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The role of third parties in shaping transboundary cooperation of the Sixaola river basin (Costa Rica and Panama): an analysis through States' involvement, technocratic turn, and reterritorialization

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Transboundary water management in the Sixaola basin, shared by Costa Rica and Panama, has historically involved significant contributions from third parties. This study investigates their evolving roles and the implications for governance in this context. We conducted a comprehensive analysis of non-State actors interventions over time, focusing on changes in strategies, priorities, and their impact on transboundary basin governance. Our findings indicate that while non-state actor initiatives have attracted attention and financial resources, they have also introduced significant governance challenges, leading to inconsistencies in basin development. The analysis reveals that limited governmental involvement and the technocratic turn in development strategies have raised questions about basin development and its tangible impacts. Additionally, reterritorialization efforts highlight a local tendency to better align existing functional spaces with local concerns. This study contributes to the literature on transboundary basin management by providing insights into the multifaceted role of non-state actors in the Sixaola basin. It explores a case where governments remain distant in defining governance systems, highlighting the added value of focusing on non-state actors to grasp the complexity of hydropolitics and discussing the politics of river basin development.

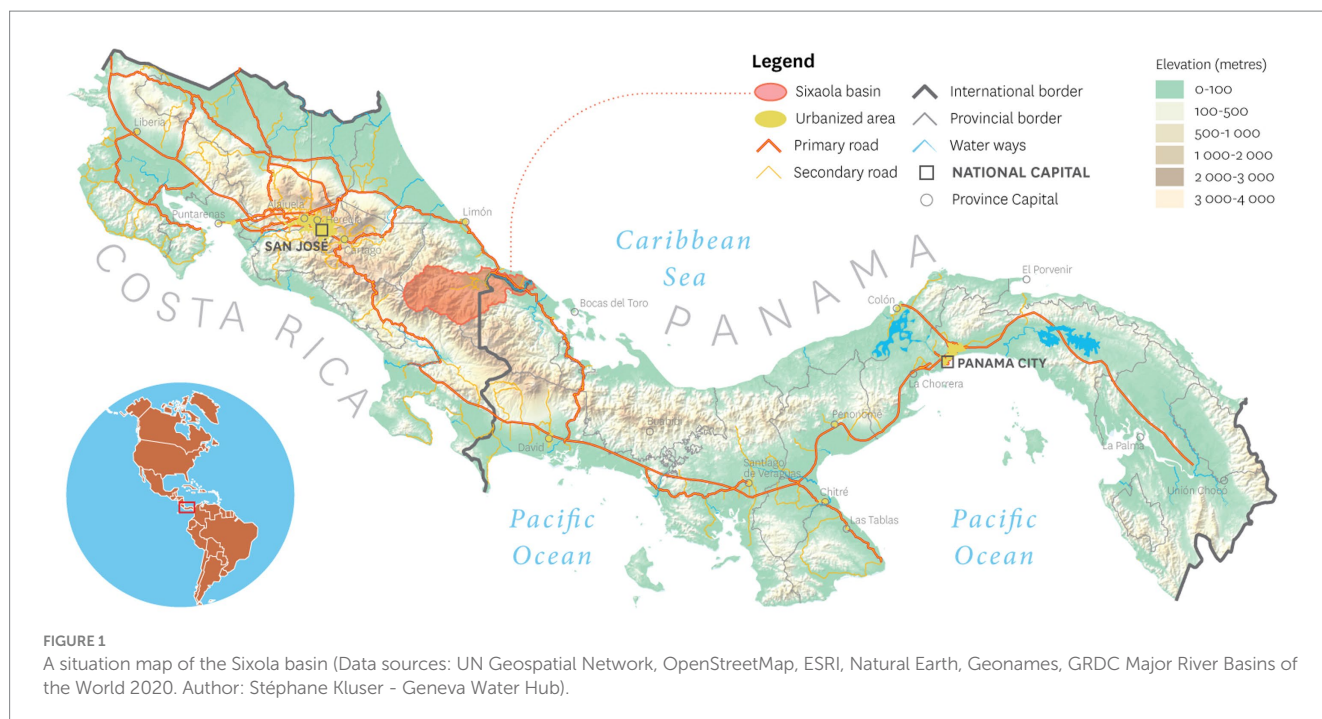
KEYWORDS

transboundary basin, third parties, development, international organizations, water

1 Introduction

The Sixaola basin spans the Caribbean coast of Costa Rica and Panama, covering an area of 2839.6 km². Originating in the mountains of the Talamanca canton, it ultimately flows into the Caribbean Sea (see [Figure 1](#)). This region boasts significant cultural diversity, with various indigenous groups like the Bri bri, Cabécar, Naso, and Ngöbe Buclé coexisting alongside Afro-descendant populations. The latter arrived during the late 19th century for purposes of railroad construction and banana production ([Rodríguez Echavarría, 2019, p. 297](#)).

This river serves as a shared border between Costa Rica and Panama. Despite historical transboundary political tensions, notably culminating in the Coto War in 1910 ([Rodríguez](#)



Echavarría, 2019), the area now enjoys a peaceful border. From a transboundary river cooperation perspective, the Sixola stands as a case of good practice (European Commission, 2014), however, governance challenges persist. Notably, tensions arise between economic activities and conservation efforts, a pivotal dimension of the basin. Roughly 80% of the Talamanca canton is under some form of protection, encompassing indigenous territories and designated conservation areas (Llaguno, 2016). This is a response to the rich biodiversity and primary forests located in the upper reaches of the river. According to the Inter-American Development Bank (IDB), there are approximately 261,700 hectares of tropical forest spread across multiple protected areas and indigenous territories (Rodríguez-Echavarría, 2013). Among these protected areas lies the lone binational park on the Isthmus, La Amistad International Park, designated as a Biosphere Reserve in 1982 and a UNESCO Natural World Heritage Site in 1983.

