

The *Piemonte* System: a governance model



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1. The Piemonte System: an effective model of governance for the water resources

1.1. Management

In order to ensure the best management of the water assets and enable not only the mere consumption, but also fruition by all the economic and social categories, as well as to protect the renewal potential of the water systems, the resource and its use are to be governed and monitored and – subsequently – the demand and offer are to be coordinated.

To do so, resort is to be made to a management system which – through both the consistent monitoring of the status and the application of models of interpretation – can assess the status of the demand throughout the territory and ensure all the activities connected to it while allowing - at the same time – for short, medium and long term planning. Such system must also enable - mainly in situations of water quality and/or quantity emergency - to define a process which leads to decision making on the basis of the knowledge acquired (Decision Making Support System) and apply all the structural and non-structural resolutions which may mitigate the phenomena and face any emergencies.

Managing the water resources is a rather complex operation which has to take into account a variety of variables. Such variables are autonomous and – though - not independent to one another; often even in conflict. The law concerning the integrated hydraulic services (Galli law 36/94) is a powerful legislative instrument for an effective response to the complexity of the system and of its management, also in the light of the new EU directives.

As a matter of fact, the principles for the coordination of the different uses of the service are already clearly outlined in the Galli law (even though it is formulated for the urban cycle of water). Such law – when interpreted at a wider scale – is found to respond fully to EU Directive /60, namely:

- The sustainability in the uses of the resource in the meaning that - once its limited availability and vulnerability are acknowledged - its exploitation is to be carried out in compliance with modalities and criteria that ensure its renewal;
- The multiplicity of uses (civil, irrigation, industrial) as well as the preservation of the natural ecosystems. Each of these uses has different reasons, logics and – in general – values to be harmonized and made compatible to the quantity and quality of the resources available;
- Protecting the interests of each sector must not affect the overall system;
- Responding to the financial and economic aspects through rational planning of all the management operations to enable the application of tariff systems compatible with the uses, in order to maintain the structural and functional efficiency of the providers;

- Territory rebalancing between the area where water “is” and where “is consumed”, through technical and economic criteria.

The consistent pursuit of the highest efficiency of the water cycle for civil, irrigation and industrial purposes remains the issue which draws its own vitality from the external system, which – on its turn – is to be protected and targeted to the highest level of efficiency.

By “external” system we mean all the other infrastructures of conveying, storage and regulation, as well as the natural water systems. The interactions - also because of the necessary conceptualization of the issue – are summarized in punctual introductions and subtractions. All these actions are regulated by a set of laws, standards and concessions which – in order to be coordinated and achieve quality and quantity efficiency of the macro-system and protect the bodies of water - require appropriate instruments to ensure an equitable, planned distribution of the resource for all the social and sanitary uses as well as for the whole set of the economic activities which originate from water in a perspective of eco-sustainable development.

Therefore, the continuity of the system is an essential factor and calls for the close coordination of all the competences.

The Piemonte System is certainly an example – at both national and European level – of coordinated management, planning, monitoring and intervention. The featuring elements of the Piemonte System are:

- Knowledge – with continuity in space and time – of the evolution of the natural and anthropic systems which originate from water. In order to plan their uses, the hydraulic and hydrologic features of the bodies of water need to be clearly detected, as well as the various uses such bodies shall be submitted to, the changes on the hydraulic system they involve and the criticality situations for both the environment and the users. All the above, of course, not only in terms of quantity, but also of quality and regeneration capacity of the system.
- Efficient coordination between the various public and private subjects allocated to the water resource management.
- Planning of the activities throughout the territory, and – therefore - of the social and economic development, in order to plan the current and future use of water.
- Detection of multi-objective and long period management for all the important reserves, be they natural or artificial.
- Consistent investment in scientific research and technology to ensure the adoption of instruments and means for the pursuit of the objectives of saving and preservation.
- Implementation of efficient control systems throughout the territory for the outflows coming from industrial and agricultural activities which might otherwise translate into widespread consistent phenomena of pollution in addition to environmental disasters often caused by unskillfulness, superficiality or lack of appropriate industrial infrastructures.

The aforementioned elements are the necessary premises for an effective governance of the water resource to regulate the withdrawals, coordinate the uses and protect the natural water systems, keeping into account a criterion which is now widely acknowledged, i.e. the uniqueness and integrity of the water resource.

