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WATER GOVERNANCE IN BRAZIL: REFLECTIONS FROM THE LITERATURE

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ABSTRACT

Although Brazil has a water resources management system with some maturity, more than 20 years after the enactment of the Water Law, it still faces great challenges in its management process. Identifying important themes in the water governance process in the country, based on a literature review, was the main objective of this study. The integration of 31 papers on the topic enabled the creation of seven categories of discussion. The results show that institutional articulation, the Fragilities faced mainly by river basin committees and social participation are the themes most present in most texts and reveal the main challenges to be overcome in order to build good governance of Brazilian waters.

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INTRODUCTION

Water is essential for the survival of living beings. It is a substance of extreme importance in physical, chemical and biological terms. In social terms, water is essential for personal hygiene, human and animal dedentation, agricultural and industrial production, energy generation and leisure. Due to its abundance and capacity for renewal through the hydrological cycle, water has always been considered an infinite resource. However, with the increase of its use one can speak of a social cycle of water, since, when passing through the productive processes or the human body, it receives other elements and substances, which changes its initial condition. This is why it has become rare in some places, which becomes more serious especially due to the qualitative and quantitative social disparities found in the globe. In Brazil, Law No. 9,433 of January 8, 1997, better known as the "Water Law", was instituted with the purpose of conservation and proper water management. It established the National Water Resources Policy (PNRH) which valued decentralized and participatory management. From the PNRH were established the River Basin Management Committees (CBH), bodies that have as a primary role the decision making within a river basin (or part of it, in some cases). The CBHs are composed of three segments of voting parity: public power, users and organized civil society. It is primarily up to these bodies to approve and guide the elaboration of water resources plans, as well as to suggest the necessary measures to achieve the goals, to arbitrate in the first administrative instance the conflicts related to water resources in the territory of the basin and to establish the mechanisms of collection for the use of this resource (BRASIL, 1997). In this sense, the role of CBH as governance arrangements is highlighted, since it is up to this body to approve, manage and monitor actions that reflect on the better management of water resources in its river basins.

The CBH involve different political actors, who meet to address water issues in the basin. In order to have governance, there must be a forum with legitimate representatives from different sectors (RIBEIRO, 2009). Governance is a process

that surrounds several institutions, categories of agents and interrelations that expresses specific interests with the possibility of negotiation, exposing the interests of the collectivity (RIBEIRO; FRACALANZA; SILVA-SÁNCHEZ, 2015). Governance does not have a transparent concept nor an ideal model, it depends on the social, cultural, environmental, economic, political and institutional context. It is the deliberate and continuous exercise of practices whose focus is on relations between the state (represented, in the Brazilian case, at different levels of government, such as municipal, state and, in some cases, federal), civil society and economic agents, i.e., they are actions focused on provoking and promoting social participation (EMPINOTTI; JACOBI; FRACALANZA, 2016; RIBEIRO; JOHNSSON, 2018). It is stressed that the difference between water governance and water management is that governance is the set of processes and institutions that define and identify, politically, what are the goals to be pursued. Management, on the other hand, deals with the mechanisms and practical measures used to achieve the goals set and thus achieve the results. In this way, water governance provides the structure to decide which water resources management activities will be implemented (RIBEIRO, 2009). As administrative spheres, CBHs are political arenas responsible for local water governance, promoting the participation of water users, organized civil society and all spheres of government. Social participation is one of the essential elements for the democratic governance of water that is daily built. It is a process that occurs within the basin committees, not necessarily a linear process, in which there are advances and setbacks identified in the profiles of the participating segments and in the practical involvement in the tasks exercised by the committee (MARTINS, 2015).

MATERIALS AND METHODS

Identifying what literature has presented on the issue of water governance in Brazil since the enactment of the Water Law has already been the subject of study in the work done by Trindade and Scheibe (2019). The authors' research revealed as the main result the main contributions and limitations in the performance of the Brazilian CBHs. This paper deals with the literature dedicated to analyzing the role of groups in CBHs.

Thus, in order to update the results found until 2015 by Trindade and Scheibe (2019) this paper - based on the same research methodology used by the authors - aimed to carry out an integrative review of the scientific papers existing in the Portal of Journals of the Coordination of Superior Level Staff Improvement (Capes), from October 22, 2015 until December 31, 2019 - that is, this study compares and updates the integration carried out by Trindade and Scheibe (2019) and reveals what has been discussed, especially in Brazil on water governance and CBHs. Figure 1 reveals a synthesis of the methodological stages of the research and the results of papers identified at each stage. It should be noted that, for the analysis and better integration of the studies, the Atlas.Ti software was used. The results of the integration, as well as the comparison with other studies, are in the following section.