Furthermore, long-standing extractive activities linked to agro exports are notable. By the late 19th century, the United Fruit Company (UFCO), a multinational American corporation established in 1899, was already involved in extensive banana production throughout the province of Limón (Bourgeois, 1985). Presently, banana companies like DOLE, Del Monte, and Chiquita continue to heavily influence the region with vast plantations. These private entities are a significant source of employment, yet they also pose environmental challenges, including the contamination of the Sixola River with agrochemicals and pesticides.

Recognized as a global biodiversity hotspot (Ezbakhe et al., 2021), the basin has garnered the attention of numerous stakeholders. Since the 1990s, various organizations have contributed to implement conservation and management projects for shared ecosystems. Agencies, Non-Governmental Organizations (NGOs), and international organizations (IOs) such as the International Union for Conservation of Nature (IUCN), The Nature Conservancy (TNC), and the Inter-American Development Bank (IDB) have played pivotal roles in this basin,

promoting transboundary governance processes and multi-stakeholder platforms such as the Binational Commission of the Sixola Basin. The substantial presence of international actors and their influence on the transboundary governance of the Sixola river prompts an examination of how transboundary basin governance, often primarily led under the leadership of central States, gets operationalized.

In the case of the Sixola, previous research on existing cooperation projects (Rodríguez-Echavarría, 2013, 2019; Ezbakhe et al., 2021) has revealed a high degree of scepticism at the regional level regarding the impact of implemented projects. Within this context, this paper aims to analyse the evolution of a transboundary basin governance mainly led by third-type actors under loose supervision of central States. It endeavors to address the following questions: How do projects intervene in facilitating transboundary cooperation? What types of discourses are put forward in such a process? How do existing intervention strategies evolve and get materialized across scales?

To address these questions, we first offer three primary research hypotheses allowing us to unpack the trajectory of existing governance structures: limited governmental involvement, technocratic turn for water management, and processes of reterritorialization. These hypotheses contribute to existing literature by then exploring simultaneously different facets of a complex process. They allow us to unpack the intervention strategies of third-type actors. Subsequently, we provide insights into our methodology. Fourth, we present an empirical analysis based on a historical screening of various interventions in the basin and on semi-directive interviews of involved stakeholders. Fifth, we look back at our hypothesis and identify key learning.

As such, this contribution aims to shed light to the governance of a case that remains less addressed by the literature. Sometimes considered as a basin that is less conflicts prone (European Commission (2014), our contribution highlights existing tensions that historically arose in regard of development choices and outcomes (Kauffer et al., 2017) and the diversity of intervention strategies implemented across time.

2 Research hypotheses

Complex by nature, transboundary settings imply an additional level of intricacy for water management. In fact, such landscape indeed requires coordinating governance practices across different institutional set-ups, different legal systems, different cultures and sometimes languages (Timmerman and Langaas, 2005). In addition, the transboundary dimension implies the intervention of a multiplicity of actors that all depend to some extent from the river and that all have different stances on how to deal with existing regional challenges (Warner and van Buuren, 2016). As such, the management of transboundary rivers implies a complexity that goes way beyond States-to-States interactions only. This is especially true in the case of countries that benefit from international cooperation (Mirumachi, 2015) where a multiple array of stakeholders tend to intervene in shaping governance practices and discourses and in helping States to formulate public policies both at the national and transboundary levels (Alesina and Dollar, 2000; Cascão and Zeitoun, 2013; Knill and Steinebach, 2023). Embracing such increase of complexity, a significant body of work has focused on the diverse array of actors involved in transboundary water management (e.g., Earle and Neal, 2017; Mirumachi, 2020; Suhardiman and Middleton, 2020; Bréthaut et al., 2022; Rogers et al., 2023). This perspective, aligned with critical hydrogeopolitics (Sneddon and Fox, 2006) and process-centered analysis (Suhardiman and Giordano, 2012), underscores the need to move beyond state-centric interactions only and to examine the role of third parties in shaping transboundary water management processes. Private sector entities, International Organizations, and Non-Governmental Organizations can play pivotal roles in influencing the evolution of transboundary interactions. Transboundary water management results therefore from multiple and iterative interactions in which states tend to continuously position themselves (Warner, 2012; Warner and Zawahri, 2012).

This multiplicity of actors and the influence of development actors in shaping transboundary water management practices is particularly evident in the case of the Sixaola basin (Rodríguez-Echavarría, 2013, 2019; Ezbakhe et al., 2021). On the one hand, transboundary dynamics have historically been heavily influenced by the dominant presence of banana companies which contributed to shape regional economy through the conduct of intensive extractive activities that led to environmental damages (Rodríguez-Echavarría, 2013). On the other hand, recent decades have witnessed a growing engagement of International Organizations and Non-Governmental Organizations in shaping formal processes, providing financial investments, and devising action plans within the basin. Considering such fragmented landscape, our objective is to unpack the varying strategies of the different actors involved in the management of the Sixaola basin by scrutinizing the evolution of transboundary governance regimes and associated discourses within the basin and beyond. From the analytical viewpoint, we structure our analysis around three research hypotheses.

