Contributing Paper

Water Resources National Policy in Brazil

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WATER RESOURCES NATIONAL POLICY IN BRAZIL

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INTRODUCTION

At present, the water resources management sector in Brazil consists of projects, programs, site work, studies and other types of activities which, on the whole, represent the Water Resources National Policy. All these elements are summarized in the main legal text, the Federal Law n^{o} 9.433/97. Actually, it can be said that this law made many programmes and activities in Water Resource National Policy legitimate. In addition, this main legal text is an excellent synthesis of the main problem the country faces. Because it is a very big and diverse country, each different region requires specific regulations. The Brazilian water resources legal text is succinct, and demands from all Brazilian regions are pointed out. This is perhaps the importance of the water law: it is, and it will be compatible with Brazilian state laws.

During the debate of the bill, the text was extensively modified. The first author was Deputy Fábio Feldmann, who drew up a fourth and final proposal after a long period of discussions. In August 1995, Deputy Feldmann left the Congress to head the São Paulo State Environment Secretariat[1]. Deputy Cedraz took over and also produced four texts, the last one being one of the shortest and most popular. This final text as approved by Congress and signed into law by the President, can be explained by dividing it into three main sections: (i) sector principles; (ii) management instruments; and (iii) an institutional framework for the operation of the principles and implementation of the instruments. The next section will discuss each one of these elements, explaining how they have been practiced in Brazil, the main difficulties involved and perspectives for success.

Sector Principles

Some water resource management principles, considered also by other countries, are present in the Brazil policies, either in the Federal water policy or in the state water policies. They are: (i) the river basin as the territorial unit for the implementation of the National Water Resources Policy; (ii) management of water resources should allow for multiple uses of water; (iii) water is a limited resource, which has economic value; (iv) the management of water resources should be decentralized and should involve participation by the Government, the users and the community; and (v) when there is a shortage of water, priority is given to human consumption and watering of animals.

By following the above principles, Brazilian society is expected to achieve the goals of the Water Resources National Policy. The first one of these goals is to ensure that present and future generations have access to water of adequate quality for their needs. Secondly, but not less important, Brazilian policy is expected to ensure rational and integrated use of water resources with the objective to achieve sustainable development. Another water resource policy objective is to prevent and provide protection from water crises due to either natural causes or inappropriate use of natural resources.

Some important issues should be taken into consideration when implementing the Water Resources National Policy. Water resources management should be systematic, and equal with regard to quantity and quality; it should consider physical, biotic, demographic, economic, social, and cultural differences among the various regions of Brazil; it should consider integration with environmental

[1] Deputy Fábio Feldmann is a member of the Social and Democratic Party – PSDB, the present President's party, and Deputy Aroldo Cedraz is a member of Liberal Front Party – PFL, which supports the Federal Government. During Feldmann's period as the bill's writer Brazil has had three presidents: Fernando Collor, of National Renovation Party – PRN (1990-1992); Itamar Franco, of National Democratic Movement Party – PMDB (1993-1994); and Fernando Henrique Cardoso, of PSDB, from 1995 up to now.

management; water resources planning should be coordinated at the regional, state and national levels; and finally, water resources management must take into account land use, and river basin management including estuary systems and coastal zones.

River basins as the unit for territorial planning

In spite of the river basin principle being accepted all over the world, it faced serious obstacles before being accepted in Brazil. Opposition came from the hydrogeologists who argued that river basin boundaries are determined by topographic crests and that aquifer limits are set by high groundwater flow potential. Since these limits never coincide, accepting river basins as units of territorial planning would not be accurate. More opposition stemmed from supporters of Brazilian states' rights, arguing the federative principle. Feelings are very strong about this in the country. States and municipalities have considerable administrative control over public goods and services within their borders. Thus, the question was, how do you manage water resources with a river basin as a territorial unit, if the same river basin flows through different states and different municipalities? Some supporters of the federative principle wanted homogeneous geographical regions to be used as water resource planning units. They claimed water has fundamental relations with most of the elements, physical and anthropologic, which should be considered to define homogeneous regions.

