

The Political Ecology of Adi Ganga: Environmental Governance of an Urban River in Kolkata, India

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Abstract

This article engages with the policies of reviving the Adi Ganga, an urban river in Kolkata and the politics of historical non-implementation of the same at the levels of government and local bodies. In the context of the global neoliberal economic growth of nations, this article highlights that the policies of water governance require a more multispecies-inclusive and local mode of implementation.

The once primary route for urban transportation in Kolkata, the Adi Ganga or the Canal of the Ganges basin, which was the main channel for the Ganges to flow through a long route in the midst of Kolkata and the Sundarbans to fall into the Bay of Bengal, has been in a dilapidated condition over the decades following the development projects and urban expansion in Kolkata. The river has now converted into a sewer and a site for dumping wastes, especially for emptying untreated wastewaters from drains—leading to a highly polluted site responsible for endangering the overall urban ecology of Kolkata.

With references to the policies passed to protect the ecosystem of the Adi Ganga since the colonial times, this article examines the politics of water governance that ignored those implementations—to explore the challenges and gaps between policymaking and policy implementation.

Keywords: Adi Ganga; water governance; environmental policy; urban river

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Introduction

This article engages with the politics of water governance of Adi Ganga in urban Kolkata though pre-colonial to colonial and postcolonial times. The once primary route for urban transportation in Kolkata, the Adi Ganga or the Canal of the Ganges basin, which was the main channel for the Ganga to flow through a long route in the midst of Kolkata and the Sundarbans to fall into the Bay of Bengal, has been in a dilapidated condition over the decades following the development projects and urban expansion in Kolkata. As a prominent stream of the Hooghly River in the pre-colonial days in Kolkata right through its colonial times, which would carry sediments from Hooghly River and facilitate agricultural practices along its long waterway, the river has now been converted into a sewer and a site for dumping wastes, especially for emptying untreated wastewaters from drains—leading to a highly polluted site responsible for endangering the overall urban ecology of Kolkata.

This article aims to highlight the sociohistorical and cultural significance of the Adi Ganga in Kolkata and examine the politics of its water governance through historical and contemporary references. By using the frameworks of Environmental Governance and Urban Political Ecology, the study also aims to explore how environmental policies, river management strategies, infrastructural developments, and cultural and religious practices of local communities have shaped the ecological conditions of the river. The article further examines the conflicts between policymaking and policy implementation, especially in the context of top-down water governance and socio-ecological-religious significance of the river. These conflicts will involve the Anthropocentric practices of urban expansion, land grabbing, waste disposal, and riverine neglect at the cost of ecological disruptions and overall environmental degradation. By highlighting the ecological significance of the river in urban Kolkata, the article finally explores the possibilities of decentralized, community-driven, and localized forms of water management.

This study mostly employs qualitative and interpretative methodologies to analyze existing literatures, policies, newspaper reports, research outputs, and community perceptions. As the author continues to live close to Adi Ganga and often passes by the water body in daily life for the last two decades, much of this study also draws from ethnographic accounts of the author, especially from everyday observations relating to the changing ecologies of the river owing to encroachments, infrastructural developments, and waste disposal. This study prioritizes qualitative perceptions on how ecologically disruptive community practices and lack of participatory governance turn a river into a sight of waste and endanger both human and more-than-human survival—transforming it into a case for ecological neglect and political exploitation of waterbodies in South Asia.

This study is theoretically grounded in the framework of Urban Political Ecology (UPE) which examines the degradations of urban ecologies under diverse political, economic, and social forces. It highlights how political powers, state interventions, and developmental activities endanger an urban ecosystem. In connection with Adi Ganga, UPE helps understand the forces and powers which have capitalized the river over time and problematized the rejuvenation policies through political interventions and multidimensional failures. It also indicates how the degradation of the river is politically and institutionally produced. Despite the profound religious and ecological significance of the river, the non-rejuvenation of the river highlight Kolkata's unplanned and ecologically insensitive urban trajectory and expansion. Through UPE, this article also locates Adi Ganga within the purview of a material and political object and argues for its ecological upkeep through participatory and decentralized forms of governance.

