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Stakeholder Engagement around Water Governance: 30 Years of Decision-Making in the Bogotá River Basin

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Abstract: Effective stakeholder engagement is vital for sustainable water management in the Bogotá River Basin, which faces serious environmental and socio-economic challenges, including water scarcity, pollution, and inequitable distribution. Engaging diverse stakeholders can promote shared decision-making, identify common goals, and enhance the implementation of sustainable water governance strategies. Taking this into account, this research evaluates multi-stakeholder engagement in the Bogotá River Basin in Colombia over the past 30 years to promote sustainable water management in the face of current global challenges. The research methodology includes a desk-based and systematic review, as well as policy analysis using descriptive and quantitative methods. With the use of MAXQDA software, we identified 74 national, regional, and local policies focused on stakeholder engagement for water management in Colombia, which were narrowed down to 22 documents for the Bogotá River Basin. The policy analysis is based on the Organization for Economic Co-operation and Development (OECD) indicator for Principle 10 to self-assess the level of legal framework implementation and stakeholder engagement. The self-assessment pointed out that despite the strong legal background and the enhancement of stakeholder engagement via formal and informal participatory mechanisms in the first stages of policy-making, there is a lack of engagement in the evaluation and follow-up phases, leading to box-ticking mechanisms. The findings suggest that effective stakeholder engagement needs to be comprehensive in policy-making processes, especially in the evaluation and follow-up stages. Moreover, the river basin's management can improve by making a clear disclosure about the outcomes of participatory processes. This research concludes that promoting shared decision-making, identifying common goals, and enhancing the implementation of sustainable water management strategies can greatly benefit the Bogotá River Basin. These efforts can lead to more effective and efficient use of water resources and ultimately contribute to a healthier and more sustainable environment.

Keywords: stakeholder engagement; water governance; OECD indicator; water governance



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1. Introduction

Analyzing the policy developments in urban river basin management is crucial for effective water resources planning and management in cities, especially in closing policy gaps [1]. By gaining a historical perspective and understanding past successes and shortcomings, policy-makers can learn valuable lessons and avoid repeating past mistakes. Evaluating the stakeholder engagement of previous and current policies helps identify strengths and weaknesses, enabling the refinement of future approaches. Such evaluation is meant to ensure that water resource planning remains responsive to changing urban challenges. Overall, studying past policies enhances decision-making, encourages innovation, and supports sustainable urban water management.

It has been decades since the United Nations Water Conference in Mar de Plata in 1997 opened the debate regarding how water governance can respond to challenges related to sustainable development [2]. In this conference, one specific recommendation was

made for countries to “promote interest in water management among users of water; users should be given adequate representation and participation in management” [3]. Since then, many recommendations and guidelines like the Organization for Economic Co-operation and Development (hereinafter OECD) Principles for Water Governance [4] have been proposed to improve stakeholder engagement in water governance. However, integrating stakeholders into policy-making processes remains a significant challenge, particularly in developing countries [5]. Engaging all stakeholders adjacent to water bodies can present a challenge for policy-makers. Consequently, understanding the role of society in decision-making processes is crucial to enable participatory approaches that can strengthen water management programs [6].

Stakeholder engagement holds specific significance in the water sector due to its fragmented nature, with multiple actors involved and varying needs that must be met [7]. Hassenforder et al. [8] note that stakeholder involvement is crucial for two reasons. Firstly, it facilitates the development of water policies that align with the needs of individuals and communities. Secondly, it delivers results to stakeholders transparently, thereby promoting social ownership, acceptance, and confidence in government actions. Thus, stakeholder engagement is a motivator for enhancing social buy-in and trust in the policy-making process. Additionally, stakeholder engagement inputs can help policy-makers navigate all the complexities and tradeoffs in the sustainable management of water resources in rural and urban areas [9].

According to the World Water Assessment Programme (WWAP), the water crisis is a crisis of governance, where water scarcity is largely caused by the mismanagement of the available resources (i.e., water) [10]. In Colombia, this issue is noticeable within the Bogotá River, where different economic and industrial activities along its course have caused a rapid deterioration of the quality of water in the past decades [11–14]. The current state of the river also affects the complete dynamic in its basin. As noted by the Regional Autonomous Corporation of Cundinamarca (CAR), the Bogotá River Basin faces various environmental and socio-economic challenges, including water scarcity, pollution, and unsustainable water use practices [15]. Moreover, it is characterized by significant social and economic inequalities, with vulnerable and marginalized communities facing disproportionate environmental risks and limited access to water resources [16].

To improve the management and use of water in the Bogotá River Basin, it is important to understand the underlying socio-economic problems. Engaging communities in decision-making processes related to water management is crucial for ensuring their voices and needs are heard and represented, ultimately leading to better water governance strategies in sustainable urban planning [17,18]. However, achieving effective stakeholder engagement is not an easy task, as there have been various strategies implemented since the 1980s to address the issues along the river [12]. Collaborative solutions and a comprehensive understanding of different methodologies are needed to assess tradeoffs and find the best approach for managing the Bogotá River [9].

Emphasizing the importance of social participation, this research evaluates stakeholder engagement in water governance within the Bogotá River Basin. The assessment focuses on 30 years of water management policies spanning from 1991 to 2021. To accomplish this, we utilized the self-assessment toolkit provided by the OECD framework for water governance, specifically the evaluation of Principle 10. The three key aspects of stakeholder engagement that Principle 10 evaluates are the legal framework, institutional authorities, and risk management [19].

The purpose of this study is to evaluate stakeholder involvement in Colombia, with the Bogotá River Basin serving as a sample. To achieve this goal, the research intends to address the following questions: (1) What is the focus of social participation in the Bogotá River Basin management? (2) How does the legal framework for stakeholder engagement align with the OECD Principle 10 for water governance?

To address the aforementioned research questions, this document is organized as follows: (1) Background and Geographical Focus: this section provides a comprehensive

historical overview of the management of the Bogotá River Basin. It also examines the physical and geographic characteristics of the study area, offering insights into the current status quo. (2) Materials and Methods: where the OECD framework is detailed, along with a description of the policy identification and analysis process employed. The methodology provides a rigorous foundation for the subsequent analysis. (3) Results and Discussion: where the various policies identified are presented, along with the interpretation of a selected relevant policy based on the OECD indicators for Principle 10. The results are thoroughly discussed, considering their implications and significance within the context of the study. Finally, (4) Conclusion: which presents the key findings derived from the analysis, addressing the research questions posed earlier. Additionally, this section offers recommendations for further research, identifying areas that warrant additional investigation. By structuring the document in this manner, a systematic and scientific approach is adopted, ensuring a robust exploration of the research question and promoting a rigorous analysis and interpretation of the obtained results.

