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Management system of the water resources in Italy

Abstract

The contribution describes the management system of the water resources in Italy in the light of the recent legislative innovation and as a result of the assimilation of EU directive 2000/60. The Italian experience in integrated management is the subject of a cooperation program started between Hydroaid and the *Ministério das Cidades*. Such cooperation has opened a wide, complex discussion table and enabled to outline a set of initiatives aimed at assessing a concrete, technically and scientifically grounded proposal of reform which would be tuned to the administrative and legislative reality of Brazil in terms of management of both water and environment resources at urban and non-urban scale.

This initiative has called for an international, holistic and multi-disciplinary approach since the issues relevant to water inevitably touch all the disciplines involved in the safeguard of the environment, social development and territory planning. The sustainable management of the water resources, i.e. its economic and social planning, cannot be achieved without taking as a basis an exhaustive analysis of the quality, quantity, ecosystem-related, engineering, architectural, social and political aspects of this vital resource, and of their interactions.

The “Italy System” for the Integrated Management of Water Resources

I am glad to participate to such a significant event as this Seminar. I cordially greet all the attendees, and – in particular – Minister Fortes de Almeida, the organizers and all the lecturers.

The proposed meeting offers an opportunity for discussion and reflection to the different disciplines related to the management of environment resources, amongst which we count water, and tends to the search for a shared path towards sustainable development. The addresses which will ensue from this meeting will constitute precious reference for the activities of those like us who work for the cooperation and will help coordinate our specific contributions in the way to the shared objective of sustainable development. In particular, they will help us define the issue of managing the water resources in a *Weltanschauung* of the living conditions i.e. – as our mission is – to conjugate ideals and competences and developing values and assumptions of solutions, foundations and operating choices in the pre-political scenario.

We are gratified by the interest that the *Ministério das Cidades* has reserved to the Italian experience as a useful contribution to the process of development of associate forms of service management. Such process is strongly wanted by the Brazilian

Government and has started by the approval of the law on consortiums. In these dynamic has the Italian reality become one of the reference elements for the development of models in both the management and safeguard of the territory and water resources in Brazil. This mutual transfer of experience was concretely translated into the project of Brazil-Italy Technical Cooperation in *Saneamento Ambiental* we jointly started in 2005 by the signature of the Cooperation Protocol.

The program of activities which was originally established has been enriched by new ideas – thanks to the process of knowledge of the respective management dynamics and territory realities - thus becoming a laboratory which has made room for new interpretations of the Italian legislative and management frameworks. This has enabled – on the one hand – to ascertain the generality of the principles the Italian management criteria are based upon and – on the other hand, thanks to the wide perspective offered by the *Ministério das Cidades* - to investigate different modalities through which the inspiring principles can be translated into models of implementation.

It is worth reminding that – amongst the activities in progress – the most significant one for the themes of the conference is the experience made available through Hydroaid by ATO3 Torinese to the State of Piauí for the drafting of a master plan for the associated management of the solid urban waste.

This experience corresponds to a new chapter for Italy as well, where the issue of water has traditionally been kept separate from the one of waste. Only law 152/99 enabled to integrate the quantity and quality aspects related to water. Only more recently are the criteria of integrated associated management being repropounded in the sector of waste to pursue criteria of cheapness, efficiency and effectiveness in the management of waste, thus overcoming the limits dictated by the existing fragmentation. Also in this case, the optimum territory dimension is acknowledged within the ATO as already operational for water (which approximately corresponds to a provincial dimension) and the programming instrument is a plan (the so-called Master Plan).

I believe this Seminar is an opportunity for a valid comparison between the different realities. On the grounds of their geographic, environmental, urbanistic and social variety in such a large country as Brazil, all these realities can offer ideas and reflections to detect new valid principles on the whole territory, as well as different terms of implementation depending upon the territory differences. This calls for diversified planning in terms of time, investment and culture for the implementation of a participatory action from the local reality towards the center.

These are issues Italy had to deal with too, in a reduced scale, and the process is still in progress.

