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CONFLICTS OVER THE USE OF WATER: AN ANALYSIS OF THE ACTIONS OF THE BASIN COMMITTEES OF THE PARAGUAY HYDROGRAPHIC REGION

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Abstract: The driving forces acting in the Paraguay River Hydrographic Region (RH Paraguay) generate direct and indirect pressures on water resources, causing qualitative and quantitative impacts that result in water crises and conflicts, which emerge for discussion and the search for solutions in the Hydrographic Basin Committees (CBHs). These pressures and conflicts occur mainly due to the expansion of deforestation for agriculture, inadequate land use, lack of basic sanitation, mining, intensive use of pesticides and fertilizers on the plateau, large-scale shipping and dams for hydroelectric power generation, all of which compromise the multiple uses of water. In addition to these factors, there are also management failures by the institutions responsible, which affects governance and negatively influences environmental conservation, the maintenance of ecosystem services and human well-being. In this context, this study aimed to analyze the topics of discussion and decision, as well as the main conflicts over the use of water resources in the RH Paraguay, based on an analysis of the minutes of meetings of the six active CBHs. The methodological procedures were: a) documentary analysis of the minutes of the CBHs; b) identification and characterization of the social groups represented in the committees and c) content analysis of the conflicts discussed in the committees. The documents analyzed consisted of 157 minutes from the Cabaçal River (15), Jauru (12), Cuiabá River Left Bank (22), São Lourenço (24), Sepotuba (66) committees in Mato Grosso and the Miranda River (18) in Mato Grosso do Sul. In general, the *Public Power* social group made up the majority of representatives, followed by *Civil Society* and, to a lesser extent, Water *Users*. The conflicts identified were: availability of water resources, especially in the CBHs of the Sepotuba and São Lourenço rivers, and water quality in the Miranda, Cabaçal, Cuiabá and Jauru CBHs. Thus, in the Paraguay RH as a whole, conflicts over the supply and demand of water resources (41%), degradation of APPs (30%), loss of quality due to the discharge of effluents (20%) and regulation of an explicitly political nature (8%) stood out. It was concluded that the conflicts refer to the appropriation of water resources by a social group, based on power relations that favor the interests of large users, to the detriment of other groups and, therefore, without considering the principle of multiple uses of water, as determined by the National Water Resources Policy.
Keywords: Water resource management. River Basin Committees. Paraguay River Hydrographic Region. Pantanal.

INTRODUCTION

Environmental conflicts have their origins in complex social problems and are aggravated by injustices produced and reproduced by society through the exploitation of natural resources (CÁCERES, 2019). Conflicts occur when the use of a natural resource becomes competitive and mutually exclusive, in terms of quantity and quality, for the various groups that make up society. Capitalism, which has competition as one of its principles, as a hegemonic economic system, considers water and natural resources as merchandise, attributing economic value to them and calling them *Water Resources* or *Natural Resources* (Di MAURO, 2014). In addition to the recognition of its economic value, water was declared a fundamental human right by the UN in 2010 (UN, 2010), as it is closely linked to the right to life, human dignity and health. Castro (2013) states that, based on this identification, government action to guarantee access to water should become a social requirement and, if it is not met, it should generate punishment, including international punishment.

The distribution of water worldwide and in Brazil is uneven, due to natural factors such as geodiversity and climate, which favor some regions more than others. Around 80 countries face critical supply problems (Di MAURO, 2014; ANA, 2014, GOMES, 2004). On the other hand, 10 countries, including Brazil, have 60% of the world's fresh water on their territory (ANA, 2014). Even in countries with great water availability, there is unequal consumption, social disparity, asymmetries in political and economic decision-making power over the uses and appropriation of water by hegemonic groups, factors that can generate conflicts, in addition to the heterogeneous distribution of water in the territory in relation to the population and the greatest demands, as is the case in Brazil (RABELO, M.; et al 2017; FIGUEIREDO, D.; et al 2021).

In the country, population density does not follow the water distribution metric. While the northern region concentrates 68.5% of all water and has only 4.13 inhabitants per square kilometer, the southeastern region is home to 48.58 inhabitants/km^2 and has only 6% of the water resources available to be distributed among the various uses (OLIVEIRA et al., 2016; AITH; ROTHBARTH, 2015; COSTA et al., 2010).

In addition to this point of imbalance between demand and supply, both qualitative and quantitative, conflicts over the use of water in Brazil also arise from social inequality.

According to the Water Law (Federal Law 9.433/97 - BRASIL, 1997), in its article 38, the basin committees are responsible, among other competencies, for;

I - Promote debate on issues related to water resources and articulate the actions of the entities;

II - Arbitrate, in the first administrative instance, conflicts related to water resources

Thus, these committees assume the role of "water parliament" and are therefore designed to discuss and arbitrate conflicting interests at the grassroots level, i.e. in the river basin.

The river basin committees - CBHs - can be federal or state in scope and have legal powers to act at the local administrative level. The CBHs are also responsible, among other things, for approving and monitoring the implementation of the Water Resources Plans for their respective basins and taking the necessary measures to meet their targets. The decisions of the Committees can be appealed to the National Water Resources Council (CNRH) or the State Water Resources Council, depending on the dominance of the watercourse in the basin in question (ROSSI, 2018; SCHULZ, 2017; CASTRO, 2010; JORDÃO; MORAES, 2002).

Water management in Brazil maximizes the ability of committees to administratively arbitrate conflicts related to water resources by idealizing their composition as a symmetrical and depoliticized partnership between civil society, the state and the market, capable of guaranteeing the participation and decentralization of decision-making that underpins Federal Law 9.433/97 (CASTRO, 2007). However, Jacobi (2009) and Campos and Fracalanza (2010) add that the committee's actions can and should meet the foundations of the law by recognizing the weaknesses and discrepancies between the members and applying social learning, which is based on dialogue, reflection-practice between the actors, learning and joint intervention.

However, conflict management today is limited to disciplining water consumption, which is only one side of the problem.

The National Water Resources Policy (Política Nacional de Recursos Hídricos - PNRH), regulated by Law no. 9.433 (BRASIL, 1997), or the Water Law, created the National Water Resources Management System (Sistema Nacional de Gerenciamento de Recursos Hídricos - SINGREH) and set out management objectives and instruments, as well as action guidelines, contributing to the implementation of more efficient planning and management structures.

Historically, the management of water resources in the world has sought alternatives centered on supply management, increasing water availability in order to meet the increase in demand, and this view is still largely in force (SILVA, 2011). However, the management model established by the PNRH has brought advances, mainly by considering the planning and management of supply and demand (TUCCI, HESPANHOL, CORDEIRO NETTO, 2001).

The foundations of the Water Law state that the management of water resources must provide for the multiple uses of water, with the hydrographic basin as the territorial unit for implementing the National Water Resources Policy and that it must be decentralized, with tripartite representation between public authorities, water users and civil society, with the aim of the rational and integrated use of this resource. In addition, the Law instituted management instruments that aim, among other things, to organize and plan the use of water in order to prevent conflicts and guarantee respect for multiple uses, by classifying bodies of water based on their preponderant uses, granting use rights and charging for the use of water resources, as well as setting up an Information System (BRASIL, 1997)

Planning, carried out mainly through Water Resources Plans, is a fundamental instrument for managing water and the river basin, since it can induce or restrict the use and occupation of land and the implementation of economic development plans in its area of coverage, by disciplining and controlling access to and use of water (LEAL, 2012).

In the Paraguay HR, one of Brazil's 12 Hydrographic Regions, conflicts over water use were listed in the Paraguay HR Water Resources Plan (PRH Paraguay), which established targets and deadlines for presenting solutions to the problems identified (PRH Paraguay, 2018), especially conflicts related to the conservation of the Pantanal biome, which is part of this Hydrographic Region.

One of the most important conflicts in the Paraguay RH, which generated the demand for the Plan to be carried out at the CNRH, is related to the increase in grants and licenses for dozens of new hydroelectric plants, and the forecast of more than a hundred other projects, totaling 180 planned dams, especially Small Hydroelectric Plants (SHPs) on the rivers that form the Pantanal. These projects, together and synergistically, would jeopardize the ecological functioning of the biome and its ecosystem services, such as fishing production, which is of great social and economic importance (CALHEIROS et al. 2012, 2018).

According to scientific studies resulting from the PRH Paraguay, the generation of electricity in the rivers that form the Pantanal, where around 50 hydroelectric plants are currently in operation, is the cause of qualitative and quantitative changes in the water of the rivers that form the Pantanal (OLIVEIRA et al., 2020; CRUZ et al., 2020; SILVA et al. 2019), also generating conflicts with professional-artisanal fishermen, fishing tourism and riverside populations (ÁVILA et al., 2019; MATEUS et al., 2018).

