

Water Management Strategies against Water Scarcity in the Alps

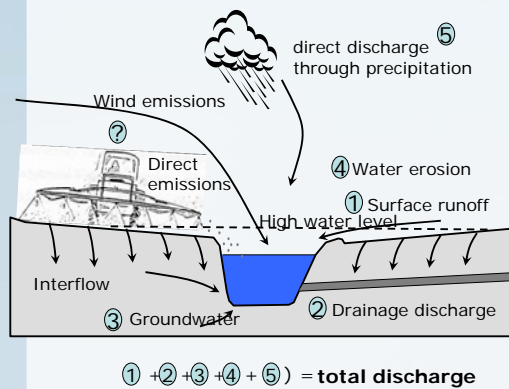
SCRIVIA RIVER BASIN

Pilot Site

The Scrivia torrent rises in the Ligurian Apennine, near Torrighia in the province of Genoa, at the mount Prelà slants, (1.416 m a.s.l.), meeting Po, a bit upstream of the Lombard town of Voghera, after having gathered its own tributaries waters, among them Spinti, Borbera, Ossoina and Grue. While its first is characterized by an Apennines typical landscape and then by a hilly one, after that by a very narrow valley, approaching the plain the torrent gets a meander-like morphology, typical of the plain environment.

Most of the plain zone is strongly anthropized, characterized by a certain landscape monotony and having a limited natural vegetable cover, relegated in the main water-course river-bed and in the residual edges of the plain wood. But generally the pebbly shore of the torrent Scrivia is one of the best examples, with regard to naturalness and territorial extension, of the fluvial habitat well preserved in Piedmont, almost completely avoided the water-courses generalized artificialization. In particular, a part of the Scrivia pebbly shore, because of its own high environmental valency, has been defined Site of Communitary Interest according to the Habitat Directive 92/43/CEE (Natural and semi-natural habitat as well as flora and wild fauna preservation) marked by the code IT1180004.

Approach



Data Sources

Meteorological and hydrological data, used in the analysis processes made for the project, result from the monitoring network of the Piedmont region, today belonging to A.R.P.A. (Regional Agency for Environmental Protection). It's a complex network of stations monitoring the system of water flow and precipitations characterizing the basin of the Scrivia river.

Data come from 15 rainfall stations and 5 hydrometric stations scattered along the Scrivia river, upstream to downstream.

Moreover, to define the land use closely related to water availability, the maps already available in the Corine Land Cover system and the thematic ones contained in the Plan for the Protection of the Waters of the Piedmont region have been considered. Therefore, the data thus obtained have been integrated in order to outline the characterization of the basin of the Scrivia river.



Layer: precipitation, temperature Data Source: climate Station Data (temporal point datasets)	Climate Data
Layer: Digital Elevation Model (DEM) Data Source: national data provider	Surface terrain
Layer: land use, Land Cover, land use intensity, management practices, cadastral map Data Source: Corine Land Cover, satellite imagery, national data provider	Land use & Topography
Layer: streams, ditches, gage stations on stream network Data Source: digitization, national data provider	Hydrologic Data
Layer: water abstractions, drainages Data Source: national data provider	Pressures
Layer: (hydro-)geology Data Source: national data provider	Geology

Driving Forces

From the analysis of the environmental components it's evident that the quantity impairment level of the surface water resource in the Scrivia river basin can be estimated as high because of the existing drawings (not many) and a runoffs natural regimen typical of the Apennine basins and particularly unfavorable during the summer, whereby little drawings cause significant criticities. Thus, regarding the water scarcity, the Scrivia river is affected by an organic origin pollution, therefore by a punctual eutrophication mainly downstream of the town and industrial significant centers' cleaners. The environmental quality of surface waters is considered sufficient in the part of the Scrivia river from downstream Stazzano area to the Po river, due to significant urban centers. In the plain area the quality criticities found in the shallow aquifer concern the impairment by nitrates (common) and organohalogen solvents (localized); in the deep layer there is only an impairment by nitrates (localized). In the mountain basin part the potential criticity situations are related to the inadequate sanitary protection of the drinking water supply sources from springs, or to the vulnerability of the aquifers in alluvial valley bottoms.

Results

The weather patterns, the hydraulic and physical ones useful to interpret the data obtained from monitorings and analysis made on the territory must be collected to identify a single conceptual pattern able to define a strategy for planning, incorporating the needs of the area stakeholders, the river ecosystem ones for its own survival. The integrated pattern has as input the series data which describe the climate trends in the last 30 years. Therefore, in relation with the findings resulting from the analysis of the climate data, there is the availability of water resource in the surface sector, in a close connection to the underground one. This leads to define a simulation pattern of the actual availability of water in the basin of the Scrivia river. Reckoned with the latter data, we must estimate the needs of the river ecosystem (water need for keeping a good level of healthiness) and the anthropic usages, analyzing causes and effects of such an usage. Then we will identify a planning strategy able to keep the two needs balanced. The expected result is thus to build a pattern of long term policy making which could be the basis for the proper planning.

Further Details (only in Italian)

> www.contrattidifiume.alessandria.it

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