



Showcasing the Governance Assessment Tool as an “effective” contextual approach to water governance

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Received: October 10, 2024

Revised : February 20, 2025

Accepted : June 20, 2025

Online : October 31, 2025

Abstract

Addressing water challenges requires policies tailored to their governance context. The lack of such consideration is among the reasons why decentralisation, privatisation, and integrated water resources management have not achieved their intended outcomes. The Governance Assessment Tool (GAT) helps improve the effectiveness of water policies. GAT assesses how effective the implementation of water policies is and helps to develop policy recommendations to improve the effectiveness of the policy. As the purpose of this paper is to showcase the capabilities of GAT, we present its application in two different governance contexts (Iran and Mexico), to the European one where GAT was created. In our case selection, we focus on different challenges in water services (water supply and sanitation). In Iran, it is a single case study that assesses the groundwater policy, and in Mexico, it is a comparative case study of three sub-basins where the wastewater treatment plant policy is assessed. For each case, the results provide insights for improving policy effectiveness, such as the need for farmer participation in Iran and the need to enhance coordination by subnational governments in Mexico. These results showcase the GAT's capability to assess in-depth single case studies (Iran) and comparative analysis (Mexico). Moreover, GAT allows systematisation to navigate our understanding of complex challenges and provides a framework for academics and practitioners to understand the context and to propose tailored policies.

Keywords: *Governance Context, Wastewater Policy, Underground Water*

INTRODUCTION

According to the United Nations World Water Development Report 2024: Water for Prosperity and Peace, around half of the world's population experiences severe water scarcity for at least part of the year, and sanitation remains a great challenge since 3.5 billion people lack access to such a service. To address these challenges, effective and equitable water allocation is required (UNESCO, 2024). Hence, water management requires tailored policies that can be effectively implemented within the governance context instead of normative approaches that aim to provide solutions worldwide. Yet, many developing countries have adopted recommendations for decentralisation, privatisation, and integrated management of their water resources (Casiano Flores, 2023). While these approaches have had the best intentions, they have not achieved the intended outcomes regarding water services provision due to the lack of consideration of the context where such reforms are implemented (Casiano Flores, 2023). From a practitioner and scholarly perspective, their major bottlenecks continue as part of the debate (Chakraborty et al., 2024). This debate has reached international organisations such as the OECD and the United Nations, which have reflected on the need for assessments that consider the governance context. Such contextual understanding is important to implement tailored policies that can address water management challenges in a more effective manner.

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In this paper, we present a governance context approach that understands governance as the combination of the relevant multiplicity of responsibilities and resources, instrumental strategies, goals, actor-networks, and scales that form a context that, to some degree, restricts and, to some degree, enables actions and interactions. This definition relates the governance context to the likelihood that planned or proposed interventions can be implemented and realised in practice. By doing so, it covers the “effectiveness” part of the OECD Principles on Water Governance. In other words, our definition relates the governance context to the likelihood that planned or proposed interventions can be implemented and realised in practice. This approach is called the “Governance Assessment Tool” (GAT), developed at the University of Twente in the Netherlands. Its roots are in a successful EU research framework project, and it has had several stages of further development since then (e.g., [Boer de and Bressers, 2011](#); [Bressers and Kuks, 2013](#); [Bressers et al., 2016](#); [Casiano Flores, 2017](#); [Özerol and Bressers, 2023](#)).

Understanding the relevance of contextual approaches and based on our GAT knowledge, this paper aims to showcase GAT's capabilities to identify water management challenges in various contexts. This knowledge can facilitate the proposal of tailored interventions. To do so, we present its application in two different governance contexts, to the European context where GAT was initially developed. Moreover, these two cases (Iran and Mexico) were selected due to their governmental, economic, social, and cultural differences. In each case, we analysed different water issues, contributing to showcasing GAT capabilities. In Iran, we use the results of research on groundwater for supply service, and in Mexico, on the wastewater treatment policy. Despite the difference between the cases, it is important to highlight that the two countries, like many others worldwide, underwent legal reforms to improve water management in the 90s and the 2000s. These reforms were inspired by the Integrated Water Resource Management (IWRM) approach. However, they are still facing important water challenges.

