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Representation of Freshwater Access, Equity, & Community Empowerment in Leading Mainstream Vernacular Newspapers: A Sustainable Development Perspective in Indian Sundarban Region's Moushuni and Gobordhanpaur Islands

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ABSTRACT

The Sundarbans, a fragile yet vital mangrove ecosystem and a UNESCO World Heritage site, is increasingly threatened by freshwater scarcity due to climate change, socioeconomic inequalities, and historical marginalization. Within this complex landscape, Moushuni and Gobardhanpaur islands exemplify the struggles of vulnerable communities facing water insecurity. This study explores how leading vernacular newspapers, *Anandabazar Patrika* and *Bartaman*, have framed issues of freshwater access, equity, and community empowerment over the past year, providing insights into the intersections of media representation and sustainable development.Using the theoretical framework of *Framing theory (Entman, 1993) & Political Ecology Approach* (Robbins,2012), this research investigates the narratives constructed around water-related challenges, particularly in relation to marginalized groups. Women, who bear the primary responsibility for water collection, often remain absent from policy discussions despite their central role in household water security (Sultana, 2011). By analyzing newspaper coverage, this study assesses how issues of availability, affordability, and water quality are portrayed, shedding light on media biases and gaps in representation. A mixed-methods approach is applied which integrates qualitative data from focus group discussions, personal interviews, and newspaper content analysis with quantitative insights from household surveys and water quality reports in this study. This comprehensive methodology ensures a multidimensional understanding of water governance in the region. The findings will illuminate the systemic inequalities in freshwater access and highlight the ways in which the media shapes public perception and policy discourse. By amplifying the voices of those most affected, this study contributes to ongoing debates on sustainable water management. It calls for inclusive, community-driven solutions to address freshwater security in climate-sensitive areas like the Sundarbans. Strengthening equitable policies and increasing media accountability can drive more responsive governance, ensuring that freshwater remains a fundamental right rather than a privilege in marginalized communities.

KEYWORDS: Freshwater Access in Sundarban , Community Empowerment, Vernacular Newspaper,

Media Framing, Sustainable Development, Socio-environmental Vulnerability, Marginalized Communities.

1. INTRODUCTION

The transformation of forests into agricultural landscapes has long been a defining aspect of human civilization, marking both economic progress and ecological decline *(Richards, 2003)*. Nowhere is this dynamic more pronounced than in the Sundarbans, the largest mangrove ecosystem in the world and a land of both breathtaking beauty and extreme hardship., where human survival and conservation efforts exist in a state of constant negotiation *(Chowdhury et al., 2016).* Historically, the colonial period accelerated deforestation, as forests were cleared for settlements and agricultural expansion, driven by imperial economic imperatives *(Herring, 1990).* However, as scientific forestry gained prominence in the late 19th century, concerns over ecological degradation led to conservation efforts that classified forests as regulated resources rather than exploitable frontiers *(Guha, 1989)*. Despite this global recognition, spread across the Ganga-Brahmaputra-Meghna (GBM) delta, this fragile region in India and Bangladesh faces a deepening freshwater crisis along with others, that threatens both human survival and ecological balance. Water is a fundamental component of life, playing a crucial role in ecological processes, biodiversity conservation, and environmental sustainability. Despite its abundance on Earth, with approximately 97% found in oceans and only a small fraction available as freshwater, less than 1% is accessible for direct human use *(Gleick, 2014)*. The increasing global population, along with industrial expansion and unsustainable land use, has intensified freshwater scarcity and degraded water quality (*Vörösmarty et al., 2010).* Climate change further exacerbates water stress by altering precipitation patterns, increasing temperatures, and reducing water availability in critical regions *(IPCC, 2014)*. Rising demand for freshwater due to agricultural, domestic, and industrial needs threatens aquatic ecosystems, reduces biodiversity, and diminishes water security *(Rockström et al., 2009).* Despite global initiatives, including UNESCO's efforts and the Millennium Development Goals, achieving sustainable freshwater management remains a major challenge *(UN-Water, 2020).*

1.1. BACKGROUND

The Indian Sundarbans, spanning 9,000 sq km, house 4.7 million people, yet freshwater remains scarce despite abundant rainfall exceeding 1,900 mm annually. Surrounded by saline waters, residents face a paradox—seasonal rains —over 1.7 million cubic meters per square kilometer—in South 24 Parganas which last 49 days, yet reliable drinking water remains elusive, making survival a constant challenge. Most of this water either evaporates, seeps underground, or flows into the sea, leaving residents without a reliable supply. Poor water conservation and inadequate infrastructure worsen the crisis. For generations, communities here have relied on a delicate mix of rainwater, creeks, and shallow aquifers for their daily water needs. However, increasing climate instability, frequent cyclones, and the steady intrusion of saltwater have made freshwater access a daily struggle *(Rudra, 2019; Bhattacharyya & Werz, 2012)*.This area faces a groundwater crisis as potable water is found only below 50 meters, while saline intrusion affects upper layers. Freshwater pockets exist at 100–300 meters but are unsuitable for direct use. Excessive extraction depletes reserves, lowering the water table annually, reducing availability by billions of liters, worsening scarcity. Rising sea surface temperatures, high-intensity cyclones, and land-use changes have

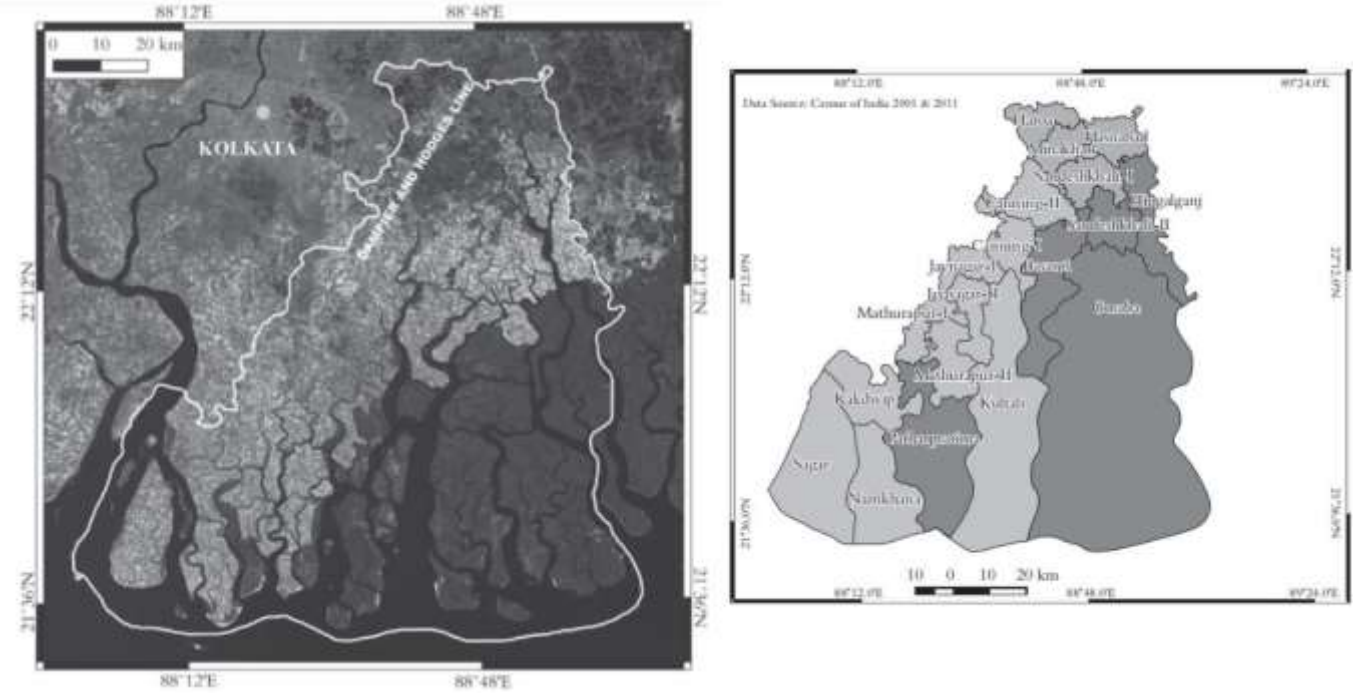

IMAGE 1: SUNDARBAN REGIONAL MAP

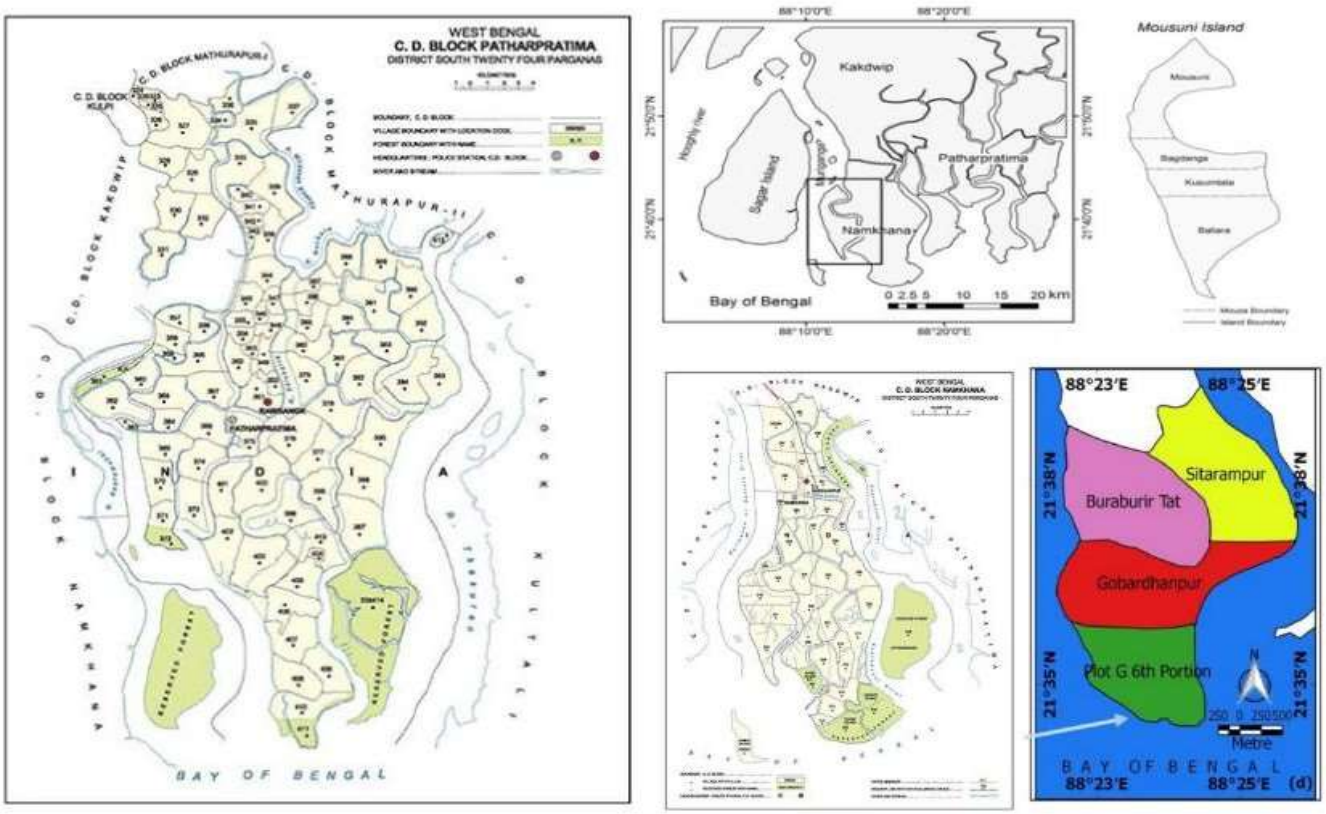

IMAGE 2. SURVEYED AREA (MOUSHUNI AND GOBARDHANPUR ISLAND)

contributed to severe environmental degradation, making sustainable water management a critical concern *(Haldar, 2015; Mitra et al., 2018)*. The depletion of freshwater reserves is exacerbated by rapid urbanization and population growth, leading to increased reliance on deep aquifers. However,

groundwater extraction in the ISR is unsustainable, as saline intrusion and arsenic contamination limit its usability *(Bhadra et al., 2020).* The fragile aquifers, with slow recharge rates, cannot support the escalating demand, which is projected to rise from 16 million cubic meters in 2011 to 44 million cubic meters by 2050 *(Halder et al., 2021).* Additionally, surface water sources are frequently polluted by agricultural runoff, industrial effluents, and inadequate sanitation infrastructure, further compromising water security *(Das et al., 2021)*. In many areas, deep aquifers are either too difficult to reach or too contaminated to be of use. Without proper storage facilities, families are left vulnerable, forced to depend on expensive private water suppliers or unsafe sources *(Chowdhury et al., 2020).*Despite global and national initiatives such as the United Nations Sustainable Development Goal 6 (SDG 6) and the Water, Sanitation, and Hygiene (WASH) program, the provision of clean drinking water in the ISR remains inadequate *(United Nations, 2022).*The Sundarbans is shaped by an intricate network of tidal channels and islands, with land constantly forming and eroding. Of the 100 islands on the Indian side, 46 remain forested, while the rest are inhabited, often with inadequate infrastructure for freshwater access *(Richards & Flint,1990)*. These issues disproportionately created an invisible divide in the Sundarbans. Those with financial resources can afford to buy clean drinking water, while poorer households—many of whom depend on farming and fishing—must rely on increasingly brackish and polluted water sources *(Mukrjee & Chahekraborty, 2021*). Women and young girls, who are traditionally responsible for fetching water, bear the heaviest burden. Long walks in the scorching sun, carrying heavy containers, and dealing with illnesses caused by poor water quality have become an everyday reality for them *(Sultana, 2011; Roy et al., 2022).* Despite the creation of the Sundarban Development Board (SDB) in 1973 to promote socio-economic development, the region continues to struggle with institutional inefficiencies and inequitable resource distribution *(Sainath, 1996).* The reliance on embankments for land reclamation has severely disrupted natural hydrological cycles, leading to saline water intrusion and making freshwater scarce for both agriculture and daily consumption *(Richards & Flint, 1990).* During a Pilot Field study in January 2025, Resercher spoke to farmers, traders, shopkeepers, political representatives of the region. In discussions across 2 Community Development Blocks (CDBs) in the South 24 Parganas districts—including Gabardhanpur and Moushuni Island—people shared their stories of hardship and resilience. Many described how once-thriving freshwater creeks had turned salty over the years, forcing them to dig deeper wells or buy water at prices they could barely afford. Others recounted how the loss of freshwater had devastated rice fields and fisheries, pushing families further into economic hardship. In Kalindi (Samshernagar), a village of Sundarban near the Bangladesh border, an unusual hydrogeological phenomenon is observed in recent past. Several tube wells spontaneously released water, similar to artesian wells. Remarkably, when a matchstick was dropped into this water, it ignited, indicating the presence of trapped gases such as methane and oxygen. This phenomenon likely resulted from groundwater traveling through subterranean tunnels where gases accumulated. In certain areas, the water exhibited a dark, glass-like color, suggesting the presence of fossilized organic matter.The phenomenon remained isolated to specific tube wells *(Sanyal,2015).* On December 9, 2014, a large-scale oil spill occurred in the Sundarban, when 350,000 liters of furnace oil leaked into the Shela, Posur, Rupsa Baleswar Rivers from a capsized tanker. The spill spread rapidly, contaminating vital ecosystems, including Surface and Underground Water sources and agricultural land. The affected area covered 14 villages, where over 8,700 people suffered severe consequences, particularly in Chandpai, Tambulbunia, and Harintana. Between December 12 and December 21, approximately 100,000 liters were recovered, yet a substantial portion remained dispersed, leading to long-term environmental

repercussions. *(Karmakar,2015)* Within this dynamic situation the islands of Moushuni and Gobardhanpur exemplify the everyday struggles of marginalized communities, where freshwater access, social equity, and community empowerment are deeply contested . In the absence of robust state intervention, community-driven initiatives have emerged as crucial mechanisms of resilience. Local self-governance structures, including gram panchayats and self-help groups, have attempted to mitigate freshwater inequities through decentralized management, yet their efforts are frequently undermined by bureaucratic inertia and fragmented policy implementation *(Choudhury & Islam, 2017).* Despite their strategic significance in the broader discourse of sustainability and climate resilience, the challenges rarely find substantive representation in mainstream vernacular media. Leading Bengali newspapers, which wield considerable influence in shaping public opinion and policy discourse, often frame these crises within the broader environmental rhetoric of Sundarbans conservation, overshadowing the socio-political dimensions of freshwater access and distributive justice *(Mukherjee & Chakraborty, 2021).* While headlines may highlight the catastrophic effects of cyclones like Aila (2009) and Amphan (2020), there remains a conspicuous absence of critical engagement with the inequitable allocation of water resources, land displacement, and the structural disenfranchisement of local communities *(Chakrabarti, 2009; Roy & Guha, 2020).*The discourse around sustainability in the Sundarbans is divorced from the lived realities of its inhabitants, whose everyday negotiations with water scarcity and environmental precarity remain absent from dominant media framings which can bridge the gap between conservation imperatives and human development goals *(Sen & Bhattacharya, 2019).*West Bengal government's post-2004 tsunami campaign in media—"Take Lesson from Tsunami, Save Our Sundarbans"—prioritized conservation without addressing community vulnerabilities (Mitra, 2007). This selective framing affects policy responses, often leading to top-down approaches that fail to integrate local voices. By examining media framing, this research will assess whether news coverage effectively highlights community voices and and sustainable development strategies or if it reinforces top- down conservationist narratives that marginalize local concerns. Understanding these representations and analyzing the difference between real and portrayed image of Sundarban will provide insights into how media can better advocate for sustainable water management and community resilience in the region.

1.2 ROLE OF THE INDIAN PRESS IN ENVIRONMENTAL COMMUNICATION

In the context of India's complex environmental challenges, the press has played a pivotal yet evolving role in shaping public discourse. Historically, Indian newspapers—both in English and vernacular languages—were instrumental in fostering nationalism and development centric ideologies during and after independence. However, in contemporary times, especially in ecologically sensitive and marginalized regions like the Sundarbans, the role of the press has shifted towards documenting and interpreting local environmental struggles. This research critically examines how the vernacular press, particularly *Anandabazar Patrika* and *Bartaman*, frames the discourse surrounding freshwater access, equity, and community empowerment. While global trends show a decline in newspaper circulation, India’s print media continues to flourish due to its vast rural readership and growing number of neo-literates. Between 1979 and 1999, newspaper consumption increased by 500%, and vernacular newspapers witnessed a significant surge (Jeffrey, 2000). This rise has enabled localized narratives—such as those related to water scarcity, salinity intrusion, and community resilience in the Sundarbans—to gain media visibility. Despite this growth, environmental reporting has often been sidelined in favor of profit-driven content, as advertising revenue competes with news space (*IndianTelevision.com, 2009).* Earlier studies noted the limited capacity of Indian media to raise

awareness on environmental concerns (*Sekar, 1981*). However, scholars like *Raghavan* (2007) and *Nambiar* (2014) highlight a recent shift, wherein select newspapers and magazines have started producing more in-depth coverage on climate change, sustainability, and water justice. In regions like the Sundarbans—where freshwater scarcity is deeply entwined with gender, class, and ecological vulnerability—the vernacular press holds the potential to democratize environmental knowledge. It can amplify marginalized voices, interrogate institutional accountability, and reframe the freshwater crisis as a structural issue rather than a localized natural disaster. This study thus explores how much the Indian vernacular press contributes to environmental communication foregrounding community narratives in the fight for water justice.

1.3 RESEARCH OBJECTIVES

- Identify how gender, caste, income, and geographic remoteness influence access to safe drinking water and irrigation resources in the study area.
- Conduct field investigations to document the lived experiences of Moushuni and Gobordhanpur Island's residents regarding freshwater access, distribution inequities, and socioeconomic impacts.
- Investigate the level of local community engagement in media narratives, and decision-making regarding sustainable water governance.
- Critically examine whether and how vernacular newspapers accurately portray the real issues faced by local communities, identifying gaps and biases in reporting.

1.4 RESEARCH QUESTIONS

- How do gender, caste, income, and geography affect water access in Moushuni and Gobordhanpur Islands?
- What are the lived experiences of residents regarding water access and its socioeconomic impact?
- How involved are local communities in media narratives and water governance decisions?
- Do vernacular newspapers accurately portray the challenges faced by local communities?