2.1 H1: limited governmental involvement in transboundary governance

Transboundary basin management can be realized through various types of organizations and institutions. Three broad types of water governance regimes [to be considered as governance systems

that have been stabilized through the introduction of a certain degree of coherence (Enjolras, 2008)] can serve as ideal types for transboundary water governance (Bréthaut and Pflieger, 2020). These regimes range from integration, typically characterized by considering the river basin as the primary unit of reference and establishing a river basin organization, to monofunctionality, where the governance regime revolves around a limited number of activity sectors that structure water usage at the basin level, and finally to polycentricity, where multiple decision-making arenas shape the governance regime in a more or less coordinated fashion. Across these different regimes, the positioning of states can vary considerably, implying varying levels of oversight on transboundary processes and various distributions of power among different types of actors (Sehring, 2009). From a historical perspective, the case of the Sixaola basin fluctuates among the three ideal types, with no definitive governance model that has been stabilized over time. However, we observe that the governance of the Sixaola basin is characterized by a situation in which the states of Costa Rica and Panama tend to defer leadership to non-state actors to drive the process of transboundary cooperation. In this first hypothesis, we therefore contend that this shift, distinct to the Sixaola basin (in contrast to observed dynamics in other parts of Costa Rica such, as, for instance, the Reventazón River Basin Management Commission), can be attributed to a developmental history tightly interwoven with the engagement of third parties (private sector, International Organizations, Non-Governmental Organizations) that constantly led the establishment of transboundary processes. We assume that this limited involvement of States in shaping transboundary water management allows non-State actors to use the basin in order to advance their agendas, whether extractive or linked to programs funded by international development policies (Copeland, 2023).

2.2 H2: a technocratic turn aimed at overcoming the inertia of governance structures

The Sixaola basin holds particular interest for analyzing the diversity of development strategies implemented over time. Indeed, numerous projects have structured transboundary water cooperation, with various development actors sequentially leading river management institutions. This second hypothesis allows us to delve into the different approaches that have shaped these interventions. Over time, we observe a progression from long-term strategies acknowledging government's role and delineating arenas to enhance political agency (Mérand, 2021), toward more focused, technocratic, and goal-oriented perspectives (Hout, 2012; Wood and Flinders, 2014), aiming for short-term and measurable impacts that do not necessarily fit with existing complexity in environmental governance (Pahl-Wostl et al., 2010; Almazán-Casali et al., 2021). Consequently, we scrutinize the evolving strategies across time and investigate how these projects materialize, contributing to basin development. Our analysis concentrates on examining the discourses articulated by actors implementing the strategy, alongside the observed outcomes and reception by basin stakeholders. Zooming in on the latest development phases, our second hypothesis posits that, in response to weakening interest from top political levels and slow-moving transboundary dynamics, development actors tend to turn toward

targeted measures and top-down technocratic approaches (Schulz and Siriwardane, 2015). Our historical analysis explores underlying dynamics, shifting government involvement, impacts of development projects, and the evolution of discourses at the basin level (Sneddon and Fox, 2006; Louis and Maertens, 2021).

2.3 H3: reterritorialization of transboundary governance

Environmental governance questions come with various dynamics that enable stakeholders to tailor arrangements to address existing challenges. In particular, these dynamics are characterized by movement across different scales, determining various territorialities and strategies for crystallizing relevant functional spaces. This hypothesis builds on the idea that various dynamics of territorialization do emerge, including iterative shifts between deterritorialization and reterritorialization. These concepts, notably shaped by Brenner (1999), focusing on the impacts of globalization, demonstrate the multiplicity of territorial impacts and illustrate how globalization requires territories to indeed cope with major economic changes. However, far from describing a unidirectional process, Brenner underlines that impacted territories can also act bottom-up in order to redefine existing territories, notably through networking and creating new relevant functional spaces. These perspectives on territorial dynamics offer complementary insights to understand how actors attempt to create and control the governance of their territory and to comprehend how territories are defined (Badie, 1995). Our third hypothesis considers that without tangible localized improvements in the Sixoala basin, local actors tend to redirect transboundary governance to alternative scales of reference, notably seeking to reterritorialize transboundary water governance as a way to define more relevant and legitimate functional spaces for basin management. We focus on how localized actors shift toward the definition of bottom-up frameworks, considered more suitable to tackle challenges specific to the local context. By doing so, we explore the non-linear process and interactions between different development strategies applied within the basin.

3 Methodology

Our analysis employs a historical approach, tracing the development of basin governance, the underlying narratives, and key actors. We concentrate on the period spanning from 2004 to 2022, which is indicative of the primary efforts undertaken in the Sixoala basin regarding transboundary management. Data collection draws upon previously published works (Rodríguez-Echavarría, 2013, 2019; Ezbakhe et al., 2021) as well as an examination of policy documents and grey literature associated with transboundary water management in the basin, particularly pertaining to the various projects under consideration in our analysis. In order to analyse each project, to comprehend the transition (and related triggers) from one project to another, to enlighten the interconnections and to understand how different initiatives seek to address each other, we integrated our analysis of policy documents and grey literature with the conduct of 14 semi-structured interviews conducted during a two-week fieldwork in San José and the Sixoala basin (more in particular in Puerto Viejo,

Changinola, Puerto Limón) in May 2023. Interviews served to corroborate the gathered information and to unpack the evolution of the governance systems (see list of interviews and questions in Annex). Most of the interviews (10 of 14) have been conducted in Spanish and lasted between one and 2 h, 4 of them have been conducted on-line and in English. Interviews allowed us to gather viewpoints from representatives from Costa Rica and Panama, from different institutional levels (from international to local) and from diverse sectors of activity. More particularly, we had the opportunity to conduct interview with President Carlos Alvarado, President of Costa Rica between 2018 and 2022, with representatives of different Ministries, of International Organizations, of development projects managers (both past and present), and with representatives from local communities. The contacts with the different interlocutors have been established through connections derived from past research activities in the basin or through personal connections in the region or beyond. Finally, data analysis was done thematically thanks to extensive note taking and cross-referencing of key data allowing us to discuss our research hypotheses.

4 A succession of projects targeting the basin, an empirical analysis

In the 2000s, a series of projects spearheaded by international organizations were executed in the Sixoala basin. These projects, following different approaches and strategies, were characterized by a transboundary perspective, considering the basin as a pivotal territorial unit for management. Their aims encompassed both the conservation of shared ecosystems and the willingness to develop additional governance structure on water resources for this border region. In the following sections (and Table 1), we provide an overview of the key projects that have been developed in recent years (from 2004 to 2022) that have been instrumental in shaping the evolution of the transboundary governance of the Sixoala basin.