LITERATURE REVIEW

Although this paper focuses on GAT, we acknowledge that in the last decades other frameworks considering the governance context have been developed. Some examples are the Collaborative Governance Framework ([Ansell & Gash, 2008](#)), the Management and Transition Framework ([Pahl-Wostl, 2009](#); [Pahl-Wostl et al., 2010](#)), the heuristic framework based on the distributive theory of institutional change ([Thiel & Egerton, 2011](#)), the OECD Water Indicator Framework ([OECD, 2018](#)), the Ten building blocks for sustainable water governance ([Van Rijswick et al., 2014](#)) and the United Nations approach ([United Nations, 2021a, 2021b](#)).

GAT development started in 2013, and researchers in many countries have extensively applied it ([Özerol and Bressers, 2023](#)). In the field of water policy, 19 projects were conducted in 16 countries, both developed and developing countries. More recently, six studies were added that applied the GAT in other fields, mostly in developing countries. This has resulted in dozens of journal publications, book chapters, and theses. To exemplify this, we conducted a literature review in the academic databases of Web of Science and Scopus, using as keyword “Governance Assessment Tool”. While many of the results overlapped, we identified 22 documents in Web of Science and 35 in Scopus, from which a total of 27 used GAT ([Al-Khatib et al., 2017](#); [Battles-de la Fuente et al., 2024](#); [Boer de et al., 2016](#); [Bressers et al., 2016b](#); [Browne et al., 2016](#); [Casiano Flores et al., 2019](#); [Casiano Flores et al., 2016, 2021, 2023](#); [Casiano Flores et al., 2019](#); [Casiano Flores & Cromptvoets, 2020](#); [Gana & Hoppe, 2017](#); [Gunawan et al., 2019](#); [Jain et al., 2017, 2020](#); [Kreiner & Franco-García, 2019](#); [La Jeunesse et al., 2019](#); [Larrue et al., 2016](#); [Latanna et al., 2023](#); [Lordkipanidze et al., 2019, 2020](#); [Maia et al., 2019](#); [Özerol and Bressers, 2023](#); [Sievers et al., 2025](#); [Troeltzsch et al., 2015](#); [Tröltzsch, 2019](#); [Tröltzsch et al., 2016](#)). As shown in Figure 1, most of these documents were scientific articles.

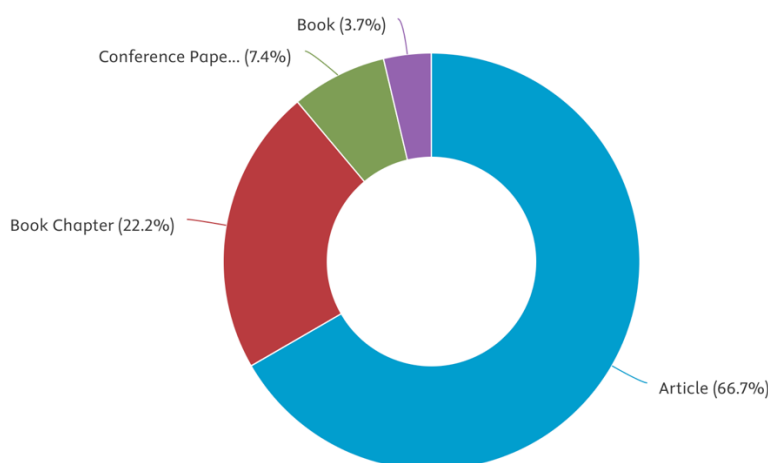


Figure 1. Percentage of GAT's type document identified in the Scopus literature review (Source Scopus).

From the 27 documents, 26 focused on specific sustainability challenges, being the most studied being related to water challenges, droughts, floods, and wastewater. Figure 2 shows the results.