1.1. Background

A River Basin Management Plan is the ultimate instrument for territorial planning in Colombia. These documents organize and regulate human activities within the basin with the objective of creating sustainable dynamics between citizens' well-being and the quality and quantity of natural systems. In that order, the Bogotá River Basin serves as the principal axis for territorial planning in the Cundinamarca Department [10].

The management of the Bogotá River Basin has undergone significant changes over the past three decades, reflecting efforts to address the basin's environmental and socio-economic challenges. According to the Ministry of Environment, Housing and Territorial Development (MAVDT), the management of the basin has been characterized by a shift from centralized and sectoral approaches to more decentralized and participatory models involving multiple stakeholders at different levels [20]. A range of policies, institutional reforms, and participatory initiatives has driven this transition.

One of the key milestones in managing the Bogotá River Basin was the establishment of the Regional Environmental Management Plan (REMP) in 2012 [13]. The REMP proposed different strategic lines where Bogotá river management is addressed from a regional point of view where the river impacts and is impacted by different anthropological and environmental dynamics that should be understood as a whole.

In the following years, the management of the Bogotá River Basin continued to evolve by implementing a range of policies and initiatives. In 2014, the Colombian courts ruled for the Bogotá River's decontamination, issuing immediate actions to improve water quality [21]. In this court order, all national, regional, and departmental institutions were held responsible for the contamination of the Bogotá River. The Council of State justified its decision on the lack of coordinated inter-institutional responsibilities. Additionally, it emphasized that environmental policy is too complicated and fragile when determining who is responsible [15,21].

More recently, the management of the Bogotá River Basin has been characterized by efforts to address the impacts of pollution and integrate comprehensive water management mechanisms. The 2018–2021 National Development Plan places a high priority on sustainable and resilient water management while promoting the integration of climate change considerations into water resource management strategies [22].

1.2. Geographical Focus

The Bogotá River Basin is located in the Andean region of Colombia, covering an area of approximately 5472 km² [23]. The basin is located in the high-altitude tropical zone, characterized by a complex topography with steep slopes and a range of altitudes from 280 to 3500 m above sea level [24]. The Bogotá River is the main river in the region (see Figure 1), and it passes through the Bogotá Metropolitan Area (District Capital) and 45 other cities. Its waters originate in Guacheneque Páramo and flow for 375 km before joining

the Magdalena River. The basin is home to diverse ecosystems, including high Andean paramos, cloud forests, and tropical dry forests [15].

The Bogotá River Basin is also home to a diverse range of communities with different socio-economic characteristics. According to the National Department of Statistics [25], the basin is home to approximately 10 million people, making it one of Colombia's most densely populated regions. The population is characterized by a mix of rural and urban areas, with 80 percent concentrated around the city of Bogotá [26]. The basin is also home to various economic activities, including agriculture, industry, and tourism. However, the basin faces a range of socio-economic challenges, including high levels of poverty, inequality, and informal industries [15].

Moreover, the Bogotá River has been classified as one of the most polluted rivers in Colombia due to the discharge of untreated domestic and industrial wastewater [18]. The high levels of pollutants in the water have led to a range of environmental and health hazards, including the eutrophication of water bodies, the degradation of aquatic habitats, and the transmission of water-borne diseases. The poor water quality also affects water availability for different uses, such as drinking, irrigation, and industry [14].

The impact of poor water quality in the Bogotá River has led to a range of initiatives to improve water management and reduce pollution. For example, in recent years, there has been a focus on implementing the United Nations guidelines for Integrated Water Resources Management (IWRM), which aims to promote the sustainable use and management of water resources in the basin [27]. This approach emphasizes the participation of different stakeholders in water management, including communities, civil society organizations, and government agencies. It also focuses on adopting innovative technologies and practices for water treatment and pollution control to improve water quality in the basin [28].

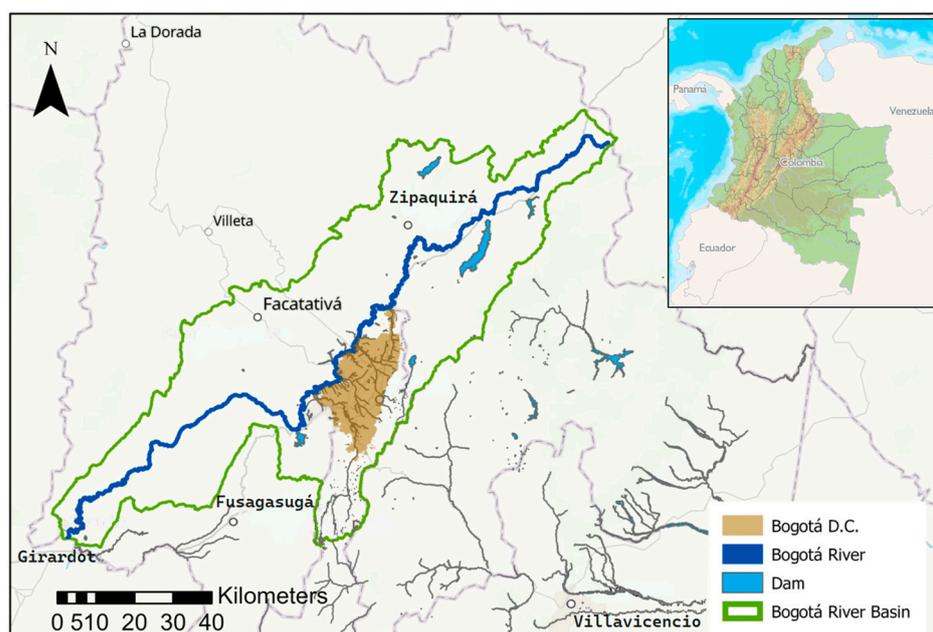


Figure 1. Geographical map of the Bogotá River Basin [29].

