

WATER SECURITY IN THE METROPOLITAN REGION OF RIO DE JANEIRO: CONTRIBUTIONS TO THE DEBATE

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Introduction

From the recognition by the United Nations General Assembly (UN) that access to drinking water as a human right in July 2010, new discussions on water agenda was promoted, such as ensuring access of water to all and water security in the regions and countries. In a research conducted by COOK and BAKKER (2012) on the Web of Science portal, the authors pointed that there was an exponential growth in the use of the term water security in journals, especially in the last decade. The research also showed that in each of the five most cited articles in the portal the term “water security” was identified.

This growth can be explained by two main factors: the recognition of the water as a human right, and the introduction of a meaning to water security which is more integrative. This introduction occurred from the 2000s with the promotion of the Second World Forum Global Water Partnership (GWP). The concept introduced easy access to water for human uses to include water quality, human health, and ecological concerns as COOK and BAKKER (2012) said.

However, Brazil only began to express its position on the debate about water security in 2012, when it started to elaborate the National Water Security Plan. The Plan, which purpose is to define the main structural and strategic interventions in the management of water resources in order to ensure the supply of water for human consumption and for the use in productive activities, and to reduce the risks associated to critical events, it is still in phase of development and has been elaborated in the Interáguas Project jointly by the National Water Agency (ANA), the Ministry of Integration and the World Bank.

Despite the government’s concerns about to elaborate a National Plan for Water Security, which started in the end of 2013, it was not efficient to avoid that the state of São Paulo faced a crisis to enable the water supply of the Macro Metropolis Region. The crisis, which received significant disclosure in the media, culminated in a tension between the states of São Paulo and Rio de Janeiro. Such tension was generated when it was announced by the state government in March 2014 the intention to realize a new

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transposition in the Paraíba do Sul river. The assumptions for the tension between the states are two: lack of rain in the region or poor management of the resource.

The announcement about an intention to realize a new transposition project in the Paraíba do Sul river to supply the Cantareira System (Complex consisting of six dams, which are responsible for 55% of the São Paulo's Metropolitan Region water supply) generated dissatisfaction on the agents involved in water management in Rio de Janeiro, specially, because of the dependence of the Metropolitan Region of Rio de Janeiro (RMRJ) in the Paraíba do Sul river for water supply. Thereby, the river began to set up a subject of dispute between the two states.

Such discontent was associated to the fact that the water supply of RMRJ only be made it possible because of a transposition Project realized in the Paraíba do Sul, capturing water to the Guandu River Basin – located in the state of Rio de Janeiro. From this Project, the Guandu River Basin begins to serve as a vehicle to transport water for supplying the RMRJ, whose initial flow was not sufficient to supply the existing demand.

A week after the announcement by the São Paulo government about the Transposition Project, the State Environmental Agency of Rio de Janeiro (INEA), published the Technical Paper DIGAT / INEA No. 01-A / 2014, exposing the positioning of the state of Rio de Janeiro, which was contrary of the alternative to implement a new Transposition Project in the Paraíba do Sul aiming to supply the Cantareira System.

The disagreement of the states on the promotion of new interventions in the Paraíba do Sul river resulted into file a Public Civil Action by the state of Rio de Janeiro. Its “outcome” was held in a mediation hearing in the Supreme Court in November 2014, which encouraged an agreement between the governors of the three states crossed by the river in dispute – although it has not clarified the real impacts of implement a new Transposition Project.

This context encourages two possible of research, which will be discussed in this article, the context of water (in)security of RMRJ due to the dependence of the water supply of this area into a fountain in dispute, and, on the other hand, the challenge assigned to the Guandu river and to the organizations associated to the water management in RMRJ, because of the fact that this basin enable the water supply of 85% of RMRJ through the Transposition realized in the Paraíba do Sul river (SONDOTÉCNICA, 2007).

The discussion that follows is organized into four parts. At first, it presents the literature review which basis the debate promoted in this article. The second part contains the presentation of the current situation of RMRJ's water demand. The presentation of water management organisms and instruments in the state of Rio de Janeiro is in the third part of the article. And finally, in the fourth part of the paper lies the analysis of the situation of RMRJ's water security and the challenges attributed to the The Guandu River Basin Committee – Guandu Committee (RJ), a collegiate which is responsible for managing the water resources of the river basin that serves as vehicle to the water transposition from Paraíba do Sul river, as mentioned above.

