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GOVERNANCE, NETWORKS AND SOCIAL CAPITAL IN THE PLENARY OF THE BRAZILIAN NATIONAL COUNCIL ON WATER RESOURCES¹

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Introduction

The management of water resources in Brazil ceased to be a matter of government and became a matter of governance. Government is associated with political and administrative hierarchy, whereas, in governance, politics is produced within multi-actor structures, beyond a formal hierarchy, in which the government is considered a possible, but not necessarily the most important actor (Carlsson & Sandstrom, 2008). The reform of the water policy (Abers, 2010) in the country began within the context of new relations between government and society, which were established by the 1988 Federal Constitution, under the principles of decentralization and popular participation in the exercise of power. The Constitutional Charter laid the foundation for the changes in the water resources management model, by establishing water dominiality in the national territory, dividing the responsibilities of its management among Union, State and Federal District; and by granting the Union the jurisdiction to institute a national water resources management system and to define the criteria for granting water use rights (Art. 21, XIX).

Nearly ten years after the constitutional ruling, Federal Law No. 9433, of January 8, 1997, established the National Water Resources Policy (PNRH - Política Nacional de Recursos Hídricos) and created the National Water Resources Management System (Singreh - Sistema Nacional de Gerenciamento de Recursos Hídricos), thus giving the Federal Executive Branch the power to take the necessary actions for its implementation. The new model is a logical alternative to the political and administrative hierarchy in the Brazilian federal system by establishing that the water resources management should be decentralized up to the river basin level and it includes the participation of the public power, water resources users and communities. Thus, it seeks to move from a model centralized in a few government agencies devoted to the water resources subject (energy, sanitation,

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transportation, etc.) - without concern with the integration of public policies - to a model able to reflect the water management complexity in the territory. This new management system transposes the traditional political-administrative boundaries public policies are implemented in, thus imposing the need for reconciling management and planning by focusing on watersheds and on the Brazilian federal system. The multilevel governance is intrinsic to the formulation and implementation of water policies, even though the water policy reform remains unfinished due to governance gaps and ambiguities rooted in the reform process itself (OCDE, 2015).

The initiatives linked to the implementation of a modern water resources management are an interesting field for the study of public policy governance processes. They not only brought to the scene new decision makers at multiple scales, but also created new dynamics and approaches that represent a paradigm shift. It was done by incorporating principles such as the multiple and integrated use, the decentralization at the watershed level and the participation in water management. Thus, the openness to social participation in Singreh's collegiate spaces (Water Resources Councils and Watershed Committees) led to a networking of actors who, until then, did not gather to negotiate interests related to public policies that had interfaces with water resources management (Abers, 2010).

The National Water Resources Council (CNRH - Conselho Nacional de Recursos Hídricos) is one of the Singreh's collegiate spaces, which notably operates in the production of solutions that regulate and guide the implementation of the National Water Resources Policy (PNRH). It is a consultative and deliberative body of the Ministry of Environment (MMA - Ministério do Meio Ambiente) which was established by Law 9433 of 1997, and regulated by Decree n. 4613 of March 11, 2003. The CNRH Plenary provides a timely example for the study of governance processes and the effects of social capital. It brings together a diverse set of actors, at multiple levels, to discuss problems, which, by their nature, require collaborative solutions.

The Council is chaired by the head of the Ministry of Environment and its Executive Secretariat is ran by the group responsible for the water resources management within the same Ministry. The CNRH Plenary comprises 57 councilor members and their respective substitutes who represent, in different proportions, the following categories: i) Ministries; ii) State Water Resources Councils (CERHs - Conselhos Estaduais de Recursos Hídricos); iii) water resources user sectors; and iv) civil water resources organizations.

The current study aims to analyze the ability of CNRH Plenary to establish itself as a water governance arena by mobilizing networks and social capital to achieve the goals of the National Water Resources Policy.

New paradigm of public action: governance, networking and social capital

The scope of the governance concept is wider than that of Government - as formal structure of the State - and it is inserted in the mark of a new public action paradigm in which the central focus of the actions is not restricted to state organs and apparatuses. It also incorporates the relations between government and society, via multiple interactions (Gohn, 2001). Governance presupposes a shift from the traditional model - in which ruling was so-

something unidirectional, from the ruler to the ruled one - to a two-way model based on broad and systemic interactions among the various actors in the political arena (Kooiman, 2005).

Although the term governance is different from government, that alone does not mean that the governance systems are not able to reproduce the traditional hierarchy patterns in public decision-making or to prevent the creation of new patterns with similar biases. Governance does not necessarily mean the absence of hierarchy or authority in the decision-making. Only the empirical analysis of each context may indicate the hierarchy degree within the governance systems (Abers and Keck 2008).

