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Applying Bourdieu's Theory to Public Perceptions of Water Scarcity during El Niño: A Case Study of Santa Marta, Colombia

Miguel A. De Luque-Villa [1,2,*], Hernán Darío Granda-Rodríguez [1,2], Cristina Isabel Garza-Tatis [3] and Mauricio González-Méndez [1]

[1] Departamento de Ecología y Territorio, Facultad de Estudios Ambientales y Rurales, Pontificia Universidad Javeriana, Cra. 7 #40-62, Bogotá 110231, Colombia; grandahd@javeriana.edu.co (H.D.G.-R.); gonzalez.alex@javeriana.edu.co (M.G.-M.)
[2] Grupo de Investigación Cundinamarca Agroambiental, Facultad de Ciencias Agropecuarias-Ingeniería Ambiental, Universidad de Cundinamarca, Facatativá 252211, Colombia
[3] SERUANS ENVIRONMENT S.A.S, Santa Marta 470001, Colombia; cigtatis@gmail.com
* Correspondence: mdeluque@javeriana.edu.co

Abstract: This study investigated the sociological dimensions informing public perceptions of water scarcity during the El Niño drought period in Colombia. We conducted this study in Santa Marta, Colombia, and surveyed 405 urban and rural residents to understand their perceptions of water scarcity, management, and the impacts of the El Niño phenomenon. The survey used a Likert scale to measure responses and employed a multivariate analysis of variance to analyze the data while considering factors such as location (urban versus rural) and gender. The study results indicated that urban residents often experience an irregular water supply all year, whereas most rural respondents noted a more consistent availability of water. The perception of water scarcity also differed notably between urban and rural areas due to their different historical and cultural experiences (habitus). Urban respondents mostly recognized the presence of water, while rural perspectives were less conclusive, likely influenced by their direct access to natural water sources. Participants across various demographics consistently reported that poor management by local, regional, and national governments contributes to the water scarcity crisis, highlighting the importance of improving communication about climate events like El Niño and water management to increase community engagement in public policies. Our research suggests that better understanding the social foundations of such perceptions using Bourdieu's concepts of social fields, habitus, and capital forms can significantly enhance water management strategies.

Keywords: Bourdieu's theory; Colombia; El Niño southern oscillation phenomenon; habitus; water management; water scarcity perception

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1. Introduction

The climate of South America has a strong connection with El Niño, which was historically associated with unusually warm sea-surface temperatures off the coast of Peru. Throughout South America, there is a significant and regionally diverse relationship between precipitation, temperature fluctuations, and the El Niño–Southern Oscillation. For instance, no region suffers more radical and frequent El Niño impacts than Latin America [1–6]. In South America, one of the countries most strongly impacted by the ENSO episode is Colombia [7–12]. El Niño often introduces droughts, the strongest of which occurred in Colombia during the El Niño years of 1997–1998, 1991–1992, 1982–1983, 1976–1977, and 1987–1988. As of April 2024, about ten million residents of the Colombian capital Bogota are being forced to ration water amid crippling shortages due to a severe drought caused by the El Niño period [13]. While scientific approaches provide tools to understand and manage water resources, addressing water scarcity effectively also requires

a deep understanding of public perceptions and local socio-cultural dynamics [14–16]. Perceptions of scarcity, which are influenced heavily by risk perception research, play a critical role in shaping public responses to water management strategies. Such research highlights the importance of trust in determining public acceptance or rejection of new technologies and management practices [17,18]. Despite increasingly recognizing the need to integrate socio-cultural perspectives into climate-related policy development, significant gaps remain. For example, there is an ongoing need to weave local cultural and cognitive systems more tightly into our frameworks for understanding and responding to climate change risks, particularly in relation to water scarcity [19]. Water management is an increasingly complex social issue that must handle the divergent opinions of local stakeholders. Furthermore, political strategies often require significant interventions that alter the environments of local inhabitants [20]. Against this background, the integration of diverse stakeholders has become an essential part of sustainable water resource management [21–25].

Approaching this phenomenon through Bourdieu's theory of social fields and habitus offers a clearer perspective on why water scarcity is perceived differently among various social groups. Bourdieu's theory emphasizes that individuals' perceptions and practices are shaped by their habitus (dispositions, perceptions, and appreciations), the capital (economic, cultural, and social) they possess, and their positions within social fields [26]. These elements interact to form specific viewpoints and responses to water scarcity.

Bourdieu developed the concept of Social Fields as relatively autonomous social spaces where specific activities take place [27], identifying power positions among actors, their relationships, and their interdependence. Bourdieu emphasized that individuals are active social agents with the capacity to transform social structures, recognizing their agency in implementing strategies to modify or change pre-established structures. This perspective is crucial for understanding how different community actors perceive and engage with water management practices.

The concept of habitus refers to a set of structured practices, skills, and dispositions that persist over time, associated with tacit norms and principles that organize social life and guide the generation of new practices [28]. These perception- and action-based schemes are deeply rooted in individuals and acquired through their life history. In the context of water management, habitus shapes how water scarcity is perceived by communities based on their historical interactions with water resources, cultural norms, and economic activities. Habitus tends to reproduce the material conditions that originated it, promoting the conservation of entrenched social structures to preserve and transmit social capital. These perception and action schemes help interpret aspects of social reality, including water management practices.