The methodology that based the discussions proposed in this paper includes two main methods, a review of the literature related to the subject addressed in the article, and the gathering of information about the instruments and mechanisms to promote

the water management in the state of Rio de Janeiro. The review had focused on the discussions about water security concept and water management in the Brazilian context.

The survey addressed the following issues: (i) current situation of availability of water in the state of Rio de Janeiro – survey conducted by consulting the technical documents provided by the Environmental Agency of the State of Rio de Janeiro (INEA), (ii) identification of instruments and mechanisms present in water resources management's system in the state of Rio de Janeiro - by reading the State Water Law and by the information provided by INEA, and (iii) analysis of the structure and functioning of the Guandu Committee (RJ), this survey was realized accessing its website and also through the reading of Santos (2014), a dissertation concerned about this Committee and its function as arena to negotiate environmental conflicts.

2 Institutional-legal framework of the Brazilian water management and the discussion on water security

According to the interpretation carried out by Cook and Bakker (2012) the approach on the issue of water security has four main approaches. The first addresses this issue concerned about the quantity and availability of water - seeking, for example, discuss tools to water safety assessment.

The second approach focuses on discussions about the vulnerabilities associated with water, illustrated by the occurrence of drought and floods and their consequences.

A third approach emphasizes the debate on discussions on human needs associated with water, which includes a wide range of issues such as, for example, access to the (drinking) water, food security and other elements associated with human development.

Sustainability is the fourth focus of water security subject, which is well illustrated by water security concept brought by the Global Water Partnership (GWP): “[W]ater security at any level from the household to the global means that every person has access to enough safe water at affordable cost to lead a clean, healthy and productive life, while ensuring that the natural environment is protected and enhanced”.

Beyond the GWP interpretation, this concept is also discussed by the authors GREY and SADORF (2007), which understand water security as “The availability of an acceptable quantity and quality of water for health, livelihoods, ecosystems and production, coupled with an acceptable level of water-related risks to people, environment and economies”.

Similar concept is discussed by UN-Water (2013), which defines water security:

Water security is defined as the capacity of a population to safeguard sustainable access to adequate quantities of acceptable quality water for sustaining livelihoods, human well-being, and socio-economic development, for ensuring protection against water-borne pollution and water-related disasters, and for preserving ecosystems in a climate of peace and political stability (UN-WATER, 2013).

The discussions conducted by Cook and Bakker (op. cit.) are guided by the emphasis in a widely reflection of the theme, in others words, it considers the global scale and wider issues in water security's agenda, such as political and socioeconomic elements.

This authors understand that a broad concept of water security and good governance could be symbiotic, since each of these concepts and its objectives facilitates the achievement of the other, water safety sets targets for governance, and good governance is needed to make progress at the operational level (COOK; BAKKER, 2012).

In Brazil, with the enactment of Law 9.433 / 1997 – Brazilian Water Law, the country is going through a reform process in its water management model. This new legal and institutional framework brings principles aimed at promoting an equitable water management in the country.

As pointed for Ioris (2010) the new regulatory framework established with the implementation of the Brazilian Water Law, incorporates a several precepts of international methodology of integrated water management, basing on three main areas: the need for prior authorization for the use of water (through the instrument named water grant), the payment of rates equivalent to the environmental impact caused by the water use and the creation of forums that enable social participation in the deliberations regarding this resource (the River Basin Committees).

This new model of water management is classified as a systemic model to integrate participation (CAMPOS; FRACALANZA, 2010), because of the fact that it takes advantage of the positive aspects of previous brazilian water policies established and also adopts some innovative procedures and mechanisms, such as the adoption of the river basin as a unit to plan the water system, it contributes to new decision making process and also brings the decentralization to the water management.

Another important aspect to be highlighted referring to this new model is related to its centrality in the notion of scarcity, as pointed by Ioris (op. cit.). According to the author this notion is expressed through the implementation of an instrument presents in the Brazilian Water Management System, charging for water use. This relation to the notion of scarcity is also reflected in the definition of priority uses in the Brazilain Water Law, according to art. 1, III “in shortage situations, the priority use of water resources is for human consumption and watering livestock”.