1.5 RATIONALE OF THE STUDY

The Sundarbans delta, recognized for its ecological significance and socio-economic vulnerability, has increasingly become a site of environmental precarity exacerbated by anthropogenic pressures and institutional inadequacies. Recurrent tidal inundations, embankment breaches, and saline water intrusions have not only destabilized local livelihoods but have also exposed critical gaps in state-led disaster governance frameworks. Despite policy discourses on climate resilience and adaptive planning, empirical realities on the ground reflect a persistent marginalization of subaltern voices, particularly those residing in remote, riverine habitations. This study is premised on the need to critically interrogate the intersection of environmental governance, media framing, and community vulnerability in the context of the Sundarbans. Drawing upon the theoretical lens of Political Ecology, it seeks to unravel the ways in which socio-natural processes are mediated by power relations, institutional inertia, and infrastructural decay. Simultaneously, Framing Theory is employed to examine the role of regional vernacular media in constructing and circulating dominant narratives around water-related disasters, often sidelining the structural and systemic determinants of vulnerability. Primary field data—collected through household surveys and focus group discussions— alongside media content analysis, reveals a disjuncture between lived experiences and their mediated representations. This warrants a scholarly intervention that can bridge epistemological gaps, advocate for inclusive environmental governance, and critically assess media's role in shaping public discourse. The rationale, therefore, emerges from an urgent need to reposition the Sundarbans not as a passive site of natural calamity, but as a contested

terrain of socio- environmental injustice.

2. REVIEWS OF LITERATURE

Haldar A , Rudra K., Satpati L (July,2024) in *Freshwater Access, Equity, and Empowerment in the Indian Sundarbans* published in *Planetary Justice (pp.54-70)* reveal that the Indian Sundarbans face severe freshwater challenges due to rising salinity, climate change, and socio-economic disparities. Marginalized communities, especially women, experience inequitable water access. Studies employ hydrological modeling, ethnographic research, surveys, and policy analysis to assess water scarcity, governance, and empowerment efforts. NGO led rainwater harvesting, government schemes, and self-help groups offer solutions, but infrastructural and policy gaps persist. Research highlights gendered burdens, caste-based inequities, and governance failures. This study indicates that future studies should focus on long-term intervention impacts, women's leadership in water governance, and scalable technological solutions and addressing these gaps is crucial for ensuring sustainable and equitable freshwater access in the Sundarbans.

Monika, Dimple,Giri A.,Kumar S (Oct.,2023) in *Watering Sundarban's felds: a systematic review of groundwater and surface water suitability for irrigation* published in *Environmental Science and Pollution Research* showcase the decadency of Sundarban region on groundwater for irrigation. Their systematic review assess groundwater and surface water suitability by analyzing eighteen studies selected through extensive database searches. The study evaluated Key parameters including total hardness, residual sodium carbonate, potential salinity, permeability index, and sodium absorption ratio. Findings indicate high alkalinity, with both surface and groundwater exceeding safe irrigation limits, despite favorable physiochemical properties. This Study indicates critical research gaps persist in long-term monitoring and salinity control.

Lima, M.H., Salehin, M., Chowdhury, M.A. et al (March,2025) in *From participation to empowerment: the case of women in community-based water management in hydrologically diverse southwest coastal Bangladesh* published in *Environ Dev Sustain* identify Women participation in Water Management Organizations (WMOs) is often linked to empowerment, yet true agency remains constrained by social, political, and environmental factors. In southwest coastal Bangladesh, participation alone does not guarantee decision-making power. Effective empowerment depends on leadership roles, reduced elite influence, and institutional support. Intensive water security programs, leadership training, and inclusive governance structures enhance women's voices. Hydrological conditions also shape empowerment outcomes, with well-maintained water control systems fostering stronger participation. A systematic framework is taken in this study to assess empowerment in water management which can identify key barriers and opportunities, ensuring equitable and impactful interventions for sustainable gender-inclusive governance.

Mondal M, Mukherjee A , Das K, Puppala H (May,2024) in *Understanding the susceptibility of groundwater of Sundarbans with hydroclimatic variability and anthropogenic influences* published in *Groundwater for Sustainable Development* systematically identify key drivers of groundwater salinization in the Indian Sundarbans, analyzing climate change and anthropogenic influences. Collecting data from 1996–2017 this study highlights groundwater level (GWL) depletion, primarily linked to Indian Ocean Dipole (IOD) and El Niño-Southern Oscillation (ENSO), affecting recharge rates, Sea-level rise, shifting rainfall patterns, and population growth which further intensify salinization. Their findings reveal shallow aquifers with high salinity and deep aquifers exceeding safe limits. Addressing

drinking water scarcity and potential climate-induced migration is crucial for sustainable groundwater management in the region.

Datta, P., Behera, B., & Rahut, D. B. (July, 2023). in *Climate change and water-related threats in the Indian Sundarbans: food security and management implications* published in *International Journal of Water Resources Development* employs a desk review and three rounds of the Delphi method to assess climate change-induced water threats to food security in the Indian Sundarbans. Findings reveal that climate change has lowered agricultural output, disrupted traditional livelihoods, and reduced food access by affecting freshwater availability and increasing health risks. Intensified weather extremes further threaten food security. The study emphasizes the need for local adaptation strategies, such as resilient farming practices, and global mitigation efforts, including emissions reduction and sustainable water management. The study shows a multi-scale approach is crucial to safeguarding food security in this vulnerable coastal region.

*Basu M, Hoshinoo S,Hashimoto S (*July 2015) *in Many issues, limited responses: Coping with water insecurity in rural India published in* uses empirical evidence from a dry, sub-humid rural district in India to analyze coping strategies for water insecurity amid climate variability. Findings indicate non-climatic factors as primary drivers of water scarcity, with climate variations worsening conditions. Water insecurity creates a vicious cycle of poverty and deprivation, forcing communities into spontaneous, crisis-driven coping strategies that degrade resources and harm health. The study critiques rural water supply policies for neglecting actual water demands. It advocates for localized, participatory strategies integrated with developmental programs to enhance long-term water security and sustainable resource management in vulnerable rural areas.

Basu M, Dasgupta R, S,Hashimoto S (Feb,2021) in *A multi-actor and bottom-up perspective on attaining rural water security: qualitative evidence from India* employs a narrative approach to analyze multi-level actor coordination in rural water supply management, engaging community members, local government, and administration. Findings reveal a supply-side focus with minimal demand-responsive strategies, prioritizing one-time service provision over long-term sustainability. Despite institutional reforms, corruption, political motives, and social power dynamics influence decision-making. Community disengagement limits participation in maintenance, exacerbating financial, technical, and environmental challenges. The study advocates for a paradigm shift toward quality infrastructure, proactive monitoring, and integrated coordination to enhance sustainable water security, preventing ineffective investments and reducing long-term burdens on rural communities.

Islam N.S (Jan,2019) in *Sundarbans a Dynamic Ecosystem: An Overview of Opportunities, Threats and Tasks: Increasing Livelihood Security* published in *The Sundarbans: A Disaster-Prone Eco-Region* examines the Sundarbans' fragile mangrove ecosystem using eco-flow assessment methodologies, highlighting climate change and anthropogenic stressors. Findings reveal salinity intrusion as the most critical threat, exacerbated by the Farakka Barrage-induced reduction in Ganges freshwater flow, leading to severe impacts on agriculture, fisheries, drinking water, and biodiversity. The study emphasizes inadequate conservation policies and the need for trans-boundary cooperation between India and Bangladesh. It calls for improved monitoring, adaptive management, and sustainable livelihood strategies to safeguard food security and ecological balance. A holistic, policy-driven approach is essential for long-term Sundarbans conservation and community resilience.

Nirmala, T., & Aram, I. A. (May,2018) in *Environmental Images in Indian Newspapers* published in *Asia Pacific Media Educator* employs content analysis and visual discourse analysis to examine

environmental imagery in *The Times of India* and *The Hindu* during 2014–2015. Findings reveal dominant themes of climate change, biodiversity, and water scarcity, with adverse impacts well represented through graphics on global CO_2 emissions, groundwater depletion, and ecosystem threats. *The Times of India* favored textual info graphics, while *The Hindu* used statistical data-heavy visuals. Despite employing info-graphic artists, both newspapers prioritized photographs over info graphics. The study emphasizes the importance of data journalism in enhancing public understanding of environmental issues through scientific and ethical reporting.

Ghosh U, Bose. S , Brahmachari, R (Mar,2018) in *Sundarbans Living on the Edge: Climate Change and Uncertainty in the Indian Sundarbans* employs qualitative research to examine climate change and uncertainty in the Sundarbans through the perspectives of local islanders, contrasting expert-driven narratives. Findings highlight that while rising sea levels, mangrove loss, erratic rainfall, and cyclones increase vulnerabilities, local communities have long adapted to these uncertainties. However, escalating climate pressures are outpacing traditional coping mechanisms, deepening livelihood challenges. The study critiques top-down adaptation approaches, advocating for inclusive, context-specific strategies that integrate local knowledge and socio-ecological diversity.

Srivarnesh SN Aram IA (June,2024) in *Framing of Environmental Issues in Indian News Channels* analyzes environmental news coverage by NDTV 24x7, WION, and India Today, focusing on themes, framing, and journalistic challenges. Using content analysis, findings reveal that NDTV 24x7 leads in human-interest storytelling, attributing responsibility to stakeholders. India Today excels in investigative depth and conflict framing, while WION adopts a balanced reporting approach. Journalists play a crucial role in simplifying complex issues, highlighting local impacts, and advocating solutions, despite facing challenges and threats. The study underscores the importance of diverse framing in environmental journalism to foster public awareness and policy engagement for meaningful environmental action.

Triana E.S, Ortolano L,Paul T (July,2022) in *Managing Water-Related Risks in the Indian Sundarbans: Policy Alternatives and Institutions* employs policy analysis to evaluate responses to water-related threats in the West Bengal Sundarbans, including sea level rise, salinization, and embankment failures. Four policy scenarios are examined: business-as-usual, intensive rural development, short-term out-migration, and embankment realignment with voluntary
permanent relocation. Findings suggest that realignment and managed migration offer the most sustainable solution to reducing vulnerability to climate-induced disasters. The study informs ongoing policy deliberations, emphasizing the need for proactive, long-term adaptation strategies to enhance community resilience and minimize risks posed by climate change and environmental degradation in the region.

Mitra A., Gangopadhyay A., Dube A, Schmidt A.C. K., Banerjee K (June,2020*)* in *Observed changes in water mass properties in the Indian Sundarbans (northwestern Bay of Bengal) during 1980 –2007* employs long-term observational analysis (1980–2007) to assess climate change impacts on the Indian Sundarbans. Findings indicate a 0.5°C per decade rise in surface water temperature, exceeding global and Indian Ocean trends. Salinity dynamics vary, with a decline near the Ganges River (west) due to Himalayan ice melt, while eastern sectors experience increased salinity due to siltation in the Bidyadhari Channel. Dissolved oxygen, pH, transparency, and water quality exhibit significant long-term changes. These shifts have critical ecological implications, necessitating further research to understand their effects on marine biodiversity, fisheries, and local livelihoods in the Sundarbans.

Rahman K.F, Pal I, Szabo S, Pramanik M, Udmale P (May,2021) in *Transboundary water risk*

governance frameworks in deltaic socio-economic regions: A case study of river deltas in Bangladesh, India, and Vietnam published in *Disaster Resilience and Sustainability Adaptation for Sustainable Development* employs a comparative case study approach to assess climate-induced disaster risks in the Ganges-Brahmaputra-Meghna (GBM) delta (India & Bangladesh) and Mekong (MK) delta (Vietnam). Findings highlight rising sea levels, increased storm surges, salinity intrusion, and human modifications as key drivers of vulnerability. Weak disaster risk governance (DRG) frameworks exacerbate these risks. The study evaluates existing disaster laws and risk management policies, emphasizing the need for localized, adaptive governance strategies. Recommendations include integrated climate adaptation, strengthened policies, and sustainable risk governance, crucial for enhancing resilience in tropical deltas amid intensifying climate threats.

Han X, Boot MW, Soomro S,,Ali S,Batool S, Shi X, Guo J, Li Y, Tayyab M (June,2024) in *Water strategies and management: current paths to sustainable water use* examines sustainable industrial water management in Pakistan, emphasizing technological advancements and corporate investment in water conservation. Using a mixed- methods approach, including case studies and policy analysis, the research highlights the economic benefits of water treatment and reuse. Key findings indicate that industries prioritize production efficiency over conservation, despite long-term profitability in sustainable practices. A comprehensive strategy integrating ecological, financial, and societal factors is essential for viability. The study serves as a guide for executives and policymakers to align industrial water usage with sustainability goals, surpassing national and international benchmarks while ensuring resource optimization in a globalized economy.

Halder, A., and Debnath, A. (Jan,2014). in their book *Assessment of climate-induced soil salinity conditions of Gosaba Island, West Bengal and its influence on local livelihood* examines the geographical impacts of Cyclone Aila (2009) on agriculture, livelihoods, and living conditions in Gosaba Block, Indian Sundarbans. Using multi-dated satellite imagery analysis, it identifies saline water ingress, leading to soil salinization, fallow land expansion, and declining crop productivity. Field surveys and secondary data reveal occupational shifts and food security threats due to rising temperatures and erratic rainfall. Key findings include static or declining yields, ecological degradation

affecting freshwater fisheries, and reduced cultivable land. The study underscores the urgency of adaptive agricultural innovations to sustain livelihoods and mitigate climate-induced vulnerabilities in the region.

Lahir J. (2022, Nov) in his edited book *Sundarban Abishkar* published from *Gangchil* presents a multidimensional perspective on the Sundarbans, moving beyond crisis narratives. Key findings highlight human-wildlife conflict, climate-induced livelihood challenges, socio-cultural identity, and gaps in policy-making. The book challenges conventional disaster-focused portrayals, emphasizing local voices and historical narratives. Methodology includes qualitative research, ethnographic observations, oral histories, and field studies, ensuring an authentic and comprehensive analysis. By integrating research with firsthand experiences, the book broadens existing literature, offering a holistic socio-ecological discourse. It serves as a crucial resource for scholars and policymakers examining the interplay between environment, culture, and livelihoods in the Sundarbans.

2.1. RESEARCH GAPS

While existing studies emphasize policy frameworks, ecological challenges, water scarcity, climate

change, and socio- economic vulnerabilities, there is a lack of media-focused research on how these issues are framed, reported, or even neglected. The absence of consistent and in-depth reporting by vernacular newspapers further exacerbates this gap, limiting public discourse and policy attention on the water crisis faced by these marginalized communities. Additionally, the role of media in shaping local narratives, influencing governance, and mobilizing grassroots action remains under explored. Furthermore, existing studies seldom explore the biases, framing techniques, or editorial priorities that influence the coverage of water-related issues.Investigating the under representation and lack of reporting on freshwater issues in these climate-vulnerable regions is crucial for assessing the media's effectiveness in advocating for sustainable water management and social equity.

2.2 THEORITICAL FRAMEWORK

A theoritical framework is a systematic approach used in qualitative research to organize, interpret, and analyze data by identifying key themes or patterns across the dataset. It serves as a tool to categorize and structure data in a way that helps to draw meaningful insights, especially from complex or narrative information. Ritchie and Spencer (1994) explain that *"Thematic frameworks provide a matrix-based method for ordering and synthesizing qualitative data to ensure transparency and rigor in qualitative research."* In this Study *Framing Theory* and *Political Ecology Approach* is adopted to analyze the News Contents in respect of ground data.

2.2.1. Framing Theory

Frame analysis, introduced by sociologist Erving Goffman in 1974, explains how people understand and interpret events by organizing experiences into structured mental frameworks called "frames." These frames guide perception and behavior by shaping how information is processed. In media studies, especially in the context of environmental communication, Semetko and Valkenburg's model identifies five key frames: human interest, conflict, morality, attribution of responsibility, and economic consequences. These frames determine how environmental issues are portrayed, shaping public understanding and emotional responses. Together, they reveal the complex ways in which media narratives influence societal attitudes toward environmental challenges and policy decisions. This study employs an interdisciplinary framework integrating *Framing Theory & Political Ecology* analyze media narratives, governance structures, and socio environmental challenges related to water accessibility.The analysis categorizes articles based on thematic framing , frequency of coverage, sources cited, and the inclusion of marginalized voices . Though Goffman was the pioneer of Framing Theory but this research is using the concept of Entman to analyze the news. According to *Entman,* "*To frame is to select some aspects of a perceived reality and make them more salient in a communicating text, in such a way as to promote a particular problem definition, causal interpretation, moral evaluation, and/or treatment recommendation."* Entman's model of framing, developed by communication theorist Robert M. Entman in 1993, outlines four essential functions through which media framing operates. These include, **Problem Definition Frame**, which determines what a particular issue is and why it matters; **Causal Interpretation**

Frame, which identifies the forces or actors responsible for the issue; **Moral Evaluation Frame**, which assesses the ethical dimensions or values related to the issue; and **Treatment Recommendation Frame**, which suggests possible solutions or responses. This analysis helps to identify whether newspapers highlight systemic issues or simply focus on surface-level crises. It examines whether media discussions encourage structural solutions or promote a narrow, event-driven narrative.Understanding causal

framing reveals media biases in assigning responsibility it highlights whether newspapers hold authorities accountable or shift blame elsewhere. It will portray the Media discourse influences on public perception of water as an economic good vs. a fundamental right. It reveals whether the voices of vulnerable communities are adequately represented. Treatment framing reflects media influence on policy debates and the prioritization of solutions. It indicates whether newspapers advocate for top-down approaches or grassroots empowerment.

2.2.1. Political Ecology Approach

The Political Ecology Approach provides a critical framework for analyzing how power relations, environmental policies, and socio-economic structures shape access to natural resources, such as freshwater. According to *Blaikie and Brookfield (1987) "Political ecology combines the concerns of ecology and a broadly defined political economy. Together, this means studying how environmental issues are shaped by political, economic, and social forces."* Rooted in geography, anthropology, and political economy, this approach emphasizes how power relations, economic inequalities, and historical processes shape environmental access, governance, and outcomes. It challenges apolitical or technocratic narratives by highlighting how environmental degradation and resource conflicts are often the result of structural injustices, state policies, market forces, and global-local interactions. As a thematic framework, political ecology enables a critical analysis of how freshwater scarcity, resource inequity, and community marginalization are not merely ecological problems, but deeply embedded in political, economic, and institutional contexts. It is especially relevant in the study of regions like the Indian Sundarbans, where climate change, developmental pressures, and socio- environmental vulnerability converge. The approach provides a lens to explore how policy decisions, institutional neglect, and elite control affect water access and how local resistance, adaptation, and empowerment emerge in response.

Key Analytical Dimensions of Political Ecology in This Study

A. ***Structural Power and Governance in Water Access***

Political ecology argues that water scarcity is often a problem of mismanagement and unequal distribution rather than a lack of resources *(Swyngedouw, 2009).* This study examines how West Bengal's water policies, local governance, and development projects affect access to clean water in the Sundarbans. Through this the study will examine who controls freshwater resources? How do government policies, privatization, and bureaucracy impact water distribution? Are there institutional failures or corruption affecting water governance?

B. Socio-Economic and Caste-Based Inequities in Water Access

In regions like the Sundarbans, social hierarchies impact water security. Women, who are primary water collectors, often suffer the most from water scarcity but remain absent from policy discussions *(Sultana, 2011)*. The study explores how caste, gender, and economic disparity shape unequal access to water infrastructure. Do marginalized communities face greater challenges in obtaining clean water? Are powerful groups controlling freshwater access and pricing? How do land ownership, caste, and wealth determine access to safe drinking water?

C. Environmental Justice and Climate Change Impacts

Political ecology links climate change to power dynamics, arguing that the poorest communities suffer the most but receive the least support *(Adger, 2001).* How does climate change worsen freshwater scarcity in Moushuni and Gobordhanpur and Are marginalized communities disproportionately affected by saltwater intrusion and extreme weather this type of questions will be analyzed through this.

D. Media Representation and Political Ecology

By applying Framing Theory within a Political Ecology lens, the study assesses how leading Bengali newspapers shape public perceptions of water crises, equity, and policy responses. Do newspapers frame the water crisis as a governance failure, climate disaster, or local mismanagement issue? Are media narratives reinforcing elite perspectives or giving voice to marginalized communities? How do leading newspapers influence policy debates on water access? These will be analyzed here.

Relevance:

- Exposes the structural causes of water scarcity, moving beyond technical explanations.
- Highlights power inequalities in freshwater governance and decision-making.
- Links environmental degradation, climate change, and social justice issues in the Sundarbans.
- Provides a framework for assessing media narratives and their role in shaping policy discourse.

3. RESEARCH METHODOLOGY

Research methodology is a way to systematically solve the research problem. It may be understood as a science of studying how research is done scientifically. In it researcher studies the various steps in studying his/her research problem along with the logic behind them. It is necessary for the researcher to know not only the research method/techniques but also the methodology *(Kothari, 2022)*. It refers to the comprehensive study of research methods and the theoretical framework. The research problem having been formulated in clear cut terms, the researcher is required to prepare a research design. He or she will have to state the conceptual structure within which research would be conducted *(Kothari, Second Revised Edition)*.This study adopts a *Mixed Method Research Design*, containing Research Design, Research Methods, Sampling Design, Data Collection, Data Analysis, which integrates both qualitative and quantitative approaches in content analysis of data to comprehensively analyze the representation of freshwater access, equity, and community empowerment in mainstream vernacular newspapers. The research focuses on the Indian Sundarbans' Moushuni and Gobordhanpur islands, critically examining how *Anandabazar Patrika* and *Bartaman* frame water-related issues and their implications for sustainable development. It includes the Qualitative Method for taking insights of the local people and professionals by in-depth interviews and focus group discussions and quantitative insights from household surveys and water quality reports in this study.

