

# WATER MANAGEMENT: CONSTRAINTS TO AND CONTRIBUTIONS OF BRAZILIAN WATERSHED MANAGEMENT COMMITTEES<sup>1</sup>

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## Introduction

Water is an essential substance for life on earth, and from a chemical, physical and biological perspective is the main constituent of all organic life on the planet. Water is not only vital to human societies, but an important social, political and economic component of them. In strategic terms, as a useable resource, it has a finite capacity for use: it is essential to the rural environment, and cities are established and flourish around reliable water sources.

More than 15 years after enactment of Brazil's National Water Resources Policy and Waters Law (Lei nº 9.433 of 8 January 1997), which determined that the administration of water resources be conducted through decentralization, participation and integration, this goal has still not been attained and there have been many problems that delay the realization of this law, particularly those linked to decentralization.

It is up to Watershed Management Committees to perform a strategic role in the National Water Resources Policy, because they are the entities that materialize the decentralization of management, include the participation of governments, users and civil society and have watersheds as the units of management. They are also proponents of public policies. Thus, the success of their operation to a certain degree signifies the success of the water policy itself. However, the current literature questions their role, given that many Watershed Management Committees in Brazil have not been able to exercise any of their basic legal prerogatives (GAGG, 2014; FRACALANZA; JACOB; EÇA, 2013; MACHADO, 2012; OLIVEIRA, 2011; CARNEIRO et al., 2010; PEREIRA; MEDEIROS, 2009; MADRUGA, 2007; RIBEIRO, 2006; HAASE, 2005; HENKES, 2002).

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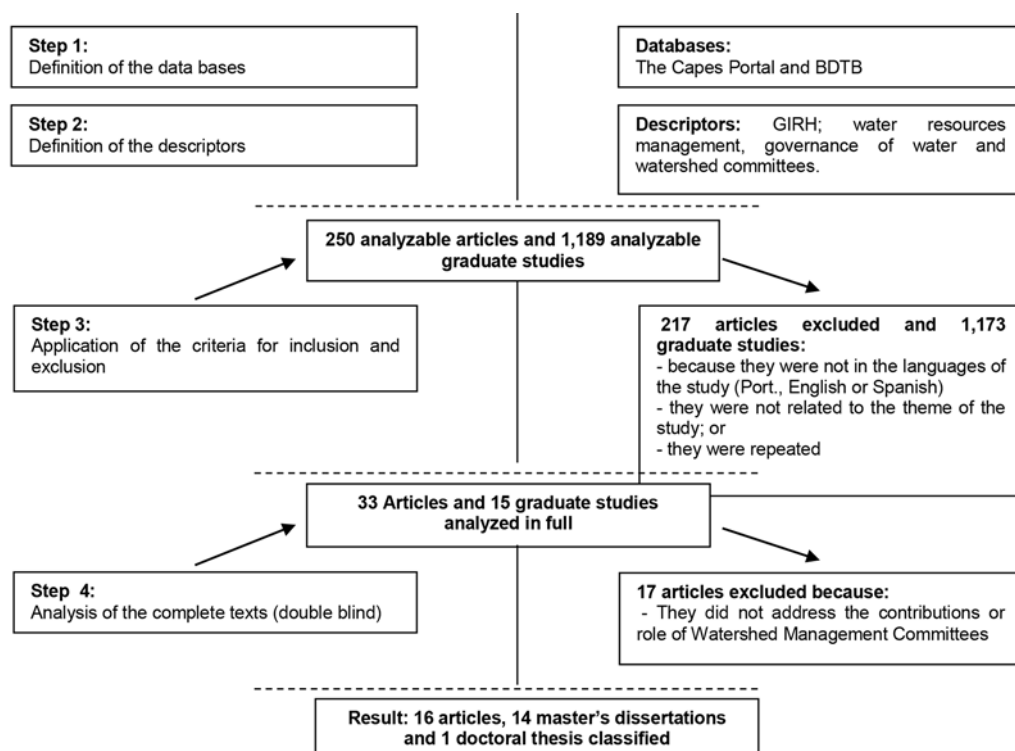
The objective of this study was to discuss the main contributions and limitations faced by Watershed Management Committees in the integrated management of water resources based on a systematic analysis of the bibliography. Two research steps were conducted: an integrative review of the literature and an analysis of the committees that have a watershed management plan and provide information about this instrument. An integrative review of the literature allows identifying and analyzing scientific production about a certain theme (GANONG, 1987). In this sense, two integrative reviews were conducted, one focused on a survey of scientific articles and another on a survey of master's dissertations and doctoral theses that identify possible contributions and limitations of these groups.