4.1 Solidarity alliances for sustainable territorial management in Central America Project (2004–2011)

The first significant project we identify is the “Alianzas Project.” Financed from 2004 to 2010 by the Norwegian Cooperation Agency, the project comprises a total envelope of 5.7 million dollars. This endeavor, supported by IUCN, concentrated on decentralizing decisions-making processes and resources. It fostered the involvement of local actors through the establishment of local structures called “Alliances” or “Consortiums.” These entities played a vital role in influencing the political agenda and executing socio-environmental projects at the local level. According to the project’s Framework Program, the aim was to “ensure that people use natural resources sustainably and improve their quality of life, maintaining a balance between meeting their needs and conserving the livelihoods provided by ecosystems”. From 2008 to 2010, a systematization process was conducted to “establish and validate governance models for the management of natural resources and biodiversity conservation in border areas, and to promote the development of livelihoods through access to green markets” (Camacho, 2012, p. 12). The project placed

TABLE 1 A synthetic outlook of development projects related to water governance in the Sixaola basin.

Projects	Actors involved	Financing source	Project description	Spatial unit for implementing the project
Alianzas Project, Alliances in Solidarity for Sustainable Territorial Management in Central America 2004–2011	IUCN Regional Office for Mesoamerica IUCN member organizations: Talamanca-Caribe Biological Corridor, Fondation Natura, Panamá Vert, among others.	Norwegian government Total project budget US\$4.3 million for 2004–2008 and US\$1.4 million for 2008–2011	The main objective is to raise local awareness of the sustainability of their natural resources and improve their quality of life. This project seeks to multiply alliances between local stakeholders so that they can influence local and national public policies in the direction of more responsible use of natural resources (Nordic Consulting Group-IUCN, Final Evaluation of the Nordic Consulting Group, 2008 , p. 37). In the case of the Sixaola river basin, the project has encouraged the formation of two local alliances on either side of the border, and a Transboundary Commission.	Talamanca in Costa Rica and Bocas del Toro in Panama
IDB-GEF 2009–2012 Integrated Ecosystem Management Project for the Binational Sixaola River Basin	IDB, Costa Rican Ministry of Environment, Energy and Telecommunications (MINAET) National Environmental Authority (ANAM)	IDB donation of US\$ 17.9 million	The aim of this bi-national project is to contribute to the sustainable use and conservation of biodiversity, water and soil resources, for the integrated, cross-sectoral management of the Sixaola river basin (Franklin, 2007). The project was also intended to encourage and finance the implementation of projects combining production and conservation, and led by local organizations. It proposed the creation of a “Binational Commission for the Management of the Sixaola River Basin” as a forum for decision-making and governance.	Sixaola River watershed
BRIDGE project (Building River Dialog and Governance) (2011–2018)	Former Water Management Unit now IUCN Livelihoods and Climate Change Unit Law Centre	Water Diplomacy Program of the Swiss Agency for Development Cooperation	The BRIDGE Project seeks to “build water governance capacity through learning, demonstration, leadership and consensus building, around the management of transboundary river basins” (IUCN, 2012). Main objectives of the 3 phases of Bridge executed in the Sixaola Basin: Phase 1 Efforts aimed at stakeholder analysis, defining governance structure and functions in relation to the IDB-GEF Binational Project and the Permanent Binational Commission; Phase 2 Strengthening, defining strategic plan, periodic project follow-up meetings. Phase 3 Strengthen the Sixaola River Basin Commission and support the implementation of its political agenda.	Sixaola River watershed
Good water management and adaptation to climate change in transboundary basins(2010–2014)	Formerly Water Management Unit, now Livelihoods and Climate Change Unit, IUCN Environmental Law Centre, Bonn	German Ministry of the Environment Budget: US\$ 2.5 million	This project aims to improve the capacity to adapt to climate change in four transboundary basins: the Paz river (Guatemala / El Salvador), the Coatan and Cahoacan rivers located in the state of Chiapas (Mexico-Guatemala), the Lempa river (El Salvador / Honduras / Guatemala), as well as the Sixaola river basin. The project aims to promote “good governance” through the participation of local stakeholders in decision-making processes. It was implemented as a complement to the BRIDGE project.	Sixaola River watershed

(Continued)

TABLE 1 (Continued)

Projects	Actors involved	Financing source	Project description	Spatial unit for implementing the project
UNDP Sixaola Integrated Watershed Management Project (2022–2026)	United Nations Development Programme Organization for tropical Studies	Global Environment Fund Trust (GEF) The GEF contributes \$4,386,210 and with the resources contributed by the other counterparts, the total is \$18,239,801.44.	This project proposes a more technical approach and seeks to improve the management of the Sixaola watershed through policy generation, knowledge generation, reforestation and risk management.	Political Sixaola River watershed

significant emphasis on participation and governance processes. It envisioned that local actors would carry out productive activities and advocacy efforts, with support from the IUCN team in terms of applied methodologies and knowledge dissemination. The project operated in three main areas of the country: the border region of the San Juan River shared by Costa Rica and Nicaragua, the Talamanca-Bocas del Toro region between Costa Rica and Panama, and the Paz River shared by Guatemala and El Salvador.

Transboundary Commissions were established to implement projects and advocate for the transboundary dimension in political agendas at both national and international levels. Notably, these commissions served as pivotal governance and advocacy platforms that could initiate and lead new projects (Rodríguez-Echavarría, 2009). Specifically, the Talamanca-Bocas Transboundary Commission was established in 2006 within the Sixaola River Basin. This commission, highly active in 2007–2008, successfully undertook coordination and lobbying activities, especially with the Legislative Environmental Commissions of the National Assemblies of Costa Rica and Panama. Its objectives encompass strengthening the shared management of transboundary protected areas, prioritizing the management of the binational watershed of the Sixaola River considering challenges related to recurring flooding with the objective to improve the situation of transboundary indigenous communities.

