TIGER Discussion Paper

DP-2015-009

Engaging society in the Brazilian water management :how to improve protection and reslience

Patrícia Faga Iglecias Lemos

2015/3/3

2-4-16 patricia

International Workshop on "Environmental Policy-Making Instruments Based on Public Participation in a High Technological Society － Energy, Chemical Substances and Water Management as Central Issues" at 7th-8th March 2015

Organizers: **OSAKA UNIVERSITY, PROJECT TIGER** "Policy decision-making and public participation on energy, chemicals and water management: an international comparative study" (Global Initiative Program), **GREEN ACCESS PROJECT II** "Review of Legal Indicators for the Participation Principle in Environmental Matters - Promotion of an International Cooperation towards Strengthening the Environmental Democracy" (JSPS Grant-in-Aid), and MITSUI & CO., LTD., ENVIRONMENT FUND – Project "**Proposing an Asian Version of the Aarhus Convention – Constitution of an International Cooperation for Implementing the Environmental Justice**"

Project TIGER

"Policy decision-making and public participation on energy, chemicals and water management: an international comparative study" (Global Initiative Program)

Osaka University

Engaging society in the Brazilian water management: how to improve protection and resilience

Patrícia Faga Iglecias Lemos[1]

February 2015

Summary: **1.** Introduction; **2.** The Brazilian historical context; **3.** The National Water Resources Management System; **4.** The São Paulo State Water Resources Management System in the State of São Paulo; **4.1** Political Structure: administrative mechanisms; **4.2** Financial Structure: Water Resources Regional Fund (FEHIDRO); **4.3** Technical Structure: the State Plan and the Watershed Plans **5.** The Water Resources Plan of the State of São Paulo: nature of the actions targeted at the protection of water resources and the improvement of resilience; **6.** Importance and ways of engaging society in water resources management; **7.** Programs of the State of São Paulo in support of the protection of water resources; **8.** Conclusion.

1. Introduction

It might be conspicuous to address the importance of proper water management, since this resource is one of the greatest goods comprising the patrimony of humanity, without which no present or future ecosystem or human grouping would be able to maintain itself. It is by no means excessive, however, to highlight the risks inflicted upon such valuable natural resource, and the possible paths leading to a consentaneous management which duly reflects the complexity of the water thematic.

Indeed, global water withdrawal, be it for agriculture, industry or domestic use, tripled in the last 50 years in order to meet the rapid population growth[2], while its availability continued steady. All over the world, this scenario is increasingly straining catchment basins and main urban rivers.

---

[1] Secretary for the Environment of the State of São Paulo, Dr. Patrícia Faga Iglecias Lemos is also Associate Professor at the Civil Law Department of the Law School of USP, as well as supervisor of the Master and Doctor degrees at the Law School and of the USP Environmental Science Program (PROCAM), vice-president for the Southeast Region of the Law for a Green Planet Institute, coordinator, for State of São Paulo, of the Association of Environmental Law Professors of Brazil (APRODAB), Vice-coordinator at the São Paulo State's Centre for Studies and Research on Disasters (CEPED/USP), researcher at the Multidisciplinary Centre for Studies on Solid Waste of University of São Paulo (CeRSOL/USP) and member of the European Environmental Law Association, and author of books in the environmental field.

[2] United Nations, p. 101.

According to a classification by the United Nations, Brazil is considered to be a country of great fresh water wealth, with a supply of 33.33.841m³ *per capita*[3]. Nevertheless, the territorial division of surface water is very unequal when compared to the country's population density and urban concentration. In this regard, while the Amazonian Hydrographic Region retains as much as 80% of the Brazilian fresh water availability whilst being the smallest in population size, the Paraná Hydrographic Region, which has the largest population, including the São Paulo State, holds only approximately 6% of this resource[4].

In this scenario, sustainable socio-environmental development depends on the creation of mechanisms and inter-institutional programs which are able to carry out a joint water management plan with the goal of preserving and recovering water.

In Brazil, such a model was engendered in accordance with the internationally applied concept of "Integrated Water Resources Management" (IWRM). IWRM, according to its widely accepted definition, "is a process which promotes the co-ordinated development and management of water, land and related resources, in order to maximize the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems"[5].

In fact, the Brazilian water management system goes beyond public administration, involving also the social and economic systems by strengthening democratic practices through the engagement of society in decision-making processes.

It is from the perspective of this system that the Brazilian experience will be analyzed regarding the establishment of an environmental governance process directed at the enhancement of water protection and resilience in light of ever stronger pressures over natural resources.