In addition to these conflicts, there are also others resulting from the agricultural use of pesticides and chemical fertilizers on the plateau that surrounds the Pantanal plain; the loss of fishing production due to the processes of silting, contamination and damming of the waters and the urban populations and traditional peoples and communities on the plain; between land use and the generation of electricity; between the use of water for the dilution of sewage from cities and the protection of the Pantanal and other uses, such as bathing; between public supply and the dilution of urban and industrial effluents, among other specific disputes throughout the hydrographic region (RABELO et al., 2021; OLIVEIRA, 2021; FIGUEIREDO et al., 2018; CALHEIROS et al. 2012, 2018; RABELO, 2017).

Therefore, in the Paraguayan HR, it is essential to strengthen the role of the committees as state bodies, directly linked to the executive (governors in the case of state CBHs and the CNRH and Ministry of the Environment in the case of federal CBHs) and also as institutions for political and social negotiation, overcoming the limits of articulation and conflicts between the different social actors involved through effective decision-making. Identifying advances, contradictions and gaps in the functioning of the CBHs allows for continuous improvement and the development of the potential of these collegiate bodies, promoting the strengthening of water resources management and, above all, social participation in conjunction with environmental management, as determined by the Water Law in its Article 3:

Art. 3 The following are general guidelines for implementing the National Water Resources Policy:

> I - The systematic management of water resources, without dissociating the quantity and quality aspects quality;
>
> II - Adapting water resource management to the physical, biotic, demographic, economic, social and cultural diversities of the various regions of the country;
>
> III - The integration of water resources management with environmental management;
>
> IV - The articulation of water resources planning with that of the user sectors and with regional, state and national planning;
>
> V - The articulation of water resources management with land use management;...

The aim of this study was therefore to analyze the topics covered and the decisions made at the meetings of the CBHs, by analyzing their minutes, as well as the representativeness of the different social segments that make up the committees of the RH Paraguay, with an emphasis on issues relating to conflicts over water use.

MATERIAL AND METHODS

STUDY AREA

The Paraguay RH, one of Brazil's twelve hydrographic regions, occupies a total area of around 1,135,000 km² and covers the states of Mato Grosso and Mato Grosso do Sul. This hydrographic region can be divided into three geomorphologically distinct areas: the Plateau region, which covers land above 200 m in altitude, the depressions, regions lower than the Plateau with altitudes between 100 m and 500 m, and the Pantanal plain, with land less than 200 m in altitude (Almeida, 1943; Almeida, 1945). This plain is the largest wetland area in the world, a National Heritage Site under the Federal Constitution (BRAZIL, 1988), a World Heritage Site and a Biosphere Reserve (UNESCO, 2000) and has four sites in its area recognized by the Ramsar Convention on the Conservation of Wetlands of International Interest.

The Paraguay River Basin is home to 86 municipalities, 53 of which belong to Mato Grosso and 33 to Mato Grosso do Sul (FIGURE 01). The total population of the River Basin District, according to IBGE 2010 data, was 1,887,365 inhabitants, of which 1,597,601 (84.15%) corresponded to the urban area and 289,067 (15.32%) to the rural area (ANA, 2014).

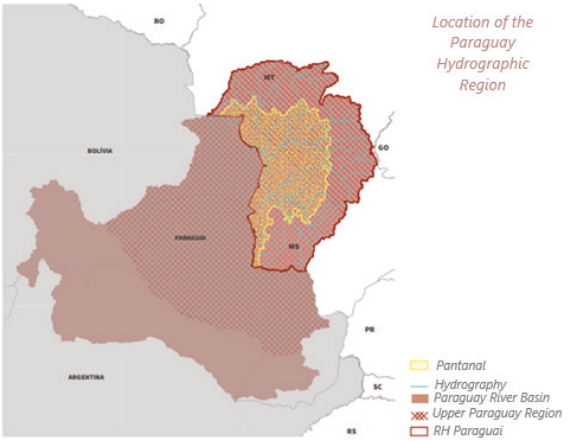

Figure 01 - Location of RH-Paraguay in Brazil with the contiguous areas of the border countries, Bolivia, Paraguay and Argentina.
Source: ANA, 2018.

The main cities in Mato Grosso located in the Hydrographic Region are: Cuiabá, with 483,346 inhabitants and Várzea Grande, with 215,298 inhabitants, forming the Greater Cuiabá metropolitan region. These municipalities have economies concentrated on commerce and industry; both urban areas are separated only by the Cuiabá river, an important tributary of the Paraguay river. Next in line is Rondonópolis, with 150,227 inhabitants and industries and agribusiness as its main economic activities. This is followed by Cáceres, with 85,857 inhabitants, whose main source of income is agriculture, as well as tourism, especially sport fishing (ANA, 2018).

In Mato Grosso do Sul, Corumbá, on the banks of the Paraguay River, has a population of 95,901. Coxim, with 31,797 inhabitants, is home to the pristine waters of the Taquari, Coxim and Jauru rivers, which attract amateur fishing tourists from all over the country. Bonito, with a population of 19,587, is also of great importance to the region's economic sector thanks to ecotourism on the main rivers, such as the Formoso River, the Prata River, the Mimoso River and the Miranda, the main tributary of the sub-basin (ANA, 2014; BRASIL, 2010).

RH Paraguay has been incorporated into the national macro-economy since the 1960s and 70s, when it was boosted by various government plans and programs for occupation, integration and regional development, aimed in particular at export agriculture and beef cattle ranching in the central-west. In the 1980s, there was also a cycle of gold mining in Mato Grosso, in the town of Poconé. The migratory flows resulting from the development of these economic activities drove the emergence and growth of cities. Recently, more conservationist sector programs have emerged by encouraging new activities, such as ecotourism and fishing tourism and aquaculture (RABELO, 2017; BRASIL, 2008; SEPLAN/MT, 2002; MENDES, 1992; LINDBERG and HAWKINGS, 1995).

Basin Committees in the Paraguay RH

The Paraguay river basin has six basin committees up and running, five in Mato Grosso and one in Mato Grosso do Sul: CBH of the Cabaçal River, CBH of the Jauru River, CBH of the Left Bank of the Cuiabá River, CBH of the São Lourenço River, CBH of the Sepotuba River, in MT and CBH of the Miranda River in MS (Figure 2). Recently, in 2022, the CBH of the Upper Paraguay river was established, but it is still in the process of being set up, which began in 2019.

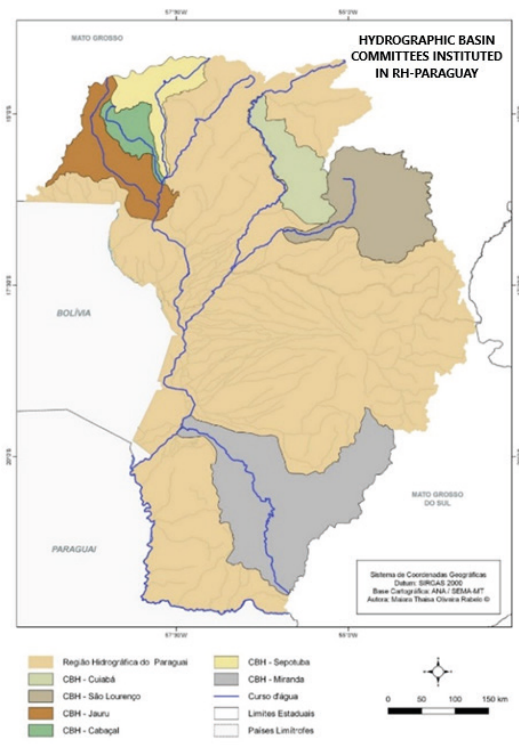

Figure 02 - River Basin Committees set up in the Paraguay River Basin District.

The Cabaçal River HBC was created by Resolution 78 of May 14, 2015. The committee's area of operation encompasses the water bodies belonging to the Cabaçal River sub-basin, which covers 10 municipalities in Mato Grosso that are part of the state's southwest mesoregion (Araputanga, Barra do Bugres, Cáceres, Curvelândia, Lambari D'Oeste, Mirassol D'Oeste, Reserva do Cabaçal, Rio Branco, Salto do Céu and São José dos Quatro Marcos).

Regarding the Jauru River CBH, its area of operation encompasses the water bodies belonging to the Jauru River sub-basin, which covers the municipalities of Mato Grosso in the southwest mesoregion (or part of their territories) Araputanga, Curvelândia, Cáceres, Figueirópolis d'Oeste, Glória D'Oeste, Indiavaí, Jauru, Mirassol D'Oeste, Porto Esperidião, Reserva do Cabaçal, São José dos Quatro Marcos and Tangará da Serra.

