

Convergences and Challenges of Environmental Protection in Regional Contexts: Case of the Thomas Van Der Hammen Reserve and the Bogotá River Intervention to Overcome the Ecological Catastrophe ¹

Convergencias y desafíos de la protección medioambiental en contextos regionales: Caso de la Reserva Thomas Van Der Hammen y la intervención al río Bogotá para la superación de la catástrofe ecológica

Convergências e Desafios da Proteção Ambiental em Contextos Regionais: O Caso da Reserva Thomas Van Der Hammen e da Intervenção no Rio Bogotá para Superar a Catástrofe Ecológica

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Abstract

The article reconstructs the characteristics of environmental regulations for the Thomas Van Der Hammen Reserve protection and the Bogotá River cleanup strategy. It also aims to identify their most relevant orientations, transformations over time, and how they have managed to conceive a regionally coordinated scheme to comply with environmental sustainability mandates and resolve the tension between two rationalities on water governance: one promoting urbanization and economic exploitation and the other supporting conservation.

Keywords: sustainability, Bogotá River, Thomas Van Der Hammen Reserve, ecological damage, environment

Resumen

El artículo efectúa una reconstrucción de los aspectos característicos de la regulación ambiental para la protección de la Reserva Thomas Van Der Hammen y la estrategia de descontaminación del río Bogotá con la finalidad de identificar sus orientaciones más relevantes, transformaciones en el tiempo, y la manera en que con el paso del tiempo han logrado concebir un esquema articulado desde la perspectiva regional para cumplir con mandatos de sostenibilidad ambiental y resolver la tensión entre dos racionalidades sobre la gobernanza del agua: por una parte aquella que promueve la urbanización y la explotación económica y, por otra, la que promueve la conservación.

Palabras clave: sostenibilidad, río Bogotá, Reserva Thomas Van Der Hammen, daño ecológico, medio ambiente.

Resumo

O artigo reconstrói os aspectos característicos da regulamentação ambiental para a proteção da Reserva Thomas Van Der Hammen e a estratégia de descontaminação do rio Bogotá, com o objetivo de identificar suas orientações mais relevantes, transformações ao

longo do tempo e como, ao longo do tempo, conseguiram conceber um esquema articulado sob a perspectiva regional para cumprir com os mandatos de sustentabilidade ambiental e resolver a tensão entre duas racionalidades sobre a governança da água: de um lado, aquela que promove a urbanização e a exploração econômica e, de outro, a que promove a conservação.

Keywords: sustentabilidade, rio Bogotá, Reserva Thomas Van Der Hammen, dano ecológico, meio ambiente.

Introduction

The Thomas Van Der Hammen (TVDH) Reserve and the Bogotá River basin are two emblematic environmental ecosystems in Bogotá and Colombia. Both are endowed with enormous richness for hosting flora and fauna; they have also been recognized for their importance in the ecological balance and well-being of the population. However, their survival has been threatened by the growing urban expansion, industrialization, and chronic pollution, mainly in the Bogotá River.

The TVDH Reserve, renamed in memory of the scientist who dedicated his life to its study, has an extension of 1,395 hectares in northern Bogotá and its surroundings. This ecosystem's biodiversity includes wetlands, moors, forests, and savannas. It is the refuge of countless species of flora and fauna, regulating hydrological cycles and mitigating climate change.

On the other hand, the Bogotá River basin covers a vast territory that includes the course of the river and its tributaries, and it is also the central water supply system for the capital city and its inhabitants. However, the water it houses has been degraded by pollution and the alteration of its natural courses due to human activities, mainly the reception of industrial and urban waste.

Given that the current context prioritizes urgent action for environmental protection within a global governance framework based on sustainability and natural resource management, this article seeks to characterize the complex network of environmental regulations and policies that govern the TVDH Reserve and the Bogotá River basin.

To understand how current regulations affect the conservation and preservation of these natural strongholds and identify points of convergence within their gradual development, the proposed analysis will locate the tensions involved in the regulatory development that promotes environmental protection to reconcile urban growth with conservation and adopt regional reinforcement schemes.