The neoliberal model has significantly influenced urban planning by shaping the habitus of urban planners to align with rent-seeking objectives. This practice has led to a situation where planners, even those aware of neoliberalism's issues, struggle to propose alternatives beyond its boundaries [29].

The analysis then focused on how access to and control of water resources within a social field represent a power struggle over water use and management, involving various actors (government, companies, and local communities) competing for resource management. In this field, rules are established, and a constant power struggle is evident, where actors with greater economic and social capital dominate the control of water resources. This situation generates wide social gaps and inequalities in water access and distribution.

Public opinions play a crucial role in shaping policies and practices in the field of water management. Bourdieu and Delsaut's analysis of Quattrocento's view of art [30] highlights the influence of socio-economic conditions on the appreciation and value placed on artwork. This sociological approach allows water scarcity to be viewed not only as a physical condition but as a socially constructed phenomenon influenced by historical, cultural, and economic factors.

The main objective of this study was to analyze community perceptions about water scarcity during the El Niño-induced drought period in Colombia, applying Bourdieu's theory. For this reason, this study sought to relate sociodemographic variables such as location (urban or rural) and gender with water scarcity. Guided by Bourdieu's theory of habitus, this study hypothesizes that the perception of water scarcity is influenced by the habitus of the stakeholders involved in water management. The focus was on the municipality of Santa Marta, known for struggling with water scarcity. The water management protocol in Santa Marta during El Niño droughts outlines measures to mitigate the impact on the water supply system. These include public campaigns promoting water conservation, monitoring river flows that supply the city, tapping into underground wells to supplement the water supply, distributing potable water by truck in high-need areas, and rationing [31]. This understanding is crucial for developing water management strategies that are effective, culturally resonant, and accepted by the local population. By gaining better insight into how the community perceives and responds to water scarcity, water agencies and policymakers can improve their communication of necessary interventions and foster closer collaboration with the community. This, in turn, is essential to ensure the successful implementation of measures that promote the conservation and sustainable management of water resources.

2. Literature Review

The global significance of drought as a climatic phenomenon is pronounced, with notable impacts on agricultural productivity and socio-economic development, particularly in rural areas. Research from Northeast Ethiopia [32] shows that household perceptions of drought critically influence their livelihood strategies, demonstrating the complex interplay between local adaptive responses and perceived climatic variations. This factor highlights the need to understand local perceptions for effective resilience-building because individuals' actions are deeply rooted in their personal views, knowledge, cultures, and attitudes toward environmental changes. A study conducted in Indonesia [33] found that even though drought forecasts play a crucial role in society, they are not widely utilized by households, and there is low confidence in their accuracy. This disconnect emphasizes a larger issue regarding the effectiveness of communicating scientific predictions for local use, which has a direct impact on agricultural practices and outcomes during periods of drought. In Southern Africa [34], although advanced tools are available to predict droughts and manage water resources, there is a significant gap in the utilization of this information to make effective decisions regarding water distribution.

According to research conducted in Maharashtra, India [35], although people are generally aware of the serious consequences of drought in different socio-economic areas, there is significant discontent with the government's efforts to mitigate these effects. This inequality highlights the pressing need for policies that not only resolve the immediate repercussions of drought but also align closely with the cultural and socio-economic environments of the communities affected.

Understanding how people perceive natural resources is crucial for promoting sustainable environmental behaviors. Research conducted in Western Europe [36] investigated the impact of people's perceptions of water as a distinct natural resource on their actions toward conservation. The study revealed that these perceptions increase the significance placed on water, thus intensifying the ethical responsibility to participate in conservation activities. This result indicates that increasing public consciousness about the inherent value of water may encourage more environmentally friendly water utilization behaviors.

Husu [37] applied Bourdieu's conceptual framework to understand how social structures, power dynamics, and cultural practices influence responses to environmental challenges in energy transition. Similarly, in the context of water management, cultural, symbolic, and social capital—understood as non-financial assets, social networks, and connections—shape communities' perceptions and actions toward water scarcity. Ternes and Donovan [38] explored how water supply systems, such as private wells and municipal

supplies, influence water consumption habits in Kansas. Using Pierre Bourdieu's concept of "habitus," the authors analyzed how water infrastructure and social variables like class and geographic location shape water use practices. The findings suggest that well owners tend to use more water, especially during droughts, reflecting a "hydrologic habitus" linked to their social position and access to resources.

The concept of social capital has also been applied in the context of sustainable development. For example, Klapper et al. [39] explored the relationship between social capital, resource constraints, and low-growth communities, focusing on lifestyle entrepreneurs in Nicaragua. This previous study examined how social capital can substitute for manufactured and natural capital in resource-limited environments, highlighting the significance of social networks and the coping strategies used by entrepreneurs to navigate resource constraints. Drawing on Bourdieu's concept of social capital, the study explored the implications of these practices for sustainability. The findings suggest that while social capital can effectively replace other forms of capital in certain contexts, its broader applicability may be limited, particularly in more affluent, consumer-oriented societies. Rahimi-Feyzabad et al. [40] investigated the intentions and behaviors of water conservation among farmers in western Iran, using Bourdieu's cultural capital theory. The analysis found that embodied and observable cultural capital significantly influenced farmers' intentions, while institutionalized cultural capital, observable cultural capital, intention, and family experiences predicted their behavior. The study determined that cultural capital can effectively explain farmers' willingness and behavior, marking the first quantitative application of this model.

