

## Water governance networks in the literature from 2019 to 2022

Cruz Garcia Lilies

Department of Social Work, Autonomous University of the State of Mexico

**\*Corresponding Author:** CruzGarciaLilies, DepartmentofSocial Work, Autonomous UniversityoftheStateof Mexico

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### Abstract:

Governance emerges when the parties to a conflict move from their differences to their similarities through some instrument for managing their needs, expectations and resources. The objective of this work was to unveil the water agenda in the observation of expert evaluations regarding the relationship between findings reported in the literature from 2019 to 2022 in institutional repositories such as CLASE, LATINDEX and REDALYC. A documentary, exploratory, cross-sectional and retrospective work of indexed sources was carried out. A network structure of trajectories was found between categories of asymmetries, consensus and responsibilities that demonstrate the legitimacy of tariff policies: forgiveness, subsidies and scarcity. In relation to the Objectives of Sustainable Development in its water category, the scope and limits of the study are discussed.

**Key Words:** Agenda, Governance, Water Resources, Public Services, Networks.

### Introduction:

Complexity is that approach that from multiple natural or social sciences aims to account for the recursion, emergence or fractality of a phenomenon. In the case of the Davos Forum, science converges around a common problem: The economy of an increasingly complex world in the relationships between its economic and political actors, as well as between public and private sectors (Bautista et al., 2018 ). What is new is that the relationship between humanity and nature is increasingly distant ( Juarez et al., 2020). It is about sustainable development that obliges stakeholders to conserve the environment for future generations (Limon et al., 2019). In other words, science as an observatory and record of the unsustainable economic reality is a self-verifying testimony of the complexity of the relationship between humanity and nature.

From the social sciences, proposals to scrutinize the unsustainable reality between the availability of resources and human needs have been explained as a fractal (Carreon et al., 2020). The complexity of a fractal phenomenon is that it repeats itself in its structure of relations between center and periphery. In this way, globalization is an economic condition of the fractality of increasingly limited resources.

Globalization allowed resources to be available in the economic centrality where the institutions and organizations that decide on resource transfers are agglomerated (Fierro et al., 2018). From the periphery, resources were transferred, after transformation into

products in the industrial semi -periphery , towards the centrality of the cities. The United States and Europe, from a geopolitical fractal logic, are financial and economic nodes that attract natural resources for the satisfaction of their current generations of citizens without considering their future descendants (Llamas et al., 2019). This fractal globalization of the availability of resources generated an anthropocentric consumer consciousness.

Anthropocentrism is distinguished by its high degree of consumerism without considering future generations (Rivera et al., 2015). It is assumed as an exclusive right of current humanity with respect to the resources it can consume (Rincon et al., 2019). Against this dominant ideology stands ecocentrism that puts the availability of resources before any need of any generation. This is a complex nature conservation approach. The foundation of econcentrism is in the recursion that assumes the relationship between resources and needs as non-linear.

ecocentric ideology as an alternative to the right to private and public resources ( Garcia et al., 2018). In order to conserve resources, ecocentric governance suggests assuming that the environment is common to any human generation (Lopez et al., 2019). Therefore, the fractality of the central node cities with respect to the suburbs or periphery, is established from a logic of public resources in which the periphery pays tribute to the centrality. Or, from the private resources of the centrality that give value to the common resources of the periphery.

ecocentric governance, the centrality and the periphery share the availability of resources (Garcia et al., 2019). An increase in resources in the periphery impacts centrality and vice versa. In this way, the scarcity of resources affects both entities (Sanchez et al., 2019). In an energy or water crisis, the periphery does not solve the necessary work to pay taxes to the centrality. Even a bonanza in the centrality inhibits the development of the periphery accustomed to scarcity and without a strategy for abundance.

Unlike anthropocentric governance that distributes resources according to asymmetric relationships between centrality and periphery, ecocentric governance assumes a co-management model in which centrality and periphery are interdependent (Bustos et al., 2021). An example is the coupling of central and peripheral institutions in the face of a resource crisis.

ecocentric governance is distinguished from other forms of state, government regimes or political systems in terms of its logic of construction and deconstruction of asymmetries between rulers and ruled (Garcia et al., 2021). The purpose of ecocentric governance is to achieve intercultural co-government (Hernandez and Garcia, 2019). That is, each minority will be represented to have a voice and a vote in decisions regarding resources (Gaza et al., 2021). Ecocentric governance achieves its goal of co-government based on the recognition of differences, negotiations, agreements and co-responsibilities between stakeholders, political and social actors, as well as public and private sectors.

The conflict between the public administration and the users of public resources and services represents the beginning of the deconstruction of anthropocentric governance (Carreon et al., 2014). The asymmetries between the policies of forgiveness, subsidies and unit cost inflation is the beginning of a dialectic between the parties involved (Martinez et al., 2019). State management instruments such as the forgiveness of payments, the reduction of debts or the increase in costs are disseminated as conflicts increase.