The framework of Environmental Governance is the most foundational for this study. In fact, this article argues for sensitive environmental governance at the levels of water, land, and biodiversity as an urgent requirement for the protection of the planetary ecosystem. The term environmental governance broadly refers to “the diverse ways that humans manage their environments,” however, DePuy et al. (2022) uses the term to refer to a “historically particular form of intervention that emerged near the end of the 20th century, characterized by a shift from traditional top-down, state-centered development interventions to more decentralized and globalized multi-actor modes of administrative control” (p. 948). Some of the ways environmental governance is operated at present times are “emphasis on prescriptive and technocratic solutions,” “location within and reproduction of a global neoliberal political economy focused on aggregate economic growth,” and “radical simplification and commodification of the natural world inherent in market-based regulatory mechanisms” (p. 948). The global environmental policies and the notion of environmental governance are dominated by the Western technocracy, which at the same time marginalizes or ignores “alternative approaches to environmental management” such as by local grassroots communities (p. 948). Rogers and Hall (2003) define water governance as “political, social, economic, and administrative systems that are in place to develop and manage water resources, and the delivery of water services, at different levels of society” (p. 7). Besides the commercial use of water for irrigation and hydraulic purposes, water is used by the governments for supply to citizens, as well as to outsourcing agencies. With the rise of the global water governance agenda in the 1970s, water governance has been advocated to center around identifying the issues relating to the water crisis in developing countries along with water pollution and the overall water ecosystem.

According to the Integrated Water Resources Management (IWRM) framework at the Dublin Conference on Water and Environment in 1992, there should be a “broad framework that promotes a coordinated multi-level approach to water governance, aimed at maximizing economic and social welfare while fostering environmental sustainability” (DePuy et al., 2022, p. 954). Use of water for commercial use or economic gain also leads the private stakeholders to engage in water management. In this process, the crisis generated in water resources also poses a viable threat to environmental sustainability. Water issues must be dealt with at the level of their social, community, and local embeddedness. “Technoscientific” use of water through “remote sensing and hydrological modeling” removes water “from its social contexts while presenting new opportunities for both improved predictability and efficiency in water management and large-scale infrastructure investment for further control over water-related risks and benefits” (p. 954).

Sociohistorical Significance of Adi Ganga

The Ganges, or more popularly known as Ganga, is the national river of India, recognized through Sections 3.1 and 3.2 of the Environmental (Protection) Act 1986 of the Government of India. The term *Adi* means original, and therefore, Adi Ganga clearly implies that it is the original channel of the Ganga, the national river of India. In the eastern Indian state of West Bengal, Adi Ganga originally ran for almost 75 km inside the city of Kolkata to fall into the Bay of Bengal. The city of Kolkata is situated on the left bank of the Hooghly river for about 130 kilometers. Adi Ganga was the original southern channel of the Hooghly river before the river shifted westward. The Hooghly is now the primary river flowing by Kolkata. It is also the primary supplier of water in Kolkata, which is treated, stored, and distributed across the city for public use. It is the lower course of the Bhagirathi river, and Bhagirathi is the main tributary of the Ganga in West Bengal. Before the sixteenth century,

Adi Ganga contained the main course of the Hooghly river through south Kolkata towards the Bay of Bengal. However, over time, because of siltation and tectonic shifts, the Hooghly river's primary course shifted towards the west, and Adi Ganga became an abandoned and sluggish watercourse.