These same instruments – thanks to the capillarity of the monitoring actions and interpretation models on the territory - enable a consistent prevention and warning action to every anomaly, thus avoiding – in the largest majority of cases – their turning into emergencies.

In an evolved social system, the elements above are translated into subjects appointed to guarantee the aims of integrated management of water balanced development of the territory.

1.2. The subjects

It is nowadays generally acknowledged that in the environment – and even more as far as the water resources are concerned – there is a coexistence of dimensions which stretch from local to global, so that the application of the principle of sustainable development necessarily passes through the integration and compatibility of levels of local action with the global ones.

Subsequently, the solution of the issues must – on the one hand – have general criteria and reference principles which clearly define what objectives and quality levels of the environment are intended to be pursued and – on the other hand – keep into account the deep specificity and diversity of the local contexts in terms of resources as well as of social, cultural and institutional features.

Such approach necessarily implies a plurality of public subjects intervening in the system to take objectives and logics of action which are different and sometimes even conflicting.

Overcoming such institutional complexity is bound to lead not to centralized policies but – rather – to a “Governance of fragmentation ” through integrating instruments which highlight the local peculiarities, in a stable, clear reference framework of principles and objectives.

The institutional distribution of competencies stretches therefore from addressing the subsidiary character: each institutional level develops – in full autonomy – the functions which are under their specific competence and the different levels of governance involved arrange their actions with the aim of building up the necessary synergy.

Consequently, the ineluctability of an integrated approach has inspired the action of the European Union, the reform of the national legislation and the enforcement of the regional legislation and planning.

1.3. The Region: "Regione Piemonte"

The Regional Council is committed the role of local legislator aimed at carrying out the connection – as regards the legislation and planning of the interventions – between the principles, objectives and addressing lines above and the needs and peculiarities of the peripheral situation. The Council is also committed to an actual role of guidance and support of the institutional subjects which refer to it in order to carry out an effective efficient system of administrative functions allocated to the Province Councils, to the single and associated municipalities and/or *Comunità montane*¹ functionally linked to the territory and demographic reality of the region.

Subsequently, the action of *Regione Piemonte* has been characterized as follows:

- Significant investments in the infrastructure sector, with the implementation of momentous waterworks, sewage and waste water treatment plans, in some case even of actual excellence at European level;
- Regulatory and planning actions which have pursued the reclaiming of the environment and the attainment of quality objectives for the bodies of water for a long time:
- Territory organization which – on the one hand – has facilitated – by means of a high level of association – the extension of the hydraulic services to large areas of the regional territory and – on the other hand – involvement of all the local institutions in the administrative management of the resource;
- A deep, durable synergy with the academic and – more generally – scientific world, founded on the exchange of experience and knowledge as well as on the pursuit of the technological innovation.
- Attention to the water issues, which has encouraged and facilitated the spontaneous birth of organizations dedicated to activities of research, propagation, training, sensitization and cooperation.

The current commitment of *Regione Piemonte* focuses on the setting up and enforcement of the Plan for the preservation of water which – on the basis of the social, economic, organizational and physical features, and analyzing the status of the criticalities detected, adopts criteria of intervention and formulates the framework of measures to be undertaken in order to meet the ambitious objectives of preservation defined in both the national and EU directives.

The methodology adopted for the drafting of the plan has followed the logic schemes defined as DPSIR (Determinants – Pressures – Status – Impact - Responses), which is coherent with the set up of the framework directive and widely assumed at international level to detect the "causality link " according to models which establish systematic relationships and connections between the different categories which characterize the environment issues.

¹ Local authorities in the mountain area

The measures proposed belong to diversified categories – regulation and organization structural interventions for the actual setting up of infrastructures, improvement of the knowledge and support to the decision-making process, communication and promotion - and are related to the classifications of the bodies of water as well as to the designation of the areas submitted to a specific protection and to the analysis of the impact exerted by the anthropic activity on the status of the bodies of both surface and ground water.

Such measures therefore define the frame of the actions, interventions, rules and behavior aimed at the preservation of the water resources, also on the basis of the interaction between specific aspects of water management with other, different aspects of the policies for the territory and for the social and economic development.