RESULTS AND DISCUSSION

The Integrative Revision: comparations and new perspectives in the literature: The integrative revision of the literature revealed 31 papers on water governance, which were integrated into 7 clusters or integration categories, namely: "Fragilities"; "Institutional Articulation"; "Social

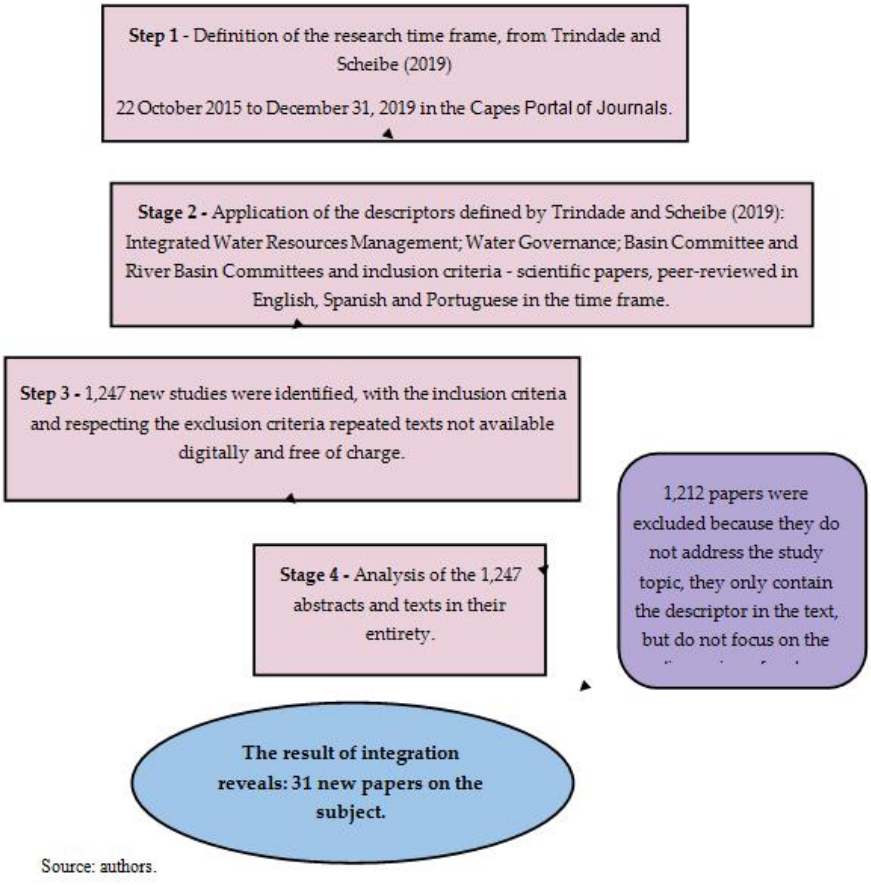


Figure 1. Synthesis of the methodological steps of the Integrative Review

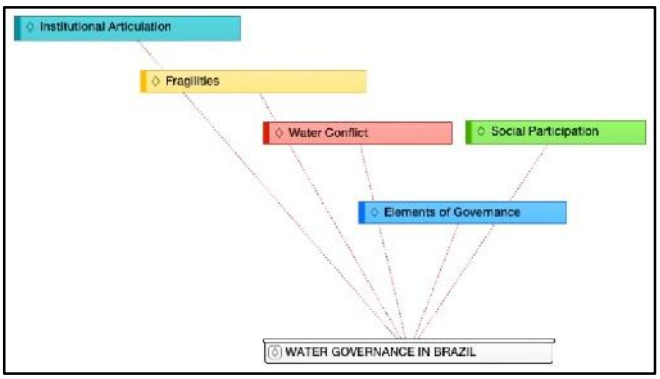
Participation"; "Water Conflicts"; "Elements of Governance"; "Water Charges" and "Advances". Beyea & Nicoll (1998) emphasize that the integrative revision of the literature consists of building a broad analysis of the literature, contributing to the discussions on research methods and results, as well as to the accomplishment of new studies. Its main objective is to obtain a deep understanding of a given phenomenon based on previous studies, especially systematizing studies with different objectives and methodologies, but which allows summarizing and identifying common categories and/or divergent themes among the literature. Table 1 shows the frequency of each code in the hermeneutic unit of analysis next to the Atlas.Ti Softaware. It can be observed from Table 1 that the categories "Institutional Articulation" and "Fragilities" appear in greater prominence, this because these two codes appear with greater frequency in the Hermeneutic Unit (HU), that is, in the set of documents that together formed the analysis HU.