4.2 The Sixaola river basin integrated ecosystem management project (IDB-GEF) (2009–2012)

Led between 2009 and 2012, the Sixaola River Basin Integrated Ecosystem Management Project, also known as IDB-GEF, is a \$2.2 million non-reimbursable technical cooperation project funded by the Global Environment Facility (GEF) of the United Nations Environment Program (UNEP). In this case, the GEF funds were administered by the Inter-American Development Bank (IDB), which also took part in project implementation. Initially led by Panama's National Environmental Authority (ANAM), a Binational Technical Executive Unit was later established to oversee project execution within the Permanent Binational Commission on Natural Resources of Costa Rica and Panama.

The project's main objective was to reconcile development and conservation, with a strong focus on water resources, biodiversity, and soil management. It sought to promote participatory watershed management, involving different institutional levels and civil society

actors such as organizations representing indigenous communities, cooperatives, workers unions from the banana production sector and development associations.

The project centered around three primary objectives: (1) to enhance the institutional framework for integrated water resources management through improved technical, administrative, and inter-institutional coordination; (2) to foster the development of production models compatible with water resource conservation for sustainable development; and (3) to promote the conservation and sustainable use of biodiversity, with special attention to climate change, international water management, and soil degradation (GEF, 2006). The IDB GEF project played a great role in building transboundary cooperation as, since 2009, the project participated to establish the binational Sixaola River Basin Commission.

4.3 Building river dialog and governance (BRIDGE) (2011–2018)

The BRIDGE Project launched in 2011 and remains active today. It is supported by IUCN through its Global Water Program and by the IUCN Environmental Law Centre. The project is funded by the Swiss Agency for Development and Cooperation. As a global initiative, the project spans across nine transboundary basins across Mesoamerica, Asia, and South America. In the Mesoamerican region, the project covered three transboundary basins, including the Sixaola river basin from 2011 to 2018. The core aim of BRIDGE is to enhance water governance capacities through learning, demonstration, leadership, and consensus building in transboundary watersheds. It aims to establish spaces for dialog and binational cooperation, involving stakeholders at various levels (local, national, and international) for the management of a shared watershed.

In the Sixaola basin, the project collaborated with IUCN member organizations and worked in partnership with the secretariat of the Costa Rica-Panama Binational Convention and the IDB-GEF project. It played a pivotal role in facilitating the work of the Binational Commission of the Sixaola River Basin, the key governance structure for the transboundary management of the Sixaola river. The BRIDGE project was a long-standing initiative in the Sixaola watershed, consisting of three phases (2011–2013 / 2013–2015 / 2015–2018). It achieved important political milestones, including cooperation between governments and the crystallization of clear functions for the commission such as coordination, preservation of natural resources and biodiversity, promotion of sustainable production, strengthening

binational institutional framework under a transboundary agreement. However, despite the positive outcomes, the commission remained challenged with lack of financial sustainability and with the difficulty to engage with local grassroots movements.

After three phases of project development, BRIDGE ultimately withdrew from the Sixaola watershed due to shifts in priorities within IUCN and SDC. Such shifts illustrate, on the one hand, an evolution with an emphasis on climate change and ecosystem-based adaptation rather than on integrated water resources management and, on the other hand, a shift in donor policy toward high-level hydrodiplomacy rather than the willingness to facilitate regional and bottom-up dynamics (personal communication, IUCN, 11 September 2023). IUCN involvement in the Sixaola came to an end in 2018. This decision led to an abrupt interruption of support of the Commission and no transition with the upcoming project could be ensured (personal communication with IUCN programme manager, 16 May 2023). Such a process left the Sixaola Basin Commission with limited resources to implement its environmental and political agenda, highlighting the dependence that the Commission had developed around the BRIDGE initiative.

4.4 UNDP Sixaola integrated watershed management project (2022–2026)

The Sixaola Integrated Watershed Management Project, funded through GEF financing dedicated to the international waters focal area, boasts a budget of approximately 13 million US\$. Commenced in 2022, the project is presently underway with a team of experts headquartered at the Organization for Tropical Studies (OTS), in collaboration with Panama's Ministry of Environment (MIAmbiente) and Costa Rica's Ministry of Environment and Energy (MINAE). This endeavor spans a duration of 4 years and aims to advance sound water governance through several key activities:

- **Policy Framework Definition:** The project endeavors to establish robust public policies for the management of the Sixaola basin.
- **Enhanced Understanding and Analysis:** A comprehensive assessment of the current situation will be conducted to inform decision-making.
- **Pilot Farms for Reforestation:** The project will support pilot farms, contributing to reforestation efforts and establishing platforms for dialog aimed at mitigating the impact of pesticides and agrochemicals.
- **Management of Extreme Events:** Efforts will be directed toward bolstering resilience against extreme events, including the implementation of an early warning system for flood prevention across 60 communities.

While this project shares the same geographic territory as the BRIDGE project and involves many of the same stakeholders, there has been no formal transition or coordination with the IUCN teams. The BRIDGE project concluded in December 2021, followed by the initiation of the GEF-UNDP project in January 2022. This situation led to local-level confusion, particularly given their close proximity in both territory and timeline.

Additionally, the coordination team of the GEF-UNDP project has indicated that they are not taking into account the experience or

studies conducted by previous initiatives (personal communication, GEF-UNDP project coordinator, 18 May 2023). At the local level, members of the Sixaola Basin Commission have observed a lack of continuity in stakeholder involvement. They note a shift in intervention style, as the current project has veered away from investing in local organizations, instead opting to bring in external specialists for implementation. This alteration in project governance has prompted significant critique by the executive secretary of the Binational Agreement and representative of MIDEPLAN in the Binational Commission which questions the top-down decision-making approach and the limited engagement of local actors in project execution (personal communication, member of the Ministry of planning, 10 May 2023).