3.1. RESEARCH DESIGN

A research design is the blueprint or framework for conducting a research study. It outlines how data will be collected, measured, and analyzed, ensuring that the study effectively addresses the research problem. This study is based on *Mixed Method Research Approach.* According to *Creswell (2014), M*ixed-Methods Research is *"An approach to inquiry that involves collecting both quantitative and qualitative data, integrating the two forms of data, and using distinct designs that may involve philosophical assumptions and theoretical frameworks. The core assumption is that the combination of qualitative and quantitative approaches provides a more complete understanding of a research problem than either approach alone."*. In this study, qualitative methods such as content analysis of newspapers, focus group discussions (FGDs), and semi-structured interviews of locals, journalists and policymakers are integrated with quantitative household surveys and secondary data analysis. This approach ensures both depth (qualitative insights) and breadth (quantitative generalizability) in analyzing freshwater challenges in the region. The decision to use a mixed-methods approach is based on the following factors:

- Triangulation of Data – Using multiple methods increases the validity of findings by cross-verifying data from different sources *(Flick, 2018).*
- Complementarity – The approach enables both breadth (quantitative insights from surveys) and depth (qualitative insights from interviews and newspaper content analysis) *(Greene et al., 1989).*
- Contextualization – It allows the integration of media representations with lived experiences, ensuring a holistic perspective on freshwater governance.

3.2. RESEARCH METHODS

Research methods refer to the systematic approaches and techniques used by researchers to collect, analyze, and interpret data in order to answer research questions or test hypotheses.According to Creswell (2014),*"Research methods refer to the specific techniques or procedures used to collect and analyze data. They provide the tools to generate reliable and valid evidence for the research."* In this paper "Content Analysis" is one type of research method which is going to be used. It is a method for analyzing communication materials like text, images, videos, audios. Content Analysis can be divided into two different part one is qualitative and another one is quantitative approach. 'Qualitative approach' is followed by interpreting themes, contents and answers the question of 'Why' and 'What'. On other hand 'Quantitative Approach' is followed by words, frequency, and presence of phase and answers the question of 'How many' and 'How much'.This research paper will follow both the approach of Content Analysis. Qualitative approach of Content Analysis is going to be used to interpret the different types of Water related news related to Sundarban Water and the positioning of the news and Quantitative approach of Content Analysis is going to be used to interpret the number of words in the news articles and the frequency of their publication of these two newspapers Ananda Bazar Patrika and the Bartaman.
In this study, qualitative methods will be employed to gather data through household surveys, focus group discussions interviews from professionals and quantitative methods will be implemented to analyze water quality reports. The household surveys and media professionals' interview will use structured questions to collect community perspectives on water availability, affordability, and institutional trust, allowing for statistical analysis. Water quality reports will provide objective, measurable data on key indicators like salinity, contamination, and potable water availability. These quantitative insights will be used to identify patterns, correlations, and trends in water access and quality, providing a robust empirical foundation for understanding the socioeconomic and environmental issues faced by the communities in the study area.

3.2.1 CONTENT ANALYSIS OF VERNACULAR NEWSPAPERS

According to *Krippendorff (2004),* content analysis is:*"A research technique for making replicable and valid inferences from texts (or other meaningful matter) to the contexts of their use."* Berelson (1952**)** defines it as: *"A research technique for the objective, systematic, and quantitative description of the manifest content of communication."* Content analysis takes different forms, each serving a unique purpose in media and communication studies. **Quantitative Content Analysis** systematically counts and measures specific words, phrases, or themes, offering statistical insights into textual patterns. In contrast, **Qualitative Content Analysis** delves into underlying meanings, uncovering implicit messages and societal implications. **Framing Analysis** explores how media constructs reality, shaping public perception through selective emphasis, omission, and linguistic choices *(Entman, 1993).* This study applies *Framing theory* (Entman, 1993) and *Political Ecology Approach (Robbins,2012)* to assess how *Anandabazar Patrika* and *Bartaman* construct narratives around freshwater availability, equity, and

governance with Qualitative and Quantitative Content Analysis.

3.2.1.1 SAMPLING STRATEGY FOR NEWSPAPER CONTENT:

"A sample design is a definite plan for obtaining a sample from a given population. It refers to the technique or the procedure the researcher would adopt in selecting items for the sample" (Kothari, C.R., 2022). According to *Tongco (2007),* purposive sampling is *"The deliberate choice of a participant due to the qualities the participant possesses, ensuring they provide the most relevant and comprehensive data for the study."* A purposive sampling technique is used to collect water-related news articles regarding Sundarban area published between January 2024 and December 2024 from *Anandabazar Patrika and Bartaman.* This study adopts critical case sampling as a purposive sampling technique because it focuses on strategically selected locations and media sources that provide the most insightful and relevant data on freshwater access, equity, and community empowerment in the Sundarbans. Critical case sampling will be useful as researcher has to study complex issues where a few well-chosen cases can yield meaningful and general insights *(Patton, 2015).*

Rationale for Selection of ***Anandabazar Patrika*** *and* ***Bartaman*** *for Newspaper Analysis*

- These are the leading vernacular newspapers in West Bengal with wide readership and influence over public opinion and policymaking. According to the Audit Bureau Circulation (ABC) report 2022 the circulation of the newspaper Ananda Bazar Patrika is 802,289 whereas the circulation of the newspaper Bartaman is 600,000. Even in Sundarban where the research is done these newspapers are circulated mainly.
- By analyzing how these newspapers frame freshwater issues, the study can assess media bias, representation gaps, and agenda-setting strategies.
- Their coverage reflects broader media narratives that influence water governance and community empowerment discussions.

3.2.1.2 SAMPLE SIZE FOR NEWSPAPER CONTENT:

Sample size means “the number of items to be selected from the universe to constitute a sample” (Kothari, C.R., 2022). In this paper the population is the Anandabazar Patrika and Bartaman with in the time frame of one year (January to December of 2024). The size of the samples are 720 newspapers. 48 news of the Ananda Bazar Patrika and 256 news of the Bartaman , related to Sundarban of the time frame of one year is taken for sampling.

3.2.2 FIELD SURVEY AND PILOT STUDY

A field survey is a structured method of collecting primary data directly from respondents to assess their perceptions and lived experiences *(Fowler, 2014)*. To refine the survey instrument, a pilot study,a trial run of a larger study, conducted on a small sample to check the clarity of questions, measure response rates, and test the overall feasibility of the research, *(Kothari,2004)* was conducted with a small sample (N=15) to ensure the reliability and validity of the questionnaire.

3.2.2.1. POPULATION SELECTION FOR HOUSEHOLD SURVEY

In research methodology, the term "population" refers to the entire group of individuals, objects, or events that share common characteristics and from which a sample may be drawn for a study. In research methodology, the term "population" refers to the entire group of individuals, objects, or events that share common characteristics and from which a sample may be drawn for a study.Population selection refers to the process of defining the group from which research participants are drawn to ensure the study's relevance *(Creswell, 2014)*. For this study, the target population includes:

- Residents of Moushuni and Gobordhanpur Islands (Mainly in Kusumtala, Baliwara, Sitarampur, Indrapur,Daspur). *(33467 people are the tentative population in the selected area. Source.Census 2011)*
- Local women and marginalized groups (1748 women according to *Census 2011)*
- Local Government Policumakers
- Local and Kolkata based Media Reporters

By including diverse stakeholders, the study captures multiple dimensions of the freshwater crisis, from policy discourse to on-the-ground experiences.

3.2.2.2. SAMPLE SELECTION FOR HOUSE HOLD SURVEY

Sample Selection involves choosing a subset of the population that accurately represents the study's objectives *(Palinkas et al., 2015)*. This study uses *Purposive Sampling*, a non-random technique where participants are selected based on specific criteria relevant to the research. After conducting a *Pilot Study* with 15 local respondents to test and refine the survey instrument for clarity, reliability, and validity this samples were taken.

Main Field Survey:

Sample Size will be 50 households across Moushuni and Gobordhanpur islands, 3 local policymakers, 3 Media personals. Purposive sampling will be used as sampling technique to ensure inclusion of households affected by water scarcity and those with varying socioeconomic backgrounds. Policymakers and reporters will be included through same Purposive sampling to get the picture of media portrayal of the real facts and sustainable water management procedures taken by the local authorities. Structured surveys, focus group discussions, and key informant interviews with community members, journalists, and policymakers will be adopted for data collection.

Justification for Sampling Approach

- It ensures representation of diverse perspectives (households, women,policymakers,Reporters).
- It focuses on communities directly affected by water access issues.
- It enhances the study's validity by refining tools through a pilot study before full-scale data collection.

By adopting a purposive sampling strategy, the study ensures a comprehensive, multi-stakeholder understanding of freshwater access, equity, and media representation in the Sundarbans. The objective is to explore thoroughly the participants' viewpoints, experiences, beliefs, and opinions. In-depth interviews are distinguished by their unstructured nature, allowing participants to express themselves freely without being confined by predetermined response options. This approach allows researchers to delve deeply into the participant's thoughts and emotions, uncovering refined insights that may not emerge through other research methods.

Key Variables Measured

Creswell (2014) defines an independent variable as *"an attribute or characteristic that influences or affects an outcome or dependent variable." Kerlinger & Lee (2000)* define a dependent variable as *"the observed result of the influence of the independent variable."*. Here in this Study the variables are:

- Accessibility and affordability of freshwater (IV)
- Community perceptions of media coverage on water issues (IV)
- Gendered impact of water scarcity (DV)
- Trust in government interventions (DV)

3.2.3 FOCUS GROUP DISCUSSIONS (FGDS) AND PERSONAL INTERVIEWS

Focus group discussions (FGDs) are semi-structured conversations that gather diverse perspectives on a topic *(Morgan, 1996).* This study conducted 4 FGDs with local residents. The target population for the FGDs includes a broad spectrum of stakeholders who are both directly and indirectly affected by the freshwater crisis. This comprises marginalized women, who typically bear the burden of water collection and household management; fisherfolk and small-scale farmers, whose livelihoods depend on timely and affordable access to water; and young individuals and students, who offer contemporary and intergenerational perspectives on both water governance and media engagement. Additionally, local elders and community leaders are included for their institutional memory and grassroots insights, while representatives from NGOs and civic organizations are engaged to understand external interventions and participatory governance structures.

To ensure a rich diversity of opinion and intersectionality in representation, a purposive sampling technique has been adopted. As described by Patton (2002), purposive sampling is ideal in qualitative inquiries where the intent is to gather in-depth information from individuals with specific knowledge or experience relevant to the research objectives. Community facilitators and local NGOs have been instrumental in identifying participants who reflect variations in gender, caste, occupation, income, and social influence. Each FGD is composed of approximately 6 to 10 participants, consistent with Krueger and Casey's (2015) guidelines for optimal group size, promoting both inclusivity and manageability in discussions.

Separate FGDs are organized for women, youth, and mixed-gender groups, ensuring that participants feel comfortable and empowered to express themselves. The discussions are semi-structured and guided by open-ended questions focusing on access to freshwater, perceptions of media coverage, government interventions, and gendered impacts.

This participatory approach not only amplifies marginalized voices but also facilitates critical reflection on how community realities align or diverge from media portrayals.

Additionally, semi-structured interviews were conducted with two local and one kolkata based journalists and local policymakers (Panchayat Members) to know editorial priorities in water-related reporting challenges faced by vernacular newspapers in covering freshwater issues, institutional and policy responses to water governance in the Sundarbans.

3.2.4 AREA SELECTION AND JUSTIFICATION

Given the trans boundary nature of the Sundarbans, a comprehensive study ideally requires examining both the Indian and Bangladeshi sides. However, this research is confined to the Indian Sundarbans due to several practical, ecological, and logistical reasons. The decision to restrict the study to two islands of the the Indian portion of the Sundarbans' is not arbitrary but rather informed by key factors that influence the feasibility, scope, and integrity of the research. These factors include the higher level of protection accorded to the Indian Sundarbans, the absence of large- scale land conversion post-1947, the challenges posed by political instability in certain areas of Bangladesh, and the researcher's national and religious identity, which could act as a barrier to conducting fieldwork effectively. Each of these considerations plays a significant role in defining the boundaries of the study and ensuring that the research remains methodologically sound and practically viable. The research focuses on Moushuni and Gobordhanpur islands, two highly climate-vulnerable regions within the Indian Sundarbans. The selection is based on:

- Rising salinity levels due to climate change have worsened water access

- These islands have high poverty rates, lack of infrastructure, and limited government intervention in water management.
- Despite their vulnerability, there is minimal media coverage of the region's freshwater crisis, making it a critical case study.

3.3. *RESEARCH TOOLS AND TECHNIQUES*

According to Kothari (2004), research tools are "*the means through which data are collected for analysis, forming the empirical basis of research findings."* Similarly, Creswell (2014) emphasizes that the choice of research techniques must align with the research objectives, ensuring reliability, validity, and depth in data interpretation.To explore freshwater access and media representation in the Sundarbans, this study adopts together diverse research tools. Through media analysis, household surveys, focus group discussions, and water quality assessments, it captures both the stories told by vernacular newspapers and the lived experiences of communities navigating scarcity, resilience, and governance challenges.

3.3.1 Newspaper Content Analysis Framework

Source Analysis: Source analysis refers to the systematic evaluation of the origins, credibility, and diversity of information presented in media coverage *(Tuchman, 1978).* It examines who is quoted, whose perspectives are
prioritized, and how different sources shape the narrative. It examines whether marginalized voices (e.g., women, fisherfolk) are represented or if elite sources dominate reporting.

Framing Bias: Framing bias occurs when media selectively emphasize certain aspects of an issue while downplaying others, shaping public perception *(Entman, 1993)*. This study will examine Bengali newspapers' portrayal of freshwater access, revealing whether coverage prioritizes government narratives, neglects community struggles, or frames water scarcity as a natural disaster rather than a policy failure and isolated crisis with no systemic solutions.This study evaluates media bias and gaps in representation, particularly the absence of gender- sensitive reporting on water collection challenges, which disproportionately impact women *(Sultana, 2011).* This study assesses *Selection bias* (which issues are covered), *Source bias* (who gets quoted), *Framing bias* (how problems and solutions are presented), and *Political bias* (alignment with government or opposition views). Using content and framing analysis (Entman, 1993), it examines whether Bengali newspapers prioritize policy failures, climate change, or community struggles. By comparing coverage across sources and verifying with independent reports, this research identifies media distortions, highlights gaps in representation, and evaluates whether marginalized communities' voices are amplified or sidelined in water governance discourse.

3.3.2 Household Survey Questionnaire

Kothari (2004) defines a questionnaire as *"a set of questions systematically designed to elicit responses from respondents with the aim of collecting relevant data for research."* Kerlinger & Lee (2000) describe a questionnaire as *"a self-report instrument comprising a series of questions that measure opinions, attitudes, behaviors, or demographic characteristics."* Structured open and closed-ended questions will be used to quantify community perspectives on Water availability and affordability, Perceptions of media reliability and coverage,Trust in institutional interventions . In this study, the household survey questionnaire is instrumental in quantifying community perspectives on freshwater availability, affordability, trust in institutional interventions, and the perceived reliability of media

coverage. By employing both open- and closed-ended questions, the tool captures the depth and diversity of public opinion, making it an essential part of mixed-methods research.

3.3.3 *Focus Group Discussion Techniques*

A focus group is a moderated discussion where participants share perspectives on a specific topic (*Krueger & Casey, 2015).* In this study, three focus group discussions *(FGDs) is* conducted to understand how vernacular newspapers *(Anandabazar Patrika, Bartaman)* represent issues of freshwater access, and what the real situation is. The discussion will be guided by open-ended questions on water challenges, media awareness, and gender roles. It is tailored for different stakeholders, including marginalized women, local residents to examine institutional perspectives on water governance.

3.3.4 Water Quality Analysis

To understand water quality secondary data from government and NGO water quality reports will be analyzed to correlate community perceptions with actual water conditions. Here the key indicators will be Salinity levels, bacterial contamination, and potable water availability. This study employs a quantitative approach to water quality analysis by relying on secondary data with the aim of correlating environmental indicators with local community perceptions of freshwater accessibility and safety. To construct the sample frame, reports were collected from organizations such as the Public Health Engineering Department (PHED) of West Bengal, Jal Jeevan Mission project updates, and NGO-led environmental monitoring agencies like WWF-India and DRCSC. The time frame considered ranges from 2018 to 2023, providing a five-year span of water quality assessments under varying seasonal and climatic conditions.The sampling strategy is based on the availability and relevance of data. Rather than selecting water sources directly, the study samples recorded data points that include consistent indicators such as salinity concentration, bacterial contamination (notably E. coli and coliform presence), turbidity, arsenic content, and potability status. These datasets typically cover multiple blocks within the Sundarbans, including the two chosen islands. From these, 20 to 30 documented water sources that have recurring and complete entries across multiple years have been selected for detailed analysis. This sample enables a comparative analysis between different geographic zones, water source types, and institutional interventions. By applying this document-based sampling method, the research adheres to a non-intrusive, time-efficient design while still maintaining scientific rigor. The approach ensures that secondary data is not used passively but is actively mined and contextualized within the broader narrative of environmental vulnerability and media representation. Ultimately, the sampled water quality data provides a solid empirical foundation for validating community voices and uncovering structural inequalities in freshwater access in the Sundarbans.

By integrating media analysis with field-based community research, this study provides a comprehensive understanding of the representation and realities of freshwater access in the Sundarbans. The mixed-methods approach ensures a nuanced examination of media biases, policy gaps, and community struggles, highlighting the crucial role of vernacular newspapers in sustainable water governance discourse.

4. DATA COLLECTION

As part of this research's mixed-methods approach, a systematic content analysis of vernacular newspapers was conducted to understand the frequency and pattern of environmental news reporting—specifically freshwater-related issues—in two widely circulated Bengali dailies: Anandabazar Patrika and Bartaman. The study spanned a one-year period, from January to December, and aimed to quantify

the visibility and editorial priority given to freshwater access, distribution challenges, and community voices in the Sundarbans region. The data was collected manually by reviewing print archives of both newspapers from National Library. News items were selected based on relevance to key environmental themes, such as water scarcity, climate impact on local water bodies, governmental water policies,

Creswell (2014) notes, *data collection involves "a series of interrelated activities aimed at gathering good information to answer emerging research questions."* In this study, multiple tools have been employed to capture the complex, multi-layered nature of the problem. These include household surveys to gather quantitative insights on water availability, affordability, and perceptions of institutional trust; focus group discussions to document local narratives and community knowledge; and content analysis of vernacular newspapers (Anandabazar Patrika and Bartaman) to decode media framing and representation. Even Media personals and Local Policymakers insights are captured. Additionally, secondary data sources—particularly water quality reports from government and NGO bodies—have been analyzed to correlate scientific parameters such as salinity, bacterial contamination, and potable water availability with community concerns. This integration of qualitative and quantitative data sources reflects a mixed- methods approach, ensuring that the findings are both statistically robust and socially embedded.

4.1 NEWSPAPER CONTENTS:

As part of this research's mixed-methods approach, a systematic content analysis of vernacular newspapers was conducted to understand the frequency and pattern of environmental news reporting—specifically freshwater-related issues—in two widely circulated Bengali dailies: Anandabazar Patrika and Bartaman. The study spanned a one-year period, from January to December, and aimed to quantify the visibility and editorial priority given to freshwater access, distribution challenges, and community voices in the Sundarbans region. The data was collected manually by reviewing print archives of both newspapers from National Library. News items were selected based on relevance to key environmental themes, such as water scarcity, climate impact on local water bodies, governmental water policies, and community-led water resilience initiatives. A clear inclusion criterion ensured that only articles directly addressing water issues in rural and peri-coastal Bengal were considered. According to the Table 1 , a total of 48 relevant articles were found in Anandabazar Patrika, while Bartaman published 256 related news items in the same period. Bartaman exhibited greater consistency in its coverage across all months, with notable spikes in May (34 news items) and December (32 news items). In contrast, Anandabazar's reporting was more sporadic, with no relevant articles found in August and November, and peak coverage only in January (15 items) and October (12 items). This numerical disparity suggests a differential editorial focus between the two newspapers. This content frequency data provides a quantitative baseline for further qualitative thematic analysis and source analysis.

