



Ganga and Yamuna Rivers: Through the Lens of the National Green Tribunal

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ABSTRACT

Despite the country's extensive environmental jurisprudence and many historic rulings in which the courts have rescued worsening environmental situations, river (Ganga and Yamuna) water does not match the mandated minimum "bathing quality." Rivers like the Ganga and Yamuna, which flow through numerous states and towns, would be in a different situation. Without strict monitoring and enforcement of the measures, no action plan can work. Punishment of defaulters can serve as deterrence while also instilling fear in other non-compliant enterprises. In comparison to environmental legislation, the NGT Act allows for substantially harsher fines and penalties. River rejuvenation plans must be carefully monitored to ensure that they do not suffer the same fate. Making action plans will not improve river water quality unless they are implemented with sincerity and consistency, as well as continuous monitoring and severe enforcement.

INTRODUCTION

The Ganga (Ganges) basin covers more than 1 million square kilometers and is made up of parts of India (roughly 80% of the basin area), Nepal, China, and Bangladesh. The key channel is 2,525 kilometers long, with altitudes ranging from 8,848 meters in the high Himalayas to sea level in India and Bangladesh's coastal deltas. The basin covers a fifth of India's total land area and is one of the most populous regions on Earth. The River Yamuna is the Ganga's main tributary. It starts at a height of 6,387 meters on the southwestern slopes of the Banderpooch peaks in the uppermost area of the Lower Himalaya in Uttarkashi, Uttarakhand State, and travels approximately 1,376 kilometers through Uttarakhand, Himachal Pradesh, Delhi, Haryana, and Uttar Pradesh until finally meeting the Ganges at Triveni Sangam, Prayagraj.

The Ganga Action Plan began cleaning the river Ganga in 1985 (GAP) and in 1993, the Yamuna Action Plan (YAP) was created. Sewerage/drain interception and diversion, sewage treatment plants (STPs), low-cost sanitation/community toilet complexes, and electric/improved wood crematoria were among the projects undertaken. The Central Government formed the National Ganga River Basin Body (NGRBA) in 2009 as an empowered planning, funding, monitoring, and coordinating authority for the Ganga River to achieve successful pollution abatement and river conservation through

a comprehensive strategy. On the 13th of May, 2015, the Cabinet approved the Namami Gange policy as a holistic strategy to rejuvenate the Ganga and all of its tributaries by combining current ongoing activities and preparing a clear action plan for the future (Xun et al. 2017). There is no special scheme for the rejuvenation of the river Yamuna since the Namami Gange policy encompasses all of the Ganga's tributaries, including the Yamuna, which is one of them. Since the mid-1980s, river cleaning campaigns have failed to either recover or replace our waterways (Xun et al. 2017).

THE SCALES OF JUSTICE

The issue before the court in the famous case of M. C. Mehta Vs Union of India (AIR 1988 SC1037: (1987) 4 SCC463) in 1985 was that tanneries in Uttar Pradesh were discharging industrial effluents into the Ganga without treatment (M. C. Mehta vs. Union of India, n.d.). In light of this, the Supreme Court (SC) issued a slew of orders prohibiting tanneries from polluting the Ganga. The court also ordered that water and effluents be treated before being dumped into the Ganga (M.C. Mehta vs Union Of India & Ors on 12 January 1988, n.d.). The Supreme Court has ordered tanneries in and near the Ganga basin to install effluent treatment plants and emissions control systems. The Apex Court has set a six-month deadline for these directives to be implemented.

The Supreme Court invoked Article 48-A of the Constitution, which requires the state to protect and enhance the natural environment. Each citizen of India has a constitutional obligation under Article 51-A to conserve and conserve the natural environment (Hashim 2013). In this context, the court remembered the passage of the Water (Prevention and Control) Act 1974, the Environment (Protection) Act 1986, and the circumstances that led to the UN Conference on the Human Environment's proclamation in Stockholm in 1972 (Balaji 2008). The court received expert advice from a group of scientists on the construction of the sewage treatment system. To set up treatment plants, the annual turnover of the tanneries was taken into account. In *M.C. Mehta Vs Union of India*, the Supreme Court addressed the issue of riparian rights (AIR 1988, SC 1115). In another important decision of the High Court of Allahabad in *S. K. Garg Vs State of Uttar Pradesh* (AIR 1999, ALL 21), the important issue was about safe drinking water, as the Ganga and Yamuna rivers were polluted to the point that the water was unsafe to drink. The Supreme Court of India ordered the National Environmental Engineering Research Institute (NEERI) to prepare a study on the contamination caused by tanneries in the Eastern part of Calcutta, such as Tangra, Tiljala, Tapsia, and Pagla Danga, in *M.C. Mehta Vs Union of India* (1997(2) SCC 411) (*Eastern Book Company - Practical Lawyer*, n.d.). The study reported that there was a systemic lack of waste control and recycling and that none of the tanneries had a proper drainage system.