1.4. The Provincial Council: “Provincia di Torino”

Through its direct functions and competences - or through the ones which are delegated by the Regional Council - the Province Council is committed the management and protection of the water resources at local scale, namely:

- Almost all the management competences relevant to the procedures for the authorization and control of the water discharges and concessions of withdrawals from both surface and ground water. Such processes are governed through assessments at hydrographic basin and integrated level in order to protect both the quality and quantity aspects of the resources available in the territory;
- The organization of the data and relevant analyses for the definition of the anthropic pressure on the water environment. This involves the interpolation of territory and environment data in order to set up activity programming and planning policies on the territory to mitigate the negative effects of the economic development.

Furthermore, the province Council represents the main actor in the *Autorità d'Ambito*² for the organization and public control of the integrated hydraulic service (waterworks, sewage and waste water treatment) and has specific competences as related to the territory planning, through the establishment of the Territory Plan of coordination, which is aimed at determining the general addresses for the development of the territory.

As related to those competencies, the participation of the Province Council is to be considered as strategic in the enforcement of the regional planning of the water resources: in compliance with the regional Plan for Water Preservation and in order to enforce it, the province Council of Turin has activated local Plans of intervention for each hydrographic basin which integrate the environment policies for use and preservation of the water with the ones relevant to the safeguard, reclaiming and development of the territory implying

² See Section 1.6

all the public and private subjects involved in the management and/or use of the water resource.

Resorting to the integration between the environment and territory policies is a necessary strategic choice for the governance of the planning and decision-making policies of the Province Council. It is nowadays obvious that prevention and a correct action of integration between such policies play an important role in risk management. The instrument used by the Province Council of Turin to enforce the local Plans of intervention and share the objectives of recovery, preservation and sustainable development of the Territory is the so-called "River Contract".

1.5. The Municipality: "Città di Torino"

The Municipalities are committed the administrative functions as related to discharges and used in a more restricted territory level, such as the discharges from civil settlements and into the public sewer, as well as the withdrawal of ground water for household use, thus ensuring effectiveness to the overall system of allotment of functions involving the municipality and the province as outlined in the reform of local powers.

Furthermore, the municipalities have the function of organizing the public services of water (from withdrawal to purification) in an associate form within the *Autorità d'Ambito*, with the essential role of promoters and first evaluators of the decisions made by the *'Autorità d'Ambito*, because of their direct relationship with the citizens.

The competences of the municipalities include also projects of environment valorization, such as project "*Torino Citta' d'Acqua*".

This project is reclaiming the river environments of the town, snatching from deterioration a large portion of the territory currently occupied by activities which are incompatible with their naturalistic vocation. The project approach is to set up targeted, low-impact interventions to enable the gradual, spontaneous recovery through time of forsaken areas which have been contaminated by anthropic uses and give them back to the fruition by the public and social uses.

Two examples of significant reclaiming:

- The park of Meisino. For centuries – i.e. before the implementation of momentous hydraulic works – the area had been the natural spreading of the confluence area of torrents Stura and Dora Riparia and river Po. The reclaiming project has pursued the objective of preserving the natural assets harmonized with the reinstatement of the typical social and cultural features of the area, chiefly oriented to agriculture.
- The linear park of Fioccardo. Such project was aimed at reclaiming and giving back to the public use part of the pathways along river Po which run across the town. In this case, the extraction activities had modified for years the natural hydromorphologic arrangement of the river. Once said activities were abandoned, the river banks have been take over by

sport circles, tree nurseries and recreation activities. The process involves the re-naturalization of the banks and its allocation to social and recreational purposes. Also in this case, the interventions involve the adoption of techniques of naturalistic engineering with autochthonous species to consolidate and contain the erosion phenomena, and the carrying out of small works.

1.6. The Optimum Territorial Environment Authority: "ATO3 Torinese"

The Optimum Territorial Environment (ATO) Authorities were born with the law on Integrated Hydraulic Services (Galli law no. 36/94) and are committed to organize the integrated water services for and on behalf of the represented Local Institutions. With regional law 13/97, the Regional Council of Piemonte has defined the optimum territory environments and organized the forms and ways of the cooperation between the local institutions, selecting a form of convention between them. The political decision-making organ is the conference of the Majors of those municipalities which do not belong to the *Comunità Montane* (gathered in homogeneous territory areas), of the Presidents of the *Comunità Montane* and of the presidents of the Province Councils.