The governance concept contains the implicit approach of social networks because it involves the interaction among government, market and civil society in order to solve problems or to create opportunities in the development of public policies (Kooiman, 2005). According to Rodhes (1996), interactive governance processes stimulate the formation of inter-organizational networks constituted by organizations that need to exchange resources - money, information, expertise, etc. - to achieve their goals.

Social Network Analysis (SNA) is a useful approach to study governance processes, since it considers that the relations among the actors, and not only their individual features, are explanatory elements for the results achieved by the network (Mertens et al, 2011). According to this approach, the human action is affected by the social relations the agents are immersed in (Mizruchi, 2006) and the network structure has significant impact on how the actors behave (Bodin & Crona, 2009). Considerable differences in public policy processes and results may be expected according to the structural features of the social networks that integrate them (Abers, 2010; Sandstrom, 2008).

According to Sholtz et al (2007), small social networks that are very connected or dense, increase the necessary credibility among actors for commitments around cooperative solutions, whereas broad networks with sparser connections increase the ability to exchange the necessary information for generating innovative solutions. The most appropriate structure of a social network is the one that takes into account the results to be achieved and the current phase of the governance process (e.g. Beginning, reorganization, consolidation). These two perspectives may indicate the most likely structural features to bring benefits to the collective action scope (Lin, 1999; Bodin & Crona, 2009).

Portes (1996) explains that social networks are not something naturally given. They should be built by investing in oriented strategies for the institutionalization of group relations that may be used as valuable resource for achieving common benefits. On the other hand, one must be careful so that, once created, social networks are not analyzed as something fixed and hardly modifiable, because the relevant governance networks are able to solve collective action issues (Benafont, 2004).

Social networking is central to the creation of social capital, because its structure can provide the necessary conditions for the access and use of the resources found in it. According to this perspective, social capital is captured from existing resources in networks and it implies some sort of advantage that emerges from the social structure and may be accessed and mobilized in purposeful actions (Lin, 1999; 2001; 2005). Variations in the features of social networks may increase or decrease their propensity to have certain quantity and quality of resources.

Identifying existing resources in the network and investigating the structural aspects of the interactions among the actors is a way to start pointing towards the mobilization of social capital in order to solve collective action problems. According to Lin's vision (2001), the concept of social capital involves, in addition to mere social relations, the entered resources and those accessed over the network and it is associated with three aspects: i) the availability of resources among the social network members; ii) the access to these resources through interpersonal relationships that form the social network and iii) the use of resources in purposeful actions.

The current study takes as methodological approach the concept of social capital suggested by Lin (2001) to analyze the following issues regarding the CNRH Plenary: 1) what are the resources available in the councilors network?; 2) what is the accessibility to these resources from the network structure?; 3) how does the network help achieving the goals of the National Water Resources Policy? The following sections present the adopted methods involving the collection and treatment of attributive data on actors and relations within the network, using Social Network Analysis - SNA. Subsequently, it presents the data analysis and discussion on the results.

Data and methods

Population

The study population encompasses CNRH Plenary members, totaling 57 councilor members and their respective substitutes, as well as the President and the Executive Secretary. The Plenary members' mandate lasts three years and they represent, in different proportions: i) the Ministries and Special Secretariats of the Presidency (51%); ii) the State Water Resources Councils - CERHs (17%); iii) the water resources user sectors (21%); iv) the civil water resources organizations (11%).

Data collection and processing

Regarding data collection, a questionnaire was applied to the councilor members and their respective substitutes, as well as to the President and the Executive Secretary, during the 26th Annual Meeting of CNRH, which took place on December 14, 2011. Between this meeting and the 34th Extraordinary Meeting of CNRH, on March 20, 2012, when the questionnaires collection were finished, the missing councilors were contacted by phone and e-mail to increase the return rate of responses. Fifty-five percent (55%) of the total distributed questionnaires (116) were returned. The analysis considered the questionnaires answered by the councilor members (53%) and their substitutes (47%), since both positions are often shared among different institutions in the CNRH Plenary, even within the same category of analysis. Sixty-three (63) questionnaires were returned and distributed as follows: 33 (52.4%) from the Federal Government (the President and the Executive Secretary of the CNRH were also considered in this category), 10 (14.3%) from the State Water Resources Councils,

12 (19%) from the water resources user sectors and 10 (14.3%) from the civil water resources organizations.

Resource availability

The resources available in the network were identified based on the councilors' attribute data (individual features and experiences), considering the following variables: a) representation they exert; b) education level and area of expertise; c) length of professional experience; d) participation in other collegiate bodies.

