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Reconceptualizing water governance through traditional knowledge: insights from Wayuu cosmovision in La Guajira, Colombia

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This paper presents a conceptual analysis of critical water governance issues in La Guajira, Colombia, with a specific focus on the Wayuu's profound spiritual and relational conceptualization of water, which is largely unrecognized in prevailing top-down, techno-economic governance approaches. The primary objective is to conceptually explore the complexities of water governance, the unique Wayuu cosmovision of water, existing water management practices, and the traditional knowledge of community's, drawing extensively from foundational research and documentary sources. The methodology involved systematic review and synthesis of key scholarly documents to elaborate a conceptual framework. The principal conceptual finding is that the severe water scarcity crisis—characterized by insufficient, unacceptable, unhealthy, and inaccessible water—emerges not only from physical conditions but fundamentally from a conceptual misalignment. This misalignment is evident in institutional failures, and a systemic disregard for Wayuu ancestral knowledge. This analysis concludes that the current water crisis in La Guajira represents a violation of fundamental human rights, aggravated by the profound disconnect between state policy conceptualizations local cultural and socio-ecological realities.

KEYWORDS

traditional knowledge, water governance, La Guajira, Wayuu, indigenous people

1 Introduction

Water governance in La Guajira, Colombia, particularly within the Wayuu Indigenous communities, represents a critical contemporary issue, fundamentally characterized by the population's scarce access to this vital resource (Gil Sarmiento et al., 2016; Maida, 2018). The situation of water access in this region presents a complex scenario defined by exclusion and the generation of significant local inequalities, rather than water being conceptualized and operationalized as a universally guaranteed right (Fuentes et al., 2018). This scenario is further complicated by intense competition for water resources among diverse powerful sectors, including large-scale mining operations, the burgeoning agro-industry, local agricultural production, and the pressing demand for potable water for human consumption (Caro, 2018).

A central conceptual problem lies in the persistent inability of governmental and institutional frameworks to recognize and integrate the diverse local conceptualizations of, and profound relationships with, water held by Indigenous communities such as the Wayuu (Paz Reverol, 2017; Ulloa, 2020). This omission not only aggravates resource

mismanagement but also leads to the direct violation of communities' right to continuous access to good quality water, a right declared fundamental by the United Nations on June 28, 2010 (Rodríguez and Gómez-Rey, 2013). Consequently, La Guajira is mired in a systematic humanitarian crisis linked to extreme poverty, prevalent malnutrition, and high infant mortality rates, all of which are inextricably associated with widespread water scarcity (Bonet and De-Castro, 2017).

Several studies highlight a critical conceptual disconnect local, symbolic, cosmological, and sociocultural perceptions of water among the Wayuu markedly clash with the predominantly economic and technical policy conceptualizations of national institutions (Otálora-Cotrino et al., 2017; Ulloa and Romero-Toledo, 2018; Quiroga et al., 2020; Robles Chávez, 2018). These institutions frequently design management systems without adequately considering territorial particularities or local knowledge systems.

The research underpinning this paper offers a conceptual analysis based on a synthesis of critical studies (primarily, Palmer, 2023; Quiroga et al., 2020; Robles Chávez, 2018; Torres Campos, 2021; Vásquez and Correa, 1993). It seeks to delve into the multifaceted complexities of water governance in La Guajira. Specifically, this paper aims to conceptually elucidate the unique Wayuu cosmovision of water, their current water management practices, and the community's perception of governmental actions (Lippi, 2024). The conceptual contribution of this analysis is underscored by its focus on the severe deficiencies in water supply—which exhibit drastic shortcomings in terms of sufficiency, acceptability, healthfulness, and physical accessibility—thereby undermining the fundamental human right to water and a dignified life for the Wayuu people.

This paper will present the conceptual synthesis derived from the documentary review, structured around four key themes: (a) the grave situation of water access and scarcity; (b) the interaction between formal water governance frameworks and the Wayuu cosmovision; and (c) traditional Wayuu water management practices. The discussion will subsequently interpret these synthesized findings to develop conceptual insights.

2 Situating the crisis: the hydro-social and hydro-cultural landscape of La Guajira

To fully grasp the complexities of the water crisis in La Guajira, it is essential to move beyond a purely technical or environmental analysis and situate the issue within broader theoretical debates on hydro-social and hydro-cultural dynamics. A hydro-social framework posits that water and society are mutually constitutive; water is not merely a natural resource to be managed but is actively shaped, controlled, and produced through social, political, economic, and cultural processes (Linton and Budds, 2014). Consequently, water scarcity in La Guajira is not simply a result of low rainfall but is, as scholars have argued, a condition actively produced and intensified by institutional practices and extractive industrial processes (Daza, 2016; Maida, 2018; Palmer, 2023).

This perspective reveals how the region's hydro-social cycle has been profoundly altered by powerful actors. The intensive water consumption of large-scale mining operations—with entities like Cerrejón using an estimated 17 million liters daily—and the subsequent disappearance of vital river tributaries directly reconfigure water flows, creating scarcity for human consumption (Urrea and Calvo, 2014; Fuentes et al., 2018). This dynamic is further entrenched by institutional failures, where state policies and resource allocation systematically favor industrial interests and urban centers, leaving rural and Indigenous territories neglected and exacerbating pre-existing inequalities (Romero and Barón, 2013; Archila, 2015). Widespread corruption and the mismanagement of public funds further cement this unequal distribution, transforming a natural resource into a contested commodity (Hoya Noel, 2022; Palmer, 2023).