This GEF project illustrates a shift in focus toward a more technically oriented intervention, aligning with the GEF's specific requirements. To this end, it employs tools such as Strategic Implementation Plans, which prioritize quantitative indicators (e.g., reforested hectares, executed training workshops) and place relatively less emphasis on political processes integral to water governance.

5 Reflecting on the lessons learned of the different project by discussing our research hypotheses

Based on the outlined evolution of development projects in the Sixaola basin, we now revisit our research hypotheses and delve into a discussion of three primary dimensions: limited governmental involvement, technocratic turn, and reterritorialization of transboundary water management.

5.1 H1: limited governmental involvement in transboundary governance

The recent history of the Sixaola basin paints a vivid picture of the multitude of actors engaged in shaping transboundary basin management and the related institutional framework. While the Governments of Costa Rica and Panama participate in various governance arenas, they tend to allow the process to evolve organically, often ceding leadership to third-party entities like Non-Governmental Organizations, private sector entities, development agencies, or International Organizations. In fact, as mentioned by the 2018–2022 President of Costa Rica (personal communication, Pres. Carlos Alvarado, 25 April 2023), the priorities as defined by the States in the basin relate more to the building of infrastructures (notably around adaptation to climate changes and disaster risk reduction) and to the fight against poverty. As such water is not considered as the top priority on Governmental political agenda. Furthermore, according to the interviews conducted, it was noted that the governmental presence differs between the two countries (personal communication, member of the Ministry of planning, 10 May 2023 and member of the binational commission of the Sixaola basin, 18 May 2023). Costa Rica exhibits a stronger presence of institutions compared to Panama, particularly in areas relating to health, security, and poverty alleviation. However, environmental concerns have not received significant attention, especially from the current government (personal communication, GEF-UNDP project technician, March 18,

2024). The sole water-related issue that has garnered attention from the Costa Rican and Panamanian governments is flood management in the middle basin of the Sixaola River.

As a result, the funding and establishment of projects focusing on the management of the Sixaola basin largely rely on external actors who wield significant influence over existing governance structures. For instance, the decision of IUCN to redraw its involvement in the basin led to strong uncertainty about the follow-up of activities and raised concerns about sustainable funding of the bi-national commission (personal communication, member of the Ministry of planning, 10 May 2023 / IUCN project manager, 15 May 2023). Another sign of this reliance on external resource, the most recent GEF project heavily leans on external consultants, with a staggering 86% of the budget allocated to consultancy services (personal communication, project coordinator, May 2023). The number of non-State actors involved across time and the various projects implemented in the region (see section 4) contributed to the establishment of a fragmented governance landscape, with limited coordination among the various governing bodies. The development trajectory underscores the shift from one project to another and highlights the diverse strategies employed.

While transboundary regions undeniably benefit from the different projects, notably through substantial investments, the prevalent influence of third-party actors has concurrently produced a heightened dependency, both economically and technically, thereby presenting challenges to regional self-sufficiency. This dominance prompts inquiries from local stakeholders who may not observe tangible improvements on the ground and may struggle to discern a sustainable trajectory once funding cycles conclude (personal communication, member of the binational commission of the Sixaola basin, 18 May 2023). The typical project duration, averaging between 4 to 5 years, does not align with institutional timelines or the political agenda of the Binational Commission. Previous research (Rodríguez Echavarría, 2019) has also revealed significant shortcomings in project formulation, where key local needs and issues, such as the contamination of the Sixaola River by agrochemicals and pesticides, are seldom adequately represented.

5.2 H2: the technocratic turn

The chronicle of various project phases illuminates the diverse approaches and scales of intervention pursued in each endeavor. These stages demonstrate a range of perspectives on transboundary water governance, from primarily emphasis on institutional building and political processes toward a turn toward technical approaches. More specifically, the last two phases represent two extremes: the IUCN Bridge project sought to facilitate transboundary cooperation through formalized decision-making procedures and the establishment of the Sixaola Transboundary Commission, while the new UNDP Sixaola Integrated Watershed Management Project mainly concentrates on a project-based approach with a focus on technical and localized interventions. Our analysis underscores the weak coordination across the different phases of the governance structure, the absence of transition and the weak institutional memory across the development pathway of the basin (personal communication, UNDP Project Coordinator, 18 May 2023, personal communication, IUCN project manager, 15 May 2023).

Consequently, each third-party entity enters with its own objectives, often without due consideration for the broader context or the legacies of past efforts in the basin (personal communication, member of the Ministry of planning, 10 May 2023). In its current form, the ongoing project has drawn lessons from the emphasis on political processes championed by IUCN, opting for a more streamlined, impact-oriented strategy designed to address the needs and concerns of the basin's inhabitants (personal communication, UNDP project coordinator, 18 May 2023). The implementation of the UNDP Sixaola Integrated Watershed Management Project illustrates a significant milestone in the ongoing efforts to enhance water governance in the Sixaola basin. With its distinct focus on technical interventions and compliance with GEF requirements, this project introduces a new dimension to the region's approach to integrated water management. However, the lack of a seamless transition and coordination between the outgoing BRIDGE project and the incoming GEF-UNDP project has led to confusion, compounded by their geographical proximity and temporal overlap (Personal communication, member of the Ministry of planning, 10 May 2023).