In Colombia, the national Policy for Integrated Water Resource Management (IWRM) was adopted in 2010, with its main objective being to ensure the sustainability of water resources through participatory management integrated with land use planning and conservation of ecosystems that regulate water supply [41]. However, a 2019 report identified weaknesses, including unclear supply-demand data and lack of coordination with land planning. As a result, IWRM has been applied only in a limited way, with few collective water management initiatives [42]. Water resource management in Colombia relies primarily on political and institutional approaches, which necessitate the involvement of social actors in developing, implementing, and overseeing water policies [43].

These studies emphasize the importance of considering local and regional perceptions in managing drought and water scarcity. They suggest that incorporating these perceptions into policies could improve the effectiveness of water conservation initiatives and drought management strategies.

3. Materials and Methods

3.1. Study Area

Santa Marta in Colombia's Magdalena region (Figure 1) experiences significant water supply challenges, with demand exceeding available supply by nearly 30% on average. During dry seasons, this shortfall can worsen to about 60% [44]. Decreased rainfall and lower flow rates further exacerbate the city's vulnerability to water scarcity. Santa Marta is among the seven areas in Magdalena that periodically declare a public calamity due to water issues, which particularly affect urban zones [45].

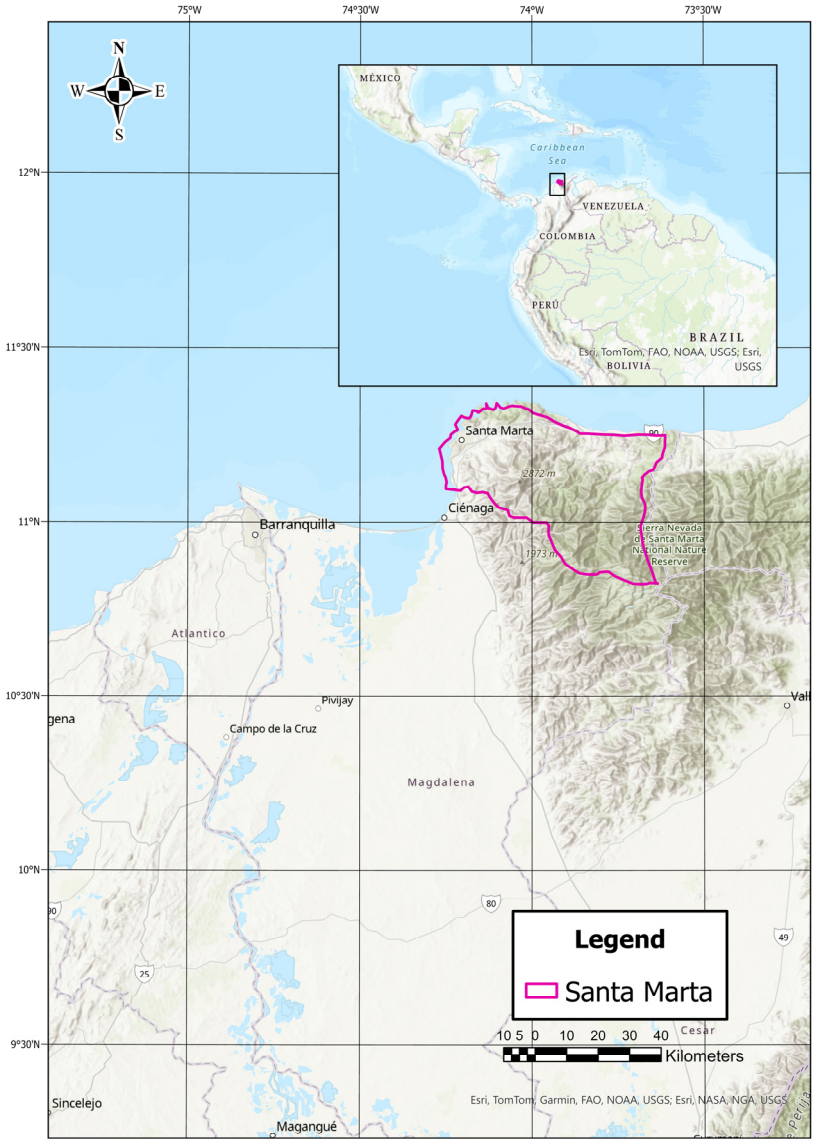

Figure 1. Study area—Santa Marta, Colombia.

3.2. Research Design

Surveys were conducted between April and May 2024 in Santa Marta, Magdalena, to understand the perception of water scarcity among resident urban and rural communities. The survey assessed public perceptions in three key areas: (1) water scarcity, including whether respondents felt their community had adequate water supply and experienced scarcity; (2) water management, focusing on views about government mismanagement contributing to scarcity; and (3) awareness of the El Niño phenomenon's impact on water rationing and communication from authorities on water management during El Niño events. The survey was conducted in Spanish, the local language, to ensure respondents fully understood the questions and could provide accurate answers. It is included as Supplementary Material. The sample size was calculated based on a population of 560,000 inhabitants to achieve a representative survey with a confidence level of 95% and a margin of error of 5% [46]. Although the target number was set at 384 surveys, a total of 405 surveys were conducted. The first section of the survey sought to characterize the respondents according to their area and sociodemographic conditions, including age, presence in an urban or rural population, social stratification, educational level, and gender. The second part of the survey included questions about water scarcity, such as whether water reaches people's homes throughout the year and if there is enough water for the entire community

in the area. The survey also aimed to assess perceptions regarding the management of this resource, as follows: "Do you think water scarcity is due to poor management by local, regional, or national government? And do you believe that mismanagement of water utility companies contributes to water scarcity?" Finally, questions related to the El Niño phenomenon were asked: "Are you aware that current water rationing is due to the El Niño phenomenon? Do you think rationing is a necessary measure during El Niño? How would you rate authorities' communication regarding the reasons for rationing and how it's managed?" The questions were presented on a five-point Likert scale with exclusive response options ranging from 1 (strongly disagree) to 5 (strongly agree).