Complementing this framework, a hydro-cultural lens emphasizes that water governance is also a site of cultural contestation, where different ways of knowing, valuing, and relating to water collide. The central conflict in La Guajira is an epistemological one, pitting a dominant, state-led technocratic paradigm against the holistic, ancestral cosmovision of the Wayuu people. The state's approach, reflected in policies like the National Policy for Integrated Water Resources Management [PNGIRH (Política Nacional para la Gestión Integral del Recurso Hídrico), 2010] and the frameworks of the United Nations Development Programme (UNDP), conceptualizes water primarily through objectives of efficiency, equity, and sustainability within a political-economic system (Ministerio de Ambiente y Desarrollo Sostenible et al., 2013). This model treats water as a manageable resource, detached from its cultural or spiritual context.

In stark contrast, the Wayuu cosmovision understands water as a living, sacred entity—*Juyá*—and a relative, intrinsically linked to their identity, spirituality, and social organization (Paz Reverol, 2017; Otálora-Cotrino et al., 2017). This relational understanding informs their governance systems, where access and management are mediated through dreams (*Laapü*), rituals, and a deep respect for sacred sites inhabited by spirits (*pulowi*) (Paz, 2016; Robles Chávez, 2018). The failure of the state to recognize or integrate this hydro-cultural reality represents what Ulloa (2020) terms a “deep and damaging disconnect,” leading to the implementation of policies that are not only ineffective but also culturally alienating and ultimately unsustainable.

The water crisis in La Guajira can therefore be conceptualized as a complex interplay of intersecting challenges. At the surface, physical-environmental factors create a baseline of vulnerability, including the natural aridity of the peninsula, low rainfall, desertification processes [Corpoguajira (Corporación Autónoma Regional de La Guajira), 2007], and the accelerating impacts of climate change [IDEAM (Instituto de Hidrología, 2024)]. These environmental pressures are severely compounded by institutional-political factors, characterized by systemic state neglect, fragmented governance, widespread corruption (Hoya Noel, 2022), and policies that consistently fail to address local needs or incorporate Indigenous rights (Archila and Coronado, 2015).

This political landscape, in turn, is dominated by powerful socio-economic factors, most notably the pressures of extractive industries (Caro, 2018), which exacerbate profound social

inequality, extreme poverty, and the resulting public health crises of malnutrition and high infant mortality (Bonet and De-Castro, 2017). Underlying all these layers is the core epistemic-cultural factor: the fundamental clash between the state's technocratic paradigm and the Wayuu's ancestral knowledge systems and spiritual conceptualizations of water (Ulloa, 2020; Robles Chávez, 2018).

This integrated framework allows for a more nuanced analysis, demonstrating that a solution cannot be found by addressing any single factor in isolation. Instead, it requires a holistic approach that recognizes the co-production of scarcity and the necessity of bridging the profound epistemic divide.

3 The water governance in La Guajira: a conceptual failure of rights and provision

The circumstances surrounding water access in La Guajira, Colombia, are conceptually defined by profound exclusion and the fostering of localized inequalities, a stark departure from the tenet of water as a universally guaranteed right (Fuentes et al., 2018). This region serves as a locus of intense competition for limited water resources among several influential sectors, encompassing mining operations, agro-industrial enterprises, local agricultural production, and the critical demand for potable water for human consumption (Caro, 2018).

A significant exacerbating factor is the systemic failure to acknowledge and integrate diverse local conceptualizations of, and relationships with, water, which culminates in the infringement of communities' rights to continuous access to good quality water (Ulloa, 2020). This situation is particularly egregious considering the United Nations' declaration of June 28, 2010, which affirms access to water as a fundamental human right (Rodríguez and Gómez-Rey, 2013). As a result, La Guajira is ensnared in an ongoing, systematic humanitarian crisis intrinsically linked to extreme poverty, widespread malnutrition, and alarming infant mortality rates, all directly associated with severe water scarcity (Bonet and De-Castro, 2017; Cortés-Cantillo et al., 2016).

The fundamental right to water stipulates that every individual must have access to water that is sufficient, acceptable, healthy, physically accessible, and affordable for personal and domestic use—conditions conceptually indispensable for a dignified life (Rodríguez and Gómez-Rey, 2013). However, the reality in La Guajira is far removed from these internationally recognized standards.

In terms of sufficiency, while international guidelines suggest a need for 50 to 100 liters of water per person per day to cover basic needs, and Colombian legislation stipulates a vital minimum of 16 cubic meters per household per month (Quiroga et al., 2020), the actual average consumption per person per day in La Guajira is a mere 0.7 liters (Gil Sarmiento et al., 2016). This pronounced deficit is compounded by the fact that only 46.6% of La Guajira's population has access to an aqueduct system (Sistema de Información Wayúu., 2024).

Regarding acceptability, water for human consumption must possess an acceptable color, odor, and taste, and the services providing it must be culturally appropriate and sensitive to gender and life cycle needs (Quiroga et al., 2020). Nevertheless, communities in La Guajira consistently report that available water is often brackish, turbid, and has adverse effects on people's health, indicating a clear lack of adaptation of water services to ethnic systems and pre-existing cultural demands.