Among the elements provided in the Brazilian Water Law which can be pointed out as those that contributes to ensure the water security of the country, it gives emphasis to the instruments envisaged in its art. 5 and the predicting to create participatory forums into the promotion of the management of resources, namely: the councils and river basins committees.

The first elements in the Brazilian Water Law could be understood as those which are align with the concerns with water security according to an approach centered on the quantity and availability of water, as pointed out by Cook and Bakker (2012). The second elements are more directly related to concerns about water security in the broadest vision, associated with governance – as proposed by Cook and Bakker (op cit.)

It is important to note the prediction of priority uses centered on human needs, as provided in art. 1, inciso III – another focus of the Brazilian Water Legislation align-

ned with the arguments discussed by Cook and Bakker (op cit.) about water security. However, there isn't a specific instrument in the Water Law that aims to ensure such prioritization. It is also important to highlight that the aspect related to the food security is not addressed clearly in the Law.

To the river basin committees are assigned several duties in the operation of the Water Resources Management System established with the Brazilian Water Law, among them it is important to highlight their role in to promoting discussion of issues related to the water resources, the arbitration of the conflicts related to water, the monitoring of the plans for river basins and their role to establish charges for the water uses.

Although there is an institutional and legal framework already established in Brazil, which entails important emplacements to the development of a water management scenario aligned with security, Brazil only starts to pay attention more specifically to this discussions recently.

While the development of water management policy finds centrality in the concepts of water scarcity and rational use of the water, as pointed by Ioris (op. cit.), the crisis faced by Sao Paulo revealed a scenario of vulnerability to manage the Brazilian water resources.

The lack of concerns about the shortages can be attributed to an apparent remote possibility of Brazil to face a situation of water stress, as it is a country which represents 12% of freshwater reserves in the world (ANA, 2007).

However, a large part of this water potential is situated in the north area of the country, while is in the southeast portion of the territory that is located the most part of the urban population (ANA, op. cit.). And to that fact is also added the low quality of the surface's waters located in the southeast area.

Thus, the dispute over water's access has been intensified since the main sources used for public supply are impacted directly by different (and new) users, especially to the agricultural and the industrial uses, in addition to the effluent generated by such activities.

Another important element in the reflections about Brazilian environmental agenda related to water security, also evidenced by the situation of water scarcity in the state of São Paulo, was related to the increase in the exploitation of underground reserves (through wells) – which has been done in an irregular and disorderly way, confirming the need for attention to the meaning that the underground reserves represent as important alternatives in Brazil's water agenda.

It is possible to say that the management of groundwater isn't an issue well explored in Brazilian water's agenda. According Hager et al. (2002), the Brazilian Water Law can be considered as a legislation that deals exclusively with surface water. Only more recently it has been an increased awareness about the need to contemplate the groundwater in the discussions about Brazilian's water management, especially because of the low qualities of the water sources which are responsible to supply the urban areas, an aspect already mentioned above.

The Brazilian Water Law considered, for a long period, the groundwater as an extension of the land, which could naturally be appropriated by landowners. Although groundwater is used for about 50% of the population, its importance is only evident in the facing of the situations of scarcity, generally marked by conflicts (HAGER et al., op. cit.).

The current command of groundwater was established by the Brazilian Federal Constitution of 1988, which were allocated to states – through art. 26 “are among the state assets: I - surface or subterranean waters, flowing, emerging or in deposit, except, in this case, according to the law, resulting from the Federal Governments works”.

The management of issues relating to groundwater on a national scale is done by the Water Coordinating Underground affiliated to the National Water Resources Committee (CNRH).

In order to overcome the difficulties faced in the management of the Brazilian’s underground water, it was created the Groundwater Program, by the Brazilian Environment Ministry (MMA), associated to the Department of Water Resources. The program’s goal is the formulation of a sector policy of groundwater, which enables the strengthening and integration of this theme in the country’s management system.

However, the challenges of groundwater management are still many, and it has focus especially on the relationship between the legal and institutional treatment and into the fitting between the instruments established by PNRH, which have an emphasis on the management of surface water. Besides the fact that the management of land and the subsoil uses are not associated with each other in the Brazilian context. Conflicts associated with mineral extraction illustrate this dissociation.