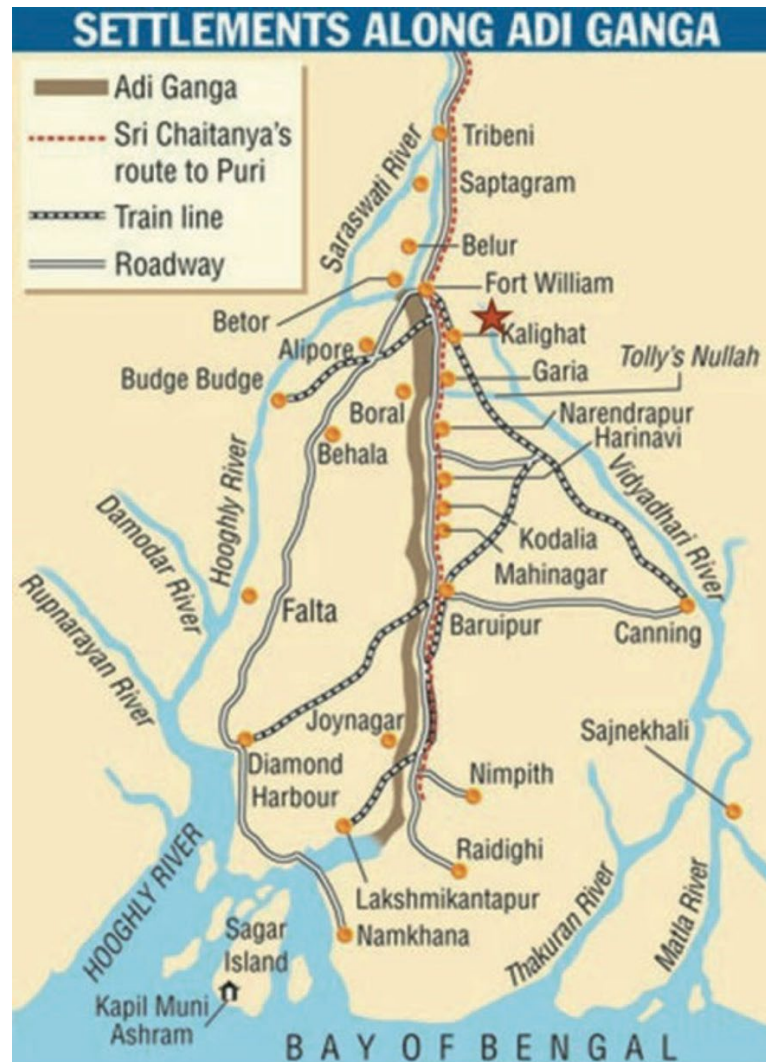


Figure 1: Map of the original stretch of Adi Ganga and the riverine network of Bengal (Das, 2009)

There are records of several surveys made by East India Company officers in the Gangetic riverine network to look for possibilities of easy and fast riverine trade, for example, in 1764-65 by Surveyor General James Rennell, in 1793 by Charles Reynolds, in 1801 and 1807 by Robert Hyde Colebrook, and in 1828 by Captain Thomas Prinsep (Chakraborty, 2025). By the 1800s, there was already a growing need for fast transport of goods from Calcutta to London, which necessitated goods and products from other parts of India to arrive at Calcutta port through riverine channels for eventual shipment to London port. Transport of goods and people between Calcutta in eastern India and Assam in northeastern India; both initially part of Bengal Presidency and later separate administrative divisions in colonial India, became possible through a long riverine route on country-made large boats, which was extremely time-taking (usually six to eight weeks) as well as risky for several issues,

especially during the monsoons (Mukherjee et al., 2023). This route was very long, winding, exhaustive, and even life-threatening for travelers.

Colonel William Tolly, an officer of the East India Company “volunteered to dig up the silted old course of the Ganga that flowed past Kalighat, known as Adi Ganga, with the cost being met from his own pockets” as the “dug-up channel would create a shortcut connecting Calcutta port through the Sundarbans with eastern Bengal and onwards to Assam cutting down travel time significantly” (Chakraborty T, 2025). Tolly’s proposed route would easily connect the Hooghly river in colonial Calcutta with the Sundarbans delta towards the southeastern part of the city (Sengupta, 2021). The excavation started in 1775, finished in 1776, and the channel became fully operational in 1777 (Mitra, 1952, p. 153). There were also toll taxes on boats travelling through the channel, which were collected by Tolly himself. The canal now stretched eight miles from Adi Ganga at Hastings towards Garia in the east and nine miles further down to Shamukpota to connect with the Bidyadhari river. This 17-mile excavated stretch of Adi Ganga came to be known as Tolly’s Nullah or Tolly’s Canal (Mukherjee, 2020). With this excavation, which was also known as “Outer Boat Tote or Lower Sunderbans Passage,” Tolly significantly reduced the distance of travel from 187 miles to 127 miles (Mitra, 1952, p. 155). It may be mentioned here that Tolly’s idea of excavating a *nullah* or canal was nothing new in his time, as there were already navigable artificial and natural channels in Bengal and Eastern Bengal of colonial India. The total length of such channels was estimated at “1,127 miles, of which about 47 miles, including Tolly’s Nullah, are artificial canals, and the remainder are natural channels, mainly tidal creeks in the Sundarbans,” which facilitated the transport of “about 1,000,000 tons per annum, valued at nearly four million sterling” in colonial times (Imperial Gazetteer, 1909, p. 242). After Colonel Tolly died in 1784, the East India Company took over the management of the river, which was later handed over to the Bengal Government under the Company and then to the Collector of 24 Parganas in 1804.



Figure 2: Adi Ganga or Tolly's Nullah, Kalighat in 1865 (Bourne & Shepherd, 1865)

Adi Ganga’s cultural significance in Bengal is evident from its reference in medieval literatures, for example, Bipradas Pipilai’s *Manasamangal Kavya*, Mukundaram Chakrabarti’s *Chandimangal Kavya*, Krishnaram Das’s *Raymangal Kavya*, Vrindavana Das’s *Chaitanya Bhagavata*, etc. (Bandyopadhyay S, 1996; Mukherjee et al., 2023). The mention of the sacred

river is also found in medieval literatures of Bengal and as well as folklores and folk arts in Bengal. Banerji and Bhattacharya contend:

The Patuas of Bengal, folk artisans excelling In the art of Patachitra or painting on a long scroll, have immortalized the heritage of the river by depicting various mythologies/stories of Hindu tradition such as Bipradas Pipilai's 15th century work *Manasamangal Kavya*, where the river was at the center of the story...The story then narrates the various protagonists' voyages across the *Adi Ganga* to provide context to the river's then socio-economic importance. (n.d.)