Data collection was conducted using the SurveySparrow application, which generates a shareable link that can be distributed via social media platforms. This approach facilitated broad dissemination of the survey, allowing for efficient data gathering across various regions. However, recognizing the potential limitations of digital access in rural areas, the research team employed a more direct method of data collection. In these cases, a member of the team traveled to rural locations with a mobile device and personally administered the survey. This dual approach ensured comprehensive reach, capturing responses from both urban and rural populations and addressing potential accessibility issues.

3.3. Data Analysis

This study analyzed the perceptions of 405 individuals regarding water scarcity, water management, and the El Niño Southern Oscillation phenomenon. The data were collected using a Likert scale [47], a common method in social science research for measuring attitudes or perceptions [48–51]. To prepare the data for statistical analysis, the Likert scale responses were transformed using square root transformations. This step was necessary to ensure the data met the assumptions required for the subsequent statistical tests, particularly in addressing non-normal distributions and stabilizing variances across the data set. Following data transformation, a Bray–Curtis similarity matrix was calculated for each of the three response variables. The Bray–Curtis index is widely used in research across various disciplines to assess similarities or differences between samples based on their composition [52–55]. In this study, this index was used to evaluate the degree of similarity in perceptions across different respondents. The Bray–Curtis matrix is well-suited for this type of analysis as it can handle zero values and does not require the assumption of multivariate normality, making it appropriate for interrogating social survey data.

A multivariate analysis of variance with type III partial sum of squares and permutation (Permanova) of residuals under a reduced model was conducted for each perception variable using 9999 permutations. The use of 9999 permutations in analyses such as PERMANOVA is common when greater precision in estimating the p-value is desired. In permutation-based analyses, the number of permutations directly affects the accuracy of the calculated empirical probability [55–57]. The experimental design included two factors: urban or rural population (with urban and rural as levels) and gender (with male and female as levels), along with their interactions [57,58]. This routine was run in the PRIMER v7 and PERMANOVA+ programs [56,59].

The experimental design incorporated two main factors: population type (urban vs. rural) and gender (male vs. female), as well as the interaction between these factors. This factorial design allowed us to examine not only the main effects of population type and gender on the response variables but also the interaction effects between these factors.

4. Results

Ultimately, 279 surveys were carried out in the urban area, representing 68.9% of the total, while in the rural area, 126 surveys were conducted, equivalent to 31.1% of the sample obtained. Among those surveyed, 274 were women (67.5%), and 131 were men (32.50%). The gender distribution shows that a majority of respondents were female, with 67.5% of the total, offering an additional perspective on how water scarcity affects men and women differently in Santa Marta.

4.1. Water Scarcity Perception

In the context of water scarcity perception, significant statistical differences were found between urban and rural populations (Pseudo-F = 98.572; p-perm = 0.001), while no differences emerged between genders (Pseudo-F = 2.9; p-perm = 0.06) or in the interaction of gender by urban or rural population (Pseudo-F = 0.45; p-perm = 0.63). In the urban area, for the question "Does water reach your home throughout the year?", the predominant responses were "sometimes" (48%) and "rarely" (42.5%), indicating that the flow is not constant throughout the year. In contrast, for rural areas, a significant majority of respondents (80%) reported that water reaches their homes "most of the time" (Figure 2).