An integrative review is a research method that allows searching, critical evaluation and synthesis of the available evidences about the theme investigated, with its final product being an overview of the current state of knowledge about the issue (Soares *et al.*, 2014). Its main objective is not a theoretical profile of the studies identified, but a synthesis and categorization (integration) of the findings, to identify evidence common to the multiple studies, including those from different paradigms of knowledge. This allows addressing complex themes that combine individual and contextual issues, as found in the reality of Watershed Management Committees. Thus, the integrative review allowed focusing on a specific problem identified in the studies, in this case the contributions and limitations of these groups based on the results of the studies.

A survey was conducted on the Periodicals Portal [Portal de Periódicos] of Brazil's Coordination of Improvement of Higher Education Personnel (Capes) to identify articles published since the enactment of the Waters Law in Brazil on 8 January 1997, until 21 October 2015. The Capes portal was chosen because it makes available more than 21,500 journals from Brazil and throughout the world (CAPES, 2004). The theses and dissertations were searched on the Biblioteca Digital Brasileira de Teses e Dissertações [The Brazilian Digital Library of Theses and Dissertations] (BDTD).

Figure 1 presents a synthesis of the methodological steps and of the results of the two integrative reviews conducted in this study.

Figure 1 – Synthesis of the results of the integrative reviews.



Source: prepared by the authors

This study sought to identify the exact number of Watershed Management Committees in Brazil and determine if they have completed and made public their main tool for watershed management: their watershed management plan. The watershed plan is the main guide for the decisions of a Watershed Management Committee, because it provides a diagnosis of the real situation of the watershed, which allows projecting goals, objectives and actions to preserve and maintain the quality and quantity of water for the entire population, minimizing future conflicts over water use.

The watershed management plans were consulted on the websites of the Watershed Management Committees and on the Water Resources Information System for each state, and sought to verify if the committees have their watershed management plans approved and if they are available for consultation. The websites of the committees and state information system pages were examined from 5 to 17 December 2015.

The results of the articulation between the integrative reviews and the survey of the watershed management plans allowed the objectives of this research to be attained. Its results are presented below.

## Brazilian Watershed Management Committees and their Watershed Management Plans: a general overview

According to Brazil's National Water Agency (ANA, 2015) 197 watershed management committees have been instituted by state decrees, and according to law n° 9.433/97 they are the public agencies responsible for discussing and deliberating issues of common interest to the various users of water in a watershed. Among the main tools of management of these groups is the Watershed Management Plan.

A Watershed Management Plan presents a diagnosis of a watershed, which allows making future projections and establishing goals for water quantity and quantity, and it is up to the Watershed Management Committee to approve the plan and accompany the realization of its goals. Table 1 indicates the situation of the watershed management plans for the 197 watershed management committees studied.

**Table 1 – Situation of the watershed management plans of the watershed management committees by state.**

State	Approved	Being prepared	Does not have	No information	TOTAL
Rio Grande do Sul - RS	3	7	0	15	25
Santa Catarina -SC	4	0	4	9	17
Paraná- PR	1	4	3	3	11
São Paulo - SP	21	0	0	0	21
Rio de Janeiro - RJ	8	0	1	0	9
Espírito Santo -EP	2	0	0	9	11
Minas Gerais - MG	24	5	5	1	35
Mato Grasso do Sul - MS	2	0	0	0	2
Mato Grosso -MGR	0	0	0	6	6
Goiás - GO	0	0	0	5	5
Bahia - BA	0	0	0	14	14
Sergipe - SE	0	0	0	3	3
Alagoas - AL	0	0	0	5	5
Pernambuco - PE	0	0	0	6	6
Pará - PA	0	0	0	3	3
Rio Grande do Norte - RN	0	0	0	3	3
Ceará - CE	0	0	0	12	12
Piauí - PI	0	0	0	2	2
Maranhão - MA	0	0	0	2	2
Tocantins - TO	0	0	0	4	4
Amazonas - AM	0	0	0	1	1
<b>TOTAL</b>	<b>65</b>	<b>16</b>	<b>13</b>	<b>103</b>	<b>197</b>

Source: Prepared by the authors

Table 1 highlights the significant number of Watershed Management Committees that do not publicize information about the situations of their management plans, and that 52% of the committees consulted in this study do not offer any type of information. It also indicates that 65 committees have an approved plan that has been made available for public consultation on its site or through the state water resources information system. Sixteen committees declared that they are in the process of preparing a plan and 13 affirmed on their site or through the state information system that they still do not have plans.