Italy is featured by remarkable geographic and climate variety, and its territory shows issues which are typical of both Northern and Southern countries such as flooding, drought and desertification. It also witnesses a remarkable urbanistic, social and economic diversification. On the technical point of view, the difficult water issues the world over, which are being discussed today, were dealt with in Italy after World War II at a national scale in order to alleviate the gap between the North and South of the Country. The carrying out of the huge hydraulic works led to the hydraulic recovery of Southern Italy. Besides the studies and works for to safeguard both human life and the environment, the effort of Italy is also aimed at the implementation of a concrete plan of actions for the hydraulic defense of the territory, the management of the water resource and the safeguard of the water and environmental assets. The planning activities at hydrographic basin level are committed – in compliance with law 183/89 – to Basin Authorities, while the Regional Councils are entrusted the management and planning of such actions. The integrated management criteria were introduced by laws 36/94 and 152/99 and – in fact – with the application of such principles has Italy dealt with an actual revolution in the management of the water resources in the light of principles of uniqueness of the environment system, civil and inter-territory solidarity, thus conjugating the management and safeguard requirements¹.

¹ **Law 183/89** is aimed at “ensuring the defense of the soil, the reclamation of water, the utilization and management of the water assets for the uses of rational economic and social development and the safeguard of the environmental aspects connected to them”.

This is a framework directive which considers the hydrographic basin as a unitarian system requiring a governance instance going beyond the territorial borders of the administrative authorities involved. Law 183/89 divides the whole national territory into basins of nation-wide, inter-regional and regional importance. Its main innovations on the point of view of reorganizing the public administration, are represented by the setting up of the *Basin Authorities*, and – as related to instruments - by the *Hydrographic basin plan* to “plan and program the actions and directions of use aimed at the preservation, defense and valorization of the soil and appropriate utilization of water, on the basis of the physical and environmental features of the territory involved”.

Besides the basin-level planning, the “*ambito*” represents the other planning level required for the sustainable management of the resource, obviously in conjunction with safeguarding actions.

Through **Law no. 36/94**, also known as the “*Legge Galli*”, the Italian legislation started a reform process of the water sector focused on detecting new levels of coordination to overcome the traditional administrative borders. Law 36/94 stated some crucial principles such as the public character of all the surface and ground waters, the sustainability in the use of the resource, the sharp separation between the

address and control functions, which are typical of the Public Administration, from the management functions, which are reserved to a subject of entrepreneurial character.

The reform is aiming to move beyond the extreme fragmentation in the water services, which has been the main cause of economic waste and malfunctions of the sector. The objective is achieving optimum management levels and quality services to the users through the integrated management of the distribution, sewage and waste water treatment cycle.

Therefore, Law no. 36/94 pursues – by means of a framework directive – the intent of valorizing and rationalizing the safeguard and utilization of the water resources, aiming at a structural reform of the water service in Italy. In fact, the law is based upon three essential assumptions, namely: the division of the territory into sufficiently extended areas (*Ambiti Territoriali Ottimali*), in order to overcome the existing management fragmentation and subsequently allow for an entrepreneurial management aimed at achieving scale economy; the unification of the waterworks, sewage and waste water treatment services in order to give more responsibility – also downstream – to the provider who operates upstream the water procurement and a tariff system which includes the actual cost of the service.

The Municipalities and Province Councils including within each *ambito territoriale ottimale*, as they are defined by each territory institution, have the task of organizing the integrated water service, i.e. the set of public services for procurement, adduction and distribution of water for civil use, sewage and waste water treatment, in order to ensure the management in compliance with criteria of efficiency, effectiveness and cheapness. The provider, which is appointed by the *Autorità d'ambito*, in compliance with the modalities allowed by the law, in full respect of the safeguard of competitiveness and of the relevant EU directives, is entrusted the implementation of the plan of actions which – together with the economic and tariff plan and with the management and organization model - constitutes the so-called “piano d'ambito”.

As it is clearly shown, law 36 allocates specific tasks and responsibilities to each institutional level: the State legislates – in its exclusive competence – as related to the environment and protection of competition. The Ministry of Environment is therefore appointed to the task of general addressing and control of the process, i.e. every provision related to the matter above; The Regional Council is appointed to the organizational and legislative choices aimed at the enforcement of the reform in the respect of the principles indicated by the State; the Local Authorities, within the *Autorità d'Ambito*, are free to decide the management modalities and the content of the concession relationship with the provider, again within the respect of the principles established by the State and criteria selected by the Regional Council.