The prominence of *Adi Ganga* as an important route of transport in Bengal, as well as a religious route for salvation and spiritual quest of the Hindus, has always been greatly celebrated in literature, culture, and religion.



Figure 3: Bathing and boats on Adi Ganga in 1880 (Bourne & Shepherd, 1865)

Mythologically, the Ganga is a goddess of the river, who flew to the earth upon the prayers of Bhagirath to Lord Brahma to redeem the dead souls of the King Sagar (meaning sea) of Oudh. There are various Hindu temples, religious buildings, and crematoriums situated across the river throughout the country, also across *Adi Ganga* (Chakraborty & Ji, 2023). *Adi Ganga* has also been considered sacred, and on its bank lies one of India's most revered Kali Temples (Mukherjee, 2020), along with several other temples and crematoriums. Bhattacharya et al. elaborate on the mythological significance of the Ganga in India:

As per Hindu mythology, an ancient King Bhagirath had prayed to Goddess Ganga to purify the souls of his ancestors, who were cursed by Sage Kapil due to a misunderstanding. Goddess Ganga was considered the epitome of purity in Hinduism and thus it was suggested that only her touch could provide them salvation. It was Sagar's great grandson Bhagirath, who prayed to the Goddess and convinced her to descend upon the mortal realm in the form of a river. Interestingly, the goddess in her

worldly form lost her way and couldn't find the location of the ashes. However, to fulfil her promise to Bhagirath, she branched herself into multiple channels or distributaries, that met the sea, thus forming the Ganga delta. As one of various branches met the ashes hidden in a cave, the souls of Bhagirath's ancestors were freed of the curse, which today is popularly known as the Legend of Sagar. (2023, p. 4)

Therefore, the river is always reverentially called "Mother Ganga." It is considered very sacred and divine to the Hindus, and its water is sprinkled to make things holy, and people take bath in the river to redeem their earthly sins (Chakrabarty, 2020). There are numerous sacred festivals of the Hindus, which are centered around and located at the bank of this highly sacred river¹, where millions of devotees congregate from across the nation and beyond to pay their religious offerings.

The banks of Adi Ganga have also been inhabited by millions of refugees after the partition of India in 1947 and the Bangladesh Liberation War in 1971, and later migrant workers, slum dwellers, and marginalized communities of the city (Mandal, 2018; Bhattacharya et al., 2023). From a site of religious significance in pre-colonial times to commercial significance in colonial times to a place for cheap relocation for refugees and migrant workers, Adi Ganga has always been a spiritually, commercially, culturally, and socioeconomically significant site in Bengal. There are residents in these slums whose families have been residing there for centuries, and who can recall the narrative of the river's prosperous existence and gradual decline.

Adi Ganga Now

Despite the historical, mythological, and cultural significance of Adi Ganga over the centuries, the river has lost its utility and significance over time, especially in the process of modernization, urbanization, and infrastructural developments. With the advent of railways and advanced roadways, the riverine medium of transportation grew obsolete with time, and the river has been a victim of neglect, refuse, and abandonment—even to the level of a filthy and polluted sewer (Banerji and Bhattacharya, n.d.). A large section of the banks of the river has been converted into slums for Kolkata's working-class populations, who have further destroyed the ecology of the river by treating it as a space for dumping waste. The unhygienic and filthy living conditions have, in turn, endangered their health.

The river continued to be in use until the 1970s, after "its water quality gradually deteriorated until it turned into a sewer and got rapidly encroached, even fully filled up just beyond the boundary of the city's municipal corporation" (Basu, 2023). The river now receives untreated waste and sewage from 57 drains across its stretch in urban Kolkata. In a report presented to the Calcutta High Court in 1998, it was mentioned that "in the 15.5 km stretch from Hastings (the confluence with the Hooghly) to Garia (where Tolly's Nullah starts), there were 7,851 illegal structures with about 40,000 residents, 90 temples, 69 godowns (goods storage depots), 12 cattle sheds and others" (Basu, 2016b; Basu, 2023). The High Court then directed an immediate removal of all encroachments within a month. However, even after almost three decades, the encroachments are still there, if not risen in number.

¹ For example, the Kumbh Mela in Uttar Pradesh and the Ganga Sagar Mela in West Bengal.



Figure 4: Encroachments on Adi Ganga (Basu, 2016a)

The encroachments are still commonly found across the stretch, without any inhibition or administrative restrictions. Noted environmental reporter Jayanta Basu (2016) notes:

Concrete houses with foundations eating into the riverbanks have drains that release effluents directly into the river. In addition to that, in the Kolkata stretch alone, there are thousands of shanties on both banks, with makeshift latrines right on top of the water. All this is regularly interspersed by cattle sheds, small factories and even neighborhood recreation clubs along the banks. Discarded polythene packets flutter around Metro rail pillars and obscure the dark water wherever the water hyacinth does not do so. Nothing can obscure the sink.