The absence of public information is a strong constraint to both management by the watershed committees and the fulfillment of Brazil's National Water Resources Plan, considering that the committees are responsible for developing water resources information systems accessible by all of society. The Water Resources Information System is a mechanism that collects, treats, stores and revises information about water resources. For state rivers, it is the responsibility of state secretariats of water resources to prepare and manage them and the management of inter-state rivers is the responsibility of the National Water Agency (ANA) (ANA, 2016).

Gonçalves *et al.* (2010) highlight that the low degree of preparation and implementation of watershed management plans and thus of categorization of water resources, is found mainly at the state-level watersheds, because of a lack of methodological support to assist members of the Watershed Management Committees to execute their tasks, which directly influences water quality and quantity in each region.

Nevertheless, the national Waters Law emphasizes in its articles 25 and 26 that data generated on a state level should be incorporated to the National Water Resources System (SINGREH) and should be unified and jointly coordinated. Research at the level of the state systems and of the National Water Resources System identified a variety of problems, including: i) many state systems, especially in the country's Northeast and North, do not have up to date information about the watershed management committees, considering that no information is available for 103 committees about the management plans on their websites: ii) on a national level, the updating of data does not occur continuously and periodically, considering that according to the National Water Agency (ANA 2015) information about some committees was updated on the National Water Resources Information System in 2015 (RS, SP, EP, MG, MS, GO, BA, SE, AL, PE, PB, PI, MA e TO), others in 2014 (PR, RJ, MGR and CE), others in 2013 (RN) and others only in 2012, as is the case of the data from Santa Catarina and Amazonas states, which makes it even more difficult for users and the population to find timely information about these groups.

A basic postulate of a democratic state of law is that all citizens have the right to access information, which is essential to a regime of social participation, considering that greater access to information allows, as highlighted by Milaré (2000), better conditions to act and make decisions about a given issue.

The Water Resources Management System of São Paulo State stood out in this study, given that in addition to having an updated list of all the state's watershed management committees, its website has a direct link to the National Water Resources System and to the webpage of each committee in the state. Moreover, São Paulo's system makes

the most information and documents available for download, including all the watershed management plans in the state, meeting minutes, deliberations, motions, the situation of the management tools for the watersheds and administrative reports.

## **The contributions and limits of the Watershed Management Committees in Brazil: what do the case studies reveal?**

In general, all of the articles as well as the theses and dissertations selected address mainly the limitations or factors that distance the watershed committees from their main functions, corroborating what was identified in the study by Trindade and Scheibe (2014) about studies about public policies for water management in Brazil.

In terms of the studies that present positive contributions of the watershed committees to the Integrated Management of Water Resources, two findings are most frequent: i) the committees strengthen social participation in decisions involving water management and ii) the committees assist in the promotion of environmental education in the river basins.

A number of authors highlight that it is important that social participation on the committees is balanced between government, users and civil society and occurs in an informed manner. It is thus necessary to guarantee occupation of all of the spaces on the committees, in particular those for civil society: Fracalanza; Jacob; Eça, 2013; Taher *et al*, 2012; Junqueira; Saiani; Passador, 2011; Prota, 2011; Flores; Misoczky, 2008; Lima-Green, 2008; Morgado, 2008; Gutiérrez, 2006; Xavier, 2006; Abers and Jorge, 2005; Henkes, 2002. They also assert that it is necessary to prepare committee members to make decisions, so that they can truly contribute to the participatory processes.

According to Fracalanza; Jacob; Eça (2013), one of the main innovations of the new model for water management is that it opens a decision-making process to society, especially to those segments that traditionally did not have the opportunity to participate in decision-making processes.

For both Flores and Misoczky (2008) and for Gutiérrez (2006), who analyzed the forms of social participation in different management committees, there is growing participation of civil society on the committees, which has influenced decisions.