DEVOLUTION OF THE PRINCIPLES

Polluter Pays Principle

In the well-known case of *M. C. Mehta Vs Union of India* (AIR 1987 SC1086), the Supreme Court of India, when reviewing the extent of remedies available under Article 32 provided guidelines for human rights protection and broadening the horizons of Article 21 of the Constitution, held that the right to live implicitly includes the right to seek compensation for pollution victims (United Nations. Office of the High Commissioner for Human Rights 2013, Vilhena et al. 2013). The Polluter Pays Principle is the most critical of the three important concepts outlined in Section 20 of the NGT Act, 2010, namely, the "principles of sustainable growth, precautionary principle, and the polluter pays principle," under which the National Green Tribunal (NGT) determines the amount of punitive and monetary penalties and issues a reasoned warrant, verdict, or award (Dutta & Purohit 2015, Gill 2016, Rengarajan et al. 2018, The National Green Tribunal Act, 2010 2013).

Simply stated, it means that the harm caused by contamination should be mitigated by the person who caused the

damage and that the person who caused the damage should pay the whole cost (Polluter-Pays Principle n.d.). The core premise is to ensure that environmental costs are internalized while keeping the public interest and natural environment protection in mind, without risking long-term growth and future by imposing a fee on environmental breaches. In this sense, this admirable Principle must aid in the quantification and determination of criminal fines and costs, allowing for the calculation of compensation dependent on environmental breaches incurred by persons or businesses, as well as the establishment of maximum values for allowable discharges (Barrett et al. 2019, Beder 2013, Ebbesson 2009, Martin-Ortega et al. 2011). The idea of environmental justice is a noble philosophy that allows restitution for losses caused by emissions, and it is under this theory that the National Green Tribunal compensates for the destruction of the natural ecosystem (Choudhry et al. 2016, Gill 2016). The National Green Tribunal (NGT), in the case of *Samir Mehta vs Union of India and Others* (Before the National Green Tribunal, Principal Bench, New Delhi, O. A. No. 24 of 2011, Decided On: 23.08.2016), applied the Polluter Pays Principle and ordered the Respondent to compensate for the environmental harm.

This polluter pays principle takes its authority from the European Community environmental policy on waste management adopted in the year 1973 (Johnson & Corcelle 1995, Lister 1996, Lowe & Ward 2005, Mazzucco et al. 2020, Tanil 2021). The Court of Justice has unanimously decided that the owner of the property where waste is dumped is the owner of the waste as defined by the definition and therefore liable (Court of Justice, case C-365/97 *Commission v. Italy*, (1999) ECR I-7773). The member states, on the other hand, have the final say in deciding where these stations will be built (Kjellstrom et al. 2006). In the *H. Acid* case (1996 3 SCC 212 at 247), the Supreme Court established the polluter pays principle by invoking the principles of the European Community Treaty on Environment under Article 130 R(2), which allows the state to give mandatory directions under the provisions of the Environment Act. In the above case, the Supreme Court ordered the government to take appropriate action against polluting factories that generated extremely radioactive acidic waste (Lister 1996). As a result, the cost of penalties and fines was transferred from the government to the polluting companies. The polluter pays theory was upheld by the Supreme Court in this instance, stating that the polluter is responsible for the harm caused by environmental pollution (Polluter-Pays Principle n.d.).

In the case of *Manoj Mishra Vs Union of India and Others*, the NGT ordered the Civic and Municipal authorities of Delhi to levy property taxes on any home, which included

finer or compensation for the Yamuna River pollution abatement. In *Krishan Kant Singh vs National Ganga River Basin Authority* (2014), the NGT ordered the defaulting industrial unit to pay a fee of Rupees Five Crores to the concerned State Pollution Control Board based on the Polluter Pays Principle for performing remedial practices to ensure river safety in its judgment delivered on October 16, 2014. In another case, *R K Patel Vs Union of India*, the NGT ordered environmental compensation of Rupees Ten Lakhs to the aggrieved farmers in Vapi, Gujarat, due to hazardous waste contamination in a judgment issued on February 18, 2014.

The Doctrine of Public Trust

The philosophy of public trust can be traced back to Roman law, and it is founded on the righteous idea that all natural resources are public property, with ownership rights vesting in humanity as a whole. According to Roman law, no one owns these properties solely (*res nullus*), but the common citizens of the society have vested ownership rights (*res communis*). The English common law, on the other hand, stipulated that the Sovereign retained possession, though restricted (Wehmeier 2021). The Crown was considered to be holding resources eligible for this use of confidence for the public's benefit. The Supreme Court of India enunciated this noble concept in *M.C. Mehta Vs Kamal Nath and Others* ((1997) I SCC388), which has served as the foundation for Indian environmental law (Balaji 2008). In yet another case (*M. C. Mehta Vs Union of India* (Span Motel cases), 1997(1) SCC388), the Supreme Court addressed the doctrine of public confidence in greater depth, reinforcing the people's right to natural capital (Sivaramakrishnan 2011). The noble ideal enshrined in this theory was that individuals in a society as a whole have the right to possession, as opposed to the principle of private ownership. Natural resources, according to the philosophy, are public land, and so the general public can benefit (Adler 2021).

