration



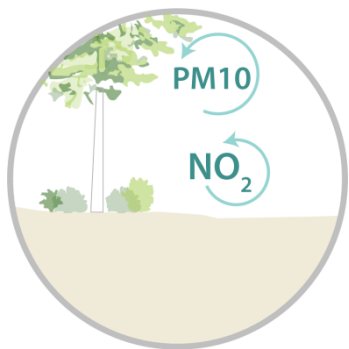
Water purification



Runoff detention



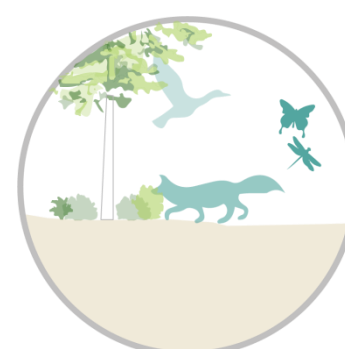
Retention and storage



Air quality improvement



Microclimate regulation



Biodiversity restoration

Socio-economic benefits



Health and well-being



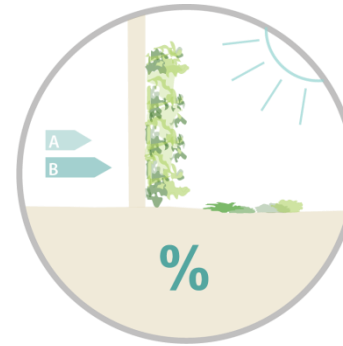
Social space



Aesthetic



Local economic growth



Energy saving



METRO ADAPT – Raising awareness and training



The Metro Theatre Project: «Pale Blue Dot»

Thanks to the Theatre Company Arditodesio this amazing play is contributing to spread LIFE Metro Adapt message about the importance to ACT at all levels to adapt to climate change, mitigating its impact.

Watch the trailer!



LIFE17CCA/IT/000080





International and national networking



Webinars and workshops within international events

18th EUROPEAN WEEK of REGIONS and CITIES

05>09 OCTOBER 2020

12>16 OCTOBER 2020

19>22 OCTOBER 2020



Conferences and debates with local experts



Crisi climatica ed eventi estremi: gestire l'inevitabile evitare l'ingestibile

Webinar

Presenta la serata:
Damiano Di Simine
Legambiente Lombardia

Relatore della serata



Luca Lombroso
meteorologo e
divulgatore ambientale

Dove:

CI collegheremo 5 minuti
prima tramite la
piattaforma ZOOM

Martedì
17 novembre 2020
ore 17.30

L'incontro è gratuito.

Per informazioni:

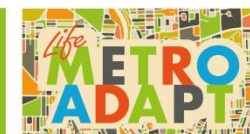
Lorenzo Bodo
lorenzobodo@legambiente.com.it
02/9709440

Per partecipare è necessario iscriversi al seguente [LINK](#)

www.lifemetroadapt.eu



LIFE17CCA/IT/000080



Strategie e misure di adattamento al cambiamento climatico nella Città Metropolitana di Milano



Life METRO ADAPT

Strategie e misure di adattamento al cambiamento
climatico nella Città Metropolitana di Milano

Thank you for your attention !

Info :

Life MetroAdapt website : <http://www.lifemetroadapt.eu/it/il-progetto/>

Metro Adpt Platform : https://www.cittametropolitana.mi.it/Life_Metro_Adapt/

Metropolitan Territorial Plan website : <https://www.cittametropolitana.mi.it/PTM/iter/adozione/index.html>