2. The Brazilian historical context

Sustainable development, rationalization and water use planning were already present in Federal Law Nr. 6.938 of 1981, which instituted the National Environmental Policy.

[3] REBOUÇAS, Aldo da Cunha, p. 36.
[4] Agência Nacional de Águas, p. 60-63.
[5] Global Water Partnership Technical Advisory Committee (TAC), p. 22.

Nevertheless, the milestone for legal water protection only came a few years later, more precisely in 1988 with the enactment of the current Constitution of the Republic, adopting parameters outlined in the Stockholm Declaration of the United Nations Conference on the Human Environment.

The Federal Constitution establishes the power to legislate over waters to be of exclusive competence of the Union[6], while determining it to be a joint competence of the Union, the States, the Federal District and also the Municipalities to "protect the environment and counter pollution in any of its forms"[7].

Nonetheless, the duty of protecting the environment is not exclusively attributed to public authorities. In fact, at the same time the Brazilian Constitution recognizes the intergenerational right to an ecologically balanced environment, it prescribes the duty of achieving such undertaking to all the collectivity[8].

Considering the above, it is possible to infer that the role carried out by society regarding environmental protection and, consequently, also the management of water resources, is intrinsically related to the exercise of citizenship itself.

As a reflex, the infra-constitutional legislations determine public policies based on a decentralized management model including civil participation, aiming, mainly, to achieve sustainable development in conformity with the IWRM concept.

Accordingly, and in compliance with the constitutional determination to institute a national water management system[9], the Federal Law 9.433 was enacted in 1997.

3. The National Water Resources Management System

Under the auspices of the Dublin Declaration, and taking into account the items contained in Agenda 21, defined during the ECO-92 Conference in Rio de Janeiro, the Brazilian National Water Resources Policy was instituted in 8 January 1997 by Federal Law Nr. 9.433. This Act instituted the National Water Resources Management System ("Sistema Nacional de Gerenciamento de Recursos Hídricos" – SINGREH in Portuguese).

---

[6] Article 21, item XIX.
[7] Article 23, item VI.
[8] Article 225 of the Federal Constitution.
[9] Article 21, item XIX.

The institutional framework of SINGREH is made up of the National Council for Water Resources, the Nacional Water Agency, the Water Resources State Councils and of the Federal District, the Subnational Water Agencies, aside from the federal, state and municipal public power organs which competencies relate to water resources management, and, finally, the Watershed Committees.

These Committees are collegiate institutions for water resources management, with normative, consultative and deliberative attributions, linking actions of all government levels. They are responsible for advancing the debate of matters related to water resources and the articulation of intervenient entities, as well as promoting conservation and recovery of water bodies in a form which guarantees rational and sustainable use of water resources. Moreover, its diversified and democratic composition demonstrates the substantial importance given to public participation by law, which stretches from the Watershed Committees to the National Council for Water Resources.

It must be highlighted that the existence of a national management system, which structure is reproduced at State level, is fundamental for an adequate administration of water resources in Brazil. This is not only because of the existence of rivers that supply water to more than one State of the Federation, but also to integrate national directives on use and occupation of territorial and sectorial policies, as well as to harmonize the socioeconomic and environmental diversities existing in a country with continental dimensions such as Brazil.

Also, considering the decentralizing scope, the Federal Law Nr. 9.433/97 enactment materialized the concept of management by watershed, which had gained strength in the international scenario from the beginning of the nineties onwards, allowing local structures to figure in the center of decision-making.

4. The São Paulo State Water Resources Management System

The establishment of the National Water Resources Policy was based on the pioneer experience of the State of São Paulo when it instituted, in 1991, the State Water Resources Policy and the principles guiding the Integrated Water Resources Management System (“Sistema Integrado de Gerenciamento de Recursos Hídricos – SIGRH” in Portuguese). These principles recognize water to be a good essential to life,

which shall be managed in a decentralized, participative and integrated manner[10], taking into account the physical-territorial cutout of watersheds.

I must be mentioned that the adoption of an integrated management in São Paulo was preceded, since the end of the eighties, by a broad debate among civil society and local public authorities in search of solutions for the severe water use conflict in the State's megalopolis.

The system adopted was designed using the successful French experience in participative management by watershed as a model, and is based on the articulation of political, technical and financial structures.

4.1 Political Structure: administrative mechanisms

The political structure is represented by deliberative bodies: the Water Resources State Council ("Conselho Estadual de Recursos Hídricos" in Portuguese) and the Watershed Committees ("Comitês de Bacias Hidrográficas" in Portuguese). Members of these forums represent three different segments: the State government (subnational level); municipalities (local level); and organized civil society, notably involving trade unions, professional associations, user associations, universities, research institutes and environmental and water protection organizations.