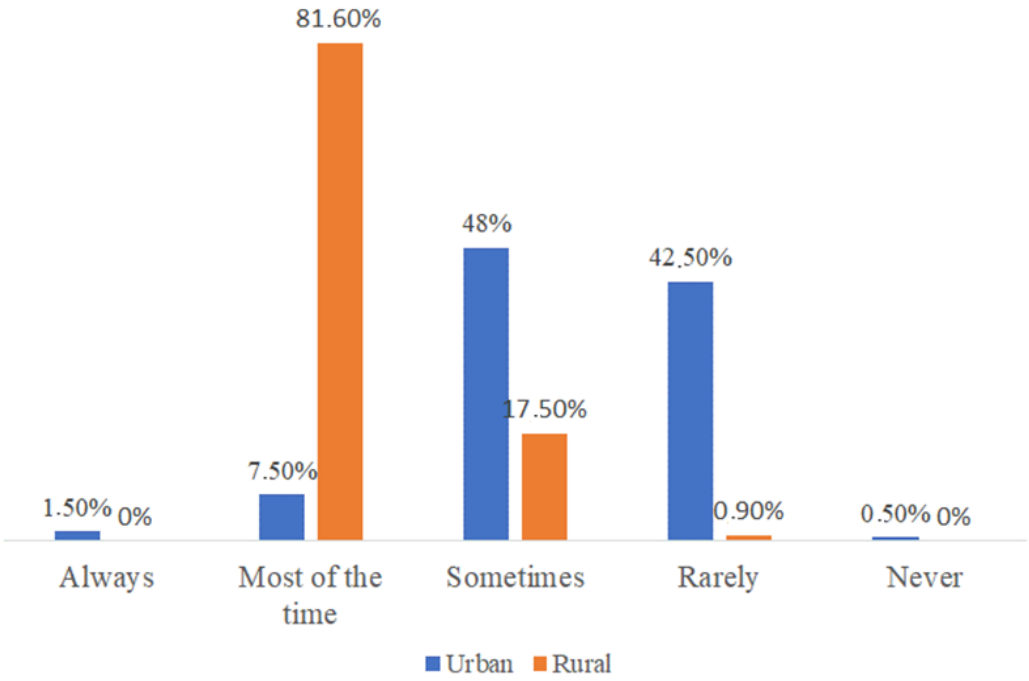

Figure 2. Results for "Does water reach your home all year?".

When asked, "Do you think there is enough water for the entire community in your territory?", the most common response in both urban and rural areas was "neither agree nor disagree", representing 67.50% and 72.22%, respectively. The respondents expressing a neutral position reflected uncertainty and variability in experiencing water accessibility and supply. In the urban area, this perception may be influenced by population growth and inadequate infrastructure maintenance, hindering a sufficient water supply for the community. However, in rural areas, factors such as seasonal variations and proximity to natural water sources could impact viewpoints on this matter (Figure 3).

Regarding the question "Do you think there is water scarcity in your territory?", the predominant responses in the urban area were "strongly agree" and "agree" at 43.37% and 23.66%, respectively, while in the rural area, "neither agree nor disagree" dominated at 83.31% (Figure 4). Urban residents of Santa Marta perceive significant water scarcity in their area. In contrast, the rural perception was uncertain about the presence of water scarcity. This result can be attributed to the proximity of surface water bodies, which allow rural residents to access water during both rainy and dry seasons despite the lack of aqueduct infrastructure.

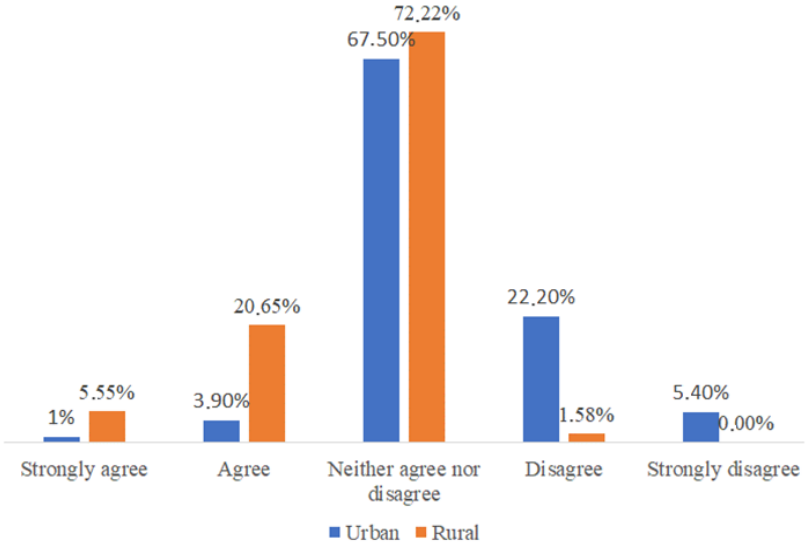

Figure 3. Results for "Do you think there is enough water in your territory for the whole community?".

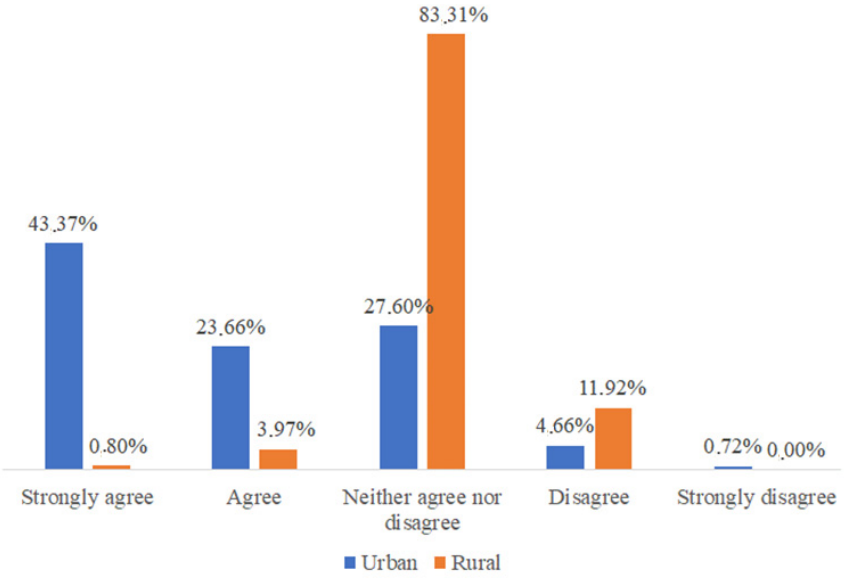

Figure 4. Results for "Do you think there is water scarcity in your territory?".