The process of creating the CBH Cuiabá - ME began in 2004. This committee covers the tributaries of the left bank of the Cuiabá River located between the watershed of the Manso River (Coordinates 56º 30' W and 16º 10' S) and the municipality of Barão de Melgaço (Coordinates 56º 30' W and 14º 50' S), forming part of the Central-Southern mesoregion of the state, encompassing the municipalities of Cuiabá, Santo Antônio do Leverger and Barão de Melgaço.

The São Lourenço river basin, where the CBH is located, covers 14 municipalities in the southeastern region of Mato Grosso: Alto Garças, Campo Verde, Jaciara, Juscimeira, Itiquira, Rondonópolis and São Pedro da Cipa. The main course is the São Lourenço River, which rises in Campo Verde and flows into the Pantanal.

The CBH of the Sepotuba River began in 2010 and covers an area of 984,450.51 ha (9,840 km²) in the southwest of the state. This represents around 1% of the total area of Mato Grosso. The sub-basin includes the municipalities of Santo Afonso, Nova Marilândia, Tangara da Serra, Nova Olímpia, Barra do Bugres, Salto do Céu, Lambari D'oeste and Cáceres.

The only RH-Paraguay Committee belonging to the state of Mato Grosso do Sul, the CBH-Miranda began in 2001 and during the first 4 years, studies, technical events and social mobilization were carried out involving all 20 municipalities that make up the basin: Terenos, São Gabriel do Oeste, Campo Grande, Bandeirantes, Dois Irmãos do Buriti, Aquidauana, Rochedo, Maracaju, Bodoquena, Bonito, Nioaque, Sidrolândia, Corguinho, Jardim, Corumbá, Miranda, Ponta Porã, Rio Negro, Guia Lopes da Laguna, Porto Murtinho and Anastácio. Its Water Resources Plan was finalized in 2016 and was due to be updated in 2021, but was not.

METHODOLOGY

In order to achieve the objectives of this article, which is qualitative in nature, a documentary analysis was carried out of the minutes of ordinary and extraordinary meetings of the six state-dominated River Basin Committees (Table 1), available on the official websites of the respective committees. A total of 157 minutes of ordinary and extraordinary meetings of the six committees in office were analyzed (Table 1), examining all the minutes available from the creation of each committee until August 2021. This analysis, according to Lüdke (2013), comprises the collection of descriptive data, obtained through information in the minutes.

Firstly, a general analysis of the topics discussed in the CBHs was carried out, with information by type of topic discussed (Table 2), according to the classification proposed by Bruno and Fantin Cruz (2018). In order to count the main topics debated in the CBHs, a survey was carried out of the number of occurrences found in each topic and aspect evaluated; the occurrences of all the topics were added together and through this step it was possible to calculate the percentage of occurrence of each topic debated in the Committees. In order to create graphs of the frequency of attendance of members at the meeting, the records of participants in the minutes of the meetings were evaluated individually, entering the attendance of each institution per meeting in an Excel spreadsheet; at the end of the survey it was possible to add up the total frequency of participation of each institution/segment, grouping them into public authorities, users, civil society and educational and research institutions.

Conflict indicators	Aspect evaluated
Normative	Discussion on environmental legislation and regulations on the National and State Water Resources Policy; Application of the Water Resources Management Instruments recommended by the Water Law.
Water quantity and availability in the basin	Identification, discussion and notes on the environmental issues occurring in the basin: 1) water availability; 2) Consumptive Uses allocated and in the environmental licensing phase in the basin; 3) Definition of water users through water use concessions and 4) Use of groundwater, 5) measurement of insignificant uses and identification of this type of user (??); 6) information on the WTPs meeting urban demand (??)
Environmental Quality in the Basin	Identification, discussion and notes regarding the environmental issues that occur in the basin: 1) water quality; 2) degradation of environmental preservation areas such as springs and permanent preservation areas (APPs); 4) solid waste; 5) domestic and industrial effluent discharge and the presence of treatment facilities (ETEs); 5) erosion processes; 6) siltation; 7) recovery of degraded areas.
Studies/ Technical Chambers	Debate, drafting and participation in Plans, Projects and Technical Chambers involving actions to be developed in the basin: 1) technical chamber to evaluate and implement the drafting of the basin plan, as well as the evaluation of the Paraguay PRH; 2) projects to recover degraded areas; 4) payment for environmental services project; 3) Technical Chamber for Project Analysis (CTAP); 4) Diagnostic and environmental education projects in the basin.
Complaints	Conflicts referred for discussion to the Committee and CERH (MS) and CEHIDRO (MT)

Table 1 - Criteria for defining and classifying the themes dealt with by the River Basin Committees of the Paraguay River Basin Region

Source: Adapted from Fantin-Cruz (2018).

In the analysis of the topics dealt with at the meetings, emphasis was placed on water conflicts and the participation of the committees in the construction of the Water Resources Plan for the Paraguay River Basin Region, the main aspects integrated and dealt with in the discussion.

The attendance of representatives from each segment at the meetings of the CBHs was quantified during the same period in which the minutes were analyzed, with the aim of measuring which segment had the highest attendance at the meetings, as well as making a similar comparison between the CBHs.

In order to create the graphs of members' attendance at the meeting, the participants' records in the minutes of the meetings were evaluated individually, entering the attendance of each segment per meeting into a spreadsheet; at the end of the survey, it was possible to add up the total attendance of each institution/segment, grouping them into the segments Public Authority, Water Users, Civil Society and Education and Research Institutions.

The regularity of the meetings in each committee, which should be quarterly, was also checked.

RESULTS

In the analysis of the 157 minutes of ordinary and extraordinary meetings of the CBHs operating in the Paraguay RH - Cabaçal, Jauru, ME Cuiabá, São Lourenço, Sepotuba and Miranda (Table 2), it was observed that the number of meetings differs between the committees, due to the time elapsed between their creation and the present study and due to the greater regularity of the meetings ordinary or greater number of extraordinary meetings of some committees compared to others

Committee	Period analyzed	No. of documents
CBH ME Cuiabá River	From 2017 to 2020	22
Cabaçal River CBH	From 2017 to 2020	15
Jauru River CBH	From 2018 to 2020	12
Sepotuba River CBH	From 2010 to 2020	66
São Lourenço River CBH	From 2014 to 2020	24
Miranda River CBH	From 2006 to 2020	18

Table 2 - Period of the survey and quantification of the minutes of the meetings of the basin committees of the Paraguay River Basin District

Source: CBH minutes.

The number of meetings differed greatly between the committees. This is due to the age of the committee, but it is also an indication of the activity and efficiency of the collegiate body. CBH Miranda, for example, is the oldest, created in 2005, but has held fewer meetings than CBH Sepotuba, created just five years later, in 2010.

In all the committees, the social group with the highest number of attendees at all the meetings was the *Public Authorities,* indicating asymmetry in participation (Figure 02). Figure 02 shows that in the São Lourenço and Miranda committees there was a significant increase in the presence of the *Users* social group.

The main topics dealt with at the meetings were related to the normative/administrative aspects of the Committee's operation (35%); water availability (35%); the basin's environmental quality (20%); studies, projects and the creation of technical chambers (8%) and complaints about water conflicts (2%) (Figure 3).

IDENTIFICATION OF CONFLICTS BY COMMITTEE

By analyzing the minutes of ordinary and extraordinary meetings of each committee, it is possible to identify a subtle variation in the percentage of topics debated, which may indicate the priorities of each committee and the regional influences on these priorities. The set of basins that make up the RH Paraguay presents and represents different social, economic and environmental realities.

CABAÇAL RIVER BASIN COMMITTEE

The committee only received one complaint about a water conflict, at its third ordinary meeting in 2017. The record in the minutes refers to an anonymous complaint requesting action on environmental degradation on the banks of the Cabaçal River, caused by irregular occupation.

The topic of "conflict" was also mentioned in relation to a training course offered by the Mato Grosso State Secretariat for the Environment on "Managing conflicts over water use". At the next meeting, those chosen shared some of the learning from the training with the others, although there was no report or more in-depth discussion of the conflicts that exist in the river basin.

The main issues debated by the committee and recorded in the minutes were normative (41%), followed by water quantity and availability (35%), environmental quality (18%), Studies and Technical Chambers (5%) and, lastly, Complaints (1%) (Figure 04).

JAURU RIVER BASIN COMMITTEE

At the committee's first ordinary meetings, a participatory diagnosis was carried out with the members present, in which priority issues for the basin were listed: pesticide contamination in the water, degraded areas, deficiencies in the coverage of basic sanitation services and the impact of small hydroelectric plants. The members of this committee were also invited to take part in the conflict management training course and, as a result, the minutes show that the lessons learned from the training course were shared. As a suggestion, a technical chamber on actual and potential water conflicts in the basin was created.