Resource accessibility

The councilors' network structure was analyzed to investigate the accessibility of the resources available in it. The analysis took under consideration that the interpersonal relations among councilors might be an indicating factor of resource sharing potential within it, thus contributing to the creation of social capital. The conversations among council members on the water management subject as well as on the CNRH agenda were taken under consideration to build the social network. Relational data were collected through the following quiz question: "To which of the current CNRH members do you usually talk about the subjects of water management and CNRH agenda?", followed by the list with the names of the councilors and the institution they represent, so that the respondents were able to identify (with an X mark) who they used to talk to. The analysis just considered situations in which respondents reciprocally cited each other.

The social network structure

After data collection, attributive data (councilors' individual attributes) and relational data (relationship among the councilors) were tabulated in an actor-actor matrix, prepared in Excel spreadsheet. Then, the Excel file was converted into text format to build the network and analyze the measures of interest for the current study. The file was opened in NetDraw software (Borgatti, 2002), which allows visualizing the network of actors. Once the network was built, the data were open in Ucinet software (Borgatti et al, 2002) to analyze their measures. In order to visualize the relation pattern among the analysis categories related to the councilors' attributes, the study applied the Ucinet software collapse function, which allows measuring the mean relations within each category of analysis and among categories, as described by Mertens et al (2011). Thus, the study analyzed how different groups featured by different attributes are intertwined, contributing to the sharing of different experiences the actors bring to the network.

The use of resources

The councilors' perception on the CNRH contribution to achieve the goals of the National Water Resources Policy, established by Law 9433 of 1997, was adopted as

indicative of the use of resources available in the network: I) ensuring the current and future generations the necessary water availability, with appropriate quality standards to its use; II) the rational and integrated use of water resources, including water transport, aiming at the sustainable development and; III) prevention and defense against critical hydrological events of natural origin or resulting from the inappropriate use of natural resources.

Results

Inventory of the available resources in the network

Table 1 presents the inventory of the available resources in the network, which are associated with the councilors' individual features and experiences.

The CNRH is a collegiate body with Federal Government majority presence, since Law n. 9433 of 1997, which created the collegiate body, established that the number of representatives in this segment could not exceed "half plus one" of the total number of CNRH members. The Federal Executive Branch occupies, in full, the limit of seats on the Board. Of the total councilors that answered the questionnaire, 52.4% were representatives of the Federal Government Ministries, including the President and the Executive Secretary. Although they have a big number of seats in the CNRH, the Ministries representation level was not as high as it would be desirable in terms of decision hierarchy within these bodies (OECD, 2015). The State Water Resources Councils have 10 seats in the Plenary, held by representatives of 20 Federation States, who take turns as full members and substitutes. The representatives in this category corresponded to approximately 14% of the respondents.

The category of water resources users encompasses irrigators; industry; providers and authorized hydroelectric power generation companies; fishermen and recreation-and-tourism water users; water supply and sanitation public service providers; and water transport. This category accounted for 19% of the respondents.

The Civil Water Resources Organizations, approximately 14% of the respondents, represent inter-municipal watershed associations and consortia; education and research technical organizations with interest in the water resources field; and non-governmental organizations, aimed at defending and diffuse collective interests of society.

As for the political segments represented in the CNRH, Federal Law defines that water resources management should count on the participation of Government representatives, Users and Communities. Most responding councilors (68%) represented the Public Power. This segment encompasses Ministries representatives as well as CERHs representatives, who usually work for the state government water resources management bodies. The representatives from water resources user sectors accounted for 19% of the responding councilors and those who represented the communities were 13% of the total sample. Representatives of the latter segment coincide, almost entirely, with the representation from Civil Water Resources Organizations.

Table 1 Available resources in the councilors' network

Councilors' attributes	N= 63 %
1.1. Representation in the CNRH	
a) Ministries	52.4
b) CERHs	14.3
c) Users	19
d) Civil Organizations	14.3
1.2. Representation in Politics	
a) Public Power	68.2
b) Users	19.1
c) Communities	12.7
1.3. Level of education	
a) Masters and/or Doctorate	54
b) Specialization	33.3
c) Graduate or less	12.7
1.4. Area of expertise	
a) Civil, Electrical or Sanitary Engineering.	39.7
b) Agronomic, Agricultural, Forest or Environmental Engineering.	17.5
c) Biology, Ecology, Pharmacy, Meteorology or Geology.	9.5
d) Social Sciences, Economic Sciences, Legal Studies, Administration or Statistics.	20.6
e) Others or not informed	12.7
1.5. Time working with the theme	
a) More than 5 years	66.8
b) 3 to 5 years	11.1
c) 0 to 3 years	22.1
1.6. Time working in the CNRH	
a) More than 5 years	22.2
b) 3 to 5 years	17.5
c) 0 to 3 years	60.3
1.7. Participation in other Singreh collegiate bodies	
a) Participate	49.2
b) Do not participate	50.8
1.8. Participation in collegiate bodies external to Singreh	
a) Participate	42.8
b) Do not participate	57.2