The debate about the river basin principle did not find any solution until a new concept was introduced. This is known as the "holistic" approach in which the river basin could be the territorial unit for water resources planning and management, provided that neighbouring areas and groundwater were considered in terms of the effects they have on the selected river basin unit. In other words, the river basin would in fact be considered the central element in any analysis process, a process that would include all demand, problems and targets in that region. To further strengthen the new principle, it was agreed that river basin was the easiest unit for water resources planning, both to use and to see. Neighbouring watersheds and aquifers, as well as states and municipalities, should all be taken into consideration when using river basin as the unit for water resources planning.

Multiple uses of water

The multiple use of water is one of the consequences of economic development. In Brazil this process has been clearly visible and has been commented previously. At the beginning of this century, the only important use of water in the country was for energy generation. However, from the middle of the century, the principle of multiple uses of water has come to the forefront, with increasing demands from the sanitation, irrigation, industrial and other sectors. The multiple use of water has resulted in positive competition among the different sectors. Equally, the threat of water scarcity has forced the users to be rational, economic and creative. Above all, however, the proper implementation of water resource management instruments is the best way to prevent conflicts among the users.

The principle of multiple use establishes equality of opportunity among users. This does not mean that each user has the right to have equal volumes of water per time unit. On the contrary, the principle of multiple uses establishes that the volumes of water per time unit shall vary among users, depending on the most appropriate social and economic use of the river basin as a whole. Group and individual cost-benefit analysis, together with cost-effectiveness, linear programming, game theory, decision trees and other scientific techniques, are the means to decision-making with regard to sharing water resources among users within the river basin.

Water as an economic good

Acknowledging water as an economic good results from its scarcity. In Brazil, perhaps because of the Amazonian water surplus, water has usually been considered as an abundant resource that would never be in short supply. The only exception is the Semi-Arid Northeast region where droughts are a normal and nearly permanent phenomenon.[2]

In order to revert the lack of balance between water supply and demand in some river basins in the country, it was decided to implement some economic actions at the national level. This action has taken the form of water tariffs - a direct consequence of the water-as-an-economic-good principle. The secret of the success of water tariffs was that everyone was convinced that typical Brazilian attitudes regarding water use had to be changed. The next step was then to transform the typical water user into a rational user. This issues is further discussed.

Decentralization and participation

Decentralizing water resource management is a condition imposed by the own characteristics of water as a resource: it does not make sense to centralize decisions and actions on a good which exists freely in nature, within the river basin area and underground. In other words, the different physical, biotic and anthropologic conditions among river basins require a decentralized decision-making process. Otherwise, general decisions for sometimes completely heterogeneous conditions will clash with management processes, with unsatisfactory results for the stakeholders.

The philosophy behind decentralization is that no decision should be taken at a higher level of government, when they can be decided satisfactorily at a lower, appropriate level. In Brazil, it means that no decisions should be taken in Brasilia, when they can be taken in the watershed regions where the people involved know their own needs and problems best. The decisions that would have to be taken in Brasilia, are likely to be more complex than the ones taken at the river basin level.

With regard to the participatory process, it is an invitation to the involved parties to take part in planning, designing, implementing and managing their river basin projects and programmes. Public participation does not mean that politicians and public managers will be replaced by civil society. It is expected that stakeholders influence policy formulation by means of active participation, supporting politicians and public managers to decide according to the needs of the community.

Decentralized and participatory water resources management become an absolute requirement nowadays. The decision-making processes must include all players, or their representatives, interested in the outcomes. Thus, with regard to decisions on the use of regional natural resources, responsibility must relay not only in the government, but also in users and civil society, all of whom should be heard and should participate in the discussions to shape the decisions of the planners and managers regarding water resources.

Priorities during water shortages

One of the basic principles of the Brazilian Water Resources Federal Law refers to extreme conditions of water scarcity. It establishes that during water shortages, priority should be given to human consumption and watering of animals. According to the Brazilian legislation, under such conditions human beings and animals have to be protected, while all other water uses become secondary. The law

[2] In the Northeast of Brazil the droughts are a cyclic phenomenon that comes every 10-12 years, and some of them are highly severe. During the present century, the following years have been dry in that region: 1903-04, 1908 (Rio Grande do Norte State), 1915, 1919, 1930-32, 1942, 1953 (Rio Grande do Norte and Paraíba States), 1958, 1970, 1976, 1979, 1980-83, 1990-94 and 1998. More aggravating is the fact that the Northeast is the poorest region in the country.

which sets this priority also establishes what are known as warning levels for water sources. This is especially significant in acute scarcity regions such as the Brazilian Semi-Arid, where there has historically never been any planning or concern with presence of water. The result has been the periodic exodus of the population as they move toward urban centres fleeing droughts.[3]

The next sub-section will discuss water resource management instruments, including river basin master plans, water permits, water tariffs, water resource information systems, classification of bodies of water, and compensation for municipalities.