The need for convergence in the political intervention of these two ecosystems must consider that the water sources are interconnected, so it constitutes a considerable risk to isolate the initiatives that protect them. The question posed by this article investigates the characteristics of these legal frameworks, their predominant tensions, and the specific strategies for their convergence to incorporate a much more robust environmental protection scheme that achieves the denoted

balance between urban expansion and economic activity on the one hand and conservation for sustainability on the other.

To this end, the discussion proposes a reconstruction of the most characteristic aspects of the legal frameworks forged over time to protect these ecosystems. The narrative is mainly ordered chronologically and, therefore, allows for recognizing the most characteristic transformations of such frameworks, the social contexts in which they arise, and how they seek a balance between rationalities oriented towards urbanization and conservation.

We hypothesize that it is possible to identify a regulatory pivot that adopts a strategic regulation of a regional scope involving the TVDH Reserve and the Bogotá River around planning and ordering schemes. These initiatives arise as a joint effort between competent authorities, civil society, and economic sectors thanks to the coordination, cooperation, and implementation of environmental and urban policies and measures in a scenario of permanent tensions. In any case, this pivot must be accompanied by a more robust strategy that includes environmental education, a culture of conservation, citizen participation, and co-responsibility in environmental management.

Materials and Methods

The methodological approach is qualitative based on desk research, judicial and administrative decisions, and others methods applicable to the subject matter. For the preparation of this article, the desk research involved the analysis of regulations on the TVDH Reserve's environmental management plan and the Bogotá River intervention plan in the face of the ecological catastrophe that its pollution causes. This step helped identify the strategies for adopting a regulatory legal framework that allowed the convergence of protection strategies for both ecosystems amid tension and political debates around land use planning. Such strategies are characterized by introducing environmental protection schemes with a regional scope.

This reconstruction also highlights the environmental importance of the TVDH Reserve and the Bogotá River, not only for the central savanna region but also for the country within the international recognition of these protected ecosystems. The article adopts a mixed, explanatory, and comprehensive approach that collects, analyzes, and links quantitative and qualitative data to respond to the problem statement.

Explanatory studies go beyond describing concepts or phenomena or establishing relationships between concepts; they aim to determining the causes of physical or social events. Thus, the subject matter analysis considered different sources: paradigmatic judicial rulings, official documents, relevant legal norms, and secondary sources obtained from databases. All these means of information were subject to triangulation and critical analysis.

When possible, we examined these regulations' coherence, complementarity, and effectiveness, as well as their practical application to and impact on environmental and land use management. The

stakeholders and competencies involved in protecting and conserving these territories were also identified, including environmental, regional, and district authorities, civil society organizations, local communities, and economic sectors. At the same time, the coordination actions between these actors, their capacity for participation, and their impact on environmental and land use management were pinpointed.

The legal principles applicable to this analysis are extracted from the legal frameworks analyzed and include precautionary, prevention, citizen participation, and environmental sustainability principles.

Discussion

The creation of the TVDH Reserve and the challenges of environmental protection T3

The TVDH Reserve is located in the north of Bogotá, with a total area of 1,395 hectares, connecting with the Eastern Hills, the Conejera and Torca hills, the alluvial valley of the Bogotá River, and the Guaymaral-Torca wetlands (Acuerdo 021 de 2014). Given the enormous biodiversity it houses, it constitutes one of the most significant environmental areas in Bogotá and the municipalities of the savanna.

Thanks to the work carried out by the expert Thomas Van Der Hammen, at the request of the Regional Autonomous Corporation of Cundinamarca (CAR, for its acronym in Spanish), a scientific study was published in 1996, determining the priority conservation areas of the savanna. The Reserve was included within a “Main Ecological Structure,” a concept that denotes those natural components that ensure and maintain biodiversity and serve as a reference for planning natural resources in the territory.

Subsequently, from the issuance of Ley 338 de 1997, the CAR entrusted Thomas Van Der Hammen again to express a guiding opinion on the adoption of a Management Plan for the Upper Basin of the Bogotá River that would inform the land use plans of neighboring municipalities in respecting the subsistence of the ecological structure. Since then, the importance of recognizing the Reserve as a connectivity zone between the Eastern Hills and the Bogotá River basin has been highlighted (Van Der Hammen, 1998).