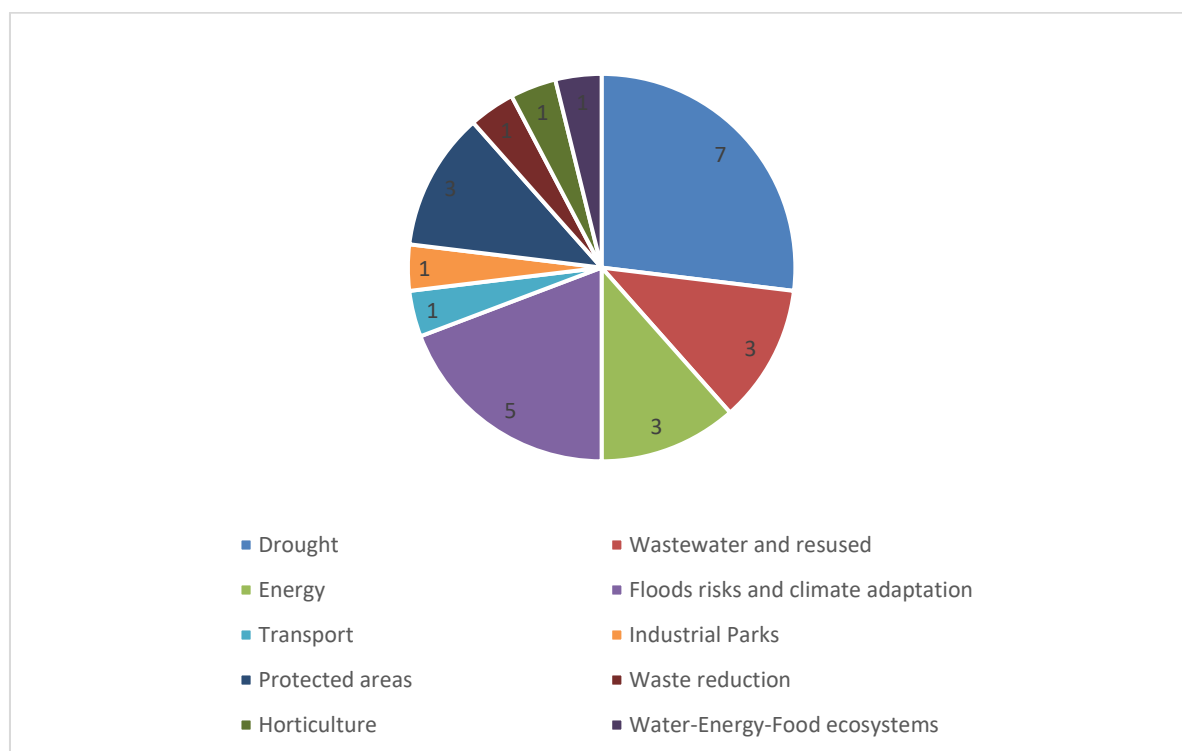


Figure 2. Sustainability challenges in which GAT was applied to understand the governance context.

The purpose of this review is to exemplify the GAT applications and not to provide an exhaustive list of publications. We are aware that there are studies that were not identified with the keyword ([Mirnezami et al., 2020](#); [Vikolainen et al., 2017](#)). Still, based on our GAT knowledge, we can confidently state that while those articles have used GAT, none of them had as the objective to

showcase its capabilities.

RESEARCH METHOD

The GAT focuses on the governance conditions that may hinder the implementation of water resource management policies and projects in complicated and dynamic environments. Governance is viewed as a context for measures and their application rather than the action itself. The specific circumstances of the cases in which actors operate inevitably influence what they want, believe, and can do.

Governance is often said to differ from earlier developed concepts like government or policy in that it emphasises the multi-level and multi-actor character of all forms of steering of any specified (sub)sector of society. In our approach to the concept of governance, we not only discern the multiplicity of the levels and the actors involved but also apply the idea that the concept of governance assumes multiplicity to the dimensions of the older concept of policy: goals, instruments, and the means to apply them (Howlett, 2019). In each governance context, multiple goals will likely be involved, along with instruments and means to apply them (Lordkipanidze et al., 2019).

Thus, we discern five dimensions of governance. Governance assumes that policy implementation has a general multi-level character, which involves levels and scales (not necessarily administrative levels). It also assumes the multi-actor character of policy implementation, which involves different actors and networks. Furthermore, governance assumes the multi-faceted character of the problem perceptions and resulting goal ambitions of policy implementation. This means that there are different problem perceptions and goals that are associated with policy implementation. Governance also assumes the multi-instrumental character of policy strategies for policy implementation, which involves different strategies and instruments. Lastly, governance assumes a complex multi-resource basis for policy implementation, which involves responsibilities and resources for implementation.

In the six-country Euwareness project, on water resource protection under the EU Water Framework Directive (Bressers & Kuks, 2004), this approach to governance was combined with parts of the Institutional Resource Regime (IRR) framework (Knoepfel, 2007), which builds further on the Institutional Analysis and Development (IAD) framework by Ostrom and colleagues. From IRR, especially the use of two criteria for successful resource regimes was incorporated: extent and coherence. Where extent in IRR is just used for the degree to which all users and uses of the resources are regulated, and coherence is applied to the internal coherence within relevant policies and property rights and the external one between them; in the Euwareness project, both criteria were applied to all five dimensions of governance. The study showed a significant effect on the sustainability of water resource use.