As for the councilors' length of professional experience with the subject and as CNRH members, most of them (66.8%) has been working for more than five years with the water resources management subject. On the other hand, 60% of respondents worked for 3 years or less as CNRH members. Therefore, they are in their first mandate as councilors.

The councilors have high education level, most of them (80%) had post-graduation titles (Specialization, Masters and/or Doctorate). As for the areas of expertise, more than half of the councilors (57%) were graduated in any Engineering branch. Forty percent (40%) of them graduated in Civil, Electrical or Sanitary Engineering. On the other hand, although CNRH is located in the Ministry of Environment institutional structure, less than 10% of the councilors are graduated in environmental sciences (Biology, Ecology, Geology, and Meteorology).

The number of councilors who participate in other collegiate bodies is quite impressive: almost half of them (49.2%) participate in one or more Singreh's collegiate bodies (Watershed Committees and State Water Resources Councils) and approximately 40 % participate in one or more collegiate bodies external to Singreh (collegiate bodies managing public policies at national, state and municipal levels).

Network structure and accessibility to the available resources

The CNRH councilors' network structure is an important variable that explains the potential for sharing the existing resources within it and, thus, the accessibility to these resources. Figure 1 shows CNRH Plenary conversation network on topics related to water resources management and the Council agenda. The nodes (or points) represent the CNRH councilors that answered the questionnaire and the lines connecting the nodes indicate the existence of reciprocal conversation relations among them.

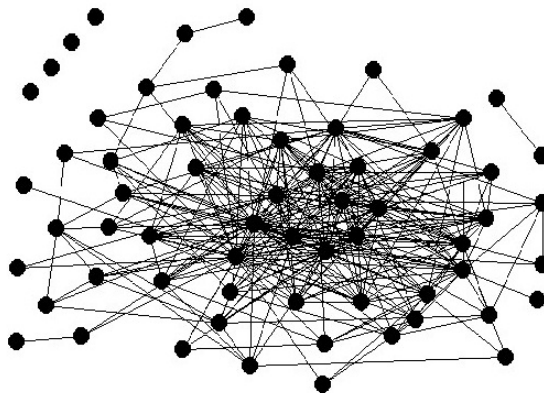


Figure I. CNRH Plenary Network.

The CNRH Plenary network consists of 63 actors (nodes) that are mostly connected with one or more actors. Only 6% of the respondents appeared entirely isolated from the network, and two of them were interconnected, but isolated from the others. In the center of the network, it is possible to see the most connected actors, although it is not possible to visualize a central actor among them.

Relations among the councilors considering their attributes

The relations among the councilors, considering the individual resources they bring to the network (individual features and experiences), are shown in Figures II to V. The circles represent the analyzed attribute categories and their diameter is associated with the number of actors (N) in these categories. The arrows represent the conversation relations among categories of actors and within their own category; its thickness is associated with the Average Number of Conversation Relations (NMRC - Número Médio de Relações de Conversa) of each group of actors within the network.

Representation they exert

Figure II depicts the conversation relations among councilors according to their representation in CNRH and their political segment.