2. Materials and Methods

The research is focused on assessing stakeholder engagement in the Bogotá River Basin using a review of 30 years of policy-making processes in Colombia, from the promulgation of the Political Constitution of 1991 until 2021. The assessment uses the OECD indicator for Principle 10, 'Stakeholder Engagement', which promotes stakeholder engagement for informed and outcome-oriented contributions to water policy design and implementation [7]. The research develops as follows: First, we study the national, regional, and local legal framework for water governance and analyze it to identify the presence/absence of

mechanisms for stakeholder engagement. Second, we analyze policy findings to examine OECD indicators for Principle 10 to determine whether national and local legal frameworks meet international guidelines.

The methodology for data collection includes desk-based research and systematic review. Data analysis included descriptive and quantitative analysis and the software for text analysis software MAXQDA for the identification of keywords and topics related to water governance for stakeholder engagement in the analyzed policies. All parameters of analysis are summarized in Table 1 and described in Section 2.1.

Table 1. Materials and methods.

Process	Stage	Method	Instrument	Parameters Used
Legal framework analysis	Data collection	Desk research	Regulatory Information System—JURISCOL	Data from 1991 to 2021 Documents issued by the departments of Agriculture and Rural Development, Environment and Sustainable Development, Housing, City and Territory, National Education, National Planning, Culture, Social Inclusion and Reconciliation
	Policy analysis	Content analysis	MAXQDA	Keywords: Water, Water Quality, Basin, Prior consultation, Pollution, Water pollution, Co-operation, Discrimination, Education, Governance, Water governance, Vulnerable groups, Participation, Risk, River, Decision-making
		Systematic review	Document reader	Does this document provide/regulate/organize mechanisms to enhance stakeholder participation in water management decision-making processes?
Stakeholder engagement assessment	Data collection	Desk research	Regional Autonomous Corporation of Cundinamarca	All versions available of the Bogotá River POMCA
	Data analysis	Descriptive and qualitative analysis	OECD checklist for self-assessment	Implemented/not implemented

The OECD framework [19] suggests dividing the indicator into three parts: (1) “What”, (2) “Who”, and (3) “How”. The “What” seeks to determine the level of legal framework implementation to engage stakeholders in water-related decision-making processes. The “Who” addresses the existence of formal and/or informal mechanisms/institutions for stakeholder engagement, and the “How” evaluates mechanisms made for determining potential obstacles, challenges, or risks in stakeholder engagement. In addition, the OECD framework seeks clear procedures on how to respond to stakeholders’ inputs. To perform the evaluation, the OECD offers a checklist in the form of a self-assessment questionnaire (see Table 2).

Table 2. Checklist for self-assessment of OECD Principle 10 [19].

Description
Is the Aarhus Convention and/or other legal and institutional frameworks for stakeholder engagement adopted?
Was a stakeholder mapping carried out to make sure that all those who have a stake in the outcome or who are likely to be affected are clearly identified and their responsibilities, core motivations, and interactions understood?
Are the ultimate line of decision-making, the objectives of stakeholder engagement, and the expected use of inputs clearly defined?
Are there mechanisms or regular assessments of stakeholder engagement costs or obstacles at large?
Is needed information for result-oriented stakeholder engagement shared?
Is the type and level of engagement customized, and is the process flexible to adjust to changing circumstances?
Is there a national multi-stakeholder coordination platform including representatives from public, private, and non-profit sectors and different categories of uses?
Are there mechanisms in place to engage science in decision-making?
Are there formal and informal mechanisms to engage stakeholders?
Do tailored communication strategies exist for relevant stakeholders, including the general public, regarding all aspects of water management?

Before utilizing the self-assessment tool, it is crucial to determine the applicable legal framework regarding stakeholder engagement in water management. This step is necessary to accurately identify the current policy governing the river basin as a whole. Additionally, identifying the legal framework is essential to address specific questions on the self-assessment checklist.

2.1. Data Collection and Analysis

Data was collected primarily using desk-based research. First, an extensive literature review was performed to define the scope, address the problem, and build a state of knowledge. Second, a systematic review was performed to identify relevant policies for water governance in Colombia and the Bogotá River Basin. The legal framework was identified using the Regulatory Information System (Juriscol) of the Colombian Justice Ministry portal [30]. This is an open-source legal database where all Colombian policies are available for free consultation. The database allows to set customized parameters to limit the scope of the results. For the purpose of this research, the search was performed under two parameters: (1) date, exclusively documents published between 1991 and 2021, and (2) sector, only documents issued by the following departments were reviewed: (1) Agriculture and Rural Development Department, (2) Environment and Sustainable Development Department, (3) Housing, City, and Territory Department, (4) National Education Department, (5) National Planning Department, (6) Culture Department, and (7) Social Inclusion and Reconciliation Department.

To analyze the legal framework, the software MAXQDA was used for text analysis. This consisted of systematic filtering using MAXQDA for content analysis, which scanned all documents searching for predetermined keywords. As a result, it generated a preliminary database with a keyword repetition count. This first step helped to discard records irrelevant to the topic. To limit the results, the following 16 terms in Spanish were used in the systematic filtering using MAXQDA: water, water quality, basin, prior consultation, pollution, water pollution, co-operation, discrimination, education, governance, water governance, vulnerable groups, participation, risk, river, and decision-making. As a next step, a content analysis technique was used to identify all policies that particularly addressed the question: “Does this document provide/regulate/organize mechanisms to enhance

stakeholder participation in water management decision-making processes?”. Lastly, all findings unrelated to the research objective were discarded.

Finally, once we detected the most relevant policy for the Bogotá River Basin management, we conducted the OECD self-assessment. To proceed accordingly, the River Basin Management and Development Plan (POMCA in Spanish) was selected, as it is the policy of the higher hierarchy for territorial planning in Colombia and the mechanism in which stakeholders participate in policy-making processes around river basins. The POMCA for the Bogotá River Basin was retrieved from the Regional Autonomous Corporation of Cundinamarca portal (CAR) in its version of 2006 and 2019.

3. Results and Discussion

Based on the data collection and posterior analysis, the results are divided into tables to help understand the findings. This chapter is divided into three subchapters, each corresponding to one analysis.