The Water Resources State Council has the duties of, among others, discussing and approving legislative bills regarding the State Water Resources Policy; approving the periodical "Situation of Water Resources in the State of São Paulo" report; pursuing normative and deliberative functions regarding the formulation, implementation and monitoring of the State Water Resources Policy; and establishing directives for the formulation of annual and multi-annual programs to apply funds from the Water Resources State Fund ("Fundo Estadual de Recursos Hídricos" – FEHIDRO in Portuguese). These attributions are locally detailed and carried out by the Watershed Committees, a formal structure linked to the SIGRH.

The State of São Paulo comprises 22 watersheds, organized in 21 watershed committees[11]. Recently, four inter-state watershed committees were created to promote

[10] Article 3, item I of Federal Law Nr. 7.663/91.

the joint management of rivers which fall within the remit of the Union since their waters drain not only the São Paulo State, but also vicinal States[12].

4.2 Financial Structure: Water Resources State Fund (FEHIDRO)

The financial structure is represented by the Water Resources State Fund (FEHIDRO in Portuguese), whose resources derive from monetary compensations for areas flooded due to energy purposes, Itaipu[13] royalties and pricing for water use. Rules and procedures to access the Fund's resources are defined by FEHIDRO's Steering Council ("Conselho de Orientação do Fundo Estadual de Recursos Hídricos" in Portuguese), of tripartite composition selected from members of the Water Resources State Council.

Funds are allocated considering the directives and actions indicated in the Quadrennial Plan and distributed among different projects: structural interventions associated directly to water supply and the maintenance of water quality; actions related to the regulation and management of natural resources use and to the protection of territorial spaces in a certain watershed; development of studies and strategic researches; as well as environmental education programs and the institutional strengthening of governmental and non-governmental organizations involved in the management of water resources.

As a transparency measure, the list of projects developed by FEHIDRO, as well as general information concerning each of them, can be accessed by any citizen on the webpage of SIGRH through a link named "citizen access"[14].

---

[11] The 21 Watershed Committees are: Alto Paranapanema; Aguapeí e Peixe (the only one which comprehends two watersheds - Aguapeí and Peixe); Alto Tietê; Baixo Pardo/Grande; Baixada Santista; Baixo Tietê; Litoral Norte; Mogi-Guaçu; Médio Paranapanema; Pardo; Picacicaba, Capivari e Jundiaí; Pontal do Paranapanema; Paraíba do Sul; Ribeira de Iguape e Litoral Sul; São José dos Dourados; Serra da Mantiqueira; Sapucaí-Mirim/Grande; Sorocaba e Médio Tietê; Tietê-Batalha; Turvo/Grande; Tietê-Jacaré.

[12] Committees pertaining rivers administered by the Union: Watershed Committee of Paranapanema; Watershed Committee of Grande; Integrational Watershed Committee of the Paraíba do Sul river; Watershed Committee of the Piracicaba, Capivari and Jundiaí rivers.

[13] Itaipu Hydroelectric Power Plant – binational hydroelectric power plant located on the Paraná river, on the border between Brazil and Paraguay.

[14] http://fehidro.sigrh.sp.gov.br/cgi-bin/FehLivre.exe/listagem

4.3 Technical Structure: the State Plan and the Watershed Plans

Finally, the technical instance, named the Coordinating Committee of the Water Resources Regional Plan ("Comitê Coordenador do Plano Estadual de Recursos Hídricos - CORHI" in Portuguese), is made up of representatives of management organs and is responsible for the coordination and development of management tools, namely the Water Resources State Plan ("Plano Estadual de Recursos Hídricos" in Portuguese) and the Water Resources Situation Report ("Relatório de Situação dos Recursos Hídricos" in Portuguese).

The State Plan is defined and evaluated every four years, suggesting directives, actions and priority resources for the whole State as well as for each of the watersheds. The Situation Report indicates the progress of each watershed in terms of water resource quality and quantity indicators. Hence, this instrument offers a basis for defining the quadrennial plans.

Furthermore, and among other relevant activities, CORHI is entrusted with proposing methodologies to effectively frame the water bodies, as well as coordinating the implementation process of charging for water use.

To support technical instruments in the framework of the State Council and the Watershed Committees, Technical Chambers were set up, specialized in specific issues such as groundwater. These chambers have the scope of identifying, formulating and subsequently implementing formal evaluation and control mechanisms for the topics discussed within the political structure.