Water Resource Management Instruments

Management tools are fundamental to address the identified problems. Water resources management instruments are very important for implementing a series of modern concepts that induce the final user to adopt appropriate attitudes in terms of water consumption decisions. One of these instruments, the Water Resources Master Plan, represents a planning tool, which is also considered as a managerial one within the sector[4].

While some instruments affect the water users directly (e.g. water permits and water tariffs), others act more like control and decision-making instruments. The Water Resources Information System provides information to the water agency and the public manager and allow them to take decisions in particular situations. However, it is the cumulative effect of the instruments which modifies the state of disarray so common in many river basin all over the country nowadays. For example, while it is possible to alleviate conflict situations by implementing a water permit system, further improvement is possible by combining the use of water permits with water tariff systems. Furthermore, these two instruments would be yet more effective when they are implemented along with a vigorous water resource information system.

Water Resources Plans

Water Resources Plans are the program documents for action at the river basin level, the state level, or even at the national level. They are master plans that provide a basis and orientation for the management of water resources, and the implementation of the National Water Resources Policy. Water Resources Plans are long-term plans, with a planning horizon compatible with the period over which their programmes and projects are to be implemented. They should include a diagnosis of the current status of water resources and an analysis of alternatives for population growth, evolution of economic activities and changes in land-use patterns. Master plans should include considerations on future supply and demand of water in terms of both quantity and quality, and identify potential areas of conflict. The plans must define some targets for rationalizing use, increasing needs of water, and improvement of the quality of water available. They should also specify actions to be taken, programmes to be developed and projects to be implemented to achieve the targets, as well as making proposals on areas which should be subjected to restrictions of water. Master plans have to define priorities for water permits, and guidelines and criteria for water tariffs. Master plans are expected to be based on dynamic indicators which consider the evolution of the productive activities within the river basin.

[3] Brazilian Semi-Arid Region droughts are an unsolved problem. When the first rains do not come, poor families take their seeds and savings and simply abandon their fields. Hired hands and sharecroppers are dismissed, everything is done to save the cattle. The cattle is transported from one farm to another where the drought is less severe. Sharecroppers and their families as well as the poorer farmers flee to the cities, adding to urban problems. Local authorities, churches and social assistance groups assist the victims of the drought. However, if they do not get enough help they will soon sack and pillage storehouses and supermarkets. State governments offer palliative solutions: charity or work gangs. The situation only turns normal when it rains again in the affected region.

[4] Actually Federal Law n^{o} 9.433/97 does not classify these instruments as management or planning instruments. It refers to them simply as National Water Resources Policy Instruments.

Classification of Bodies of Water

The classification of bodies of water is, actually, an instrument that comes from environmental management. In Brazil this instrument is regulated by Resolution n° 20 of 1986, of the Environment National Council (CONAMA). This resolution classifies bodies of water in eight different classes[5].

The objectives to classify the bodies of water according to their main uses are: (i) to ensure a level of quality that is compatible with the most demanding uses for which the water is intended; and (ii) to reduce the cost of combating water pollution through constant preventive actions. The classification of bodies of water is applicable both to surface water and groundwater. What is really relevant in the classification of the bodies of water is the fact that this instrument does not mean that rivers, lakes and aquifers will be classified only according to what is known about their water quality. Far more important is the target quality that must be defined by the river basin committee and achieved within a set period of time.

Water Permits

The water permit system aims at ensuring the qualitative and quantitative control of water according to its use, as well as ensuring water use rights. Diversions and other types of water uses that alter hydrological regimens are subject to water permits. According to the Federal Law n° 9.433/97, the following water uses require a water use permit: (i) the diversion or impoundment of water from a body of water for final consumption, including public water supply or use in a production process; (ii) the extraction of water from aquifers for final consumption or for use in a production process; (iii) the discharge of treated or untreated sewage or other liquid or gaseous waste into a body of water with the objective to dilute it, transport it or dispose it; (iv) the use of hydropower potential; and (v) other uses that affect the flow, quantity or quality of water existing in a body of water.

