

Città
metropolitana
di Milano



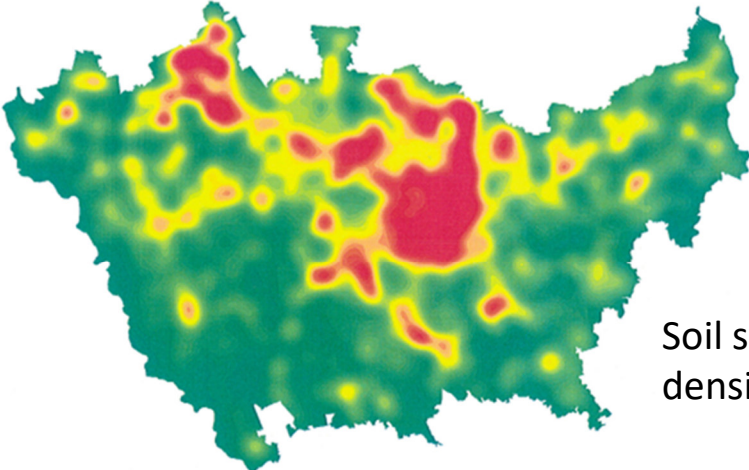
Life Metroadapt project - climate change adaptation policies in the Metropolitan Territorial Plan and its implementation tools

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Metropolitan City of Milan - Head of Supra-municipal Planning Service

General Territorial Planning and Urban Regeneration Sector

Metropolitan City of Milan : territory



Soil sealing density

Territory:

- 41% formed by build-up areas and infrastructures
- 50% formed by agricultural areas
- 8% formed by woodlands

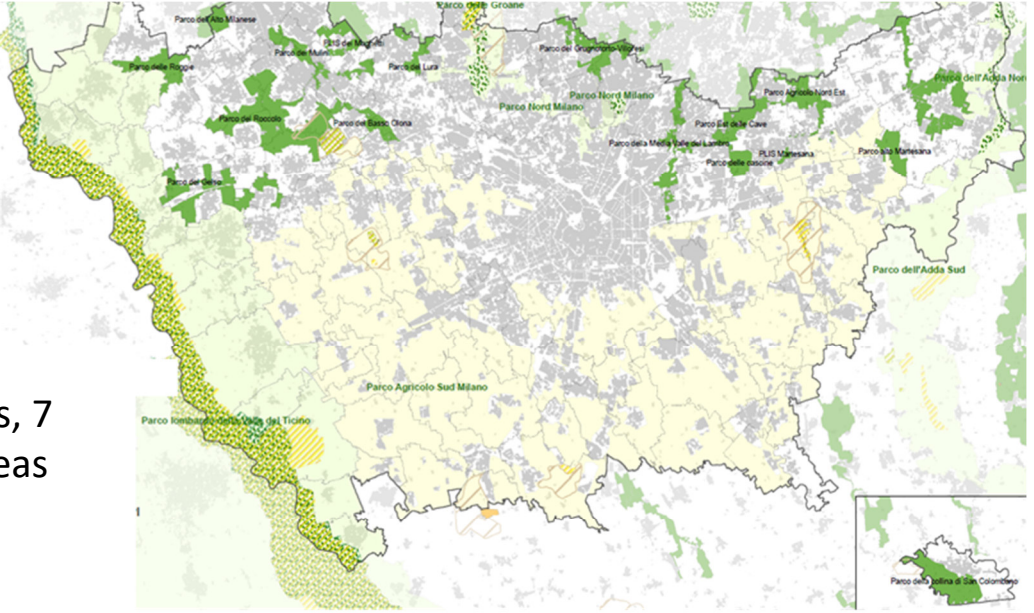
Total area of the Metropolitan City of Milan
157.500 (hectares)

Total population of the Metropolitan City of Milan
3,2 M (inhabitants)

Population density for the Metropolitan City of Milan
2.038 (inhabitants per square kilometer)

22% of population older than 64 years old
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Green system



133 Municipalities, 7 homogeneous Areas

LIFE METRO ADAPT - enhancing climate change adaptation strategies and measures in the Metropolitan City of Milan (Life 17CCA/IT/000080 – CUP I43E17000230007)

Project duration: Start: 03.09.2018 - End: 30.09.2021

Project's Implementors: Metropolitan City of Milan (Coordinating Beneficiary)

Associated Beneficiaries: ALDA (European association for local democracy, FR)

Ambiente Italia S.r.l. (IT)

CAP Holding S.p.A. (IT)

e-GEOS S.p.A. (IT)

Legambiente Lombardia Onlus (IT)