Prota (2011), upon analyzing the participatory process in committees in São Paulo, demonstrated that this is found not only in the general assemblies of the committees, but also through the creation of technical chambers for different issues, which seek to involve all the segments represented on the committee according to their knowledge in the field. Prota demonstrates that there was satisfaction among the committee members interviewed concerning the adoption of the most participatory spaces and indicates that the model in São Paulo state should be expanded to other states. Prota also observes the importance of maintaining the representativeness of the entities participating in these groups, in particular the municipal segments and those for civil society, from which the entities should be elected to represent their category; care should also be taken to avoid self-representations, to have a more complete sense of participation.

Lima-Green (2008), analyzed participation on the watershed management committee of Lago São João, in Rio de Janeiro and demonstrated that a consortium of various municipalities in the state was used to lead the administration of the watershed, which was “an excellent example of empowerment of local society” (LIMA-GREEN, 2008, p.117). Lima-Green also found that organized civil society had strong participation in the decisions and this participation took place for two reasons: a) the process of creating the Committee expressed a mutual desire on local and state levels and b) the initial articulation through a consortium involving all the municipalities in the river basin, the state, the Public Ministry [the state attorney’s office], local companies and especially local civil society. According to Lima-Green, the members of this committee displayed strong capacity and legitimacy in transforming their internal institutional arrangements.

Morgado (2008), who sketched a history of the Watershed Management Committee of the Piracicaba, Capivari and Jundiá Rivers, since its founding in 1993, until the renovation of the usage rights in the Sistema Cantareira in August 2004, identified that although the committee has a balanced distribution of representatives of each one of the municipal, state and civil society segments, the participation of society in the meetings was higher than that of the other segments, coming to exceed 80% of the representatives at some meetings, which was not initially expected. Morgado affirms that the other segments only participated with greater frequency when decisions were being made about financial resources for executing projects.

For Henkes (2002) and Xavier (2006), who also analyzed the activities of the committee for the Piracicaba, Capivari and Jundiá rivers (CHPCJ) in São Paulo and the committee for the Itajaí River in Santa Catarina, the articulation and participation of civil society was one of the main factors responsible for the growth of these committees. In both studies the authors recognize the importance of these collaborators, who work voluntarily, and who seek to place in practice the planned actions, in many cases without help from government and with inadequate permanent technical staff.

It is important to observe that, in all the studies that found that social participation had been strengthened and was thus highlighted as one of the positive factors of the integrated management of water resources, the committees studied had better management organization, and are part of a select group of longer-standing committees. They have had their management tools implemented - or are in a more advanced process of implantation - such as charging for the use of water and manifest greater institutional articulation in the relationship between science, society and government.

For Guivant; Jacobi (2003) this new model of institutional articulation, involving communities, business, NGOs, governments and universities, allowed the passage from an administrative model defined by the authors as *hydro-technical*, that is, concentrated in decisions of an exclusively technical order, to a *hydro-political* model, that is, based on operations through a collegiate body, in negotiations between technicians and non-technicians, in the debate and defense of divergent interests.

The promotion of environmental education in the river basins also stood out in the literature as one of the contributions of the committees to the integrated management of water resources (ALVIM; RONCA, 2007; RIBEIRO, 2006; MARTINS, 2006). Alvim;

Ronca (2007, p. 333) emphasize that the environmental education actions promoted by the committees “are important for both water and land management and can contribute, if well implemented, to improving the physical and environmental conditions of the river basin”.

Nevertheless, it should be highlighted that while the promotion of environmental education is one of the attributes of the committees, their actions cannot be restricted to this. The committees have other attributes that are essential for promoting advances in water management (BRASIL, 1997), including: to be the initial level of arbitration of conflicts over water use, to approve the plan for the river basin and accompany its execution, to establish criteria for granting usage rights and charging for the use of water, and other functions.

For Gutiérrez (2006) the main function of the committees is to deliberate about water conflicts, considering that they were conceived to articulate the principles found in the national Water Law, which confers them greater deliberative power. Nevertheless, Gutiérrez affirms that this has not been taking place in practice, due to a series of difficulties faced by the committees, including an absence of legitimacy and recognition by governments of decisions taken, which are often not recognized at a second level of decision making, and the difficulty that the committees face in taking decisions about certain issues, due to their technical and or institutional limitations.