Finally, the argument of insufficient integration between the management of surface water and groundwater is corroborated by the recent development of the National Plan for Water Security – already mentioned, and its lack of focus to deal with this subject.

3 Notes about the current water resources scenario of RMRJ

The “Report of Alternative Sources to the Supply of Rio de Janeiro with Emphasis on RMRJ” (2014) contained in the State Plan for Water Resources of the State of Rio de Janeiro, based on the studies of COBRAPE / DAEE (2010) and PSR / AGEVAP (2013) cited by COPPETEC (2014), points out that the realization of new transpositions in the Paraíba do Sul river will increase the risk of recrudescence of similar events to water stress experienced in 2003.

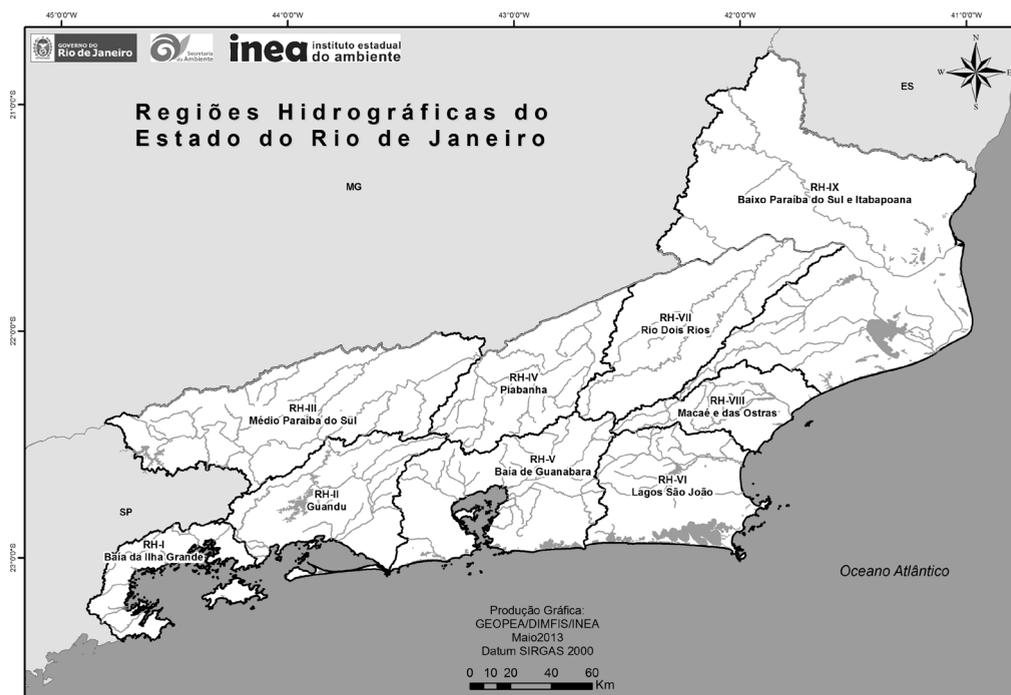
Also points out that the municipalities of Magé, Guapimirim and part of Duque de Caxias (municipalities members of RMRJ) are not served or are partially served by the Guandu and Imunana/Laranjal Systems, and even with the expansions planned for such systems in the next years, the situation of these municipalities will not be changed – which reinforces the scenario of imminent fragility of the RMRJ’s water supply.

Regarding the water quality of the main sources in Rio de Janeiro, the report mentioned points out the situations of commitment in the basins of the Guandu River and Guanabara Bay.

Therefore, groundwater reserves emerge as potential alternative to serve the water demands of the region, as they are recognized in the report. The document outlines that, based on the current availability of underground reserves of the state, it can be concluded that there are conditions to expand the exploitation of the groundwater in most of the

Hydrographic Districts of the state, except for some areas of the Hydrographic District V, and the coastal part of the Hydrographic District VI. The impossibility to have this last Hydrographic District as an alternative is related to the risk of salinization of the aquifers. On the other hand, as already mentioned, the management of water resources still has important gaps in the Brazilian water agenda. The following map illustrates the division of the state of Rio de Janeiro into Hydrographic Districts.