Beyond the 15 km stretch to Garia in the south of Kolkata, the river has completely disappeared for several kilometers and suddenly reappears almost after 15 kilometers. The sluice gates and sewerage on Adi Ganga are mostly dysfunctional and out of maintenance. The overall sewage treatment system on the canal is largely neglected. However, the 22 pumping stations situated on the canal function to divert the sewage to different directions of disposal. Thus, Adi Ganga has become the primary carrier of drainage, sewage, and untreated wastes of Kolkata to the Hooghly river.



Figure 5: Metro pillars in Adi Ganga (Roy and Basu, 2020)

With the expansion of metro rail in South Kolkata from Tollygunge to Garia in 2009, 300 pillars, with a distance of 20 m in between, were directly planted on the bed of the river—causing the final shutdown of the river’s ecology. These sections are particularly clogged and most polluted “concrete encroachments, including houses, that pour effluents directly into water...with thousands of shanties on both banks, with makeshift latrines right on top of water” (Basu, 2023). In fact, within just four kilometers from Garia down the south, the river has lost its trail under concrete infrastructures and simply become non-existent and lost. In addition to the rail pillars, dumping of waste and unprocessed items in the river has further clogged the river channel. In its long route, there are slums, farms, markets, temples, and even cowsheds that freely dispose of wastes and untreated sewage in the river. As a result, frequent flooding is observed during the monsoon season. Lea Associates (2023) report that “the predominant flow of Tolly’s Nullah is from east to west, i.e., from Garia side to Hastings, however, during high tides, it was observed that the river water from Hooghly flows back towards Tolly nullah, resulting into overflow of nullah” (p. ii).

As the river has now become a site of major garbage and pollution, its water quality has been devastating, “with a load of faecal bacteria crossing 17 million in 100 milliliters of river water” and “dissolved oxygen...zero” (Yadav, 2023). The ecology of the river is now practically dead as the Biochemical Oxygen Demand, Chemical Oxygen Demand, and coliform bacteria in its water are in pathetic conditions for any life to survive in it (Ghosh et al., 2019; Bhattacharya et al., 2023; Bandyopadhyay H, 2024).



Figure 6: The dead ecology of Adi Ganga (Basu, 2016b)

The religious activities surrounding the Ganga, or in this case, Adi Ganga, have resulted in further polluting the river water through offerings of several kinds, cremation activities on the banks, bathing in the river water, idol immersion etc.—leaving the water polluted with what Chakrabarty terms as “toxic and hazardous sacred waste” (2020). Chakrabarty elaborates on the nature of toxic and hazardous sacred wastes that mix with the water of Adi Ganga because of ritualistic activities:

Idols or statues or images of God used in Hindu rituals are mostly made out of clay, plaster of paris, cement, plastic, thermocol, jute, paper wood, cloth, small iron rods, bamboo, plastic, cement, synthetic paints, varnishes, adhesive materials, cosmetics, ornaments, etc., and out of all these materials, thermocol, cement, plaster of paris, ornaments are non-biodegradable, while heavy metals like mercury, lead, arsenic, zinc, chromium and cadmium are often found in the paints used leading to increase in heavy metal pollution after the immersion which affects the food chain along with heavy metal pollution in the waterbodies. A traditional red-coloured powder called ‘sindoor’, worn by Hindu women as a sign of marriage and also used in religious rituals, contains lead and chromium, also gets mixed in the water during the various rituals. Incense sticks, camphor, ash, etc. are also released in the water during idol immersion. (2020, p. 205)

In addition to these, the river also gets polluted from the throwing of huge amounts of water bottles, plastic bags, and disposable plates into the water, which, although are not directly part of the ritual offerings to the river, are usually accompanied by the devotees for several purposes. Plastics, for example, are extraordinarily used by devotees for various purposes—for example, for carrying offerings, for disposing waste, for drinking water, etc., and after their use, are thrown into the river or the bank.

The present dilapidated condition of the river may seem contradictory to its religious significance. Even though people throw waste in the river, they interestingly consider the

water sacred (Chakrabarty S, 2020). Despite “the accumulation of filth and sewage, devotees continue to take their ritual dip in the polluted river as they believe she can purify their souls and cleanse them from their mortal sins...the river’s heritage and reverence surpass her contemporary challenges, and dirt is simply, ‘matter out of place’” (Banerji and Bhattacharya, n.d.). Although the priests blame the state for turning the sacred river into a sewer, they are confident about the sustained spiritual power of its water. On the other hand, although there have been initiatives to stop shoreline inhabitants from passing effluents in the river, citing its religious and cultural significance, they have failed due to “the lack of concrete sewage treatment measures and transparent river rejuvenation policies from the government” (Bhattacharya et al., 2023, p. 11).