5. The Water Resources Plan of the State of São Paulo: nature of the actions targeted at the protection of water resources and the improvement of resilience

Traditionally, the State plans establish specific actions for the management of water resources, considering the necessity to control, protect and recover each watershed's territory, with the scope of harmonizing demand and availability of surface and groundwater resources. They have the goal, moreover, to raise awareness and involve all of society, particularly communities living in the surroundings of watersheds.

Furthermore, the plan of the State of São Paulo contains strategic actions associated to the management of risk areas which directly or indirectly impact water resources, and relate to the prevailing geodynamic phenomena in the State and in the whole of Brazil, such as land sliding, flooding, continental and coastal erosive processes, soil collapse and subsidence.

Disaster prevention, in these cases, leads to an increase of social perception regarding not only the use of water, but also of other natural resources that compose the environment. Additionally, it unveils direct impacts resulting from inadequate use and occupation of watershed territory, contributing to the strengthening of resilience in these municipalities and their population.

In the current plan, actions to prevent natural disasters reflect the directives and priorities established in the State Programme for Prevention of Natural Disasters and Mitigation of Geohazards ("Programa Estadual de Prevenção de Desastres Naturais e de Redução de Riscos Geológicos" in Portuguese), outlined in the State Decree Nr. 57.512 of 11 November 2011.

Nowadays, there is a tendency of incorporating such actions in the other State and Federal plans, and the case of São Paulo can serve as a model for the management of risk areas.

6. Importance and ways of engaging society in water resources management

After roughly two decades have passed since the Brazilian and São Paulo's systems were created, it is possible to observe that the participation of society – considering both organized civil society and the population in general – in water management has gradually increased.

This can be illustrated by the growing number of professional associations, user associations, education & research institutions and NGOs which have developed projects financed by the Water Resources State Fund. In the period between 2011 and 2014, for example, the contracts signed by civil society organizations correspond to about 18% of the total amount of financings[15].

[15] COFEHIDRO, p. 17.

It must also be said that these funds are employed in projects which directly benefit the respective watersheds populations, in areas such as environmental education, capacity-building of committee members, sewage treatment in isolated communities, reforestation and restraining of erosive phenomena, among others.

The numbers reveal, pointedly, that society is commonly more engaged and demands improvements in watershed localities suffering from hydric deficits, contamination problems and conflicts over water use.

In this panorama, the current challenge involves the extension of social participation, so that it is present in continued water management and not only in crisis situations.

It is well known that since the beginning of the 19th century humanity has faced a serious water crisis. This could not be different in Brazil and, particularly, in the State of São Paulo, which experiences a historic drought period.

Regarding this issue, the United Nations "Water for People, Water for Life" report presented during the 2003 Third Water Forum in Kyoto[16] pointed out that water mismanagement lies in the center of this crisis.

It can be observed, thus, that the search for solutions inevitably passes through the implantation of a democratic management system.

And, as referenced before, both the State and the National Water Resources Management Policies were based on the principles of decentralized, participative and integrated water management.

Current efforts are concentrated on increasing community participation and, at the same time, on overcoming inherent deficiencies of its representation capacity, taking into account the technicalities and particularities of such complex subject. In other words, it is crucial that society actively exercises its legal right to participation.

In this sense, the environmental education project "Inter-watershed Dialogue" should be mentioned, which since 2003 promotes capacity-building among managers in charge, enabling them to participate in governmental decision-making processes.

[16] UNESCO, p. 4.

7. Programs of the State of São Paulo in support of the protection of water resources

Another initiative to be mentioned is the Incentives Program for the Riparian Forest Recovery and Vegetation Restoration of Water Catchment Basins ("Programa de Incentivos à Recuperação de Matas Ciliares e à Recomposição de Vegetação nas Bacias Formadoras de Mananciais de Água" in Portuguese) established in the State of São Paulo through Decree Nr. 60.521, of 5 June 2014.

Program directives build upon the conservation of water resources and the recovery of riparian forests through the adoption of coordinated actions involving federal, state and municipal organs and entities, non-governmental organizations and the private initiative.

In practical terms, the Riparian Forest Program has the scope of recovering about 20 thousand hectares (corresponding to 40 million seedlings), and its actions are developed by channeling public and private investments. These actions are initially directed to priority intervention areas in the Alto Tietê, Paraíba do Sul and Piracicaba-Capivari-Jundiaí watersheds, which concentrate over 30 million inhabitants.

In the Piracicaba-Capivari-Jundiaí watershed, for example, the Cachoeira Project was brought about with the support of the São Paulo State Secretariat for the Environment in one of the four main reservoirs of the Cantareira System[17]. This project, whose goal is to plant 350 hectares in the surroundings of the homonymous reservoir, results from a partnership[18] involving the Secretariat for the Environment, a local cooperative society ("Ambiência Cooperativa de Trabalho para Reflorestamento Ambiental da Represa de Piracaia e Região") and the well-known NGO The Nature Conservancy.