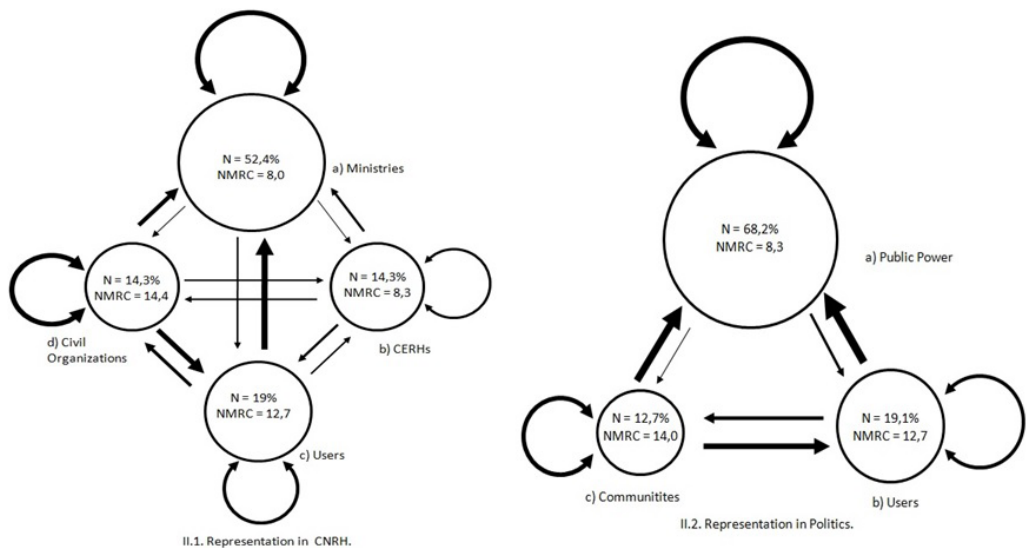


Figure II. Relations among councilors considering the representation they exert.

Illustration II.1, which refers to the relations among councilors considering the representation they exert in CNRH, shows that, although Ministries representatives are the majority in the Council Plenary, they have fewer connections within the network in comparison to the representatives from other categories. Each Ministry representative

is, on average, connected with eight other councilors and most of these connections occur among representatives within the same category. On the other hand, each representative of water resources civil organizations, with less representation in the Council, is, on average, connected with other 14 councilors and these connections mainly occur among councilors within the same category and water resources users. Each representative from user sectors is, on average, connected with other 12 councilors and most of these connections occur among Ministries representatives. Each CERHs representative is, on average, connected with eight other councilors and these connections are similarly distributed among the four representation categories.

The relations among councilors, considering the political segments they represent, are depicted in illustration II.2. Public Power representatives, although they are the majority in the Council, have fewer connections within the network than the representatives from the other two segments. Most of these connections occur with other representatives from the same segment. On the other hand, user segment representatives have more connections with Public Power representatives than they have inside their own category. On the other hand, the councilors representing the Communities, although in smaller numbers in the Council, have greater connection capacity within the network; each councilor in this segment is, on average, connected with 14 other councilors. These connections are equitably distributed among representatives of the three other political segments.

Education level and area of expertise

Figure III shows the pattern of connections among councilors considering their education level and area of expertise.

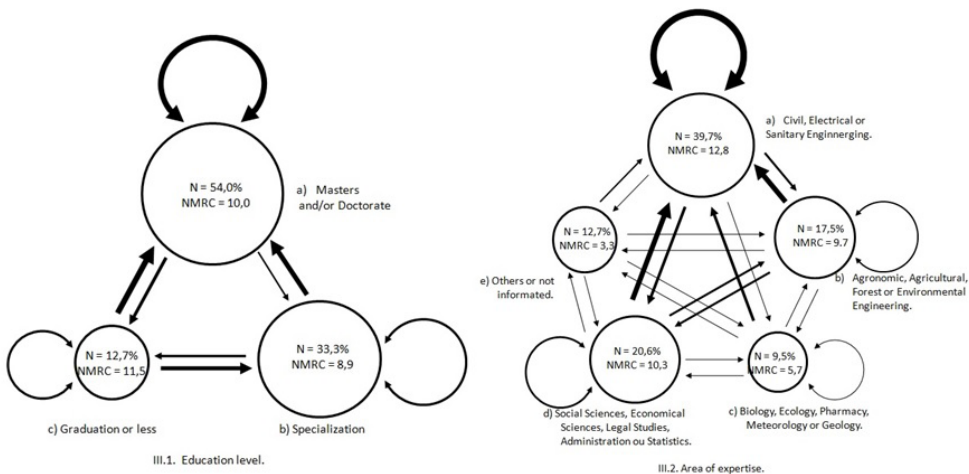


Figure III. Relations among councilors considering their education level and area of expertise.

By considering councilors' education level in Illustration III.1, no significant difference was found in the number of connections among councilors from the three groups within the network. Most connections of councilors with Master and/or PhD degree occur within the category itself and the councilors of the other two analyzed categories have more connections with higher education level councilors. Illustration III.2 shows that councilors graduated in Civil, Electrical and Sanitary Engineering have more connections within the network; each councilor in this category is, on average, connected with 13 other councilors, and most of these connections occur within the category. Councilors from all other areas of expertise also have more connection with councilors graduated in Engineering than they have within their own category.

Length of professional experience

Figure IV shows the connection pattern among councilors, it considers the length of their professional experience with water resource management and in CNRH.