At the local level, there is a sentiment among stakeholders that the GEF-UNDP project lacks continuity and meaningful involvement of local stakeholders, in contrast to the participatory approach of projects like BRIDGE (personal communication, representative of the municipality of Talamanca, 18 May 2023, personal communication, member of the Ministry of planning, 10 May 2023). This shift in governance has prompted criticism from key figures in the Binational Agreement and the Binational Commission, who question the top-down decision-making and the limited participation of local actors in project execution (personal communication, member of the Ministry of planning, 10 May 2023). The GEF-UNDP project highlights a shift toward a more technocratic approach. It employs scientific and quantitative criteria to address socio-environmental challenges. As a result, in the prevailing context, the public debate concerning water governance in the basin and its potential evolution is notably restricted. Technical dimensions take precedence, evident in the prioritization of quantifiable criteria like the number of reforested hectares or the count of farms subjected to interventions. Furthermore, aligned with the intervention logic of projects, there is a notable inclination toward actions that prioritize efficiency or cost-effectiveness, side-lining political debate. That being said, the technical entry point can also facilitate a specific focus on governance challenges at the local level. For instance, as part of its program of activity, the GEF-UNDP, introduced discussions around the question of gender, emphasizing the need to empower women in communities. Finally, socio-environmental conflicts identified as priorities by local stakeholders, such as agrochemical contamination of the watershed by large banana companies, remain for the moment distant from the ongoing discussion.

5.3 H3: reterritorialization for relevant functional spaces

After nearly two decades of various attempts to structure the governance of the Sixaola basin, regional stakeholders observed minimal impact on daily life. Following years of interventions by third-party entities, local actors found themselves lacking the technical or economic resources needed to sustain these activities. This has led

to a perception among international organizations that local actors are ineffective, while governmental institutions are seen as bureaucratic (Rodríguez Echavarría, 2019). Conversely, local actors are questioning the efficacy of the projects, as the perception of absence of tangible results has not strengthened the legitimacy of third-party interventions in the basin (personal communication, member of the binational commission of the Sixaola basin, 18 May 2023). For many of the people interviewed, projects did not contribute to solve structural problems in the watershed and have rather neglected the issue of water management. Projects are considered to have focused on promoting the establishment of organizations at the community level but without clearly defining a purpose and without focusing on needs already identified by the communities. One can mention as for instance the threat of agrochemical contamination for access to drinking water. As such, interviewees consider that projects, especially the current one, “do not leave anything to the communities.” They also question the rigidity with which the project imposes agendas and working conditions in the watershed (Official of the Women’s Care Center, Ministry of Women’s Affairs, Panama, personal communication, April 24 2024 and Director of the National Civil Protection System, in the Province of Bocas del Toro, Panamá, personal communication, April 26, 2024).

At the local level, the intervention of the UNDP project has raised important tensions between the municipalities of Talamanca and Changuinola, the main governance entities in the basin, and the project executing unit. For the representatives of the municipality of Talamanca, this project has promoted a selective and unrepresentative participation (Personal communication with the Mayor of Talamanca, 24th October 2024). For the Mayor of Talamanca, local governments were excluded from the project. Furthermore, he argues that the project “does not bring anything new to the canton and that it is based only on studies” (Personal communication with the Mayor of Talamanca, 24 October 2024).

Drawing lessons from this process, the UNDP Sixaola Integrated Watershed Management Project is currently working to reformulate its development approach with consideration for regional concerns (personal communication, UNDP consultant, 10 May 2023). However, in practice, the project continues to heavily rely on external actors and consultants, opting not to leverage the activities and actor networks previously established in the region. Recognizing these dynamics, local actors are now taking steps to reorganize water governance at the basin level, with a notable emphasis on redesigning the governance system around a functional space primarily centred on activities that do not involve cooperation projects but on activities related to border management or risk management in the basin (personal communication, representative of the municipality of Talamanca, 18 May 2023). Through this approach, actors aim to re-establish territorial control over governance capacities, addressing transboundary challenges by informal cross-border cooperation processes that are neither coordinated by municipalities nor by cooperation projects. For example, there are exchanges between Costa Rican and Panamanian indigenous Bribri communities to safeguard organic cocoa production in the Basin. There are also local tourism networks in the watershed territories that are transboundary and includes territories outside the basin area such as Cahuita in Costa Rica and Bocas del Toro in Panama (Rodríguez, 2014).

In terms of watershed management, the fieldwork conducted in this border region allowed us to identify watershed committees and subcommittees which have been created as mechanisms to exercise water governance specifically on the Panamanian side. In 2018, the country constituted the National Committee of the Sixaola River Watershed. These committees contribute to coordinate with Costa Rican communities such as Las Tablas, which are carrying out their own activities promoting water source protection, species monitoring and rural aqueduct improvement as well as solid waste management (President of La Tablas sub-basin commission in personal communication, March 26, 2024). However, these platforms have important problems linked to the lack of economic resources which has limited their impact in the watershed (Head of Integrated Watershed Management, Directorate of Water Security, Ministry of Environment of Panama, personal communication, March 8, 2024 and Fernando Miranda, in personal communication, March 26, 2024).

Throughout the interviews, we were able to identify that current functional space (and its area of influence, as expressed by the UNDP project coordinator and a representative of the municipality of Talamanca, both in personal communication 18 May 2023) tend to exceed the limit of the river basin (see Figure 2), including the territory of communities such as Cahuita. Although not within the watershed, these communities are included in different projects such as the IDB GEF, the BRIDGE project, and UNDP projects. This inclusion is explained by their strategic importance due to the presence of institutions and key actors for water governance in the basin, such as community leaders and local organizations.

6 Discussion and conclusion

In this paper, we focused on the role of non-state actors in facilitating transboundary water management in the Sixaola basin. We opened the paper with the following set of questions: How do projects intervene in facilitating transboundary cooperation? What types of discourses are put forward in such a process? How do existing intervention strategies evolve and get materialized across scales?