4.2. Water Management Perception

Significant statistical differences were found between urban and rural populations (Pseudo-F = 15.595; p-perm = 0.001) in relation to the questions concerning water management. No differences were found between genders (Pseudo-F = 1.24; p-perm = 0.277), nor in the interaction of gender by urban or rural population (Pseudo-F = 0.18; p-perm = 0.78). The survey results indicate a clear consensus among respondents regarding water management inefficiencies across various levels of government (Figure 5). Most participants believe that local, regional, and national governments are managing water resources poorly, directly contributing to ongoing water scarcity in their territory. These beliefs were consistently strong across different demographics and localities, demonstrating widespread dissatisfaction with the current state of water management. This consensus highlights the public perception that mismanagement and neglect by governmental bodies at all levels are primary drivers of the water scarcity crisis in their communities. This critical perspective toward governmental management emphasizes the urgent need to reform policies and practices related to water management to address the root causes of water scarcity and restore public trust in related governmental actions.

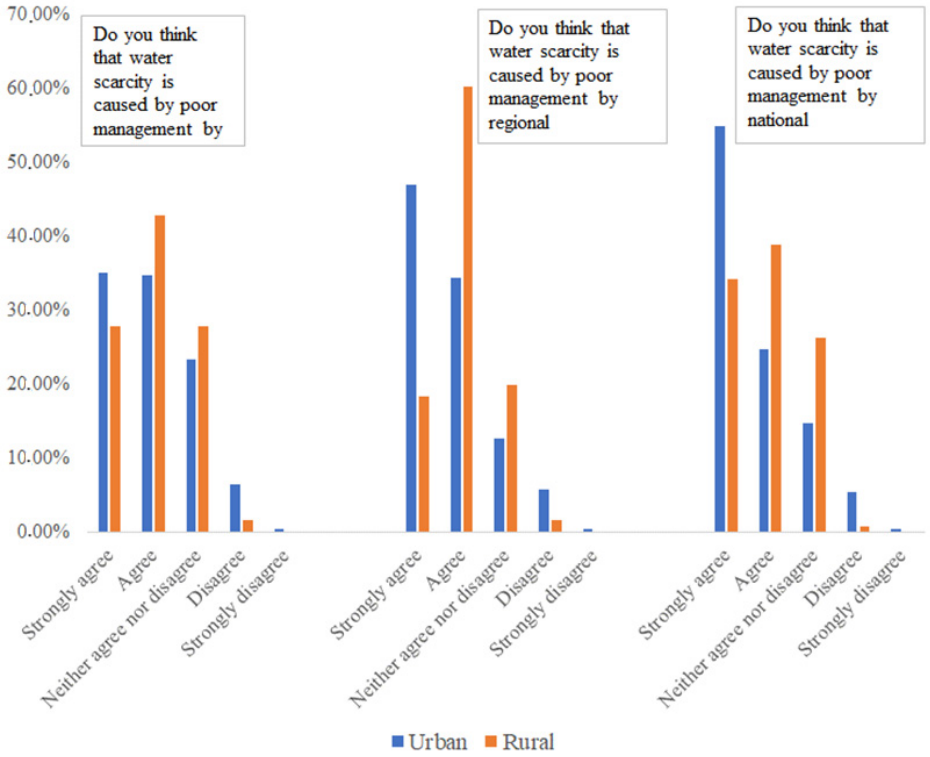

Figure 5. Government water management perception results.

4.3. El Niño Southern Oscillation Phenomenon Perception

Significant statistical differences were found between the localities (Pseudo-F = 9.90; p-perm = 0.001) in relation to the questions related to water resources. However, no differences were found between genders (Pseudo-F = 1.00; p-perm = 0.41) or in the interaction of gender by location (Pseudo-F = 0.53; p-perm = 0.67). In response to the question, "Are you aware that the current water rationing is due to the El Niño phenomenon?", 52% and 32% of urban area residents selected agree and strongly agree, respectively (Figure 6). This result indicates a general consensus that current rationing is associated with climate variations affecting rainfall patterns. In some places, El Niño can cause prolonged droughts, reducing water availability and potentially necessitating rationing. Rural respondents, on the other hand, expressed a neutral sentiment, with 88% selecting neither agree nor disagree. Regarding the question "Do you believe that water rationing is a necessary measure to manage water scarcity during the El Niño phenomenon?", 49.10% and 29.39% of urban residents chose to agree and strongly agree, respectively. This perception considers rationing a necessary measure to ensure sufficient water supply for the entire community and mitigate the corresponding impacts on daily life. Despite the inconvenience, rationing is an important tool for managing limited water resources. Rural inhabitants maintained a neutral stance, with 93% selecting neither agree nor disagree.

Regarding the question "How would you rate communication from the authorities about the reasons for water rationing and how to manage it?" both urban and rural respondents expressed overwhelmingly neutral opinions, with 177 (63%) and 105 (83%), respectively, considering the authorities' management to be moderately effective. In urban areas, responses were as follows: 11 effective (9%), nine ineffective (5.73%), 86 disagree (30.83%), and one strongly disagree (0.36%). In rural areas, 11 selected agree (8.73%), two selected disagree (1.58%), five selected strongly agree (3.97%), and zero selected strongly disagree (0%) (Figure 7). The neutral survey responses suggest a lack of strong public opinions about communication on water rationing. This indicates a need to improve how information is shared with the public. Ensuring accessible communication for all residents, especially in areas with limited access to information, remains a key challenge for effective water management.