Table 1. Codes and Frequencies

CODES	FREQUENCY UH
Institutional Articulation	28%
Fragilities	25%
Social Participation	14%
Water Conflict	14%
Elements of Governance	8%
Water Charges	5%
Advances	5%

Source: authors.

It should be noted that from the categories identified in this research, through the Atlas.Ti software, the family "Water Governance in Brazil" (Figure 2) was created, which reflects the issues that have been most addressed in Brazil in terms of water governance and its relationship with CBHs. As the literature itself determines, water governance is a process of new practical and theoretical ways to determine an alternative relationship between government levels and social demands in order to manage different existing interests (CAMPOS; FRACALANZA, 2010). Understanding how it is articulated and has been discussed from bibliographic studies can be one of the ways to improve it in Brazil.



Source: authors

Figure 2. Presentation of the Water Governance family in Brazil and its categories

It can be seen from Figure 2 that the "Institutional Articulation" as well as the "Fragilities" in the management process stand out in terms of water governance in the country. According to Tundisi (2016), for a consolidated integrated basin and water resources management program, there are five basic principles of governance: articulated institutions, social participation, use of technologies to improve local infrastructure, information system and financing. As presented by Trindade and Scheibe (2019), the fragilities continue to be portrayed in the papers involving water governance mainly in CBHs. The category "Fragilities" manifested itself with a 25% approach being represented by 8 papers TRINDADE; SCHEIBE; RIBEIRO, 2018; SILVA, 2018; RANDO; GALVÃO, 2016; KEMERICH et al., 2015; KEMERICH et al.,2016; CHINAQUE et al., 2017; SOUZA, 2017; SOUZA JÚNIOR et al., 2017), being one of the most reported categories of the study, showing a subject still relevant in the current scenario. In this category, there are papers that discuss the fragilities found in several spheres related to water resources, the vulnerabilities and the difficult task of practicing decentralized and participatory water management.
At least eight studies present difficulties that CBHs face in water management. They are: organizational, bureaucratic, financial and authority/legitimacy difficulties. The latter being a much discussed aspect, since CBHs are often not consulted on decisions involving water resources management and, in many cases, decisions that are consensual are not always referenced by the State (TRINDADE; SCHEIBE; RIBEIRO, 2018; SILVA, 2018).

Another point of vulnerability in water governance is the lack of effective participation of civil society, as highlighted by Silva (2018); Trindade; Scheibe and Ribeiro (2018); Chinaque et al. (2017) and Souza (2017). The main obstacle faced by the committees is to motivate social participation for issues of collective interest, since those who are active in these groups are the same ones who have their own interests or demands and not collective (KEMERICH et al., 2016). The lack of communication between managing bodies - boards, secretariats, basin committees has also presented itself as an obstacle to be overcome in water resources management. The absence of dialogue significantly hinders the search for solutions that meet the common interests of society, is what the findings of Souza Júnior et al. (2017) and Chinaque et al. (2017). Another point revealed is that, in practice, the CBHs are unable to comply with their legal prerogatives, demonstrating that their contributions are limited to promoting environmental education and preparing low impact administrative deliberations (TRINDADE; SCHEIBE; RIBEIRO, 2018 and Kemerich et al., 2015;). The category "Institutional Articulation" is formed by 9 papers (FERRAÇO; MORAES, 2018; EMPINOTTI; GONTIJO; OLIVEIRA, 2018 FEIL; STRASBURG; SPILKI, 2017; THEODORO; NASCIMENTO; HELLER, 2016; COSTA; MERTENS, 2015; SANT'ANNA; VILLAR, 2015; JACOBI; SILVA-SÁNCHEZ; FRACALANZA, 2015; JACOBI; FRACALANZA; SILVA-SÁNCHEZ, 2015; PIZELLA, 2015). Studies that directly or indirectly discuss the relevance of cooperation and interaction among agents working in integrated water resources management were included in the definition of this cluster, with the lack of institutional articulation among agents directly impacting on water governance. According to Theodoro, Nascimento and Heller (2016) the water resources management structures are not understood by the municipalities. In other words, the municipal sphere, for the most part, has not yet understood its role within this water management structure. In terms of water management, it is important to emphasize that it is up to the municipality to define how it occurs within its territory. This is why this situation is surprising, since it demonstrates a disarticulation of the main political agent, the one who defines