Santin; Goellner (2013) observe that the committees are not executive agencies – although many committees, due to the lack of water agencies in their river basins, undertake executive activities. They are also not inspection agencies, but must be decision-making bodies that issue positions and articulate administrative measures. Fracalanza; Jacob; Eça (2013), agree about the main function of the committees in Brazil, but warn about two vulnerabilities that place their operations in risk: i) high dependence on traditional organizations (state), which impede the provision of information and do not offer technical, material and financial support and ii) decisions taken by the committees are not binding, that is, they can be changed by the state.

Given this situation, many users of water and members of civil society believe it is quicker to seek direct decisions from governments than use spaces for representation in these committees (EMPINOTTI, 2011) – given that direct partnerships allow reaching decisions without negotiations with other social actors, which leads to distancing the committees from their main reasons for existence (ABERS; JORGE, 2005).

It stands out that this reality – of distancing of the committees from their main role – was revealed by most of the studies found in the integrative reviews. Nevertheless, in the studies of the committees in São Paulo state (PROTA, 2011; MORGADO, 2008; XAVIER, 2006; RIBEIRO, 2006) and in the experiences presented by Lima-Green (2008), in Rio de Janeiro and by Costa (2008) with the committee in Velhas, in Minas Gerais, some common aspects can be highlighted and are the main reasons which the reality of these committees is different from the general situation. They are:

a) Institutional maturity: all of the committees have been operating for more than 15 years;



- b Presence of government: municipal, state and federal bodies, including the Public Ministry [state attorney], were present on these committees;
- c) A desire for shared creation: both government and civil society participated in their creation process – collaborative creation;
- d) Mapping of conflicts over the use of water: the committees have conflicts mapped and work to administer these conflicts;
- e) Management instruments: the instruments of the National Water Resources Plan are established and active;
- f) Executive Secretary –a consortium or agency has been created for the river basin and serves as the executive secretary of the committee;
- g) Projects and management reports – they have projects and reports about administrative results;
- h) Financial resources – they receive more significant financial resources, whether from the State Water Resources Fund (FEHIDRO), inter-institutional partnerships or even from charging for water use.

This does not mean that the committees with the above characteristics do not have problems, nevertheless their actions are closer to what is foreseen in the law and they appear to advance in their administrative models, going beyond what is legally prescribed and developing other administrative arrangements, as appropriate to a good system of water governance. As examples, there is the case of the committee of the Lago [Lake] São João, which strengthened its autonomy by deliberating to create sub-committees within the watershed, as a form of improving its institutional articulation and management (LIMA-GREEN, 2008). The decision was later upheld by the Rio de Janeiro state government.

In São Paulo, the committee for the Piracicaba, Capivari and Jundiá Rivers also innovated by establishing a policy of minimal values for projects, to better democratize the distribution of resources and guarantee that more projects receive them (XAVIER, 2006). Xavier also found that from 1993 to 2006 the committee deliberated 228 times and executed 203 projects, demonstrating that it had grown considerably in water resources management, with important results in terms of both water quality and quantity in São Paulo.

For Ribeiro (2006) the tripartite formation of committees, with the action of state agencies, municipal agencies and civil society, has assisted in the success of some committees in São Paulo, considering that their actions are advancing and going beyond the consultative and deliberative functions, given that they are also contributing to monitoring and combating poor water use in São Paulo state.

Although some committees in Brazil have had positive results, in general, the literature demonstrates a distance between what is called for in Brazilian water resources legislation and what in fact has taken place in the practice of the committees (TRINIDADE, SCHEIBE, 2014). This in part is because of constraints confronted by the committees. Chart 1 presents the authors and main problems they found to be faced by the committees in Brazil, according to the results of the integrative reviews.