While collecting data from Anandabazar Patrika the data were categorized thematically to assess the frequency and framing of specific issues relevant to environmental communication and regional concerns in the Sundarbans. The newspaper articles were catagorized across 12 thematic domains—including *Water Issues*, *Health*, *Crime & Disaster*, *Political*, *Tiger & Forests*, and *Development*, among others. This structured categorization allowed for a quantitative measurement of how often each theme was reported and how those frequencies shifted over time. Notably, the theme "Water Issues", which is central to the study, was selectively covered, peaking in February with 3 articles, and appearing in several other months in lower numbers. (Table 2.)

The data collection from *Bartaman*, categorizing 256 articles across 12 themes are categorized into

Water Issues (17), Development (24), Health (3), and Human Interest (16). Articles were manually recorded month-wise, with May (34 articles) and December (32) showing peak coverage. Political news dominated with 43 articles, while Water Issues appeared infrequently, highlighting under-representation of freshwater access concerns. This dataset provides insight into the media's thematic priorities and reflects limited focus on critical issues (Table 3.)

January	15	27
February	7	31
March	1	24
April	2	6
May	5	34
June	1	12
July	2	24
August	0	23
September	2	12
October	12	21
November	0	10
December	1	32
Total	**48**	**256**

TABLE 1: NEWS PUBLISHED IN ANANDABAZAR PATRIKA & BARTAMAN RELATED TO SUNDARBAN IN 2024

January	2	5	1	0	3	0	2	1	1	0	0	0	15
February	0	0	0	3	0	0	0	2	0	0	2	0	7
March	0	0	1	0	0	0	0	0	0	0	0	0	1
April	0	0	0	0	0	1	0	0	0	0	0	1	2
May	0	0	0	0	0	0	0	0	0	0	0	5	5
June	0	0	0	1	0	0	0	0	0	0	0	0	1
July	0	0	0	0	0	0	0	0	0	0	2	0	2
August	0	0	0	0	0	0	0	0	0	0	0	0	0

September	0	0	1	0	0	1	0	0	0	0	0	0	2
October	0	0	0	0	0	0	0	1	0	1	1	9	12
November	0	0	0	0	0	0	0	0	0	0	0	0	0
December	0	0	0	0	0	1	0	0	0	0	0	0	1

TABLE 2: CATEGORIES OF NEWS PUBLISHED IN ANANDABAZAR PATRIKA REGARDING SUNDARBAN IN 2024

In this study, data collection involves the systematic gathering of secondary content from *Anandabazar Patrika* and *Bartaman* newspapers.A total of 20 water-related news reports were found, including 4 from Anandabazar Patrika and 16 from Bartaman. These articles varied in length (ranging from 100 to 300 words), number of columns (1–4), and types (news, editorial, post-editorial). The highest frequency of coverage appeared in May, with 5 articles recorded. Statistical indicators such as word count, page placement, and publication frequency provided quantifiable insights into the media salience of water issues. (Table 4.)

January	2	3	2	2	1	1	0	2	2	1	8	3	27
February	1	6	8	4	0	2	0	0	1	4	5	0	31
March	5	0	13	0	0	0	0	2	0	2	1	1	24
April	0	0	2	1	0	0	0	1	0	1	1	0	6
May	10	8	2	5	0	0	1	1	0	1	3	3	34
June	0	0	5	1	0	0	0	2	0	3	1	0	12
July	2	1	3	1	0	3	0	1	1	3	7	2	24
August	5	1	1	1	0	3	0	1	4	4	2	2	23
September	0	0	0	1	1	0	1	1	2	0	4	1	12
October	2	2	2	0	0	8	1	1	1	0	0	4	21
November	0	0	0	0	1	1	0	2	2	2	1	1	10
December	4	1	3	0	1	4	0	2	8	2	7	0	32

TABLE 3: CATEGORIES OF NEWS PUBLISHED IN BARTAMAAN REGARDING SUNDARBAN IN 2024

SOMUDROJIBIR SANKAT	ANANDABAZAR PATRIKA	20.2.24	4	300	3	POST EDITORIAL
SCHOOLE PANIYO JOLER SONGJOG NEI,	ANANDABAZAR PATRIKA	27.2.24	6	150	1	NEWS
KHUBDHO ADALAT JOLOBAT	ANANDABAZAR PATRIKA	27.224	4	300	1	EDITORIAL
KOTOTA DAM DILE TOBE	ANANDABAZAR PATRIKA	11.6.24	4	300	3	POST EDITORIAL
RAIDIGHIR MONI NODITE ROJ PORCHE ABORJONA	BARTAMAN	21.1.24	9	150	3	NEWS
JOLDUSHAN RODHE AGAMI SAPTAHE BOITHAK KENDRER	BARTAMAN	21.1.24	7	245	3	NEWS
GHORAMARA DWIPER PROTITI BARITE EKHON SARKARI PROKOLPER JOL	BARTAMAN	12.2.24	6	100	2	NEWS
BHUGARBHOSTHO JOL NEME JOYAY PANIYO JOLER HAHAKAR	BARTAMAN	12.2.24	7	150	4	NEWS
SAGORE SAONSKAR HOBE AATTI KHAL, JANALEN MONTREE	BARTAMAN	19.2.24	5	100	1	NEWS
JOYARER SOMOY NONA JOL OTHE NOLKUPE, BHATAY MELE NA TAO	BARTAMAN	21.2.24	6	300	3	NEWS
PANIYO JOLER SONKOT MIITLO KWAKDEEPER MADAHBNAGARE	BARTAMAN	27.4.24	9	100	1	NEWS
DUI JAIGAI NODHIBADHE DHWOS, ATANKO	BARTAMAN	12.5.24	4	200	4	NEWS
KULTOLITE JENO OGHOSITO BONDH	BARTAMAN	28.5.24	6	150	3	NEWS

JHOR O PROBOL BRISHTI SOTTEO PLABITO HOYNI GRAM	BARTAMAN	28.5.24	6	165	3	NEWS
CHILO DHAN KHET, JHORER POR THOITHOI JOLASHOY, PALTE GIECHE SAGARDWIP	BARTAMAN	28.5.24	6	250	3	NEWS
DUBE 5000 HECTOR JOMI, KHOTIGROSTHO 40 HAJAR CHASHI	BARTAMAN	29.5.24	6	120	1	NEWS
SOBHARADER KATHA	BARTAMAN	2.6.24	1	250	2	ARTICLE
SUNDORBONE VENGECHE CONCRITER BANDH, BONGOPSAGORER GORJONE ATANKO	BARTAMAN	24.7.24	9	250	3	NEWS
PURNIMAR KOTAL O NIMMNOCHAP, GHUM URCHE SUNDARBANBASHIR	BARTAMAN	20.8.24	5	150	1	NEWS
BANDHE OBOIDHO PAIP BOSHANOI PLABITO PUKUR RASTA JOMI	BARTAMAN	19.10.24	6	100	1	NEWS

TABLE 4: WATER ISSUE RELATED NEWS PUBLISHED REGARDING SUNDARBAN IN 2024

4.2 SURVEY & INTERVIEW DATA:

In alignment with the objectives of this study—to assess the social, geographical, and communicative dimensions of freshwater scarcity in Mousuni and Gobordhanpur Islands—*in-depth semi-structured interviews* were employed as a key primary data collection method. This qualitative approach was instrumental in capturing the nuanced, lived experiences of residents and understanding how freshwater challenges intersect with identity markers such as gender, caste, income levels, and geographic remoteness. The use of interviews was predicated on the need to move beyond statistical generalizations and instead engage with experiential narratives that reveal how water issues are *perceived, endured, and negotiated* by different sections of the community. This approach aligns with Creswell's (2013) assertion that qualitative interviews are essential when researchers seek to explore *"deep meanings embedded in individual experiences and socio-cultural contexts."* With a purposive sampling technique to ensure a heterogeneous and inclusive representation a total of 50 participants were interviewed, comprising: 20 local residents from marginalized caste groups, 24 women (with an emphasis on women-led households), 2 community health workers, local policy makers, 1 local schoolteachers, and 2 journalists from local vernacular newspapers and 1 from kolkata based journalist .This diverse sampling framework ensured that the intersectional nature of water-related vulnerabilities was well represented. Special attention was given to selecting participants from both upstream and downstream locations within the islands to capture geographic disparities in water access and salinity exposure. Each

interview followed a semi-structured format with open-ended questions organized under three broad themes: Household water accessibility, affordability, and quality, Socio-economic impact and coping strategies, Perceptions of local media coverage and government response. Interviews were conducted in Bengali, the native language of the respondents, which allowed for richer and more spontaneous communication. The average duration of each interview was between 10 to 20 minutes. Verbal consent was obtained for audio recording, and anonymity was ensured. All audio recordings were transcribed verbatim, then translated into English. Field notes taken during and after the interviews were used to record non-verbal cues, emotional tones, and environmental observations. The interview data proved crucial in validating and complementing secondary data sources such as water quality reports and newspaper content analysis. More importantly, it provided critical insights into community agency, perceptions of injustice, and under representation in media discourse. The narratives collected revealed a complex interplay of natural degradation, institutional neglect, and social stratification, highlighting the urgent need for participatory and decentralized water governance.

4.3 FOCUS GROUP DISCUSSION DATA:

To capture collective insights and lived experiences surrounding the freshwater crisis in Mousuni and Gobordhanpur Islands, Focus Group Discussions (FGDs) were used as a primary data collection tool. FGDs, as defined by Morgan (1996), are semi-structured group conversations that bring together individuals with shared experiences to discuss specific topics. A total of four FGDs were conducted, involving carefully selected participants from diverse demographic and occupational backgrounds. The target population included marginalized women, fisherfolk, small- scale farmers, youth and students, local elders, community leaders, and NGO workers. Each group was chosen for their unique perspectives and proximity to the issues at hand—particularly in terms of their exposure to freshwater shortages and their engagement (or lack thereof) in local media narratives and governance structures. Each FGD included between 6 to 10 participants, following Krueger and Casey's (2015) guidelines for optimal group size that fosters active dialogue without compromising manageability. The discussions were semi-structured and guided by open-ended questions clustered around key thematic areas: Household-level access to freshwater and its affordability, Gendered labor in water collection and management, Media narratives and visibility of rural water crises, Community perceptions of governmental and NGO interventions, Cultural and generational attitudes toward water governance. Separate FGDs were conducted for women, youth, and mixed-gender groups to ensure that participants felt safe, respected, and free to express their opinions without hierarchical or gender-based inhibitions. Special emphasis was placed on women's perspectives, as they are disproportionately responsible for water collection yet often excluded from policy dialogues. All sessions were conducted in the local language (Bengali) and held in community-accessible spaces, with facilitators trained in sensitive engagement and ethical fieldwork practices. Audio recordings were made with informed verbal consent, and detailed field notes were maintained to capture non-verbal cues and environmental contexts. The data collected through FGDs was later transcribed, translated, and coded thematically to facilitate a comparative analysis with content drawn from newspaper texts and household survey results. These discussions provided critical narrative depth, enriching the understanding of water-related hardships, community resilience, and representational gaps in vernacular media.

4.4. WATER QUALITY REPORT DATA:

This study adopts a quantitative, document-based sampling strategy to collect secondary data on water quality in the Sundarbans region, particularly Mousuni and Gobordhanpur islands. Data was sourced

from credible agencies including the Public Health Engineering Department (PHED), Jal Jeevan Mission, WWF-India, and DRCSC,DMS covering a period from 2018 to 2023.The data includes scientifically measured indicators such as salinity levels, and E.coli and coli form counts, turbidity, arsenic contamination, and potable status. The sample consists of 20–30 documented water sources that demonstrate recurring, multi-year entries to enable comparative, cross-sectional, and longitudinal analysis. This approach permits a non-intrusive, cost-effective method to establish environmental baselines, while correlating local perceptions gathered through surveys and FGDs. (Table 5.) Even the water quality of surveyed area where interviews are taken are collected from the Sundarban Water Report of Department of Marine Science,University of Calcutta. (Table 6.) Water quality data from the surveyed region, sourced from the *Sundarban Water Report* (Department of Marine Science, University of Calcutta), highlights significant ecological stress. Dissolved Oxygen levels range from 5.18–6.49 mg/L, while pH averages 7.51 ± 0.20, suggesting moderate water health. However, high Chemical Oxygen Demand (COD) levels (101.29–114.8 mg/L) indicate organic pollution. Phosphate levels peak at 1.96 µg-atom/L, and chlorophyll a range from 1.29–5.5 mg/m³, suggesting potential eutrophication. Nitrate levels rise during monsoon.This dataset provides an empirical grounding to correlate local environmental stresses—such as embankment breach, saline intrusion, and seasonal flooding—with community responses and infrastructural vulnerabilities. The integration of such environmental science data enhances the interdisciplinary robustness of this research, linking quantitative ecological metrics with qualitative social realities.

TABLE 5. WATER QUALITY DATA SUMMARY (2018–2023 (PREPARED FROM ALL REPORTS)

2018	Mousuni	Namkhana	Tube well	Monsoon	3.2	210	12.5	0.05	No
2019	Gobordhanpur	Patharpratima	Pond	Winter	2.8	150	10.2	0.01	Yes
2020	Namkhana	Namkhana	Shallow well	Summer	5.6	300	15.8	0.12	No
2021	Mousuni	Namkhana	Tube well	Monsoon	4.1	180	11.3	0.02	Yes
2022	Gosaba	Gosaba	River edge	Summer	6.4	500	17.0	0.20	No

2023	Gobordhanpur	Patharpratima	Hand pump	Winter	3.7	130	9.8	0.00	Yes
2020	Mousuni	Namkhana	Community Tank	Summer	2.3	90	8.5	0.00	Yes
2019	Gobordhanpur	Patharpratima	Canal	Monsoon	7.1	410	18.9	0.15	No
2021	Mousuni	Namkhana	Ope pond	Winter	3.9	200	13.2	0.03	Yes

Temperature-Turbidity Correlation	r = 0.502, P = 0.01
Dissolved Oxygen (DO) (mg/L)	5.18 – 6.49 Average > 4.0
pH	General: 8.13 – 8.74 Surveyed Area: 7.51 ± 0.20
Chemical Oxygen Demand (COD) (mg/L)	Highest: 101.29 to 114.8
Nitrate (µg-atom/L)	Higher during monsoon; exact values not given
Phosphate (µg-atom/L)	0.48 – 1.42 1.96
Chlorophyll a (mg/m³)	1.29 – 5.5
Chlorophyll b & c	Present in lower concentrations

TABLE 6. STATISTICAL SUMMARY OF WATER QUALITY PARAMETERS ACROSS SURVEYED AREA (SOURCE: DEPARTMENT OF MARINE SCIENCE, UNIVERSITY OF CALCUTTA)

5. DATA ANALYSIS

The story of water is not always written in waves— sometimes, it flows through silence, through headlines, through voices half-heard.

This analysis begins with the belief that data is not just numbers or text, but lived experience—spoken, written, and sometimes withheld. To trace the layered narrative of freshwater access in the Sundarbans, this study weaves together diverse forms of evidence: newspaper articles that frame public discourse, interviews with local residents who live the crisis daily, conversations with journalists who decide what gets told, and insights from policymakers shaping infrastructure and governance. Focus group discussions offer collective memory and negotiation, while water quality reports ground these perspectives in material reality. By reading across these sources, this analysis seeks to understand how freshwater scarcity is framed—what is emphasized, what is obscured, and who gets to speak. Each piece

of evidence—whether a quote, a statistic, or a lived account—is a fragment of a larger mosaic. A mosaic that speaks of long-standing neglect, of communities that refuse to give up, and of a media landscape that can either spotlight injustice or let it fade quietly into the margins. This study does not seek easy answers. Instead, it tries to listen closely—to water, to silence, and to the stories that emerge when we pay attention to both.

5.1 NEWSPAPER CONTENT ANALYSIS

In the article *Somudrojibir Sankat* (*The Crisis of the Sea-Dwellers*), published in Anandabazar Patrika dated on 20th February,2024 authored by Supratim Karmakar, the plight of the marginalized coastal communities in the Sundarbans is brought to light with journalistic urgency and moral gravity. These communities—primarily dependent on fishing and subsistence farming—are increasingly displaced by tidal surges, riverbank erosion, and the devastating impacts of climate change. Here the problem is vividly framed: the loss of land, livelihoods, and dignity of the "samudrajibi" (sea-dwelling) population due to the intensifying effects of river erosion and sea-level rise. The article opens with stark imagery of villages being swallowed by encroaching tides, forcing people—especially women—to stand by helplessly as homes and histories vanish into water. Causality is ascribed not only to natural disasters but, crucially, to institutional neglect. Karmakar positions governmental inadequacy as a key driver of the crisis. Relief is sporadic, access to drinking water is unreliable, and bureaucratic hurdles prevent effective and timely intervention. In one poignant section, the article notes how promised "safe drinking water" initiatives and "river embankments" have either failed or been abandoned mid-project. Thus, the problem is not just environmental—it is deeply political.Moral evaluation is implicit throughout the narrative. The tone evokes empathy and moral responsibility, criticizing a system that continues to overlook the poorest and most vulnerable. The recommended treatment is not limited to charity or emergency response. Post-disaster, many women are forced to walk kilometers to fetch drinking water. The privatization and scarcity of this basic resource, compounded by the collapse of public distribution, underline how governance failure manifests in bodily labor—disproportionately borne by women. This is not just environmental collapse but a gendered and caste-class crisis. Moreover, the narrative challenges the myth of resilience often projected onto these communities. Instead of romanticizing adaptation, it shows how lack of state support, corruption in relief distribution, and erosion of local livelihoods (such as fishing) render people dis-empowered and disposable. The concept of "slow violence" (Nixon, 2011) is relevant here: the article documents how structural and environmental degradation unfolds gradually, invisibly, and with devastating consequences.The article reflects selection bias by choosing to highlight grassroots stories over elite or technocratic voices. It draws attention to women standing on submerged lands, old men discussing vanished homes, and local NGO workers trying to build toilets and shelters. However, no government officials are quoted, and scientific or policy voices are notably absent—suggesting a tilt toward representing on-the-ground suffering rather than systemic accountability through expert intervention. Source bias is evident in the prioritization of local testimonies. While this builds emotional resonance and places human faces at the center of the narrative, it also limits the analytical depth regarding policy failures or bureaucratic systems that perpetuate the crisis. It presents the affected population as victims deserving of aid but also as active agents trying to cope and rebuild. In terms of political bias, the tone subtly critiques the ruling government's inability to respond adequately. While not overtly partisan, the article's framing leans toward a rights-based critique of governance, aligning more with civil society perspectives than with state narratives of progress and development. A significant strength of the article lies in its attention to

inter sectional marginalization. Though it does not name caste explicitly, references to fishing communities, daily wage laborers, and the absence of land ownership indicate a lower- caste and economically marginalized population. The article also foregrounds women's burden—noting how they must manage households, care for children, and secure water under increasingly hostile environmental conditions. This situates the crisis within a framework of socio-ecological injustice, where access to clean water, housing, and safety is mediated by class, caste, and gender hierarchies. Political ecology reminds us that such inequality is not accidental, but structurally produced and historically entrenched.

The article titled *"Schoole Paniyo Joler Songjog Nei, Khubdho Adalat"* (Why There Is No Drinking Water in Schools, Asks Court) published in Anandabazar Patrika on 27.2.24 at page 6 highlights a stark example of structural injustice, where the basic right to clean water is denied to schoolchildren in Raghunathpur, sardar chawk of Jaynagar Block 2, West Bengal. The media frames the problem as a governance failure—where despite budget allocations, schools continue to function without piped drinking water. The cause is traced to administrative negligence, misallocation of resources, and lack of coordination between state departments, particularly the Panchayat and Education departments. The solution, as suggested by the article, lies in judicial activism, with the High Court demanding accountability from government officials. The moral evaluation is clear: children's right to health and education is being compromised due to systemic apathy. They are bound to drink contaminated water from nearby pond which is unhealthy for them. From a Political Ecology perspective (Robbins, 2012), the issue reflects how access to water—an ecological resource—is shaped by bureaucratic power, rural marginalization, and policy inaction. The neglect of remote schools in backward regions reflects environmental injustice, where socio-economically weaker populations are denied equitable access to essential services. The caste and class biases are implicit, as the most affected students come from rural and marginalized communities. The article exhibits selection bias by focusing on a judicially recognized issue, ignoring similar conditions in other districts. There is source bias—the narrative quotes the judiciary and officials, but not the affected students or local teachers. While its framing bias stresses urgency and administrative failure, its political bias remains neutral yet exposes inefficiencies in government function. Ultimately, the article defines how infrastructural failure in water access reflects broader issues of governance, accountability, and rural neglect in Sundarban's public systems.