ANALYZING THE FUNDAMENTALS OF THE ISSUE

River Ganga is a symbol of Indian faith and tradition, and it is regarded as so pure that it has been dubbed the "elixir of life." For millions of devotees of Indian civilization, the holy water of the Ganga has the greatest religious significance (Victor 2017). The Ganga is the epitome of the Indian subcontinent's long-standing traditions, history, and civilizational ideals (Kumar 2017). The river Ganga has aided the development of Indian society, and it is properly regarded as the emblem of Indian culture, tradition, and faith, as well as its importance (Ahmed & Sinha 2014). For centuries, Ganga, the founder of righteousness and holiness, has become a constant source of purification of the inner as well as inner selves of humankind

(Sanghi 2013). Despite its physical, natural, cultural, and religious importance, the Ganga River ranks tenth among the world's most polluted rivers (Trivedi & Trivedi 2014). The Ganga has a total length of 2,525 kilometers and is significant in that it has influenced India's culture, personality, religious values, and economy, as well as being the world's fourth-largest river basin (Meena 2020). The Uttarakhand High Court, in a well-known judgment (Mohd. Salim v. State of Uttarakhand & Others, Writ Petition (PIL) No. 126 of 2014, decided on March 20, 2017), highlighted the importance of the Holy Rivers Ganga and Yamuna, holding that the rivers Ganges and Yamuna are worshipped by Hindus and are very sacred and revered.

The proliferation of pharmaceutical and other industries, as well as other practices such as dumping waste and other hazardous substances directly into river systems in urban areas, have harmed the ecosystem, climate, livelihood, and lifestyle of millions of people in many states where these rivers flow (Trivedi & Trivedi 2014). Rivers have long been important to human development around the world, and the Ganga river basin has made a significant contribution to the growth of the human population and, as a result, to rapid urbanization (Fig. 1). As a result, the towns and cities that the Ganges flows through, as well as thousands of villages, have become the primary source of pollutants because they spill their untreated or maltreated waste products, such as sewage and human and animal carcasses, totaling more than 6 billion liters, directly into the Ganges (Maji & Chaudhary 2019). This is compounded by the reality that many factory setups, mills, and tanneries drain untreated industrial sewage and wastewater directly into the Ganges, amounting to 260 million liters every day. In addition, according to a report by the Ministry of Water Resources, River Development, and Ganga Rejuvenation, 6 million tonnes of chemical fertilizers and 9000 tonnes of pesticides used in agricultural fields along the Ganga basin were dumped directly into the Ganga garbha (Dutta et al. 2020). As a result, the Central Pollution Control Board (CPCB) has come to the disturbing conclusion that the Ganga at Kanpur, Allahabad, and Varanasi has become one of the world's most polluted rivers. Thousands of people bathe in the Ganga River every day as part of their religious rituals. The National Green Tribunal (NGT) has issued timely health alerts about the dangers of bathing in the polluted Ganga and has directed that the health hazards be displayed along the Ganga's banks between Haridwar and Unnao (Ganga water is injurious to health! NGT says Holy river should carry warnings like cigarettes, 2018, 28).

RIVER POLLUTION AND ACTION PLANS

The term pollutant is defined by the Environment (Protec-

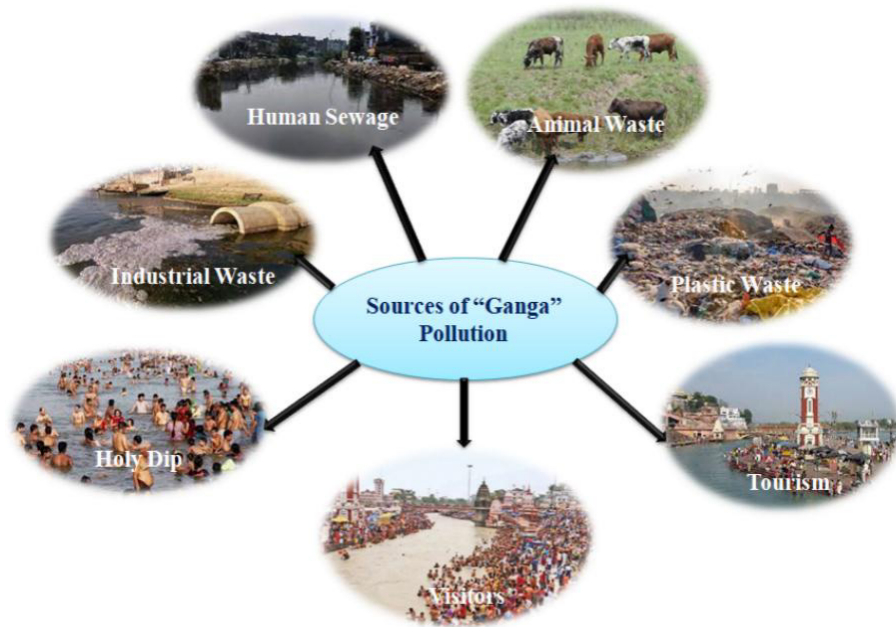


Fig. 1: Sources of 'The Ganga' River Pollution.