The establishment of the TVDH Reserve dates back to 2000. Through Resolución 0475 de 2000 and Resolución 621 de 2000, the Ministry of the Environment recognized its importance and determined the need to convert it into a special protection area, given its characteristics of connection, restoration, and protection, as stated in Section 5 of this instrument (Resolución 621 de 2000). Likewise, creating the Northern Regional Forest Reserve Area implied defining its uses, delimiting it, and adopting a management plan that should be agreed upon between the CAR and the district environmental authority. The concepts of ecological heritage, ecological function of ownership, and conurbation were also coined there, serving as parameters for the plans.

In 2003, the Ministry of the Environment received recommendations from experts and academics about a general delimitation of the reserve area and the possibility of expanding the city (Ardila, 2003). From there, a series of initiatives were launched to specify the area, plans, and conservation measures through resolutions.

Later, Resolución 1640 de 2004, issued by the Ministry of Culture, determined that the Casa Hacienda la Conejera and the perimeter land were cultural assets of national interest. Because of this declaration, Resolución 1021 dated June 12, 2012, also issued by the Ministry of Culture, approved the Special Management and Protection Plan (PEMP, for its acronym in Spanish) for the Hacienda La Conejera, recognizing its cultural interest in the region.

In turn, the CAR declared the creation of the Thomas Van der Hammen Producing Regional Forest Reserve (Acuerdo 011 de 2011) and specified in Sections 2 and 3 the conservation actions that should be implemented there and the characteristics of an environmental plan, respectively, before delimiting the area.

These conservation actions, according to the described resolution, seek to strengthen the regularity of physical and biotic flows to guarantee ecosystem connectivity, preserve the high Andean and aquatic ecosystems, protect the fauna and flora with their endemic species, restore and protect the environmental goods and services provided by the area to rural communities, protect the forests that serve as natural flood control, restore and protect the natural, historical, and landscape values of the area, promote the appropriation and enjoyment of existing environmental values in the area, encourage environmentally sustainable practices within existing agricultural uses and promote their substitution for forest cover, recover deteriorated and degraded areas and counteract the socioeconomic dynamics that cause these effects, promote scientific and applied research, and improve the socio-environmental conditions of residents (Corporación Autónoma Regional de Colombia, 2014).

Section 4 of the Reserve's provisional Environmental Management Plan established a usage set of rules. It included a primary use of forest nature for activities associated with conservation and compatible uses such as scientific research and passive recreation. Active recreation, infrastructure for utilities, and security services were listed as conditional uses. Any other use not outlined in these provisions were considered prohibited.

The TVDH Regional Forest Reserve is located entirely within the rural area of the Capital District, specifically in the localities of Suba and Usaquén. Under this premise, it is pertinent to highlight the main competencies of the different dependencies of the District Administration concerning this area. These include controlling urban works and construction in the area, taking the necessary actions to recover improperly occupied public space, ensuring public safety and order, maintaining road and public space infrastructure, relocating populations settled in non-mitigable risk areas, preventing, mitigating, and addressing forest fires and other risks and threats in coordination with other

responsible parties, implementing economic and social development alternatives for the population settled in the area, formulating and implementing economic and tax instruments, providing environmental education, acquiring properties under the terms of Sections 108 and 111 of Law 99/1993, and strengthening the Environmental Police in the Reserve in coordination with the CAR (CAR, 2014).

In 2014, the CAR adopted the Reserve's Environmental Management Plan to determine the preservation mechanisms, procedures, and methods, as well as the sources of financing to ensure its sustainability.

In 2015, the District Planning Secretary's Office established the eight surrounding polygons of the Guaymaral-Torca wetlands as an environmental protection area (Resolución 00819 de 2015). This area includes the TVDH Reserve, and the principle of precaution was not applicable in this case. The practical effect of this resolution was to exclude 131 hectares from the protected area.