Map of the State of Rio de Janeiro by Hydrographic Districts



Source: INEA (2015).

The analysis of the situation of water availability in the state, especially in the RMRJ, calls attention to the need for reflection about the functioning of the Water Management System of the State, in order to discuss about possible ways to overcome an insecurity scenario. Therefore, it is necessary to promote an analysis of the instruments of the State Water Policy of Rio de Janeiro and its mechanisms.

3.1 Agents, Institutions and instruments of the State Policy of Water Resources of Rio de Janeiro

The water management in the state of Rio de Janeiro is regulated by State Law 3.239/1999, which established the State Water Policy (PERHI-RJ) and created the Water Resources Management System (SGRH-RJ).

Similar to the established by Brazilian Water Law and the models adopted in other states, are part of the SGRH-RJ: a) State Water Resources Council (CERHI-RJ); b) State Water Resources Fund (FUNDRHI-RJ); c) River Basin Committees; d) Water Agencies; e) agencies of federal, state and municipal authorities whose responsibilities are related to the management of the water resources.

The table 1 below illustrates the organisms associated with the SIGRH-RJ and the Guandu River Basin Committee, the main organism of Guandu River Basin management.

Beyond the organisms shown in table 1, it also should be highlighted the FUNDRHI-RJ, a fund responsible for financing the water resources instruments of the state. Among the fund's resources, the main ones are those related to the charge for water uses, the fines related to the water uses, and the financial compensation resulted of hydroelectric projects in its territory.

Equally inspired by the model established by the Federal Water Law, the Water Law of Rio de Janeiro includes six instruments, as follows: a) State Water Resources Plan (PERH); b) State Program of Conservation and Revitalization of Water Resources (PROHIDRO); c) River Basin Plans (PBHS); d) classification of the rivers into classes, according to its predominant uses; e) granting to water resources use; f) charging users for the water resources uses; g) State System of Water Resources Information (SEIRHI-RJ).

It is important to point out that when dealing with instruments and guidelines of Rio de Janeiro's water management, this legislation introduces four elements not covered by the Federal Water Law. The first element relates to the regulation of the minimum of information that should be included in the State Plan for Water Resources and the state's division into nine Hydrographic Districts, whose administration is related to the river basin committees in the state.

The second point is related to the possibility of a delegate agency perform the functions as the river basin agencies. In this case, it is a competence of CERHI-RJ to delegate to delegates agencies, for a specified period, the exercise of agencies functions - while river basin agencies aren't incorporated in the state system.

Another element to mention is the concern of Rio de Janeiro's Water Law for the protection and the regulation of groundwater management, expressed through the arts. 36, 37, 38, 39 of the law, the latter (art. 39) dealing specifically on the classification of the groundwater protection areas.

Finally, it should also be mentioned the creation of the State Program of Conservation and Revitalization of Water Resources (PROHIDRO), which consists in an instrument aimed to providing the conservation and revitalization of water resources taking the river basin as a planning unit.

Focusing on the discussions about Rio de Janeiro's water security, there are some aspects about the grant instruments and the charging for the water's uses in this territory, because such instruments are important mechanisms to promote the water security of the state.

According to the article 22 of the Rio de Janeiro's Water Law, the uses of water which are subject to licenses are: a) derivation or capture of water portion in water body for consumption; b) extraction of water in aquifers; c) waterborne sewerage and other liquid or gaseous waste, treated or not, for the purpose of dilution, transport or disposal;

Water resources Management System of the state of Rio de Janeiro and the organisms associated with the management of the Guandu River Basin (RJ)

