L’assetto istituzionale e le attività dell’Autorità di Bacino del fiume Po

Institutional structure and activities of Po River Basin Authority

Beatrice Bertolo
Republic of Italy: administrative structure

In Italy the State is organised in four institutional levels:

- **State** - with legislative power
- **20 Regions** - with legislative power
- **103 Provinces**
- **8101 Municipalities**

Each having different assignments - ruled by law. These assignments are changing in the last years, due to a decentralization process.

Being part of the European Community, Italian legislation has to take in rules and directions of European directives following the subsidiarity principle.
The first law on water resources dates back to 1933, with the Royal Decree n.1775/33, which recognizes surface water as public, thus giving the responsibility of their management to public administration offices.

From then on, several laws have been issued on water management, but a fundamental step is represented by the Law 183/89.

**Law 183/89** established the hydrographic basin as the environmental reference system within which all regulatory actions concerning soil protection, water pollution abatement and water resources management had to be coordinated for the purpose of rational economic development and the protection of the environment.

For the national significant basins, the law set up Basin Authorities. Basin Authorities are collegiate bodies in which state and regional authorities are represented and are headed by the Italian Ministry for the Environment and Territory.
Legislative Decree n. 152, April 3rd 2006

“Rules on environmental matters”

This legislative decree sets up a unitarian frame for environmental matters, which has not yet finished its institutional course. A part of the decree takes in the european Water Frame Directive, which imposes to member states the institution of River District Authorities, thus expanding to the rest of Europe the italian “river basin” approach to water resources management.

Therefore italian national River Basin Authorities are going to be transformed into River District Authorities.
Law 183/89, Art. 12 - Organisational structure of Basin Authorities

**Ministry**
- Environment and Territory
- Agriculture and Forestry
- Cultural and Environmental assets
- Transport and infrastructure
- Civil Defence Department

**Regions**
- Valle d’Aosta
- Piemonte
- Lombardia
- Veneto
- Liguria
- Emilia-Romagna
- Provincia Autonoma di Trento
- Toscana

**Institutional Committee**
- Ministers
- Presidents of the Regions
- Secretary-general

**Technical Committee**
- Representatives of the Regions
- Experts

**Technical-Operational Secretariat**
- Secretary-general
  - who oversees and coordinates the Authority activities, chairing the technical committee and directing the technical - operational secretariat

The diagram illustrates the organisational structure of Basin Authorities, highlighting the decision-making authority and the operational functions.
The main responsibility of the *Po River Basin Authority* is the drafting and implementing of the *Basin Plan*, covering soil defence, hydrogeological and hydraulic reorganization, water and land utilisation.

The *Basin Plan* lays down policies and measures for the basin as a whole, responsibility for their implementation being assigned to regional and local administrative bodies in accordance with their areas of competence.

Some of the most serious situation in the basin area relate to landslides and erosive phenomena, floods, surface and groundwater pollution, drinking water contamination.
Internal structure of the technical-operational secretariat

Secretary General

General affairs
Human resources management, contracts and balance sheet, accounting

Specialistic and transversal-supporting services
Juridical office
AdbPo Information system, data elaboration and cartography

Technical offices:

- Basin Governance
- Hydrogeological risk attenuation
- Local development and economic estimate
- Territorial and fluvial corridor development
- Water resources protection
Le caratteristiche del bacino del fiume Po

Po river basin characteristics
Main European rivers
Overall data:
- Area of the basin: 74,000 km²
- Length of river course: 652 km
- Minimum daily flow rate at Pontelagoscuro: 165 m³/s
- Maximum daily flow rate at Pontelagoscuro: 10,300 m³/s
- Area of the Burana-Po di Volano, Delta: 4,000 km²
The Po river watershed: the territory

- Mountain areas: 58% of the territory
- Alluvial plain: 42% of the territory

Il fiume Po percorre 650 Km dal Monviso al mare. Attraverso i suoi affluenti principali drena una superficie di 74.000 Km²:
  - 70.000 Km² alla chiusura idrografica di Pontelagoscuro (FE)
  - 4.000 Km² Burana-Po di Volano e Delta
The Po river watershed: hydrographic system’s main features

Total length of main rivers: 6,750 km (main rivers: longer than 20 km, or directly flowing into Po river - 28 rivers - or directly flowing into Po affluents - 16 rivers)