There are other water uses that do not depend on a water permit. They are: (i) the use of water resources to meet the needs of small population groups scattered in rural areas; (ii) diversions, catchments or discharges that are considered insignificant; and (iii) impoundments of volumes of water that are considered insignificant.

Water permits are applicable to surface and groundwater. In Brazil, water permits for hydropower generation are included in the National Water Resources Plan. They should consider the classification of the body of water, as well as try to maintain appropriate conditions for waterway transportation, whenever appropriate. It is important to emphasize that the water permit system in Brazil cannot be delegated to any institution outside the government. Thus, the awarding of water use rights can only be made by a responsible authority in the executive branch of the Federal Government or the State, depending on the domain of the water body. Finally, the award of water use rights does not imply any

[5] The classes are: First Group (fresh water): Special Class (water for domestic supply without previous disinfection or with single disinfection; and water for aquatic community protection); Class I (water for domestic supply after simple treatment; water for the aquatic communities protection; water for primary contact recreation, like swimming, water skiing and diving; water for raw vegetables and fruits; and water for farmed fish and animals for human consumption); Class II (water for domestic supply after conventional treatment; water for the aquatic communities protection; water for primary contact recreation; water for irrigation of vegetables and fruit trees; and water for farmed fish and animals for human consumption); Class III (water for domestic supply after conventional treatment; water for irrigation of cereal crops, tree cultivation and fodder; and water for dewatering animals); Class IV (water for navigation; water for landscape aesthetics; and water for less demanding uses). Second Group (salty water): Class V (water for primary contact recreation; water for aquatic communities protection; and water for farmed fish and animals for human consumption); Class VI (water for commercial navigation; water for landscape aesthetics; and water for secondary contact recreation). And Third Group (Brackish Water): Class VII (water for primary contact recreation; water for aquatic communities protection; and water for farmed fish and animals for human consumption); and Class VIII (water for commercial navigation; water for landscape aesthetics; and water for secondary contact recreation).

alienation of the water itself. As a public good the water is inalienable. The permit merely awards a right to use the water.

Water Tariffs

Bulk water tariffs exist because water is an economic good. The existence of tariffs encourages rational water use and raises revenues for financing programmes and activities within the Water Resources Plans. Water uses subject to tariffs are the same as those which are subject to water permits. This means that if a certain use of water does not require rights to use it, it will not be subject to fees, either. When setting fees for the use of water resources, several elements should be taken into account, like (i) volumes per time unit diverted, abstracted or utilized in stream; and (ii) volume discharged per time unit, the variation in stream flow and the physical-chemical and biological characteristics and toxicity in the in the effluent discharges.

Water use charges in Brazil have been hotly debated. One problem is that those who will pay the charges in the future now see them as just another tax. The credibility of this management instrument will depend on its use. That is, if the fees collected are allocated to improve the river basin where they are paid, the chances for acceptance are high. Otherwise, the credibility of the whole idea will be jeopardized.

The funds raised from water charges should be used in financing studies, programmes and projects under the Water Resources Plans. In addition, they defray implementation costs and administrative overhead for agencies and entities of the National Water Resources Management System. According to Federal Law, these cost payments must be limited to 7.5% of the total amount collected. The above percentage will probably face some implementation difficulties because of the large number of institutions and entities that take part in the National Water Resource Management System. In other words, in order for collected amounts to meet the needs of monetary institutions, the fees will probably have to be too high. And that, once again, would jeopardize the water tariff system.

The water tariff has the following goals: (i) managing water demands; (ii) redistributing social costs; (iii) improving effluent quality; (iv) raising funds for sector investments and O&M of hydraulic equipment and construction; and (v) giving global planning, social and environmental dimensions.

Charging for water use is a management instrument that was born out of the scarcity of this natural resource. When there is a shortage of water, it is necessary to induce the users for a rational consumption. There are several ways to do this. In the past, before water tariffs, legal instruments, civic campaigns and government control, among other measures, were the actions most widely used. However, they have all been found inefficient. Thus, various countries have recently implemented water tariff systems which have resulted to be a new ingredient that sharply inhibits unnecessary consumption. Actually, there is nothing new in this. History has shown that whenever man faced scarcity, the solution was to submit the scarce good to the laws of supply and demand. Normally, prices settle at their own market level. The result of this process is twofold: supply and demand equilibrium and no more scarcity problem. This mechanism is at the heart of economic theory and an important basis for modern economic decision-making.