In this way, the regulation of the Reserve, from its inception, maintains its forest characteristics to connect the city's hills to the northern part and adopts conservation measures that adequately preserve the ecosystems it houses due to their environmental significance.

However, the gradual consolidation of the Reserve will face increasing resistance from political sectors seeking to reform the legal framework supporting it to transform the usage regime and undertake urban development projects there.

In 2016, the former Mayor of Bogotá, Enrique Peñalosa, initiated several strategies aimed at subtracting part of the Reserve's territory to expand a major avenue in the city connecting the northern savanna. Since then, a political and legal confrontation began, with the main scenario being the implementation of the Land Use Plan at the time, an instrument under which municipalities and districts in the country must plan land use and establish the programs and projects that will govern these matters for the next 12 years (Ley 388 de 1997).

The debate that arose from these initiatives of the former mayor allowed the identification of other historical tensions that called into question the protection of the Reserve. For example, approximately 76% of the properties comprising it were owned by about 30 companies (El Espectador, 2016). Traditionally, these properties had been used for activities other than those allowed by the constitutive regulations of the reserve. Decreto 3600 de 2007, which regulates the provisions of Laws 99/1993 and 388/1997 regarding determinants of rural land planning and the development of urban planning actions for land division and construction, established land use that had to be consistent with conservation functions for reserves. This implied the prohibition of authorizing urban planning actions involving the subdivision, division, or building of real estate that implied alteration or transformation of usage.

In 2016, the Bogotá City Mayor aimed to urbanize the Reserve with multiple audiovisual campaigns (Pinilla et al., 2019). In the same year, the District Environmental Secretariat issued Resolución 1213 de 2016, revoking Resolución 00819 de 2015. Furthermore, it was established that the

precautionary principle was not applicable. It was an opinion used to support adopting protective measures against products or technologies that may pose a severe risk to health or the environment, as provided for in Article 15 of the 1992 Rio Declaration on Environment and Development. However, the most significant practical effect of this resolution was the exclusion of eight polygons from the protected area, covering 131 hectares (Secretaría Distrital de Ambiente, 2015).

Later, in 2018, the Mayor of Bogotá, D.C., Enrique Peñalosa, formally requested the CAR to realign, subtract, and categorize the lands of the Reserve to continue with his urbanization plans. Given the magnitude of the matter, a public debate was held that engaged the citizenry, and several public hearings were conducted. Finally, this agency issued an opinion that did not recommend proceeding with the subtraction process. The lack of studies by the district administration and the limited citizen participation during the process to support the request were noted among the arguments.

While the debate regarding these initiatives persisted, the public took on a leading role in defending the preservation of the Reserve. For instance, the Citizens' Oversight Committee for the Protection of the Thomas van der Hammen Forest Reserve, (Veeduría Ciudadana para la protección de la Reserva Van Der Hammen, 2018) expressly requested the Peñalosa Administration:

...absolute respect for the environmental vocation of the Thomas Van Der Hammen Reserve and the technical opinions that made it possible. (...) "a new global awareness of the devastating effects of climate change [and] the materialization of this vision [,] in which the use of space respectfully integrates human settlements with the water and biological resources of the territory.

Subsequently, the district administration of Peñalosa introduced a draft agreement for the review of the Land Use Plan, which, while not including modifications to the Reserve, proposed a mechanism for urban expansion by establishing an urbanizing boundary around it.

With the change in the district administration in 2020, the Mayor of Bogotá, Claudia López, announced that she was withdrawing the request made by the previous administration to change the category of the TVDH Reserve, redefine its boundaries, and construct three roads there: the extension of Avenida Boyacá, Avenida Novena, and the expansion of the Avenidad Suba-Cota.

Finally, on January 31, 2020, the CAR accepted the withdrawal submitted by the Mayor of Bogotá concerning the TVDH Reserve, ordered the legal notification, and archived the process definitively. As of that date, the legal protection of the Reserve is reaffirmed, and the challenge of implementing the management plan measures continues.