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Artificial channels for irrigation and land reclamation are altogether 16,750 km long.
Po river and the tributary’s “winter” dikes

**Embankments:**
- Po River’s dikes: 864 Km
- Tributaries’ dikes: 1424 Km
- Delta’s dikes: 154 Km

Total: 2442 Km
The Po river watershed: main groundwater bodies - shallow aquifers
The Po river watershed: main groundwater bodies - deep acquifers
A general view of the administrative and socio-economic situation

GDP: 40% of the national GDP

Population density: inhabitant per km²

- Population: 16,000,000
- Medium population density: 225 inhabitants/km²
- Max population density: 1,478 inhabitants/km²
- Min population density: 25 inhabitants/km²

Industrial density: employed per km²

- GDP: 40% of the national GDP

3210 Municipalities:
- Regione Lombardia: 1,541
- Regione Piemonte: 1,209
- Regione Emilia-Romagna: 225
- Regione Valle d’Aosta: 74
- Prov. Autonoma di Trento: 62
- Regione Liguria: 61
- Regione Veneto: 36
- Regione Toscana: 2
Le attività dell’Autorità del bacino del fiume Po

Activities of the Po river basin Authority
General activities

Planning: the principal institutional activity is individuated in PLANNING activities, having as GOAL soil protection, water pollution abatement and water resources management.

Programming: the basin plan sets up a frame of objectives and scenarios, inside which PROGRAMS and ACTIONS have to be individuated every three years, to bring those objectives and scenarios into reality, and this is another fundamental activity for the Po river basin authority.

Coordinating: many actors are involved in territory use and management, and each one of them has different goals and institutional duties. To reach plan objectives, these actors have to be involved in the planning process and coordinated, in order to put together resources, ideas, “energies” to REACH COMMON GOALS.

Applied research and fostering of pilot projects.

Basin authorities are entrusted even with the duty of giving authorization to all water abstractions, and realization of infrastructures having impacts on water flow (roads, railways, river crossing bridges…) = control of the respect of the plan dispositions.
Data types
• Topography
• Hydro-geological historical data
• Water quality data
• Water uses
• Land use
• Hydrography
• .....  

Collected with different technologies:
• Laser - altimetric surveys
• Satellite images
• Hyperspectral surveys
• Historical analysis
• Aerial - photogrammetric surveys
• .....
Data Acquisition: topography

Laser - scanner: Data from laser-scanner allow to build:

- Digital elevation model
- Digital surface model
- Slope Contour lines and maps
Data Acquisition: historical data

Map of 1833

Map of 1998
Data Acquisition: water quality and quantity

INTER-REGIONAL QUALITATIVE-QUANTITATIVE MONITORING NETWORK FOR SURFACE WATER

Adriatic sea
Localization of the most important critical situations

- Criticità localizzate per grandi frane di tipo alpino
- Criticità per franosità diffusa sul bacino terziario piemontese
- Criticità localizzate per grandi frane di tipo appenninico
- Rischio di esondazione sui grandi laghi alpini
  - Grandi frane
  - Fenomeni di conoide
2.324 built-up areas

Interference between landslides and built-up areas and infrastructures

Infrastructures
(roads, railways, ...)
Critical situations recognition

The map of hydro-geological risk

\[ R = (E) (H \times V) \]

- \( R_4 \) - Very high
- \( R_3 \) - High
- \( R_2 \) - Medium
- \( R_1 \) - Low
Planning activities: sector plan for the hydrogeological arrangement

Individuation of Flood hazard protection areas
Data Elaboration: individuation of flood hazard protection areas

FLOOD MAP using hydraulic models and GIS

FLOOD MAPS (hydraulic models and GIS):
- Flood extension - level / area
- Duration of flood
- Comparison of impact in different situations
Planning activities: sector plan for the hydrogeological arrangement

Landslides cadaster
Reduction of the actual risk:
- Delimitation of the very high risk areas
- Structures for defence and control of the phenomena in order to reduce the very high risk integrated with the civil protection plans for the management of the emergency
- Economic instruments to place the existing buildings outside the very high hazard areas
- Modification of the infrastructures interfering with the phenomena

Prevention of the increase of the risk in the future:
- Delimitation of the hazard areas as a function of the particular hazardous phenomena
- Regulation of the land use in the hazard areas with rules becoming stricter and stricter with the increasing of the hazard
Overview of quality goals established by the Sector Plan, to be met at latest in 2016.
This plan is in the phase of drafting.