The editorial *"Jolobot"* (Simple as Water) published in Anandabazar Patrika on 27.2.24 sharply critiques systemic neglect in ensuring access to safe drinking water in primary schools, presenting it not merely as a local governance lapse but a moral and political failure. The article defines the problem as a long-standing deprivation of essential water services in rural schools, especially in backward districts. The causes are traced to political apathy, inefficiency, and the bureaucratic tendency to pass blame, even in the face of media exposure. The moral evaluation invokes outrage and disappointment at how basic rights are undermined, with the editorial questioning the conscience of both state authorities and society. Solutions are vaguely offered—highlighting the need for accountability and real change—but without detailing actionable pathways.The piece emphasizes how water access is deeply entangled with power structures and institutional neglect. The rural poor, often living in environmentally vulnerable zones, are disproportionately affected by policy failure. The article hints at structural power dynamics, where elite-driven governance disregards the lived realities of marginalized communities. It critiques symbolic governance, where announcements are made but no follow-up actions occur. Selection bias appears in the article's choice to focus on one example, using it symbolically rather than offering comparative data. Source bias is evident as it does not incorporate voices of affected students or teachers, relying instead

on generalized criticism. Its framing bias emphasizes systemic decay and public betrayal, creating a morally charged narrative. Politically, the editorial maintains a confrontational tone, indirectly holding both ruling powers and local administrators accountable, revealing an anti-establishment stance. Ultimately, it reinforces how access to water—a basic environmental right—is not only about resources but about justice, power, and the failure of governance structures to uphold the dignity and rights of rural children.

The Post Editorial *"Kotota Dam Dile Tobe"* by Partha Pratim Bishwas published in Anandabazar Patrika on 11.6.24 offers a striking portrayal of the human and ecological toll of climate-induced disasters in the Sunderbans, centering on the failures of governmental flood protection systems. The article defines the problem as an outcome of both natural vulnerability and governmental mismanagement—cyclone erosion, crumbling embankments, and neglected rural infrastructure with fresh water access. It attributes causality to a combination of ineffective planning, delayed funds, and top-down decision-making. The moral evaluation is intense, invoking the suffering of displaced villagers and questioning the sincerity of administrative promises. Solutions such as involving local experts, decentralizing decision-making, and implementing scientifically informed planning are proposed, framing the issue not just as technical but as political. The piece reveals how environmental disasters are not "natural" but politically produced. The structural power to decide who gets protected—and who does not—is wielded by bureaucrats far removed from the disaster zones, deepening inequity. Local knowledge systems are sidelined while contractors and government officials dominate the narrative. The article exposes source bias by foregrounding expert voices and scientific data (e.g., river behavior models, erosion mapping), while the lived experiences of affected people are secondary. Its framing bias highlights urgency and rational solutions but skirts deep critique of systemic corruption. Politically, the article presents a neutral technocratic tone, yet implicitly critiques the state's inefficacy. The selection bias leans toward scientific and engineering-based narratives, marginalizing social justice-oriented discourse. Ultimately, the piece shows how environmental planning, especially in the face of climate change, must recognize community agency, power disparities, and the urgent need for participatory governance. Without shifting decision-making power and accountability, no price paid can truly ensure safety or justice for climate-vulnerable communities.

The article *"Raidighir Moni Nodite Roj Porche Aborjona" published in Bartaman on 21.1.24* sheds light on a deeply concerning environmental crisis in Sundarban, where household waste is regularly dumped into the Mani River, threatening both ecological integrity and human health. The problem is framed as a failure of waste management and civic awareness, as well as administrative inaction. The article's problem definition emphasizes the continuous pollution of a key freshwater body, vital to the area's ecosystem and public health. The causal interpretation points to unregulated waste disposal practices, particularly from households in Mathurapur panchayat 2, and the lack of proper civic infrastructure. The moral evaluation suggests negligence on the part of the administration and public indifference, while the proposed remedy calls for urgent action to install waste nets and reroute drains—solutions rooted in technocratic and governance reforms. The article reveals a critical injustice: marginalized communities relying on this polluted river are being deprived of their right to safe, clean water, in clear violation of SDG Goal 6 (Clean Water and Sanitation for All). The issue is not merely environmental but a denial of a basic human right. Framing biases are evident as the piece centers expert and administrative voices but downplays affected citizens' perspectives, while selection bias focuses on technical fixes over systemic accountability. This environmental neglect also illustrates unequal exposure to risk, disproportionately

affecting the poor living near the riverbanks. Overall, the article demands intersectional governance that considers ecological sustainability, civic responsibility, and the fundamental human right to clean water—before the crisis deepens beyond repair.

The article *"Joldushan Rodhe Agami Soptahe Boithok Kendrer"* published in Bartman on 21.1.24 highlights an urgent administrative response to rising water pollution on 23 and 24 January .The article defines the problem as the unchecked discharge of untreated sewage and industrial waste into freshwater sources .The causal analysis emphasizes multiple layers of administrative inefficiency, as untreated waste from over 16 drains flows directly into the river, exacerbating both ecological and public health crises. Although a meeting is planned to address these issues, the article subtly conveys skepticism regarding the effectiveness of bureaucratic action, thus embedding a tone of accountability.This piece draws attention to the disproportionate impact of water pollution on riverside residents, particularly those from marginalized socio-economic groups. The denial of clean water is not simply a policy failure, but a rights violation, directly contradicting Sustainable Development Goal 6 (Clean Water and Sanitation for All). The article suggests a shift toward technical governance—planning to upgrade drainage and install filtration systems,rain water conservation—yet it falls short of critically interrogating structural inequalities or amplifying the voices of affected communities.The framing is biased toward administrative solutions, focusing on upcoming bureaucratic meetings and statements from officials like Pollution Control Board representatives. The narrative lacks representation from community members or environmental activists, thereby centralizing authority-driven perspectives. It also implies that pollution is a technical rather than systemic governance and justice issue.

The article *"Ghoramara Dwiper Protiti Barite Ekhon Sarkari Prokolper Jol,Khushi Basindara" published in Bartaman on 12.2.24* presents a positive shift in state-led water accessibility for one of the most environmentally vulnerable regions of West Bengal—Ghoramara Island.The article frames the problem definition around past water insecurity caused by the saline contamination of groundwater due to sea-level rise and river erosion. The solution, as reported, is a government initiative that has successfully ensured piped water supply to every household under a centralized project.The causal interpretation frames this success as a direct outcome of administrative foresight and infrastructural development. However, the article does not delve into the long-term sustainability of this intervention, nor does it examine climate vulnerability, which remains a latent but critical factor in Ghoramara. The moral evaluation subtly praises the government's efforts, portraying the community's relief and improved quality of life, especially in daily chores, as a testament to the program's success. From an Environmental Justice and SDG 6 perspective, this development is significant. Ghoramara's residents, long neglected in access to basic services due to their location and climate-displacement risks, are now finally enjoying their right to clean and accessible water. The provision of a piped water system also alleviates the burden on women, who traditionally bore the responsibility of fetching water.Yet, the article avoids critical inquiry into long-term resilience planning or community engagement in water governance. It also omits discourse on climate adaptation for island communities like Ghoramara that remain on the frontline of environmental degradation. Thus, while the tone is optimistic, the framing remains technocratic and state-centric, leaving out deeper environmental justice narratives.

The article, *" Bhugarvastho Jol Neme Joyay Paniyo Joler Hahakar"* published in Bartaman on 12.2.24 centered around Gosaba,Basanti and Canning area in Sundarban, highlights a severe water crisis caused by falling groundwater levels and ineffective infrastructure maintenance. It constructs the problem definition around the non-functional state of water pumps and the subsequent suffering of residents—

particularly marginalized rural farmers and daily wage laborers. Unlike success narratives, this piece underscores infrastructure failure and negligence as primary causes of water scarcity. The causal interpretation points fingers at both technical decay and lack of administrative accountability. Even though tube wells were installed, they are no longer operational due to water table depletion. The moral evaluation here is more implicitly critical, suggesting that residents have been left to fend for themselves despite state assurances, and highlighting the class disparity in who suffers most when public services fail. This scenario reflects exclusion and unmet targets, especially concerning universal access to safe water. It reveals a systemic failure in monitoring, resource planning, and sustainable groundwater use. Notably, the voices of villagers portray a feeling of abandonment and desperation—a stark contrast to the optimistic tone in the Ghoramara coverage. This article also aligns with Environmental Justice theory, as the community affected lacks economic and political power to demand solutions or adaptation support. There is no mention of community engagement or climate resilience efforts, which are crucial for long-term water security in deltaic, groundwater-stressed zones. In essence, this article shifts the media frame from celebratory narratives of policy success to a ground-reality exposure of systemic dysfunction. It underlines the importance of infrastructure upkeep, community-centered planning, and ecological awareness in addressing the human right to water.

The report '*Sagore Saonskar Hobe Aatti Khal,Janalen Montree'* published in *Bartaman on 19.2.24* discusses government plans to renovate eight canals in the Sagar region of the Sundarbans. The article sets a developmental and proactive tone, framing the issue of water management not as a crisis but as an administrative commitment toward resilience and sustainability. The problem definition is implicit: poor water flow and flood control due to silted and neglected canals.The causal interpretation is presented through bureaucratic language—highlighting budget allocations, sanctioned projects, and coordination between central and state bodies. Unlike the earlier articles that emphasize citizen hardship, this one centers the government as the agent of change, thereby shaping the reader's perception of a responsive and functional administration. However, the article lacks any mention of community participation, long-term monitoring, or ecological consequences of canal dredging—a gap in addressing sustainable and inclusive water governance. From an Environmental Justice angle, while the canal restoration may eventually benefit vulnerable populations affected by flooding and water logging, the top-down narrative excludes local voices and historical grievances. There's little mention of how or whether marginalized communities will be involved or protected during the canal work. Thus, this article functions as a classic state narrative: solution-oriented and optimistic, but with limited transparency or critical assessment of implementation capacity or past failures. It contrasts sharply with the third article, which exposed similar issues of infrastructure neglect and loss of trust in state response.

The article *"Joyarer Somoy Nona Jol Othe Nolkupe,Bhatay Mele Na Tao"* published in Bartaman on 21.2.24 describing the water crisis in Sandeshkhali, located in the Sundarbans region, illustrates the complex entanglement of environmental vulnerability and systemic neglect. It portrays a stark picture of the recurring water scarcity faced by the residents, especially during tidal fluctuations. During high tide, saline water infiltrates the groundwater, making even hand-pump water undrinkable, and during low tide, the water recedes to such an extent that there is no access at all. This unpredictable rhythm of nature traps communities in a perpetual cycle of thirst, uncertainty, and health risks.

The article is framed with a tone of skepticism and fatigue, focusing on the persistence of the problem rather than the promise of a solution. There is no celebratory mention of government schemes or infrastructure. Instead, the reporting focuses on the disillusionment of the local population, who have

waited for years, if not decades, for consistent and clean water supply. This approach aligns with the framing theory in media analysis, where the reporter chooses to highlight failure and vulnerability over policy optimism or bureaucratic assurances. The rhetorical question—"Will the situation change this time?"—encapsulates the sense of institutional abandonment and eroding hope. The visual representation of a woman bending over a dry hand pump reinforces this frame. It is not just about the failure of a machine, but a broader failure of the system to uphold environmental justice. The article subtly yet powerfully centers gender, as women and girls are often the ones most affected by lack of water, having to spend time and energy searching for it. Here, the crisis of water becomes not just an environmental issue, but a deeply social one, reinforcing existing inequalities and shaping the rhythms of daily life through the lens of deprivation. From the perspective of environmental justice, the article reveals how the intersection of geography, poverty, and weak governance magnifies the burden on the most vulnerable. The people of Sandeshkhali are not just affected by a lack of resources but also by the state's inability to recognize and respond to their specific ecological challenges. The recurring salinity in groundwater, which is a known and predictable problem in coastal areas, has not been addressed with effective, locally appropriate solutions. This underscores how environmental risks are unevenly distributed, with the poorest and most marginalized forced to endure the harshest consequences. What makes this article significant within the broader discourse of water insecurity is its refusal to adopt a developmentalist tone. There is no narrative of hope pinned to future infrastructure or bureaucratic ambition. Instead, it presents the lived reality of an ongoing crisis—one that is deeply rooted in both environmental degradation and institutional inertia. This realism offers a sobering counterpoint to the often overly optimistic narratives of rural water development, compelling the reader to consider the structural and political dimensions of what is usually portrayed as a technical problem. By giving space to local voices and visualizing the embodied experience of deprivation, it demands a shift in the conversation—from planning for water to delivering it with equity, urgency, and local context in mind.

In Madhav Nagar of Kakdwip, the struggle for access to drinking water has been a long-standing and deeply felt concern. The article "*Paniyo Joler Sonkot Miitlo Kwakdeeper Madahbnagare*" published in Bartaman on 27.4.24 sheds light on how the residents of this remote area were compelled to endure severe hardships due to the unavailability of clean drinking water. For years, villagers had to walk long distances to fetch water, sometimes from unsafe or saline sources, putting their health and daily lives at risk. This article, unlike policy-driven reports that often highlight top-down initiatives, captures a grassroots struggle for a basic right. It points out how, in some areas closer to rivers, salinity made groundwater undrinkable, while in others, the absence of sufficient infrastructure meant people depended on unreliable hand pumps. The reporting strategy here frames the crisis through lived experience, using quotes and on-the-ground observations to construct a narrative of prolonged exclusion and endurance. The presence of an image showing men manually drawing water highlights not just a momentary act, but a daily burden that consumes time and labor—particularly in rural contexts where mechanized alternatives are either unaffordable or unavailable. This visual symbolism strengthens the frame of scarcity and deprivation while indirectly pointing to gender and labor dynamics, as such responsibilities often fall on both men and women in these communities. The image also reinforces the idea that even when water is found, the process of obtaining it is far from dignified or sustainable. From an environmental justice perspective, this situation reflects multiple forms of inequality. Not only are the people of Madhav Nagar subjected to ecological constraints like salinity intrusion—exacerbated by their proximity to coastal regions—but they are also victims of systemic policy oversight. The uneven

distribution of water infrastructure, with some communities receiving pipeline connections while others remain reliant on failing hand pumps, reveals how marginal populations are frequently left out of development plans. This further violates the principle of distributive justice, which demands fair access to environmental goods and services. The recent steps by local authorities to finally provide tap connections to these long-neglected areas are portrayed as overdue rather than celebratory. The article does not romanticize these efforts but rather treats them as long-awaited redressals of a persistent grievance. This reflects the idea that access to clean water should not be treated as a privilege or favor, but a basic right that should have been fulfilled long ago. The case of Madhav Nagar shows how far many communities still are from achieving this global goal, particularly when governance structures fail to prioritize vulnerable regions. Even when the problem is well known, its solution is often delayed by bureaucratic inertia, lack of political will, or poor planning. This narrative avoids the typical "development success story" trope and instead centers the people's lived experience as the core of the story. It calls for accountability from the state while also acknowledging the resilience of communities that have long survived on the periphery of basic services. In doing so, it compels the reader to recognize the crisis not just as a failure of resources, but as a deeper failure of justice and recognition. It emphasizes the urgent need for place- specific, inclusive, and sustainable water governance that prioritizes not just efficiency, but fairness and humanity.

The selected newspaper article "*Dui Jaigai Nodhibadhe Dhwos, Atanko*" published in Bartaman on 12.5.24 reports on the ongoing riverbank erosion in the Budhkhali village of Kakdwip and Chakfuldubi of Muriganga region of Sagardwip of West Bengal, where two villages have suffered significant land loss to the encroaching rivers. The report highlights the destruction of embankments, the collapse of houses, and the displacement of residents. Visual imagery of crumbling infrastructure and expressions of fear from the affected residents paint a picture of devastation and helplessness. This article, in particular, exhibits clear selection bias in its focus on the dramatic consequences of the erosion—the collapse of infrastructure, the destruction of homes, and the fear among villagers. While the event is portrayed as urgent and traumatic, the report omits crucial contextual factors such as climate change, long-term ecological degradation, or infrastructural negligence. Such a selective emphasis restricts public understanding of the systemic nature of the problem and frames the event as a sudden natural disaster rather than a consequence of structural vulnerabilities. The article also displays source bias in its heavy reliance on the voices of affected villagers. These voices express anxiety, loss, and frustration with repeated erosion events and the absence of sustainable governmental action. While this inclusion validates local experiences, the conspicuous absence of government officials, planners, or ecological experts means that no authoritative or technical accountability is offered. The repeated mention of past governmental promises with no follow-through adds a layer of cynicism, subtly guiding the reader toward skepticism about political intent. Yet, there is no explicit critique of governmental or bureaucratic structures, nor is there any exploration of policy mechanisms that could prevent such erosion in the future. From a political bias standpoint, the article maintains a cautious tone. It neither explicitly supports nor opposes any political party, yet the implicit narrative reveals disillusionment with governance structures. The repetition of residents' unmet demands and the visible failure of infrastructure expose the limitations of local and state authorities without directly naming political leadership. This ambiguity can be interpreted as a form of passive resistance—highlighting governance failure while avoiding overt political confrontation..While the article uses compelling images and emotional narratives, it ultimately fails to critically interrogate the root causes of vulnerability. The

journalistic framing focuses on the spectacle of destruction rather than the politics of land use, infrastructure decay, and environmental neglect. This reflects a broader trend in media representation, where disaster is decontextualized, and accountability is diluted.

A recent newspaper report *"Kultolite Jeno Oghosito Bondh"* published in *Bartaman* dated on 28.05.2024 on recurrent flooding in Kultali, South 24 Parganas.The problem is primarily framed due to Remal and infrastructural vulnerability. The text details how embankments have collapsed due to tidal surges, leading to the inundation of agricultural land and hamlets in the Kultali region. The causal explanation provided is largely meteorological, attributing the damage to tidal waves and persistent rainfall. In the southern fringes of Sundarban—particularly Raidighi, Kankandighi, Kumropara, Maipith, and Mojilpur—residents are grappling with an acute water crisis, primarily triggered by persistent load shedding. These rural pockets, heavily reliant on electric pumps to access groundwater, face severe disruption in daily water availability when electricity supply becomes erratic. The people most dependent on natural resources and least represented in political power structures are rendered most vulnerable to environmental shocks. Yet, the article fails to mention the socio-economic composition of the affected population or the institutional failures that perpetuate their vulnerability. The article, however, does not invoke the vocabulary of environmental justice. It remains confined to descriptive journalism—highlighting submerged fields, stranded villagers, and washed-away roads—without connecting these to broader climate patterns or governance gaps. Selection Bias is evident in the choice to cover this event only after visible devastation occurred. The chronic neglect of embankments, despite past warnings, was not reported until disaster struck. Source Bias emerges in the exclusive reliance on local villagers' voices, while experts, planners, or government officials are not cited. This narrow sourcing restricts the analytical depth of the report. Framing Bias, as previously discussed, limits the portrayal of floods as routine and natural, thereby normalizing suffering and omitting systemic critique. The article refrains from naming political actors or institutions responsible for infrastructure management.

The article titled *"Jhor O Probol Nristi Sotteo Plabito Hoyni Gram- Saktopokto Nadibandhi Ebar Sundarbone Hero"* published in Bartaman on reflects key concerns in media representation of water-related issues.The article frames the narrative as a success story, highlighting sandbag embankments while downplaying structural causes of vulnerability. It lacks critical engagement with governance failures, thereby depoliticizing the issue. The article omits discussions of power dynamics, environmental justice, and the impacts of climate change in the Sundarbans Though some villagers from Amrabati, Shimabadh Area remembered their past experience of weak embankments but there is clear selection bias (focus on a "saved" village, less focus on affected areas-Jyotishpur and Nafarganj) and framing bias (naturalizing disaster while ignoring policy failures). The narrative reflects political bias by avoiding critique of state responsibility, reinforcing a status-quo approach that invisibilizes socio-economic and caste-based inequities in water access and protection.

The article titled : "*Dube 5000 Hector Jomi,Khotigrostho 40 Hajar Chashi*" published in Bartaman on 29.5.24 narrates the flooding and submergence of agricultural land in Sagar Island, a coastal region of West Bengal. Following a heavy storm, vast stretches of farmland have turned into stagnant waterbodies, severely impacting agriculture and local livelihoods. The article frames the flooding as a natural aftermath of heavy rains and storms, presenting vivid imagery of paddy fields turning into lakes. The framing bias is visible in the portrayal of the event primarily as an environmental disaster, with little attention to systemic infrastructural vulnerabilities or historical negligence. The headline itself is

emotionally evocative but lacks analytical depth, focusing on what has been lost rather than why the loss was possible. The article emphasizes the dramatic transformation of land and the despair of local residents, but avoids discussing the structural inadequacies in flood defense systems, embankment maintenance, or climate adaptation strategies. Source bias emerges through the dominant use of local voices—primarily farmers and affected villagers—who speak of their losses and fears. While thisgrounds the article in human experience, it excludes the perspectives of officials, climate experts, or NGOs, thus omitting institutional accountability or scientific explanation. This lack of multi-actor framing weakens the reader's ability to understand broader causes or solutions. Political bias in the article is subtle but present. While it mentions the suffering of communities and the failure of relief responses, it avoids direct criticism of the state government or any political body.This reflects a common pattern in local reporting—highlighting governance failure without explicitly assigning political responsibility. The recurring nature of these disasters also indicates the lack of political will in implementing long-term, resilient ecological planning. Additionally, climate change impacts are understated in the media narrative, even though the intensity of storms and flooding, Saline Waterlogged land is a direct manifestation of rising sea levels and erratic weather patterns affecting the Bengal delta. This omission dilutes public understanding of how local suffering is connected to global climate systems and state-level policy inaction. Most of those affected are small-scale farmers and laborers whose subsistence livelihoods are deeply tied to land. The absence of upper-caste or economically powerful voices, while not explicitly addressed, reflects a media trend where marginalized groups are visible as victims but invisible in decision-making.