tion) Act of 1986 as any harmful material contained in the environment that has the potential to harm the environment or ecosystem. The amount of waste caused by anthropogenic contaminants that enter the Ganga daily is unfathomable. However, the Central Pollution Control Board, which has been assigned the duty to report the quality of rivers since 1980, has provided estimations in a report in the year 2017, and as per the report, the situation is alarming. According to a more recent study titled "Biological Water Quality Assessment of the River Ganga (2017-18)" released in June 2018, water quality sampling was performed in the states of Uttarakhand, Uttar Pradesh, Bihar, and West Bengal, and the situation was found to be more troubling than ever. This report was later declassified by the CPCB as a result of a Supreme Court judgment mandating that all CPCB findings on the state of health, climate, and emissions be made public. The report concluded that different factors such as Biochemical Oxygen Demand (BOD), Chemical Oxygen Demand (COD), Dissolved Oxygen (DO), temperature, pH, total coliforms, fecal coliforms, and others influence the quality of water in a given region.

The 1986 Environment (Protection) Act regulates the regulation, mitigation, and abatement of water contamination. Section 17 of the Act also states that the government offices, by the Head of the Agency, are solely responsible for any breach of the legislation by the department. The Central Pollution Control Board recommended the establishment of the

Central Ganga Authority in 1981-1982 in its comprehensive report on Ganga pollution, and the Ganga Action Plan (GAP) was launched in 1985 with the primary goal of cleaning the Ganga (Xun et al. 2017). In the year 1985, the Government of India under the aegis of the Ministry of Environment and Forest (MoEF) as it then was called, launched Ganga Action Plan (GAP) Phase-1 to address and abate the increasing pollution of the river Ganga and the initiatives were taken to clean the Ganga. This proposal was later expanded to cover all other waterways, and the National River Conservation Plan (NRCP) was officially initiated in December 1996 to determine the extent of the contamination. As early as 1983, the urgency of the massive issue of river contamination was addressed in depth by U. N. Mahida.

The influx of vast amounts of untreated domestic and industrial wastes is the primary source of Ganga contamination. Since the factories in the area still lack adequate effluent and sewage treatment units, the people living along the Ganga basin, which number over 300 million, are the most affected (Sanghi 2013, Trivedi & Trivedi 2014, Xun et al. 2017). According to a 2015 World Bank study, domestic waste accounts for nearly 80% of the overall pollution in the Ganga, with just 15% coming from untreated agricultural waste and effluents. Despite successive governments investing thousands of crores of rupees in it, the Ganga Action Plan failed to meet its target, despite the government's lofty statements. And, as we can see today, the holy Ganga is

always filthy, as it has always been (Sinha & Prasad 2020). The River Boards Act was passed in 1956, and the River Boards were formed to provide advice to the government on river pollution management. The law has no impact since the Board's function in terms of water quality is purely advisory.

The Factories Act of 1948 (Great Britain 1948) contains provisions for the treatment of waters and effluents by factories. Sec. 12 of the Act is significant in that it requires industries to dispose of properly handled hazardous waste and effluents efficiently. It also gives the state government the authority to make any laws or arrangements necessary to reduce emissions. Non-observance or non-compliance with the requirements of Sec.12 and other laws made under the Act are subject to a general punishment under Sec. 92 of the Act. Untreated industrial effluents can contain extremely toxic chemical compounds. Toxic wastes pollute rivers as untreated sewage water is released into them (Great Britain 1948, MONAPPA2012, Panda 2012). Food manufacturing and the food goods industries contribute a significant amount of toxins. It is a reality that many large and medium-sized food manufacturing businesses lack adequate waste and effluent treatment facilities on their premises.

GANGA RIVER POLLUTION THROUGH THE LENS OF NGT ORDERS

The National Green Tribunal (M.C. Mehta vs. Union of India, ORIGINAL APPLICATION NO. 200 OF 2014 (C.WRIT PETITION No.3727/1985) (M.A. No. 594/2017 &598/2017, Decided on 13.07.2017) has gone into great depth about the shortcomings in the implementation of GAP-I and GAP-II, citing supporting reports and evidence. It went on to say that it needs to find a path forward that is free of certain flaws and capable of achieving the goal of cleaning and rejuvenating the Ganga. The Indian Institute of Technology (IIT) Consortium, other technical experts, the stakeholders' consultative mechanism, the Tribunal's Principal Committee, and finally the Tribunal itself all agree that ad-hocism was a major factor in making GAP I and GAP II inefficient and unsuccessful.

The Ganga River Basin Management Plan (GRBMP) prepared by the seven IIT consortiums for National Ganga River Basin Authority (NGRBA) proposed a separate statute and constitutional mechanisms and further recommended the establishment of the National River Ganga Basin Management Commission (NRGBMC). It's pointless to handle either the hotspots or one or two parts of a city along the riverbank while allowing all the drains carrying mixed waste to flow into the river. Even where a Sewage Treatment Plant/ Common Effluent Treatment Plant (STP/CETP) is built to handle effluents or sewage, it connects to other larger drains

downstream, resulting in heavily contaminated treated water (Bharati et al., 2016; Smakhtin, 2006; Tchobanoglous et al., 1991). There must be a systemic solution that will assist in cleaning the whole section on a watershed basis rather than the specific location, which may be a highly polluting spot, but addressing it alone without taking any necessary measures for pollution prevention and control will be of little concern and would yield ineffective results (Agarwal & Agarwal, 2021; Singh et al., 2019).