The "Turin" Environment Authority no. 3 (ATO/3) includes 306 Municipalities and the Province of Turin; The Conference consists of 13 Homogeneous Areas and 13 *Comunità Montane* plus the president of the Province Council of Turin. In May 2004, ATO/3 committed the hydraulic service to two fully public companies, namely *SMAT S.p.A.* and *ACEA Pinerolese Industriale S.p.A.*, for 20 years. The service convention between the parties was signed in October 2004. Such convention includes, amongst its enclosures, the Environment Plan (*Piano D'Ambito - PdA*), which is a document of economic and financial planning.

ATO/3 defines the tariffs which ensure the full coverage of the service cost, including the facilities for the mountain territories, for the essential household consumptions, for the families in hardship and public utilities. Up to 5% (in 2007) of the total amount of the tariff revenues is transferred to the *Comunità Montane* for interventions of ordinary maintenance within the territory. A thousandth of Euro per cubic meter of water invoiced (approx. € 250,000.00 year), is destined to international cooperation. The program of the approved investments involves interventions for 67,120,176 Euros in 2005, 98,361,687 Euros in 2006 and 114,717,415 Euros in 2007.

The governance process of ATO/3 to prevent the risk operates through:

- Prevention policy: The governance system, which was implemented with the *Autorità d'Ambito* - focused on the planning of both the investments and the revenue -, enables to act preventively on the territory thus reducing the risks of crisis due to water emergencies. The management results to be effective and efficient so that it overcomes any phenomena of localisms and NIMBY (not in my backyard). In case of scarcity crises, ATO/3 intervenes in cooperation with the provider through both direct actions and surveys addressed to the Municipalities on the specific issue. In particularly serious conditions, which involve the Prefecture, ATO/3 participates to the coordination meetings. The Mayors, who keep their

appointment of health officers, are supported by ATO directives in the decisions relevant to the limitations of consumption.

- Preservation of the bodies of water: study and definition of the protection areas to be submitted to the Regional Council for approval; preventive search for new sources to face the possible scarcity crises and improve the quality of the procurement (e.g. passing from withdrawals from water streams to ground water). Completion of the sewer system and implementation of treatment equipment as appropriate to the needs by replacement of the technologically obsolete or structurally inappropriate ones. During quality control of the drainage starting from reception from ARPA³ of information about cases of non-compliance, adopting procedures aimed at solving the problem, wherever possible, or at reducing the impact on the environment, in view of structural interventions.
- Hydrogeologic defense: through the financing of the Routine Maintenance Plans of the territory for the *Comunità Montane*, ATO/3 transfers resources for the hydrogeologic defense of the Territory. In absolute values – within the time span of application of the Environment Plan (*Piano d'Ambito*) a transfer of resources to the *Comunità Montane* is established to be 280,760,000.00 Euros.

1.7. The provider of the Integrated Hydraulic Service: “SMAT”

SMAT S.p.A. (*Società Metropolitana Acque Torino S.p.A.* - Turin Metro Water Company) is a totally public shareholder company which manages – as a result of the twenty-year appointment given by the Water Authority ATO 3 Torinese – the integrated water cycle in the territory of Turin's province for an overall amount of over 2 million inhabitants distributed on a territory of 3,824Km².

SMAT has developed an “Italian way” for the management of the integrated water service which is made through a systemic approach: at local level, SMAT directly manages the metropolitan area of Turin through its staff and operates in other areas of the territory through local operators. The presence of these local operators – which are directly controlled by SMAT – enables to safeguard the excellences on the territory while ensuring at the same time the high level of service required by the ATO standards.

SMAT operates also at regional level through seven controlled companies

At national level, as a result of the acquired control on *Acque Potabili S.p.A.* – the most ancient Italian company quoted at the Italian Stock Exchange - SMAT established the “Water Pole of the Northwest”, a reality which represents approximately 8% of the Italian market in terms of turnover and 6% of the served population.