RESOURCE MANAGEMENT SYSTEM WATER RIO DE JANEIRO STATE AND ORGANIZATIONS ASSOCIATED WITH RIVER BASIN MANAGEMENT GUANDU (RJ)			
FORMULATION OF THE POLICY		IMPLEMENTATION OF THE INSTRUMENTS PROVIDED IN THE POLICY	
Scope of action	Collegiate Organisms	Duties	Supervisory organism and grantor Power
State	Conselho Estadual de Recursos Hídricos (CERHI-RJ)	Establish guidelines for training, organization and operation of the River Basin Committees (CBHs) and Water Agencies, exercise arbitration in last administrative instance, conflicts between River Basin Committees, establish the general criteria on the granting of rights use of water resources and its collection, decide on the use of water resources projects within the state, in addition to examining the proposals to amend the relevant legislation to water resources and the State Water-Resources Policy.	Instituto Estadual do Ambiente (INEA)
Regional	Comitê Guandu	The River Basin Committees are collegiate organisms with regulatory powers, deliberative and consultative, being created and established by decree of the Government and the proposal of the State Council for Water Resources (CERHI-RJ). They are political organisms in charge of planning the use of water and ensure the conservation and recovery of the basin territories.	Created by Law No. 5.1010 / 2007, INEA has as its mission to protect, conserve and restore the environment to promote sustainable development.
Scope of action	Direct administration	Duties	Duties
Estadual	Secretaria de Estado de Meio Ambiente (SEA)	The Secretary of State for the Environment (SEA) is the first hierarchical level of the state administration body and its mission is to formulate and coordinate the state policy of protection and conservation of the environment and management of water resources, aiming at sustainable development of the state Rio de Janeiro.	The State Law No. 5.639 / 2010 enabled Water Agencies of functions are carried out by entities Delegatárias.

Source: AGEVAP (RJ), INEA (RJ), SEA (RJ), Water Law of Rio de Janeiro 3.239/1999, State Decree 31.178/2002, State Law 5.639/2010.

d) use of hydroelectric power; e) other uses which could modify the quantity or quality of existing water in a water body. It's INEA's responsibility to authorize water uses in the state of Rio de Janeiro

The charge for water use in the State is regulated by the State Water Law 4.247 / 2003. Regarding for the implementation of this instrument, the INEA is the organism responsible for collect, distribute and apply the revenues from the collection under the incentive plan and implementation of revenue set by the committees of the respective river basins in conjunction with the priorities identified by the River Basin Plan.

They are chargeable the use of water subject to licenses, which were mentioned above. Revenues result of the collection will be directed to FUNDRHI-RJ.

These instruments involve the mobilization of at least three agents responsible for the water management system in the state for its effective implementation listed below, the state environmental agency (INEA), which is responsible for the authorization and the management of the water resources, the organisms linked to the river basins (the river basin committees) – responsible for the implementation of water uses charges and for the information available in the River Basin Plans, and the river basins agencies, which provide technical support to the committees, contributing in the drawing of the river basins plans and also in carrying out technical studies, as well as other.

3.2 Constituent components of context (in) water security in RMRJ and challenges attributed to the Guandu Committee (RJ)

The high dependence on a widely impacted system for the viability of the public supply of a relevant part of RMRJ, and also the current object of dispute by other systems, is the main element which characterizes a scenario that could be pointed out as a water insecurity situation in RMRJ.

In the other hand, the alternatives to this scenario, in which RMRJ starts to be impacted in the promotion of its public water supply, because of the withdrawal of new flows in the Paraíba do Sul River Basin, are scarce – as already mentioned.

Thus, an important challenge is attributed to the Guandu Committee (RJ), organism responsible for water management of the Guandu River Basin – Hydrographic District II of Rio de Janeiro.

The Guandu Committee was created in 2002, through the State Decree 31.178 / 2002, being the first river basin committee of the state of Rio de Janeiro. According to its charter, elaborated in 2004, the Committee is formed by four instances, listed bellow: (i) Plenary, (ii) Collegiate Directors, (iii) Executive Secretary and (iv) Technical Chambers.

The Plenary of the Guandu Committee – the highest organism of the Committee's forum of decision – consists of thirty principal representatives, each of them also represented by their alternates. Its representatives are divided into three segments: Nine representatives of agencies / public entities, twelve representatives of water users and nine representatives of civil society (COMITE GUANDU, 2004).

The Plenary's representants meet at least four times a year to conduct regular meetings at its headquarters, special or extra meetings may be called in order to deal

with urgency matters to be discussed. The Technical Chambers have meets at least every two months at the Committee's headquarters. The high frequency of meetings in this collegiate could be considered as a potential element in the promoting of a participatory water management in this basin.