3.1. Legal Framework Analysis for Stakeholder Engagement in Colombia

The first desk search to construct the database for the legal framework resulted in a list of 74 documents. After performing a systematic content analysis using MAXQDA, the list was narrowed down to 50 documents. Finally, all documents were read thoroughly. As a result, 22 documents were recognized as part of the legal framework for stakeholder engagement. The documents were separated into three categories: General Law, Specific Law, and Complementary Law. Preliminary results are summarized in Figure 2.

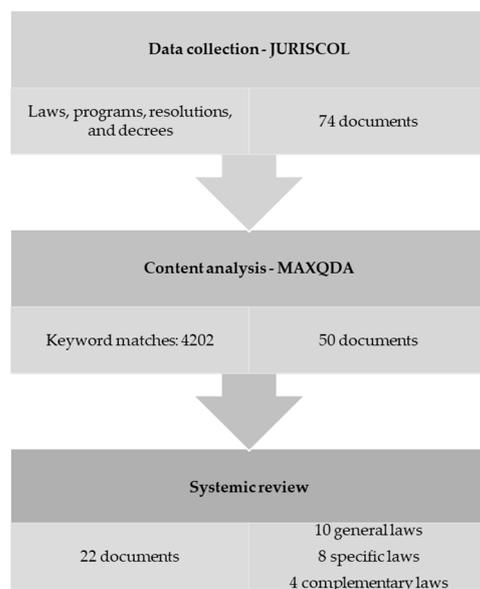


Figure 2. Preliminary results of the legal framework analysis.

General Laws are encompassed by the documents that define and organize mechanisms for citizen participation independently of the context. This means the set of documents is the basis for stakeholder engagement in all decision-making processes. In the Specific Law category, the documents directly address citizen participation in water-related issues, including river basin management. In this category, legally binding documents and technical guidelines are included. Finally, Complementary Law consists of all documents addressing management policies transversal to river basin management. This set of documents encompasses managing plans for diverse ecosystems and biodiversity issues. All sets of documents are displayed in Table 3.

Table 3. Legal framework for stakeholder engagement.

Name	Description
Politic Constitution of Colombia of 1991 [31]	By which a baseline is established for a new legal system based on open lines of participation and inclusion of ideological differences through political means instead of violence and exclusion.
Law 99 of 1993 [32]	By which the Ministry of the Environment is created, the Public Sector in charge of managing and conserving the environment and renewable natural resources is reorganized, the National Environmental System (NES) is organized, and other provisions are enacted.
Decree 1600 of 1994 [33]	By which the NES is partially regulated by the National Environmental Research and Environmental Information Systems.
Law 134 of 1994 [34]	By which rules on mechanisms for citizen participation are established.
National training plan for the social control of public administration [35]	By which the State aims to strengthen social control and the participation of social and governmental actors to contribute to the effectiveness and transparency of public administration.
Decree 1729 of 2002 [36]	By which the State regulates hydrographic basins and issues other provisions.
National Inland Wetlands Policy [37]	By which the State aims to promote the conservation and wise use of Colombia's inland wetlands to maintain and obtain ecological, economic, and socio-cultural benefits as an integral part of the country's development.
Law 850 of 2003 [38]	Whereby regulates the citizen oversight bodies
National Water Law 365 of 2005 [39]	Establishes the regime for the integrated management of water resources and includes all waters, in any of their states and forms, which are within the jurisdiction of the Colombian State.
Resolution 196 of 2006 [40]	By which the technical guide for the development of Wetland Management plans in Colombia is adopted.
National Council for Economic and Social Policy Act 3463 [41]	Defines Departmental water and sanitation plans for managing water, sewerage, and wastewater services.
National Policy for Integrated Water Resource Management [42]	Seeks to guide the development of public policies on water resources via economic and social development and the protection of ecosystems.
Institutional Network for the Support of Citizen Ombudsperson's Offices [43]	By which strategies for the institutional strengthening of citizen oversight bodies are presented.
Decree 1640 of 2012 [44]	By which the instruments for the planning, organization, and management of river basins and aquifers are regulated, and other provisions are issued.
Decree 1985 of 2013 [45]	By which the structure of the Ministry of Agriculture and Rural Development is modified, and the functions of its units are determined.

Table 3. Cont.

Name	Description
Resolution 1907 of 2013 [46]	By which the Technical Guide for the formulation of the Hydrographic Basin Development and Management Plans is issued.
Resolution 509 of 2013 [47]	By which the guidelines for the formation of the Basin Councils are defined, and their participation in the phases of the Basin Management Plan and other provisions are established.
National Policy for Integrated Management of Biodiversity and its Ecosystem Services [48]	Promotes Integrated Management for the Conservation of Biodiversity and its Ecosystem Services to maintain and improve the resilience of socio-ecological systems at national, regional, and local scales, considering scenarios of change and using a joint, coordinated, and concerted action by the State, the productive sector and civil society.
Technical Guidance for the Formulation of Watershed Management Plans [49]	By which the technical criteria, procedures, and methodologies to be considered in the phases of preparation, diagnosis, prospective and environmental zoning, formulation, execution, and monitoring, and evaluation are established, as well as the guidelines to address the issues of participation and the inclusion of risk management in each of the phases foreseen for the formulation of the river basin management plans (POMCA).
Decree 1076 of 2015 [50]	Establishes the Single Environmental Decree where all environmental normative is summarized.
Resolution 886 of 2018 [51]	By which guidelines are adopted for the zoning and regime of uses in the delimited paramos areas and procedures are established for the design, training, and implementation of programs for the substitution and reconversion of agricultural and livestock activities, and other determinations are made.
National Plan for the Training of Ombudspersons with an Ethnic Approach [52]	Constitutes the objects of surveillance, monitoring, and interest of ethnic peoples and communities due to their important role in peace-building and the guarantee of human rights.

3.1.1. General Law

First, it is important to address that this 30-year legal framework review starts with the Political Constitution of Colombia of 1991. This Carta Magna was a pioneer in the region for addressing the upcoming challenges related to environmental issues and the necessity to implement special instruments for environment and biodiversity protection [53]. Article 79 declares the following:

“Everyone has the right to enjoy a healthy environment. The law shall guarantee the participation of the community in decisions that may affect it. The State must protect the diversity and integrity of the environment, conserve areas of special ecological importance, and promote education for the achievement of these ends” [31].

In addition, it was the first time in Latin America that a country systematically constitutionalized a participatory model, which opened the doors for creating laws, instruments,

and institutions for citizen participation in decision-making processes, including environmental issues [53].