The Tribunal would take a systematic approach rather than one that cannot withstand review in terms of technical, science, and application. The lessons learned in the past must be shared by all parties so that they do not make the same errors and waste public funds indiscriminately, avoiding waste of public funds on the one hand and increased emissions on the other. The tribunal also went into great depth on end-of-pipe disposal. The need of the hour is to disinfect the river as quickly as possible, and for that, care of the drains that enter the river and hold mixed effluents should take precedence (Agarwal & Agarwal, 2021; Singh et al., 2019). This is also consistent with the river basin approach, which treats the whole river basin, including tributaries and storm drains that enter the river, as a single organic body. The Tribunal had extensive discussions with all stakeholders, and the only sensible decision that emerged and is most reasonable is that drain-wise treatment should be used instead of city cleaning, particularly where cities include a variety of planned, unplanned, haphazard construction, and slum areas.

However, the river has stayed polluted, increasing emission levels such as heavy metals like arsenic, hexavalent chromium, fluoride, iron, and other sediment contaminants (Pandey et al. 2015). So, bearing in mind the magnitude of the issue and to expedite the cleaning operation, and measuring the urgency and significance of the task of cleaning Ganga, the National Democratic Alliance, which has been in power in the government since mid-May 2014, has launched a new program popularly known as the Namami Gange Programme (NGP). As a result, the government has urged the Ganga's five basin states to work together to revitalize the river. The project was expected to cost more than Rs. 20,000 crores, with a task deadline of 2019, which has now been pushed back to 2020. There are logistical issues with cleaning the Ganga, including a lack of proper coordination inside and across the different government ministries. On the 10th/18th December 2015, the court issued a comprehensive order in the case of 'Indian Council for Enviro Legal Action Vs National Ganga River Basin Authority (Original Application No. 10 of 2015), in which the demarcation of the floodplain, restricted consumer, and restriction of 100 meters from the center of the river was discussed and instructions were given (Gill 2016).

The National Green Tribunal in *Social Action for Forest and Environment (Safe) Vs Union of India & Ors.* (Original Application No. 87 of 2015, Decided on 02.03.2017), while considering different issues, including whether there is an immediate need for the full shutdown of camping activities in the River Ganga basin in the Rishikesh district (Original Application No. 87 of 2015, Decided on 02.03.2017). Since they were causing irreversible air and water contamination in the River Ganga and the surrounding regions, the court ruled that all operations would be carried out in compliance with the rules. In a 2017 order reprimanding the government, its functionaries, and other stakeholders, the National Green Tribunal stated emphatically that "... not a single drop of river Ganges has been cleaned thus far, and just wasting public resources." As a result, it is abundantly clear that a stringent, open, and accountable framework within the system is needed for the cleaning of the Ganga, as well as proper management of funds appropriately and productively.

YAMUNA RIVER POLLUTION THROUGH THE LENS OF NGT ORDERS

River Yamuna flows south and east through the states of Uttarakhand, Haryana, Delhi (UT), and Uttar Pradesh, with major cities/towns along the known polluted stretch being Gautam Budh Nagar, Bulandshahar, Aligarh, Vrindavan, Mathura, Agra, Firozabad, Etawah, and Kalpi. Hamirpur and Prayagraj contribute to the contamination of the Yamuna River. On the banks of this Priority-1-polluted stretch of the Yamuna, there are 121 villages. The catchment area's waste and effluent are discharged into the River Yamuna by 35 drains, 18 of which are mixed and 17 of which are solely domestic. Sugar, Pulp & Paper, Distillery, Textile, Slaughterhouses, and other factories are very polluting (Rout 2017).

In Mathura, there is a textile industrial cluster with 30 Saari Washing & Printing Units at Site-A, UPSIDC, Industrial Area, Mathura. Around 20 are currently in operation, whereas the other 10 remain closed for various reasons. The installed capacity of CETP Mathura is 6.5 MLD, but due to the self-closure of industries, only 3.0 MLD is currently being used. The treated effluent is discharged in the urban drain (Ambakhar Drain), which eventually contributes to the river Yamuna and has been partly tapped and diverted to STP Trans-Yamuna. The objective of the Action Plans is to rejuvenate the quality of this priority -1 polluted stretch of River Yamuna to be fit for at least bathing purposes within 06 months from the date of action plan gets approved, as directed by Hon'ble National Green Tribunal vide its order dated 20th September 2018 passed in the original Application No 673/2018 in the matter of News Item Published In 'The

Hindu' Authored By Shri Jacob Koshy titled "More river stretches are now critically polluted".

