

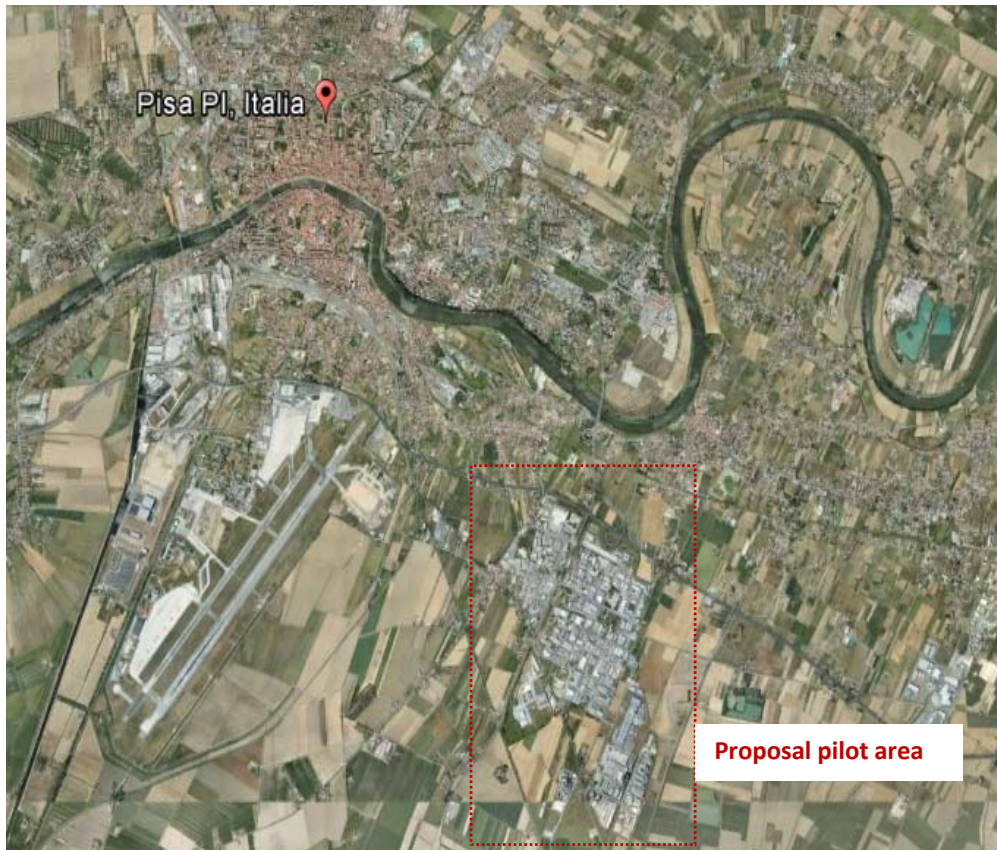
COMPILATION OF INFORMATION DURING THE FIRST MEETING OF REGIONAL WORKING GROUPS ON ENERGY EFFICIENCY

Pilot city details: Name of Partner	
P4 Municipality of Pisa	
City	Pisa
Country	Italy

SOCIO ECONOMIC AND SOCIO DEMOGRAPHIC DATA

Pilot city location and general map

The pilot city location is an industrial and commercial area located on the border between the municipality of Pisa and Cascina. The north part of this area is very close to the Arno river while the rest of borders are rural areas characterized by an hydrological system less.



Number of residents	92.250 (registry data at 31/12/2012)	Yearly growth of population (%)	-0.4%
Is there significant population variation in the city during the year (i.e. during holidays)? Is there quantitative information available about these variations?			
Pisa is a university town with a significant variation during the summer time when student and other non-resident people, like off-site workers, come back home. On the other hand during the summer time people coming from the neighbouring municipalities make the population grow, increasing the pressure of tourism flows.			
Total urban area (km ²)	185,18 km ² municipal territorial area (29 km, 2 areas Pisa and its sea-border area)	Population density (hab/km ²)	92.250/185,18 = 498,16 hab/km ²
Please describe how dense is the urban area (high density, low density, central dense urban area with disperse population nodes, etc.).			
Pisa has an old town grew up within the medieval walls and an urban area all round it composed by ancient sub-urban neighbourhoods and new urban areas developed especially to the north-east side in the new hospital direction. Along the coast the summer towns of Marina, Tirrenia and Calambrone have been developed, starting from the beginning of nineteenth century.			

GOVERNANCE

Organisational information: Stormwater management
Which Agencies/Departments are responsible for stormwater planning?
<p>Basin Authority: it is responsible for the planning under the National direction</p> <p>Department of the Soil Protection (Tuscany Region): operationally manages the events and defines mitigation actions</p> <p>Province and Prefecture: handle the event if relevant provincial or local level</p>
Which Agencies/Departments are responsible for stormwater management and maintenance?
<p>The monitoring is done by the Region of Tuscany through its Functional Centre</p> <p>The Management is entrusted to a committee that handles emergencies through a steering group made up of different actors and authorities having jurisdiction in the matter.</p>
Payment method for drainage service
<p>The maintenance of the minor drainage grid and of Arno river is the responsibility of the Province of Pisa, who through the consortium rivers and ditches, provides for the maintenance and fee collection.</p>
Normative and policies
Are Sustainable Drainage Systems (SuDS) mandatory or recommended for new urban developments? (Yes/No)
If Yes, is there a standardised procedure/policy for design/application of SuDS?
<p>The hydraulic safety refers to the activities for the area protection from floods with 2 hundred years return periods</p> <p>The minor grid has not been conceived to tackle this type of event then for the new foreseen settlements some specific interventions to securize different areas must be carried out</p> <p>The rules and procedures are those defined by the instruments and acts of the Basin Region Authority and the Municipality.</p>
Organisational information: Flooding
Which Agencies/Departments are responsible when flooding occurs? (e.g. City Engineers, Planning Department, Environment Department, Roads Department ...)
Civil Protection
Organisational information: Energy supply
Which Agencies/Departments are responsible for Energy?
<p>The municipal government has named and defined:</p> <ul style="list-style-type: none"> - The energy manager - The SEAP or the Sustainable Energy Action Plan to achieve the objectives of European policy