Later, in the New Rurality project, sponsored by the French Research Council, long-term implementation of river restoration was studied in which the “complex and dynamic” nature of such processes led to the addition of two extra criteria to determine the degree of supportiveness of the governance context: flexibility, allowing for adaptive strategies of dealing with obstacles and chances during processes of more than a decade and intensity, the combined pressures to move into a more sustainable direction (Boer de & Bressers, 2011).

Four quality criteria were considered and applied to each dimension: 1) Extent, the degree to which relevant aspects are considered; 2) Coherence, the degree to which all different aspects reinforce each other; 3) Flexibility, the degree to which multiple roads can be taken to support the achievement of the goals and 4) Intensity, the degree to which the governance regime urge and support change. Together, this matrix of 20 cells combining dimensions and qualities (See Table 1) identifies the degree to which the governance context supports or restricts the effective

implementation of water management interventions and helps provide policy recommendations to improve the effectiveness of the policy. Each of the cells has some guiding questions and can be assessed as supportive, neutral, or restrictive (see the matrix and further explanations, [Bressers et al., 2016](#)). Taken together, the degree of supportiveness can range from low to high.

Table 1. Water governance matrix ([Bressers et al., 2015](#))

Governance Dimension	Qualities of the governance regime			
	Extent	Coherence	Flexibility	Intensity
Levels & Scales	Is there participation of all the relevant government levels?	Are the government levels working together?	Is it possible that, given the issue at stake, lower or higher government levels take the lead?	Is there a government level or levels promoting the innovative projects?
Actors & Networks	Are all relevant actors involved?	Are government and non-government actors working together and trusting each other?	Is it possible to include new actors to create social capital and to support each other's tasks?	Is there a non-government actor or a coalition of actors promoting the innovative projects?
Problem Perspectives & Goal Ambitions	Are the different perspectives being considered?	Are the key actors sharing a similar goal and vision?	Are there opportunities to reassess goals?	How different are the goals from the status quo?
Strategies & Instruments	Are all the instruments and strategies being considered?	Are there overlaps or conflicts among the different strategies and instruments?	Are there opportunities to combine different instruments or strategies?	Are the current strategies and instruments appropriate for the innovative projects?
Responsibilities & Resources	Are responsibilities clearly assigned with sufficient resources?	Is there collaboration across institutions to support each other's responsibilities and to combine resources?	Is it possible to pool responsibilities and resources without jeopardizing accountability?	Are the resources sufficient to implement the measures needed for the intended change?

We used GAT to assess the implementation of groundwater conservation in Iran ([Mirnezami et al., 2020](#)) and the wastewater treatment plant policy in central Mexico ([Casiano Flores et al., 2019](#)). For both cases, the data sources included secondary data from technical reports, legal texts including laws, policies, strategies, national development plans, news articles, and official

webpages of organizations. For the Iranian case, 74 semi-structured interviews were undertaken (as primary data) with informant farmers in a deeply groundwater-dependent area, as well as the national, regional, and local authorities (Mirnezami et al., 2020). Meanwhile, for the Mexican case, 66 semi-structured interviews were conducted with national, subnational, and water utility authorities, along with the economic actors and non-governmental organisations (Casiano Flores, 2017).

Iran has an intense groundwater extraction (Giordano, 2009). The number of groundwater extraction points increased from 546,000 to more than one million during the period 2002 to 2015. Paradoxically, at the same time, the extracted water volume declined from 74.6 to 61.3 km³/year. This decline highlights the reduced capacity of aquifers to provide fresh/usable groundwater resources. The annual extraction of 5.4 km³ of nonrenewable groundwater resources has caused a constant negative trend in groundwater level, ranging from 10 to 100 cm per annum in diverse geographic regions, with a mean decline of 49 cm per year at the national scale (Noori et al., 2021). The condition has also been worsened by a reduced rate of groundwater recharge (Noori et al., 2023). The Iranian government is responsible for managing and regulating groundwater resources according to the law (Mirnezami & Bagheri, 2017; Nabavi, 2017). Since 1968, several reforms have taken place to support groundwater conservation and coordinate groundwater management; however, their conservation policies have been ineffective (Mirnezami et al., 2020).