contracts with companies or who decides to establish his own water management. The expressive participation of the municipalities in the CBHs allows effective and more lasting responses to be produced in local water management, besides allowing a greater articulation of sectorial actions and public policies (JACOBI; FRACALANZA; SILVA-SÁNCHEZ, 2015; JACOBI; SILVA-SÁNCHEZ; FRACALANZA, 2015; FEIL; STRASBURG; SPILKI, 2017). Pizella (2015) reinforces that the Municipal Master Plan contributes vigorously to local water management, gradually improving the quantity and quality of water in river basins. However, the municipal sphere was not the only one addressed. In the federal scenario, Empinotti, Gontijo and Oliveira (2018) reveal that the process of decentralization of management, which is provided for by law, does not occur in practice. According to the authors, the federal government, when delegating, adopts rules of clientelism and paternalism, privileging some interest groups in detriment to others.

Cooperation was also addressed in the "Institutional Articulation" case studies of the Amazon and La Plata Basins - both studies promote discussion about transboundary CBHs and allowed the identification that international cooperation does not necessarily guarantee a governance process. The projects developed in the field of international cooperation are applied at the local level, usually without any process of discussion and articulation with local actors and institutions, a fact that goes against what determines the principles of water governance (SANT'ANNA; VILLAR, 2015). To manage the complexity involved in water governance, Costa and Mertens (2015) point out that a negotiated management environment is necessary to obtain more effective alternatives. Water management according to the authors requires collaborative solutions in which collective interests outweigh individual interests. In this sense, Ferraço and Moraes (2018) ensure that for the resolution of water management problems it is essential that there is dialogue between the actors involved, that is, that negotiations take place between the parties. The category "Water Conflicts" present in 4 papers (ROSSI; SANTOS, 2018; OLIVEIRA; ZANQUIM JUNIOR; ESPÍNDOLA, 2016; SILVA; SILVA; MOREIRA, 2015; DEMANBORO, 2015), represents geopolitical tensions and articulations present in water resources management. According to Rossi and Santos (2018), conflict situations challenge knowledge and technical procedures established in decisions about water use, water conflicts reactivate complex discussions about society and nature, making it necessary to understand the political concept of the dispute between public and private interests in water appropriation. In order to solve the thousands of conflicts involving the inappropriate use of water, pollution on a large scale, water charges among other problems involving this elementary natural resource for society, Oliveira, Zanquim Junior and Espíndola (2016) propose to use the arbitration technique in conflict management. It should be noted that arbitration is an extrajudicial means of dispute resolution provided for in Law No. 9,307/1996 (amended by Law No. 13,129/15), whereby those involved choose a person or a specialized institution to definitively resolve the established controversy. The authors even suggest that the CBHs may be this arbitration body, but this would require changes to the PNRH. Silva; Silva; Moreira (2015) found that investments in engineering works that increase the availability of water for granting also help to solve possible conflicts over water use. According to Demanboro (2015), environmental problems that directly affect water availability aggravate existing conflicts. The authors attest that investments in the sanitation sector are fundamental to minimize water conflicts. The code "Social Participation" is composed of 5 papers (FADUL; VITORIA; CERQUEIRA, 2017; FERREIRA et al., 2017; BARBOSA; HANAI; SILVA, 2016; COSTA; MERTENS, 2015; AGRA FILHO; RAMOS, 2015). This category is formed by papers that discuss social participation within river basin committees, which is one of the elementary organs of the National Water Resources System.

As previously portrayed, the absence of participation within the bodies responsible for water resources is a weakness found in the various spheres of government. Fadul, Vitoria and Cerqueira (2017) state that the policy on water resources is dictated by the state governments and thus the representatives of civil society are unable to create a space for effective participation within the river basin committees. The authors point out that most CBHs exist only "on paper" and most do not have the strength to actually enable a decentralization in water management and a greater adhesion of civil society. Ferreira et al. (2017) dealt with the participation of society in the deliberative spaces in the Amazon region and according to the authors there is little representation of users, which hinders the implementation of the PNRH in a decentralized manner in the states that comprise the Legal Amazon. Public participation was also part of the research carried out by Agra Filho and Ramos (2015) who analyzed institutional elements in watershed plans in Portugal and Brazil. The authors reveal that both countries present fragilities regarding the insertion and interaction of society in deliberative spaces. Many surveys mention the absence of civil society participation, but Costa and Mertens (2015) point out that the councils themselves contribute little to achieving the goals of the PNRH and fostering social participation. Barbosa, Hanai and Silva (2016) verified the legitimacy in the participation arenas, which was questioned by various criteria, including the choice of representatives. Some questions raised in the study point out that participation occurs mainly because of the mandatory nature of the legislation. The authors declare that it is necessary to bring the technical language closer to the daily life of the CBHs, the perception and experience of the participants of the board is essential for good management. In this sense, according to the terms proposed by Ribeiro (2009), there is no water governance.