In the 12 minutes analyzed, there was only one report of a water conflict in 2019, in which members of a civil society organization brought to the committee a report of encroachment in a permanent preservation area (APP) and consequent environmental damage. As a follow-up, the committee sent letters to the competent environmental bodies (INCRA, IBAMA, the Federal Police and the Federal Public Prosecutor's Office).

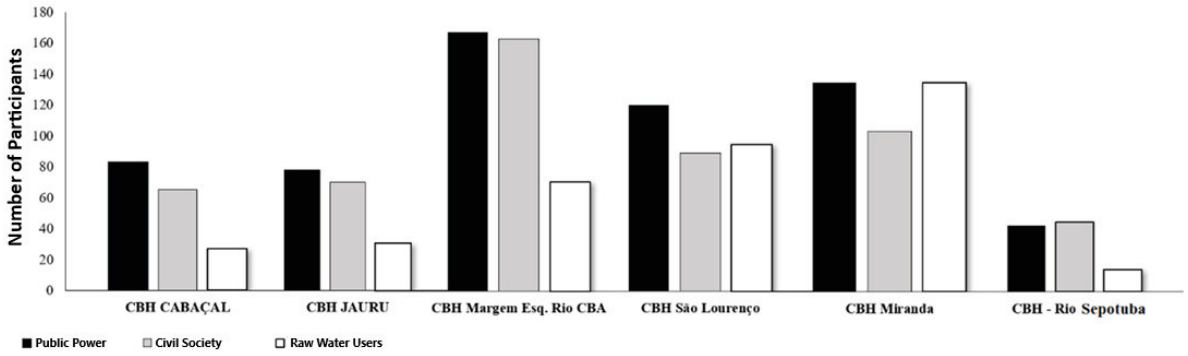

Figure 02 - Participation of social segments in the meetings of the active River Basin Committees in the Paraguay River Basin Region, in all ordinary and extraordinary meetings, from 2006 to 2020.
Source: CBH minutes.

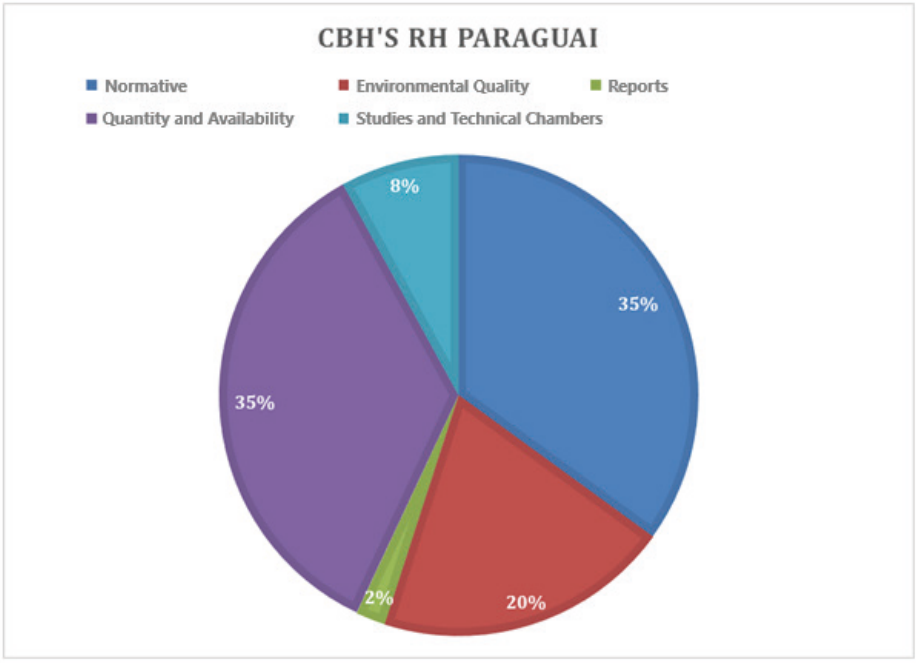

Figure 3 - Main topics discussed at the meetings of the active River Basin Committees in the Paraguay River Basin District from 2006 to 2020
Source: CBH minutes.

Another mention of conflicts refers to information on the activities of the Technical Chamber on "Conflicts and environmental damage resulting from the installation of hydroelectric plants and SHPs in the area covered by the Jauru river basin". Although there is no record of the creation of this Technical Chamber in any of the minutes analyzed, it is an indicator of a real conflict arising from the damming of the river where six hydroelectric plants are in operation

The main issues debated by the committee and recorded in the minutes were regulatory (33%), followed by environmental quality (28%), water quantity and availability (28%), Studies and Technical Chambers (10%) and, lastly, Complaints (1%) (Figure 04).

It is important to mention that the Jauru River suffers changes in its flow almost on a daily basis due to the operation of the reservoir (193 ha) of the Jauru HPP, associated with the operation of the other five SHPs, causing inconve-

nience to the local population, especially the riverside communities, when, for example, it has a very low flow and level, preventing river travel by boats. However, this serious conflict over the use of water has not been the subject of discussions or even complaints at the CBH Jauru, since the operation of the reservoir must respect downstream uses.

RIVER BASIN COMMITTEE OF THE LEFT BANK OF THE CUIABÁ RIVER

At the committee's first ordinary meeting, there was a discussion between representatives of water users and civil society about the irregular use and occupation of land in the Cuiabá metropolitan region, which would directly influence the efficiency of sanitation services. The committee members pointed out that there is not enough supervision to analyze the efficiency of sewage treatment plants in new subdivisions and that the lack of supervision could mean irregular dumping directly into urban rivers, which would cause considerable damage to fishing in the Cuiabá River. Also in this discussion, the committee members stated that the grants issued by SEMA do not analyze the dilution capacity of water bodies.

The following meetings were marked by discussions about water quality in the basin. Committee members explained the need to expand and regionalize water treatment plants and the water supply network in some regions of the basin, such as Barão de Melgaço, in the Pantanal. The members also discussed the issue of general sanitation in the region, as well as the final disposal of solid waste.

The documentary analysis shows the disagreement between water users and other social groups. SEMA representatives reported on the high number of requests for authorization to drill wells to serve irrigation projects in locations that have no surface water available to meet demand or where the construction of a pipeline to transport raw water has proved economically unfeasible. Faced with this reality, SEMA's Superintendence of Water Resources brought the issue up for discussion and evaluation. A representative of the state's Electricity Construction, Generation and Distribution Union spoke up, saying that "environmental issues cannot stand in the way of undertakings and that there is no way that entrepreneurs can afford the cost of hydrological studies". The use of groundwater raised discussion among the committee members. Despite the difficulty of making a judgment, considering that no study was presented to support such a judgment, a vote was taken, which was approved by 8 votes in favor and 3 abstentions.

No reports of water conflicts were received by the committee, however, there was one report in the form of a complaint, from a member of the water users' group, who told the committee that NGOs (Non-Governmental Organizations) and the Public Prosecutor's Office "interfere in licensing processes for hydroelectric projects, driven by their own interests, without the technical knowledge to prove the damage and impacts they claim". There were no reports of investigations into this, nor was any evidence presented to back up this claim.

The main issues debated by the committee and recorded in the minutes were regulatory (30%), followed by water quantity and availability (30%), environmental quality (30%), Studies and Technical Chambers (10%) and, lastly, Complaints (0%) (Figure 04).

SÃO LOURENÇO RIVER BASIN COMMITTEE - CBHSL

The classification of water bodies was the management instrument most debated at meetings between the members of the São Lourenço CBH. In a participatory diagnosis, on the agenda of the first extraordinary meeting, the excess of hydroelectric projects, deforestation, mining and dams were listed as priority challenges for the basin.

The minutes analyzed point to discussions about the uses of water in the basin, with an emphasis on agricultural uses, irrigation and animal watering, with an emphasis on safeguarding the quantity and quality of water needed for other uses.

The committee received two reports of conflicts over water use. The first was about the decrease in fish stocks and changes in the reproductive behavior of fish in the region. In response to this complaint, the committee asked SEMA and the State Fisheries Council (CEPESCA) for information on reproductive monitoring data and the expansion of monitoring stations in the basin. The second, from the municipality of Jaciara, concerned the irregular deposit of plastic packaging on the banks of the Tenente Amaral River, received via messaging app. The complaint was filed by the committee with SEMA's Decentralized Unit in Rondonópolis. In this case, the notification was complied with and the company was held responsible (fined) for making an irregular deposit (in the open) of solid waste, as well as being notified to remove the material and dispose of it properly.

In 2017, at a supplementary meeting, the CBHSL dealt specifically with environmental demands from the municipality of Juscimeira regarding allotments located around the São Lourenço SHPP reservoir. The owners of the rural allotments claimed ignorance of the law regarding environmental licensing and their obligations regarding the final disposal of solid waste which, according to the minutes, was being left irregularly in the vicinity of the Prata waterfall.