NATIONAL WATER RESOURCES MANAGEMENT SYSTEM

The National Water Resources Management System is a group of institutions that also play a role in water resource planning and management. In other words, they are a combination of organized public organizations, private entities and civil society representatives which make the implementation of the water resources management instruments possible, in accordance with principles established in law. Some

of these organizations are entirely new in the Brazilian public sector. The river basin committees, for example, bring stakeholders together for debates and decisions regarding problems in the watershed. Among these stakeholders are public organizations such as state secretariats and local government representatives, as well as private and state-owned water users and NGO's. The composition of the board of directors of the Water Agencies is also a mixture of all the previous representatives. In the next section the general framework for the sector will be presented, emphasizing the role of each one of the organizations that integrate it.

General framework

The National Water Resources Management System pursues several important goals. Some of its objectives are: (i) the coordination of integrated water management, taking into consideration their multiple uses at the river basin level, water as an economic good, decentralization and involvement of the Government, users and communities; (ii) arbitration at an administrative level of disputes related to water resources among water users, water agencies, committees, states and municipalities, etc.; (iii) implementation of the National Water Resources Policy, with special attention to principles, management instruments, projects and programmes; (iv) planning, regulation, and supervision of the use, conservation and recovery of water resources; and (v) enforcement of water tariff rules.

The National Water Resources institutional framework consists of:

- The National Council on Water Resources
- The State and Federal District Councils on Water Resources
- The River Basin Committees
- The organizations at the federal, state, and municipal levels whose respective areas of competence are related to the management of water resources, and
- The Water Agencies

The main aspects of each one of the previously mentioned elements are commented on in the next sub-sections, especially with regard to the present stage of their implementation, advantages and disadvantages, besides their main attributions.

The National Water Resources Council

The National Water Resources Council is the highest organization in the system's hierarchy, with the following responsibilities: (i) to promote the integration of water resources planning at the national, regional and state levels and with the user sectors; (ii) to arbitrate, as the final administrative recourse, conflicts between State Councils on Water Resources; (iii) to review water resources utilization projects whose impacts extend beyond the states in which they are to be implemented; (iv) to discuss any questions that have been submitted to them by the State Councils on Water Resources or the river basin Committees; (v) to review proposals for amending existing legislation on water resources and the National Water Resources Policy; (vi) to develop supplementary guidelines for the implementation of the National Water Resources Policy, the application of its instruments and the operation of the National Water Resources Management System; (vii) to approve proposals for the creation of the river basin committees and to establish broad criteria for the setting of their rules; (viii) to monitor the execution of the National Water Resources Plan and decide on the actions required to achieve its goals; and (ix) to establish broad criteria for water rights and water tariffs.

The National Water Resources Council is integrated by representatives of the Federal Government ministries and departments concerned with the management of water resources, as well as representatives designated by the State Councils on Water Resources and representatives of water users

and civil organizations concerned with water resources management. Federal government participation is always 50% plus one vote, which means that the Federal Government has a majority in decisions at the top of the system. This majority can be misunderstood as a contradiction of water resources management system principles which are supposed to protect the right of participation by all stakeholders. But there is an explanation for this: the water resources management sector is young in Brazil and it is expected that the lessons to be learned depend, to a certain extent, on the mistakes that will surely be made. Thus, it is advisable to allow the Federal Government to control the majority and alter, change or even undo mistaken decisions made at other levels within the system. This is quite understandable when one recalls that the Federal Government is ultimately responsible for the nation's property.

The Chairman of the National Water Resources Council is the Minister of the Environment, and the Executive Secretary is the head of the department housed within the Ministry of Environment responsible for the management of water resources. The Council was established in November 5, 1998, and during it first session, approved its operational rules. The Council has 29 members, 15 of them are representatives of the Federal Government. One of the problems with the number of members is state participation. There are 26 states in Brazil and they are represented by only five members. The possibility of one member per state was considered, but that would have meant a large, unwieldy Council of more than 70 members, (as explained above, the Federal Government is supposed have 50% plus one vote). For this reason, it was decided that each hydrological region would have a representative. The 29 members Council seems to operate very well.