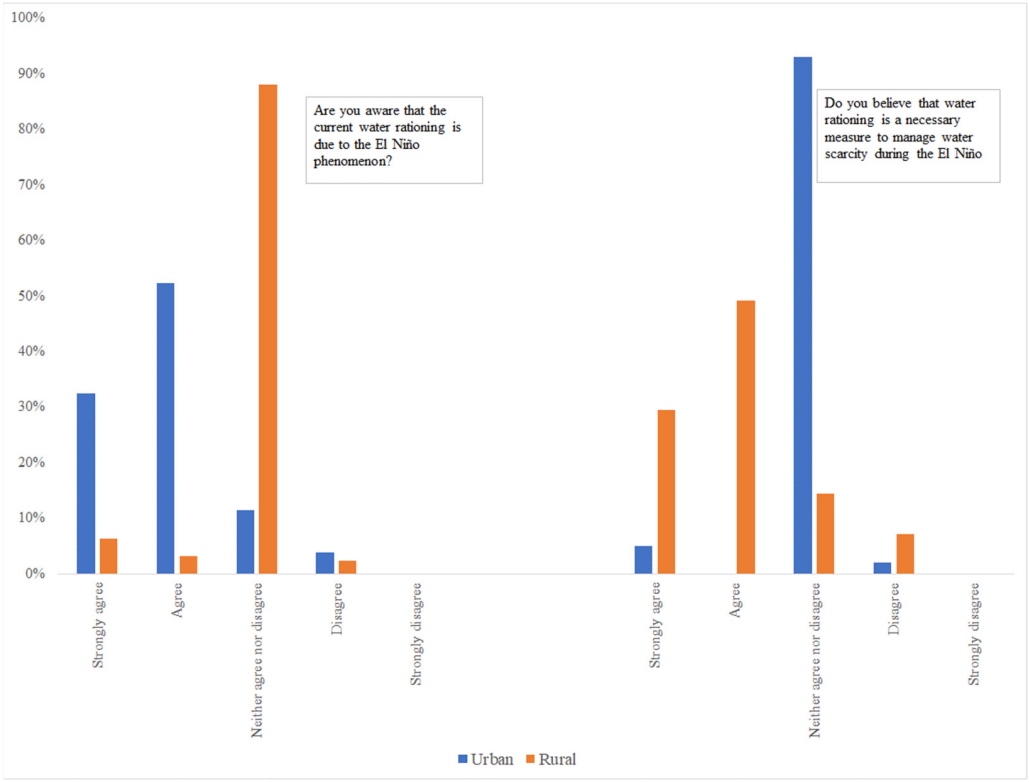

Figure 6. El Niño Southern Oscillation phenomenon perception results.

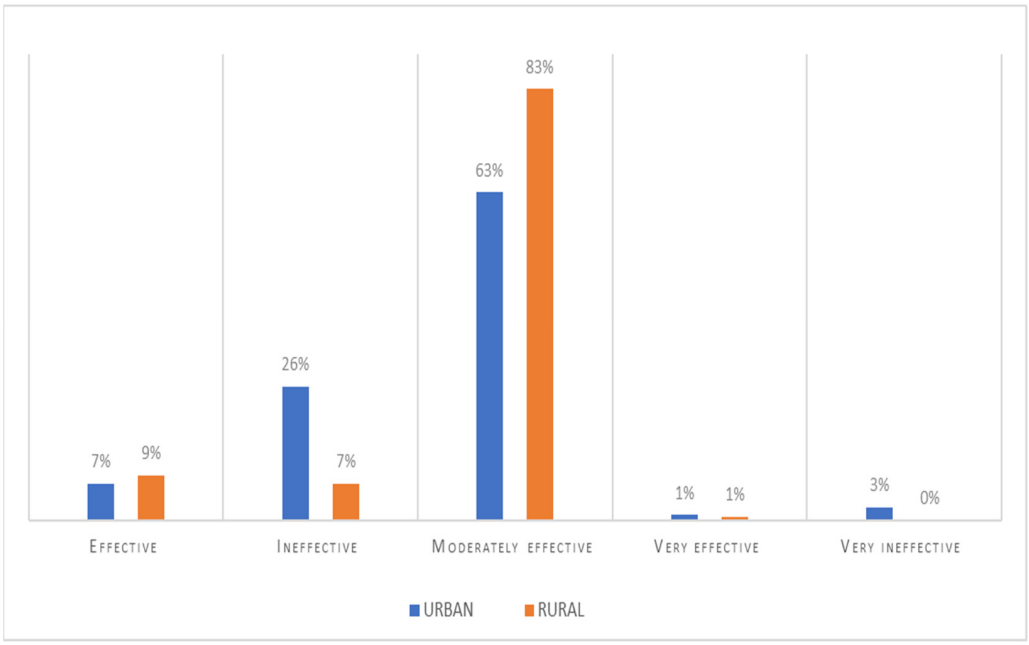

Figure 7. Results for "How would you rate the communication from the authorities about the reasons for water rationing and how to manage it?".

5. Discussion

This is the first study to use Bourdieu's theory to evaluate water scarcity public perception. This evaluation found that the different perceptions between urban and rural residents can be viewed through the lens of habitus. The surveys revealed significant differences in the perception of water scarcity between rural and urban populations in Santa Marta due to the El Niño phenomenon. Water scarcity was more acutely perceived in

urban areas, primarily due to water rationing by aqueduct services. In contrast, despite the lack of an aqueduct system in rural areas, the population has more readily accessible natural water sources, allowing them to maintain water availability even during drought periods.