At another point, during her presentation to the committee, the representative from Juscimeira City Hall spoke about the lack of sanitation in the municipality. In a tone of denunciation, she addressed the issue of abusive use of groundwater, stating that there were approximately 80 active wells while only five were duly licensed. She also spoke of the existence of condominiums around the São Lourenço SHPP reservoir that were discharging their effluent untreated into this source, as well as the lack of a "fish ladder" at the SHPP. On the last point, the hydroelectric plant's representative said that, when the Environmental License is renewed, the study of the ichthyofauna will be considered. However, it is worth pointing out that this type of work to transpose fish in dammed rivers has no scientific backing according to experts (CALHEIROS, D. et al, 2021).

The main issues debated by the committee and recorded in the minutes were water quantity and availability (35%), followed by regulatory issues (30%), quality environmental (23%), Studies and Technical Chambers (10%) and, lastly, Complaints (2%) (Figure 04).

SEPOTUBA RIVER BASIN COMMITTEE

The CBH Sepotuba minutes analyzed show the conflict between water users and civil society, specifically representatives of the hydroelectric sector and the Halitinã indigenous community. On this occasion, the Committee requested the analysis of projects and processes relating to the Environmental Impact Study - EIA/RIMA of three SHPs, currently in the planning stage. Also at the meeting, the inclusion of the member representing the indigenous people was requested, since the projects would affect the Formoso village. It was mentioned that "there were several statements from representatives of the indigenous community (Aldeia Queimada), related to the implementation of the SHPs on the Formoso River", but the content of the statements was not described, nor was there any mention of the responses from representatives of the energy sector, or even if there was any deliberation by the Committee in relation to this conflict. The minutes of the subsequent meeting only state that the public hearing for the presenta-

tion of the EIA/RIMA for the SHPs was canceled by SEMA, as published in the Official State Gazette. According to Dionel (2020), the Federal Public Prosecutor's Office and the State Public Prosecutor's Office demanded that SEMA suspend the licensing process for the SHPs, as they were planned to be in the area of influence of four indigenous lands. No records were found in the minutes of the subsequent meetings analyzed of any discussion about the hydroelectric projects under consideration for installation in the river basin.

In relation to the most serious episodes of water crisis in the region, in which an emergency situation was declared in the public supply of the city of Tangara da Serra, the CBH's headquarters, in 2016 and 2020, records were found of discussions and possible solutions pointed out by the members of the CBH Sepotuba, with regard to changing the catchment point of the Córrego Queima Pé to the Sepotuba River, and on the water availability of the stream, considering the expansion of urbanization and agricultural uses.

The micro-basin of the Queima-Pé stream is intensely occupied by agricultural activity, whose deforestation of spring areas and riparian forests is the factor responsible for the reduction in water production and, consequently, in the availability of water for public supply, as demonstrated in studies since 2012 (PESSOA et al., 2012).

Since 2013, the Sepotuba CHB has had a Technical Chamber (TC) to evaluate potentially polluting projects that intend to set up in the river basin. The first project analyzed by the chamber, recorded in the minutes, was a SHPP that had already received the preliminary and installation licenses from the environmental agency (SEMA). However, the members of the TC felt that the analysis of the project could support further discussions on the subject.

Despite the committee's long history of activity, with the largest collection of documents among the collegiate bodies covered in this research, and the recurring events of water emergencies in the river basin, no records were found of complaints of water conflicts forwarded to the committee.

In the 66 minutes of the meetings analyzed, discussions about SHP projects, EIA-RIMAs, technical, operational and environmental feasibility, as well as the effects of the environmental impacts of these projects, were the most recurrent subject of debate, followed by groundwater use and the recovery of the Queima-Pé stream micro-basin

Another point noted in the meeting minutes is that the Committee was rarely informed or consulted by the municipal, state or federal management body about the licensing or granting processes of large water users to be installed in the basin. The information and consultations came from the Federal and State Public Prosecutor's Offices, such as the one recorded in the minutes of the 22nd meeting, in which the Tangará da Serra Public Prosecutor's Office requested an analysis of the licensing process for the Salto das Nuvens SHPP at a waterfall of great scenic beauty and an important tourist attraction in the region. It is worth noting in Mato Grosso there are no legal mechanisms establishing the submission of water use grant processes for analysis by the basin committees, which does not prevent this forum from having a greater role, i.e. being duly informed and consulted on grant requests and licensing processes for large water-using enterprises.

Of the six active committees in the Paraguay RH, the CBH Sepotuba was the only one to register the composition of a Working Group (WG) to study the implementation of charging for water use (one of the management instruments established by the State and Federal Water Resources Policies) in the Se-

potuba river basin, in order to raise financial resources for environmental recovery projects in the basin. This WG was created in 2012 and at subsequent meetings the results of the group's evaluation were presented to the other members of the committee.

The main issues debated by the committee and recorded in the minutes were regulatory (35%), followed by water quantity and availability (33%), environmental quality (28%), Studies and Technical Chambers (4%) and, lastly, Complaints (0%) (Figure 04).

MIRANDA RIVER BASIN COMMITTEE

An analysis of the minutes of meetings held between 2006 and 2020 revealed that discussions were held on the TOR (term of reference) drawn up by IMASUL, in partnership with the committee's Technical Planning Chamber, for the preparation of the Basin Water Resources Plan.

In subsequent registrations, the agenda was irrigation. The president of the committee stressed the importance of the agricultural sector's participation in the forum, saying that it is the most important sector in this basin, but that in municipalities such as Bonito and Corumbá the tourism sector is just as important.

Later, in 2013, there was a documentary record of the electoral process, and only one slate applied to run for the board of directors. When it was presented for a vote by the other members of the committee, it was found that it was made up of representatives from only one segment, water users, and that it was therefore unrepresentative. As a result of this discussion, a member of civil society was appointed to the general secretariat and the slate was consensually approved.

The texts point to tensions between committee members at two moments during the presentation of the preliminary version of the Basin Water Resources Plan, which began in 2013. In the first instance, the representative of the sanitation services concessionaire for the municipality of Bodoquena said he was not aware of any abstractions made in the River Plate, a watercourse of great interest to the tourism sector. However, the engineer giving the presentation said that all types of water use had been taken into account. The next moment, the representative of the Mato Grosso do Sul Sanitation Company (SANESUL) asked about the estimated budget for sanitation in the basin, saying that it was lower than the real need.

Another indication of potential conflict between water users in the Bonito region recorded in this CBH was the turbidity of the waters of the Prata and Formoso rivers, which led the committee to draw up an action plan to contain the environmental damage, which is causing direct harm to tourism. The minutes also mention the holding of a public hearing, proposed by the State Public Prosecutor's Office, to discuss the problem and list possible solutions. The minutes did not record the causes of the turbidity, nor the groups or activities responsible. However, looking for information in the press[1] , there was mention of soya monocultures as a possible cause of soil erosion and sediment entering watercourses.

The committee members once again discussed the problem of the turbidity of Bonito's rivers and pointed to the lack of maintenance of the region's roads and deficiencies in basic sanitation services, especially effluent treatment and the final disposal of solid waste, among the causes. However, deforestation and poor land use by agriculture in the basin were only mentioned by one member of civil society. It is worth mentioning that Bonito is a municipality where hydro-tourism is one of the main economic activities, with national prominence.

1. https://g1.globo.com/ms/mato-grosso-do-sul/noticia/2018/12/10/audiencia-publica-discute-como-rio-com-aguas-cristalinas-em-bonito-ms-ficou-turvo-com-enxurrada-de-lama.ghtml

None of the CBH Miranda minutes analyzed recorded complaints of conflicts or potential environmental damage related to water. The committee's internal regulations stipulate that it must hold two meetings a year, and found only two minutes of extraordinary meetings, held in 2015 and 2019. In the minutes of these meetings, no complaints were reported directly to the committee, but there were expressions of discontent from other social groups regarding the massive representation of members of the water users' group in the overall composition of the collegiate body.

The main issues debated by the committee and recorded in the minutes were water quantity and availability (30%), followed by regulatory issues (30%), environmental quality (30%), Studies and Technical Chambers (10%) and, lastly, Complaints (0%) (Figure 04).

CONFLICTS IDENTIFIED

Both internal and external conflicts were identified. In other words, conflicts between the members of the committees and between the social groups represented on the committees (Figure 05).

DISCUSSION

The Paraguay Hydrographic Region has historically had various traditional economic activities such as professional-artisanal and subsistence fishing, tourism in various forms such as ecotourism, adventure tourism, sport fishing and traditional livestock farming. All these activities directly or indirectly exploit natural resources in their processes of extraction, production and commercialization of services or products. This environmental dependence generates a dispute between the actors over natural resources and is the trigger for conflicts between them (RABELO et al., 2017; CALHEIROS et al., 2012, 2018; CAMPOS FILHO, 2002; SIQUEIRA, 1990; RONDON, 1982).