The strategic importance of the Bogotá River basin for environmental sustainability in Colombia

The Bogotá River is one of the most significant water resources in the country. According to the (Observatorio regional ambiental y de desarrollo sostenible del río Bogotá, 2021) it has a longitudinal length of 347 kilometers and influences 589,143 hectares, traversing 46 municipalities in the central region of the Cundinamarca department. It affects approximately 12 million people living in Bogotá and the surrounding savanna. About 32 % of the country's economic activities, such as agriculture, industry, and livestock production, are concentrated in its vicinity.

The river is divided into three sub-basins: upper, middle, and lower. The middle sub-basin stretches from the Puente la Virgen sector in the municipality of Cota to the Muña reservoir in Alicachín, covering about ninety kilometers. This is where the river bears the heaviest pollution load due to its proximity to the city and, specifically, to industries discharging their wastewater into it. Influential economic activities in this area include tanneries, food production, dairy and meat processing, beauty product manufacturing, gas and oil production, and textiles (Escalante & Fajardo, 2022).

The importance of the Bogotá River as a fundamental water resource for the country's central region coincides with a chronic and accelerating pollution phenomenon that, as will be observed later, has not been effectively countered or mitigated. It constitutes one of the country's most alarming ecological catastrophe cases. Pollution begins approximately 10 kilometers downstream from its source in the municipality of Villapinzón and continues to its confluence between Girardot and Ricaurte. Bogotá contributes 84 % of the river's pollution. This pollution entails the alteration of the basin and ecosystems due to biological, chemical, and physical waste discharged into it because of economic and domestic activities. Using river water in agricultural and livestock activities represents one of the most significant environmental risks due to the high concentration of chemicals and heavy metals that can negatively impact human health, the surrounding ecosystems, and wildlife (Mayorga, 2021).

The strategic importance of the Bogotá River and its status as one of the country's most alarming pollution cases has given rise to significant public concern in recent years. This concern has manifested in various programs, plans, and projects to mitigate this environmental impact and counter pollution. This phenomenon has run in parallel with the development of a state policy that, in line with the directives of the international community, especially the United Nations, revolves around achieving sustainable development based on the availability of water resources in the face of water cycle variability because of climate change.

The Colombian State adopted the National Policy for Comprehensive Water Resource Management (PNGIRH, for its acronym in Spanish), structured around two main points. The first pertains to the status of the water resource concerning supply, demand, quality, and risks. The second encompasses management based on planning, administration, monitoring, and governance. Under the latter, relationships between different social actors are promoted for decision-making (Ministerio de Ambiente y Desarrollo Sostenible, 2021).

It falls upon the CAR to assume the technical and socio-environmental actions directed toward fulfilling the governance component in the savanna. This is done through the political, technical, legal, and social responsibility for managing the protection, conservation, compensation, and ecological restoration of the Bogotá River and exercising control over the municipalities belonging to the basins that comprise it. This entity has undertaken the largest number of projects to recover the middle basin of the Bogotá River (Escalante & Fajardo, 2022).

Specifically, about the middle basin, a joint strategy has been adopted that brings together the actions of ten municipalities around programs, projects, and actions for the conservation and restoration of environmental and ecosystem settings. This includes reforestation and regeneration of native forests in the hills and along the riverbanks and wetlands, protection of the moorlands, propagation of live fences, promotion of sustainable agriculture, and reduction of surface water pollution that makes up the river's course (Díaz & García, 2021).

Another key player in the State's strategy to reverse the pollution of the river is the administration of justice. Precisely, the Council of State, the highest body of contentious administrative jurisdiction, issued a landmark ruling that responds to multiple popular actions filed by citizens over the past 23 years. These actions have all been aimed at the cleanup, recovery, and conservation of the Bogotá River and its tributaries.

The operative part of the appeal judgment orders the "Environmental and Social Improvement Plan of the Hydrographic Basin of the Bogotá River," based on the achievement of ten specific objectives aimed at improving the quality of life of citizens and ecosystems, revolving around three components: i) environmental and social improvement of the basin, ii) institutional, intersectoral, and economic coordination, and iii) education and citizen participation processes (Consejo de Estado, Sentencia AP-25000-23-27-000-2001-90479-01).