Water Governance in India: The Case of Adi Ganga

Kolkata’s growth as a city was “rapid and unplanned” even during the colonial times, and without a “natural drainage route, waterlogging became a major urban problem” in colonial Calcutta in the eighteenth century (Neogi, 2017). Adi Ganga was perhaps the first river channel in Kolkata that was excavated for drainage and navigation. Alivardi Khan, the Nawab of Bengal from 1740 to 1756, was perhaps the first person to excavate Adi Ganga for a stretch of one kilometer (Mandal, 2018, p. 1347).

Although there were creeks and canals that would carry sewage to the Salt Lakes on the northern part of the city, the British officers of the Calcutta Government dredged some narrow sewers to carry the sewage to the Hooghly river. However, this initiative did not work as “the flow was against the natural eastward slope of the city, and it led to more stagnation of filth and rainwater during the monsoon” (Neogi, 2017). As per the suggestions of a civil engineer named William Clark in 1855, underground sewers were constructed, which connected with various canals across the city and carried the waste to the Hooghly river. Tolly’s Nullah or Adi Ganga was also a part of this project. There was a dedicated Government Drainage Committee which investigated Clark’s suggestions and implemented them by the 1890s, which continues to exist in Kolkata even today. Therefore, during the expansion of colonial Calcutta, Tolly Nullah/Adi Ganga was a part of the government schemes for clearing drainage and measuring tides of canals to deal with waterlogging issues. In fact, Adi Ganga was regularly maintained and dredged during the colonial times (Inglis, 1909). The situation worsened in the postcolonial times, and the river got neglected by the subsequent authorities.

One of the major state-sponsored initiatives after Independence was the Ganga Action Plan (GAP) worth 4.52 billion Indian rupees, which was launched by the then Prime Minister Rajeev Gandhi on 14 January 1986 with a clear objective of making the river free from all kinds of pollutions, hazards, and wastes. Besides minimizing the pollution of the river, the state-sponsored project also aimed at enhancing the water quality and preserving the religious, ecological, and social significance of the river. It primarily aimed at “interception, diversion, and treatment of sewage and industrial waste, alongside novel aims like biodiversity rehabilitation (e.g., soft-shelled turtles), afforestation, and methane recovery from sewage sludges” (“Ganga Action,” n.d.). The project was divided into two phases—whereas Phase I (1985-2000) addressed the management of the Ganga in major states such as Uttar Pradesh, Bihar, and West Bengal, Phase II (1993-2001) added four more states to the list. GAP thus became the first major initiative on the part of the Government to enhance the ecology of the river at a pan-Indian level. This project also brought into existence important action plans such as the National River Conservation Plan (NRCP) and regulatory bodies such as the National River Ganga Basin Authority (NRGBA), which was headed by the Prime Minister himself. The newly passed Environment Protection Act 1986, in the aftermath of the Bhopal

Gas Tragedy in 1984, also necessitated the adoption of environmental protection measures under the direct intervention of the Prime Minister of India.

The major drive to clean the water of the Ganga across the seven states and twenty-five major towns of India came with the objectives such as checking “pollution from non-point sources such as agricultural runoff, human defecation, and throwing half-burnt or unburnt bodies into the river,” conducting “research and envelopment for the conservation of biotic diversity of the Ganga River,” implementing “new technology for sewage treatment, such as Up-flow Anaerobic Sludge Blanket (UASB),” facilitating “sewage treatment through afforestation,” rehabilitating “soft-shelled turtles for pollution abatement,” and restoring the “biodiversity inside the river and along its course” (“Ganga Action,” n.d.). However, the Ganga Action Plan could not achieve all its objectives and eventually failed to clean the huge level of water pollution of the river across India. Lack of adequate funds, sewage treatment infrastructures, public involvement, industrial support, effective environmental governance, long-term sustainable vision, and political conflicts were held responsible for the failure of the project. More importantly, the top-down structure of the project and the lack of multidimensional inclusivity of the general public were the key drawbacks of this project.

The only reference available about the inclusion of Adi Ganga in GAP Phase II states that the Interception, Diversion, and Lifting Station at Tolly’s Nullah was in progress— “27 sewerage discharge points along the Tolly’s Nullah are being intercepted and diverted towards the main sewerage system, which undergo natural treatment as they flow towards the east Kolkata wetlands” (Bandyopadhyay S, 2002). It was later mentioned in a report published in *The Indian Express* that “the irrigation department had excavated Tolly’s Nullah in 2000 under the Ganga Action Plan” (Chakraborty K, 2009). However, the nature and extent of this excavation is not clearly mentioned anywhere, nor are there visible signs of such works and their aftermath in present times.