The National Water Resources Secretariat

During the discussions about the sector's institutional framework, it was seen that the system would need a management department. Similar departments exist at the federal and state levels nearly all over the country. The main attributions of these departments are to award the use rights, and monitor and control use, both qualitatively and quantitatively. They also organize and follow up on the implementation of water tariff systems, penalizing water users who break the rules established by committees or do not follow river basin master plans.

The National Water Resources Secretariat is also the Executive Secretariat of the National Water Resources Council, with the following responsibilities: (i) to provide administrative, technical and financial support to the Council; (ii) to coordinate the preparation of the National Water Resources Plan and submit it to the National Council on Water Resources for approval; (iii) to report on the proceedings of the State Councils on Water Resources and the river basin committees; (iv) to coordinate the Water Resources Information System; and (v) to prepare a work program and the corresponding annual budget proposal and submit them to the National Council on Water Resources for its approval.

An important discussion is going on at the federal level which concerns the nature of the National Water Resources Management Department. In Brazil, modern regulatory agencies for several economic sectors have been established recently. For instance, regulatory agencies now exist for electrical energy, telecommunications and petroleum[6]. The debate at the moment is whether to have the water sector run by a secretariat or an agency or some other kind of public entity or make it a state-owned enterprise. There are many different opinions, but there seems to be a consensus that a regulatory agency is more typical in a sector that is totally or nearly totally state-owned, undergoing rapid privatisation. The privatisation process calls for an agency which can establish rules and monitor the transformation in the sector. On the other hand, the water resources management sector is quite different from other economic sectors because its operations occur within a decentralized, participatory process. In other words,

[6] National Electrical Energy Agency – ANEEL, National Telecommunication Agency – ANATEL and National Oil Agency – ANP.

monitoring stakeholder activities is supposed to take place at the lowest appropriate level and the participatory process is carried out at the river basin committee level. This debate will continue. It seems that the Federal Government is likely to accelerate studies on the matter and move towards the creation of a Brazilian Federal Water Resources Agency which will operate as a regulatory agency.

The River Basin Committees

The River Basin Committees are a very special type of entity. Under Brazilian law, they do not have a legal existence. They are known as colligation organizations which bring together stakeholders so that they can discuss and decide on their own problems with the objective of protecting natural resources in the river basin region, especially water resources. They act in the entire river basin, including sub-basins, of any tributaries to main streams, and group of neighbouring river basins or sub-basins.

The River Basin Committees have the following responsibilities: (i) to promote the discussion of water resources related-issues and to coordinate the work of the entities involved; (ii) to arbitrate, as the first administrative stage of appeal, conflicts related to water resources; (iii) to approve the Water Resources Plan for the river basin; (iv) to monitor the execution of the Water Resources Plan for the river basin and suggest measures required for its goals to be meet; (v) to propose to the State and National Councils on Water Resources which impoundment, diversion, catchment and discharges are of minor importance for purposes of water permit exemption, depending on the water domain; (vi) to establish mechanisms for water use charges and suggest prices to be paid; and (vii) to establish criteria for and promote the apportionment of the cost of multiple use projects for common or collective interests.

The structure of a Committee of a river basin that has at least one watercourse in the Federal domain should include representatives of the Federal Government, the states or the Federal District in which they are located (even if only partially), the municipalities, the water users and the civil water resources agencies that have a demonstrated record of action in the basin. The number of representatives from each sector mentioned, as well as the criteria for their appointment, shall be defined in the regulations of the Committees. The representatives of the executive branch of the Federal Government, the states, the Federal District and the municipalities shall be limited to half the total number of members. This is a relevant rule because by keeping the three levels of government in a minority position, it stimulates the participatory process. Decisions regarding river basin problems should be made within the Committee itself and only a few problems should be object of appeal to upper levels.

In the case of River Basin Committees that share the management of basins of rivers that run along and across borders, the representatives of the Federal Government must include a member of the Foreign Affairs Ministry. In the case of Committees whose territory include indigenous lands, they must include representatives from the National Indian Foundation (FUNAI), and the indigenous communities living or having interests in the basin. The River Basin Committees should be managed by a president and a secretary but arrangements can vary depending on the total number of members and mainly on the number of states involved.

Although the law calls for only two directors, as mentioned before, there are large, important River Basin Committees[7] in Brazil with three directors.