The ruling also formulates five monitoring points for compliance with the judgment's orders to coordinate improvement actions and precisely track progress. These points include water quality, education and participation, inter-institutional cooperation, technology and infrastructure, and land use (Observatorio Regional Ambiental y de Desarrollo Sostenible del Río Bogotá, 2021). This decision was preceded by the declaration of state responsibility for action and omission in the configuration of the river's environmental, ecological, economic, and social catastrophe and its tributaries. Therefore, orders were also issued to 19 national entities, 46 municipalities within the basin, and several private companies with influence in the area (Consejo de Estado, Sentencia AP-25000-23-27-000-2001-90479-01).

The judicialization of the environmental conflict promoted the creation of spaces for interaction among the involved actors and broadened the perspective for understanding it. This facilitated agreements that fostered concrete actions to protect violated rights within programmatic and more coordinated initiatives (Güiza et al., 2015). The ruling also strengthens the role of territorial entities,

led by municipalities, in implementing the plan in line with international commitments to protecting and conserving the water.

Results

Strategic intervention in the face of the ecological catastrophe of the Bogotá River and points of convergence with the protection of the TVDH Reserve

The Guacheneque moorland is where the Bogotá River originates, with a course of 336 kilometers until it flows into the Magdalena River. Along its path, it passes through 42 municipalities inhabited by approximately 8.04 million people, including Bogotá (Departamento de Planeación Nacional, 2004). As the river flows, it receives untreated discharges of pathogenic agents (viruses, bacteria, parasites from human and animal organic waste), organic chemicals (oil, plastic, pesticides, detergents), and inorganic chemicals (acids, salts, toxic metals) (Instituto de Hidrología, Meteorología y Estudios Ambientales– [IDEAM], 2014).

The Bogotá River is facing an environmental catastrophe that has been attempted to be addressed through various means, among which the sentence issued by the Cundinamarca Court in the first instance and the Council of State in 2014 in the court of appeals stand out. In both rulings, the State was condemned for its responsibility for the river's pollution, as it failed to mitigate, prevent, and protect the river basin.

The judgment aims to recover the Bogotá River watershed to improve its inhabitants' quality of life continuously and sustainably. It also seeks to manage the Bogotá River Hydrographic Basin in a systemic framework through the integration and combination of environmental, social, economic, and institutional elements (Consejo de Estado, Sentencia AP-25000-23-27-000-2001-90479-01). This is achieved through environmental damage mitigation and protecting the surrounding areas to fulfill preservation functions per Article 308 of the Natural Resources Code (Gobierno Nacional, 1974).

The high vulnerability of the remaining ecosystems and surviving wetlands to intense anthropogenic filling justifies implementing this structural measure to enable the interconnection of adjacent protected areas for the Bogotá Savanna. These areas include the Protective Forest Reserve of the Eastern Forest of Bogotá, the Environmental Management and Preservation Zone (ZMPA) of the Bogotá River, and potentially the Majui Hill in the municipality of Cota, as well as the district-protected areas system (District Ecological Park: Conejera Hill and the Conejera, Guaymaral, and Torca Wetlands). All of these are framed within a consolidation dynamic to ensure the adequate preservation of the primary ecological structure of the Bogotá Savanna (CAR, 2014)

The aforementioned allows us to determine the geographic connections and strategic relationship between the Bogotá River Basin and the TVDH Reserve. This relationship has even been acknowledged by the CAR (2014). In the Reserve's Environmental Management Plan, the protection

of 3.47 % of the area, which consists of wetlands, is explicitly considered. Furthermore, this plan specifically outlines the restoration of connectivity with the Bogotá River and the Eastern Hills, involving ecological rehabilitation and recovery plans. This includes mountain corridors, and the restoration of surface water flows to prevent flooding in the area connecting to the Bogotá River.

In any case, the Council of State's ruling on the Bogotá River has promoted actions that link the protection of the Reserve and the Bogotá River Basin. It was determined that the CAR had an obligation to update the Land Use Plan to exercise control and regulation over the properties within the TVDH Reserve as part of the Land Use and Management Plan of the Bogotá River Basin (POMCA, for its acronym in Spanish).

