

EXTREME CITY

**Climate Change and the
transformation of the waterscape**

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SCUOLA DI DOTTORATO

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WET WET WET

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What if we could buy time to adapt by storing water...a territory built by water collection

The main characteristic of the wet plain is the impermeable condition of its soil. The landscape is the result of the reclaimed land of an ancient lagoon. The water management is mainly via the ground through the existing system of wells (that hasten the salination of the underground water); the drainage system includes channels that drive the excess fresh water into the sea. The wet plain presents a flood risk in occurrence of peak events. In addition to this and due to climate change, more problems are added with the rise in the sea level. Certainly, due to its position, the area is directly related with the dry plain and to the coastline. We assume the scenario of a better water management in order to control flooding in the dry plain. Likewise we assume the possible coastline scenarios of resilience or resistance.

ACTIONS:

To solve these problems, we decided to act on three levels:

Productive System

Assuming an induced process of salinity of the lower areas, nowadays productively inefficient, we propose a gradual adaptation in time of the agricultural structure that will imply new uses of the land. This entails the introduction of "halophytes" for biofuel and food, and aquaculture in the coastal plots.

Settlements

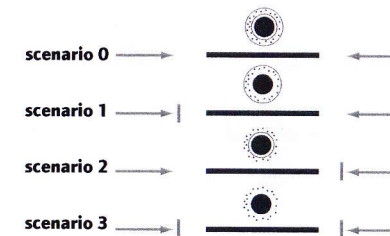
The process will generate new situations in the area in question. In time the new structures that will appear as a result of the water management will give rise to new settlements as a form of adaptation to the new scenario.

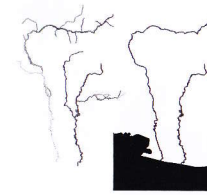


Infrastructure

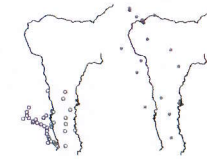
We intend avoiding the use of the wells. To combat the flood risk, we will provide areas that could take on the excess water should extreme conditions occur. Three main locations are proposed. In the urban areas (for example one being the area of San Doná di Piave). We have also selected some spaces near the rivers such as upstream along the river Livenza, before the rivers Monticano and Meduna join it. And in a dispersed way in the farmland: every plot will have its own "local" storage system connected to the general water system. A new intermediate water level system is to be designed, in addition to the existing network, in order to soften the pumping system. To tackle the process of salination, we would create an ecological corridor or "sponge" connected to the fresh water system. The pressure of this water storage corridor would repel the salinity problems in the first stage. This corridor will also include a natural water purifying system. At the same time, we would take the opportunity of introducing new settlements and uses of the land (eco tourism, etc) to the area. The said corridor is mainly located along an ancient riverbed and introduces the pre-existing courses, channels, paths, etc into the site design. Indeed our proposal has been conceived making maximum use of the site's existing tracks and dynamics, offering a soft-realistic approach to the set problems.

wet
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 wet

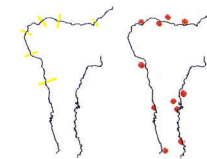




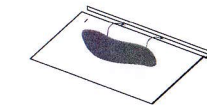
Hydrographic system of the Piave and the Livenza. The rivers are composed of a series of secondary and tertiary tributaries.



Groundwater wells system.



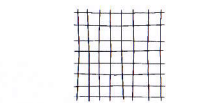
Instead of considering the standard approach of the condition of the main branch of the river, we decided to intervene in the second and tertiary tributaries and drainage system.



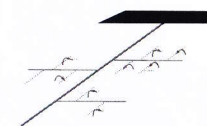
One of the parameters of the water tax is based on the amount of water discharged in the canals and pumped out from the polder.



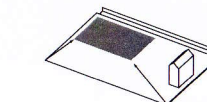
Use of wells and the direct surface discharge allow underground salinity infiltration.



Fragmentation



In case of a peak event the drainage system discharges a large amount of water into an already turbulent river.



Diffused water storage as an answer to the preceding issues.



Rooms for the river.



Diffuse water storage and collective buffer zone.



Intermediate water system.



Present day water system with a direct discharge into the river system.



Proposed water system, with a low storage and the use of the existing topography to create an intermediate water system. This system requires less pumping power and enables a direct discharge into the sea in occurrence of a peak event.