Due to the Political Constitution, environmental jurisprudence was able to start with the Law 99 of 1993 [32]. Such law is the basis of the environmental legal framework, as it enabled the creation of the Ministry of Environment, which organizes the National Environmental System (NES). The NES comprehends policies, activities, resources, programs, and institutions that allow the functioning of environmental principles.

In terms of stakeholder engagement, these general laws encompass documents addressing the participation of all communities in different state processes. For example, Law 99 [32] mandates that the Ministry and the President shall guarantee community participation in the conformation of the National Environmental Policy. Further, the CAR shall create participatory councils confirmed by government, guilds, ethnicities, academia, and NGO representatives as a way to encourage participation between civil society and the government. Moreover, the Decree 1600 of 1994 [33] states that any institution (public or private) and member of civil society without regard for its ethnicity can be part of the Environmental Research System as long as it demonstrates the ability to develop research activities.

In terms of legal participatory mechanisms, Law 134 [34] established the following formal mechanisms: popular legislative initiative, referendum, recall of mandate, plebiscite, public consultation, and town hall meetings, which can be accessed as individuals or via oversight bodies and the ombudsperson office. In addition, the National Training Plan for the Social Control of Public Administration was issued in 2001 [35]. This plan aims to instruct social and governmental actors in mechanisms that lead to transparent and efficient public administration.

Throughout Law 850 of 2003 [38], public society can request and access information using citizen oversight bodies. Using this mechanism, citizens can obtain information about policies, programs, projects, contracts, etc. It also establishes that it is mandatory to respond to all requests. Additionally, the institutional network for the support of citizen Ombudsperson's offices was conformed in 2011 [43]. The objective is to structure lines of organization and functions that help to divulge norms and action plans for further years. These laws complement Article 74 of the Political Constitution, which states that "Everyone has the right of access to public documents except in cases established by law. Professional secrecy is inviolable [31]."

This set of general laws mentions some strategies for including minorities and vulnerable groups in decision-making processes. In the restructuring of the Ministry of Agriculture and Rural Development, the ministry is encouraged to propose policies, plans, and programs directed to rural citizens with particular attention to the youth, women, different ethnic groups, and populations living in poverty settled in the countryside [45]. In addition, within the framework of peace agreements signed in 2016, the National Plan for the Training of Ombudsperson with an Ethnic Approach [52] was issued. This plan seeks to enhance different mechanisms to overcome barriers to accessing information and guarantee the right of all ethnic peoples to surveillance and social control of their territories.

The novelty of this document lies in the inclusion of Indigenous nature's cosmovision in management plans, which implies the consideration of their unique relationship with their culture and environment—including sacred places and spirituality. Moreover, it recognizes the special burdens that different ethnicities had to bear due to colonialism and injustice and looks for implementing strategies to guarantee the whole exercise of their human rights (own and collective), respecting their organization, government, and cultural identity.

3.1.2. Specific Law

The concept of a river basin as a subject of planning and management started in 1974 with the creation of the National Code of Renewable Natural Resources and Environmental Protection [54]. However, it was not until 1997 that the government established the POMCA

as the norm of the highest hierarchy for planning and managing the territory [55]. Moreover, in 2002, the government defined instruments for river basin management, plan implementation, and funding in the Decree 1729 of 2002 [36]. For stakeholder engagement, Decree 1729 declares that the government needs to inform citizens about new management strategies for any river basin. The informative process can be performed using national or local journals. Moreover, once the final management program is issued, the authority in charge must provide mechanisms for the citizens to present formal questions, recommendations, or observations about it.

In 2005, the National Water Law was issued to establish the Integrated Water Resources Management (IWRM) regime. It included the creation of river basin councils as consultation bodies in formulating, implementing, monitoring, and evaluating POMCA. Herewith, it provides for the participation of Indigenous and black communities in decision-making processes. The law proposes citizen educational exercises and general access to information.

In 2010, the National Policy for Integrated Water Resource Management was issued. This policy acts under the principles of integrity and diversity, where it is sought to include local, regional, and national actors in management plans. In addition, it recognized the diversity of ecosystems, cultures, ethnicities, and territories. It also acknowledges the need for a unique approach for the youth, women, ethnic minorities, and elderly population in decision-making processes. This policy seeks to identify conflicts and achieve social equality.

Finally, POMCA is regulated with the Decree 1640 of 2012, where the government established the mandatory content of the document [44]. It also organizes participation tools and mandates a complete identification, mapping, and assessment of stakeholders as a first step in river basin planning. POMCA shall include prior consultation and identification of socio-economic factors, challenges, and vulnerabilities. Following this resolution, the guidance document Technical Guidelines for the Formulation of Management and Development of Hydrographic Basins was issued in 2013 [49]. Lastly, Resolution 509 of 2013 defines the guidelines for electing River Basin Council members, and it also provides guidelines for its operation [47].

3.1.3. Complementary Law

Decree 1729 of 2002 declares that it is an objective of POMCA to prevent and control degradation that might occur in the basin. Since this document is the primary guideline for urban planning, it is important to address all policies that transversely contribute to stakeholder engagement in different water-related issues. Following the complementary laws are described:

- National Inland Wetlands Policy (2002). Since wetlands are also crucial for the management of river basins, the government promotes the active participation of local communities in planning, decision-making processes, conservation, and the wise management of the wetlands. To achieve this, the government will define mechanisms for the participation of Indigenous communities in the Wetland National Committee. This document also comprehends educational training of governmental parties to include environmental principles in the economic and social development of plans for the conservation and restoration of ecosystem goods and services. The National Wetland Management Plan (Resolution 196) was updated in 2006 to state the need to perform stakeholder identification in each wetland plan and include them in all stages of planning processes.
- Departmental Water and Sanitation Plans for the Management of Water, Sewerage, and Wastewater Services are also included in this analysis since they are part of the management strategies for water quality preservation. This document aims to present transparent information about funding movements for stakeholder engagement.
- National Policy for Integrated Management of Biodiversity and its Ecosystem Services (2013). Since ecosystem services and biodiversity are part of the basin, this document identifies specific actions to enhance education, stakeholder engagement,

and institutional and legislative development. Biodiversity requires an intersectoral approach with the participation of civil society at all levels. To continue with this plan, participatory processes, and governance strengthening are crucial.