The article "*SOBHARADER KATHA"* published in Bartaman Rabibar Page on 2.6.24 presents a chronicle of ecological suffering across decades in West Bengal, with specific focus on flood-prone, storm-ravaged, and economically marginalized communities. This article emphasizes emotional storytelling—highlighting individuals like Sapan Das and others who lost homes, jobs, and identity in repeated disasters from 2001 to 2023. The "victim narrative" is central.The article does not probe the institutional failures that allowed this dispossession—such as flawed disaster management, poor land-use planning, Water access inequality or unequal access to relief. Nor does it assign blame to governance or corporate interests in real estate or dam-building. There is framing bias in representing suffering as a timeless, almost natural phenomenon, rather than a political and economic outcome. Additionally, selection bias is visible: only rural, male voices are emphasized, with limited attention to gendered suffering, caste oppression, or local resistance. There's source bias as well: no local activist, academic, or policymaker is cited. Thus, the framing stays within the limits of safe humanitarian discourse without advocating systemic change.This article, while lamenting repeated destruction of homes and displacement, never investigates why certain communities are always the most affected. This absence hides the reality of structural marginalization: lower-caste, landless laborers, and migrant workers often settle in the most vulnerable geographies—near eroding rivers, unstable embankments, or unzoned land—not by choice, but by compulsion. The article indirectly refers to this cycle but does not explore the state's complicity in maintaining this ecological precarity. Though the article features multiple episodes of suffering (e.g., river erosion, cyclones, evictions, water crisis), it does not call out the caste-class structures that dictate vulnerability. There is no mention of policy support mechanisms, compensation schemes, or disaster-resilient planning. This failure to interrogate systemic exclusions aligns with what political ecology calls a "myopic view" of disaster as accident rather than outcome. While the article is aesthetically written and emotionally powerful, it fails to intervene politically. This

reflects political bias—a reluctance to critique the state or challenge dominant policy narratives. The framing bias is also clear: by showing individuals as helpless and disasters as destiny, it removes focus from institutional inaction or alternative governance models (like community-led embankment management or climate-resilient housing). Additionally, the lack of solutions in the piece—such as climate adaptation, land rights reform, or decentralized planning—reinforces a passive framing. The audience is led to empathize, not mobilize.

The report *"Sundorbone Vengeche Concriter Bandh, Bongopsagorer Gorjone"* published in Bartaman on 24.7.24 highlights embankment breaches in Patharpratima, exposing recurring climate vulnerability in the Sundarbans and entering of saline water in farming land due to *Remal.* However, the media frames it as a natural crisis, ignoring the anthropogenic roots—unplanned construction, weak governance, and ecological mismanagement. By emphasizing disaster impact but excluding systemic accountability, the article reflects framing bias. Through the lens of Political Ecology, the collapse signifies more than erosion—it reveals the unequal burden borne by poor coastal communities due to state inaction. Missing are voices of the displaced and calls for sustainable, inclusive planning. Thus, the report mourns damage without interrogating why it keeps repeating.

The newspaper article "*Purnimar Kotal O Nimmnochap, Ghum Urche Sundarbanbashir"* published in *Bartaman* on 20th June 2024 paints a dramatic picture of the Sundarbans, where local residents live in constant fear due to the rising tides from the full moon and an intensifying low-pressure system over the Bay of Bengal. The dominant tone of the piece emphasizes a climatic inevitability, portraying the rising water levels and broken embankments as acts of nature beyond human control which helps saline water to enter into farming land and fresh water sources of the village .The story repeatedly references water intrusion and embankment collapses in Namkhana, yet fails to investigate *why* these embankments are perpetually weak or poorly maintained. There is a statement from Irrigation minister of state failure, budgetary lapses. This is symptomatic of selection bias as well, where the voices of affected people are partially present. The article quotes one directly but his voice echoes the past unsuccessful attempt of government interventions which are episodic and often reactive. The prioritization of mainland interests over deltaic resilience exposes deeper inequities in climate governance, where poorer populations must constantly bear the brunt of environmental risks without commensurate infrastructural support or compensation. Thus, the article, while visually dramatic and emotionally loaded, fails to critically assess the political economy of climate vulnerability in the Sundarbans.

The article, *"Bandhe Oboidho Paip Boshanoi Plabito Pukur Rasta Jomi"* published in *Bartaman on 19.10.24* reports on a micro-level ecological crisis unfolding in Kakdwip, where illegal interventions into embankments—specifically the insertion of unauthorized PVC pipes—have triggered significant waterlogging. The flooding has contaminated ponds, submerged roads, and rendered agricultural lands unusable. While the article is rich in local specificity, it subtly masks systemic negligence behind surface-level irregularities. There is no interrogation of institutional failure, regulatory collapse, or ecological planning. Who monitors these embankments? What mechanisms failed to prevent such illegal modifications? These pressing questions remain untouched. The lack of source diversity is equally revealing. This top-down narrative silences the lived experiences of environmentally marginalized communities who must endure frequent inundation due to negligent hydrological management and fragmented development policies.The power asymmetry here is evident: those who suffer are not those who decide. This article thus misses an opportunity to broaden the discourse from culprit-hunting to structural interrogation.

5.2. HOUSE SURVEY DATA ANALYSIS

Household responses confirm that freshwater access in the Sundarbans is both spatially and seasonally uneven. Most families rely on a combination of ponds, tube wells, and rainwater harvesting, with severe challenges during the summer and post-cyclonic periods. The proximity to the sea increases salinity intrusion, further depleting potable sources. The data show that water infrastructure such as taps and tube wells are either non-functional or unequally distributed, disproportionately affecting vulnerable communities. Women, children, and elderly members sometime male members are responsible for collecting water, often walking several kilometers daily. This reflects a classic Political Ecology scenario, where geography, power, and environmental degradation intersect to produce chronic water insecurity. Survey data point to clear socio-economic and caste-based disparities. Lower-caste and lower- income households often live far from functional water sources. Some respondents reported that local panchayat leaders favor certain areas, especially those politically aligned with them, while others remain neglected. Additionally, there are incidents of localized water conflict, theft of pipes, and non-registration of working tube wells in marginalized areas. Despite widespread suffering, most households feel disempowered to influence decisions regarding water management. Respondents rarely participate in government or NGO-led projects and express frustration over the lack of responsiveness from local authorities. While some women's groups and youth collectives have independently maintained taps or raised funds for repairs, their contributions are rarely recognized. Interestingly, many villagers show a high degree of environmental awareness. They link increased salinity, drying water bodies, and irregular rainfall to climate change. They also propose context-specific solutions such as rainwater harvesting, community water storage, and rotational usage practices. However, these bottom-up ideas are seldom incorporated into policy discussions, reinforcing the disconnect between community wisdom and institutional action. The household survey reveals that local communities often feel excluded or misrepresented. The media tends to focus on episodic disasters like floods rather than chronic water scarcity.Survey indicates that residents of Purba Gheri in Kusumtala receive water, but neighboring settlements like Barosawal and Sater Gheri face extreme deprivation. Barosawal lacks a single working tube well, with only one tube well serving nearly 400 households across both

IMAGE 3. TUBEWELLS CONDITIONS IN SURVEYED AREA

localities. Even this limited infrastructure is undermined by technical failures—water pressure is weak, it takes 30 minutes to fill a single pot, and contamination rises during monsoons. Many tube wells have

been removed without replacement, and shallow pumps for farming reduce the water force of public sources. The problem is worsened by socio-economic divides: wealthier families have installed private tube wells, which inadvertently lower the water pressure in communal taps. The time-call tap water system, introduced to ensure universal access, has remained non- functional for over 1.5 years. These inequities embody the political ecological dynamics of uneven development and elite capture of resources. Survey also shows the lack of access forces many women to travel long distances—sometimes crossing paddy fields—to fetch water, exposing them to physical strain and social hostility from landowners. In some cases, water must be purchased from neighboring taps, despite poverty and marginalization. Filtration, when possible, is done with cloth, indicating both the lack of proper technology and the precariousness of water quality. Women are the primary sufferers, but socio-cultural norms often prevent them from voicing complaints directly. Instead, male relatives are expected to advocate on their behalf, limiting women's agency and visibility in water governance. This invisibilization reflects both gendered political power and media underrepresentation.While NGOs have tried to intervene, such as by installing tube wells, community feedback indicates poor water quality and a lack of follow-up. Residents express skepticism about future reliability, especially when even school-based water sources are no longer guaranteed. This reflects a growing trust deficit toward both state and non-state actors, underlining governance failure at multiple levels. Government voices dominate the narrative, while those most

IMAGE 4. JALJEEVAN MISSION IN SURVEYED AREA

affected—such as women, laborers, and farmers—are sidelined. Many respondents noted that media coverage tends to glorify government achievements or reduce local struggles to moments of victimhood without capturing ongoing structural neglect. Despite repeated complaints to local authorities, including the Block Development Officer (BDO), no formal responses or interventions have materialized. Residents have taken up the responsibility of self-managing public taps, collecting money annually for repairs, especially since tap systems break down every year. Sumita Giri said *"We maintain our tap by*

ourselves; no one from the panchayat listens. Every year, we pay for repairs—what else can we do? The quality of water is another pressing concern. Residents report saline contamination, blue particles, sand sediments, and foul taste, particularly during high tides. Ankhi Majhi said *"Sometimes blue elements and sand come out with the tap water. It causes skin diseases and constant acidity—we can't even drink properly."* This degradation links directly to climate-induced changes like rising sea levels and deepening water tables (now estimated at 900 feet below surface). As a result, shallow tube wells are often ineffective, while pond water, previously used for all domestic purposes, is now limited to bathing and washing due to

IMAGE 5. CLOSED AND POLLUTED TUBE WELLS & TAP IN SURVEYED AREA

contamination. A notable shift has occurred in farming practices. In the past, saline pond water rendered agriculture nearly impossible. However, with recent use of shallow irrigation, some limited farming has resumed. Yet, this change has not been accompanied by proper technical support or awareness of water

quality standards—highlighting gaps in policy implementation. Babita Bibi said,*"We don't know if the water is safe. No one told us anything since last year. After Aila, there was a campaign, but nothing since then."* Despite the intensity of the crisis, residents have no access to radio, news, or consistent media exposure. Their suffering remains absent from mainstream narratives. Sabitri Dule uttered,*"We never hear our story in the news. Even when we pay for water, no one talks about it."* Residents are often forced to pay for water, regardless of the source—be it NGO-installed tubewells, or neighborhood systems. In some areas, they must cross paddy fields or negotiate with private landowners to reach water. This commodification of basic needs reflects systemic failures in water governance and exacerbates social inequities, particularly affecting women who carry the physical and emotional burden of daily water collection. Residents call for more equitable policy interventions, transparency in scheme implementation, and active involvement of local voices in water planning. Suggestions include ensuring geographic fairness in water source distribution, repairing existing infrastructure, and creating complaint redressal systems. Importantly, many villagers expressed a willingness to share their experiences through community media or citizen journalism platforms, believing this could bridge the gap between their realities and public narratives. Despite the gravity of the crisis, local media often underreport chronic water struggles in favor of one-time events or political stories. The framing of water as a development success—such as announcing new tap installations—overshadows ongoing neglect, faulty infrastructure, and lived hardship.

IMAGE 6. CLOSED HOUSEHOLD TAP IN SURVEYED AREA

5.3. DATA ANALYSIS OF FOCUS GROUP DISCUSSION

The focus group discussions (FGDs) generated rich qualitative data on community experiences of freshwater access in the Sundarbans. Responses were thematically analyzed to uncover key issues related to resource reliability, gendered labor, socio-economic barriers, governance, and media representation. Participants reported relying primarily on ponds, rainwater harvesting, and tubewells.

However, these sources were described as highly seasonal and unreliable, particularly during summer and post-cyclone periods. Many respondents noted an increase in salinity and contamination, corroborating broader climate change impacts. Travel distance for water collection, often over 1–3 km, was reported as physically taxing and time-consuming, especially for women and children, who bear the bulk of this responsibility. Hamida Bibi Said ,"*I walk over two kilometers every day to fetch water. My back hurts constantly, and sometimes I can't cook on time for my children."* This gendered labor burden highlights structural power dynamics in water access and household roles. Health issues, including diarrhea, skin infections, and kidney problems, were frequently linked to poor water quality. Yet, access to healthcare remained limited, indicating intersecting vulnerabilities. Discussions revealed that while some NGOs provided short-term support (e.g., filters, tanks), most government interventions were viewed as insufficient, delayed, or politically biased, echoing community distrust in institutional responses. Several participants mentioned the cost of purchasing clean water, which they described as financially burdensome, especially for daily wage laborers. Although government schemes such as Jal Jiban Mission promised piped water to every household, implementation is faulty and uneven. Participantss reported that many taps are either non-functional or poorly maintained, creating bottlenecks in water access. Rokeya Bibi said, "There are so many taps in one small area, but none of them give water. It's been six months—nothing comes out of them.". Sabina Bibi put her remarks as "In Barosawal, the Panchayet member installed taps that don't work. Only their own family's tap flows. What about us?" This reflects symbolic development—infrastructure as a showpiece rather than a functioning service. According

IMAGE 7. FRESH WATER POND USED BY LOCALS IN SURVEYED AREA:

to Framing Theory, such schemes are often framed in media and policy as success stories, despite community evidence to the contrary. *Sabita Giri* in the women focus group said *"Even when it rains, the tanks overflow because we don't*

IMAGE 8: BAROSWAL WOMEN FOCUS GROUP DISCUSSION

have proper storage. Rainwater is wasted while we queue for hours at one tap." Hasan Molla, a farmer put his sufferings in words, *"Sometimes we use the same water for bathing, cooking, and the cattle. We know it's not safe, but what option do we have?"* Local officials and political leaders were described as unresponsive, with allegations of corruption or bias in service delivery. Relief during crises was reported as being influenced by political affiliation, indicating that water access is not just an ecological issue, but deeply embedded in power structures and governance failures. Participants expressed deep frustration toward the Panchayat and local governance. Allegations included favoritism, non-responsiveness, and politically motivated distribution of resources. There is a growing sentiment that elected representatives prioritize personal gain over community well-being. Amina Bibi said *"The Panchayat doesn't hear our cries. If leaders come for votes, we will beat them with brooms.*" Saukat Ali said, "*Even we farmers have to buy water for irrigation. What's the point of voting if we can't even get water to grow food?"* This illustrates how structural power imbalances perpetuate environmental injustice. The Political Ecology framework helps interpret this not as a resource failure, but as a failure of political accountability. The clustering of taps in certain areas, combined with favoritism, has triggered water disputes within the community. Several FGD participants described tensions and even verbal altercations over access to public taps. Hasibul Molla , a loacal youth said *"Fights broke out because one family blocked others from using the common tap. The Panchayat member took no action."* Rita Majhi said ,"*They made their*

own tap. We all drink pond water. Where is the justice in that?" Such disputes reflect everyday politics of resource allocation—an issue often underreported in mainstream media, which tends to frame water crises as natural disasters or technical breakdowns, rather than conflicts rooted in social inequality. Women in particular expressed emotional distress, describing both the physical toll and psychological burden of dealing with unusable or unsafe water. Moktoba Bibi said*, "It is better to die than to drink this water. It smells, it burns the throat, but we have no choice."* Aanowara Begam , older woman said*"We can't even steam or boil the water—we are working from dawn to night. There's no time, no fuel."* The invisibility of labor, especially that of women, is a critical insight from Political Ecology. Health burdens are compounded by economic marginalization, leading to a cycle of vulnerability that rarely enters official reports or media frames. Despite institutional neglect, communities showed remarkable agency and adaptability. From collective tap maintenance to rainwater harvesting and sharing ponds, villagers displayed a strong ethic of self-reliance—though it often came at personal cost. Saikat Molla said, "*We collect rainwater in drums. That's how we cook, wash, survive."* Sayara Begam said *"We collect money from every house to fix our public tap. If we don't do it, nobody will."* This demonstrates community resilience, but also

IMAGE 9: HIGHTENED TUBEWELL AND SUFFERER

reinforces the unjust burden placed on marginalized populations to maintain what should be public infrastructure. Crucially, participants expressed they are not much aware of news reporting. Many felt that newspapers either ignored or misrepresented their struggles, focusing more on disaster events than ongoing structural issues. This suggests a framing bias in regional reporting, where certain narratives (e.g., local resilience, short-term relief) are amplified while deeper systemic critiques are sidelined. When asked about solutions, respondents advocated for decentralized water systems, better maintenance of public taps, rainwater harvesting infrastructure, and accountable governance mechanisms. They emphasized the need for more water sources and some remained silent. Overall, the FGDs highlighted how water access in the Sundarbans is shaped by intersecting socio-political, environmental, and media forces, validating the relevance of both Framing Theory and Political Ecology in understanding the complexity of the issue.

5.4. DATA ANALYSIS OF POLICY MAKERS

The Sundarbans region, particularly in low-lying, saline-prone villages like Gobordhanpur, Kusumtala, Uttar Balaiwara and Kultali, faces a persistent freshwater crisis that reflects deep-rooted issues of infrastructure, governance, and equity. While government programs such as the Jal Jiban Mission have aimed to extend water access, implementation on the ground reveals stark regional disparities—notably between the east and west sides of Kultali. Residents in the western areas continue to struggle with irregular or nonexistent supply, despite promises of universal access. Interestingly, local narratives contrast with official accounts: while the previous government reportedly extended services to wider regions, current complaints highlight infrastructure gaps and allegations of misappropriation in construction. However, local Panchayat members have dismissed these concerns, calling them

IMAGE 10: WOMEN C WALKS MILES TO FETCH THE WATER

rumors or politically motivated misinformation. One elected panchayet member defended current efforts, stating: *"These areas are too close to the sea—we can't do much. But we're doing our best and working continuously."* This reflects a broader pattern where environmental vulnerability is used to frame administrative limitations, raising key questions about governance accountability, resource justice, and the framing of responsibility in crisis zones.This interview with two current Panchayat members and past panchayet members offers insight into how water infrastructure is framed by local governance, the narratives of inclusion and exclusion they construct, and the tensions that arise between state accountability and grassroots experiences. One Pressent Panchayat member acknowledged that tap connections have been sanctioned under schemes like the Jal Jiban Mission, but admitted that many are non- functional or poorly maintained due to "technical glitches" and "low water pressure from the mainline." Asad Khan said*"We have installed taps in every ward, but water doesn't reach all of them equally. Some areas are at the tail end,*

IMAGE 11. WOMEN STRUGGLING TO GET WATER

so pressure is low." This reflects infrastructural inequality, where technical failures disproportionately affect marginalized areas. The member was evasive when asked about allegations of favoritism in tap placement. Community complaints about selective water access were framed as "local misunderstandings" or "issues between residents," shifting blame to interpersonal conflict rather than governance. Asad said *"Some families feel left out, but we follow the government blueprint. We cannot please everyone."*This deflects accountability and reinforces structural power imbalances. When asked about community involvement in water management, the member emphasized top- down planning and official meetings. Atif Islam said "*We invite people to Gram Sabhas, but few attend. So we assume they agree with the decisions made."* The reality shared by villagers contrasts with this official narrative, suggesting a disconnect between formal mechanisms and lived participation. On being questioned about caste or class-based exclusion, the member denied systematic discrimination but acknowledged *"some communities are harder to reach."* Atif said, *"We don't discriminate, but some hamlets are very remote.*

*It's hard to install pipelines there."*This passive framing of marginalization as a matter of geography rather than social neglect reveals an unwillingness to address institutionalized exclusion. He also added "*If people maintain the tap, it shows they care. We support that spirit of self-help."*While self-reliance is important, the framing here shifts the burden of responsibility onto the public, echoing neoliberal logics of governance and masking state withdrawal from essential services.When asked about long- term water solutions, the Panchayat member emphasized "*more funds," "better pipelines,*" and *"awareness campaigns,*" but there was no mention of accountability, transparent budgeting, or real-time community grievance redressal mechanisms. Former Panchayat member Anirul Khan allege that the current local leadership is engaging in corrupt practices. He said,"*They are removing working tubewells, not registering functioning ones, and diverting pipes to select areas."*This suggests that water infrastructure is being used as a tool of political patronage. He added *"In one para, there are many tubewells, and in another, not a single one."*This pattern reflects infrastructural inequality driven not by technical constraints but by biased spatial planning. According to him*"To them, inaugurating a football match is more important than installing a water tap."*.This exposes the symbolic politics at play, where leaders prioritize visible, performative acts over essential service delivery. Accusations of "pipe theft", removal of assets, and non- registration of tubewells have fostered deep mistrust. He added, "*We complain, but they say the taps are coming. It's been months."* The interview with Panchayat members reveal significant discrepancies between state narratives and community realities. It highlights how infrastructural failure is depoliticized, community exclusion is normalized.