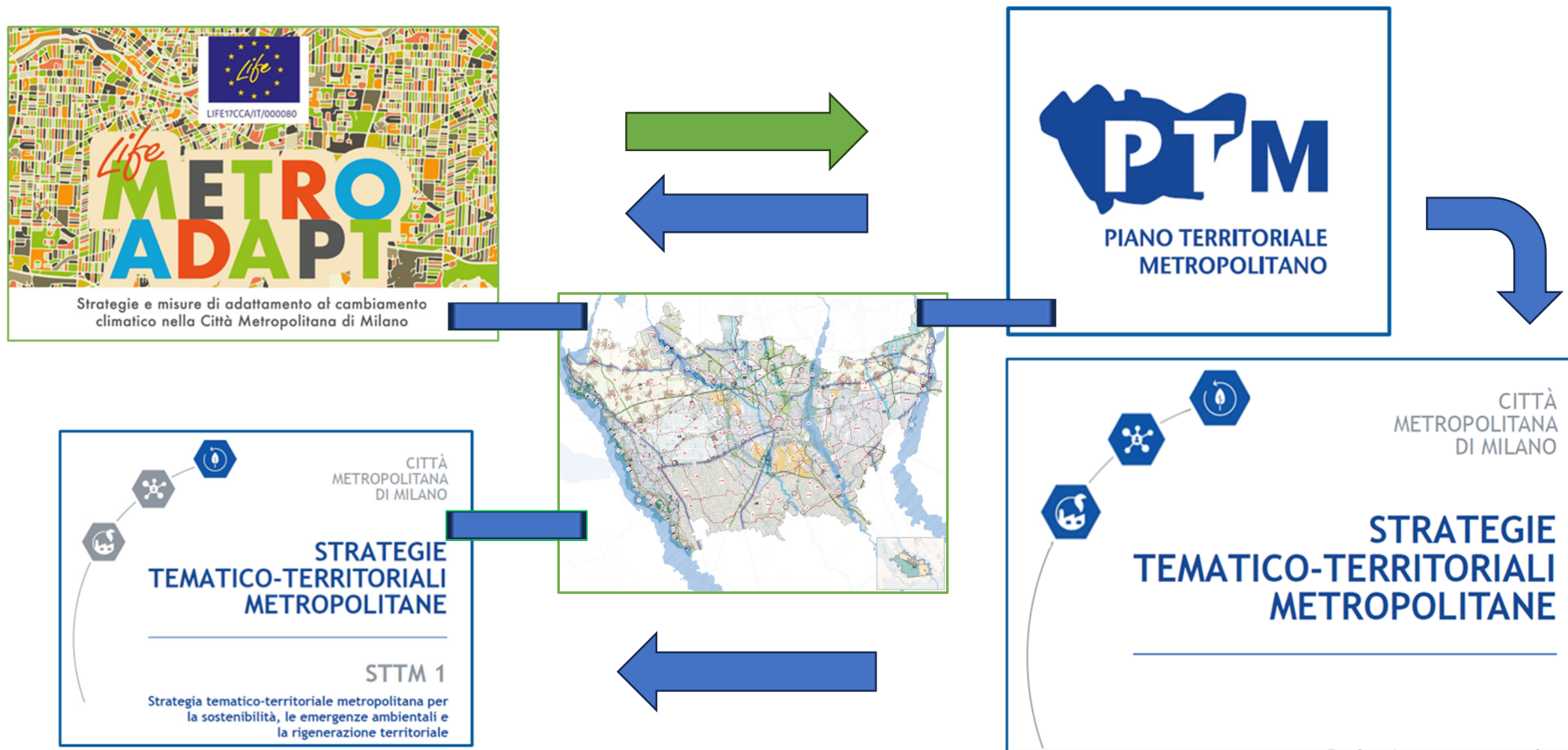
The **METRO ADAPT** project, **winner of the LIFE Award in the Climate Action category in June 2023**, aimed to mainstream the EU strategy on **adaptation to climate change** at the local level, focusing on metropolitan area.

METRO ADAPT addressed this issue for the first time in a large area planning tool.

The project integrated possible measures and strategies for climate change adaptation in the Metropolitan Territorial Plan (MTP), specifically as regards **flood risk prevention** and the **reduction of the urban heat islands effect**.

METRO ADAPT also **aimed to promote the creation of robust climate change governance** that is common to all local authorities and to produce tools to enable them to implement efficient adaptation measures. A considerable part of the project was dedicated to the **sharing and dissemination of tools and good practices** developed through the project to other Italian and European metropolitan areas.