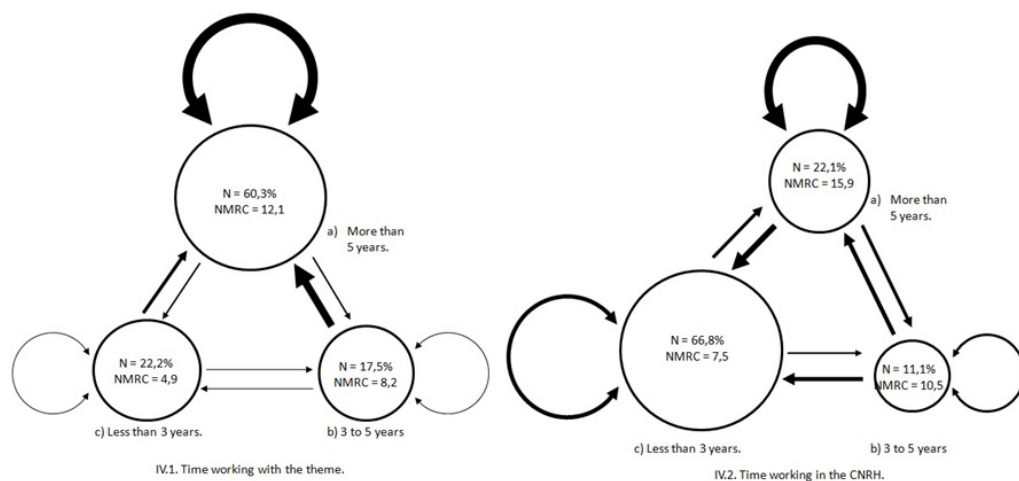


Figure IV. Relations among councilors according to the time of their professional experience.

Councilors with shorter professional experience on water resources management, although fewer in number, have more connections within the network than those who have larger professional experience. Illustration IV.1 shows that each councilor with less than three years of professional experience on the subject, on average, talks to 16 other councilors within the network, whereas each councilor with larger professional experience on the subject (over five years), on average, talks to seven other councilors.

When considering the length of professional experience as CNRH members, councilors with shorter professional experience (less than three years) are the majority. Their category has more connections within the network in comparison to other ones.

Each councilor with less than three years of professional experience in CNRH, on average, talks to 12 other councilors. Most of these conversations occur among councilors within the same category. On the other hand, each councilor with more than 5 years of professional experience, on average, talks to five other councilors.

Participation in other collegiate bodies

The conversation relations pattern among councilors participating or not in other Singreh collegiate bodies and in collegiate bodies external to Singreh is represented in Figure V.

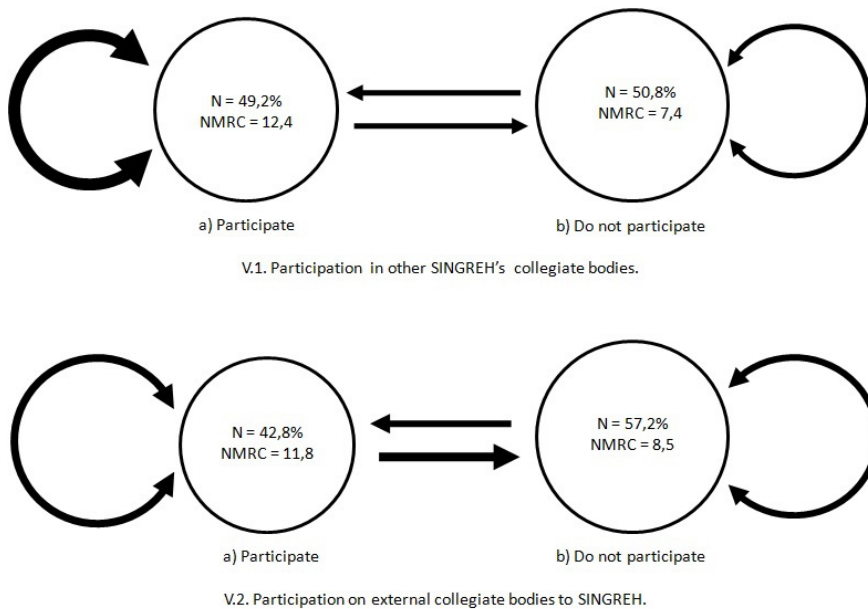


Figure V. Relations among councilors participating in other collegiate bodies.

Councilors participating in other collegiate bodies have more connections within the network than those who do not participate in them; each councilor participating in other collegiate body (ies) is, on average, connected with 12 other councilors, whereas those who do not participate are, on average, connected with eight other councilors. Illustration V.1 shows that most of the connections among councilors participating in other Singreh collegiate bodies occur within their own category, i.e., with other actors who also participate in Singreh collegiate bodies. As for the connections among directors participating in collegiate bodies external to Singreh, shown in illustration V.2, they occur with councilors who do not participate in these bodies.