³ See Section 1.8

The most significant data for the management of fiscal year 2004 can be summarized as follows:

Municipalities served by SMAT	nr	211
Municipalities served by SMAT and controlled companies	nr	379
Inhabitants served by SMAT	nr	2,001,271
Inhabitants served by SMAT and controlled companies	nr	3,060,271
Production value	(K €)	203,519
Investments	(K €)	28,691

After the flooding of November 2000, SMAT - in cooperation with other regional and provincial bodies - organized a plan to prevent the natural catastrophes, consisting of a system to detect the quality and level of water of river Po and its tributaries in the whole Piemonte region by means of monitoring units. Furthermore, SMAT assesses possible threats of flooding, monitors the biological parameters by means of bivalvular mollusks and manages a remote control network.

SMAT avails to two specific alarm systems: one referred to the treatment plants of river Po and the other one for the distribution network.

Two sets of equipment are available for the management of emergencies: one for bagging and one for bottling drinkable water. A high number of mobile reservoirs mounted on trucks and tank trucks provided with both disinfection system and electricity generating unit can be quickly dislocated to urban settlements or put at disposal of hospitals and schools.

Furthermore, SMAT owns a mobile system for the potabilisation of water which was recently sent to Sri Lanka, in the Tsunami area. Such system can be installed in the areas struck by calamities and can produce disinfected, safe water.

SMAT has been the provider of the water services for the XX Winter Olympic Games of Turin 2006 and has purposely developed the integrated water service in all the Olympic venues and in those sites which were not connected to the water and sewage networks.

Moreover, an articulated program was set up to prevent the risk of terrorism actions, vandal acts or structure sabotage in general in the Olympic venues.

The company has a sound tradition in worldwide activities and cooperation. Since 1998, SMAT has been actively involved in several projects of cooperation in Africa and Latin America

The projects essentially consist of the building of small-sized waterworks, as it was the case in Tanzania, Peru and India, or in the setting up of laboratories for the quality control of the distributed water, as in Guatemala.

Since 2003, SMAT has been designated as “mandated body” of the European Union and participates to the PHARE projects related to the assimilation of the water directives in countries which are entering the EU such as the Slovak Republic, Poland and Hungary.

Finally, SMAT has been acknowledged as the official supplier of drinkable water for the astronauts of the European orbital station.

1.8. The Regional Agency for the Environmental Protection: “ARPA Piemonte”

The Regional Agency for the Environment Protection of Piemonte (*Arpa Piemonte*) exerts activities of control, support, technical and scientific consulting for the Regional and Province Councils, single and associated Municipalities for the development of the tasks they have been appointed by the law as related to the prevention and protection of the environment. The interventions of the Agency are aimed at perfecting the knowledge of the status of the environment and – consequently – providing the administrations with technical elements to support the environment policies also through the forecast of the effects which will result from the choices made.

The monitoring and control activities on the whole regional territory make available capillary data and information on which services are set up for the management of the environment emergencies and in support of the prevention policies to foster the local economic development in terms of environment sustainability.

After the flooding events which occurred in its own territory in 1994, the Regional Council of Piemonte gave itself a structure to manage the environment emergencies through an effective integration between the forecast activities, the actual knowledge of the phenomena and the counteracting and emergency actions. During the huge flooding event of 2000, which can be compared to the previous one by dimensions and effects, a timely alert and effective organization of the rescue service has led to a significant reduction in the number of casualties. In 2004, the Italian Government extended the organizational model of Piemonte to the whole national territory; the management of the national alert system is ensured by the central government and by the regional Councils through the network of the Functional Centers.

Arpa Piemonte manages the Functional center of Piemonte and evaluates with continuity – every day – the level of alert through the following steps:

- weather forecast (rain, snow, wind and the like);
- evaluation of the expected risk and of the effects which the occurrence of such events would determine for the integrity of life, assets, settlements and of the environment as a whole;
- assessment of the level of criticality on the regional territory.

As related to the evaluation of the hydraulic risk, since 2000 has the Functional Center of Piemonte been provided with a forecast system for the river flow rate which enables to assess in real time the setting up of danger conditions on the

main rivers of the region (i.e. river Po and its tributaries) whose main components are:

- the quantity forecast of the precipitation;
- the simulation of the hydrologic processes which directly affect the transformation of the rains on the versants into flow rates which will outflow to the water network;
- the reproduction of the hydraulic phenomena which determine the modalities of hydrodynamic propagation of the wave along the river streams at the bottom of the valley and in the plain.