However, the structure of water governance has not been dimensioned and corroborated (Morales and Garcia, 2019). Therefore, the objective of this work was to establish the axes and topics of discussion in the research agenda concerning the conflicts, agreements and co-responsibilities between the parties involved in water problems such as scarcity, shortages, unhealthiness and dearth of water resources, resources and services that are considered common, but are managed as public goods.

Are there significant differences between water governance in the literature from 2019 to 2022 with respect to the evaluations of expert judges on the topics?

The premise that guides the present work warns that governance is a system of discussion of asymmetries, agreements and co-responsibilities observable in the public administration of water resources and services (Garcia et al., 2020). In this sense, the conflicts between the rulers and the ruled are recorded in the literature from 2019 to 2022 (Molina et al., 2019). That is, the confrontations, rallies, boycotts, and kidnappings reflect the impact of policies of forgiveness, subsidies, and rate increases (Juarez et al., 2019). Once the differences between the parties have been recognized, the social representations of negotiation, debate, agreements and co-responsibilities underlie them, which can be specified in the signing of contracts, or in the social imaginary around government justice and the election of party candidates. in government or opposition.

## Method

From the phenomenology oriented towards the *epojé* that consists of suspending subjectivity to appreciate reality without perceptual or representational biases, it was possible to consolidate a qualitative, cross-sectional, retrospective and documentary study with a sample of summaries published in the specialized literature and updated from 2019 to 2022 in the institutional repositories.

The Inventory of the Research Agenda was used, which records the relationships between summaries and the theoretical and empirical frameworks of the governance of water resources and services (Carreon et al., 2015). It includes questions regarding the relevance of the findings with respect to their contribution to the state of knowledge.

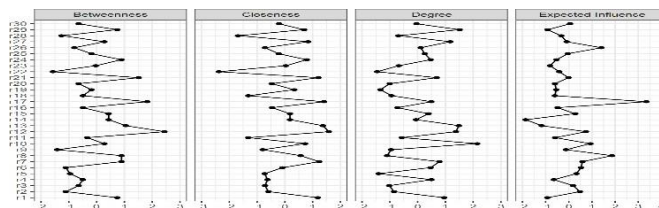
Expert judges on private, common and public property issues such as water resources and services were contacted through institutional mail. The objective of the study and those responsible for the project were reported. The instrument was sent considering the protocol of the American Medical Association and the American Psychological Association regarding studies with humans in risk situations such as the pandemic (Molina et al., 2021). The confidentiality and anonymity of the experts was guaranteed, as well as the dissemination of the results through the open science protocol (Quiroz et al., 2020). The judges rated the relationship between the abstracts selected from the institutional repositories with respect to the theoretical and empirical frameworks of water governance (Sanchez et al., 2020). In a second round, the results of comparing the initial ratings with the general averages were disseminated, inviting the experts to reconsider or ratify their criteria. In a third phase, the reconsideration or reiteration of the initial rating was recorded.

The data was captured in Excel and processed in JASP version 14. The centrality, grouping and structuring coefficients were estimated in order to test the null hypothesis regarding the significant differences between the findings reported in the literature from 2019 to 2022 with respect to the evaluation criteria of expert judges regarding the relationship between the summaries and the theoretical and empirical frameworks of water governance.

The values that were close to the unit were assumed as evidence of centrality, grouping and structuring (Quintero et al., 2018). The results close to zero as evidence of a spurious relationship between the nodes and edges analyzed.

## Results

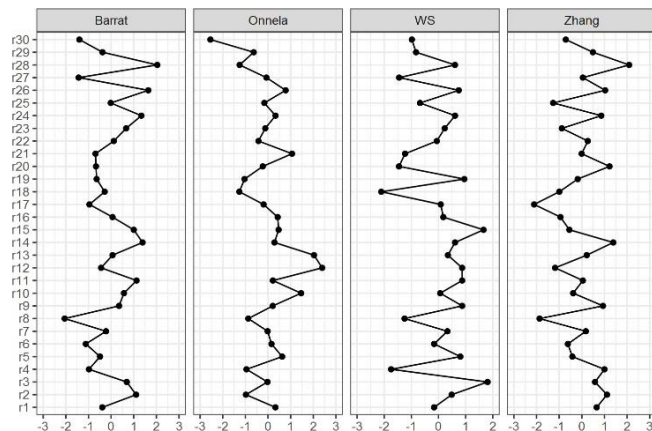
Figure 1 shows the centrality values that refer to the distance or proximity between the nodes and the edges. It is observed that the categories of governance, related to conflicts, agreements and co-responsibilities in the literature from 2019 to 2022 were qualified by the experts as close to the theoretical and empirical frameworks