With the coming into force of **Legislative Decree no.152/99**, which was then modified and integrated by Legislative Decree no. 258 of August 18th 2000, Italy provided itself with a legislative instrument for the safeguard of water harmonized to the addresses of the European Union.

The Legislative Decree assimilates EU Directives 91/271/CEE (treatment of the urban waste water) and 91/676/CEE (protection of water against pollution due to nitrates coming from farming sources) and anticipates some contents of EU Directive 2000/60/CEE.

The Decree modifies the previous directives of the sector and defines the general discipline for the safeguard of water, pursuing the objectives of preventing and reducing the pollution, reclaim and improve the status of water, protect the water allocated to special uses, ensure the sustainable use of the resources and keep the natural ability of self-purification of the bodies of water, needed to support wide, well diversified animal and vegetal communities.

The general discipline pursues – amongst others – some main objectives, namely:

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- The introduction of specific quality standards, which are diversified for the receiving bodies of water, to be achieved by defined expiry dates (2008 and 2016) as a main reference for the definition of the safeguard actions;
 - The integrated safeguard of the quality and quantity aspects within each hydrographic basin, related to an appropriate control system and to the complete review of the sanctioning system;
 - The detection of measures to prevent and reduce pollution in the vulnerable and sensitive areas;
 - The detection of measures aimed at the preservation, saving, reuse and recycling of the water resources.

The main instrument to achieve the established objectives is the *Water safeguard Plan* which contains - besides the interventions aimed at ensuring that the objectives are either achieved or kept - the measure required for the quality and quantity safeguard of the Water System. The Safeguard Plans are a *sector excerpt of the basin plan* in compliance with Article 17 of Law no. 183/89.

It is therefore up to the Basin Authorities – after consulting the Province Councils and *Autorità d'ambito* - to set up a preliminary definition of objectives and priorities at basin scale the safeguard Plans are to comply to.

After consulting the Province Councils, and after application of safeguarding measures – if any – the Regional Councils apply the Plan and forward it to the Basin Authority, which will ascertain its compliance with the objectives and priorities, and will express a binding opinion to enable the Regional Council to approve it by December 31st 2004.

Subsequently, Legislative Decree no. 152/99 sets up the basis for a different approach to the safeguard of water against pollution: it actually shifts the attention from the control of the single discharge to the set of events which cause the pollution of the body of water, thus integrating the quantity aspects to the quality ones; the whole in a wider vision of hydrographic basin. In this new perspective, it will no longer be enough to check the compliance with the limits by each single discharge, but it will be necessary to guarantee that all the discharges into the same body of water are such not to affect its quality.

Such integrated approach, which combines the definitions of environment quality and by specific destination of use and of limit values of emission, complies with the European policies related to water safeguard

The most innovative aspects of this Decree concern, therefore, a new set up of the reclaiming and protection policy based upon the concept of quality of the bodies of water which are receiving the waste and on the need to diversify the actions on the basis of different criticalities throughout the territory (concept of sensitive and vulnerable areas), the introduction of specific, diversified quality objectives (environment and functions) for the receiving bodies of water, a better defense of groundwater and greater attention to the correct, rational utilization of water.

In particular, in its quality of directive assimilating Directive 91/271/CEE relevant to the treatment of urban waste water, Legislative Decree 152/99 defines a set of milestones for the adaptation of the collection and treatment systems at the service of “agglomerates”. Hence the requirement, on the one hand, to ensure a larger coverage of the sewage and water treatment service and – on the other hand – to adjust the existing system and achieve compliance with the new quality standards of the discharges and the new objectives of environment quality established by the standards for the receiving bodies of water, to be attained by the dates of 2008 (“moderate”) and 2016 (“good”).