For water to be considered healthy, it must be free from harmful microorganisms, dangerous chemical substances, and radiological threats (Sistema de Información Wayúu., 2024). Alarming, data indicate that nearly 97.7% of rural communities in La Guajira consume water from sources known to be contaminated (Gutiérrez-Martínez et al., 2021).

Physical accessibility also presents a significant challenge. The human right to water stipulates that water services must be accessible within or near the home, with the source ideally located no more than 1,000 m away (Sistema de Información Wayúu., 2024). However, even for the 41% of households that do have a connection to a public, communal, or village (rural settlement) aqueduct, water service is frequently interrupted during the week (Cortés-Cantillo et al., 2016; Gutiérrez-Martínez et al., 2021; Sistema de Información Wayúu., 2024).

Several deeply rooted factors contribute to this severe water scarcity problem. The physical conditions of the La Guajira department include a natural reduction in water supply associated with low rainfall patterns and the severe impact of persistent droughts experienced since 2012 [IDEAM (Instituto de Hidrología, 2024)]. Climate projections paint an even bleaker future, indicating that in the coming years, rainfall could decrease by up to twenty times its current levels and average temperatures could rise by up to 2.5 °C [IDEAM (Instituto de Hidrología, 2024)]. Furthermore, La Guajira holds the unfortunate distinction of having the largest land area undergoing desertification in Colombia [Corpoguajira (Corporación Autónoma Regional de La Guajira), 2007]. According to the Institute of Hydrology, Meteorology and Environmental Studies [IDEAM (Instituto de Hidrología, 2024)], 100% of the municipalities in La Guajira are susceptible to water shortages during dry seasons.

Institutional problems and widespread corruption further exacerbate the already critical situation (Palmer, 2023). Institutional programs designed to improve water access often remain unfinished and systematically fail to address specific local water demands (Archila and Coronado, 2015). Corruption and severe fragmentation in the management of public resources allocated to water access programs are reported to be prevalent throughout the region (Hoya Noel, 2022).

Moreover, there is a perceptible tendency to implement water-related programs primarily in areas associated with mining interests and in urban centers, while other zones, particularly remote rural areas inhabited by Indigenous communities, are systematically neglected (Romero and Barón, 2013). The imposition of large-scale regionalized infrastructure, such as regional aqueducts, mega-irrigation projects, and dams, often leads to urbanization in local water management approaches, thereby sharpening existing access inequalities and marginalizing local communities (Fuentes et al., 2018).

The mining industry exerts a significant and often detrimental impact on water resources (Caro, 2018). For instance, the Cerrejón mine, one of the largest open-pit coal mines in the world, located in La Guajira, is reported to use an astounding 17 million liters of water daily for its operations, including road irrigation and personnel maintenance (Urrea and Calvo, 2014). Research by Fuentes et al. (2018) and Urrea and Calvo (2014) documents that around ten tributaries of the vital Ranchería River have disappeared due to coal extraction activities and associated coal mine expansion projects. A critical and often cited example is the diversion of the Arroyo Bruno, a stream locally considered the last remaining water source in its specific area, an act that authoritative sources report as completed, further diminishing water availability for local communities.

Furthermore, there is widespread disregard, both institutional and corporate, for pluralistic local governance systems (Ulloa, 2020). Indigenous and local systems of water access and distribution are not considered in planning and policies, or they are deemed ineffective or inadequate by external actors (Archila et al., 2015). This includes a fundamental lack of recognition of the conceptualizations, practices, and complex relationships that local populations, particularly the Wayuu, have with water when designing and implementing new water governance programs (Robles Chávez, 2018).

The consequences of these complex problems are severe and far-reaching. Severe inequalities in access to potable water directly aggravate the ongoing humanitarian crisis in La Guajira (Palmer, 2023). Indigenous and Afro-descendant communities, especially those residing in rural areas, have been the most affected by this crisis (Hoya Noel, 2022). It is crucial to understand, as emphasized by Daza (2016), Maida (2018), and Palmer (2023), that water scarcity in La Guajira is not solely due to the physical and climatic conditions of the arid region; it is also a scarcity actively produced and intensified by detrimental institutional practices and extractive industrial processes.

These extractive activities have led to widespread contamination of remaining water sources, water hoarding by powerful entities, and the complete disappearance of streams and other water bodies (Urrea and Calvo, 2014). This has profoundly affected the entire hydro-social cycle of the region, leading to chronic water shortages for local communities (Gil Sarmiento et al., 2016). Conflicts over water access are expected to increase in frequency and intensity over time (Ulloa and Romero-Toledo, 2018), and La Guajira is predicted to become one of the regions in Colombia with the lowest availability of fresh water due to the growing impacts of climate change [IDEAM (Instituto de Hidrología, 2024)].

This analysis underscores a critical situation where environmental vulnerabilities, institutional deficiencies, and industrial pressures converge to create profound water insecurity, disproportionately affecting vulnerable populations, undermining their fundamental human right to water, and leading to an ever-deepening humanitarian crisis that demands urgent, equitable, and sustainable water governance solutions (Lippi, 2024).