According to the Water Resources Outlook Report (ANA, 2019), there are 10 (ten) interstate river basin committees and 225 (two hundred and twenty-five) state committees in the country, with most of the interstate committees concentrated in the Northeast and Southeast regions and the state committees more concentrated in the South, Northeast and Southeast regions. It is important to note that the states with the highest number of committees are those with the lowest water availability, both in terms of quantity and quality, and the highest population, indicating concern about water scarcity and conflicts related to water use, and possibly because they have greater social mobilization.

Rossi (2018) believes that water use conflicts involve private interests, including those of transnational corporations, and collective and diffuse interests, and that the numerous records of conflicts in recent decades are actually due to unequal forms of use and access to natural resources. Even so, the presence of potential conflicts between different users is evident. In this study, it was found that the use of water resources for energy is in conflict with fishing activities in all their forms in the region.

The number of hydroelectric projects already installed on the region's rivers and also in the process of being studied, licensed and implemented is striking, and this is the topic under discussion the most often in all the Committees. There are a total of 183 current and proposed projects in the Paraguay RH, most of them small hydroelectric plants (SHPs), with 47 dams already built. Important socio-environmental conflicts have already arisen, resulting in the understanding that public managers, in general, are actually acting to favor the electricity sector under the discourse that there is an increase in demand for energy to foster economic development. This action by management bodies, which favors one segment of society to the detriment of others, and environmental

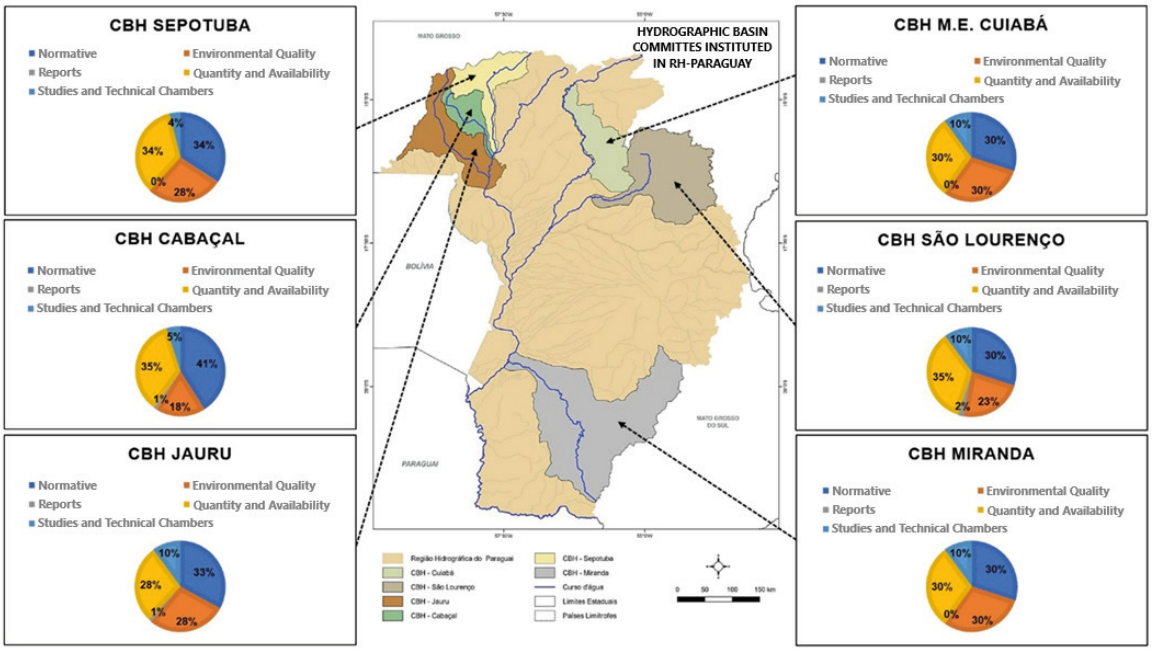

Figure 04 - Main topics of discussion recorded in the meeting minutes of the River Basin Committees of the Paraguay River Basin Region, between 2006 and 2021.

Source: Committee minutes

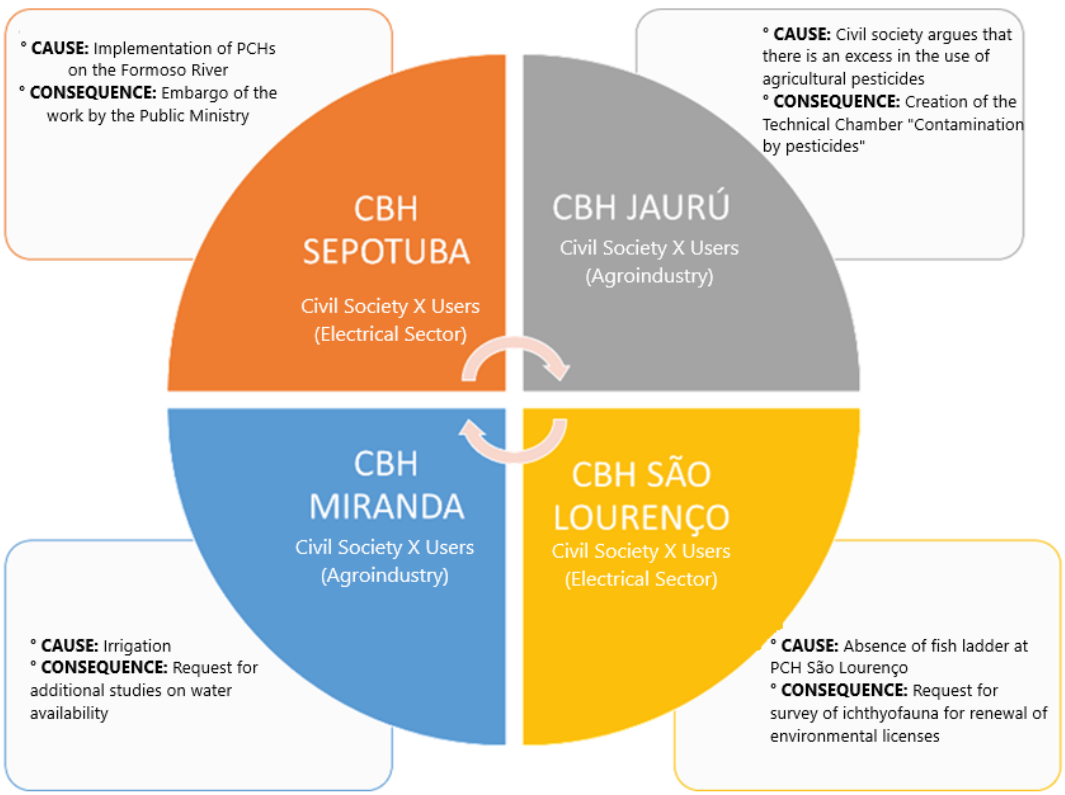

Figure 05 - Conflicts identified by the existing Basin Committees in the Paraguay Hydrographic Region

Source: Committee minutes

conservation itself, fundamentally contradicts the concept of multiple uses determined by the Water Law, as well as the Federal Constitution itself, in its art. 225, by not prioritizing the conservation of the Pantanal Biome, once considered National Heritage in the constitutional text, through systemic management that really guarantees the conservation of essential ecological processes and the provision of ecological management of species and ecosystems (ABRAPCH, 2020; ANA, 2018; CALHEIROS et al, 2012, 2018; BRASIL, 1988, 1997).

According to Lima et al. (2019), the Cabaçal River basin has a predominant land use for agriculture, and is also the largest user of water for irrigation and animal watering (SEMA, 2019), a factor that determines the generation of conflicts between other water uses. Like the Cabaçal River basin, the area that comprises the Jauru River drainage basin also has predominant land use for agriculture and livestock (SIEBERT et al., 2014).

Magalhães et al (2016) and Brasil (2007) state that in the Paraguay RH, the most dynamic center is the city of Rondonópolis, located in the São Lourenço river basin, which concentrates important agro-industrial units that process a large portion of the region's agricultural production. The basin's plateau area has suffered intense deforestation for the extensive cultivation of soybeans, corn, cotton and sugar cane, reflecting the main conflicts discussed by the members of the São Lourenço CBH, related to the use and occupation of land in the basin and the damage to water uses and aquatic ecosystems.

Agriculture and livestock are also the main economic activities developed in the Miranda River Basin in Mato Grosso do Sul. However, there is intense potential for contemplative tourism and fishing, which favors the emergence of conflicts over the use of water between users of such activities (IMASUL, 2014; FERRAZ, 2006).

