

# DT3.3.3 FUA-LEVEL CONCEPT ON

## INTEGRATED CIW MANAGEMENT

TURIN

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/ CITY OF TURIN -

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## CONTENT

<b>INTRODUCTION</b>	<b>2</b>
<b>1. Determination of the territory covered by the strategy</b>	<b>3</b>
<b>2. Stakeholder involvement</b>	<b>3</b>
<b>3. Baseline assessment</b>	<b>3</b>
<b>4. Vision</b>	<b>3</b>
<b>5. Strategic goals and objectives</b>	<b>3</b>



## INTRODUCTION

*Summary of chapters 1-5. The description of stage of local strategies on circular urban water management preparation covering vision creation, goal and objectives setting.*

The TURIN FUA level is improved step by step in every Stakeholder Group Meeting. As already mentioned, the real problem is the absence of an administrative authority above the FUA that can give policies and regulation on the municipality.

Unluckily there are only 3 municipalities plus Turin that are active in the Stakeholder group and we think than without a real contribute of Città Metropolitana which can manage all the FUA Municipality will be hard to achieve the objective of our newborn Strategy Plan.

We can, however, say that the participation of the Stakeholders already on board in SGMs is always constant and active.

With the strong support of Iridra, we are working on the Strategic Plan, planning an elaborate index and collecting new indicators who are prodromal to build next Action Plan.

### 1. Determination of the territory covered by the strategy

*Description of FUA as territorial unit.*

The territory of the FUA of Turin is about 1.701 km<sup>2</sup> and has 89 different municipalities:

Municipalities are strongly different in terms of urbanization and green areas, because some are mountain municipalities and others are urbanized cities. The criteria for determining the FUA territory elected by OCSE meet relevant problems when it comes to adopt laws, regulations, and policies on water management and to create a real governance system, because there is no administrative entity corresponding to the FUA. It would be more feasible to work in a different geographical area, such as “Città Metropolitana” or “Regione”.

### 2. Stakeholder involvement

*The description of the stakeholders, and the way of their involvement in strategy building process.*

*Supplementing the description of the way of stakeholders involvement in strategy building process resulting from the third meeting (SGM3)*

The engagement process is running well, with a high level of participation, both from the qualitative and quantitative point of view.



We didn't add new stakeholders at the moment but we are trying to better involve the ones already on board. We are also strongly collaborate with Città Metropolitana as a core of the administrative power on the municipalities of the FUA with the objective to give top down regulations and policies.

We are working to catch the attention of a new big reality of Turin, "Green Pea", that is a green Retail Park dedicated to the theme of Respect with a low impact on the environment.

### 3. Baseline assessment

*The synthesis of quantitative and qualitative assessment. The data and analysis essential for creating a common vision together with stakeholders.*

As the description of the DT.3.2.3 and we copy below, we can share the same data.

We are working on the strategic plan, creating a new scheme where we are collecting new criteria in order to better have a concrete idea on where we want to go and which action we have to develop: <https://docs.google.com/spreadsheets/d/1hls9WYWrbMtBHcx6wjFi-LEHV3tX9Cn6/edit#gid=1019633486>

FUA TOTAL AREA is about 1.701 km<sup>2</sup> and includes 89 Municipalities, measured data in 2018 count 1.784.753 habitants. The percentage of soil consumed in 2018 was 34,50%. Green area in the entire FUA is about 1.320 km<sup>2</sup>. The average annual precipitation is 927 mm. The water quality evaluation for the rivers, the canals and lakes are in the range between very good and adequate.

The percentage of population with access to the water supply network is 100%. SMAT manages all system of purification and treatment: 93 drinking water plants are currently in operation (some plants simultaneously remove several pollutants).

The processes adopted by SMAT to guarantee the quality of the water supplied to users are as follows: aeration, chemical oxidation with chlorine, chlorine dioxide or ozone, clarification and precipitation, filtration on sand or on exchange resins, reverse osmosis, ultrafiltration, adsorption on activated carbon and other materials, disinfection with hypochlorite, chlorine dioxide and ultraviolet.

The index of real losses in distribution is 24,97% in the City of Turin, there are no dual water distribution system. In 2018 the extent of the sewerage network per inhabitant served (meters per inhabitant) remained stable compared to the previous year.

In order to optimize the treatment of waste water, these are divided into two separate dedicated networks; in this way the dilution of black water (which makes the purification processes more expensive) and unnecessarily "dirty" rainwater (which by its nature is little polluted and requires simpler treatments)



is avoided. For this reason, SMAT, in recent years, foresees the separation of the two types of network for new sewage constructions and for the remaking of the older ones.

SMAT manages a sewer development of 9.526 kilometers of municipal networks, white, black and mixed, corresponding to 4.2 meters per inhabitant served.

Most of the water withdrawn from the environment is of underground origin, i.e. from wells and springs (overall about 82%). Only 17,7% is of superficial origin (rivers, streams, rii). Water produced from wells: 71% Water produced from surface withdrawals: 17,7 % Water produced from springs: 11,3%.

In 2018, the water supplied by SMAT was 177,2 million cubic meters in total, of which almost 79,12% was used for domestic use. Considering that the residents of the municipalities served by SMAT are 2.247.449, an average of 171 l of drinking water per person for civil use was consumed per day in the Metropolitan city of Turin.

Starting from national considerations, it has been estimated that for 2018 in the FUA the annual water consumption was equal to: 290.000.000 of 1,5-liter bottles (approximately 0,66 liter/day per capita).