4 Traditional Wayuu knowledge of water management

Water governance is broadly defined as the set of processes for the integrated management of water as a common good (Palmer, 2023; Torres Campos, 2021; Rogers and Hall, 2003). This concept emphasizes the active and inclusive participation of diverse social actors in decision-making (Lippi, 2024; Maida, 2018). It involves articulating multiple cultures, knowledge systems, and normative instruments within specific socio-political contexts to achieve objectives of efficiency, equity, and sustainability (Ministerio de Ambiente y Desarrollo Sostenible et al., 2013).

Despite these comprehensive frameworks, rural and Indigenous territories in Colombia, particularly the department of La Guajira, consistently exhibit the lowest levels of access to safe drinking water and sanitation. This disparity stems from a combination of deeply rooted social, economic, and political factors (Gutiérrez-Martínez et al., 2021). The resulting deterioration of water quality directly harms the health of Indigenous communities, compromising both their wellbeing and the sustainability of vital ecosystem services (Bonet and De-Castro, 2017).

The lack of basic infrastructure in many Indigenous reserves is aggravated by the centralization of resources in municipal centers, leaving dispersed rural populations like the Wayuu underserved (Hoya Noel, 2022; Archila, 2015). Consequently, communities often rely on surface sources like rivers and traditional reservoirs (*jagüeyes*) or groundwater from wells, which frequently suffer from significant quality problems and are unfit for human consumption (Torres Campos, 2021).

In stark opposition to state-led paradigms, the Wayuu people possess an ancestral understanding of their territory and a distinct cosmovision regarding water (Paz Reverol, 2017). Within their worldview, water is not merely a quantifiable resource but a life-generating entity, intrinsically valued for the wellbeing of their territories and the sustainability of its sources (Robles Chávez, 2018). This perspective is deeply integrated into their cultural practices and spiritual beliefs (Vásquez and Correa, 1993).

This ancestral knowledge is reinforced through complex mythology and spiritual beliefs. The mythical being *Juyá* (rain) is revered as the ultimate provider and progenitor of all life (Otálora-Cotrino et al., 2017; Paz Reverol, 2017). Furthermore, dreams, known as *Laapü*, are considered a vital channel of communication with the spiritual world, capable of revealing the location of potable water sources, for which ritual offerings are made in gratitude (Daza, 2016; Robles Chávez, 2018).

The symbolic importance of water is also manifest in key Wayuu rituals. It is used in purifying ceremonies during funerary rites and the female rite of passage from girlhood to adulthood (Paz, 2016). Specific water bodies, such as springs or important *jagüeyes*, are considered sacred sites inhabited by powerful female spirits called *pulowi*. These locations command immense respect and are understood to require their own protected territory, free from desecration (Paz, 2016).

The stark divergence between the Wayuu's spiritual conceptualization and the technical-economic approach of state governance creates a fundamental conceptual chasm. This

disconnect results in policies that are often culturally inappropriate, ineffective, and fail to sustainably address the community's actual needs. The daily quest for water thus remains a significant burden, forcing families—particularly women and children—to traverse vast arid territories using artisanal transport methods (Otálora-Cotrino et al., 2017).

The primary water sources utilized by the Wayuu reflect traditional ecological knowledge and adaptation strategies, which include:

Jagüeyes: Natural or artificial depressions that store rainwater (*La'* in Wayuunaiki), these sites are culturally significant but provide water of high turbidity that is often unsafe for consumption without treatment [Robles Chávez, 2018; Corpoguajira (Corporación Autónoma Regional de La Guajira), 2007]. Access is often restricted to prevent contamination by animals (Torres Campos, 2021).

Wells: As a primary source of higher-quality groundwater, many wells are constructed artisanally and are now over 15 years old, showing significant deterioration (Torres Campos, 2021). Water quality varies from fresh to saline, and it is typically extracted manually with a rope and bucket system to supply several dispersed communities (Paz, 2016; Otálora-Cotrino et al., 2017).

Windmills and Rainwater: Windmills, some dating to the 1950s, pump groundwater into storage tanks (*albercas*) but operate irregularly depending on wind availability (Torres Campos, 2021). Additionally, rainwater (*Juyá*) is a highly prized source, carefully collected from rooftops and stored in containers to sustain families during dry periods.

For agricultural (*Apain*) and livestock use, small-scale irrigation is adapted near windmills for family farms, and animals often drink directly from *jagüeyes* (Paz, 2016). However, modern water treatment is generally absent at the household level (Gutiérrez-Martínez et al., 2021). While ancestral clarification methods exist—using materials like cactus pulp as a flocculant before boiling—their practice is reportedly declining (Correa Assmus, 2015).

In conclusion, this traditional knowledge constitutes a vital lifeline for the resilience and adaptation of Wayuu communities amid severe water scarcity. Nevertheless, these profound knowledge systems and inherent principles of Wayuu water governance are critically overlooked in state-level policies. This exclusion disregards their cultural value and misses an opportunity for sustainable, locally-adapted solutions. Acknowledging and integrating Wayuu governance is paramount for developing equitable and resilient water management frameworks for the region.