In Mexico, the GAT analysis was applied to the wastewater treatment policy. Currently, the country still faces important challenges in its wastewater treatment policy, as it only treats approximately 67.5% (OECD, 2024), after decades of important investments. The GAT application was conducted in three basins: Puebla-Atoyac in the state of Puebla, Atoyac-Zahuapan in Tlaxcala, and Presa Guadalupe in the State of Mexico. These three cases present a variability in their multi-level governance structure. Figure 3 shows the structural variations in terms of institutions and governmental actors.

Cases			
	Alto Atoyac Puebla	Alto Atoyac Tlaxcala	Presa Guadalupe
Commission status	No Commission at the sub-basin level	Commission created at the sub-basin level. However, it was not implemented	Commission created at the sub-basin level and it has been implemented
Federal government	Federal level: CONAGUA Basin Organisation & Delegation in Puebla	Federal level: CONAGUA Basin Organisation & Delegation in Tlaxcala	Federal level: CONAGUA Basin Organisation & Delegation in Estado de Mexico
State government	State government of Puebla	State government of Tlaxcala, implementing a regionalisation policy	State government of Estado de Mexico
Municipal government	Water utilities at the municipal level	Water utilities at the municipal level	Water utilities at the municipal level

Figure 3. Governance structure of the selected cases (Casiano Flores, 2017)

The three cases are located in the central part of Mexico. The decentralisation efforts that started in 1980 by the federal government have not seen significant improvements in water utilities' performance; while economic resources have been mainly used to build or renovate plants, there are operational problems or abandonment of wastewater treatment plants across all three cases (Casiano Flores, 2017). Mexico adopted via a national reform in 1992 an IWRM that has resulted in contradictory governance structures (Casiano Flores, 2023). The main driver of the water policy, including wastewater treatment in Mexico, is the National Water Commission (CONAGUA) via the Governmental Commission of Regulation and Follow-up (CORESE). CORESE is responsible for implementing wastewater policies for both the state and federal governments. It is established by the Rules of Operation of CONAGUA's programs and enables state governments to propose their ideas to federal programs. In the case of the state level, this is crucial in investment planning and tendering (Casiano Flores et al., 2016; Casiano Flores et al., 2019). Meanwhile, municipalities and their water utilities are responsible for the wastewater treatment plant.

FINDINGS AND DISCUSSION

Tables 2 and 3 summarise the results of the GAT application, and such results are explained below. Based on Table 1, the assessment insights are two-fold. First, it highlights that the governance context in terms of its extent and coherence is not supportive. While the extent is not sufficiently developed to cover and engage various elements, the coherence among the currently engaged elements does not have the potential to compensate for extent-related deficiencies and, even in most cases, adds to the lack of support of the governance context. These results show that even in the hierarchical and exclusively governmental structure of groundwater conservation, there is little space for including missing, excluded parts of the puzzle - including the openness to bottom-up movements and non-state actors, adoption of non-technical and non-bureaucratic instruments, and so on.

Second, but even more important, is the mixed insight that our inquiry into flexibility and intensity provides. The flexibility assessment results show that the concurrent governance context is seemingly open to fixing deficiencies. However, the intensity is mainly placed on the business as usual. It means there is a complex setting for improvement efforts, and one needs to be cautious in consulting and suggesting solutions to overcome the poorly developed governance setting from the extent and coherence perspectives. Advocating for the inclusion of non-state actors or alternative instruments can be counterproductive. In other words, the ruling network of actors expresses openness to change but can finally translate the recommendations into counter-realizations. Giving space to non-state or alternative instruments finally turns into creating institutional initiatives or a new list of projects where there is little, if any, space for their survival and effectiveness. This mixed insight of the two qualities reveals the 'symbolic' change: turning the desirable intentions into new formalities which have little (or even sometimes opposite) relation to their original intentions.

Table 2. Key assessment findings about groundwater governance in Iran based on the GAT framework (Mirnezami et al., 2020)

Governance Dimension	Qualities			
	Extent	Coherence	Flexibility	Intensity
Levels and scales	Hierarchical structure; non-cooperating	Little alignment between local and central levels	Marginal efforts for improving the multi-level	Aspirations for addressing the gaps, however,