The activity of the Functional center supports the management of the emergencies and is guaranteed through a continuous service of surveillance and environment forecast throughout the regional territory (365 days a year) by sector experts who interpret the system data and the forecast modeling.

1.9. The principle of solidarity and decentralized cooperation: “Hydroaid”

Hydroaid, the Water for Development Management Institute, can be considered as a local example which has turned to be successful at national scale.

Hydroaid represents an emblematic case of decentralized cooperation carried out by the public, scientific and financial institutions of Piemonte which operates in the third and developing countries in close cooperation with the central government, which is represented in its Board of Directors by the Ministry of Foreign Affairs.

Hydroaid deals with themes relevant to water policies on the technical, administrative and legislative points of view at regional, interregional, urban, suburban and even more detailed levels in order to meet both the objectives of the cooperation and the specific technical requirements.

The topics Hydroaid is concerned with embrace the optimization in the management of the hydraulic reserves, the protection of both human life and territory resources in the aim of ensuring sustainable, compatible development of the society as related to the nature of the land and to the cultural and economic features of the region.

By statute, the main aim of Hydroaid is training. The proposed courses – both specialist and general – provide the necessary added value for the development and achievement of the objectives set in the projects - run by the Italian Cooperation to Development of the Ministry of Foreign Affairs as well as by the actions of de-centralized cooperation of Piemonte in the developing countries - which involve capacity building, planning and organization of the local and national hydraulic systems.

Hydroaid relies on human resources of high technical and scientific profile made available by the regional authorities and by the local academic realities. As a whole, they provide educational assistance tuned to the hydro-climate nature of the territory which is being dealt with by the cooperation, to the infra-structural

typology available as well as to the features of the of the social and productive tissue and – what is more important –the experience of coordination of subjects oriented to an integrated, multi-objective management activity.

By its own nature and because of the Piemonte model it draws its competences from, Hydroaid provides a direct process of integration and cooperation between the public and private institutions of Italian and the foreign bodies, since the former are integral to the Association and the latter are part of the network of professional updating.

All the cooperation activities of Hydroaid are carried out thanks to the economic support of:

- Ministry of Foreign Affairs, General Management for the cooperation to Development,
- Regional Council of Piemonte,
- Province Council of Turin,
- Turin's ATO3
- Municipality of Turin,
- *Compagnia di San Paolo*,
- *Fondazione Cassa Risparmio di Torino*,
- Chamber of Commerce, Industry, Artisanship and Agriculture of Turin,
- SMAT S.p.A – Metropolitan Company of Water - Turin

and to the technical and scientific cooperation of

- University of Turin
- Engineering University (Politecnico) of Turin,
- SMAT S.p.A.

2. The coordination instruments of the “Piemonte” System

The increasing scientific and technologic complexity of the matter, the plurality of interests involved and the multi-reference of the Bodies on the territory have made it necessary to link the subjects which are operating on the on the matter into a “system”, through a method of cooperation governance embracing the different levels of government to ensure a correct management of the water resources.

It is just through a careful, loyal cooperation and deep sharing of responsibilities in the choices that the opposing interests emerging at different territory levels can be balanced in order to reach the integration of the following elements:

- Economic, social, environment and cultural values involved in the water sector
- Different levels of territory governance for the resource and multiplicity of subjects involved
- Management of the water assets with actions for the protection against pollution and preservation of the ecosystems.
- Aspects of defense of the water asset together with the protection *against* water.

In order to harmonize the actions of the different competent institutional levels, some fundamental moments of discussion and coordination have been institutionalized within the **Regional Conference of the Hydraulic resources** with the participation of the Regional Council, the Province Councils, the *Autorità d'Ambito*⁴, UNCEM (i.e. the National Union of the Municipalities, Local Authorities of the Mountain Areas and institutions) as well as of the representatives of other Bodies and organisms with specific competences on the matter, i.e. the so-called the “stakeholders”.

Established by regional law 13/1997, throughout these years has the conference been a beneficial moment of agreement, and dealt with all the main topics of the sector at the highest institutional level: from the complex reform of the integrated hydraulic service to the transfer of the functions in terms of property of water, up to the sharing of the information flows.