Both water-polluting factories will be continuously regulated by three agencies: the UPPCB, the District Ganga Committee/Zila Paryavaran Samiti, and reputable third-party institutions. The District Ganga Committee/Zila Paryavaran Samiti will track GPIs periodically, and other industries will be tracked at random. CPCB and NMCG will both entrust Third Party Institutions with the burden of robust oversight. In addition, District Ganga Committees/Zila Paryavaran Samitis, with adequate Magisterial and Police assistance, will conduct a campaign to identify and close illicit factories existing in non-conforming areas. The National Green Tribunal directed that a Control Room be built in Agra with proper facilities and human resources for monitoring and coordinated reporting of numerous pollution sources.

The control room will be managed by the UP Pollution Control Board with the assistance of District Ganga Committees/Zila Paryavaran Samitis and will be supervised by the Commissioner of Agra. District Ganga Committees / Zila Paryavaran Samitis can hire JRFs/Monitoring Assistants on a contractual basis for monitoring purposes, with financial assistance from the District Ganga Committees/Zila Paryavaran Samitis. Educational/Technical Institutions and Colleges will also be known for their assistance in pollution source control and remediation. The Pollution Control Board will also develop the capacity for tracking pollution sources among students at such established institutions and colleges. The proposed surveillance would be carried out from the Control Room using a Web Portal to which field monitoring data would be submitted. The UP Pollution Control Board was suggested to create a Web Portal with access shared with District Ganga Committees/Zila Paryavaran Samitis for easier access to the portal.

COVID-19, THE LOCKDOWN, AND ITS EFFECTS ON THE RIVERS

The spread of the novel coronavirus known as COVID-19 has resulted in unparalleled degrees of adversity. Around the same time, it is a cause for celebration because it has resulted in a reduction in air and water emissions. The self-cleaning property of the river improved during the nationwide lockdown period (Vinaya & Karthik 2021). Rivers have never been cleaner or clearer than they are right now. Rivers have a normal ability to clean themselves up by consuming massive quantities of oxygen, but the amount of garbage pumped into them regularly, whether commercial or otherwise, obstructs this mechanism, and they become unclean in the long run. According to a study by the Asian Development Research Institute (ADRI), approximately 70% of surface

water supplies were severely degraded beyond repair, with a total of 40 million liters of uncontrolled municipal pollution and wastewater entering rivers and other water bodies every day, just 37% of it is properly handled. The lockdown took just weeks to accomplish this feat of a cleaner Ganga and Yamuna, which governments have failed to achieve despite investing thousands of crores over decades. It is clear that the rivers have finally been able to breathe after such a long time of national shutdown, and the Ganga and Yamuna rivers have been healthier than ever before, with the water quality of these rivers exceeding expectations. This change can be credited to the nationwide lockdown imposed by Covid-19, as a result of which events such as tourism, fairs, swimming, and cloth washing near the ghats ceased, resulting in a poisonous load being removed from the river and the full cessation of untreated industrial waste discharge has improved the Ganga's water quality.

CONCLUSION

Environmental conservation in India has largely failed, especially when it comes to rivers and urban water bodies. The cleaning of the Ganga and Yamuna rivers is a monumental challenge that necessitates top-down and bottom-up policies that include all stakeholders and leave no stone unturned. Cities discharge millions of gallons of untreated or partly treated wastewater into urban lakes and waterways to complete the hydrological cycle. As a result, India's waterways are heavily polluted and often eroded into foul-smelling streams, posing considerable ecological and health risks (Rout 2017). Using a bottom-up strategy will mean using a common collection of parameters to evaluate all stakeholders' success across the networks to identify compliance challenges that could emerge in the future rather than judging how they occurred previously. It would also make it easier to meet regulatory goals cost-effectively.

Many analysts have raised concerns about violations of environmental laws and regulations, especially about shortcomings and inconsistencies in environmental clearances provided by the Ministry of Environment and Forests (MoEF) and emission control systems (Panigrahi et al. 2012, Karpouzoglou 2011). Indian state authorities, especially the Ministry of Environment and Forests (MOEF) and the Central Pollution Control Board (CPCB), have publicly admitted that institutional frameworks and regulatory enforcement to protect the environment are inadequate (CPCB 2006, 2010, MoEF 2009). Although large-scale riverfront developments are encouraged across India as ecological restoration projects, the construction of iconic and aesthetic riverfronts takes precedence, and river restoration projects are largely unsuccessful in terms of ecological restoration (Desai 2012, Follmann 2015).

The accountable ministry would work to improve the phase-by-phase execution of these policies. There is also a pressing need to investigate why the government of India's numerous policies over the decades have failed to yield the desired results. Thousands of crores of rupees have been spent on various schemes to clean the Ganga and Yamuna rivers, but none of them have met their objectives. Furthermore, in addition to the continuing plans to clean the Ganga and Yamuna, these can be exacerbated with small-scale, phase and location-specific, low-cost, and long-term solutions. The Central Government, State Governments, and their respective agencies, as well as the Judiciary, must develop an integrated Ganga and Yamuna River management strategy (Tortajada 2014). This will necessitate a thorough knowledge of the Ganga and Yamuna basin's geography, history, ecology, policy, geology, anthropology, society, culture, and economy (Helmer & Hespanhol 1997).