5 Unheeded wisdom, enduring scarcity: state neglect of Wayuu traditional water governance and its consequences

The Colombian Constitution of 1991 establishes a fundamental legal framework emphasizing the rights of Indigenous peoples,

including formal recognition of ethnic and cultural diversity, official status of native languages in their respective territories, guaranteed freedom of religion, promotion of intercultural education, and recognition of territorial autonomy (Colombia, 1991, arts. 7, 10, 19, 68, 287, 329). Regarding specific water policy, the National Policy for Integrated Water Resources Management [PNGIRH (Política Nacional para la Gestión Integral del Recurso Hídrico), 2010] sets objectives and strategies for national water management. Significantly, this policy itself acknowledged that most water-related conflicts are linked to cultural practices and the diverse ways water is perceived, valued, and managed by different communities.

Subsequently, Departmental Water Plans (PDA) were created in 2006 to decentralize water management responsibilities, and the Integrated Water Resources Management (IWRM) framework was adopted in 2010, intended to guide the actions of Regional Autonomous Corporations through instruments known as POMCAs or Watershed Management and Planning Plans (Rodríguez and Gómez-Rey, 2013). Municipalities are designated as primarily responsible for providing drinking water services, with departmental entities tasked with offering support and coordination (Colombia, 1991, art. 311). The national government, departments, and municipalities also have the authority to grant subsidies to low-income individuals for access to water services (Colombia, 1991, art. 368). In addition, the Vice-Ministry of Water and Basic Sanitation is the national body responsible for formulating policies and programs aimed at improving water access nationwide (Ministerio de Ambiente y Desarrollo Sostenible de Colombia, 2017).

Despite these constitutional provisions and policy initiatives, these efforts have not sufficiently met the pressing needs of the population, particularly the Wayuu (Hoya Noel, 2022). Historically, governmental initiatives, like the construction of deep wells and dams dating back to 1928, were initially well-regarded by some Wayuu communities. However, Torres Campos (2021) argues that these and subsequent top-down interventions ultimately failed to resolve chronic water scarcity issues. Critically, these external efforts also had the unintended consequence of undermining local initiative and traditional knowledge related to maintaining traditional water sources like *jagüeyes* and wells (Archila, 2015). This fostered a sense of dependence on external actors and often complex, inappropriate technologies, leading to a significant loss of local water governance knowledge and practices (Paz, 2016). Many of these government-built deep wells are reported to be abandoned, in disrepair, or technologically obsolete (Gil Sarmiento et al., 2016).

This persistent failure of state initiatives has led the Wayuu to seek legal avenues to demand their fundamental rights to water, food, and health, particularly in the face of severe impacts from extractive industries (Palmer, 2023). Landmark legal actions, such as Sentences T-216/19 and T-614/19, represent these efforts by the Wayuu to seek judicial protection for their rights (Torres Campos, 2021, pp. 48, 49). Current governmental responses to the water crisis in La Guajira often manifest as welfarist policies (Correa Assmus, 2015). These include sporadic donations from entities like the Cerrejón mining company (such as water provision via tanker trucks), the installation of some desalination plants (often financed by mining royalties), and the provision of plastic tanks

for water storage (Correa Assmus, 2015). However, these measures are frequently criticized for being short-term palliatives that do not address the root causes of water insecurity (Lippi, 2024). La Guajira still lacks the large-scale, sustainable, and culturally appropriate infrastructure necessary for a consistent and equitable water supply (Gutiérrez-Martínez et al., 2021).

Endemic corruption and a chronic lack of transparency and control over the substantial royalty funds generated by mining activities have further hindered significant progress in improving water access and coverage for the Wayuu and other vulnerable populations in La Guajira (Hoya Noel, 2022; Maida, 2018). This complex, multidimensional problem of failed governance, resource mismanagement, and cultural neglect directly contributes to deteriorating health outcomes, the spread of waterborne diseases, severe malnutrition, and the exacerbation of poverty and inequality in the region (Bonet and De-Castro, 2017; Palmer, 2023).

6 Discussion

The findings synthesized from the documentary analysis present a stark conceptualization of the water governance crisis in La Guajira, particularly as it impacts the Wayuu Indigenous community. The analysis consistently underscores a profound crisis characterized by severe scarcity, inadequate quality, and inequitable access to water. This situation, as argued by multiple scholars, not only constitutes a violation of a fundamental human right but also perpetuates an ongoing humanitarian crisis.

A critical conceptual point emerging from this analysis is the multi-causal nature of the crisis. It is not merely a consequence of the region's arid climate but is significantly exacerbated by systemic institutional failures. These failures can be conceptualized as deficiencies in planning, pervasive corruption, and resource mismanagement; the overwhelming and often detrimental impact of extractive industries, particularly coal mining; and a widespread, institutionalized disregard for Wayuu local governance systems, their ancestral knowledge, and their unique cosmovision of water.

A central theme is the marked conceptual disconnect between the Wayuu's holistic, relational, and spiritual understanding of water—as a living entity, *Juyá*, essential for their culture and survival—and the predominantly technical, economic, and often exploitative approaches to water management imposed by state and corporate entities. National policies are frequently designed without adequately considering territorial particularities or local sociocultural conceptualizations of water and environment.

This dismissal of Indigenous cosmovision and traditional management practices, such as the nuanced understanding of *jagüeyes* or dream-guided well location, not only alienates communities but also, as conceptualized by scholars like Scoones (2021) and Litbena and Silvia (2021) in similar contexts, leads to the failure of interventions because they lack local legitimacy and ecological congruence.