Using resources available in the network

In the current study, the use of resources available in the network is associated with the councilors' perception on the CNRH's contribution to the achievement of PNRH goals, which, by nature, constitute collective action problems because they require solutions in which the community interests must come first to individual interests.

The vast majority of councilors (76%) believe that the CNRH greatly contributes to meet the first Policy goal, which is related to "ensuring the current and future generations the necessary water availability with appropriate quality standards to its different uses."

On the other hand, more than half of the councilors (56%) believe that CNRH little contributes or does not contribute to "the rational and integrated use of water resources, including water transport, in order to achieve sustainable development."

According to most councilors (65%), the Council little contributes or does not contribute to "the prevention and defense against critical hydrological events of natural origin or resulting from inappropriate use of natural resources."

Discussion

The emphasis on the intersectoral and multi-level management established by the National Water Resources Policy broadens the prospects around the subject, by introducing new viewpoints to the water resources management. The presence of actors with different backgrounds and experiences in Singreh collegiate spaces may be a starting point for building an interdisciplinary approach, which is key to the analysis of a complex and multifaceted object. The different forms of knowledge - often anchored in the local context - are strategic elements for water management. The councilors' length of professional experience in the subject and their participation as CNRH members also contributes to this diversity of experiences: the actors with more experience time usually bring out greater knowledge. On the other hand, the renewal of representations in the plenary may contribute to renew the ideas. Councilors' participation in other Singreh collegiate bodies or in those external to Singreh is also a positive factor for constituting social capital, thus creating bridges among the public policies discussed in these different spaces.

Although it is not immediately evident whether the greater diversity of backgrounds and experience within social networks is a positive or negative factor from the social capital viewpoint, presumably, a group of actors with different experiences and organizational identities contributes to a richer supply of new features and to public policy innovations. However, it is important to consider that the mere aggregation of the councilors' individual features and experiences - as human capital assets - is not in itself an advantage. As for the constitution of social capital, it is also necessary to access and use these resources, and the way these networks articulate gives the group a greater or lesser ability to meet the demands generated by these subjects (Jacobi & Monteiro, 2005).

Regarding the councilors' network, it is possible to see a dense and diversified structure, in which almost all the actors are connected by one or more relations. In

addition, the network brings together a variety of important individual experiences for innovating the public water resources policy. Groups with greater numerical representation in the Plenary are not necessarily the most connected ones. Similarly, the fact that the councilors represent the same group does not mean that they are more connected to each other than with councilors from other groups. It is also not possible to identify a central actor in the network, and few councilors are completely disconnected.

Although the content of the conversations among councilors has not been the subject of the current analysis, but only whether or not these conversation relations exist, the current study sought an association between the connections within the network and the councilors' perception on CNRH's contribution to the achievement of the Policy goals. The councilors' optimistic view regarding the Council's contribution to ensure water availability for current and future generations - subject of the first Policy goal - suggests that the councilors trust CNRH's ability to solve the medium- or long-term problems of collective action. Indeed, the Council can play an important preventive role regarding the future of water resources, since one of its duties is to regulate the Policy, fact that provides the basis for developing water management in the country. On the other hand, this view may also be imbued with wishes and hopes, more than with the pragmatism required to achieve the other two Policy goals.

The second Policy goal is related to the rational and integrated use of water resources. In this case, councilors' less optimistic view may be explained by the low connectivity among representatives from user sectors. The management of multiple uses is the essence of water resources management, and achieving this goal requires coordination among sectors (OCDE, 2015) and greater sharing of views in search of beneficial solutions for the community.

Although CNRH has a variety of resources to discuss issues related to the prevention and defense against critical hydrological events - the third subject of the Policy goal -, situations such as the low representation and connectivity among the States representatives (CERHs) - who experience in loco problems and could share experiences - and the relations restricted to the areas of knowledge available in the Plenary may explain councilors' more pessimistic view regarding CNRH's contribution to this goal.

In short, according to the councilors, although CNRH may contribute to issues that may affect water resources in the long term, it little contributes to address issues that require greater pragmatism and immediate action. The absence of desirable connections among the existing representations in CNRH may explain this perception. The herein presented analysis suggests that adopting more flexibly structured networks in collegiate management environments that mobilize around concrete problems may be more effective to deal with the water governance complexity.