Another significant aspect which must be considered is that many river basins in Brazil are within state domains. They have absolutely no stream course owned by the Federal Government. In these

[7] The Paraíba do Sulriverbasin is the most developed region in the country with a participation of roughly 8% in the Brazilian GDP. The interested states, São Paulo, Rio de Janeiro and Minas Gerais are the richest states in the country. As they are three federated units, they have made arrangement in respect to the committee's direction by which they have three— and not only two — members.

cases, the Committee's organization is decided on by the states as an expression of their administrative autonomy. However it is expected that the organization of a committee by a state will not be significantly different from a Federal committee. After all, there is only one National Water Resources Policy for the whole country.

The Water Agencies

The Water Agencies are an interesting type of organisation within the National Water Resources Management System. They act as the executive secretariats of the River Basin Committees. Although there is a close relationship between the committees and the agencies, the latter are very different from the first ones. The main difference is in their nature and organization: while the Committees act as what are called in Brazil "water parliaments", the Water Agencies operate more like executive organizations, or privately or state-owned enterprises.

What is really impressive in the Water Agency structure is the rigorous control of costs. Water Agencies operate in the same area as one or more river basin committees, within strict limits imposed by revenue and fixed costs. Their creation is subject to the previous existence of the river basin committees and financial viability, which must be ensured by fees for water use in their area of activity. Their responsibilities include: (i) to maintain an updated record of water resources available in their area of activity; (ii) to maintain a roster of water users; (iii) to collect fees for water use under authority delegated by the grantor; (iv) to review and comment on proposals for projects to be financed from fees collected for water use and transmit their comments to the financial institution responsible for administering those resources; (v) to monitor the financial management of fees collected for water use in their area of activity; (vi) to manage the Water Resources Information System; (vii) to enter into agreements and contracts for the financing and services to implement their responsibilities; (viii) to prepare a budget proposal and submit it for review by the respective river basin committee; (ix) to arrange for the studies necessary for the management of water resources in their area of activity; (x) to prepare the Water Resources Plan for review by the corresponding river basin committee; and (xi) to propose to the corresponding river basin committee the classification of bodies of water, water tariffs, plans for use of fees collected for water use and apportionment of costs of multiple use projects.

Finally, the creation of Water Agencies will be authorized by either the National or the State Councils on Water Resources at the request of one or more river basin committees. While the Water Agency is not implemented, inter-municipal consortia and associations for river basins may receive delegated authority from the National Water Resource Council for a specific period to carry out the Water Agencies duties. However, this law disposition has become controversial as consortia are now interested in transforming themselves into agencies. This is not considered reasonable as the consortia have other important roles, especially in river basin decision-making. So, recently there has been a flurry of activity to head off the consortia idea.

The Water Resources Civil Organisations

Brazilian legislation is very careful in dealing with the participation principle. In this respect, the role played by civil organisations in the decision-making process is significant. There is a law which establishes that these organisations should be represented on the National Water Resources Council, besides taking part in river basin committees.

Civil Water Resources Organisations can be any of the following: (i) inter-municipal consortia, that play an important role in water resources management as they have political power due to the participation of mayors as members; (ii) associations dealing with river basins, which can be any type of NGO, hopefully bringing interesting ideas, sometimes not perceived by others, into discussions with

stakeholders; (iii) regional, local or sectoral associations of water users, whose activities and needs are relevant, reflecting specific points of view; (iv) technical, academic and research organisations concerned with water resources, bringing a scientific point of view to discussions in River Basin Committees, the National Water Resources Council or other meetings; (v) non-governmental organisations recognised by National or State Water Resources Councils which have a commitment to defending the broad collective interests of society; and (vi) other organisations recognised by the National or State Councils on Water Resources.

Each one of these organisations should participate in the decision-making process with their own objectives in mind. It is common to see, on these occasions, fruitless discussions among representatives and directors and civil servants as each tries to get its point of view into the final decision. Directors are closer to legislators, and they also have legal and regulatory responsibilities along with their own ideas and personalities. So, Civil Water Resources Organisations should always look for means of persuading civil officials with arguments that show both sides have advantages.

The Role of the States and Municipalities

In Brazil it is important to take into consideration the interaction of the two domains which control bodies of water. Federal legislation dictates general rules to be followed by both the Federal Government and by the states. In this sense, federal legislation is the national legislation linking both state and federal activities, by establishing rules that are to be followed at all levels of government. However, it is necessary to consider also the role of the municipalities. Although the municipalities have no domain rights on bodies of water, they are very important in water resources management because, on one hand, all problems occur at their level, while on the other, they are the perhaps the most important water users.