5.5. DATA ANALYSIS OF INTERVIEWS OF LOCAL INTELLECTUALS AND HEALTHWORKERS

The interview with the Sheikh Habib Ali,Headmaster of Kusumtala Baliwara High Madars introduces a discursive counterpoint to the dominant narrative of crisis and exclusion. His focus on local water sufficiency, educational responsibility, and non-political framing offers insight into how certain institutions respond to structural challenges by internalizing solutions and staying neutral. *Saying"Water crisis is persistent in different areas, but here it is not such problematic."he* distinguishes his locality from others by emphasizing relative stability in water access. Unlike many interviewees who frame the crisis through suffering and neglect, the headmaster employs a rational, managerial frame, presenting the school as a zone of functioning infrastructure and resilience. This may reflect his position as an institutional leader, seeking to maintain reputation and stability. He added*"We teach children how to use water and save it."* Rather than focusing on external failures or political blame, the headmaster redirects attention toward behavioral responsibility and education.While commendable, this educational frame can also subtly depoliticize the water crisis by placing responsibility on consumers (children) rather than the institutions or governing bodies that control access and distribution. In contrast to emotionally charged or politically loaded responses from Panchayat members, farmers, or women community members, the headmaster provides a measured and neutral account. This is significant—his narrative sits between crisis and denial. He acknowledges the broader crisis, excludes his own area from the problem, and emphasizes personal and institutional solutions rather than policy critiques.It also reflects a desire to stay apolitical within a highly politicized issue. What's not discussed in the interview is also important . He doesnot mention of government schemes, local Panchayat involvement or NGO interventions, no critique of infrastructure distribution or environmental vulnerability and no reference to socio-economic

or caste-based disparities in water access was there in his speech. This absence may reflect lack of direct impact in the immediate surroundings of the school,strategic neutrality to avoid controversy or an internalized framing where issues are managed quietly at the community level rather than escalated. While this approach supports community resilience and awareness, it may also unintentionally obscure systemic inequalities and structural governance failures central to understanding the broader water crisis in the Sundarbans.

In the water-scarce regions of the Sundarbans, grassroots health workers like ASHA personnel witness the devastating impact of freshwater inaccessibility on women and children daily. Namita Mondal, an ICDSBasundhara (90 no Cemtre) worker from Kusumtala, offers a powerful account of how water scarcity shapes the lives of over 88 mothers and children in the area where she serves. Her narrative underscores the gendered burdens of water collection and the systemic neglect embedded in everyday survival. Her experience reveals how frontline health workers are both victims and silent infrastructure of a failing governance system. Her testimony reflects a deeply gendered experience of water scarcity in Kusumtala, where 40 mothers struggle daily due to poor water infrastructure. As an ASHA worker, she travels 2 km to fetch water for the community health center—labor that is unpaid and unacknowledged. This testimony sharply contrasts with neutral institutional perspectives and directly centers the gendered labor of water collection.This underscores how the burden of environmental governance is shifted onto women and community workers, especially from marginalized caste and class backgrounds. The unequal labor borne by women becomes invisible in policy documents but deeply embedded in lived realities.When ASHA workers have to divert time and energy to fetch water instead of delivering care, the quality of maternal and child healthcare declines. This compromises not only women's dignity and health, but also the functionality of public health infrastructure. This highlights a systemic contradiction: even where health programs exist, they are hollowed out by basic infrastructural neglect. Such realities are rarely represented in mainstream narratives, which often ignore the suffering of marginalized women. In summer, the crisis intensifies, yet institutional support remains absent. Her anger signals more than frustration—it is a form of resistance against political indifference. In Public Tap water comes nearly at 12 noon,untill then Cemter's daily works remain closed - this reality comes in his words.This echoes the sentiment of other women who spoke of beating leaders with brooms during election season. These expressions of frustration are a subaltern critique of state neglect, framed not through organized protest but through embodied, daily defiance.The structural invisibility of women's work in water management reveals the urgent need for policy action that centers local voices and prioritizes equity. Namita's account is not just a report—it is a call for recognition, dignity, and justice in the Sundarbans' water governance.

IMAGE 12: MAN CARRYING WATER TO HELP HOUSEHOLD

5.6. DATA ANALYSIS OF INTERVIEWS OF JOURNALISTS

The researcher conducted in-depth interviews with three journalists who offered diverse perspectives shaped by their roles and affiliations. Provudhan Haldar, editor of *Ajker Basundhara*, provided valuable insights into the editorial decisions of a regional publication closely engaged with the lived realities of the Sundarbans. His reflections highlighted how local media frame freshwater issues through the lens of community priorities and infrastructural neglect. Shahajahan Siraj, a local journalist with firsthand experience of ground-level reporting, shared observations on the challenges of accessing remote areas, gathering reliable data, and ensuring that marginalized voices are adequately represented. His perspective underscored the socio-political barriers that influence both water governance and journalistic coverage. Meanwhile, Madhurima Pattanayek, a science journalist associated with *The Hindu* and *The Wire*, offered a broader, national media perspective, emphasizing the importance of environmental science, climate change communication, and data-driven storytelling in covering freshwater access. Her insights shed light on the editorial limitations in mainstream media and the difficulty of sustaining long-term coverage on ecological issues.In

IMAGE 13. WOMAN GOES LONG TO HAVE THE WATER

the transcription and familiarization phase all recorded journalist interviews are converted into detailed written transcripts, capturing not only the spoken words but also emotional cues and pauses. This was followed by multiple close readings to immerse in the data, allowing patterns and emerging themes to surface organically. This stage was essential for developing an intuitive grasp of the narratives and perspectives embedded in the interviews. After the initial transcription and familiarization stages, the

researcher undertook an inductive coding process, identifying recurring concepts and patterns across the interviews. Using a line-by-line approach, the data were examined to extract meaningful codes that reflected how journalists discussed water access, structural governance, community marginalization, and environmental concerns One major theme that emerged was structural power and governance, where journalists pointed to political negligence, bureaucratic inefficiency, and a lack of accountability in managing water infrastructure. Another significant theme was environmental justice and climate vulnerability, as reporters emphasized the unequal impact of climate change on already marginalized communities in the Sundarbans. The theme of media representation and bias revealed how editorial decisions, access to information, and institutional affiliations shaped the framing of freshwater issues. Through coding, it became evident that journalists negotiate between advocacy and neutrality, often constrained by editorial policies,advertisement pressure and limited resources.

As Provudan Haldar noted, *"After every cyclone, we report the same crisis—salinity, no drinking water—but officials call it 'natural disruption,' not policy failure."* This quote highlights how causes are often diagnosed as environmental, obscuring deeper systemic inequalities and state inaction. Moral judgments in such reporting tend to be sympathetic toward affected communities but may avoid directly criticizing authorities. This framing not only affects public perception but can also depoliticize water injustice, reinforcing narratives that downplay the role of governance and institutional neglect.

Shahjahan Siraj notes that "*many of the water storage tanks installed after Cyclone Aila are now rusted or broken. Nobody comes to repair them.*" This byte is emblematic of the cyclical failure of state response, where crisis infrastructure is deployed reactively, only to be abandoned post-disaster. Such infrastructural decay reflects what Political Ecology terms chronic under-governance—a condition in which marginal geographies suffer from policy discontinuity and resource neglect. While the physical structures may exist, their operational collapse reinforces a symbolic message: these regions are expendable. Mainstream media, meanwhile, rarely frames this as administrative failure. Instead, it is either omitted or contextualized as logistical shortcoming—thus revealing a framing bias that softens critique and obscures systemic fault lines. Another revealing byte from the him describes how "*who gets water depends on political loyalty—if you're with the wrong party, you may be ignored during distribution."* This points to the deeply politicized nature of resource governance in rural Bengal, where access to essentials like water can be used to reward allegiance or punish dissent. The absence of such power asymmetries in news reports constitutes a silence that aligns, whether actively or passively, with dominant political structures—one of the more insidious forms of political bias in media practice.

Madhurima Pattanayek observed that "*it's mostly women and girls who walk miles to fetch water"* and *"due to consumption of impure water they are facing many gynecological and skin related health issues"* illustrates the gendered division of environmental labour. Women, as the traditional stewards of domestic water needs, disproportionately bear the cost of state neglect—missing school, compromising health, and enduring physical hardship.When media reports frame women's water struggles as acts of endurance or rural resilience without linking them to endered policy failure, they risk romanticizing suffering rather than indicting systemic negligence. Entman's theory becomes especially relevant here, as the media's failure to diagnose the political roots of gendered water scarcity leads to an incomplete, if not misleading, narrative.

In another striking admission, Shiraj explains: "*Very few hydrologists or climate experts are consulted by local papers. It's too technical or hard to source."* This reveals a source bias that has long plagued environmental journalism in regional India. While local testimonies are valuable, the absence of

expert perspectives leads to reductive framing and undercuts public understanding of complex phenomena like aquifer depletion, salinity intrusion, and hydrological cycles. The result is a knowledge vacuum, where anecdote substitutes for analysis, and problems remain depoliticized or oversimplified. Probhudan revealed*: "Most local journalists haven't studied environmental science. We cover events, not systems. We report impacts, not causes."* This observation brings to light a crucial gap: the lack of environmental literacy in mainstream and regional journalism. Without sufficient training in climate science, hydrology, or political ecology, journalists are often unable to trace the complex, systemic origins of local ecological issues. As a result, the media narrative remains event-driven, fragmented, and reactive, rather than anticipatory, analytical, or justice-focused.

Perhaps the most sobering reflection came when Provudan remarked: *"We've reported similar stories year after year. But after the monsoon, everyone forgets—officials and readers alike."* This points to what may be called cyclical amnesia—a societal tendency to normalize recurring ecological crises as seasonal inevitabilities rather than systemic failures. This normalization operates through framing patterns that repeat the spectacle of suffering without evolving into investigative critique. As such, both governance and journalism fall into a pattern of performative concern, where suffering is acknowledged but never redressed. Madhurima Pattanayek candidly explained, *"If I write about a tiger entering a village, it goes viral—photos, fear, drama. But if I cover villagers walking five kilometers for drinking water, even editors tell me, 'It's the same old story."* This reflects how causes are framed: sensational events are treated as urgent, while water crises are normalized or attributed vaguely to "climate" without interrogating governance failures. Shiraj noted, *"Tourism is a revenue spinner, so anything about Ganga Sagar gets promoted. But when I pitched a story on contaminated ponds, I was told it was 'too negative' for festival season."* These insights reveal how moral judgments are often skewed—pilgrims and wildlife evoke sympathy, while rural communities facing systemic neglect are sidelined. As a result, solutions proposed in high-profile stories tend to involve investment and promotion, whereas water-related articles rarely push for policy reform. This disparity in framing illustrates how editorial decisions, visual appeal, and economic interests shape the environmental narrative—often at the cost of justice and equity.

Despite the limitations, Madhurima Pattanayek offered radical suggestions for media transformation, including *"training local youth in citizen journalism,"* using WhatsApp for real-time reporting, and *"collaborating with NGOs to access data."* These proposals echo the Political Ecology call for democratization, not only of water access but also of knowledge production. In an environment where top-down narratives dominate, empowering grassroots voices becomes both a methodological and ethical imperative. However, she also acknowledged serious limitations: *"But facts must be checked. And phones don't work everywhere. In many islands, there's no signal for days."* This underscores the technological divide that mirrors and reinforces the geographic and social exclusions already prevalent in governance structures. Remote islands like Kumropara, Maipith, and Kankandighi lack not just network access, but institutional visibility—they are disconnected not only from the internet but from decision-making circuits.

This deficit is compounded by the digital transition post-COVID-19, which has left many small publications incapacitated. *"After corona, several small papers shut down,"* the Shiraj stated. *"They couldn't afford to print, and the online shift didn't suit everyone."* What is witnessed here is the digital attrition of local journalism, where economic pressures have forced the closure or downsizing of community-based outlets that once served as vital watchdogs. The loss of archives, as

he noted—*"we don't maintain proper archives anymore"*—represents not just a logistical failure but a collective forgetting of past crises, patterns, and state promises. This exacerbates the structural amnesia around recurring environmental injustice, making it easier for authorities to deny responsibility or repeat failures. Furthermore, awareness barriers remain high. *"Most villagers don't know where to report, or whom to approach,"* the journalist added. This hints at an informational vacuum—a space where both state mechanisms and media platforms fail to provide navigable channels for grievance redressal or disaster preparedness. Compounding this, the absence of a sustained record—a functioning archive—is more than an administrative lapse; it signals epistemic injustice. Without documentation, there is no continuity of critique, no accountability trail, and no platform to compare past and present government promises. In media terms, this absence results in episodic framing, where each new flood, cyclone, or water crisis is treated as isolated, rather than embedded in long histories of environmental mismanagement and political failure.

5.7. DATA ANALYSIS OF WATER QUALITY REPORT

The analysis of water report data (2018–2023) validates the patterns of freshwater scarcity, spatial injustice, and infrastructural decay reported in fieldwork across the Sundarbans. Quantitative indicators such as high salinity, microbial contamination, and seasonal turbidity spikes are not isolated environmental facts but are interwoven with caste, class, and political dynamics, as revealed through community interviews. The secondary quantitative data collected from water quality reports provides a crucial empirical foundation to contextualize and validate the lived experiences and narratives gathered through focus group discussions, interviews with community members, journalists, and policymakers, and household surveys across the Sundarbans region. This scientific data helps reinforce the community's perceptions of freshwater insecurity, institutional neglect, and uneven infrastructural access, particularly in vulnerable blocks like Namkhana, Patharpratima. The measured parameters such as salinity, E. coli counts, turbidity, and arsenic levels highlight consistent violations of potable water standards in multiple sources. For instance, Mousuni and Namkhana, both frequently mentioned by participants in FGDs, report high salinity levels ranging from
3.2 to 5.6 ppt, especially during monsoon and summer, rendering the water non-potable. This directly supports testimonies from Kusumtala and Barosawal, where residents described salty water, skin irritations, and lack of freshwater for cooking and drinking. The reported E. coli counts (up to 210 cfu/10ml) and turbidity values (up to 18.5 NTU) exceed WHO permissible limits, corroborating household survey findings that highlight reliance on untreated pond water, cloth filtration, and frequent health issues like acidity, skin diseases, and gastrointestinal ailments. The statistical data from Table 6 further supports environmental degradation due to climate-induced salinization and poor groundwater recharge. Dissolved Oxygen ranges between 5.18–6.49 mg/L, and pH values remain slightly above neutral, but the Chemical Oxygen Demand (COD) is reported as high as 114.8 mg/L, indicating elevated organic pollution.The presence of chlorophyll and phosphate values suggests nutrient-rich but stagnant and biologically unsafe water, which supports participants' concerns regarding blue particles, sand in tap water, and poor water aesthetics While the water quality data is scientifically rigorous, it starkly contrasts with the ground reality of governance gaps. Despite the presence of government schemes, many installations are non-functional, and even NGO efforts such as tube well installations were perceived as ineffective or harmful due to poor water quality. The data reveals that water declared technically "potable" (like in Gobardhanpur 2019) may not be socially or culturally acceptable, challenging the simplistic potable/non-potable binary.

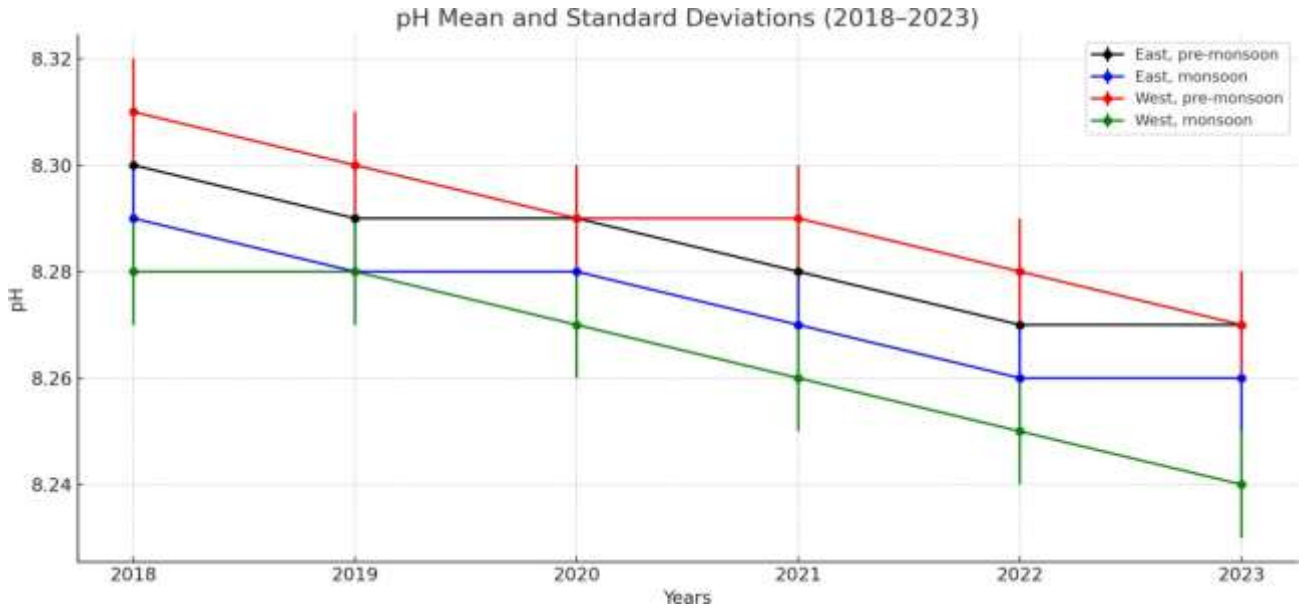

FIGURE1.PH SCALE MEASUREMENT 2018 TO 2023

This pH trend analysis from 2018 to 2023 reveals a gradual decline in water quality across the eastern and western Sundarbans, showing a consistent downward trend in pH levels during both pre-monsoon and monsoon periods, especially in the western region, where monsoon values drop below 8.25 by 2023. These changes suggest increasing acidification of the estuarine waters, possibly due to rising industrial pollutants, altered salinity patterns, or climate- induced changes in river-sea dynamics—factors often underrepresented in media narratives, as research indicates. By linking these ecological trends with interviews and household surveys, it can be seen how structural power imbalances and fragmented governance fail to address long-term environmental degradation. The pH decline intensifies freshwater scarcity and affects livelihoods, especially for marginalized communities already facing caste and socio-economic inequities.

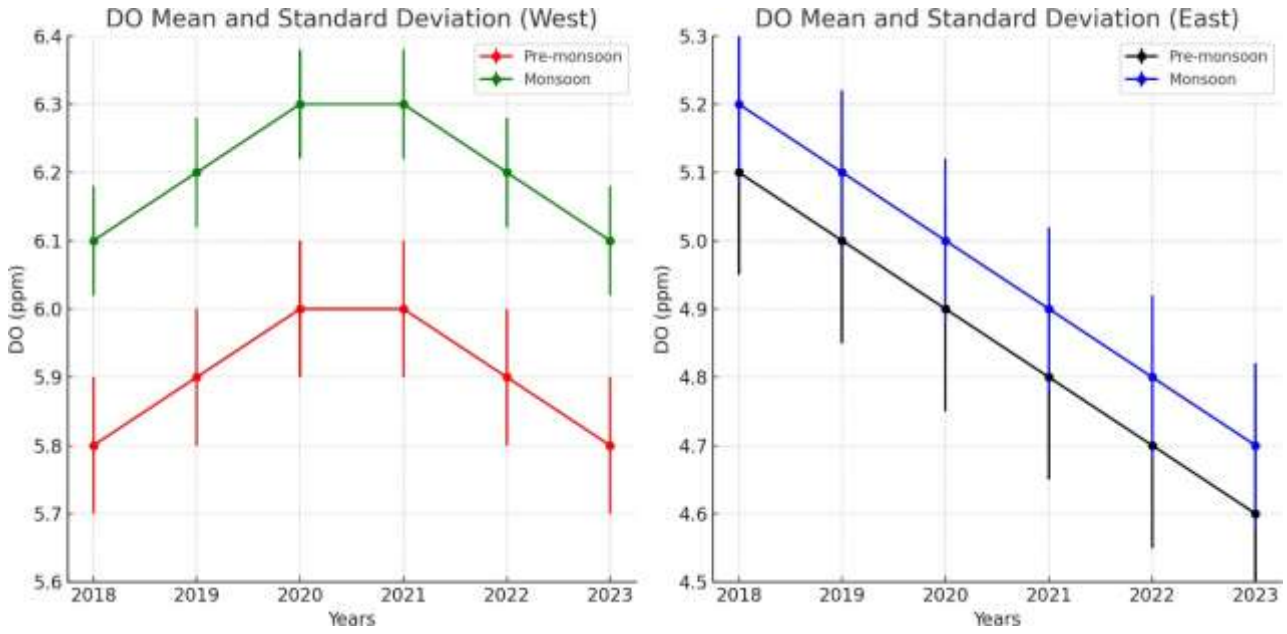

FIGURE2. DISSOLVED OXYGEN MEASUREMENT 2018 TO 2023

The Dissolved Oxygen (DO) data from 2018 to 2023 reveal contrasting regional and seasonal patterns in the Sundarbans, highlighting critical ecological shifts. In the West Sundarbans, DO levels are consistently higher than in the East, reflecting healthier aquatic conditions. During the monsoon, the West experiences a rise in DO peaking around 2020–2021 (6.3 ppm), followed by a slight decline. Pre-monsoon values remain relatively stable, fluctuating between 5.8 and 6.0 ppm. This suggests sustained water quality and better oxygenation during monsoon inflows. Conversely, the East Sundarbans shows a steady decline in DO across both seasons. Pre-monsoon levels dropped from
5.1 ppm in 2018 to 4.6 ppm in 2023, while monsoon values also declined from 5.2 to 4.7 ppm. This downward trend may be attributed to increased salinity, eutrophication, and anthropogenic stressors, reflecting a worsening aquatic ecosystem. These findings tie into this research on freshwater access, governance, and environmental justice. The spatial disparity underscores how climate vulnerability, infrastructural neglect, and policy inaction contribute to regional ecological inequities. It emphasizes the uneven distribution of environmental degradation and the urgent need for context-sensitive, justice-oriented water governance in the Sundarbans.