- **Paramo Ecosystem Plans.** In 2019, with Resolution 886, the guidelines for Paramo delimitation were issued. This document determines that spaces for effective social participation must be promoted for the inhabitants of the paramo, as they are the managers of their territory and have the capacity for decisions over their territories. Additionally, actors who receive direct and indirect benefits from the functioning of these ecosystems will be linked through citizen participation mechanisms.

3.2. OECD Indicator for Principle 10

The water governance indicator framework [19] is an initiative of the OECD Principle on Water Governance [7]; this is a voluntary instrument to assess the level of implementation of water governance principles at all governance levels (local, basin, regional, or national). Specifically, Principle 10 aims to “promote stakeholder engagement for informed and outcome-oriented contributions to water policy design and implementation”. This indicator is divided into three sections: What, Who, and How, each of which assesses a different aspect of stakeholder engagement.

The guidelines for assessment proposed a checklist, similar to a questionnaire, aiming to gain insights about the current status of stakeholder engagement easily. The checklist and findings are displayed in Table 4.

Table 4. Indicator comparative result between POMCA 2006 and POMCA 2019.

Indicator	2006	2019	Details
Is the Aarhus Convention and/or other legal and institutional frameworks for stakeholder engagement adopted?	YES	YES	Both documents have a strong background regarding the legal framework that impels stakeholder engagement. In particular, the Aarhus Convention does not apply to Colombia, but legal mechanisms are available to promote citizen participation.
Was a stakeholder mapping carried out to make sure that all those who have a stake in the outcome or who are likely to be affected are clearly identified and their responsibilities, core motivations, and interactions understood?	NO	YES	In POMCA 2006, there was no stakeholder mapping; however, it was possible to identify the socio-economic characterization of some actors present in the river basin. For POMCA 2019, there was a robust identification, mapping, and analysis of stakeholders. The methodology used was the one proposed in the guidelines for POMCA formulation.
Are the ultimate line of decision-making, the objectives of stakeholder engagement, and the expected use of inputs clearly defined?	NO	NO	By law, if any stakeholder exercises their constitutional right of petition, the responsible organization has up to 30 days to issue a response. However, it was not possible to identify the consecutive steps after receiving inputs from stakeholders.
Are there mechanisms or regular assessments of stakeholder engagement costs or obstacles at large?	NO	NO	It was not possible to find evidence in either of the documents.

Table 4. Cont.

Indicator	2006	2019	Details
Is the needed information for result-oriented stakeholder engagement shared?	YES	YES	The legal framework establishes the obligation to provide information to stakeholders in all stages of decision-making processes.
Is the type and level of engagement customized, and is the process flexible to adjust to changing circumstances?	NO	YES	In the first formulation stage of POMCA 2019, it was possible to identify different engagement mechanisms according to the project's interest. For instance, the first engagement with governmental actors might be achieved with emails and direct posts, but the first engagement with social actors needs to be achieved via community leaders. Nevertheless, POMCA 2016 did not register any level of engagement with stakeholders.
Is there a national multi-stakeholder coordination platform including representatives from public, private, and non-profit sectors and different categories of uses?	YES	YES	According to the legal framework, a river basin management and development plan must include the confirmation of a River Basin Council, which will include actors from all public and private sectors.
Are there mechanisms in place to engage science in decision-making?	YES	YES	It was possible to identify academic institutions as part of river basin councils. However, it is not possible to address their responsibilities and contributions to the decision-making process. Nevertheless, institutions like the Ministry of Environment, CAR, and the Ministry of Hydrology, Meteorology and Environmental Studies (IDEAM in Spanish) have strong research institutes that support decision-making in general environmental management issues. Additionally, one of the strategic objectives formulated in POMCA 2019 is to promote research as technical and scientific support for river basin management plans.
Are there formal and informal mechanisms to engage stakeholders?	YES	YES	Both documents offer a formal and informal mechanism to engage stakeholders, citizen committees, consensus conference meetings, workshops and forums, web-based technologies, focus groups, and stakeholder mapping.
Do tailored communication strategies exist for relevant stakeholders, including the general public, regarding all aspects of water management?	NO	YES	POMCA 2019 offers different tools for communication with stakeholders. Each tool is adapted to the needs and capacities of different actors. It was possible to identify emails, local newspapers, flyers, telephone communications, and focus meetings, among others.

3.2.1. What

According to OECD Indicators (2018), the “What” part of the indicator aims to assess the existence and level of implementation of legal frameworks for decision-making processes related to water governance. This indicator discloses that policy-makers “should discourage consultation capture and consultation fatigue through balanced representativeness as well as clarity and accountability on the expected use of stakeholders’ inputs” [19] (p. 31).

As a first result of this assessment, Colombia has a robust environmental policy baseline that prioritizes social participation. It starts with the Political Constitution of 1991, where stakeholder engagement became a requisite in all processes that affect positively or negatively the constitutional right to enjoy a healthy environment [31] (Art. 79. Political Constitution, 1991). Additionally, the Law 99 of 1993 is the legal baseline for the national environmental system in Colombia. It addresses that the country’s development should be reached without depleting the renewable natural resources or harming the right of future generations to use them for their own needs.

The policy framework for stakeholder engagement allows the involvement of interested parties in the policy-making process. In general, environmental laws encourage different mechanisms for stakeholder engagement and mandate the obligation to consult all interested parties to develop any environmental project.

In the evaluation of POMCA 2006, it was possible to determine that this version did not comprehensively identify actors. The focus was on characterizing socio-economic aspects in general without determining relevance, participation strategies, or mapping power-interest dynamics. Nevertheless, POMCA 2019 puts forward a robust methodology for identifying stakeholders with specific participation strategies for each of them. All ethnicities were included in the identification of actors according to the technical guidelines and the legal framework. Additionally, an extensive characterization of actors and socio-economic aspects was performed to formulate the management plan. The participation strategy was defined in the first stage, and the inputs were translated into possible challenges. All findings were extensively described in the Preparation chapter of the plan [15]. As a result, 3095 actors were identified in 46 towns located in the area of influence of the Bogotá River Basin. The interested parties belong to indigenous communities, citizen assemblies, ministries, NGOs, diverse economic groups, and academia, among others.