Thus, the hegemonic use of land and water for agricultural activities throughout the river basin region justifies the predominance of conflicts discussed and/or denounced in the six committees, mainly related to poor land use and deforestation of permanent preservation areas (springs and riparian forests), which result in a qualitative and quantitative shortage of water.

The mechanism created by the National Water Resources Policy to prevent such prerogatives is the effective formal participation of civil society, but this action in water decision-making processes, as we have seen, encounters various obstacles that limit the negotiation process (FRACALANZA; CAMPOS; JACOBI, 2009).

WATER MANAGEMENT FOR CONSENSUS BETWEEN DISPARATE INTERESTS

The tension between water supply and demand has the characteristic of assuming a geopolitical profile. As soon as this resource becomes scarce, it becomes an important source of power that gives rise to political, social and economic disputes and conflicts. In this way, water resources, being strategic and essential for maintaining the way of life on Earth and which have become scarce in various regions, are the reason for the aggravation of disputes over the use of water (LACERDA, 2015; SENHORAS, MORREIRA, VITTE, 2009).

The committees are state bodies, which gives them a deliberative nature. However, the flaws in their performance and the weakening of their decision-making power is directly related to the fragility and immaturity of democracy in Brazil (BOBBIO, 1992; TRINDADE, 2019).

Public authorities are responsible for managing, legislating and ordering the use of natural resources, mediating conflicts, acting to minimize problems and guaranteeing the

availability and quality of water, but not alone. In addition to this social group, the Water Law includes, with the same degree of importance, two other social groups: water users and civil society. This is how the committees and their management team are made up.

The lack of integration between the actions of the committees that already exist in the Paraguay River Basin, since there has not yet been the creation of a Federal Committee for the entire Paraguay River Basin, is also an obstacle to resolving historical conflicts in the region. Dionel (2020) and Moraes (2019) point out that the absence of important instruments such as framing and charging for the use of water resources makes planning and decision-making difficult, since they are tools for defining actions and guidelines for water resource management. Granting is another important management instrument, but its governance is limited, since the CBHs have no legal authority to grant it , only the management bodies. However, they can and should define the criteria and conditions for granting it, based on the basin's water balance, which is a fundamental item in the Basin Plans. In addition, the CBHs should be responsible for evaluating and participating in decision--making on grants, as long as they have technical support from the management body or the basin agency, if any.

In the national context, in 2020 the Pastoral Land Commission launched the booklet Conflitos no Campo (Conflicts in the Countryside), with reference to the year 2019, which points to a staggering number of 578,968 people across the country who are fighting for the right to land and water. The document also points out that 2019 was marked by an increase in violence in the countryside against communities and the poorest, as the federal government at the time favored agribusiness and large companies and criminalized traditional communities. For the Commission, this attitude, coupled with the weakening of public land reform policies, contributed to worsening of these conflicts by denying territorial identity and the social role of land determined by the Constitution (BRASIL, 1988; CPT NACIONAL, 2020; GONZAGA, 2020; BARBOSA, 2020)

The big question when analyzing the context of water conflicts in Brazil, and the mentions of the subject in current environmental legislation, is the claim to resolve socio-environmental conflicts by identifying more appropriate ways of managing scarcity, technical qualification and improving organizational performance, criticizing waste and consumerism, more effective or efficient administration of the negative externalities of economic activities, mediating actors with absolutely different perceptions, needs and capacities. In general, attempts to manage conflicts do not take into account the political and structural issues surrounding the relationships between the different social actors. The result of this behavior is a series of oppressive measures that harm the most socially vulnerable peoples and communities (CAMPOS and FRACALANZA, 2010).

The results obtained in this research indicate that there is a deficiency in the interaction between the committees and the demands of the population, since there are very few complaints that reach the collegiate body, with only 2% of all issues debated at meetings. Loebens and Sttefen (2013) state that the river basin committee is the basic body for the form of politics advocated by the Water Law: decentralized by river basin and with the participation of social actors. However, there is still a great distance between social representation in the CBHs and Councils without maintaining a more direct and interactive relationship with local society.

Conflicts between water users are reported daily. In the Paraguay hydrographic region, fishermen on the Jauru River denounced in the local media the variation in water levels caused by the operation of the reservoirs of the hydroelectric plants installed upriver, as well as the failure to compensate the populations affected by the six hydroelectric plants built in the basin (five SHPs and one HPP) (ECOA, 2018[2]; Outras Mídias, 2021). In addition to the economic damage to riverside dwellers, we need to consider the social and cultural damage involved and the incalculable environmental damage (MATOS; GONÇALVES, 2017). However, the complaints have generally not been officially submitted to the River Basin Committee, which should be the first body to arbitrate and settle conflicts in the basin. Any citizen can make such a complaint, especially civil society representatives who are members of the CBH.

Fishing in the Pantanal region drives the local economy through professional and subsistence fishing, fishing tourism, commerce and services such as hotels, inns and restaurants, as well as being of paramount cultural and ancestral importance to the native inhabitants. Fishing is traditional knowledge, passed down through generations of Pantanal residents, meaning that the decline in fish stocks is not merely an environmental issue. The documentary video "The Day the River Dried Up", made by the Gaia Institute, discusses the environmental and social devastation that hydroelectric projects in operation and planned in the region have caused or could cause to the hydrological regime and fishing production. In the video, fishermen and civil society from cities such as Coxim/MS, where several dams are planned in the Taquari/Coxim river basin, and Porto Esperidião and Cáceres/MT, which were already suffering from the socio-environmental impacts of the Jauru river hydroelectric complex, comment on how they feel they have been harmed by the installation and operation of these projects.

As for water scarcity, Tangará da Serra, the fifth most populous municipality in Mato Grosso and one of the state's strongest economies, faced serious urban supply crises in 2016 and 2020 caused by a prolonged drought and an increase in water demand. The Sepotuba Basin Committee, according to Dionel (2020) and Bruno and Fantin-Cruz (2018) is one of the most active and technical committees in the state of Mato Grosso, but it has not taken any effective decisions to solve the issue or promoted community participation, since it has not registered the receipt of any complaints

As for the composition of the committees, the National Water Resources Policy specifies that it should reflect the segments and interests in relation to water use in the basin. According to the Law, the River Basin Committees must be made up of representatives of the public authorities, users and civil society with proven activity in the basin. The representativeness of each segment must comply with Article 8 of Resolution 5/2000 of the National Water Resources Council (BRASIL, 2000), respecting the minimum participation of civil society and the maximum number of members from the public authorities. Furthermore, this distribution of the composition of the CBHs depends on local specificities, and is established by the Internal Regulations of each Committee. It was noted, however, that some committees, especially the São Lourenço and Miranda River CBHs, had difficulty composing their collegiate bodies in a balanced way.

According to Trindade (2019), Jacobi et al. (2006) and Empinotti (2011), the composition of a basin committee must reflect the multiple interests in relation to the waters of the basin in defense of collective interests and with a view to diffuse interests. Added to this diversity is the fact that each social segment, in turn, has multiple other interests. Howe-

ver, it is clear that it is difficult to maintain such representativeness among the members of the RH Paraguay committees, especially in the Miranda and São Lourenço river basins. The predominance of one social group over others in the arrangement of the committees can contribute to the silencing and emptying of the specific demands of certain groups and/or regions.

When we talk about conflicts over the use of water, we can go back to the origin of the word "rival", which goes back to the Latin *rivus* meaning "river", in other words, the semantics establishes that a "rival" is someone who shares the use of the same river. This sense of rivalry remains in the Portuguese language, but nowadays only for a restricted legal sense of rival: "a subject who has, together with another, possession of the waters of a river", however it is possible to see that, historically, this coexistence is sometimes not peaceful (RODRIGUES, 2020; HOUAISS, 2009).

Alternatives such as storing rainwater, campaigns to raise awareness of consumption, treating and reusing effluents, cleaning up rivers and preserving springs reaffirm the need to implement and comply with the National Basic Sanitation Policy, the National Solid Waste Policy and the Forestry Code together with the PNRH, since they are part of managing water resources and guaranteeing their availability in the future, avoiding conflicts.

The United Nations (UN) predicts a collapse in the world's water supply from 2025 onwards, calling the event the "Water Crisis". It is predicted that approximately 5 billion people will have difficulty consuming water, and half of them will face extreme scarcity if there is no immediate change in consumption patterns, use and conservation of water sources (VENANCIO, 2015; VICTORINO, 2007). Society is gradually realizing that water resources are necessary to carry out basic day-to-day activities such as power generation, public supply, irrigation and food production (agriculture, livestock, aquaculture and fishing, for example) for the survival of the human species, as well as the conservation and balance of biodiversity and the relationships of dependence between living beings and natural environments. But decision-making should be more urgent, as recommended by the UN when it established the Sustainable Development Goals - SDGs, in particular SDG 6 - Drinking Water & Sanitation (UN, 2015).