"Elements of Governance" consists of 3 papers (RIBEIRO; JOHNSSON, 2018; EMPINOTTI; JACOBI; FRACALANZA, 2016; MARTINS, 2015) and addresses the fundamental aspects in water governance. Ribeiro and Johnsson (2018) state that there is no ideal model of water governance and that it depends exclusively on the social, cultural, environmental, economic, political and institutional context, however for a better governance process to occur, the practice of transparency and participation in decisions is fundamental.

For Martins (2015), a transformation in the management narrative is necessary and one that progressively puts aside the naive and abstract discourse of "technical management" carried out by the committees and builds a more technosocial narrative. He stresses that it is crucial that the members of the committees develop skills to think about diversity, that is, that expert and disciplinary knowledge is related to lay knowledge. Empinotti, Jacobi and Fracalanza (2016) highlight the inclusion of social actors in new negotiation forums, and the emergence of new governance practices as key instruments in power and influence on decision-making within basin

committees. The "Water Charges" category consists of 2 papers (GUTIERREZ; FERNANDES; RAUEN, 2017; DEMAJOROVIC; CARUSO; JACOBI, 2015). This cluster discusses water use charging and its impacts on society. The collection for the use of water is foreseen by the PNRH and has the objective, besides guaranteeing financial resources for the recovery of hydrographic basins, to encourage investment in depollution and stimulate investment in new clean and saving technologies (ASSOCIAÇÃO BRASILEIRA DE ÁGUAS SUBTERRÂNEAS – ABAS). Demajorovic, Caruso and Jacobi (2015) reported in their study that, according to the actors interviewed, charging for water use does not directly alter users' behavior, although the essentiality of charging for water resource management is recognized. However, the review of the price of collection arises as a reason for tension among users, public authorities and non-governmental organizations, the authors affirm that internal disputes in committees are negative and make the process of consolidating collection as a management instrument even more difficult.

The survey conducted by Gutierres, Fernandes and Rauen (2017) revealed that there is a relationship between water consumption and the population's income. The authors observed that about 91% of Curitiba (Paraná) neighborhoods could reduce consumption, and that the tendency to consume is higher among the population with higher income, consequently, the population with lower consumption also has lower pay. In this sense, the authors observe that the collection of water needs to be thought out so that it does not make access to water impossible for the most vulnerable populations, who already have low access and consumption of this fundamental substance. The last category discussed in this study is "Advances", with also 2 papers: Libanio, (2016); Kemerich et al. (2016). This cluster expresses the advances, improvements and investments made in the water resources segment in recent years. Kemerich et al. (2016) observed advances related to the development and performance of the Passo Fundo River Basin Committee, according to the authors the Committee is in an active and advanced stage of development, having been approved its deliberations regarding the framing of surface waters and the quality standards for the use of water resources in the Basin, for approximately 20 years. For Libanio (2016) the path to advances and improvements, especially the problem of pollution of the river basins, lies in the investment in sewage treatment plants. For the author, effective investment in projects within the river basins can have an impact on the improvement of sanitation and water management.

Conclusions

The research aimed to identify what has been discussed about water governance in Brazil, especially with regard to issues involving CBHs. The integrative revision of the literature revealed 31 papers that directly address the theme proposed by the study. These studies were grouped into 8 categories: "Fragilities"; "Institutional Articulation"; "Groundwater"; "Social Participation"; "Water Conflicts"; "Elements of Governance"; "Water Charges" and "Advances". From the analysis of these categories and their frequency in the papers, it can be revealed that the literature on "Water Governance in Brazil" has mainly discussed: i) the institutional articulation - what this process requires and that the lack of it has a direct impact on management; ii) the Fragilities in the governance process - especially from the managing bodies, especially the vulnerabilities that the river basin committees face and iii) social participation as an essential governance process. It is stressed that integration between the different spheres of power, institutions and social actors involving integrated water resources management is the main challenge of water governance, especially as it requires that water decisions be negotiated and collective interests prevail. It is also stressed that water governance can contribute significantly to the design and implementation of integrated water resources management, but this needs to involve different levels of government, civil society, business and the widest range of stakeholders who have an important role to play alongside policy makers in reaping the economic, social and environmental benefits of good governance. As suggestions for future studies, it is recommended that the bibliographical studies related to this theme be periodically followed up in order to verify whether the categories and as well as the challenges in the process of management and consolidation of Water Governance in the Country remain or have been overcome.

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