The plan is already structured in terms of giving “discharge” objectives for surface waters in pre-determined Po-river sections in different periods of the year.

For groundwaters, the problem is still hard, considering the difficulty of calculating groundwater balance due to the lack of suitable data on every factor involved.
Programming activities: an example

Po river sediments management plan

Signed in form of an agreement between Po river basin authority, Po interregional agency, and regions Lombardia, Emilia Romagna, Veneto.

**Goals**: obtain good conditions of Po river in terms of hydraulic, morphologic and environmental functionality.

**Tools**: non-structural and structural

*Non structural*: data and knowledge acquisition on solid transport, river bed morphology monitoring, individuation of rules for river bed maintenance,

*Structural*: sediment removal and/or deposit where necessary – inside the same river basin; corrections on the actual hydraulic
Coordinating activities: actual existing Projects

- With middle Po valley riverine Provinces: consulta delle province
- Riva di Po: with middle Po valley riverine Municipalities

- Re.Mo (REte di MOonitoraggio - monitoring network): With basin regions’ Arpas
  - To conjugate environmental protection and territorial development
  - To coordinate monitoring activities in the basin, and raise basin scale objectives awareness and importance
  - To give guiding lines for an integrated and participated approach to the maintenance of mountain areas, comprehensive of social and economic aspects, and to make maintenance an ordinary process, funded by ordinary funds.

- ManuMont: mountain areas maintenance pilot project
  - To collect, share, organize, elaborate data on water resources, both actual (real time) and historical
Progetto MANUMONT: mountain areas maintenance pilot project

dimostrare la **sostenibilità** di un sistema di manutenzione permanente

definire **concetti e criteri condivisi** di ricognizione, controllo e manutenzione del territorio

proporre **modelli di coinvolgimento degli enti locali nell’attività di manutenzione**

individuare meccanismi di **finanziamento continuativo** per l’attività di manutenzione

individuare meccanismi di **affidamento dei lavori compatibili con il nuovo carattere di “servizio”**

individuare **procedimenti amministrativi semplificati** e condivisi per l’approvazione dei programmi e degli interventi
**FASE 1**

Individuazione di criteri e metodi per la redazione dei piani di manutenzione e prima raccolta dei quadri conoscitivi

**Linee-guida per la predisposizione dei Piani di manutenzione del territorio delle Comunità Montane**

**FASE 2**

Sperimentazione delle Linee-guida attraverso la predisposizione di Piani di manutenzione

**Piano di manutenzione**

- Profilo strutturale
- Profilo strategico
- Profilo attuativo
River restoration and environmental requalification of Po fluvial corridor

**Goals:** biodiversity increase; diffuse restoration of natural conditions, tourism and cultural activities enhancement

Through different **action lines:**

- Primary system of ecological network
- Increase of wooded areas
- Compatible agriculture
- Conservation and restoration of wetlands, biotopes and environmental emergencies
- Realisation of tracks along the Po river
**Water resources protection through realisation of buffer riparian zones**

**Definition:** Buffer riparian zones are vegetated areas interposed between field- and river-ecosystems, able to intercept and reduce the amount of anthropogenic pollutants reaching surface and groundwaters.

**Goals:** Gained experiences analysis, critical situations recognition – at a basin scale; guiding lines for actions programming, in order to achieve more efficacy in pollution impacts reductions.

Through different **action lines:**

- Definition of one or more “actions” to spread the use of buffer riparian zones as territory management tools, and sharing/coordinating of these actions at regional level
- Better integration between different institutional levels (local, regional) and between different sector politics (e.g: soil protection, water protection, river restoration)
Activities related to the Water Framework Directive

Italy has not completely taken in instructions from the WFD yet, but the Ministry for Environment and Territory, together with Regions and Basin Authorities is working to characterise rivers and groundwaters, after different water body types, specifically individuated for our territory (system B - annex II of the WFD).

At national level types for surface waters have been identified, and now it’s starting the identification and classification of surface waterbodies.

For what concerns groundwaters, the Ministry is proceeding to the identification of waterbodies under the WFD guiding lines, making the most of the work already done by Regions for the drafting of PTAs.

Basin authorities are playing a major role in coordinating the work done by the regions.
THANK YOU
FOR
YOUR KIND ATTENTION