In 1997, the Calcutta Environment Management Strategy Action Plan prepared a detailed plan for rejuvenating Adi Ganga/Tolly Nullah by constructing lock gates to “control and regulate the flow and discharge of wastewater” (Mukherjee et al., 2023, p. 20). In 1998, the state submitted a detailed plan to rejuvenate the river to the National River Conservation Directorate, against which 295 million Indian rupees were sanctioned. However, the project got stalled against the mobilizations of the canal squatter residents for rehabilitation.

The Government of India declared the Ganga as the national river of India in 2008 and included the revival of the river under the National River Conservation Plan, which was an extension of the earlier adopted Ganga Action Plan of the Ministry of Environment, Forest, and Climate Change in 1985 (Yadav, 2023). In 2009, the government also formed the National Ganga River Basin Authority (NGRBA) to closely monitor the management of the river and to protect its ecosystem through dedicated policies and planning (Lea Associates, 2023). One of the biggest policies adopted by the Government of India to abate pollution and preserve the religious and ecological sanctity of the river was the National Mission for Clean Ganga (NMCG) or *Namami Ganga* in 2014, which was worth 200 billion Indian rupees. NGRBA proposed that the cleanliness drive of Adi Ganga or Tolly’s Nullah should be taken under NMCG, especially for its dilapidated condition in urban Kolkata for decades. A detailed Environmental and Social Assessment and Management Plan (ESAMP) has been accordingly prepared to implement the pollution abatement program in Adi Ganga, measure the relevant socioenvironmental impacts, and mitigate the consequent challenges (Lea Associates, 2023).

In the second National Ganga Council Meeting on 30 December 2022, Prime Minister of India, Narendra Modi, declared dedicated projects worth 6 billion Indian rupees to revive Adi Ganga, which was part of a larger project of Namami Ganga for maintaining the ecosystem of the Ganga river in the country. The project aimed to install modern infrastructure to provide clean water and treat the sewage and garbage that fall on Adi Ganga. The project aimed at removing all kinds of encroachments from the river to allow its natural flow. It was supposed to create a sewer network of 114 kilometers along the trail of Adi Ganga with a “sewage treatment plant with a capacity of 26 MLD” (Khanna, 2022). Kolkata Municipal Corporation undertook to complete the task of rejuvenating the river by constructing “three sewage treatment plants (STPs), seven sewage pumping stations and five mini-pumping stations... [renovating] existing 11 sewage pumping stations...[and] Penstock gates” within two and a half years i.e., 30 September 2025 (Bandyopadhyay K, 2023a and 2023b). By developing a new and modern sewer network with Sewage Treatment Plants, pumping, and mini-pumping stations to ensure timely desilting and lining of the river, this initiative also aimed at making the river navigable and improve its overall flood management during the high tide and monsoon seasons.

Although the rejuvenation of Adi Ganga was scheduled to start in 2023 and end in September 2025, the project has again been delayed, and January 2025 has been marked as the fresh start date of the work. The project is now worth 8 billion Indian rupees and funded by the World Bank as a grant to be clubbed with the Government of India’s larger Namami Ganga project (Ray, 2024). It has now been a part of a larger transnational project in South Asia to make river basins free from pollution, which received funding from the World Bank (Basu, 2023; Yadav, 2023).² This revised project aims at “increasing the holding capacity of Adi Ganga and a complete overhaul of the drainage system on either side...along the canal from Kidderpore (Doi Ghat) to Garia” (Ray, 2024). The project has also been designed to dredge the canal throughout 31 wards of the Kolkata Municipality and the Rajpur-Sonarpur Municipality and lay drainage pipes along a 50-kilometer stretch of the Adi Ganga. It has been planned to “construct three major sewerage treatment plants, and revamp and augment the capacity of 23 drainage pumping stations located along Adi Ganga” to treat sewage and untreated waste from adjacent households and infrastructures (Ray, 2024). As per a report dated 20 September 2024, the project has been given to EMS Ltd. to start the project in January 2025 and complete it by 2028, and look after the operation and maintenance of the work for the next 15 years (PTI, 2024).

On the one hand, the river has rapidly deteriorated over the last four decades, and on the other hand, the government has spent almost 2 billion Indian rupees to rejuvenate the river. However, environmental activist Subhas Datta calls it a “major scam...under the obvious patronage of political powers” (in Basu, 2016a). Biswajit Mukherjee of the West Bengal Pollution Control Board also called it a scam: “This is nothing but a scam. Not only in case of Adi Ganga but for the entire Ganga; under Ganga Action Plan projects, so much money has been spent but virtually no improvement of Ganga has taken place. Unfortunately, in our country, environmental scams and crimes are hardly pinpointed” (in Basu, 2016a). Depending on Datta’s petition filed against such encroachments, the National Green Tribunal passed strict directives to the Government of West Bengal to clean up all illegal encroachments and construct adequate sewage treatment plants by December 2020 (Roy and Basu, 2020).