The environment quality objective concerns both the quality and quantity aspects of the whole water ecosystem. In particular, it expresses the status of the bodies of water as a function of their capability to support wide, well diversified animal and vegetal communities, so that it is as close as possible to the

In order to understand the meaning and significance of such a provision, we should go back to its genesis.

The spur which triggered the political will and awareness that an integral reform was to be undertaken was the water emergency which particularly affected the Northern part of the country in 1988/1989, because of pollution due to chemicals used in agriculture.

It was then realized that the issues could not be solved by emergency interventions; we needed to move past the culture of emergency and revise the management of water from scratch and in depth.

The first essential pulse which originated the reform was therefore the need to detect a new management model to deal with the environmental issue. To do so, need arose to acquire the concept of singleness of the environment and to overcome the administrative limits and fragmentation which was characterizing the water cycle (in the old system, the waterworks, sewage and waste water treatment services were made up with different separate logics).

In other words, here was the need to define an organization model which could deal with water starting from the protection of the springs up to the returning of water to the environment. We may then state that the environment issue has been the midwife which helped the birth to the integrated water service; a service which must concern a wide area in close relationship with the hydrographic basin or sub-basin.

Protecting the water environment means safeguarding all the components of the water cycle, from withdrawal to delivery. In order to achieve this objective, the following is required:

- The water withdrawals are to be “compatible with the refilling capability”;
- Carry out the sewage system;
- Treat the waste water;

natural condition, i.e. it should not generate any significant changes to the ecosystem and the self-purifying capacity against the pressure produced by anthropic activities should be kept intact. Such environment quality objective is to be applied to all the significant bodies of water and achieved by December 31st 2016.

Furthermore, the aforementioned Decree relates the safeguard of the body of water not only to the specificity of its sections, but also to the safeguard of the bodies of water belonging to the same hydrographic basin. Rivers, torrents, lakes, and groundwater do not know borders, but are linked to one another and – subsequently – the hydrographic basin is the logic unit to be taken into consideration for their safeguard. The management of the hydrographic basins is therefore to be set up through the coordination of the different territory administrations within the same basin.

- Protect the springs, the water table, and the lakes as “water environment” as well as large reserve of drinking water.

The cultural environment which is recalled by article 1 of law 36/94 is the one of “global shared assets”: water is an essential condition for life and life quality not only for the current generation, but for the forthcoming ones as well. We thus overcome not only the concept of “ownership”, but also the one of “contemporaneity”

The guidelines of the new water governance and management organization consist of two essential elements, namely:

1. the statement that all the surface and ground water, even if not extracted, is public and safeguarded for the forthcoming generations;
2. the priority of human consumption versus any other utilization.

Therefore, in order to set up the integrated water service on an optimum territory scale, the municipalities, which are the holders of the function, have to coordinate and define the forms of institutional cooperation and the program of the interventions required to both protect the water and use it rationally.

This is the crucial point, the actual cultural and organizational difficulty of “putting so many municipalities together”; this is where the cultural and political challenge lays: giving birth to the “governance” required to manage the integrated water service.

Our objective, i.e. the industrial management of the service was reached through the application of the regulatory principles and definition of a wide area within which the municipalities should apply their competence in an associated form.

The new environmental and territorial dimension of the service demand, or –even better - dictate an industrial management based upon a territory environment, which is defined as optimum because of both the correspondence to the hydrographic basin and number of users served.

In a few words, this is the law.

On the other hand, the organization model is structurally complex (in the etymological meaning of the word) since three large issues intertwine, namely:

1. the environment;
2. the necessary institutional cooperation (Regional Council – Local Authorities);
3. the industrial management as a basis for an efficient, effective, economic service.

The reformation law has witnessed different progress timing: fast and timely in the North, slow in the South. The delay is mainly due to cultural and political incertitude’s of the local administrations, besides the objective complexity of drafting a *piano*

d'ambito. This adds up to the European trend, which supported the belief that the public interest is not due to the public ownership of the enterprise, but to the free competition amongst enterprises, which caught unawares the small providers, who lacked the strength required to compete to be awarded the service.

I now would like to speak more specifically of the management plan of the *Ambito Territoriale Ottimale* (called the *piano d'ambito*), because its drafting seems to be a definitely simple operation. In reality, this is extremely complex and calls for – first of all – the survey of the existing infrastructures and projects it by developing it. How does it develop it?