Adaptation policies in Metropolitan City of Milan - from Metroadapt to MTTs 1



Metropolitan Territorial Plan (MTP) : general principles and objectives

The MTP is the overall territorial plan of the Metropolitan City of Milan and introduces rules and measures for the entire territory concerned regarding the environment, landscape, infrastructure, services, settlement development and territorial regeneration. The MTP has been in force since 6 October 2021, the plan introduces 4 founding general principles and 10 objectives that are in line with the 2030 Sustainable Development Goals (SDGs) and with the national commitment to sustainable development.




4 principles



Protection of non-renewable resources (soil, water, air, fossil fuels)



Protect landscape and environment assets


Territorial equity and overcoming marginalization



Implement and manage the plan, simplify procedures, digitize documents

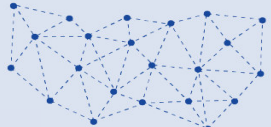
 Make sure that the measures outlined in plan adhere to the contents and timing of international agreements concerning the environment


 Improving the compatibility between the environment, the landscape, and the modifications to be made thereto


 Improve public mobility services and make sure that they are in line with the settlement structure


10 general objectives

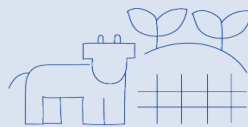
 Promote as a priority the location of settlement on abandoned areas and consolidated fabric

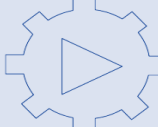
 Promote the polycentric organization of the metropolitan territory

 Strengthen the ecological network

 Develop a metropolitan green network

 Strengthen the tools for managing the water cycle

 Protect and diversify agricultural production

 Strengthen the tools for the implementation and management of the plan

MTP ACT : PART II - Environmental emergencies

For the **first time in Italy**, a **large area territorial plan** provides in legislation a part **dedicated to the protection of non-renewable resources, climate change and resilience** containing **guidelines and directives for municipal plans** aimed at inserting parameters and rules in them specific for the promotion of sustainable development.

Title Act I – Protection of non-renewable natural resources

- art. 16 Sustainability criteria and limits
- art. 17 Reduction of energy consumption and atmospheric emissions

} **Mitigation measures**



Title Act II – Soil consumption and urban regeneration

- art. 18 Implementation of Regional Territorial Plan land use reduction targets
- art. 19 Territorial and urban regeneration
- art. 20 Recovery of disused areas

Title Act III – Climate change

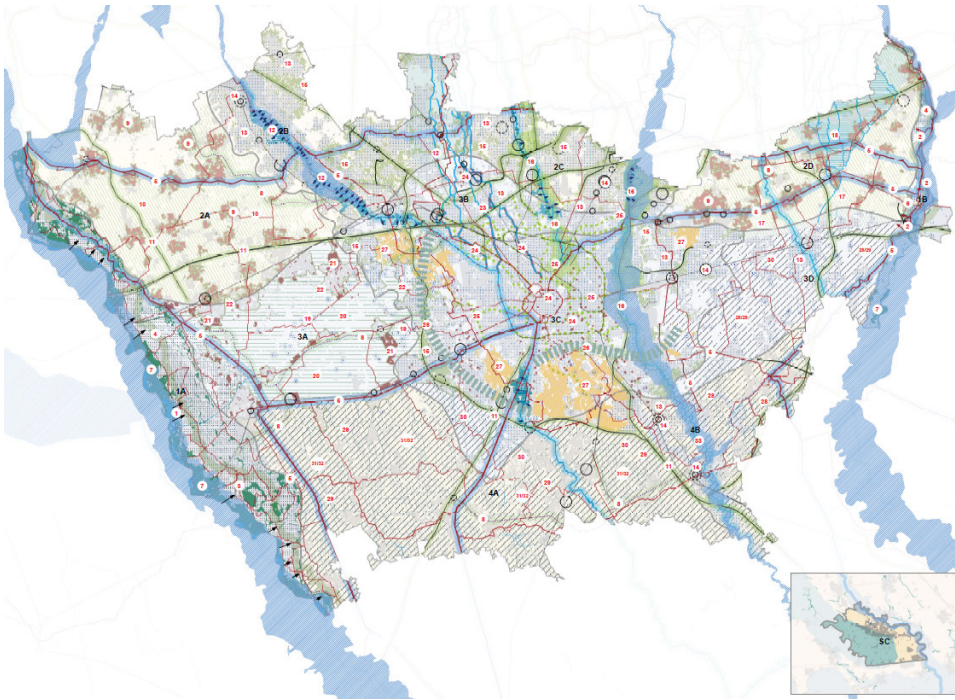
- art. 21 Water plumbing invariance
- art. 22 Containment of potable water consumption
- art. 23 Climate and heat-islands

} **Adaptation measures**



The Metropolitan Green Network (MGN)

A **Metropolitan Green Network** project was drawn up in the MTP 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.