**Chart 1 – Main limitations faced by Brazilian watershed management committees, based on the results of integrative reviews.**

Author(s)	Problems identified
Gagg (2014)	Absence of physical, technical and administrative facilities; Inexistence of important tools of the National Water Resources Plan, such as charging for the use of water; Lack of technical knowledge of some members to promote debate and take decisions.
Fracalanza; Jacob; Eça (2013)	Lack of technical, financial and human support from government; Absence of binding nature to their decisions, which can be changed at a higher level
Machado (2012)	Absence of agencies in the river basins; Lack of technical and financial support from the state; Little participation by civil society.
Oliveira (2011)	Absence of physical structure, and technical and financial support from the state; Lack of preparation of the members who do not have technical knowledge about the issue; Inactivity and lack of representativeness of municipal governments on the committees; Absence of awareness about the empowerment that the committee has in relation to society; Absence of or failure to implement the management tools foreseen in the National Water Resources Plan, in particular issuing usage rights and charging.
Carneiro <i>et al.</i> (2010)	Lack of articulation between the levels of sectoral planning and different government levels.
Pereira, Medeiros (2009)	Lack of articulation between government entities; Absence of debate and deliberations; Little social participation in the committees; Problems with management instruments: incompatibility of data, outdatedness and absence of administrative tools.
Azevedo (2009)	They do not produce up-to-date reports on the situation of waters in the river basin; Plans for the river basins are delayed, outdated or inexistent; The watershed management plans do not have clear goals and defined schedules; Absence of actions and documents that prove that the goals are met.
Gomes (2008)	Absence of a physical, technical and administrative infrastructure; Lack of knowledge about the operation of the committee, its functions and actions by the part of society and even by some members of the committees; Lack of financial support and human resources; Little popular participation.

Moreira (2008)	<p>Absence of suitable infrastructure: material, technical and administrative;</p> <p>Absence of support from state and municipal governments – who do not participate and do not communicate their actions or consult the committees;</p> <p>Decisions made by the committees are not respected by state government;</p> <p>Lack of preparation by representatives of the committees to work with technical issues;</p> <p>Lack of financial resources;</p> <p>Absence of instruments established by the National Water Resources Plan;</p> <p>Absence of reports that present the action of the committee;</p> <p>Problems in the composition of the committee.</p>
Flores; Misoczky (2008)	<p>Absence of participation of state and municipal governments on the committees;</p> <p>The committees are seen only as consultative agencies by the state, which in general do not respect their decisions.</p>
Madrugá (2007)	<p>Absence of implementation and application of the management tools established by the National Water Resources Plan;</p> <p>Absence of agencies for the watersheds, to conduct the executive tasks;</p> <p>Lack of compliance with legal attributions;</p> <p>Absence of technical, financial and administrative support from government.</p> <p>Absence of technical knowledge of the representatives to discuss and deliberate about the issues.</p>
Martins (2006)	<p>Lack of knowledge of the functions and actions of the committee, which is considered a bureaucratic entity far from the community.</p>
Gutiérrez (2006)	<p>Little legitimacy for the committee to deliberate;</p> <p>The committees do not have technical capacity to deliberate;</p> <p>The absence of the instrument for charging significantly harms the financial sources to be invested in the river basin.</p>
Abers e Jorge (2005)	<p>Dual domains of the water, difficulty in the identification of responsibilities;</p> <p>The states do not have the technical capacity to establish usage rights, to charge for use, or prepare a water resources information system, monitoring and inspection – which has direct impact on the committees;</p> <p>Absence of the instrument for charging harms the implementation of actions in the watersheds, due to a lack of financial resources;</p> <p>Absence of legal mechanisms that guarantee that the decisions taken by the committees are respected by the states.</p>
Haase (2005)	<p>The committees do not deliberate about the conflicts over water;</p> <p>They are not very active;</p> <p>Little social participation, with technical knowledge, capable to assist in decision making.</p>
Henkes (2002)	<p>Little presence of the state and municipalities;</p> <p>Absence of permanent technical staff to assist and give continuity to actions;</p> <p>Lack of financial support.</p>

Source: prepared by the author

Chart 1 indicates that of the 16 studies of Brazilian watershed management committees, at least 9 studies found that they lack technical, physical and financial support, especially from state governments. The studies reveal that although many states approved a law for the creation of the committees, their implementation was not accompanied by adequate technical and financial support (GAGG, 2014; FRACALANZA; JACOB; EÇA, 2013; MACHADO, 2012; OLIVEIRA, 2011; GOMES, 2008; MOREIRA, 2008; MADRUGA, 2007; GUTIÉRREZ, 2006; HENKES, 2002).