The POMCA was jointly developed by various entities and led by the CAR. In 2019, Resolución 957 was issued, approving the adjustment and update of the land use and management plan for the Bogotá River Basin and other provisions. It states that the Land Use Plans and other environmental regulations of municipalities adjacent to the Bogotá River must be adjusted according to the environmental zoning, programmatic, and risk management components.

This trend toward the integration of joint protection areas between the TVDH Reserve and the Bogotá River is also reflected in the district development plan for 2020–2024, “A New Social and Environmental Contract for the 21st Century.” This plan includes mechanisms for Bogotá to integrate with the savanna region. It sets goals for issuing a regional Land Use Plan to restore the Main Ecological Structure as a land use element. It also includes over 16 goals related to the comprehensive management of the Bogotá River, including actions for the river's recovery and compliance with the Bogotá River cleanup judgment through the Hydrographic Basin Land Use and Management Plan (POMCA). Additionally, it involves expanding conservation areas in the TVDH Reserve and the District Mountain Ecological Park Entrenubes, Cuchilla del Gavilán, rural areas of Usme, and Ciudad Bolívar.

This projected design towards regional governance seeks greater coordination of decisions to consolidate the Bogotá River bank. It considers the urban needs of the densely populated surroundings while ensuring the environmental preservation and sanitation of the river and its ecological corridor. This plan also addresses risk prevention and the city's climate resilience. It encompasses 15 strategic lines and action projects to positively impact the physical, biotic, and socioeconomic levels concerning the Bogotá River POMCA. The underlying principle is water governance, with four programs: 1) Strategic ecosystems and sustainability of the basin's territory; 2) Water security in the Bogotá River Basin; 3) Comprehensive Disaster Risk Management and Climate Change Adaptation; 4) Environmental and Production Guidance.

In this way, the city-region projection will serve as the roadmap for the district in the next 12 years, considering that the current Land Use Plan, which is currently in effect, dates back to 2000.

Conclusions

Currently, a regulatory coordination seeks to reconstruct the environmental path in the city-region, which has been inconsistent between administrative decisions and actions for many years. In the case under analysis, this coordination involves the TVDH Reserve, the Bogotá River, the POMCA, and the Development Plan and Land Use Plan, with the POMCA taking precedence in land use planning.

The 2014 Council of State ruling set an essential precedent for defining ecological heritage and cleaning up the Bogotá River. It instructed the 46 municipalities within the river basin to advance in the complex and challenging task of complying with the judicial orders, understanding that the basin is a whole and requires coordinated actions.

After the intense debate regarding the intervention in the TVDH Reserve, the recommendations for its protection and conservation must be followed, particularly the connection with the Bogotá River. This is crucial due to the significance of this water source for the city, the department, and the country. Environmental authorities have stressed the need to maintain the rural use of its development areas to conserve the wildlife and flora inhabiting the TVDH Reserve. It has also been emphasized that the city's inevitable expansion should not come at the expense of these primary protection ecosystems.

There is a significant challenge in aligning the district's Land Use Plan (POT, for its acronym in Spanish) with the guidelines in the Bogotá River POMCA, which takes precedence over local land use planning. This alignment should ensure effective implementation in the territory and harmonize with the region. A conservation and restoration approach must be employed so that the TVDH Reserve and the Bogotá River can be the ecological structure that the city needs. This is possible with a POT recognizing that urban development in this area is unnecessary for the city's growth.

The TVDH Regional Northern Forest Reserve has deteriorated, with land use in certain areas that is not suitable. A corresponding restoration plan is required to recover the city's northern edge, emphasizing its connectivity with the Eastern Hills, and the need for the proper and complete implementation of its management plan.

Current regulations regarding the Reserve and the Bogotá River have been strengthened over the years, but district administrations have been unable to execute their provisions effectively. This has resulted in a delay in restoring these water sources, which requires every effort necessary to help mitigate the environmental impacts affecting the city and the region.

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