B.5 TRINCEE FILTRANTI



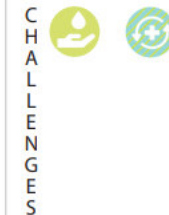
riferimento: pag.81-85

DEFINIZIONE: Scavi riempiti da materiale ghiaioso e sabbioso, o con elementi plastici, con lo scopo di far infiltrare l'acqua nel suolo.

SCALA DI RICADUTA:
Locale

GRADO DI TRASFORMAZIONE
DELLE SPAZIO:
Basso

B.6 SUPERFCI PERMEABILI



riferimento: pag.86-91

DEFINIZIONE: Pavimenti permeabili, adibiti alla filtrazione dell'acqua piovana.

SCALA DI RICADUTA:
Metropolina

GRADO DI TRASFORMAZIONE
DELLE SPAZIO:
Medio

Implementation of adaptation measures and the Metropolitan Green Network

To implement the **Metropolitan Green Network** project and related measures relating to the two themes already identified as priorities by the **Life Metroadapt** project for adaptation to the effects of climate change in the metropolitan area, or the **response to extreme weather events (rain)** and **mitigation of the heat island phenomenon**, Metropolitan City of Milan has operated:

- ➔ At **planning level** through:
 - ✓ the drafting of the **Metropolitan Thematic-Territorial Strategies**, an instrument for implementing the MTP introduced by the plan itself, and in particular the MTTTS 1 for sustainability, environmental emergencies and territorial regeneration
 - ✓ the drafting of the **Balance of territorial diffusivity** and the other instruments provided for by the MTP in order to recognize the supra-municipal or metropolitan relevance of the interventions proposed by the municipalities: **Consultative conference** and subsequent **Territorial equalization agreement**

- ➔ At project level through:
 - ✓ the drafting of **Metropolitan City Sponge Project** in collaboration with CAP, Integrated Plan funded by the PNRR
 - ✓ the drafting of **Urban, peri-urban and extra-urban afforestation** in the municipalities of the Metropolitan City (Measure 2 - Component 4 - Investment 3.1 "Protection and enhancement of urban and extra-urban greenery" of the PNRR)

Implementation instruments of the Metropolitan Territorial Plan

Metropolitan Thematic-Territorial Strategies

Balance of territorial diffusivity drawn up by the Municipality in case of planning proposals with potential supra-municipal or metropolitan effects to highlights the type and extent of the generated effects by the implementation of the proposal.

Consultative conference convened by MCM with the municipalities involved to promote the conditions of a territorial equalization agreement. The conference examines the balance of territorial diffusivity and identifies the possible solutions of equal allocation of the resources deriving from each intervention in proportion to the pressures which are expected to be invested in the various municipal territories.

Territorial equalization agreement that identifies and commit each municipalities involved to respect the project solutions and the allocation of part of the resources deriving from the proposal with supra-municipal or metropolitan effects to be invested in the various municipal territories

Supra-municipal or metropolitan relevance recognition made by MCM and activation of forms of equalization and compensation of the external effects

Metropolitan equalization fund

In order to guarantee the principle of territorial equity, the **Metropolitan City promotes coordination actions and adopts forms of equalization and compensation to distribute among the common advantages and disadvantages** deriving from the construction of settlements and infrastructures with repercussions and supra-municipal effects.

The MTP provides for the establishment of **metropolitan equalization funds** financed with economic resources of the Municipalities or with income deriving from contributions related to the transformations as well as with **real estate assets or through the transfer of real estate assets** or with regional, national and European programs.

The metropolitan equalization funds, regulated by a specific **rule**, may only allocate their resources to the **realization of works, interventions and development of public utility services**.

Equalization and compensation are also promoted in the presence of actions aimed at:

- promoting of **territorial regeneration** interventions
- raising the levels of **sustainability and resilience** of environmental systems and the metropolitan landscape
- improving the functioning of **networks and services for mobility**

Implementation - Metropolitan Thematic-Territorial Strategies

Metropolitan Thematic-Territorial Strategies

They are tools for **in-depth analysis and implementation** of the MTP. They identify forms of territorial management that are strongly integrated on issues of supra-municipal and metropolitan importance according to the general principles and objectives of the MTP.