The case of the Sixaola basin illustrates a rich history of interventions allowing to analyse specific projects but also the continuity (or lack of continuity) between the different approaches and strategies. While these different initiatives have garnered significant attention and financial resources for the region, they have also raised important questions about governance, the role of States in driving processes, proper impacts of projects on the ground, the role and legitimacy of non-state actors to facilitate and structure transboundary water management. Tracing back the evolution and comparing the different approaches across time, our study explores the overall coherence of a basin development that relies on successive intervention strategies mainly led by third-type actors. Consequently, our examination of the Sixaola basin illustrates the emergence of transboundary dynamics without a necessarily strong leadership from governmental authorities. Notably, throughout the implementation of various projects, governments remain on the periphery of on-going processes, that tend to respond more to the

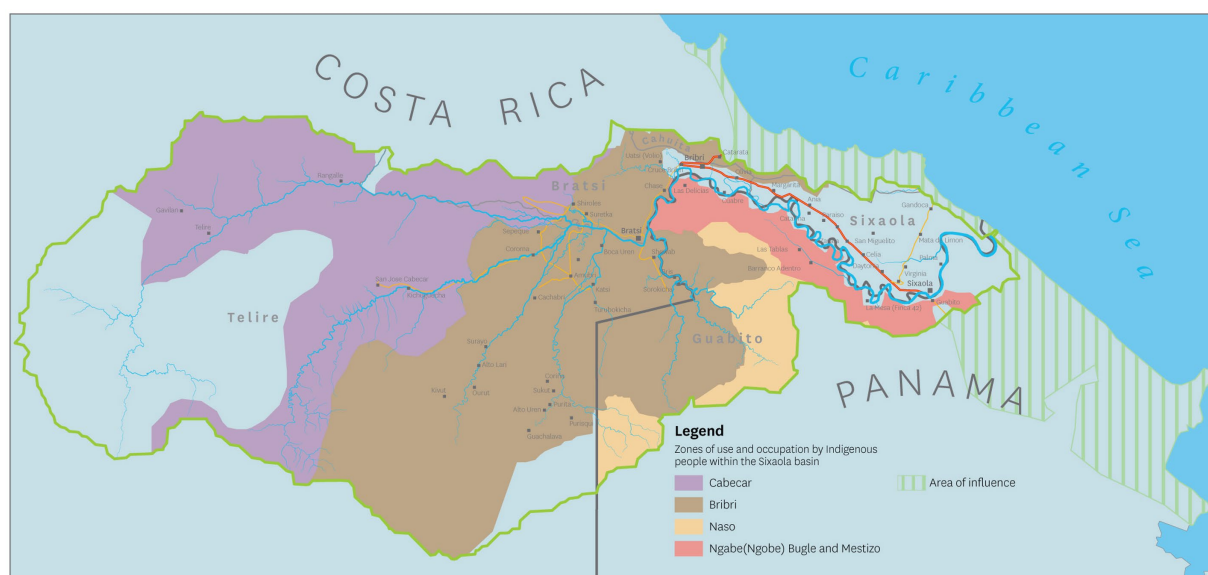


FIGURE 2

A functional space that goes beyond the river basin unit (Data sources: IUCN, UNDP, UN Geospatial Network, OpenStreetMap, ESRI, Natural Earth, Geonames, GRDC Major River Basins of the World 2020, Global Administrative Areas dataset. Author: Stéphane Kluser - Geneva Water Hub).

objectives and obligations of international funding schemes than to localized concerns, visions, and policy goals.

From the analytical viewpoint, we offer three hypothesis that allow to unpack on-going processes (and related complexities) simultaneously through different entry points: limited governmental involvement and the role of non-states actors, a technocratic turn in the implementation of development projects, reterritorialization of transboundary functional spaces. For basin development, the Sixaola case highlights two sides of the same coin. On one hand, the involvement of non-state actors has brought a considerable number of resources, allowing for the establishment of strategies for basin-scale development. It has also contributed to creating platforms where actors from Costa Rica and Panama, and from different institutional levels, have had the opportunity to meet and discuss ongoing challenges. Finally, in the current phase, on-going project allows to bring new types of critical dimension forward, for instance the question of gender balance. On the other hand, the succession of projects that are not necessarily articulated and interconnected implies challenges in terms of overall coherence of interventions in long-term basin development and questions concrete impacts and improvements at the local level.

As such, this piece contributes to the literature in several ways. Firstly, it highlights how the absence of state leadership can be seen as a missed opportunity, as states can play the role of governance facilitator, ensuring policy coherence and fostering multi-level and multi-actor processes at the basin level (Albrecht and Gerlak, 2022). Secondly, it shows how focusing on both state and non-state actors simultaneously contributes to unpacking the complexity of hydropolitics, considering the diversity of strategies, positioning, and impacts across levels and scales (Suhardiman and Giordano, 2012; Conker, 2016). This piece also contributes to discussing the politics of river basin development. Our historical analysis of projects and their interactions raises questions

regarding the sustainability of an approach primarily steered by and dependent on external actors and funding (Hout, 2012). Finally, our analysis demonstrates how regional stakeholders actively seek avenues to align development projects with localized concerns through the process of reterritorialization; an attempt to re-establish the management of the Sixaola River within the region, thereby ensuring the legitimacy of transboundary water management processes and redefining a functional space that aligns more concretely with local realities.

Data availability statement

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

Ethics statement

Ethical approval was not required for the studies involving humans because the research followed ethical protocols applied for any social sciences research endeavour, as framed by the two Universities of authors. Research protocols, aims of the research and use of the data have been explained to each interviewees before the start of interviews. Oral consent has been granted. The studies were conducted in accordance with the local legislation and institutional requirements.

Author contributions

CB: Conceptualization, Formal analysis, Funding acquisition, Investigation, Methodology, Writing – original draft, Writing – review & editing. TR: Conceptualization, Formal analysis, Funding

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Supplementary material

The Supplementary material for this article can be found online at: <https://www.frontiersin.org/articles/10.3389/frwa.2024.1369002/full#supplementary-material>

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