3.2.2. Who

The “Who” part of the indicator aims to focus on how organizational structures and accountable entities facilitate stakeholder participation in water-related policies and decision-making processes. As previously stated, POMCA 2006 and POMCA 2019 were formulated under a legal framework that enhances different participatory mechanisms protected by the Political Constitution of Colombia. The authority in charge of Bogotá River management is the Regional Autonomous Corporation of Cundinamarca (CAR). However, CAR does not act alone. The extension and complexity of the Bogotá River Basin management requires the involvement of different actors located along the river (see Figure 3).

The evaluation and comparison of POMCA 2006 and 2019 show that stakeholder identification for 2019 was more comprehensive in terms of civil society, especially regarding vulnerable groups. It was possible to identify interested actors in both documents; however, in the 2019 version, all actors are comprehensively assessed and mapped using the power-interest approach. Participation and communication strategies were tailored to each of the actors identified. According to OECD [7] guidelines “Stakeholder Engagement for Inclusive Water Governance”, participation and communication strategies can be formal and informal. All mechanisms identified in POMCA 2006 and 2019 are gathered in Table 5.

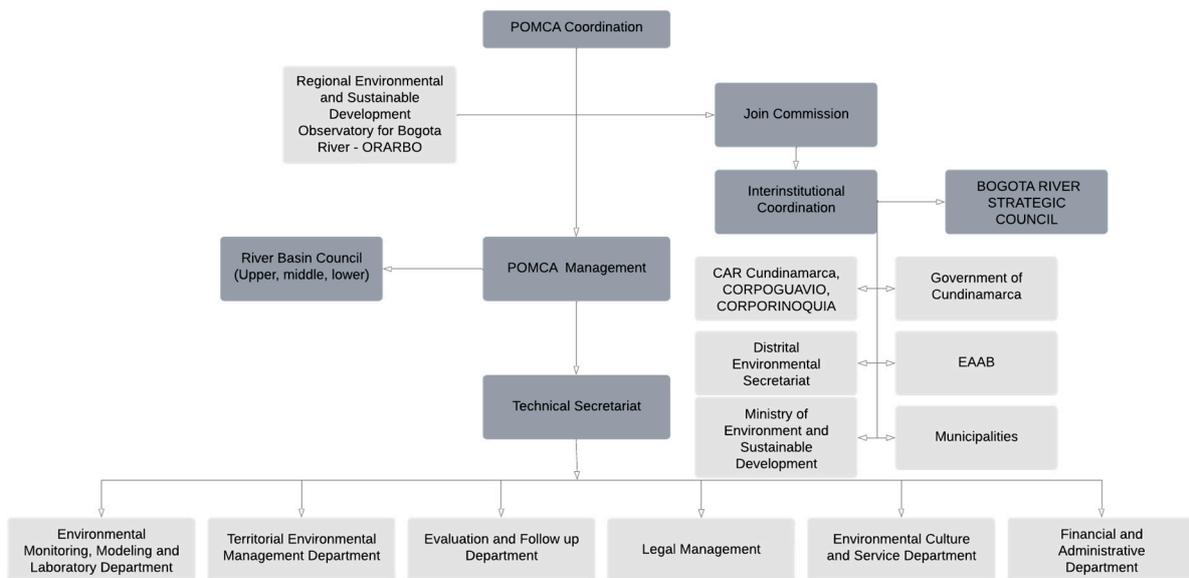


Figure 3. Administrative structure for Bogotá River POMCA management [15].

Stakeholder engagement can be presented as a fostering systematic stakeholder engagement that provides a strong sense of legitimacy (formal) or using mechanisms that remain flexible time and focus-wise and allow inputs from a wide range of stakeholders (informal) [7]. Both approaches present advantages and disadvantages. However, Hassenforder, Clavreul, Akhmouch, and Ferrand [8] claim that stakeholder engagement that is formal in nature may have a potential negative impact. For instance, in strategies where participation is merely limited to following the law and other regulations already in place, a “box-ticking” approach will enhance consultation fatigue or capture in participatory processes, a stage in stakeholder engagement that must be avoided.

According to the results of this study, the stakeholder participation in the Bogotá River Basin is a mixture of formal and informal participatory methods. On one side, it was possible to identify river basin councils for upper, middle, and lower basins; these are consultative and representative bodies of all stakeholders living and working in the river basin [47]. It offers an opportunity to share knowledge and experiences about the basin, as well as to study, discuss, support, and make recommendations for the construction and implementation of the POMCA. All councils are established by law and are the liaison between stakeholders and the CAR (maximal authority for River Basin Management Plans).

On the other hand, it was possible to identify that informal participation mechanisms such as workshops, focus groups, and hotlines, among others, are a vital part of the formulation process of a river basin management plan. Both approaches are used in different stages of policy-making. For instance, informal mechanisms were used in the preparation and diagnosis stages, although formal mechanisms were established to continue with stakeholder engagement in the evaluation and follow-up stages.

Finally, it was possible to identify the use of information and communication technologies for stakeholder engagement, like the Regional Environmental and Sustainable Development Observatory of the Bogotá River (ORARBO in Spanish). This is a socio-environmental tool displayed as a web portal in which information regarding the recovery and decontamination of the Bogotá River Basin is summarized. The observatory contains data that strengthen environmental policy measurement, follow-up, and evaluation [56]. Bonney et al. [57] state that lacking free access to information limits co-operation and trust among interested parties. Through the implementation of this web-based observatory, the State Council aims to promote co-operation between institutions and the participation of the private sector in the management of the Bogotá River [21].

Table 5. Informal and formal participatory mechanisms [7].