The United Nations' conceptualization of water as a human right, demanding sufficiency, acceptability, healthfulness, and accessibility, contrasts sharply with the Wayuu's daily reality. They receive a fraction of the necessary water volumes, often find it brackish or turbid, consume it from contaminated sources, and face interrupted services or long journeys to water points. This paper's

conceptual contribution lies in its illumination of these systemic failures and the urgent need for a paradigm shift in how water governance is conceptualized and implemented in such contexts.

The Wayuu community's negative perception of governmental water governance—often rated as “regular” or “bad” due to a perceived lack of state presence, inadequate and inappropriate infrastructure, and absence of purification systems—is a damning critique of current top-down approaches. Welfarist policies, such as sporadic tanker truck deliveries or royalty-funded desalination plants, are correctly identified as insufficient short-term palliatives (Lippi, 2024).

The profound conceptual disconnect between Indigenous cosmovision and state policies, tragically exemplified in the Wayuu water crisis, also highlights the broader challenge of epistemic justice—the need to protect, value, and integrate traditional and Indigenous knowledge systems within development and environmental governance. Traditional knowledge of Indigenous peoples represents a vast repository of wisdom crucial for their identity, subsistence, and relationship with the environment.

However, this knowledge faces constant threat from what Ulloa (2020, p. 7) terms a “deep and damaging disconnect between ancestral, cosmological, and sociocultural perceptions and practices [...] and the predominantly economic, technical, and often negligent policies and actions of state and corporate institutions.” This epistemic gap not only marginalizes communities but also hinders the development of genuinely sustainable and equitable solutions. Although Colombia's National Policy for Integrated Water Resources Management acknowledged the link between water conflicts and cultural practices, its effective implementation, which would require a fundamental re-conceptualization of whose traditional knowledge counts, remains a profound challenge.

6.1 Methodological implications

This paper employs a conceptual analysis methodology, realized through the systematic review and synthesis of key scholarly documents, to explore and articulate the complexities of water governance in La Guajira, with a specific focus on the Wayuu Indigenous community. The analytical process involved identifying, examining, and integrating concepts, frameworks, and empirical descriptions from a curated selection of existing research literature.

This study aims to achieve a deeper conceptual understanding of the water crisis in La Guajira by critically examining and synthesizing existing knowledge, rather than generating new primary empirical data. The methodology involves several key stages.

Initially, the research will focus on identifying core concepts, which entails pinpointing and defining pivotal terms such as “water governance,” and “traditional knowledge” as they are presented and operating within the specific context of La Guajira and the Wayuu community. Following this, the study will proceed to analyze conceptual relationships. This stage involves a critical examination of the interconnections, inherent tensions, and notable disconnects between disparate conceptual frameworks. Particular attention will be paid to the interface between state-led, techno-economic models

of water management and the Wayuu's distinct socio-spiritual conceptualizations of water.

Subsequently, the research will emphasize synthesizing for conceptual clarity. This involves integrating findings from diverse sources to construct a coherent conceptual narrative that effectively illuminates the multi-layered nature of the water crisis in La Guajira. Finally, the approach is geared toward developing conceptual insights. By drawing robust conclusions from the preceding analyses, this research aims to offer a refined understanding of the complex water problem and, crucially, to highlight the necessity of considering alternative conceptual frameworks for more effective and equitable water governance.

The selection criteria for the documents reviewed were their direct relevance to the multifaceted dimensions of water governance, the Wayuu cosmovision of water, traditional management practices, community perceptions of state actions, and the overall water access crisis in La Guajira. No specific time limitations were imposed beyond scholarly relevance and thematic focus. This paper, therefore, presents an integrated conceptual argument derived from the critical synthesis of these existing scholarly works, aiming to contribute to a clearer understanding of the conceptual underpinnings of the water crisis and the pathways toward more equitable and effective solutions.

6.2 Concluding remarks

This conceptual analysis concludes that the water governance situation in La Guajira, especially concerning the Wayuu Indigenous community, is critical and demands immediate, transformative action. The primary objective of conceptually exploring the complexities of water governance, the Wayuu cosmovision, water management practices, and community perceptions has revealed a multifaceted crisis. This crisis is conceptually rooted in historical neglect, environmental pressures, institutional failings, and a profound disregard for Indigenous rights and knowledge systems.

This study reaffirms the significance of understanding and addressing the deep epistemic disconnect between state-driven, technical-economic conceptualizations of water management and the holistic, spiritual, and ancestral knowledge systems of the Wayuu people. Current welfarist responses are conceptually flawed as they are insufficient, acting as mere palliatives rather than addressing the structural and conceptual causes of water insecurity.

Therefore, there is an urgent imperative to shift toward a new conceptual paradigm for water governance—one that is equitable, sustainable, and culturally sensitive. Such a paradigm must: (1) Ensure genuine Wayuu participation in all stages of decision-making, from conceptualization to implementation and monitoring; (2) Integrate Wayuu ancestral knowledge with appropriate modern technologies in a way that respects and empowers local conceptual frameworks; (3) Be supported by robust investment in sustainable, culturally appropriate infrastructure and transparent, accountable resource management.