An analysis is run of the demand in the territory environment, investigating what the forthcoming needs will be, defining the criticalities, analyzing what interventions shall have to be carried out to manage the *Ambito Territoriale Ottimale* and developing a model which – starting from the previous experiences – defines the organization and management aspects of the new provider.

In Italy, we have rather uneven conditions. There are regions with a chronic need for water, such as – for instance – Puglia, and other regions – e.g. Calabria – where the remarkable quantity of water available is unfortunately counteracted by the lack of infrastructures.

Each *Piano d'Ambito* is to be calibrated and devised to be attractive for the forthcoming provider, be it public or private.

Essential elements of the *Piano d'Ambito* are the economic, financial and investment plans. The economic and financial plan defines the tariff and its evolution throughout the years, so that the forthcoming provider will have an appealing economic return, if not at very short term, at least within the time range of the concession which it will be granted. The investment plan defines the investments throughout the years.

The reform involves also a cultural revolution, since the provider is requested to pay particular attention to the environment issue as a whole, and the citizens are requested to consider water no longer as a limitless resource, but as a limited one, to be used efficiently and cost effectively.

For instance: in the farming sector, still today in some regions the water tariffs are paid per hectare and not depending upon the quantity of water which is being distributed. This means that – once this reform is fully applied in the irrigation sector as well – the farmers shall have to fully realize that the quantity of water they will be able to use is not limitless and at a fixed cost.

This is why, once again, the issue – besides its technical aspects – is essentially political. It is actually up to the political world to ensure that the reforming law produces its effects.

It is up to the political world to ensure reforms that can interpret and implement the reform.

It is up to the political world to exert its mission to the bottom of the matter, since politics is not the art of possible: is the art of widening the borders of the possible.

It is worth mentioning, for the sake of completeness, that – because of the diversification of the national territory and in order to overcome the difficulties of implementing the Galli law in Southern Italy – the Central Government has provided itself with an important operational instrument Sogesid.

Sogesid is a company of the Ministry of Treasure set to provide advice to the Local Authorities and cooperate with them in the carrying out of the process of industrialization of the water service and in establishing the *ATO*. In particular, as far as the Southern regions are concerned, Sogesid has been committed the task of ascertaining the status of the works, producing economic plans, *piani d'ambito* and design activities with the aim of overcoming the existing criticalities. Thanks to the contribution of SOGESID, the last few years have witnessed an acceleration in the industrialization process in the Southern regions. Each *ambito territoriale* has been surveyed, the *piani d'ambito* - which are indispensable documents for the commitment of the water service - have been carried out. The investment planned for the enforcement of the Galli law 36/94 in Southern Italy includes an overall investment of 22 billion Euro by 2030.

On the other hand, as regards the structural investments, required for the large works which will guarantee the storage of water, the inter-territory solidarity and the multiple uses the water resource is set to, the competency belongs to the Ministry of Infrastructures, and said programming is part of the Objective Law.

In general terms, the Ministry of Environment is appointed all the aspects of water safeguard as regards quality and quantity.

The new criteria of uniqueness of the water resource introduced by the recent Italian regulatory frameworks, which have in fact anticipated – in terms of principles – EU directive no. 2000/60, call for the adoption of coordinated strategies to respond to the criteria of sustainability in the management of the environment resources and involve – as an actual difficulty – the coordination of the different competencies. The

coordination of the planning and implementation of the actions in the water sector is to be carried out in the light of the following general principles:

- *Sustainable development*: it must be acknowledged – first of all – that the use and anthropic changes in the natural systems cannot be intensified without limits; the management of water – in particular – is to be far more respectful of the freedom of evolution of the natural systems than it used to be in the past. After acknowledging the public character (Law no. 36/1994) of all the surface and ground water - which constitutes a resource to be safeguarded and used in compliance with principles of solidarity - a strategy to ensure sustainable development is to be enforced;
- *Saving, preservation management and search for new sources*: water is to be managed as a scarce resource of vital importance for both man and the biosphere. Subsequently, it has to be safeguarded on both the quantity and quality aspects by choices aimed not only to limit its use but – rather – to reduce – not to say eliminate – the waste and decay processes. On a strategic point of view, such approach requires not only to increment the efforts for an efficient use of water, but also to plan the development of new available resources and promote the search for alternative sources.
- *Balance between availability and needs*: a globally sufficient supply of good quality water is to be guaranteed for durable, balanced and fair use, in compliance with a priority scale defined by the law as related to the use of water. In the hydrographic basins which feature consistent retrievals or transfers, the outlets are to be adjusted to guarantee the outflow level as required to life in the river-beds involved and such not to affect the balance of the ecosystems (Minimum Vital Outflow).
- *Precaution*: since the environmental risk cannot be reduced to zero, any intervention whose effect cannot be preliminarily ascertained on the basis of the given knowledge, or which involves unacceptable residual risk in terms of both social and economic impact is to be excluded.
- *Prevention and responsibility*: the public intervention for the management of the actions of emergency, containment or damage repair (whose economic, social and environmental costs are progressively less sustainable) is to be shifted as much as possible towards actions of risk prevention, environment reclaiming, hydrogeological and ecosystem stabilization, based upon the strategic planning, territory agreements and pacts and on organic integrated projects. In order to ensure effective actions of protection and intervention, the cooperative management and shared planning amongst the institutional subjects is to be promoted, so that it ensures a wide undertaking of responsibility by a plurality of public and private subjects which operate on the territory.

Such interventions shall guarantee the following:

- a) *The compliance with the requirements of the EU and national legislation;*
- b) *The coherence and correspondence with sector planning;*
- c) *The compliance with the correct environmental procedures and technical guidelines shared at national and international level.*

In order to establish the importance and priority, the potential of these interventions is to be evaluated in terms of:

- a) *Capability to solve issues of a wide territory scale (national, interregional, inter-basin and inter –ambito valence);*
- b) *Capability to increment the safety levels for the public safety and infrastructures, as well as safeguard of both health and environment;*
- c) *Sustainability, economic and financial feasibility;*
- d) *Inter-sector, multi-objective character;*
- e) *Possible setting up of an erection site as related to the progress of design/implementation of the works;*
- f) *Degree of technical and scientific innovation.*

A first instrument to deal with the actions relevant to the issue of water resources in a coordinated way and in the light of the aforementioned principles was offered by the Budget Law of 2004 through the National Program of Interventions in the Water Sector. The Program is to be considered as a planning act, established in order to guarantee the necessary coordination in carrying out all the works in the water sector in coherence with the existing Framework Program Agreements² and respond to the requirements of environment sustainability in the light of EU Directive no. 2000/60.

² The Agreements are acts of coordination between the central state and the regional administration for the pursuit of objectives and establish the roles, the actions, the applicable resources, the priorities, the juridical technical, administrative and financial instruments, the linking, verification and updating mechanisms. They offer the space for a bilateral definition, in a pact form, the strategy for water governance at regional and basin scale, anticipating – if required – the application of the standards and overcoming any localism and any other kind of obstacles. Therefore, the Program Agreements contain those instruments which are required to make a quality jump in the water management policies implementing at the same time the EU and national obligations in terms of water safeguard, through a strategy of economic sustainability and inter-territory solidarity.

The national Program indicates the financial resources allocated to the different actions defined by the relevant expenditure laws and defines the hierarchy of the priority interventions, with the exclusion of those which are already part of the Framework Program Agreements.

Conclusions

In the previous pages did I try to expose the inspiring principles which support the management of the water resources in Italy. This frame corresponds to the strategic programming in terms of administration and safeguard of the water resources for the implementation of a long-term sustainable policy for the use and safeguard of all the internal, transition and sea-cost water.

The specific aim is integrating in synergy the different interventions and often conflictual interests the water resource is submitted to.

The use of the word “interventions” obviously shows the intention of the legislator of going beyond the mere programming of infrastructural works towards a wider meaning which includes all the aspects connected to the use of the resource and to the safeguard of the bodies of water and of the ecosystems they depend upon.