Santos (2014) based her work in the reading of the minutes of all the meetings held by the Plenary of the Guandu Committee between the years 2004 to 2013, considers that in the Plenary are discussed a wide diversity of subjects, but points out that there is an emphasis on the matters related to the direction of the fund coming from charging water use, besides discussing the viability to implementing environmental recuperation projects in the river basin. Among the discussions promoted by the author which align with the concerns about water security of RMRJ, could be mentioned the discussions based on the mechanisms/instruments to mitigate the intensification of the saline intrusion phenomenon in the basin and promoting recovery projects water quality.

The main instruments of the Guandu River Basin which are available to promote the management of the water resources are: a) River Basin Plan, elaborated in 2005, and therefore already outdated; b) Charges for the water uses, c) the role played by the Technical Chambers promoting the technical and the scientific advices in the deliberation which happens in the Plenary.

The Guandu Committee activities are made possible mainly through the financial proceeds by charging the users of the water's basin. It should also be noted that this Committee represent one of a few Brazilian committees which the instrument of water charging was already established. On the other hand, the inclusion of the water bodies under the preponderant use classes is not implemented in this basin yet.

Beyond the instruments provided by the Brazilian Water Law, another important aspect in the Brazilian water's management is related to the representativeness of those which represents the main organisms that are responsible for decisions making by water resources to ensure representation in these organisms is a mechanisms which helps the promotion of effective governance of water (CAMPOS; FRACALANZA, 2010).

In regarding of the representativeness of the participants who form the Plenary of the Guandu Committee, in comparison between the composition of the representatives in the years 2014 and 2013, in the two past years (2012 and 2011) it was demonstrated by Santos (op. cit.), a maintenance of at least eight institutions / organizations representing the basin users over the last three bienniums, it is important to highlight that to the representatives of the users are reserved twelve seats in the Plenary.

This maintenance coincides with those who exert a strong expression in the management of the river basin, especially to the CEDAE, the company responsible for water supply of the population located largely in RMRJ and Light, one of the main companies responsible for electricity distribution in the state. The strong representation of these agents is also associated with the history of the Committee for Integration of the Paraíba do Sul River Basin (CEIVAP) as pointed out by Pires do Rio (2006)

As already mentioned, the fields of competence of this river basin is associated with the management of the waters which are treated by the Guandu Water Treatment Plant (ETA Guandu) and the water supply for 85% of the population located in

RMRJ. However, it should be highlighted that in this river basin is also an important component to promote the management of the water in the state especially in RMRJ – because of the underground reserve located in the State, it is called the Piranema Aquifer.

However, some pressures are already added in the management of this reserve, due to the installation and operation of a landfill, the Central de Tratamento de Resíduos Sólidos Santa Rosa (CTR Santa Rosa). The project aims to allocate 85% of solid waste generated by the city of Rio de Janeiro in the landfill (Santos, *op. cit.*).

Because the landfill is located in the same area of the Guandu River Basin, the Guandu Committee has positioned itself on the implementation of this landfill. However, although the Committee has been elaborate a Recommendation, which was sent to the state environmental agency - INEA - pointing out the need to carry out more rigorous monitoring of the installation and operation of the landfill, while pointing out the lack of information on monitoring of treatment leachate generated by the landfill and the absence of hydrogeological nature studies, it has been operating since the year 2011 (Santos, *op. cit.*). We should also mention that two years after the start of the landfill operation, it operated without the proper disposal of manure generated in the same¹.

Pressures on the Aquifer Piranema, and the “failure” of the negotiations promoted by the basin deliberations forum that supplies the metropolitan region of the state, contributing to highlight a lack of coordination between the constituent agents of the water resources of the state management system especially with regard to the discussion of relevant issues for water agenda of the state.

4 Final Considerations

The water crisis faced by the state of São Paulo and its strong placement in the media promoted an increasing in the debate about water management in Brazil. On the other hand, its wide expression was not sufficient to effectively mobilize those who are involved in water management in favor to increase the promotion of the water security – this fact was evidenced by the shortcomings identified in the National Water Security Plan in recent elaboration.