Adopting this new paradigm requires a foundational commitment to epistemic justice, which involves moving beyond the mere consultation of Indigenous communities to the

active recognition of their cosmovision as a valid and essential framework for governance. This means acknowledging that the Wayuu relationship with water—as a sacred living being, revealed through dreams (*Laapiü*), and protected by spiritual entities—is not an obstacle to be overcome but a sophisticated system of socio-ecological understanding. Acknowledging this pluralistic system is a direct countermeasure to the institutional disregard that has historically rendered local governance ineffective and perpetuated conflict.

Practically, this integration would manifest as a hybrid governance model where traditional knowledge guides and shapes technological interventions. For instance, rather than imposing external infrastructure that falls into disrepair, new wells could be sited using a combination of hydrogeological studies and the spiritual guidance of *Laapiü*, a practice that would ensure both technical viability and profound cultural legitimacy. Similarly, the maintenance of traditional *jagüeyes* could be revitalized and supported with modern techniques, preventing the loss of local autonomy and knowledge that resulted from past top-down projects. This approach transforms technology from an alien imposition into a tool that reinforces community resilience.

Ultimately, this conceptual shift cannot be realized without corresponding structural and institutional reform. The new paradigm demands a departure from ineffective welfarist policies and sporadic interventions toward sustained, long-term investment in community-led water solutions. This necessitates transparent management of resources, particularly mining royalties, to dismantle the cycles of corruption and neglect that have concentrated services in urban centers while marginalizing rural territories. Only by reconfiguring power dynamics and ensuring that financial and political support empowers local Wayuu governance can the fundamental human right to water be secured, transforming it from a distant ideal into a lived reality in La Guajira.