Two other aspects were identified with greater frequency in the results of the studies and demonstrate two other significant limitations faced by the Brazilian committees: the lack of or “limited existence” of the management tools established by the National Water Resources Plan (GAGG, 2014; OLIVEIRA, 2011; PEREIRA; MEDEIROS, 2009; MOREIRA, 2008; MADRUGA, 2007; ABERS E JORGE, 2005) which can reduce the decision-making power of the committees, which in general do not act as decision-making bodies. In addition, the low participation of state and municipal governments and of civil society on the committees is also highlighted in the studies, which makes the institutional articulation of the committees even more difficult and limits their decision-making powers (MACHADO, 2012; CARNEIRO *et al.*, 2010; PEREIRA, MEDEIROS, 2009; GOMES, 2008; FLORES; MISOCZKY, 2008; HAASE, 2005; HENKES, 2002).

In this sense it is important that the administration of water resources break with a technocratic view of management, that is, it is important that agents from civil society effectively contribute to the elaboration of public policies. Machado (2003) reinforces the need to create within the committees spaces for popular participation in which civil society is not a passive agent in public policies, which are prepared by a technical or political staff. These policies must be developed through social participation that allows citizens to be active, transformative and constructive agents of a reality, a plan, and administration.

The participation of municipal administrators is another aspect that must be worked with among the committees, given that they have regulatory, tax, and monitoring responsibilities in local environmental management, and can issue licenses or inhibit certain uses according to their interests. The presence of municipal governments in this type of management, however, is still quite limited, which significantly harms the integrated management of water resources. Encouraging the participation of municipal administrators is a great challenge to be overcome by the committees.

Tundisi (2008) affirms that it is important to prepare public administrators and the local community for the integrated management of water resources. As tools to do so the author proposes environmental education and the creation of a data base focused on the reality of each watershed, to obtain an optimized management system with better forecasting ability.

The level of participation on the committees, whether of public or private agents, or from organized civil society, was the object of many articles identified in the integrative review of this study (MACHADO, 2012; CAMPOS; FRACALANZA, 2010; ABERS *et al.*, 2009; ALVIM; RONCA, 2007; GUTIÉRREZ, 2006, JACOBI; MONTEIRO, 2006 and ABERS; JORGE, 2005). The authors agree that the norms that support the participation of civil society in the management of environmental resources, especially

those related to water, are important advances for the integrated management of water resources. Nevertheless, upon analyzing the effectiveness of this participation in specific committees, including: the committee of the Gravataí River in Rio Grande do Sul state (GUTIÉRREZ, 2006) and the watershed committee of the Upper Tietê River in São Paulo state (ALVIM; RONCA, 2007), the studies found that although participation is called for in federal Law nº 9.433/97 and in the state public policies for water resources in the different administrative spheres, such as the watershed committees, the National Water Agency and on the National Water Resources Council, this participation is still not effective, considering that on some committees, not even the minimal number of representatives was attained (ABERS *et al.*, 2009). Of the representatives that are active, many demonstrate that they defend primarily their own interests related to water use, and others lack knowledge in the field of deliberation, which prevents them from taking more prudent decisions (GAGG, 2014; GOMES, 2008; JACOBI; MONTEIRO, 2006).

Jacobi; Fracalanza (2006) emphasizes that, although participation of civil society in public policies has increased in the past ten years, it is still sporadic and limited, given that although the watershed management committees were created to make decision-making more democratic, the population still does not use them as spaces for debate. Few people participate in public hearings – and many that do lack sufficient knowledge about the instruments of discussion so that the representatives of civil society can contribute to decision making.

Empinotti (2011) analyzed the reasons for and impacts of the lack of participation by civil society on the Watershed Management Committee for the São Francisco River. The author concluded that the lack of participation does not only indicate an exclusion of these organizations or their resistance to participating, but a pragmatic choice to invest in unilateral partnerships with government instead of participating in the watershed management committee. Empinotti recognizes that non-participation has multiple meanings that go beyond the failure of the system to allow the participation of all, the lack of effective decentralization of the system, the prevalence of the influence of economic groups or even the resistance of social movements to legitimate state actions.

## Final considerations

The purpose of this study was to systematize, based on the literature, the main contributions and limitations to the action of Watershed Management Committees in Brazil. The results reveal that, in general, these groups still face great difficulties in executing their main attributes.