Regarding the water scenario RMRJ, it is already highly impacted quantitatively and qualitatively, as illustrated by the State Water Resources Plan. On the other hand, to examine to hydrographic basin of the Guandu River and bodies associated with the management of this territory, since this is imputed the challenge of managing the transposed waters of the Paraíba do Sul River, which enable the metropolitan public supply, it can be seen that they have been unable to meet the demands contained in this territory. For such a finding can be raised two hypotheses, a first pointing this situation as a result of a low degree of entanglement between the agents responsible for water management in the state. A second hypothesis focuses on an imbalance in the expression of the interests represented by the agents / agencies / institutions present in this basin, which would not have correspondence with the water demands installed.

The existence of an active deliberations forum did not show sufficient condition to ensure the water security of RMRJ, which could denote that the water security concept would also be associated with intertwining institutional capacity.

Finally, we should make a note on the management of groundwater resources in the state, since the State Water Resources Plan the points as a relevant alternative to water scenario already widely impacted the RMRJ. A lack of effective linkage between the management of surface and groundwater resources in this territory was identified, because as noted in the case of CTR Santa Rosa, referring to the management of the aquifer Piranema, there was no connection between: on the one hand, the interests of agents present in the territory, on the other, the situation of the basin, presented by the basin Plan and the recommendations of the Guandu Committee and the acts of the environmental agency in relation to the project - especially as it is for the authorization and supervision of it.

Note

i Source: <<http://g1.globo.com/rio-de-janeiro/noticia/2013/02/aterro-de-seropedica-no-rj-leva-multas-por-nao-tratar-o-chorume.html>>. Accessed in 28 may 2015.

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WATER SECURITY IN THE METROPOLITAN REGION OF RIO DE JANEIRO: CONTRIBUTIONS TO THE DEBATE

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Abstract: This article aims to contribute to discussions on the management of water resources and the elements associated to water security. The discussion has focused on two main aspects, first, in the theoretical frame about discussions of water security and second, in the presentation of the elements which composes the current scenario of water management in the Metropolitan Region of Rio de Janeiro (RMRJ), based in the discussions about the centrality for Rio de Janeiro's water supply focused in Paraíba do Sul river, and in the role of agencies and organisms associated to water management in this territory. Based in the researching about the water availability and quality in Rio de Janeiro and the mechanisms presents in this State, the elements presented in this article demonstrated a context of water insecurity in RMRJ.

Palavras-chave: water management, water security, water conflicts, Metropolitan Region of Rio de Janeiro.

Resumo: O presente artigo tem como objetivo contribuir com as discussões promovidas sobre a gestão dos recursos hídricos com enfoque nos elementos associados à segurança hídrica. A discussão que se apresenta tem dois norteamentos principais, o primeiro, na apresentação do referencial teórico-conceitual que norteia as discussões sobre a segurança hídrica e, o segundo, nos elementos constituintes do atual cenário de gestão hídrica da Região Metropolitana do Rio de Janeiro (RMRJ), abrangendo as discussões sobre a dependência do abastecimento hídrico desta região no rio Paraíba do Sul, e o papel dos organismos e instrumentos de gestão das águas do estado e na manutenção da segurança hídrica. Os elementos apresentados demonstraram, através da investigação sobre a situação dos mananciais de abastecimento público e dos instrumentos existentes no presente território, um contexto de premente insegurança hídrica na RMRJ.

Palavras-chave: gestão de recursos hídricos, segurança hídrica, conflitos hídricos, Região Metropolitana do Rio de Janeiro.

Resumen: Este artículo tiene como objetivo contribuir a los debates promovidos en la gestión de los recursos hídricos con un enfoque en los elementos asociados a la seguridad hídrica.

La discusión se ha centrado en dos aspectos principales: en la presentación del marco teórico y conceptual que guía las discusiones sobre la seguridad hídrica y, en los elementos constitutivos de la situación actual de la gestión del agua en la Región Metropolitana de Río de Janeiro (RMRJ), incluyendo discusiones sobre la dependencia del abastecimiento de agua de esta región en el río Paraíba do Sul, el papel de los organismos e instrumentos de gestión del agua del Estado y el mantenimiento de la seguridad hídrica. Los elementos presentados demostraron, a través de la investigación sobre la situación de las fuentes de agua potable pública y los instrumentos existentes en este territorio, un contexto de inseguridad hídrica en RMRJ.

Palavras-chave: Gestión de los recursos hídricos, seguridad hídrica, conflictos del agua, Región Metropolitana de Río de Janeiro.