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References

- Archila, M. (2015). "Introducción," in *"Hasta cuando soñemos": Extractivismo e interculturalidad en el sur de La Guajira*, eds. M. Archila, Z. Arboleda, and S. Coronado (Bogotá: Centro de Investigación y Educación Popular/Programa por la Paz), 25–43.
- Archila, M., Arboleda, Z., and Coronado, S. (2015). *"Hasta cuando soñemos": Extractivismo e interculturalidad en el sur de La Guajira*. Bogotá: Centro de Investigación y Educación Popular/Programa por la Paz.
- Archila, M., and Coronado, S. (2015). "Extractivismo e interculturalidad en el sur de la Guajira," in *Hasta cuando soñemos*, ed. M. Archila (Bogotá: CINEP), 104–148.
- Bonet, J., and De-Castro, L. W. H. (2017). *La mortalidad y desnutrición infantil en La Guajira* (Documento No. 15541). Bogotá: Banco de la República, Economía Regional.
- Caro, C. (2018). "Las venas de la tierra, la sangre de la vida: Significados y conflictos por el agua en la zona carbonífera del sur de La Guajira, Colombia," in *Agua y disputas territoriales en Chile y Colombia*, eds. A. Ulloa and H. Romero-Toledo (Bogotá: Universidad Nacional de Colombia), 85–121.
- Colombia. (1991). *Constitución Política de Colombia*. Gaceta Constitucional No. 116 de 20 de julio de 1991. Bogotá: Imprenta de Colombia.
- Corpoguajira (Corporación Autónoma Regional de La Guajira). (2007). *Colombia una nación multicultural: Su diversidad étnica*. Bogotá: Corpoguajira.
- Correa Assmus, G. (2015). *Transformaciones culturales de las prácticas de medicina ancestral wayúu*. Bogotá: Universidad Externado de Colombia.
- Cortés-Cantillo, K., Vargas Sandoval, G., Alvis, N., Díaz, D., Vallejo, E., Castañeda, C., et al. (2016). *Hambre y desnutrición en La Guajira*. Boletín técnico interactivo No. 8. Bogotá: Instituto Nacional de Salud; Observatorio Nacional de Salud.
- Daza, R. A. (2016). La crisis del agua en La Guajira: Un análisis crítico frente al concepto de desarrollo sostenible. *Asuntos Económicos y Administrativos* 31, 151–160.
- Fuentes, G., Olivero Verbel, J., Valdelamar Villegas, J. C., et al. (2018). *Si el río suena, piedras lleva: Sobre los derechos al agua y a un ambiente sano en la zona minera de La Guajira*. Bogotá: Indepaz.
- Gil Sarmiento, F. F. G., Castaño Bohorquez, R. C., and Pacheco Olivella, C. A. (2016). *Escasez de agua en el departamento de La Guajira, Colombia*. Revista *Agunkuyáa*, vol. 6. Riohacha: Universidad de La Guajira.
- Gutiérrez-Martínez, J., Narváez Olaya, A. M., García Ruiz, J., and Guarnizo Peralta, D. (2021). *Territorio Wayúu: Entre distancias y ausencias: Pobreza alimentaria, malnutrición y acceso a agua potable en los entornos escolares de Uribia*. Bogotá: Dejusticia.
- Hoya Noel, L. (2022). The forgotten Wayuu people. *Rev. J. Undergrad. Stud. Res.* 23:5.
- IDEAM (Instituto de Hidrología, Meteorología y Estudios Ambientales). (2024). *Sistema de Información para la gestión de datos Hidrológicos y Meteorológicos – DHIME*. Available online at: <http://dhime.ideam.gov.co/webgis/home/> (Accessed May 23, 2024).
- Linton, J., and Budds, J. (2014). The hydrosocial cycle: Defining and mobilizing a relational-dialectical approach to water. *Geoforum* 57, 170–180. doi: 10.1016/j.geoforum.2013.10.008
- Lippi, A. (2024). Water and Wayuu: the crisis in La Guajira, Colombia. *J. Int. Serv.* 12, 45–60.
- Litbena, Á., and Silvia, G. (2021). Cultural sustainability and community water management in coastal Ecuador: Jagüeyes or albarradas and small dams or detention ponds. *Sustain. Debate* 12, 101–132. doi: 10.18472/SustDeb.v12n1.2021.35516
- Maida, K. (2018). *Extractivism and Indigenous rights: A case study of the Wayuu people and their struggle for water* [Unpublished master's thesis]. Brandeis University, Waltham.
- Ministerio de Ambiente y Desarrollo Sostenible de Colombia. (2017). *Gestión integral del recurso hídrico*. Bogotá: Ministerio de Ambiente y Desarrollo Sostenible.
- Ministerio de Ambiente y Desarrollo Sostenible, Corpoguajira, and Universidad de Antioquia (UdeA). (2013). *Plan de Manejo Ambiental de Acuífero (PMAA) Cuenca del río Ranchería. Informe Final Convenio Interadministrativo 143 de 2013* [Unpublished manuscript]. Bogotá, Colombia: Ministerio de Ambiente y Desarrollo Sostenible.
- Otálora-Cottrino, L., Saldarriaga-Roa, A., Acosta-Convers, M. F., López-Acevedo, G., and SÁCHICA-Moreno, C. (2017). *Lo que saben los Wayuu = Tü natüjalakat Wayuu*. Bogotá: Editorial Tadeo Lozano.
- Palmer, R. E. (2023). The rights of the Wayúu people and water in the context of mining in La Guajira, Colombia: demands of relational water justice. *Rev. Int. Geogr. Educ. Online* 13, 1–11.
- Paz Reverol, C. L. (2017). *Pueblo Wayuu: Rebeliones, comercio y autonomía una perspectiva histórica-antropológica*. Bogotá: Editorial Abya-Yala.
- Paz, R. (2016). *Concepción y descripción de la cultura wayuu (Tomo 1)*. Bogotá: Editorial Kimeria.
- PNGIRH (Política Nacional para la Gestión Integral del Recurso Hídrico). (2010). *Política nacional para la gestión integral del recurso hídrico*. Bogotá: Ministerio de Ambiente, Vivienda y Desarrollo Territorial.
- Quiroga, C., Ulloa, A., and Gaitán, L. (2020). *El acceso al agua en La Guajira*. Lima: GRADE; Bogotá: Universidad Nacional de Colombia.
- Robles Chávez, D. (2018). "El significado del agua y su gobernanza en territorio wayuu, La Guajira, Colombia," in *Aproximaciones diversas hacia el ordenamiento del territorio costero y marino en el departamento de La Guajira* (Riohacha: Universidad de La Guajira), 61–81.
- Rodríguez, G. A., and Gómez-Rey, A. (2013). *El Derecho Fundamental al Agua: Una Visión Desde el Derecho Ambiental y los Servicios Públicos Domiciliarios*. Bogotá: Editorial Legis.
- Rogers, P., and Hall, A. W. (2003). *Effective Water Governance (TEC Background Papers, No. 7)*. Stockholm: Global Water Partnership.
- Romero, J., and Barón, D. (2013). *Impacto de la explotación minera en las mujeres rurales: Afectaciones al derecho a la tierra y el territorio en el sur de La Guajira, Colombia*. Riohacha: Sütsiin Jieyuu Wayúu-Fuerza de Mujeres Wayúu/Equipo de Tierras y Derecho al Territorio del Centro de Investigación y Educación Popular-Cinep/PPP.
- Scoones, I. (2021). Pastoralists and peasants: perspectives on agrarian change. *J. Peasant Stud.* 48, 1–47. doi: 10.1080/03066150.2020.1802249
- Sistema de Información Wayúu. (2024). *Informe sobre acceso y calidad del agua 2023-24*. Bogotá: Departamento Administrativo Nacional de Estadística DANE.
- Torres Campos, R. E. (2021). *Análisis de la gobernanza del agua en la comunidad indígena wayuu Spatou, ubicada en zona rural del municipio de Uribia, La Guajira* [Unpublished undergraduate thesis]. Bogotá: Universidad Nacional Abierta y a Distancia - UNAD.
- Ulloa, A. (2020). The rights of the Wayúu people and water in the context of mining in La Guajira, Colombia: Demands of relational water justice. *Human Geogr.* 13, 6–15. doi: 10.1177/1942778620910894
- Ulloa, A., and Romero-Toledo, H. (Eds.). (2018). *Agua y disputas territoriales en Chile y Colombia*. Bogotá: Universidad Nacional de Colombia.
- Urrea, D., and Calvo, I. (2014). Conflictos socioambientales por el agua en La Guajira. *Revista Semillas* (55–56), 63–69.
- Vásquez, S., and Correa, H. D. (1993). Los wayuu. In *Geografía Humana de Colombia* (Tomo II) (Bogotá: Instituto Colombiano de Cultura Hispánica), 215–292.

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