**Figure 1 . Centrality of water governance in the literature from 2019 to 2022**

### Source: Prepared with study data

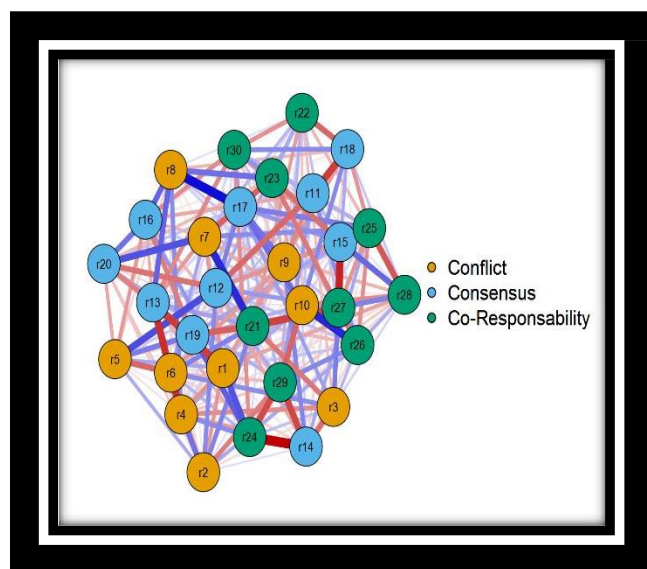
Figure shows the pool values that explain the paths a node must traverse to reach an edge. The prevalence of groupings related to the phases of governance is observed: conflict, agreement and co-responsibility. That is, the judges distinguish the governance phases based on their knowledge of the literature from 2019 to 2022.



**Figure 2 . Water governance clustering in the literature from 2019 to 2022**

### Source: Prepared with study data

Figure 3 shows the relationships between the categories that explain the structuring of water governance. It is inferred that the administration of public resources and services revolves around the phases of governance according to the literature from 2019 to 2022 and the corresponding evaluations of the experts.



**Figure 3 . Structure of water governance in the literature from 2019 to 2022**

### Source: Prepared with study data

In summary, the findings of the present work suggest that there are no significant differences between the findings published in the literature from 2019 to 2022 regarding the evaluation criteria of the

judges in three qualifying rounds. In other words, water governance is a central axis of the research agenda, although the centrality, grouping and structuring suggest the prevalence of governance phases which would suggest ecocentric policies .

### Discussion

The contribution of this work to the state of the matter lies in the establishment of a research agenda related to governance. The null hypothesis regarding significant differences between the theoretical and empirical structure with respect to the criteria judged by experts indicate was not rejected. The implications of this null hypothesis regarding the anti-COVID-19 policies in their water version suggest that the public administration must continue with the policies of forgiveness, subsidy and increase in rates. From the conflicts between authorities and users it is possible to expect a symbolic agreement ( Carreon et al., 2016). The parties involved advance towards a social representation of water resources and services that legitimizes tariff policies. In such a scenario, co-responsibility can be achieved if the parties build an agenda of common goods. In other words, the findings reported in the literature were supported by expert judges regarding the centrality, grouping, and structuring of governance phases. It means then that the conflicts, agreements and co-responsibilities between authorities

and users can be considered as a continuum of governance. A systematic review and meta-analysis of homogeneous random effects will corroborate the prevalence of governance phases and their structure of dependency relationships.

However, the Sustainable Development Goals (SDGs) propose a local action that advances and consolidates in a multilateral treaty. Rather, this study suggests that the interaction between political and social actors, as well as public and private sectors, be considered regarding the administration of fees for remission, subsidy or famine. The SDG proposal follows two predominant routes, one from the top down in which the comprehensive management of water resources guarantees fair payment for water units according to their availability ( Carreon et al., 2017). Or, the bottom-up path in which the authorities establish two-way channels with users, their demands, needs and expectations. Both routes have been questioned for their electoral reorientation (Sandoval et al., 2021). That is, governments offer a water supply in exchange for votes. The present work rather proposes that agreements and co-responsibilities be reached based on the availability of resources, as well as the projections of scarcity in the future and the needs of future generations. It is recommended to formalize the water governance proposal consisting of the interaction between the parties. It is possible to model the conflicts, agreements and co-responsibilities in different simulated scenarios of water problems. In order to be able to anticipate unfavorable scenarios and promote governance scenarios, it is recommended to extend the study to international repositories that observe various water resource administration demarcations.

### conclusion

The objective of the present study was to establish the research agenda by comparing the selected findings of the literature from 2019 to 2022 in institutional repositories against the evaluative criteria of expert judges on the subject. The results show that the rate policies of forgiveness, subsidies and scarcity are linked to agreements and symbolic co-responsibilities between the authorities and the users. In the sample of findings consulted and evaluated, governance networks can be seen that reach levels of centrality, grouping and structuring around asymmetrical relationships between



the parties, although oriented towards the exchange of water services for votes. In other words, the literature warns of demonstrations, confrontations, rallies, kidnappings or boycotts between users and the police, although agreements and real and symbolic co-responsibilities between the parties are also reported. In other words, the water governance that is built between political and social actors, as well as between the public and private sectors, follows a negotiation sequence that triggers the acceptance of tariff policies in a context of risk such as the pandemic.

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