This study provides a nuanced perspective on community awareness of the El Niño phenomenon, revealing differences between urban and rural areas. As expected, urban residents demonstrated greater awareness of the relationship between El Niño and current water rationing. This aligns with the understanding that urban populations have better access to technological resources and information related to climate change. However, rural inhabitants expressed neither agreement nor disagreement regarding the cause of water rationing. This reveals a significant gap in communication and awareness, not solely due to a lack of access to technology but potentially due to the absence of targeted information dissemination strategies in rural areas. Furthermore, while urban residents largely viewed water rationing as necessary during El Niño events, rural communities maintained a neutral stance. This contrast highlights a disparity in understanding the rationale behind resource management decisions. The findings suggest that enhancing communication and education in rural areas, tailored to local contexts, could improve overall awareness and community engagement with water management practices during climate events like El Niño [60]. Thus, while urban areas benefit from better information, the study underscores the need for more equitable information dissemination, especially in rural regions, to close the gap in climate change awareness and water resource management.

Previous research on the global management of water resources has primarily focused on different theoretical perspectives, simultaneously pursuing multiple directions of study [61]. However, this study takes a multidisciplinary approach, considering not only water availability but also the socio-economic, organizational, and institutional aspects related to the relevant communities. This broader perspective contributes to a more comprehensive assessment.

The methodology used in this study incorporates Bourdieu's concept of habitus to evaluate water scarcity. This approach provides a deeper understanding of how ingrained social practices, cultural dispositions, and collective perceptions influence and shape water management strategies. By integrating habitus into the analysis, this study offers a unique perspective that goes beyond traditional assessments, offering insights into the social and cultural dimensions underlying water resource management decisions and behaviors. This methodological approach contributes to a more comprehensive and nuanced understanding of the complexities involved in water management.

Although this methodology is designed to be generalizable throughout Colombia, it could also be applied in other countries by evaluating the specific cultural and social contexts of the study area.

Limitations of this study include our reliance on self-reported data through surveys, which may have introduced biases such as social desirability bias or recall bias. These biases could have affected the accuracy of the responses regarding water management practices and perceptions. Moreover, habitus is a complex and abstract concept that remains challenging to quantify and analyze systematically. Consequently, the interpretation of habitus-related data might be subject to researcher bias or misinterpretation.

6. Conclusions

The findings from this study reveal significant differences in the perceptions of water scarcity and management between urban and rural populations in Santa Marta. The urban population reported more severe water scarcity, which is attributed to watershed deterioration—and its associated river flow reduction—decreased rainfall, illegal water collection, and rapid demographic growth [44]. In contrast, rural residents, who are closer to natural water sources, exhibited more neutral perceptions, suggesting that their proximity to water buffers them against the experience of severe scarcity.

Understanding of the El Niño phenomenon also varied between urban and rural populations. Urban residents were found to be more aware of the climatic reasons behind

water rationing and generally support rationing as a necessary measure. In contrast, rural residents maintained a neutral stance, reflecting a gap in awareness and communication effectiveness regarding climate impacts on water resources.

This study emphasizes the need to improve communication about the El Niño phenomenon and water management to increase community involvement in public policies. Public participation is crucial for effective water management, from policymaking to utilization. Involving rural communities can promote environmentally friendly behaviors and support the implementation of sustainable water resource practices [62]. Strengthening the ability of rural areas to manage water resources sustainably requires targeted capacity-building initiatives. Workshops and training programs that recognize and support local knowledge in sustainable water management can bolster the resilience of these communities [63,64]. Integrating such capacity-building efforts can help rural communities improve their water management practices, ensuring more equitable and sustainable water access in the future.

Bourdieu's theory provides a valuable tool for understanding the social dynamics influencing water scarcity perceptions and management. The differences in perceptions between urban and rural residents can be viewed through the lens of habitus, in which historical and cultural experiences shape how communities perceive and respond to water scarcity. The possession and use of different forms of capital—economic, cultural, and social—affect the power dynamics in water resource management. Urban areas, which have greater economic capital but poor infrastructure, perceive greater scarcity, whereas rural areas benefit from cultural and social capital because of their proximity to natural water sources. This study underscores the importance of social fields in shaping public perceptions and the need for equitable resource distribution to address the inequalities in water access. By incorporating Bourdieu's concepts of habitus, capital, and field, the present study highlights the socio-economic structures that must be addressed to achieve sustainable water management and mitigate the impacts of water scarcity in Santa Marta.

Water management policies should acknowledge the diversity of perceptions and consider the influence of socio-economic backgrounds on these views, as policies sensitive to local contexts are more likely to be accepted by the public and complied with. Education and awareness campaigns aimed at changing water use behaviors should be customized to resonate with the specific social dynamics of different communities. Lastly, involving communities in water management could bridge the gap between public perceptions and policy initiatives, ensuring that the implemented strategies are sustainable and socially equitable. By treating water scarcity as a socially constructed phenomenon influenced by historical, social, and economic factors, policymakers could better anticipate and mitigate the complex challenges associated with managing this essential resource.

Supplementary Materials: The following supporting information can be downloaded at: https://www.mdpi.com/article/10.3390/soc14100201/s1, Water Scarcity Public Perception Survey.

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