FORMAL MECHANISMS		2006	2019
Citizen committee	A group of representatives from a particular community or set of interests appointed to provide comments and advice on an issue	NO	YES
Consensus conference	Public meeting, which allows ordinary citizens to be involved in assessing an issue or proposal. The conference is a dialogue between experts and citizens	YES	YES
Decentralized assemblies	Group of representatives from local authorities and civil society with discretionary powers in the management of affairs	YES	YES
River basin organizations/councils	Specialized organizations set up by political authorities or in response to stakeholder demands to deal with the water resources management issues in a river basin, a lake basin, or across an important aquifer	NO	YES
Water Associations	Member-bases groups of stakeholders invested in similar activities (e.g., an association of water utility networks of water researchers, an association of water regulators)	YES	YES
INFORMAL MECHANISMS		2006	2019
Meetings/workshops/forums	Coming together of people for a specific purpose/structured forum where people are invited to work together in a group (or groups) on a common problem or task	YES	YES
Web-based technologies	Internet tools and platforms can contain project/policy information, announcements, and comments. The array of web-based technologies can be used as an information source, a forum for public input, or electronic democracy.	NO	YES
Traditional media (press releases, newspaper inserts)	Media releases circulate project or policy information to various media outlets	YES	YES
Focus group	Used for exploratory studies. The issues that emerge from the focus group may be developed into a questionnaire or other form of survey to verify the findings.	YES	YES
Stakeholder mapping	Exercise that helps to identify stakeholders depending on their degree of influence, power, legitimacy, and collaboration.	NO	YES
Information hotlines	Offer information on a project via telephone and/or access to project team staff members who can answer questions or provide additional information and assistance	YES	YES

3.2.3. How

The “How” part of the indicator evaluates the existence and level of implementation of mechanisms to diagnose and review stakeholder engagement challenges, processes, and outcomes. This indicator seeks to diagnose prominent obstacles, challenges, or risks such as consultation capture, consultation fatigue, or lack of resources (i.e., in capacity and/or funding) but also processes and outcomes [19].

Stakeholder participation is intensive in the first stages of POMCA formulation. Identification of challenges and possible strategies emerge from participation activities and are

discussed or addressed in the final management plan. After the POMCA is formulated, stakeholder participation decreases. Considering that POMCA validity is 10 years, it was not possible to identify clear guidelines for stakeholder engagement in modification, evaluation, or follow-up for the following years. With this in mind, the River Basin Council is a participation mechanism endorsed by law according to Decree 509 of 2013, where new challenges are addressed, and inputs from different stakeholder members can be discussed.

Active stakeholder engagement early on and throughout the policy-making process is essential to ensure that the resulting policies genuinely reflect and benefit the people and places they affect [8]. However, the resulting policy should not be the ending point of participatory mechanisms. According to the International Association for Public Consultation IAP2 [58], stakeholder engagement is a spectrum of participation rather than one ending goal. The participation spectrum is composed of five degrees: inform, consult, involve, collaborate, and empower, starting with a low control on the decision and gradually increasing the impact over the final decision. It should also include a high degree of feedback in which those responsible for designing, implementing and assessing policies can inform stakeholders about how their inputs were used.

4. Conclusions

This study provides a qualitative evaluation of how to enhance the management plan for the Bogotá River Basin, with a focus on stakeholder engagement. It highlights areas that can be improved for the upcoming POMCA in 2029 and initiates a conversation on adjusting guidelines for effective stakeholder engagement, which can empower citizens and support sustainable development in urban and rural areas.

The research aimed to address the level of stakeholder engagement in Colombia based on the case study of the Bogotá River Basin. The methodology included studying the national environmental legal framework and the River Basin Management Plans issued in the last 30 years. Based on the research questions, the findings are as follows:

- The focus of social participation in Bogotá River Basin management is formal and informal in different stages of the policy-making process.

The government of Colombia is making significant efforts to enhance participatory mechanisms in the first stages of the River Basin Management plan formulation. We found that the establishment of river basin councils provides a formal structure for consultation and representation, while informal mechanisms like workshops and focus groups allow broader participation and knowledge sharing. Additionally, we identified the use of information and communication technologies, such as the ORARBO web portal. The use of such resources further enhances transparency and access to information for stakeholders and potentially can support environmental policy evaluation. However, this study found that participatory mechanisms are not consistent throughout the policy-making process. It is necessary to continue with formal and informal participatory mechanisms for stakeholder engagement in the phases of evaluation and follow-up as part of the policy's ongoing improvement process. Otherwise, stakeholder engagement becomes a box-ticking mechanism where efforts for participation become a form of merely meeting legal requirements.

- The legal framework for stakeholder engagement partially meets the guidelines of OECD Principle 10 for water governance.

The legal framework proposes a robust baseline where authorities, institutions, and requirements are clearly set. The government of Colombia is committed to promoting inclusivity and stakeholder participation in policy-making processes, irrespective of demographic differences such as ethnicity, gender, or age. To this end, the government has implemented policies and guidelines that encourage the involvement of all citizens in the decision-making process.

The OECD indicator framework for Principle 10 evaluates stakeholder engagement in three crucial aspects. The first aspect, known as the "What," assesses the state of the legal framework. In the case of the Bogotá River Basin, our research reveals a well-established

environmental policy that prioritizes social involvement. This policy mandates stakeholder engagement in decision-making processes that may affect their constitutional right to a healthy environment. Furthermore, the 2019 POMCA presents a comprehensive approach to stakeholder identification, accompanied by tailored participation strategies for each stakeholder group.

Moving on to the second aspect, the “Who,” we found that policies related to water management in Colombia have dedicated institutions and mechanisms in place to ensure the participation of all stakeholders with a vested interest in the subject. These well-defined structures allow for effective engagement throughout the policy-making process. However, in terms of the third aspect, the “How,” certain gaps have been identified. Specifically, there is a lack of established risk management mechanisms, and no procedures are currently in place to detect potential consultation fatigue among stakeholders. Additionally, there is a lack of clarity regarding the incorporation of the outputs gathered during the initial stages of policy-making into the final version of the policy.

The utilization of the water governance framework for Principle 10 provided by the OECD has proven to be a successful method in assessing the existence and effectiveness of mechanisms utilized in stakeholder engagement for the management of the Bogotá River Basin. Through this methodology, potential areas for improvement in policy-making processes were identified. While this research focused solely on stakeholder engagement, there is potential for using the OECD framework to measure all aspects of water governance, like effectiveness and efficiency. Such methodology is valuable in improving water resource planning, promoting urban sustainability, and assessing water governance in both public and private institutions.

A limitation of this research was the inability to conduct surveys and fieldwork to assess the perspective of local stakeholders on their involvement in the development of the POMCA. Therefore, future studies on stakeholder engagement in the Bogotá River Basin should conduct further investigation and major fieldwork to gain a comprehensive understanding of the local context. It is important to fully comprehend the complexities of the river basin before offering prescriptive suggestions on how to approach stakeholder engagement.

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