The government's efforts would eventually be a civil-society initiative in which people's constructive participation is paramount. At various levels, such as policymaking, execution, supervision, and management of an integrated program to clean the Ganga and Yamuna, there should be active cooperation with and among different stakeholders such as politicians, scientists, civil society, and religious leaders. Climate change effects on the Ganga and Yamuna Rivers, as well as the environment around them, should be assessed. In brief, a holistic approach to urban river ecological rejuvenation is a pressing problem for India's long-term urban growth and environmental governance (Uberoi 2004). Environmental advocacy has stressed the natural integrity of waterways and the intimate river-city interactions, even though state actors do not see it that way.

REFERENCES

- Adler, R. 2021. Natural resources and natural law part ii: the public trust doctrine. *Michigan J. Environ. Adm. Law.*, 10(1): 225. <https://doi.org/10.36640/mjeal.10.1.natural>.
- Agarwal, Y. and Agarwal, G.K. 2021. *Water an element of life: Price sensitivity and consumption by marginalized*. Bloomsbury Publishing, London, UK.
- Ahmed, B. and Sinha, RK. 2014. *Rivers for life: Proceedings of the International Symposium on River Biodiversity: Ganges-Brahmaputra-Meghna River System*. IUCN, Gland, Switzerland.
- Balaji, V. 2008. *Environment and Human Rights Law: An Indian Perspective*. In: Eberhard, C. (ed.), *Law, Land Use and the Environment: Afro-Indian Dialogues*. Institut français de Pondichéry, Pudducherry, India, pp. 527-549. <https://doi.org/10.4000/books.ifp.3954>
- Barrett, A., Lawlor, J. and Scott, S. 2019. *The Fiscal System and the Polluter Pays Principle: A Case Study of Ireland*. Routledge, London.
- Beder, S. 2013. *Environmental Principles and Policies: An Interdisciplinary Introduction*. Routledge, London.
- Bharati, L., Sharma, B.R. and Smakhtin, V. 2016. *The Ganges River Basin: Status and Challenges in Water, Environment, and Livelihoods*. Routledge, London.