Open and **incremental** tools built with the **active involvement** of:

- **Municipalities**
- **other administrations**
- **territorial and socio-economic actors** directly concerned

They aim at an **equitable distribution of the advantages** and resources available with the activation of the **equalization and compensation tools provided for by the MTP**, in particular the equalization funds, and forms of **Public Private Partnership (PPP)** for the optimization of investments.

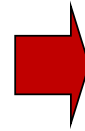
The **strategic contents are taken up by the Municipalities in their urban planning tools** and are implemented through tools and actions detailed therein.

The first 3 Metropolitan Thematic-Territorial Strategies (MTTS)

The **first three MTTS** provided for by the MTP **were approved** by Metropolitan Council Resolution No. 5 of **28 February 2024**.



MTTS 1 for sustainability, environmental emergencies and territorial regeneration



- Development and implementation of the Metropolitan Green Network
- Resilience to climate change and the spread of NBS
- Territorial and urban regeneration



MTTS 2 for social cohesion, supra-municipal and metropolitan services



- Supra-municipal services
- City of 15 minutes model on a metropolitan scale
- Functions and services compatible and synergistic with the role of modal interchange for mobility in UPM (Urban Places for Mobility)

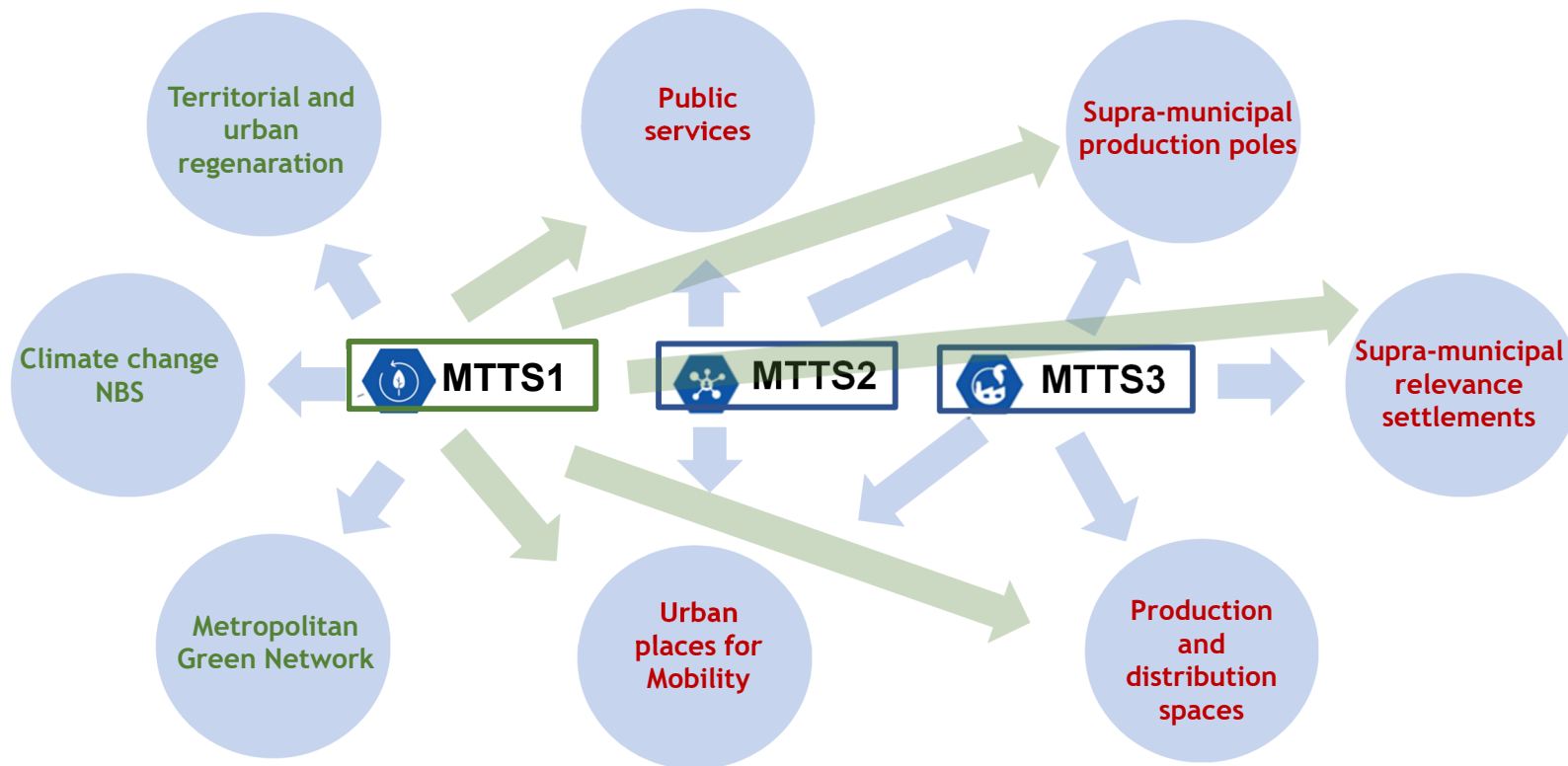


MTTS 3 for the innovation of production, service and distribution spaces

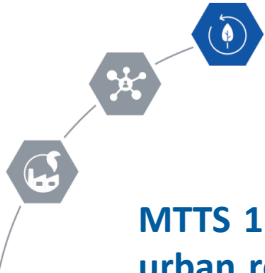


- Support for innovation and innovative productions spaces
- Redevelopment of existing production sites and promotion of supra-municipal productive poles
- Territorial and environmental compatibility of logistic settlements

Mainstreaming of the 3 Metropolitan Thematic-Territorial Strategies



MTTS 1 – Themes and goals



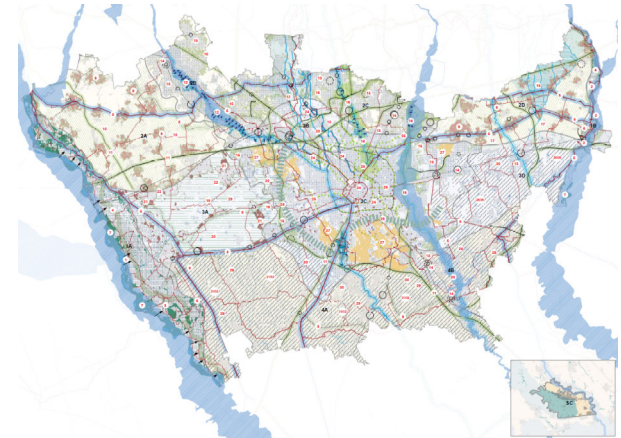
MTTS 1 is transversal to MTTS 2 and MTTS 3 and **promotes territorial and urban regeneration as the main tools for the redevelopment of degraded landscapes** and the qualification of everyday landscapes.

STTM1 aims to:

- **guiding and monitoring territorial effects** of supra-municipal and metropolitan settlements