Use of Potable Water Domestic use 79,12%

Commercial and industrial use 13,61%

Public use 5,83%

Agricultural use and breeding 1,35%

Other uses 0,09%.

#### 4. **Vision**

*The concise description of FUA's desired future state with suggested time horizon for the strategy 2030. The description of outputs of vision creating process (What visions were proposed by stakeholders? How was the joint vision chosen?)*



Stakeholders built a shared vision for 2030 Turin, towards a more sustainable, green and resilient FUA, more sustainability in the water management, and increased cooperation between citizens and institutions.

The indications obtained by the previous stakeholder meetings have been ordered with attention to cause-effect relationship in a scheme pointing out the path from general basic objectives to operational objectives and their indicators, which will be the basis of the strategic plan and the starting point to the action plan.

## 5. Strategic goals and objectives

The identified fundamental objectives (strategic goals) are:

1. Ensure the good quality of water bodies
2. Improve the hydrological response of the territory
3. improve the ecological conditions of watercourses
4. enhance the services offered by ecosystems and NBSs
5. improve the quality of the air and the microclimate
6. Generate consciousness, engagement and awareness, and improve governance
7. Minimize land use

Fundamental objectives are specified through specific objectives which detail the fundamental ones. The practical fulfilment of the fundamental objectives will be achieved through the accomplishment of operational objectives, and it will be measured thanks to specific indicators. In the following we report the specific objectives connected to each fundamental one, and list the connected operational objectives and the indicators that will be used to measure their accomplishment.

### 5.1. Fundamental objective 1: Ensure the good quality of water bodies in the FUA

#### 5.1.1. Specific objectives

The specific objectives of Fundamental objective 1, Ensure the good quality of water bodies in the FUA, are:

- Adaptation to climate change and increased resilience to drought events: reducing withdrawals from the water body
  - Reduce the consumption of drinking water for civil uses
    - Increase the use of rainwater
    - Increase the reuse of gray water
  - Reduce water withdrawals for other uses



- increase the use of treated wastewater for agricultural and industrial uses
- Reduce water network losses
- Reduce polluting loads
  - Reduce the polluting contribution due to untreated discharges
  - Reduce the polluting contribution due to the wastewater treatment plants
  - Reduce the polluting contribution due to flood spillways and urban runoff
  - Reduce the load of diffuse pollution

### 5.1.2. Operational objectives and indicators

The practical fulfilment of fundamental objective 1 will be achieved through the accomplishment of the following operational objectives, measured through the reported indicators:

Operational objective	Indicator
Reduction of network losses within values of ...	Percentage (%) or specific losses (l/d/km)
Provide rainwater collection and reuse systems ... buildings within the FUA	No. of buildings
Provide gray water reuse systems ... buildings within the FUA	No. of buildings
Implement NBSs for the treatment of overflow water/runoff for an area of ...	Total area of the implemented treatment NBSs

## 5.2. Fundamental objective 2

Improve the hydrological response of the FUA territory, through the following sub-objectives:

- Increase infiltration capacity
- Adaptation to climate change and improve resilience to extreme weather events ("Water bombs"): increase retention



### 5.2.1. Operational objectives and indicators

The practical fulfilment of the fundamental objectives will be achieved through the accomplishment of operational objectives, and it will be measured thanks to specific indicators:

Operational objective	Indicator
Create infiltration SUDS to serve a waterproofed surface equal to ...	Total area drained by SUDS
Create green roofs (lamination and evapotranspiration) for a total area of ...	Total area of green roofs
Create diffuse lamination systems equal to ...	Diffused lamination volume created

## 5.3. Fundamental objective 3

Improve the ecological conditions of watercourses

### 5.3.1. Operational objectives and indicators

The practical fulfilment of the fundamental objectives will be achieved through the accomplishment of operational objectives, and it will be measured thanks to specific indicators:

Operational objective	Indicator
Improve ecological conditions on ... km of watercourses	Improvement of at least 1 IFF (= Fluvial Function Index) class in the affected waterways

## 5.4. Fundamental objective 4

Enhance the services offered by ecosystems and NBSs

### 5.4.1. Operational objectives and indicators



The practical fulfilment of the fundamental objectives will be achieved through the accomplishment of operational objectives, and it will be measured thanks to specific indicators:

Operational objective	Indicator
Implement NBSs for the treatment of overflow water/runoff for an area of ...	Total area of the implemented treatment NBSs
Create infiltration SUDS to serve a waterproofed surface equal to ...	Total area drained by SUDS
Create green roofs (lamination and evapotranspiration) for a total area of ...	Total area of green roofs
Implement diffuse lamination systems equal to ...	Diffused lamination volume created

## 5.5. Fundamental objective 5

Improve the quality of the air and the microclimate

### 5.5.1. Operational objectives and indicators

The practical fulfilment of the fundamental objectives will be achieved through the accomplishment of operational objectives, and it will be measured thanks to specific indicators:

Operational objective	Indicator
Create green roofs (lamination and evapotranspiration) for a total area of ...	Total area of green roofs

## 5.6. Fundamental objective 6

Generate consciousness, engagement and awareness among citizens, and improve governance



### 5.6.1. Operational objectives and indicators

The practical fulfilment of the fundamental objectives will be achieved through the accomplishment of operational objectives, and it will be measured thanks to specific indicators:

Operational objective	Indicator
Involve citizens in information, education and awareness activities	Number of participants in activities / year
Involve key players in training activities	Number of participants in activities / year

## 5.7. Fundamental objective 7

Minimize land use