The concern of protecting the vegetation surrounding water springs in order to safeguard the water resources themselves is no novelty. This is because a substantial number of water spring areas has become subject to inadequate urban use, resulting in

[17] Cachoeira Reservoir, located in the municipality of Piracaia.
[18] Other partners: SABESP, Municipality of Piracaia and Dow Foundation. More information at www.cooperativaambiencia.com.br/?page_id=22

the pollution of water bodies as an effect of intense conflicts on land use over the last four decades, especially in peripheral regions next to public supply reservoirs.

In view of this scenario, State Law Nr. 9.866, of 28 November 1997, instituted a new management model for territories inserted in the Metropolitan Region of São Paulo (RMSP), which concentrates about 21 million inhabitants and a complex network of economic industrial and service activities distributed on 7.947 km².

This experience guaranteed a tripartite participation, including civil society, local public administration and organs of the State of São Paulo Government through its representatives in the respective watershed sub-committees.

Among the diverse projects to be mentioned is the Water Protection Operation ("Operação Defesa das Águas" in Portuguese), which disassembled over 12.500 irregular constructions in water spring areas. Also, the project Restart – Planting Liberty ("Recomeçar – Plantando a Liberdade"), in which convicts of two penitentiaries located in the Municipality of Sorocaba work producing about 350 thousand seedlings of 130 different species a year, in exchange of compensation and penalty reduction.

It should be emphasized that society's engagement in the management of water resources is important not only for a more democratic governance in conformity with the law, but also to enable the construction of an ecologic citizenship and thus strengthening local resilience.

8. Conclusion

Brazil enjoys one of the most advanced water resources legislations in the world, and one of its merits is the significant incentive to civil society participation in practically all the Watershed Committees and Councils of each system.

Socioeconomic and cultural factors, brought into the discussion by society in addition to technical factors, allow the decisions taken to be more comprehensive and sustainable, strengthening local resilience.

It is necessary to continue working on translating community necessities into effective actions and transforming these communities from mere recipients into real participants in public policies. In this way, society is enabled to not only claim its right

of water preservation, but also carry out its part in the duty of protection. This is one of the greatest challenges of the water management systems in the State of São Paulo and in Brazil.

Bibliographical References

AGÊNCIA NACIONAL DE ÁGUAS. Conjuntura dos recursos hídricos no Brasil. 2013, 434 pgs. Available at http://arquivos.ana.gov.br/institucional/spr/conjuntura/ANA_Conjuntura_Recursos_Hidricos_Brasil/ANA_Conjuntura_Recursos_Hidricos_Brasil_2013_Final.pdf

COFEHIDRO. Relatório Fundo Estadual de Recursos Hídricos - FEHIDRO - Elementos Para um Balanço 2011 – 2014. 2014, 35 pgs. Available at www.sigrh.sp.gov.br/public/uploads/documents/8022/relatorio-resumo-fehidro-2013-e-2011-a-14.pdf

GLOBAL WATER PARTNERSHIP TECHNICAL ADVISORY COMMITTEE (TAC). Integrated Water Resources Management Background Paper. 2000, 71 pgs. Available at www.gwp.org/Global/GWP-CACENA_Files/en/pdf/tec04.pdf

UNESCO. The United Nations World Water Development Report – Water for People, Water for Life. 2003, 36 pgs. Available at unesdoc.unesco.org/images/0012/001295/129556e.pdf

UNITED NATIONS. World Water Development Report (WWDR3) - Water in a Changing World. 2009, 429 pgs. Available at http://unesdoc.unesco.org/images/0018/001819/181993e.pdf#page=5.

REBOUÇAS, Aldo da Cunha. Proteção dos recursos hídricos. Revista de Direito Ambiental, n. 32, 2003, pgs. 33-67.

Legislation

Brazilian Federal Constitution, enacted on 5 October 1988.

Brazilian Federal Law Nr. 6.938 of 31 August 1981, establishing the National Environmental Policy.

Brazilian Federal Law Nr. 9433 of 8 January of 1997, instituting the National Water Resources Policy.

São Paulo State Law Nr. 7.663 of 30 December 1991, establishing the State Water Resources Policy and the Integrated Water Resources Management System.

São Paulo State Decree Nr. 57.512 of 11 November 2011, instituting the State Program for Prevention of Natural Disasters and Reduction of Geologic Risks.