Because of the relevance and specificity of the field which is being dealt with, the Conference is supplied with the technical support of both the **Observatory of the integrated water services** – another instrument defined by regional law no. 13/1997 - and a **purposely-appointed Committee**, which is the technical seat for the analysis of the most specifically operational aspects and for the agreement on the enforcement acts of the regional law as regards both the aspects of organization and carrying out of the administrative functions allocated to the Local Authorities (such as the arrangement of forms and the definition of criteria and methodologies), as well as with reference to the regulatory body (such as the definition of technical standards, the re-opening of terms and the extension of expiry dates).

⁴ See section 1.6

In order to involve the social economic and cultural subjects which are directly interested to the preservation, management and use of the water resources in Piemonte and to acquire the relevant observations and issues, the PTA includes the establishment of the **Forum for the preservation of water** as a center for permanent discussion activated within the regional conference of the hydraulic resources which – in this case – is open in particular to the participation of the other local authorities, enterprises and sector operators, category associations of the production, trade, artisanship and agricultural world, of the trade unions, environment protection and consumer associations, University and Engineering University (Politecnico) in particular, research institutions as well as national and regional agencies for the safeguard of the environment.

The momentous background of knowledge of hydraulic resources is managed unitarily in Piemonte through the **S.I.R.I. - Sistema Informativo delle Risorse Idriche** (Information system of the water resources), which is aimed at ensuring the sharing of the existing information amongst all the operators of the sector and the coordinated, standardized development of further data collection for an in-depth acknowledgement of the quality status and availability of the surface and ground water throughout the territory of Piemonte, as well as of the anthropic phenomena which have some impact on the water resources.

S.I.R.I. collects the huge amount of data for the drafting of the Water protection Plan in order to enable – by the systematic updating of the information contained – to check the effectiveness of the protective actions which have been set up and attain the conditions of environment status of the water resources as outlined in the Plan itself.

The **principle of solidarity** of the institutions of Piemonte finds one of its most important expressions in the **cooperation** through **Hydroaid**. Amongst the most recent activities of which witness the synergic involvement of the whole plurality of academic, financial public and private subjects of Piemonte are: the Brazil project and the and the Post-graduate course which – every year – receives in Turin 25 students from all the developing countries for a professional and specialist updating relevant to the management of water resources for civil and agricultural applications.

Brazil 2005 and 2006:

The program of cooperation between Hydroaid and the *Ministério das Cidades* of the Federal Government of Brazil has enabled to set up high profile international contacts at both technical and political levels in the sectors of hydraulic defense of the territory, preservation of the hydraulic resources and environment reclaiming.

On the pattern of the Italy system, the projects of training, institutional support and technical cooperation included in the program have enabled to start in Brazil and with the Portuguese-speaking countries of Africa a process of cultural and technical exchange with the main institutions devoted to the management of the environment, territory and water, as

well as to the carrying out of hydraulic works and to the defense and prevention against the natural calamities.

The Brazilian experience has shown that some of the criteria which constitute the core of the hydraulic defense in Italy could contribute – with the required adaptations – to improve the Brazilian legislative and administrative management as regards the hydraulic defense of the territory, the protection of the hydraulic resources and land as well as the mitigation and prevention of the risk. In particular, this would meet the requirement of harmonizing the modalities and criteria of the territory administration with the handling of the hydraulic, hydrogeologic, social and economic risk at local level, with a subsequent improvement in the efficiency of the public systems and fostering of the development of programs to integrate the environmental dimension into the development strategies, i.e. conjugate the economic growth to the safeguard of man and environment.

Post-Graduate Course in Management of the Water Resources and Services

The aforementioned course is organized by HYDROAID, Water for Development Management Institute every year in Turin – at the International Training Center of the International Labor Organization (ITC ILO). Such course addresses engineers and managers coming from developing countries and supplies – in an environment of technical and social solidarity – terms of comparison with the proven instruments and methods of the complex systems for the management of the water resources.

The course is attended every year by 25 engineers and managers who are already working in public structures for the administration of public resources.

3. The coordinated actions

The **monitoring network system** follows methodological criteria of territoriality, hierarchy and flexibility, setting up the development of separate networks, and though integrated amongst the institutional subjects which operate on the territory, in particular the Regional and Province Councils and the Municipalities. Therefore, diversification criteria of the monitoring system reflect the actual interest of the territory bodies to know the status of the water resource as related to the task they are supposed to accomplish.