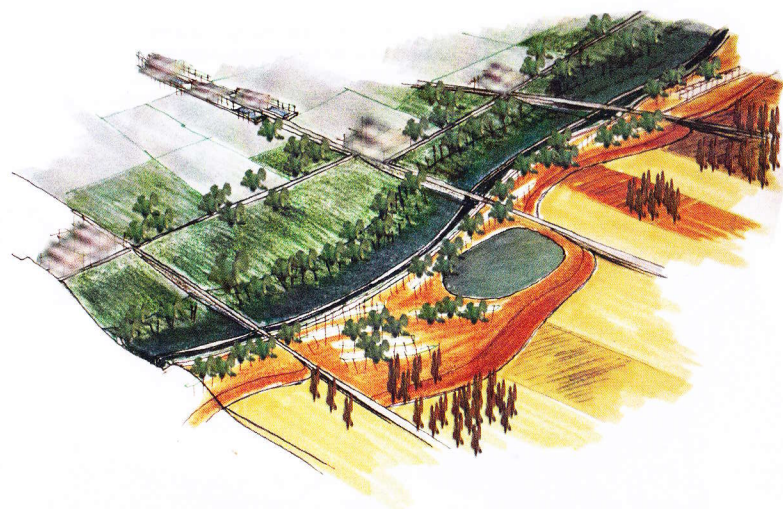
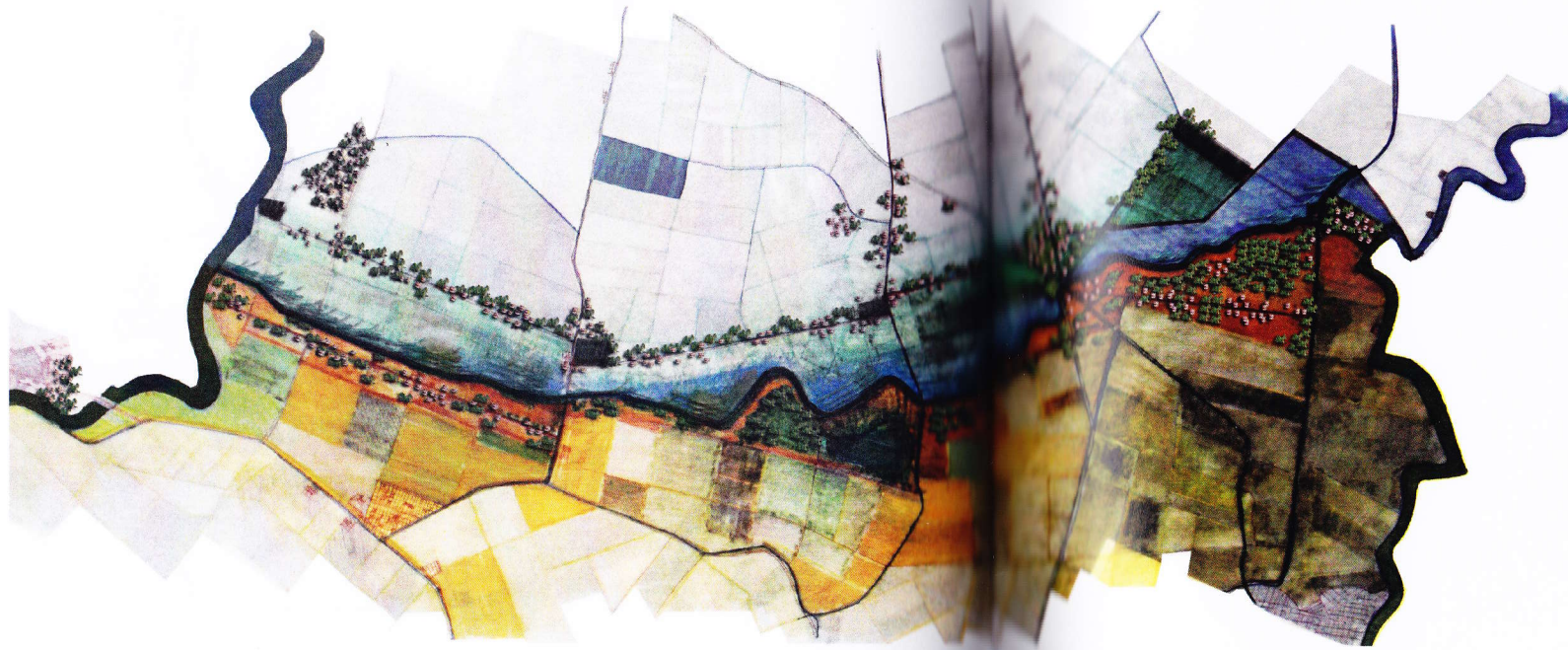
Section of the diffuse storage in the existing farms.



Section of the sponge zone.



View of the possible landscape created by the diffuse water storage system.



Balance between salty and fresh water.