2020

The agencies responsible for energy supply are ENEL (for energy production and distribution) and AGES (gas supply)

Organisational information: Other Agencies/Departments

Which other Agencies/Departments are involved in Water and Energy?
(e.g. Environmental regulator, building/site owners...)

All the water **supply** and wastewater facilities are owned by the municipality of Pisa.
Acque s.p.a. manages the integrated water supply system and the municipality of Pisa manages the white sewers directly.

WATER MANAGEMENT SYSTEM

Water courses in the urban area	
Description of water courses in the urban area (if applicable)	
<p>In the urban area the grid is made by the main channel of Arno river, which partly runs through the heart of the city, which has as its sole branch the State- owned channel</p> <p>There is also a second hydraulic system made by the drainage grid with both natural and mechanized drain.</p>	
Map where the catchment areas of these water courses are in relation to the urban area (if applicable)	
See the previous section	
Are river flooding events common in the city?	NO, TR. 200
Rainfall data	
Annual average rainfall (mm)	900 mm
Monthly average rainfall (mm)	
75 mm	
Is there rain gauging data available inside the city?	There are 3 rain gauging station
Is there data about water quality of rainfall?	/
Water supply system	
General description of the water supply system in the city, explaining the main water sources, treatments and structures.	
<p>There are three areas where are located several boreholes. The underground water is treated to remove metals and disinfected; from the treatment plants the water is pumped to the network. In one plant water is pumped directly into the network using pumps with frequency inverters, otherwise is pumped in reservoirs over the hills that supply the network.</p> <p>In the water supply network the pressure is automatically controlled using an integrated control platform.</p>	
Total amount of water initially supplied (considering losses) and finally consumed by citizens in the city (m ³)	12.207.415 m ³ /year (the City) -
Does potable water quality fulfil international (such as Council Directive 98/83/EC and OMS's guidelines) and national rules quality requirements?	Yes
Is water pumped in the water supply system?	Yes, directly or through reservoirs on the hills
Are gardens and parks irrigated with potable water?	Yes – In case of water scarcity the permit can be restricted

What are the pumping requirements of the water supply system? Please indicate an approximate range of values.	
Pressure Range =	1,8 - 2,5 bar
Height Differences Range =	55-65 m
Pumping Distance Range =	400-1000 m
Drainage system	
General description of the drainage system in the city, explaining the materials used and its main structures (pipes, culverts, etc.).	
In urban areas there are some drains conveying the waters into the sewer white or mixed. In non-urbanized areas the waters naturally flow into the minor grid. Combined sewers are also equipped with overflow facilities.	
Is it a combined or separate system?	Both; only in some areas there is a separate system
Is the stormwater pumped?	Yes
Is stormwater reused? How much water is reused (% and volume)?	No
Does drainage system discharge into a sewer treatment plant?	No*, only partially
If yes, is water pumped in the treatment plant?	Yes, there are several pumping stations
Is the drainage system capacity enough?	No
Are pluvial flooding events common in the city?	Yes
Have Sustainable Drainage Systems (SuDS) been used? If they have been used, please provide a general description.	
Due to the local standards, some treatment tanks of rain water will be realized for the new constructions	
Which are the main planned structural measures in the urban drainage system? Please describe them briefly.	
<p>Cases of expansion: made surfaces: 85.000 mq , made volumes160.000 mc surfaces to be realized 110.000 mq, volumes to be realized66.000 mc</p> <p>Pumping stations: 8 working pumping stations, total flow: 46.000 l/s Kwh medi annui (last 4 years): 758.023 Average cost (last 4 years): 162.742,62 Works in progress: n.2 new pumping station, total flow: 27.000 l/s</p>	
Is it planned to use Sustainable Drainage Systems (SuDS)?	Yes
Is it planned to increment the volume of stormwater reused?	Yes
General water management problems	

According to your experience, what are the main problems related with the water management system in the city?

- Management of the exceptional events of the Arno;
- Criticalities of the minor grid;
- Sewer system not adequate to flash storms

ENERGY CONSUMPTION IN WATER MANAGEMENT

Facilities	
Where do you think energy consumption is less efficient in your water use cycle? Please describe.	
to deepen	
How old is the treatment facility for water supply?	Presence of historical grid
What is the energy consumption range of the treatment facility for water supply (in kWh/m ³)?	0,36 kWh/m ³ treatment and distribution
How old is the wastewater treatment facility?	About 40 years
What is the energy consumption range of the wastewater treatment facility (in kWh/m ³)?	0,5 kWh/m ³
Pumping	
What energy vector do you use for pumping (fuel, electricity)? Please describe.	
Electricity generators and supports	
Other comments in energy consumption about your water cycle.	
<p>The water supply requires a lot of energy cause we use only underground water that must be pumped before the treatment and after the treatment.</p> <p>The water supply network has been optimized controlling the pressure to reduce water leaks and the related energy losses.</p> <p>The wastewater treatment plants have automatic control for energy saving.</p>	