² In the 8th International Water Conference, organized by ActionAid Bangladesh in Sylhet, Bangladesh, from 23 to 25 January 2023, this transnational project was adopted to combat river pollution in one key river of each country, where Adi Ganga was chosen from India. The other rivers selected for this project were the Buriganga in Bangladesh, the Puyang in China, the Bagmati in Nepal, and the Klang in Malaysia.

However, as none of these directives were implemented by the Government of West Bengal, Datta filed another petition in 2022, and the NGT again passed orders to immediately implement its earlier instructions (Bandyopadhyay K, 2022). In its latest order in 2023, the National Green Tribunal asked the Kolkata Municipal Corporation to implement the Namami Ganga project and complete the pollution abatement program by 30 September 2025, which has once again been neglected as per the progress at present.

Although the High Court in Calcutta ordered on 24 April 1998 that all the encroachments be removed immediately within a month, the encroachments are still there even today. Activist Subhas Datta reasons that such “unhindered large-scale continuous encroachment is only possible because of local mafias being supported by political powers” (in Basu, 2016a). It may be mentioned here that the state had already carried out eviction and demolition activities in 2001 and 2002 to destroy encroachments along a 2.5 km long stretch of Adi Ganga in Garia to make way for the Metro rail extension. Around four thousand hutments were demolished, and two thousand people were evicted by police on 22 September 2001 (TNN, 2001). There were two more eviction drives in 2002 when encroachments were cleared from around a 9 km long stretch of the canal, once again to facilitate the construction of the Metro railway.

Thus, as Jenia Mukherjee contends, canals in Calcutta have been excavated for two purposes— “trade-transportation and drainage-sewerage-sanitation” (Mukherjee, 2016, p. 1). Whereas the colonial rejuvenation projects aimed mostly at trade and commerce, the postcolonial projects have addressed the pollution and drainage channel issues. As trade and commerce contributed more immediate material benefits to the state, Adi Ganga was regularly maintained and dredged in the colonial times. As the main channel of the Hooghly river, Adi Ganga has always received a high amount of silt from the Hooghly river, especially during the high tides—contributing to the rise of its bed to even six to twelve feet (Mukherjee, 2016). Therefore, the river always required regular dredging and cleaning. However, over the last four decades, this highly silted river bed has combined with a heavy volume of effluents and wastes falling into the river randomly from encroachments across its banks. The sheer neglect in rejuvenating the ecology of Adi Ganga on the part of the state may be seen from the perspective of how nature has been historically commodified and exploited to satisfy the material needs of the state.

Conclusion

One of the key factors behind the failures of the policies to rejuvenate Adi Ganga lies in its top-down model of implementation and lack of grassroots involvement (Chakrabarty, 2020). The top-down model of environmental or water governance in Adi Ganga has failed to protect the ecology of the river and has turned into a sewer despite investments of billions of Indian rupees. Although the corruption, inertia, and lack of awareness on the part of the state agencies and their local political networks are hugely responsible for this, it surely calls for more grassroots and multi-dimensional involvement of the local public, political organizations, NGOs, as well as the state agencies. In South Asia, state policies are typically nonchalant about maintaining environmental and ecological resources and have often fallen into the Anthropocentric trap of cultural progress at the cost of exploitation of nature.

Multi-model water governance of Adi Ganga is not only important to protect its ecosystem, as well as its cultural, spiritual, and social significance, but also to establish India’s ability to protect its ecological heritage and foster effective environmental governance. The challenge of rejuvenating the river is manifold, especially for being an urban river, that

too without any direct navigational use. The issues of encroachments, pollution, infrastructure developments, and proper sewage management system have endangered the river's ecosystem and can only be protected through multi-actor models where local people, corporate agencies, and state powers contribute to its management and protection.

Despite the initiative of the Central Government, such as *Namami Ganga* and *Jal Shakti Abhiyan*, water/river governance in India is caught in the cobweb of state agencies, municipal corporations, political agendas, and corruption. Although the National Green Tribunal has been setting deadlines for the state agencies in Kolkata for almost a decade to finish rejuvenating the river, there has not been any progress so far. The latest deadline for rejuvenation was over on 30 September 2025, and a revised deadline has now been set for 2028. The rejuvenation work cannot be simply done by dredging it or building sewage treatment plants, but to sustain its ecosystem, there should be an adoption of a multi-actor integrated river corridor approach where ecological rejuvenation, urban planning, community participation, legal enforcement, and environmental sustainability should be combined. Therefore, it is not just about checking waste-dumping or controlling flood during the monsoons but about restoring a living system and its flora and fauna so that it may be brought to life and Kolkata's umbilical relationship with the Ganga can be revived.

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