The thought of ownership of water bodies by appropriating land is a historical-cultural thought that has remained even after the Water Code (Federal Decree 14643 of 10/07-1934) and the National Water Resources Policy (Law 9.433/1997), which are based on the public domain of water (MARCIEL, 2000).

Conflicts over the use of water began to cause concern due to the increase in the number of occurrences and the number of families affected, and were almost always associated with land conflicts. But it was in 2002 that they gained greater visibility due to the separation in the accounting of cases by the Pastoral Land Commission (CPT).

The data provided by the Pastoral Land Commission (CPT, 2019) brought worrying figures, showing an increase in water conflicts from 2009 to 2017, which went from 45 to 197 in the country. The main culprits for the increase in conflicts have been the mining industry, which is most responsible for the occurrences, including murders, followed by conflicts in hydroelectric dam areas and on land dominated by farmers. These last two types of conflicts at national level occur in the Paraguay RH, as seen in the results presented.

In the Brazilian semi-arid region, conflicts are associated with private appropriation, which encompasses almost all cases and leads to impediment and/or reduction in access to water, as well as the degradation or pollution of water bodies and, finally, conflicts associa-

ted with the policy of dams and the construction of reservoirs, which are linked to conflicts involving resettlement projects for those affected, threats of expropriation and non-compliance with legal procedures (SILVA, 2019).

According to the ANA (2017), the growth in demand for water by the industrial, agricultural, energy and sanitation sectors and the greater variability of rainfall in recent years, most likely caused by global climate change, should make the debate on the multiple use of water increasingly present on the national stage. Future scenarios predict even more conflicts and new methods of managing water resources in Brazil will be needed, requiring greater transparency and a broad view of the issue, such as water pricing for each sector.

One of the sectors that needs to be closely monitored is the energy sector, since approximately 90% of the water dammed in reservoirs in the country goes to this segment, which makes it part of the solution and part of the problem, according to Cordeiro Netto (2020). In addition, demand is expected to grow, especially if we opt for the advance of thermoelectric and natural gas power plants, which are major consumers of water in the energy production process, as well as contributing to greenhouse gases.

Of the five instruments proposed by the Water Law, charging for water use is the least implemented in Brazil, with only six Brazilian basins with rivers under federal control (Doce, Piracicaba-Capivari-Jundiaí, Paraíba do Sul, Paranaíba - São Francisco and Verde-Grande) applying charging as a management tool. Of the six committees analyzed in this study, only one, CBH Sepotuba, has put the issue on the agenda, even forming a technical chamber to assess the feasibility and build a proposal.

Moraes (2019) pointed out that the lack of participatory management and the disorderly and predatory use of water and environmental resources lead to contamination with a loss of water quality which can, in the short term, generate conflicts of interest regarding the various uses of the basin's water resources. According to what was observed in the minutes of the RH Paraguay committees, the stretches that have permits for the dilution of effluents do not record the existence of conflicts over quality.

In a scenario of scarcity, pricing and the implementation of a robust integrated water resources management system are the tools that society, the government and companies need to conserve river basins and, consequently, water resources and thus mitigate the dispute over water, avoid damage to the economy and socio-environmental conflicts. However, this commodification of water goes against what was established in 2010 by the UN, when it recognized access to water as a right inherent to human life, freedom and dignity. Therefore, the human right to access to water can only be effectively fulfilled when all people, regardless of their ability to pay, have access to this essential resource (UN, 2010).

The complexity of the eternal dispute between the economic model and socio-environmental demands requires that water resource management be increasingly participatory and decentralized, so that society can act as an active agent in monitoring and controlling public policies, through committees and councils, thus being able to pressure and stimulate decision-making through an inclusive, fair and equal view of a resource that is the source of all life on the planet.

The central themes of the Basin Committee meeting minutes are shown in Figure 4:

CBH Cabaçal - The main issues discussed by the committee and recorded in the minutes were normative (41%), followed by water quantity and availability (35%), environmental quality (18%), Studies and Technical Chambers (5%) and, lastly, Complaints (1%).

CBH Jauru - The main issues debated by the committee and recorded in the minutes were normative (33%), followed by environmental quality (28%), water quantity and availability (28%), Studies and Technical Chambers (10%) and, lastly, Complaints (1%).

CBH ME Cuiabá - The main issues discussed by the committee and recorded in the minutes were normative (30%), followed by water quantity and availability (30%), environmental quality (30%), Studies and Technical Chambers (10%) and, lastly, Complaints (0%).

CBH São Lourenço - The main issues discussed by the committee and recorded in the minutes were water quantity and availability (35%), followed by regulatory issues (30%), environmental quality (23%), Studies and Technical Chambers (10%) and, lastly, Complaints (2%).

CBH Sepotuba - The main issues discussed by the committee and recorded in the minutes were normative (35%), followed by water quantity and availability (33%), environmental quality (28%), Studies and Technical Chambers (4%) and, lastly, Complaints (0%).

CBH Miranda - The main issues debated by the committee and recorded in the minutes were water quantity and availability (30%), followed by regulatory issues (30%), environmental quality (30%), Studies and Technical Chambers (10%) and, lastly, Complaints (0%) (Figure 04).

FINAL CONSIDERATIONS

The central themes of the minutes of meetings of the Basin Committees operating in the Paraguay river basin are water availability and environmental and water quality. However, profound changes are needed in terms of mobilizing social actors for critical and creative participation, and promoting technologies that are better adapted to the regional environment, in order to stimulate truly integrated, participatory and sustainable water resource management, especially considering the need for mediation of conflicts over water use. There is an urgent need for the CBHs to create channels for reporting conflicts over water use and environmental impacts, with wide publicity, so that local society knows about the work of a Committee and its importance for the population.

The absence of important instruments for the implementation of the National Water Resources Policy and, consequently, efficient water resources management, such as the Basin Plan, framing, licensing and charging in the CBHs of the Paraguay HR, make planning and decision-making difficult since they are tools for defining actions and guidelines for carrying out this management. The Miranda CBH has had a Basin Plan since 2016 and recently (December 2022) the Middle Paraguay UPG 2 Plan was published in Mato Grosso, which includes the areas covered by the Sepotuba CBH and the Cabaçal CBH.

The Basin Plans define the actions that should be carried out as a matter of priority and in the medium and long term to conserve water resources, indicating who is responsible, forecasting sources of funding, etc. at municipal, state and federal level. But even though the plans have been approved, there is a lack of commitment from public managers to carry out the planned actions. Granting, in particular, has limited governance, since the CBHs have no legal authority to grant it, only the management bodies. However, they can and should define the criteria and conditions for granting it, based on the basin's water balance, a fundamental aid for any decision-making and a basic item in the Basin Plans. The CBHs should be given the task of participating in decision-making regarding water allocation and other instruments provided for in the National Policy.

It is important to note that the committees are state bodies, which gives them a deliberative nature, but what we see are failures in their

performance and a weakening of their decision-making power, reflecting the fragility of the exercise of citizenship and democracy in our country. There is a lack of training for its members on the policy of managing and conserving water resources, as well as on legal and constitutional issues, rights and duties. Without this training, the tendency is for them to act only reactively, without the necessary commitment to the efficient management of water resources, demanding decision-making from the management bodies, the CERHs and, finally, the CNRH and, in the event of failure to act, making the appropriate official complaint to the MPEs and MPF.

On the other hand, on part of both CBH members and managers, there is often omission and connivance in order to distort and manipulate the implementation of the Water Resources Policy to favor the interests of certain users with greater economic and political power.

All of this is reflected in the general inaction of the CBHs to actually take decisions and act in favor of the effective conservation of river basins, as observed by the data from this survey, which found that the highest proportion of actions related to solving bureaucratic issues of the Committees' self-functioning and prioritizing decisions related to increasing the quantitative supply of water.

Thus, chronic problems such as the lack of water in the municipalities of Tangará da Serra and Nova Olímpia, or the recurring decrease in the flow of the Jauru River, which impedes navigation and the right of the riverside population to come and go, remain unsolved. The lack of sanitation, the state of degradation of the APPs and the misuse of the land in most of the basins of the RH Paraguay have also continued for decades without any effective action to improve them.

It is also necessary to set up the Federal CBH for the Paraguay River Basin Region as a matter of urgency, in order to guarantee commitment and respect for the results of the Paraguay PRH on the part of state and federal public officials. Another possibility would be to integrate the governance of water resources, including the possibility of joint management with the neighboring countries of Bolivia and Paraguay, which make up the Paraguay HR, through this Federal Cross-Border River Basin Committee.

Finally, it is necessary to take advantage of the radical nature of the concept of sustainability to bring about conceptual and attitudinal changes in the conservation and governance of water resources. A significant change requires a new ethical stance and a new attitude towards nature, understanding human limitations in understanding and intervening in environmental processes.

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