The task of mapping the relations within the institutional arrangements of water governance may lead to important questions: What goals do we want to achieve with these social networks? Do we need that level of relational complexity? Can we reduce complexity and simplify the social networks? The answers to these questions will allow adjusting the network design to the desired result, by drawing oriented institutions to motivate certain type of collective action (Goldsmith, 2011)

Conclusion

The CNRH Plenary is a dense and diversified network of actors. However, the Council has not been fully playing its intersectoral coordination role and does little to achieve the goals of the National Water Resources Policy. It is necessary to review the water governance practices in Brazil, so that they facilitate the solution of the existing and eminent crises related to water resources management (OCDE, 2015)

The effective transition from the old to the new water management paradigm requires collaborative solutions, in which collective interests are above individual interests. As for the social governance of water networks, it is necessary to seek conditions and situations that favor the integration and management of interdependencies at multiple levels and among different actors (OCDE, 2015) and social learning, by recognizing the diversity of interests, arguments and knowledge necessary to deal with a complex problem such as water management (Jacobi, 2012). The study of the properties that emerge from the existing social networks in the negotiated water management environments may contribute to design more effective alternatives, focusing on the problems to be solved by creating such institutional arrangements (Goldsmith, 2011).

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GOVERNANCE, NETWORKS AND SOCIAL CAPITAL IN THE PLENARY OF THE BRAZILIAN NATIONAL COUNCIL ON WATER RESOURCES

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Abstract: The current paper aims to analyze the ability of the Plenary of the National Water Resources Council to constitute itself as a water governance arena, by mobilizing networks and social capital to achieve the goals of the National Water Resources Policy. According to the current study, the social network is central to the mobilization of social capital, because its structure can provide the necessary conditions to access and use the existing resources. Social Network Analysis (SNA) was used to answer the following questions: 1) what are the available network resources?; 2) what is the structure of the network and the accessibility to these resources?; 3) how does the network contribute to the achievement of the Policy goals? Although it has a dense and diverse network of actors, important factors in the formation of social capital, the Council little contributes to achieve the Policy goals. The current study suggests that flexible institutional arrangements, which networks of actors mobilize around specific problems, may be more effective for water governance in Brazil.

Keywords: Governance, Social Network Analysis (SNA), Social Capital, National Water Resources Council.

Resumo: O objetivo deste artigo é analisar a capacidade do Plenário do Conselho Nacional de Recursos Hídricos (CNRH) em constituir-se como arena de governança da água, mobilizando redes e capital social para o alcance dos objetivos da Política Nacional de Recursos Hídricos (PNRH). Neste estudo, a rede social constitui elemento central para a mobilização de capital social, pois sua estrutura pode oferecer as condições necessárias para o acesso e o uso dos recursos nela existentes. Utilizamos a Análise de Redes Sociais (ARS) para responder as seguintes questões: 1) quais os recursos disponíveis na rede de conselheiros; 2) qual a estrutura da rede e a acessibilidade aos recursos disponíveis; 3) como a rede contribui para o alcance dos objetivos da PNRH? Embora com uma rede social densa e diversificada, fatores importantes na constituição do capital social, o CNRH vem contribuindo pouco para o alcance dos objetivos da PNRH. O estudo sugere que arranjos institucionais flexíveis nos ambientes colegiados, cujas redes de atores se mobilizem em torno de problemas concretos, podem ser mais efetivos para a governança da água no Brasil.

Palavras-chave: Governança, Análise de Redes Sociais (ARS), Capital Social, Conselho Nacional de Recursos Hídricos (CNRH).

Resumen: El objetivo de este trabajo es analizar la capacidad del Plenário del Consejo Nacional de Recursos Hídricos (CNRH) para constituirse en una arena de la gobernanza del agua, movilizando redes y capital social para alcanzar los objetivos de la Política Nacional de Recursos Hídricos (PNRH) . En este estudio, la red social es fundamental para la movilización de capital, debido a que su estructura puede proporcionar las condiciones necesarias para el acceso y uso de los recursos que existen en su interior. Se utilizó el Análisis de Redes Sociales (ARS) para responder a las siguientes preguntas: 1) ¿cuáles son los recursos de red disponibles; 2) ¿cuál es la estructura de la red y el acceso a estos recursos; 3) cómo la red contribuye a la consecución de los objetivos de la Política? Aunque una red densa y diversa de actores, factores importantes en la formación de capital social, el CNRH contribuye poco a la consecución de los objetivos de la PNRH. El estudio sugiere que los arreglos institucionales flexibles, cuyas redes de actores se movilicen en torno a problemas específicos, pueden ser más efectivos para la gobernanza del agua en Brasil.

Palabras clave: Gobernanza, Análisis de Redes Sociales (ARS), Capital Social, Consejo Nacional de Recursos Hídricos (CNRH).