	jurisdictions		governance	again with a hierarchical orientation
Actors and networks	Lack of participation of non-state actors in the policy	Dominance of bureaucratic connections with deep conflicts among (state) actors	Efforts for increasing inclusiveness and fixing the conflictual connections	Aspirations for addressing the gaps by providing new formal institutions (institutional layering)
Problem perspectives and goal ambitions	Strong dominance of (social-engineering) technical-fix over the social-political views	Deep alignment of technical-fix views to the bureaucratic context	Attitude for inclusion of social (engineering) best practices	Fluctuating with the (dis)appearance of change-advocating policymakers, however, with a social-engineering perspective
Strategies and instruments	An inclusive list of instruments, however, with fundamentally different priorities	Selective (contradictory) approach in defining and operationalising instruments	Attitude for having diverse instruments	Strongly advocating a controlling strategy, rather than communicative or relational
Responsibilities and resources	Lack of fundamental human and financial resources, as well as social/political capital for following other than the controlling strategy	Inconsistency of existing (dominant) human resources (and mindsets) for following non-controlling strategies	Attitude for diversifying the human resource and creating social/political capital	Fluctuating with the (dis)appearance of change-advocating policymakers, however, with a social-engineering perspective

Based on Table 2 we can state that GAT allowed the identification of the following governance issues: 1) ineffective conservation policies due to lack of multi-level coordination and farmers participation, 2) overlapping and conflicted responsibilities, 3) inadequate monitoring of groundwater facilitating illegal extraction, 4) development of unfeasible solutions, 5) focus on short-term solutions and 6) mistrust to government due to populism and corruption practices (S. J. Mirnezami et al., 2020). Hence, we consider that the groundwater governance debate has to be politicised, i.e., becoming reflexive about the politics of this policy and its implementation. Without politicising the groundwater discourse, the reproduction of power imbalances embedded is more likely to continue.

For the case of Mexico, as can be observed in Table 3, the governance context in the selected cases is primarily restrictive, resulting in fragmentation, a lack of flexibility and intensity, and a lack of stakeholder trust and certainty. There is a lack of municipal capacity; resources are centralised at the national level, and policy fragmentation and coordination challenges exist. The establishment of symbolic basin institutions via institutional layering is another problem

Through the comparative analysis, we identified that in the Mexican case, the subnational governments play an important role in the wastewater treatment plant policy. Subnational governments are policy drivers and coordinators that can improve the effectiveness of the policy. They also have more financial and human resources than local governments and greater political stability. Confirming that the subnational government is key to improving the wastewater policy in the Mexican context (Pacheco-Vega, 2015b), brings the relevance of the principle of subsidiarity. This principle states that the most appropriate level of governance should take action to achieve effective results (Jordan, 2000). The fact that in Mexico, subnational governments have greater financial and human resources and enjoy a six-year term in office improves the stability of the policy implementation and increases its effectiveness. However, as of today, any changes in governance arrangements require the willingness of subnational governments (Casiano Flores, 2023).

Table 3. Individual results from the governance assessments in three subnational regions in Mexico (Casiano Flores, 2017)

	Qualities/Assessment Atoyac-Puebla				Qualities/Assessment Atoyac-Tlaxcala				Qualities/Assessment Guadalupe Basin, Estado de Mexico			
Governance Dimension	Extent	Coherence	Flexibility	Intensity	Extent	Coherence	Flexibility	Intensity	Extent	Coherence	Flexibility	Intensity
Levels and scales	Hierarchical structure; limited cooperation	Little alignment and a lack of trust in their vertical and horizontal relations	Lack of flexibility due to the hierarchical relationship	Unbalanced level of intensity between the different government levels	Hierarchical structure. Cooperation of the national level with the subnational level, and this with the local levels.	Coherence among the federal and subnational levels. Leaving aside the local level, increased trust and coherence	Lack of flexibility due to the hierarchical relationship	Balance of intensity between the national and subnational levels	Hierarchical structure. Cooperation of the national level with the subnational level, and this with the local levels.	Little alignment and limited trust when it comes to the implementation of the policy.	Lack of flexibility due to the hierarchical relationship	The main intensity comes from the national level
Actors and networks	Absence of the non-governmental actors in the policy implementation	Governmental and non-governmental actors do not trust each other.	Lack of flexibility to include social actors and create social capital	Intensity comes mainly from the national government and some	Lack of participation of non-state actors and local governments in	Governmental and non-governmental actors do not work together. The	Lack of flexibility to include social actors and create social capital	Intensity comes mainly from the national and subnational government	Participation of governmental and non-state actors in the Basin Commission.	There is a lack of coherence and alignment between the actors participating in	Lack of flexibility has eroded the social capital that the Basin Commission created	While there is pressure from social actors and the Basin