Because of the role of both the states and the municipalities, it is necessary to explain what is expected from them in terms of water resources management. In Brazil most of the basic sanitation companies are owned by the states and not by the municipalities or the Federal Government. However, in the cases in which the companies belong to the Federal Government or to the municipalities, the control of concessions for basic sanitation services is at the municipal level, which would make the municipalities the real water users. In the case of the states, as they have domain over many bodies of water, most of them have built their own water management systems. Additionally, since most basic sanitation companies are owned by states, it is only natural to expect a strong interest on wastewater treatment. The presence of the state creates high expectations, thus, a positive performance by state-owned sanitation companies over the next decade should mean a relevant increase in waste treatment.

As for municipalities, they are responsible for the local government and the solution of local problems. Additionally, they have an important role as members of the River Basin Committees due to the interaction of land-use and occupancy with water resources policies. One of the main problems affecting the municipalities is urban drainage, which is inter-twined with urban planning and alterations in hydrologic flows.

CONCLUSIONS

The National Water Resources Policy is a new institutional landmark in Brazil, since it incorporates internationally accepted water management principles, norms and standards which are already practices in many other countries. The decentralised and democratic management of water, involving various uses and different forms of sharing the resource, will bring about a true revolution not only in the water resources management, but also in environmental management as a whole.

The current adverse picture — badly used streams, threatened scarcity and so on — can only be reverted if, together with governmental initiatives and laws, there is a widespread decision of all stakeholders to join efforts to manage water resources. Only shared water resources management will bring about the necessary changes to transform a dire reality into a future fraught with possibilities. In this context, it is no longer possible to accept the figure of the passive user, waiting for proposals from the government. The new order demands that the citizens seek alternative solutions to their water problems, taking into account the needs and difficulties of the communities.

In general, significant progress in water resources management and, to a lesser extent, water resource planning, has been achieved by Brazil. This is understandable as management activity has taken place all over the country. The water resources planning field is fairly well developed in Brazil, but faces problems inherent to such a large country with a still fragmented institutional framework in the water user sectors which has affected water resources planning until recent years. For instance, the São Francisco interbasin transfer project, which is a need of the States of Ceará, Rio Grande do Norte and Paraíba, has been drawn up without any River Basin Committee participation. The Committee, of course, is one of the most important players in this process. Equally, state government planning and sectoral projects do not necessarily coincide with River Basin Master plans. Ironically those plans and projects are often drawn up by one or more state-owned organisations. Many other examples of this type of inconsistency in planning could be commented on here, but it is preferable to comment on what it is being done to cope with and even overcome these difficulties. What it is really important for the future of the water in Brazil, is that the present Brazilian government is aware of that, which is demonstrated by the water resources management agenda started from 1995 up to now.

However, additional efforts are still needed to achieve efficient water resource planning and management at the federal and state levels. Emphasis should be placed on several areas of concern like the implementation of the water fees which will strengthen the Committees and Water Agency's role, besides the practical utilisation of the National Water Resources Information System, one of the most forceful water resources management instruments.

The debate currently in progress in Brazil, and the restructuring of the water sector that is taking place in the country, could well yield some relevant lessons of more general applicability, particularly for the states that have not advanced in this field and even for other countries in Latin America.

It is important to stress the fact that until the late 1970s, most of the Brazilian dams were built with the exclusive objective of generating electricity. Other water uses were not taken into consideration. In spite of their complaints, even now, sectors such as irrigation, sanitation and industry still face restrictions imposed by the electricity sector. These sectors complain about the historical privileges the central government has given to the hydropower sector. In addition, there is the environment conservation campaign which was born after the 1972 Stockholm Conference, and which has made a strong contribution to the emergence of a transition phase that is redefining the framework of the water resources management sector[8] in Brazil.

[8] Some authors avoid the term "water resources sector" believing that there is no economic sector for water management. They point out that several user sectors form the whole in which the problem of water resources management is inserted. But there are other authors who, taking into consideration the fact that there are, in most countries, governmental water programs with their own budgets, see this as meaning that "water resources management" is an economic sector based on the natural resource "water" which is utilized by different economic sectors here considered "sub sectors".