The dataset illustrates that while some areas like Gobardhanpur (2019, 2023) using ponds and hand pumps reported better water quality (low salinity and E. coli), others using shallow wells, canals, and open ponds show deteriorating water conditions. The contrast is echoed in qualitative data: residents from Sater Gheri and Barosawal report that only one tube well serves 400 households, while Purba Gheri (Kusumtala) enjoys comparatively better access. Interview data reflects anger over preferential treatment and the political manipulation of infrastructure allocation, with accusations against panchayat members of removing or redirecting tube wells. The reports show a clear seasonal dimension to water stress. During monsoons, turbidity and microbial contamination peak, while in summer, salinity increases significantly, particularly in shallow and surface sources.

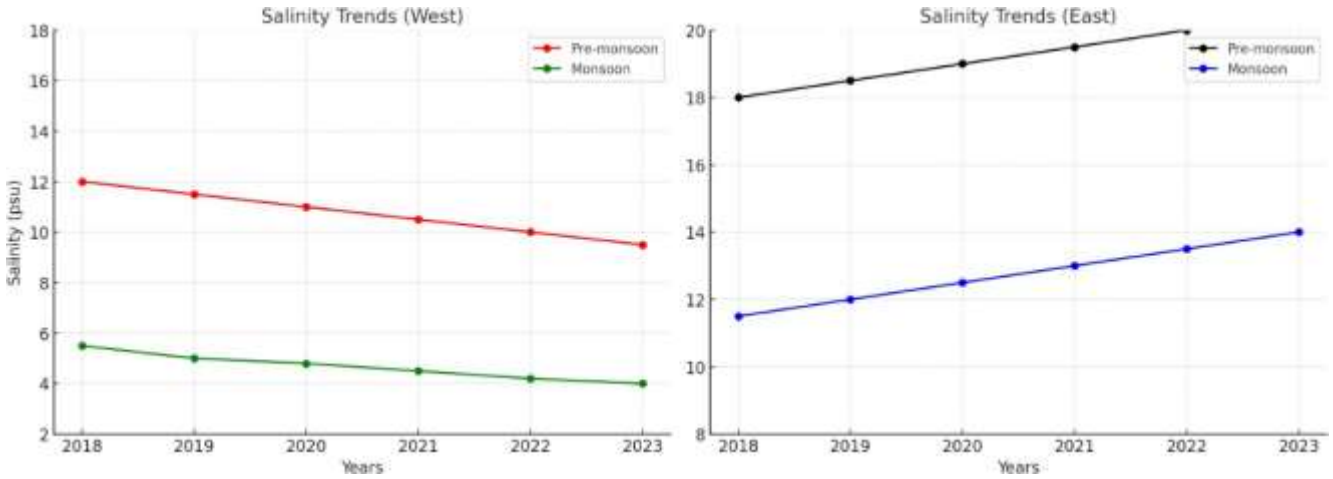

FIGURE 3. SALINITY MEASUREMENT 2018 TO 2023

The salinity trends from 2018 to 2023 for the Indian Sundarbans, divided into the western and eastern sectors and measured during both pre-monsoon and monsoon seasons, reveal a continuation and intensification of earlier patterns. This projection is crucial in understanding ongoing environmental transformations likely driven by climate change, hydrological alterations, and anthropogenic interventions. In the western sector (represented by Moushuni and adjacent areas), salinity levels have shown a marked decline. During the pre-monsoon season, the salinity decreased from 12.0 psu to 9.5

psu, while in the monsoon period, it dropped more significantly from 5.5 psu to 4.0 psu. This consistent "freshening" trend is most likely the result of increased freshwater influx, potentially caused by intensified glacial melt from the Himalayas, enhanced monsoonal rainfall, and upstream river regulation or diversion projects. Conversely, the eastern sector (notably areas like Gobordhanpur) has experienced a significant rise in salinity levels. Pre-monsoon salinity increased from 18.0 psu to 20.5 psu, and monsoon salinity rose from 11.5 psu to 14.0 psu. These increases suggest a reduction in freshwater inflows and greater tidal ingress from the Bay of Bengal. Likely contributors include embankment failures, coastal erosion, and sea-level rise, which facilitate the penetration of saline waters deeper into inland estuaries. Western Sundarbans (Moushuni) shows increasing freshwater dominance (declining salinity), but paradoxically suffers from non-potable stagnant water due to embankment damage, waterlogging, and lack of infrastructure. Eastern Sundarbans (Gobordhanpur) faces rising salinity, threatening drinking water sources, damaging tube wells, and rendering agriculture non-viable. These patterns align with household narratives noting increased struggles in summer, low-pressure tap water, and the complete failure of systems like the Jal Jeevan Mission pipeline network. The mention of water tables sinking to 900 ft in interviews is substantiated by the decline in water quality from tube wells and community tanks, especially in 2020–2022. This triangulated approach—combining statistical rigor with ethnographic richness—demonstrates that sustainable water governance in the Sundarbans must move beyond technocratic fixes to prioritize inclusive policy, decentralized water management, and grassroots media representation.

6. OBSERVATIONS & FINDINGS

The study conducted on water accessibility and equity in the Indian Sundarban Region (ISR) reveals a complex web of interlinked challenges shaped by ecological fragility, socio-economic inequalities, gendered burdens, and insufficient infrastructural development. Drawing from extensive content analysis of media reports, government publications of water reports , community and professionals' interviews, and field surveys conducted the following key findings have emerged.

Media coverage of the Sundarban predominantly focuses on environmental disasters such as cyclones, flooding, and soil salinization, while issues related to safe and equitable access to potable water receive limited attention. The quarterly publication *Sudhu Sundarban Charcha* and other local newspapers have underscored environmental degradation, yet the deeper connections between water scarcity and social equity remain underreported. Moreover, Main stream Vernacular Newspaper have increasingly highlighted pollution and disaster impacts, success stories of government but have failed to address the need for sustainable water infrastructure development and policy reforms. When the Sundarbans does appear in the news, it is typically in the wake of cyclones or floods, presented through the lens of episodic disaster coverage. This framing bias not only trivializes the chronic and structural nature of water scarcity but also obscures the accountability of governance institutions. Schemes like Jal Jeevan Mission are portrayed as unequivocal successes, with little journalistic scrutiny of their ground-level implementation. Framing Theory helps unpack how such media narratives contribute to the silencing of subaltern voices and the manufacturing of consent around ineffective governance.Interviews with journalists highlighted a deep disjunct between localized experiences and national media narratives. Local journalists underscored political neglect, infrastructural decay, and the politicization of water distribution, while science journalists emphasized editorial constraints, source bias, and gendered burdens in water collection. Key themes included structural power, environmental justice, and framing

bias, with recurring patterns of cyclical amnesia and performative concern in reporting.Furthermore, the collapse of local media post-COVID-19 and the absence of archives contributed to epistemic injustice, silencing long-term critique.

Water collection in the ISR is largely gendered. Women, particularly from marginalized communities, bear the primary responsibility for collecting water, often spending several hours daily in difficult conditions. Fieldwork revealed that women queue for water under the scorching sun, with each household requiring at least three buckets (approximately 48 litres) per day. Water pressure is low, and contamination from iron and salinity is prevalent. Rising salinity, especially after cyclones, has severely impacted pond water, previously used for agriculture and domestic activities. Many households have turned to deep aquifers or purchased water at high costs, especially during peak summer months. The taste, colour, and safety of the water have deteriorated. Approximately 39% of respondents noted salinity issues, while 20% observed a reddish tinge indicating high iron content, making water unsafe for consumption and domestic use. Focus group participants recalled how ponds, once perennial, now dry up .Taps, even when newly installed under schemes such as the Jal Jeevan Mission, deliver saline or visibly contaminated water, described by respondents as carrying "blue particles," "sand," and "foul taste." This lived experience of climate change sharply contrasts with the bureaucratic framing of such changes as manageable or incremental. Most visible aspect of the crisis is the uneven spatial distribution of water sources. While localities such as Purba Gheri enjoy comparatively better access to functioning taps and tube wells, villages like Barosawal and Sater Gheri are severely marginalized. Here, residents must traverse over two kilometers, often multiple times a day, to fetch potable water. This inequity is compounded during the summer months and post-cyclonic periods, when water tables recede and sources become saline due to rising sea levels. The dependence on monsoon rains is critical, but due to inadequate rainwater harvesting infrastructure and poor planning, this water often goes to waste..Though some affluent households have installed private deep tube wells, the majority depend on shared, low-pressure public taps and pond water. Government initiatives, including RO desalination plants and solar pumps, have largely failed due to high maintenance costs and lack of community training. Similarly, tube wells submerged during floods have prompted efforts to raise their height, but these actions remain insufficient without comprehensive community engagement and sustained maintenance.

Despite the existence of decentralized bodies like gram panchayats under the West Bengal Panchayati Raj Act, local governance structures are often plagued by corruption and lack of technical capacity. Although initiatives like 'Jal Dharo, Jal Bharo' and "Jal Jeevan Mission" have made initial strides, they suffer from poor monitoring and minimal community ownership. Field evidence shows that many renovated ponds are underutilized or remain polluted due to insufficient quality checks. Even all the house though get tap water but conditions are not workable.

The economic burden of accessing water is alarmingly high. Households spend up to INR 100 per day for 20 litres of drinking water, translating to INR 120,000 annually, and nearly INR 1 million over eight years. Comparatively, rainwater harvesting (RWH) is significantly cheaper, with costs of building a RWH pond around INR 25,000, capable of serving ten people for nearly a decade. This stark economic disparity underlines the urgent need for cost-effective, decentralized water systems. Infrastructure in the Sundarbans is marked by what can be termed as visible invisibility—it exists on paper, is often inaugurated with fanfare, yet remains dysfunctional in practice. Numerous taps and tube wells across the villages remain broken, dry, or deliver contaminated water. In one village, the time-regulated water

release system known as “time call” has not functioned for over 1.5 years. Community members repeatedly described how local political leaders and panchayat members favor particular constituencies aligned with their party affiliations, leading to elite capture of public water sources. Families with greater political capital or proximity to power manage to get functioning infrastructure near their homes, while others are left to struggle. This reflects a broader crisis of political clientelism and the hollowing out of participatory governance.

The burden of water collection falls disproportionately on women and girls, especially from marginalized caste and income groups. Their daily routine involves physically strenuous and time-consuming tasks, exacerbated by patriarchal constraints that limit their decision-making power. Women reported that even basic complaints about water are routed through male relatives, and that they are discouraged from speaking directly to officials. This gendered exclusion is not merely cultural but institutional, reflected in the absence of women from water-related planning and governance bodies. Additionally, caste hierarchies play a defining role—lower-caste households are typically situated in areas furthest from water sources, and their needs are deprioritized in planning. Such insights foreground the intersectionality of water governance as embedded in broader structures of oppression.

Water scarcity in the Sundarbans is not only a matter of access but also one of health and economic stability. Waterborne diseases—skin infections, diarrhea, and kidney ailments—are rampant. Residents, particularly women and children, suffer from recurrent illness, leading to missed school days and loss of income. In the absence of reliable state intervention, families often resort to buying water at exorbitant rates or organizing informal fundraising to repair broken taps—initiatives that, while commendable in their community spirit, underscore state abdication. This situation illustrates environmental injustice, wherein already vulnerable communities are forced to bear additional health and financial burdens due to systemic neglect.

Amidst this bleak landscape, what stands out is the quiet yet powerful resilience of the communities. Residents have initiated rainwater harvesting, contributed financially to infrastructure repair, and devised informal sharing systems. Women’s collectives and youth groups have emerged as de facto custodians of water management in certain localities. However, these forms of bottom-up innovation remain under-recognized by formal institutions. There is an urgent need to integrate these practices into official policy frameworks, not merely as beneficiaries of schemes but as active participants in water governance.

Interviews indicate stark disparities between eastern and western Kultali, where residents continue to face irregular or no water supply. Local governance representatives often attribute this to proximity to the sea or technical issues, framing the crisis as a geographic inevitability rather than a product of administrative neglect. Crucially, the discourse of current Panchayat members seeks to deflect responsibility, often labeling grievances as “misunderstandings” or “local conflicts.” Community participation is nominal, with Gram Sabhas poorly attended, which authorities interpret as consensus. This reflects a top-down planning model that excludes meaningful public involvement. Allegations by former leaders point toward political favoritism, asset mismanagement, and symbolic governance—suggesting that water infrastructure is manipulated for electoral visibility rather than equity. In contrast, institutional actors like the local headmaster offer a depoliticized perspective, highlighting education and behavioral change but avoiding critique of governance structures. Meanwhile, frontline health workers like ASHA personnel expose the gendered dimensions of the crisis. They endure unpaid labor, walking long distances to fetch water, which in turn compromises public health services. Their narratives reflect

both marginalization and resistance. Quantitative water quality data (2018– 2023) validated community concerns about salinity, microbial contamination, and declining dissolved oxygen levels. Salinity spikes in the east and stagnant water in the west posed dual challenges, both environmentally and socially. The failure of schemes like Jal Jeevan Mission and the political manipulation of water infrastructure reflect chronic inequities.

Overall, the findings demonstrate how water scarcity in the Sundarbans is not merely environmental but deeply political. The crisis is shaped by structural inequalities, uneven resource allocation, and the systematic silencing of marginalized voices. These lived realities demand a more accountable, participatory, and justice-oriented approach to water governance in climate-vulnerable regions.

7. CONCLUSIONS

The investigation into water access and governance in the Indian Sundarbans, guided by the frameworks of Political Ecology and Framing Theory, reveals a landscape marked by ecological fragility, infrastructural vulnerability, and systemic neglect. Through the dual lenses of journalistic inquiry and empirical water quality assessment, this study brings to light the multifaceted crisis that afflicts one of the most ecologically sensitive and politically marginalized regions of India. The voices of journalists—both those embedded within the region and those reporting from urban centers—underscore the paradox of visibility and silence. While disasters such as cyclones or arsenic contamination occasionally catapult the Sundarbans into national media consciousness, the chronic nature of water-related suffering is rarely afforded sustained attention. This reflects the influence of editorial priorities, political affiliations, and the precarious economics of media practice, wherein long-term coverage of peripheral geographies is often sacrificed at the altar of TRP-driven news cycles. Moreover, as revealed in the interviews, journalists themselves often lack access to reliable scientific data or face institutional pressures that limit the depth and framing of their reportage. As a result, the water crisis is often depicted in episodic, apolitical terms, devoid of historical and structural context—a framing that obscures the systemic drivers of inequality, such as policy failure, caste and class-based marginalization, and regional neglect.

Simultaneously, the analysis of water quality data collected from various blocks within the Sundarbans reveals a grim scenario. The persistent failure to meet basic parameters of potable water, such as safe levels of iron, arsenic, chloride, and acceptable pH and salinity levels, paints a picture of environmental injustice. The most affected regions—such as Namkhana and Patharpratima blocks—are also those with high dependence on surface water, fewer filtration plants, and greater distance from urban policy-making centers. This geographical marginalization is compounded by seasonal vulnerability: during the monsoons, many households face complete inundation of their freshwater sources, while in the dry season, rising salinity due to tidal intrusion renders water sources unusable. These findings highlight the deep interconnections between climate variability, ecological degradation, and the inadequacies of current governance mechanisms.

When considered together, the insights from journalistic narratives and the water quality dataset offer a sobering critique of the dominant development discourse. Political Ecology helps to understand how ecological scarcity is not natural but manufactured—rooted in unequal power relations, historically skewed development priorities, and the commodification of resources. Framing Theory, in turn, elucidates how media representations shape public perceptions and political urgency. The current media framing, skewed toward sensationalism or superficial human- interest angles, fails to capture the layered realities of water deprivation in the Sundarbans. It also fails to hold the state accountable for its

fragmented and short-term interventions, which often emphasize technological fixes without addressing issues of maintenance, access, and community participation.

The study also makes visible the gendered burden of water scarcity. As highlighted in both media coverage and local testimonies, women disproportionately bear the cost of poor water infrastructure—through the time they spend fetching water, the health risks they endure, and the social stigma attached to their roles as water collectors. Yet their voices are often missing from both policy documents and media narratives. This underscores the urgent need for intersectional analysis that recognizes how caste, gender, and class shape the experience and politics of water access.

In conclusion, addressing the water crisis in the Sundarbans demands a radical rethinking of both governance and media practices. On the one hand, the state must move beyond ad hoc and donor-driven water schemes to adopt a long-term, decentralized, and community-led approach to water governance. This includes investing in sustainable water harvesting systems, improving water testing infrastructure, and ensuring real-time transparency of water quality data accessible to local communities. On the other hand, the media must reorient its framing practices to reflect not just events but processes, not just suffering but resistance. Journalism in ecologically vulnerable zones like the Sundarbans must be rooted in local knowledge, sustained engagement, and a commitment to environmental justice.

Water in the Sundarbans is not merely a question of supply and demand. It is a mirror reflecting the deeper crises of governance, inequality, and representation. Without a fundamental transformation in how we report, manage, and imagine water, the region will continue to spiral deeper into ecological distress and human suffering. Thus, this study advocates for a shift—from water as a resource to water as a right, from crisis reporting to justice journalism, and from state-centric development to participatory governance anchored in ecological and social equity.

7.1. FURTHER SCOPE OF RESEARCH

This study opens multiple interdisciplinary avenues for further inquiry into water access and governance in the Indian Sundarbans. Longitudinal studies examining seasonal variations in water quality would enhance understanding of climate impacts over time. Comparative research between Indian and Bangladeshi Sundarbans could offer transboundary insights into governance practices. Ethnographic studies within newsrooms may deepen understanding of media framing dynamics, while a gendered analysis can further explore the disproportionate burden of water scarcity on women, especially in relation to caste and class. Additionally, the growing influence of digital and social media invites analysis of how alternative platforms frame the crisis differently from traditional media. Policy discourse analysis can interrogate the language and priorities of state interventions. Participatory Action Research (PAR) involving local communities would democratize knowledge production and foster actionable solutions. Exploring climate-induced migration patterns linked to water insecurity, and evaluating the efficacy of technological solutions such as desalination or rainwater harvesting, are also crucial. Finally, the role of visual media— documentaries, photographs, and digital art—in constructing narratives of crisis and resilience offers a rich domain within Framing Theory. Together, these directions encourage critical, community-engaged, and action-oriented research that is essential for building sustainable and just water governance in the Sundarbans.

7.2. LIMITATION OF THE RESEARCH

This study faces several constraints that may impact its scope and depth. Limited media coverage and data availability pose challenges, as vernacular newspapers may not consistently report on freshwater issues restricting content analysis. Bias in media reporting may further limit diverse perspectives, often

prioritizing political or economic narratives over grassroots struggles. Field data collection is hindered by logistical difficulties, including transportation barriers, extreme weather, and cultural sensitivities. Limited community participation, particularly among marginalized groups may affect data reliability. Additionally, government and NGO responses vary, making it difficult to assess the facts.Time and resource constraints may limit the study's sample size and duration, while ethical concerns regarding data privacy and political sensitivities require careful handling. To mitigate these issues, triangulation of data sources, collaboration with local organizations, and adaptive research methods will be employed to ensure robust findings.

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