		Constant changes in the bureaucracy and social exclusion negatively impact		non-governmental actors, but their impact is very limited	the policy	basin commission, created to increase collaboration, did not session		ments. But active social actors are excluded		the Basin Commission and those in actual wastewater projects	at the beginning	Commission provides the space, their impact is very limited
Problem perspectives and goal ambitions	Strong dominance of the upper government levels' perspectives	Governmental and non-governmental actors have different goals with different time frames that do not support each other	Lack of flexibility to align perspectives or to readjust goals	The goals are far too reach when considering the current management	Strong dominance of the upper government levels' perspectives	The perspectives considered are only those of the higher governmental levels. This situation supports a better alignment regarding time frames	Lack of flexibility to align perspectives or to readjust goals	The goals are still far too reach, but the changes in management have increased the percentage of treated water	Strong dominance of the upper government levels' perspectives. Non-governmental actors' perspectives do not really influence the policy and the goals	Governmental and non-governmental actors in the Basin Commission have different goals with different time frames that do not support each other	Lack of flexibility to align the perspectives and goals of the Basin Commission with the actual policy implementation.	The different perspectives presented in the Basin Commission have not made a difference, as they have not impacted the wastewater policy
Strategies and instruments	Strategies and instruments are fragmented, and secondarily legislation is pending	There are no issues in terms of overlaps, but there are disagreements across governmental authorities and political manipulation	Strategies and instruments can only be combined if they are explicitly considered in the legislation	The current strategies are not appropriate, as the policy requires long-term planning, and the strategies and instruments responded to governmental periods	Strategies and instruments are fragmented, and secondarily legislation is pending	There are no issues in terms of overlaps, and there has been an increasing alignment in the strategies and instruments	Strategies and instruments can only be combined if they are explicitly considered in the legislation	The strategies and instruments adopted by the subnational government and supported by the national government have increased the percentage of treated water	The strategy of creating a basin commission has improved communication, but has not helped to improve the policy	There are no issues in terms of overlaps, but there are synergies between the strategies and instruments of the governmental actors and those that belong to the Basin Commission	Strategies and instruments can only be combined if they are explicitly considered in the legislation	The strategies and instruments adopted have not really increased the percentage of treated water

Responsibilities and resources	Responsibilities are clearly assigned, but resources are limited regarding human resources and economic capacity	Some programs aim to combine the resources of the different governmental actors, but in many cases, the subnational and lower governmental levels lack such resources	Pooling resources faces challenges in terms of accountability. Being the main issue at the subnational level	Resources are insufficient and unevenly distributed. The priority of building plants over their sustainable operation negatively affects the policy	Responsibilities are clearly assigned, and resources have been increased via subnational reforms	The national programs aim to combine the resources with lower governmental actors. Subnational reforms are supporting such a combination	Pooling resources is still between the national and subnational levels, is possible by following the national reforms and support guidelines	Resources are still insufficient, but they have been increased to favour a sustainable management of the wastewater treatment plant policy	Responsibilities are clearly assigned. However, the Basin Commission has very limited resources focused on its daily operation and not on the wastewater treatment policy. While the policy itself also has limited resources.	The national program aims to combine the resources with lower governmental actors. However, there is a high level of fragmentation that creates issues among governmental actors and with non-governmental actors	Pooling resources between governmental actors is only possible by following national guidelines	Resources are insufficient for both the wastewater treatment plant policy and the Basin Commission
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The results from the GAT application were externally validated with Nuevo Leon and Aguascalientes subnational governments, as they have the highest rates of wastewater treatment (Casiano Flores, 2023). However, there are substantial differences in how the subnational governments coordinate the policy. In the case of Aguascalientes, the government set mechanisms to directly operate the wastewater treatment plants (Pacheco-Vega, 2015a) without being involved in other water services, while in Nuevo Leon, the policy has been coordinated via the state water utility named Servicios de Agua y Drenaje de Monterrey (SADM) (Aguilar-Barajas et al., 2015). Still, there is a need for mechanisms to increase transparency and accountability when subnational governments voluntarily participate in implementing and coordinating the wastewater policy.

The increasing role of subnational governments can be partially explained by recognising regional and local identities and the failure of “one-size-fits-all” approaches (Connell et al., 2022). OECD reports state that 65% of the Sustainable Development Goals’ targets will not be reached without the coordination of subnational governments and local governments (OECD, 2019b, 2019a). Subnational governmental actors are important drivers of policy coordination (Gjaltema et al., 2020), as they can be key policy coordinators (Indset, 2023; Trein et al., 2019) to increase collaboration among actors and to scale up policies (Casiano Flores & Cromptvoets, 2020; Jørgensen et al., 2015) to make the policy more effective. Moreover, they have proven to be key in addressing water policy fragmentation (Cacal & Taboada, 2022), and they have been increasingly taking over responsibilities from federal and local governments in the environmental field (Casiano Flores et al., 2016; Happaerts et al., 2012).