- **supporting** the implementation of MTP for the protection of non-renewable resources and for **adaptation to and mitigation of climate change**.

The **MTTS 1's guiding project** is the MTP **Metropolitan Green Network** (MGN), which is:

- the general reference for all the urban eco-paesistic system projects
- the **preferential place for the landing of the economic resources** generated by the supra-municipal and metropolitan relevance settlements and of the resources of the Metropolitan equalization fund introduced by the MTP regulation.



MTTS 1 - Vulnerability and Resilience



MTTS 1 has been developed in accordance with the concepts of **Vulnerability and Resilience of landscape eco-systems** and is implemented with different intensity depending on the characteristics and vulnerability levels of the various areas in which the metropolitan area is structured.

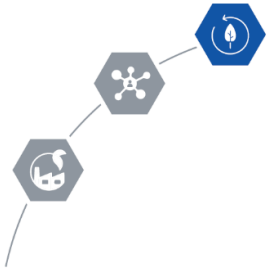
The priority themes for adaptation measures to climate change in the metropolitan area are:

- **Adaptation and response to extreme events** (rain)
- **Adaptation and mitigation of heat island**

In relation to the two priority themes, MTTS 1 has prepared **two Standard forms to evaluate interventions for the implementation of MTTS 1** and of **Metropolitan Green Network**. These forms allow the Municipalities to self-assess the proposed measures for the implementation of the MGN and MTTS 1.

Each standard form provides **objective criteria for assessing the effectiveness of NBS** and synergic interventions that will characterize the implementation of MGN. It also contains the localizing priorities of different types of intervention and their benefits.

MTTS 1 – Standard forms



Each **standard form** is organized in 4 parts, corresponding to the 3 consecutive steps for the purpose of self-assessment of interventions of supra-municipal and metropolitan relevance and a concluding part (PART D) of final evaluation of the intervention:



2 forms to evaluate interventions of:

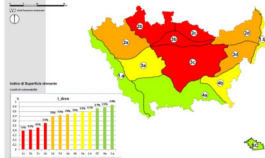
- **Adaptation and response to extreme events (rain)**
- **Adaptation and mitigation of heat island**

MTTS 1 – Standard forms: Part A

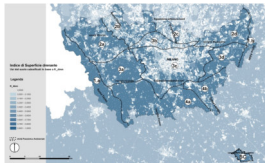
Location

Scheda Norma 1 («drenaggio»)