The integrative reviews detected, from a universe of 250 articles, and 1,189 dissertations and theses, a total of 32 studies that clearly addressed this theme, with at least 16 studies discussing constraints faced by the committees that explain the inefficiency of many of these committees in Brazil. The most frequent difficulties include: i) the absence of technical, physical and financial support from state governments; ii) the inexistence or “little existence” of the management instruments established by the National Water Resources Plan; iii) the low participation of governments – especially municipal and state

governments and of civil society on the committees – which makes institutional articulation of the committees even more difficult as well as their decision making abilities.

The study also highlighted another important limit that the committees face: the inexistence of public information about the main administrative tool of the committees: the watershed management plans. This general overview reveals that although some committees in Brazil, especially in the southeast region of the county, have better operating conditions and have conducted significant actions, in general, the watershed management committees are not able to act effectively to improve water resource management.

It is understood that the establishment of the committees as entities for planning, administration and regulation of water resources involves a quite complex system, in which participate many public and private sector actors, and those from civil society. To have a strong state (technically and financially) capable of effectively implanting the public policy and that provides support to this model, appears to be essential, mainly because Brazilian culture is still not familiarized with the existence of the watershed as a planning unit, or even with the models of decentralization of decision-making and participation.

It is also necessary to reconsider the Brazilian management system as a whole, reviewing the technical capacities of each agency that composes the National Water Resources System, especially the state agencies, so that they can exercise technical competencies more effectively, clearly and reliably. In addition, the National Water Resources System must broaden the visibility of the sector of water resources both to society and to state governments, demonstrating that a more effective policy, that is, one based on results, could lead to better social, environmental and economic gains for the country.

Finally, the results of the studies reviewed reveal that the watershed management committees contribute to the integrated management of water resources, to the degree to which they promote a participatory debate and environmental education in the watersheds. Nevertheless, there is a distance between the legal prerogative of the role of the committees and what they have actually undertaken, that is, there is a distance between what is called for by laws and regulations and what is done by the committees within a model of collaborative and democratic management. It is perceived that there is a distance between the norms, the real behavior and all the potentialities that the watershed management committees could materialize.

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Submitted on: 17/11/2016

Accepted on: 07/03/2019

<http://dx.doi.org/10.1590/1809-4422asoc20160267r2vu2019L2AO2019;22:e02672>

Original Article

# WATER MANAGEMENT: CONSTRAINTS TO AND CONTRIBUTIONS OF BRAZILIAN WATERSHED MANAGEMENT COMMITTEES

**Abstract:** This study discusses the main contributions and limitations to the performance of Brazilian Watershed Management Committees. Two integrative reviews of the literature were conducted that revealed that most of these committees are failing to contribute effectively to the purposes for which they were created. This is mainly due to: lack of support from the state; the non-implementation of management instruments and the low participation of municipal and state public authorities and of civil society in these spaces. The committees have made contributions in environmental education and by allowing greater social participation in decisions about water management.

**Key-words:** watershed management committees; water management; water governance.

**Resumo:** Este estudo objetivou discutir as principais contribuições e limitações na atuação dos grupos de bacias hidrográficas brasileiros. Para isso, foram realizadas duas revisões integrativas. A literatura revelou que, na maioria dos casos, estes grupos não estão conseguindo contribuir efetivamente para o propósito com que foram criados, devido principalmente a: ausência de suporte por parte do órgão estadual; a não implementação dos instrumentos de gestão e a baixa participação dos poderes públicos municipais e estaduais e da sociedade civil nestes espaços. Como contribuições destacam-se sua atuação em ações de educação ambiental e seu potencial para possibilitar maior participação social nas decisões que envolvem a gestão hídrica.

**Palavras-chaves:** comitês de bacias hidrográficas; gestão hídrica; Governança da Água.

**Resumen:** Este estudio objetivó discutir las principales contribuciones y limitaciones en la actuación de de los grupos de cuencas hidrográficas brasileñas. Para ello, se realizaron dos revisiones integradoras. La literatura reveló que, en la mayoría de los casos, estos grupos no están consiguiendo contribuir efectivamente al propósito con que fueron creados, debido principalmente a: ausencia de soporte por parte del órgano estadual; la no implementación de los instrumentos de gestión y la baja participación de los poderes públicos municipales y estatales y de la sociedad civil en estos espacios. Como contribuciones destacan su actuación en acciones de educación ambiental y su potencial para posibilitar mayor participación social en las decisiones que involucran la gestión hídrica.

**Palabra clave:** comités de cuencas hidrográficas; gestión del agua; Gobernanza del Agua

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