CONCLUSIONS

Despite the differences between the Iranian and Mexican contexts, the application of GAT allowed the identification of challenges that water management faces, and the development of tailored recommendations to improve the policy's effectiveness. Among the similarities that both contexts face is a symbolic implementation. Many of the reforms that have been conducted to address the issues of the water policies have remained only on paper and have not translated into effective policy implementation. While both countries share a hierarchical context and a hierarchical policy implementation, GAT permits to differentiate that in the case of Mexico, the effectiveness of the wastewater policy can be improved by strengthening the multi-level coordination, meanwhile, in the case of Iran, it requires a network or co-creation approach via social participation. In this sense, the results show that in Iran, farmers need to be part of the policymaking and implementation processes, and in Mexico, the subnational governments' coordination role is essential and needs to be strengthened. Based on these results, we can safely state that GAT provides recommendations for tailored interventions beyond the classic "panaceas" that other governance assessments can provide.

Hence, we can state that the two selected cases allow us to showcase GAT's flexibility and adaptability, as it is capable of assessing in-depth single case studies (Iran) and comparative analysis (Mexico). GAT's systematic method allows us to navigate our understanding of complex challenges and enables the improvement of decision-making and policy design. Moreover, it provides a framework for scholars and practitioners to consider the context and dynamics of policy implementation. As previously mentioned, we illustrated the wide applicability of GAT by presenting two applications in different contexts from the one where GAT was created. GAT has been applied to water management policy implementation by a few dozen different researchers (See Figure 2) in a wide range of countries across the globe. On top of these studies, as shown in the literature review, GAT has analysed other sustainability-related policies, like sustainable industrial parks, energy, transport, or protected areas.

In short, we consider that GAT makes four significant contributions to the field of water governance: 1) It provides a comprehensive framework to identify policy implementation issues from the governance context perspective. 2) It provides a structured approach that facilitates the identification of governance issues systematically to develop tailored interventions. 3) The GAT can be used for single and comparative analysis, and 4) The GAT's capability to provide contextual interventions can foster innovative policy approaches beyond those one-size-fits-all solutions.

LIMITATIONS & FURTHER RESEARCH

While this case selection can be seen as limited when compared to the GAT body of knowledge, we believe our selected cases and their internal variety are sufficient to showcase GAT capabilities. In terms of the limitations, we agree that while GAT has relevant advantages due to the understanding of contexts, its application is research-intensive and requires a high level of local understanding, which can also be time-consuming, and these resources are not always available. For that reason, recently, an attempt has been made to develop a simplified version of GAT for practitioners to use (Özerol and Bressers, 2023). They often have the local knowledge but lack the understanding of the concepts used in the GAT, which allows a deeper comprehension of the context in which they have to do their work. Developing such a simplified GAT proved to be possible, but only at the expense of narrowing down the scope of its possible use, in this case, to climate resilience projects in midsize cities in Europe (Özerol and Bressers, 2023). Thus, for research purposes, while the original scheme remains the most useful, we acknowledge that its application can be challenging without specialised training or expertise. Therefore, we consider it

important that future studies focus on the development of simplified versions of GAT that can be used by practitioners with limited resources and expertise.

Although the GAT has been used in studies involving multiple contexts, we believe that the way GAT is structured and applied can be compatible with other comparative approaches, such as “qualitative comparative analyses”. Yet further research is needed in this regard. Therefore, we invite scholars worldwide to continue testing the GAT application along with other methods to support its evolution. Moreover, broader analysis can bring together the different GAT applications across different contexts and sustainability challenges, such as energy or climate adaptation. This could help to construct a body of knowledge that can provide a broader understanding of the role of the governance context in complex issues and sustainable transitions. In the same line, new complex topics such as the role of digital innovations to address complex challenges are arising. Understanding the governance context under which such innovations take place is relevant, and we believe future research using GAT can be developed on this topic.

As we have noted, we recognise the limitations of this paper and GAT. We believe that future research directions can help deepen our understanding of the complex and sustainability challenges we face. Therefore, we hope this paper, in addition to showcasing GAT's capabilities, serves as a source of inspiration for future applications

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