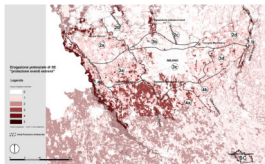
- A1 Livello di vulnerabilità delle UPA in base all'indice di superficie drenante



- A2 Indice di Superficie Drenante (Idren)

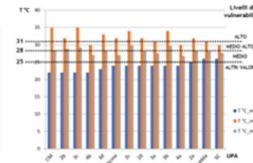


- A3 Erogazione potenziale del SE Regolazione degli Eventi Estremi

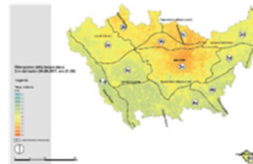


Scheda Norma 2 (isola di calore)

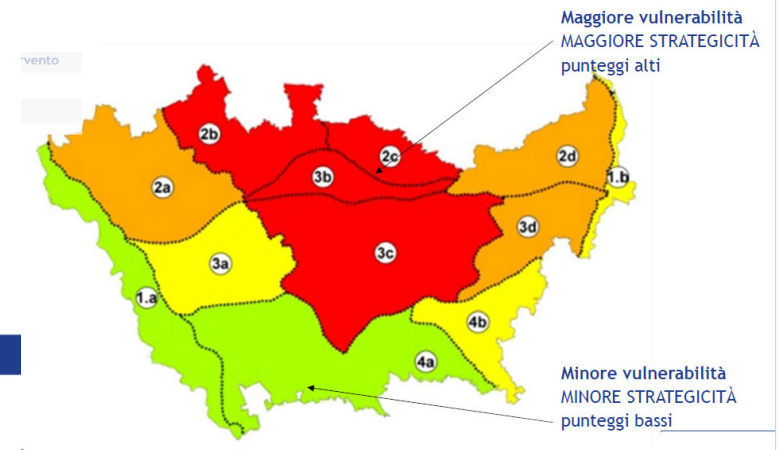
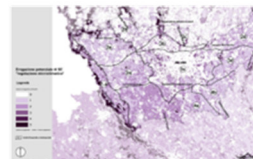
- A1 Livello di vulnerabilità delle UPA in base alle Temperature Notturne estive



- A2 Temperature Notturne Estive



- A3 Erogazione potenziale del SE Regolazione del Microclima



The compilation of the form allows to identify the suitability and strategic location

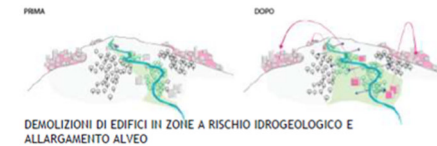
MTTS 1 – Standard forms: Part B

Type and characteristics of the intervention

	Scheda Norma 1 («drenaggio»)			Scheda Norma 2 (isola di calore)						
	Punteggi definiti sulla base dei livelli di vulnerabilità dell'UPA			Punteggi assegnati alle tipologie e alle dimensioni degli interventi						
	A			B	C	D (B/C)	E	F (D*E)	A+F	
- B1 Interventi strutturali per l'efficacia RVM	Livello di vulnerabilità da attribuire	Punteggio da attribuire	Punteggio attribuito	Dimensione minima (unità misura varie)	Superficie intervento (unità misura varie)	divisore	Punteggio parziale	Punteggio premiale per extra superficie	Punteggio parziale "premiato"	Punteggio complessivo
- B2 Intervento Nature Based e valutazione dimensionale	Livello di vulnerabilità da attribuire	Punteggio da attribuire	Punteggio attribuito	Dimensione minima (unità misura varie)	Superficie intervento (unità misura varie)	divisore	Punteggio parziale	Punteggio premiale per extra superficie	Punteggio parziale "premiato"	Punteggio complessivo
- B3 Interventi sinergici	Livello di vulnerabilità da attribuire	Punteggio da attribuire	Punteggio attribuito	Dimensione minima (unità misura varie)	Superficie intervento (unità misura varie)	divisore	Punteggio parziale	Punteggio premiale per extra superficie	Punteggio parziale "premiato"	Punteggio complessivo
Punteggio Complessivo								Punteggio complessivo :	numero	

The compilation of the form allows to identify the suitability and strategic nature of the intervention

Strategic nature of the intervention



Alta complessità realizzativa
MASSIMO VALORE
 punteggi molto alti



Aggregazione di interventi non necessariamente simili
ALTO VALORE
 punteggi alti



Intervento singolo
MINORE VALORE
 punteggi bassi

MTTS 1 – Standard forms: Part C

Method of implementation

C1 - Individuare i benefici attesi diretti e indiretti

Scheda Norma 1 («drenaggio»)

