Title: The Nuanced Indian Approach to the Brahmaputra River: Strategic Vision, Development Initiatives, and Indigenous Knowledge Systems

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Abstract:

This research note critically examines India's evolving engagement with the Brahmaputra River between 2021 and 2025 through a multi-layered lens encompassing national strategic frameworks (SAGAR vision), developmental policies (Sagarmala), and traditional ecological knowledge systems. Drawing upon a broad corpus of academic, policy, and strategic literature, it assesses India's nuanced strategy to balance hydropolitics, regional security, sustainable development, and indigenous livelihoods. Recognising the Brahmaputra's complex geopolitical and ecological context, this note emphasises the gradual institutional shifts, emerging limitations, and future pathways for India's riverine governance, guided by frameworks like Underwater Domain Awareness (UDA).

Key Words: Brahmaputra River, SAGAR Vision, Sagarmala, Hydropolitics, India-China Water Relations, Underwater Domain Awareness (UDA), Strategic Infrastructure, Northeast India

Introduction

The Brahmaputra River, one of the world's largest and most dynamic river systems, occupies a central place in India's northeastern landscape, both physically and strategically. Flowing through disputed territories, volatile floodplains, and ecologically fragile zones, the river has emerged as a critical site of India's national interest. Between 2021 and 2025, India's policy posture reflects a nuanced approach blending strategic foresight, infrastructure development, environmental consciousness, and indigenous cultural resilience.

Recent studies emphasise the growing linkage between Brahmaputra management and regional security concerns, particularly vis-à-vis upstream activities by China (Baruah et al, 2022; Gajurel, 2024). Policy developments such as the Sagarmala inland extensions to Brahmaputra (Ministry of Ports, Shipping and Waterways (MoPSW, 2024) and the expansion of National Waterway 2 (Inland Waterways Authority of India, n.d.) highlight India's broader strategy of integrated development. Indigenous adaptation practices continue to offer valuable lessons for resilience building (Vijayaraghavan, 2021).

This research note builds upon recent hydropolitical studies and climate impact assessments to present a focused review of India's evolving engagement with the Brahmaputra.

1. Strategic Dimensions: SAGAR Vision's Extension into the Brahmaputra Basin

While originally maritime in focus, the SAGAR (Security and Growth for All in the Region) Vision gradually expanded after 2021 to include inland water security concerns. In the Brahmaputra context, India's strategic focus has sharpened around territorial sovereignty, resource security, and ecological stability. As Chakraborty and Dey (2022) note, India's policy responses remain cautious amid China's upstream hydropower developments.

Recent commentary suggests that the Brahmaputra could become a flashpoint in India-China competition if proactive basin management frameworks are not strengthened (Haby, 2024). However, India's evolving SAGAR articulation now increasingly embraces riverine ecosystems as vital extensions of national security.

2. Developmental Interventions: Sagarmala's Inland Connectivity through NW-2

The Sagarmala programme's inland component has seen significant expansion since 2021, with major investments aimed at enhancing the Brahmaputra's navigability under National Waterway 2 (Inland Waterways Authority of India, n.d.). Government reports indicate allocations of over ₹645 crore to augment river terminals, port connectivity, and cargo handling facilities (MoPSW, 2024).

However, these development projects risk altering the Brahmaputra's sediment regime and threatening riverine biodiversity if not managed sustainably. Environmental impact assessments point to potential disruptions in wetland systems critical to local livelihoods (Palash et al., 2023). Such critiques underscore the need for development models that integrate environmental sensitivity with infrastructure modernisation.

3. Indigenous Knowledge Systems: An Underutilised Resource

Indigenous communities such as the Mising have long developed sophisticated adaptations to the Brahmaputra's flood cycles. Practices such as the construction of *chang ghars*, rotational cropping, and wetland fisheries management reflect a deep understanding of riverine dynamics (Vijayaraghavan, 2021).

Despite these valuable practices, mainstream flood management policies in Assam remain predominantly technocratic, emphasising embankments and structural measures over indigenous adaptive strategies (Jain, 2023). There is growing recognition that blending indigenous wisdom with formal governance structures could enhance long-term resilience.

4. Institutional Fragmentation and Governance Gaps

The Brahmaputra's governance landscape is characterised by institutional fragmentation. Although the Brahmaputra Board was established to coordinate flood management and development efforts, it remains limited in authority and suffers from overlapping jurisdictions with state water resources departments (Brahmaputra Board, n.d.).

Proposals for establishing a comprehensive Brahmaputra River Basin Organisation have circulated since the early 2000s, but political sensitivities among northeastern states have stymied their realisation (Haby, 2024). Consequently, river management remains reactive and piecemeal, undermining sustainable basin-wide planning.

5. Climate Risks and Environmental Vulnerabilities

The Brahmaputra basin faces increasing vulnerability to climate change. Studies show that Himalayan glacier retreat, altered precipitation patterns, and more frequent extreme events pose significant risks to river flows and downstream communities (Palash et al., 2023).

Government initiatives such as the State Action Plans on Climate Change attempt to address localised vulnerabilities (Ministry of Environment, Forest and Climate Change, 2023), but broader basin-scale adaptation frameworks remain lacking. The lack of coordinated climate resilience planning could exacerbate flood disasters and long-term ecosystem degradation.

6. Limitations

This research note is based largely on secondary sources, including policy papers, think tank publications, and peer-reviewed journal articles. Direct empirical fieldwork engagement with Brahmaputra riparian communities remains limited. Access to internal government deliberations regarding strategic and hydrological security also restricts the scope of analysis.

7. The Way Forward

Future policy directions for Brahmaputra governance should align with the conceptual foundations of the Underwater Domain Awareness (UDA) framework. Rather than offering fixed solutions, the following thematic directions are proposed:

- **Holistic Domain Integration:** Develop Brahmaputra-specific surveillance mechanisms that include subsurface hydrological monitoring, sediment transport analysis, and basin-wide ecological assessments, building on UDA's cross-domain awareness principles.

- **River Basin Sovereignty Architecture:** Initiate cooperative diplomatic engagements toward a potential Brahmaputra Basin Accord involving Bangladesh and China, promoting equitable water sharing and data transparency.

- **Community-led Monitoring Networks:** Institutionalise decentralised environmental observation systems that draw upon indigenous knowledge practices, embedding river stewardship within grassroots governance structures.

- **Climate-Responsive Infrastructures:** Shift away from rigid infrastructure solutions like large dams towards dynamic, ecosystem-based adaptation models capable of responding to the Brahmaputra's seasonal and morphological variabilities.

- **Data Harmonisation and Open Access:** Promote interstate and international real-time hydro-meteorological data sharing, ensuring transparency and collaborative risk mitigation across Brahmaputra riparian states.

8. Conclusion:

Between 2021 and 2025, India's engagement with the Brahmaputra River has increasingly reflected a complex, multi-dimensional approach, balancing security, development, and ecological stewardship. The extension of the SAGAR Vision inland, the infrastructural investments via Sagarmala, and the recognition of indigenous knowledge frameworks all mark significant progress, even as challenges of institutional fragmentation and climate vulnerability persist. Future directions must embrace integrated basin management under frameworks like Underwater Domain Awareness to ensure the Brahmaputra's sustainable and resilient governance.

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