The regional monitoring system is aimed at the systematic updating of the physical and evolutionary knowledge on the regional territory, to the supply in real time of the data required to the short and medium term forecast evaluations for the prevention of risk conditions and for the management of the water resources.

The flow is controlled through the automatic meteorological network which counts more than 350 measurement points on the floor, the meteorological radar and the cloud survey.

The surface downflow is controlled by the integrated hydrometric network, whilst the quality monitoring of the water streams includes 201 points of withdrawal referred to 70 significant bodies of water in compliance with D. Lgs. 152/99 for which provisions are made to have a monthly chemical campaign and a quarterly campaign on the aquatic biota.

The ground water network is composed by approximately 700 monitoring points located in the plain area of the region on a surface of approximately 8,500 km².

The hydrometric and quality monitoring network consists of more than 100 stations located on the main water streams of Piemonte, and implemented since 1990, within the framework of several projects aimed at the protection, planning, and management of the water resources as well as to the knowledge of the extreme hydrologic events. Such system is managed unitarily by a Coordination Group composed by the Regional Council and ARPA. Integration was made at the upper level (inter-regional and national) through agreements for the exchange of data, but also and mainly at local scale because of the initiatives of the Provinces.

The monitoring sites have been identified both on the basis of the division of the regional territory into hydrographic sub-basins and to enable and efficient quality and quantity control of the surface and ground water resources as related to the anthropic pressure and also to set up a control system for the propagation of the floods.

As related to the competences and objectives, the main network of regional interest – which is managed by ARPA – is also provided with other monitoring instruments and analyses interpolated with data of different nature. Amongst, which the Province Council:

- For the monitoring of the surface water aimed at the correct use and protection of the water resource and civil protection (management of

the emergencies). It manages **its own network for quality and quantity measures**

- For the quantification of the environment pressure, it has carried out the **register of the discharges and the one of the hydraulic branches**.
- For the protection and recovery of the water streams –besides the prevention of the hydraulic risk - it develops **Studies and research in terms of land protection and preservation of the hydrographic grid** which support the drafting of the Territory Plan for coordination as well as the activity of civil protection in detecting the circumstances of particular criticality on the hydrogeologic point of view.

An efficient instrument of integration between the policies of water protection and the ones of territory management and defense of the land is represented by the **River contracts**, stipulated in coherence with the new orientation of the European Union policies in terms of management of the water resources as mentioned in Directive 2000/60 and keeping into account the experiences run in other national and international realities.

They represent a form of local, shared management of water in an integrated interdisciplinary dimension, aimed at the maintenance of the territory, mitigation of the hydrogeologic risk, compatible use of the resource while respecting the objectives of quality and quantity preservation of water.

An example of connection with other environment, social and economic compartments is project **Torino Città d'acqua**, i.e. a set of interventions of environment and territory reclaiming on the river banks of the town through a coordinated network of bicycle and pedestrian, tourist and naturalistic tracks.

The objectives of the initiative are multiple and interdisciplinary: from the consolidation of the banks to the solution of issues related to environment pollution to the promotion of tourist transport and of the rowing sports, from the re-naturalization of the banks to the management of the fauna and flora protection areas.

The **cooperation with the academic and scientific world** has enabled to set up executive projects of high technological and scientific content, implement technical standards and evaluate methodologies of investigation on the features of the hydraulic resources which today – in large part – have become routines in the structures allocated to the controls. Advantageous cooperation's are in progress also with other research institutes which enable to activate the indispensable synergies of experience and knowledge.

Furthermore, particular attention is dedicated to the **activities to promote information, training, education and sensitization** as preventive actions, since the participation of the civil society to the defense of some goods which are considered as an absolute priority – such as water – sets up a new dialectic relationship with the public power: no longer founded on governing the public issues from up downwards but on the participation of the citizens in their own role of users and controllers.

Subsequently, this will not simply mean a generalized use to the public information, but also aimed qualified training of the sector operators, promotion of specific educational and training processes within the schooling institutions of every level, as well as sensitization of the community to influence

the culture and affirm the actual awareness of the vulnerability of the resource and of the right the forthcoming generations have to use the same resource in its wholesome conditions.

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