Benefici Diretti (strettamente legati al drenaggio urbano)	SI	NO
Riduzione delle alluvioni urbane		
Raccolta e conservazione dell'acqua		
Infiltrazione e ricarica degli acquiferi		
Depurazione delle acque		
Protezione degli acquiferi		
Riduzione delle infrastrutture grigie		
Contenimento dei costi di manutenzione delle reti		
Contenimento dei costi di manutenzione del territorio (comprende anche la riduzione dei costi di ripristino e i costi di protezione civile)		
Totale benefici attesi (quanti SI)	n.	

Benefici Indiretti	SI	NO
Conservazione della biodiversità		
Microclimatica		
Ricreativo-sociale, educazione		
Miglioramento del paesaggio urbano		
Senso di appartenenza e cura dei luoghi		
Opportunità economiche e lavori verdi		
Totale benefici attesi (quanti SI)	n.	

- volumi d'acqua gestiti con la NBS (tolti alla rete di collettamento): mc _____
- portate di acqua meteorica intercettata e trattata dai SUDS con tempi di ritorno di 1 e 2 anni: mc _____
- sponde fluviali rinaturalizzate: m _____
- reticolo idrico ri-connesso: m _____
- canali tombati riaperti: m _____
- estensione delle NBS: m _____
- aree depavimentate: mq _____
- mq superficie verde permeabile/superficie permeabile negli interventi di trasformazione e/o rigenerazione urbana: % _____

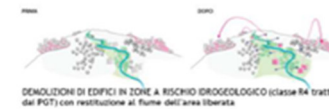
Punteggio complessivo

numero

C2 - Descrivere tramite parametri quantitativi l'intervento

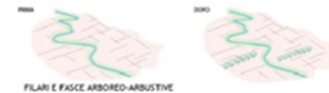
The completion of the form allows to identify the benefits of the intervention

BENEFICI dell'intervento



- Benefici attesi:**
- riduzione del rischio idraulico
 - recupero suolo vivo
 - ricostruzione habitat
 - fitodepurazione
 - regolazione del microclima
 - nuovo paesaggio fluviale
 -

**Maggiori Benefici
MAGGIORE VALORE
punteggi alti**



- Benefici attesi:**
- regolazione del microclima
 - ricostruzione habitat ecotonali

**Minori Benefici
MINORE VALORE
punteggi bassi**

MTTS 1 – Standard forms: Part D

Overall final assessment

Scheda Norma 1 («drenaggio»)

Indicatore	Classe	Punteggio da attribuire	Punteggio attribuito
A1. Livello di vulnerabilità delle UPA in base all'indice di superficie drenante	Inferiore a 65% (Vulnerabilità alta – ROSSO)	3	
	Compresa tra 65% e 75% (Vulnerabilità medio alta – ARANCIONE)	1	
	Altre classi	0	
A2. Indice di Superficie Drenante (IIdren)	K_dren = 0 (bianco)	3	
	K_dren compreso tra 0.0001 e 0.1000	2	
	K_dren compreso tra 0.1000 e 0.2000	1	
	Altri valori	0	
A3. Erogazione potenziale del SE Regolazione degli Eventi Estremi	0 (bianco)	3	
	1	1	
	Altri valori	0	
Punteggio complessivo (n.)			
VALUTAZIONE		Punteggio Finale	
B1. Interventi strutturali per l'efficacia RVM			
B2. Intervento NBS e valutazione dimensionale			
B3. Presenza di Interventi sinergici			
Punteggio complessivo (n.)			
VALUTAZIONE		Punteggio Finale	
C1. Totale benefici diretti attesi (n. Si)			
C1. Totale benefici indiretti attesi (n. Si)			
Punteggio complessivo (n.)			

The final value of all interventions is given by the sum of the partial evaluations of PARTS A, B and C.

This value is used to:

- position in the **ranking of awards** in relation to the strategic nature of the interventions
- **activate the consultation processes** provided for by the MTP and the MTTs **for the compensation of negative externalities and for territorial equalization**

Thank you for your attention



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<https://www.cittametropolitana.mi.it/PTM/index.html>

https://www.cittametropolitana.mi.it/pianificazione_territoriale/index.html

https://www.cittametropolitana.mi.it/welfare_metropolitano/index.html

<https://www.cittametropolitana.mi.it/websit/index.html>

https://www.cittametropolitana.mi.it/Agenda_metropolitana_sviluppo_sostenibile/index.html