- Choudhry, S., Khosla, M. and Mehta, P.B. 2016. *The Oxford Handbook of the Indian Constitution*. Oxford University Press, Oxford.
- Dutta, R. and Purohit, S. 2015. *Commentary on the National Green Tribunal Act, 2010*.
- Dutta, V., Dubey, D. and Kumar, S. 2020. Cleaning the river Ganga: Impact of lockdown on water quality and future implications on river rejuvenation strategies. *Sci. Total Environ.*, 743: 140756. <https://doi.org/10.1016/j.scitotenv.2020.140756>
- Eastern Book Company - Practical Lawyer. (n.d.). Retrieved July 9, 2021, from <https://www.ebc-india.com/lawyer/articles/718.htm>
- Ebbesson, J. 2009. *Environmental Law and Justice in Context*. Cambridge University Press, MA.
- Gill, G.N. 2016. *Environmental Justice in India: The National Green Tribunal*. Taylor & Francis, NJ.
- Great Britain. 1948. *The Factories Act, 1948*. Universal Law Publishing, Delhi, India.
- Hashim, N.B. 2013. Constitutional recognition of the right to a healthy environment: the way forward. *Proced. Soc. Behav. Sci.*, 105: 204-210. <https://doi.org/10.1016/j.sbspro.2013.11.021>.
- Helmer, R. and Hespanhol, I. 1997. *Water Pollution Control: A Guide to the Use of Water Quality Management Principles*. CRC Press, Boca Raton, Florida.
- Johnson, S. and Corcelle, G. 1995. *The Environmental Policy of the European Communities*. Springer, Cham.
- Kjellstrom, T., Lodh, M., McMichael, T., Ranmuthugala, G., Shrestha, R. and Kingsland, S. 2006. Air and Water Pollution: Burden and Strategies for Control. In Jamison, D.T., Breman, J.G., Measham, A.R., Alleyne, G., Claeson, M., Evans, D.B., Jha, P., Mills, A. and Musgrove, P. (eds), *Disease Control Priorities in Developing Countries*, 2nd edition, Oxford University Press, New York, pp.825-826
- Kumar, D. 2017. River Ganges: Historical, cultural, and socioeconomic attributes. *Aqua. Eco. Health Mgmt.*, 20(1-2): 8-20. <https://doi.org/10.1080/14634988.2017.1304129>
- Victor, M. 2017. *River of Life, River of Death: The Ganges and India's Future*. Oxford University Press., Oxford, p. 71.
- Lister, C. 1996. *European Union Environmental Law: A Guide for Industry*. John Wiley & Sons Incorporated, NJ.
- Lowe, P. and Ward, S. 2005. *British Environmental Policy and Europe: Politics and Policy in Transition*. Routledge, London.
- Maji, K.J. and Chaudhary, R. 2019. Principal component analysis for water quality assessment of the Ganga river in Uttar Pradesh, India. *Water Resour.*, 46(5): 789-806. <https://doi.org/10.1134/s0097807819050129>
- Martin-Ortega, J., Brouwer, R. and Aiking, H. 2011. Application of a value-based equivalency method to assess environmental damage compensation under the European environmental liability directive. *J. Environ. Manag.*, 92(6): 1461-1470.
- Mazzucco, W., Costantino, C., Restivo, V., Alba, D., Marotta, C., Tavormina, E., Cernigliaro, A., Macaluso, M., Cusimano, R., Grammauta, R., Tramuto, F., Scondotto, S. and Vitale, F. 2020. The management of health hazards related to municipal solid waste on fire in Europe: an environmental justice issue? *Int. J. Environ. Res. Pub. Health*, 17(18): 617. <https://doi.org/10.3390/ijerph17186617>
- M. C. Mehta vs. Union of India. (n.d.). Retrieved July 9, 2021, from <https://www.cla.auburn.edu/envirolitigators/litigation/ganga-pollution-case-mehta/m-c-mehta-vs-union-of-india/>
- M.C. Mehta vs Union Of India & Ors on 12 January 1988. (n.d.). Retrieved July 9, 2021, from <https://indiankanon.org/doc/59060/>
- Meena, R.P. 2020. *Indian And World Geography: Current Affairs Yearbook*. IAS Insights, Delhi, India
- Monappa, A. 2012. *Industrial Relations and Labour Laws*. Tata McGraw-Hill Education, NY.
- Panda, B. 2012. *Industrial Safety, Health Environment, and Security*. University Science Press (USP), Sausalito, CA, United States.
- Polluter-Pays Principle. (n.d.). Retrieved July 8, 2021, from <https://www.sciencedirect.com/topics/earth-and-planetary-sciences/polluter-pays-principle>
- Rengarajan, S., Palaniyappan, D., Ramachandran, P. and Ramachandran, R. 2018. National green tribunal of India-an observation from environmental judgments. *Environ. Sci. Pollut. Res. Int.*, 25(12): 11313-11318.
- Rout, C. 2017. Assessment of water quality: A case study of river Yamuna. *Int. J. Earth Sci. Eng.*, 10(2): 398-403. <https://doi.org/10.21276/ijee.2017.10.0239>
- Sanghi, R. 2013. *Our National River Ganga: Lifeline of Millions*. Springer Science & Business Media, NY. <https://doi.org/10.1007/978-3-319-00530-0>.
- Singh, A., Saha, D. and Tyagi, A. C. 2019. *Water Governance: Challenges and Prospects*. Springer.
- Sinha, R. K. and Prasad, K. 2020. Management of Water Quality and Biodiversity of the River Ganga. In: Gunawardena, E.R.N., Gopal, B. and Kotamaga, H. (eds.) *Ecosystems and Integrated Water Resources Management in South Asia* (pp. 104-132). <https://doi.org/10.4324/9781003157847-5>
- Sivaramakrishnan, K. 2011. Environment, law, and democracy in India. *J. Asian St.*, 70(4): 905-928. <https://doi.org/10.1017/S0021911811001719>
- Smakhtin, V.Y. and Anputhas, M. 2006. *An Assessment of Environmental Flow Requirements of Indian River Basins*. International Water Management Institute (IWMI), Delhi, India.
- Tanil, G. 2021. *Environmental Sustainability: Water and Waste Management Policy in the European Union and the Czech Republic*. Rowman & Littlefield, Lanham, Maryland, US.
- Vinaya, T. and Karthik K.V.M. 2021. COVID-19 Pandemic: Its Origin, Implications, and Effect of Lockdown on Environment. In Pasupuleti, D.S.R.M. and Nakkella, D.A.K (eds.), *Health, Hygiene, Sanitation and Environment at Pandemic Times*, Immortal Publication, Vijaywada, AP, India, pp. 187-201.
- The National Green Tribunal Act, 2010. 2013. Universal Law Publishing, Delhi, India.
- Tortajada, C. (ed.). 2014. *Water Quality Policy and Management in Asia*. Routledge, London.
- Trivedi, R.C. and Trivedi, R.C. 2014. Water Quality Challenges in Ganga Basin, India: In *Our National River Ganga* (pp. 189-210). https://doi.org/10.1007/978-3-319-00530-0_7
- Uberoi, N.K. 2004. *Environmental Management*. Excel Books India, Kerala, India.
- United Nations. Office of the High Commissioner for Human Rights. 2013. *Realizing the Right to Development: Essays in Commemoration of 25 Years of the United Nations Declaration on the Right to Development*. United Nations Publications, New York.
- Vilhena, O., Baxi, U. and Viljoen, F. (eds.) 2013. *Transformative Constitutionalism: Comparing the Apex Courts of Brazil, India and South Africa*. Pretoria University Law Press (PULP), Pretoria, SA.
- Wehmeier, N. (ed). 2021. *Oxford Advanced Learner's Dictionary*. Oxford University Press, Oxford.
- Xun, W., James, W.R. and Oraorn, P. 2017. *Ganga Rejuvenation: Governance Challenges and Policy Options*. World Scientific Publishers, Singapore. <https://doi.org/10.1142/9715>