

Forum: Environmental Committee (EC)

Issue: Reducing the effects of industrial pollution in the Ganges River basin in India

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TOPIC INTRODUCTION

Water is found and needed everywhere, as it covers around 70% of the Earth's surface¹ and is essential for socio-economic development, energy and food production as well as for the environment, human and animal survival. Yet, it can be defined and looked at differently by each individual. In households, schools and work environments, water mostly means health, hygiene, nutrition and hydration. However, in religious and spiritual places, its significance goes deeper, as it contains cultural meaning, myths and legends as well as connects people in a way that other things don't.

Unfortunately, industries such as fashion, mining, and construction continue to pollute rivers around the world, which as a result harm the communities and ecosystems that depend on them. They also affect the water's quality, by discharging toxic effluents, releasing heavy metals and altering water temperatures, causing nutrient pollution. Nutrient pollution is the excessive presence of chemical elements, specifically nitrogen and phosphorus. Toxins and depleted dissolved oxygen are released, causing rapid algae blooms, which can threaten human health, animals and aquatic ecosystems.² Thermal pollution arises when industrial activities artificially alter the ambient temperature of a water body, consequently impacting heavily ecosystems.³ Combined, they increase the water's toxicity and destroy aquatic life.

The Ganges River is seen as a sacred river by the Hindu population and is home to 140 species of fish and 90 species of amphibians⁴. It flows approximately 2,500 km from the

¹*The Importance of Water: Sustaining Life and Preserving Our Planet* | Deped Division of San Jose City, region3.deped.gov.ph/sanjose/the-importance-of-water-sustaining-life-and-preserving-our-planet/ Accessed 26 June 2026.

² EPA, Environmental Protection Agency, www.epa.gov/nutrientpollution Accessed 29 July 2026.

³ "Thermal Pollution: Science: Research Starters: EBSCO Research." EBSCO, www.ebsco.com/research-starters/science/thermal-pollution Accessed 29 July 2026.

⁴ *What Is Missing?* | Ganges River, www.whatismissing.org/timeline/ganges-river-timeline/overview Accessed 26 June 2026.

Himalayas through northern and eastern India as well as into Bangladesh, where it empties into the Bay of Bengal⁵ and also supports the livelihoods of approximately 40% of India's population, which corresponds to around 590 million people⁶. However, it happens to be also one of the most polluted river basins in the world⁷.

This issue needs to be addressed promptly, as the earth and many lives depend on it. Without the Ganges River more than half a billion people won't be able to eat, drink or be provided with basic hygiene. Cultural and religious rituals continue to and will be threatened in the future by the degradation of the river, if not acted immediately. In addition, ecosystems and biodiversity will be disrupted. Therefore solving this issue could be the start of a new beginning.



Figure 1⁸: Map illustrating the Ganges River

⁵ Ganges River | Environmental Sciences | Research Starters | Ebsco Research, www.ebsco.com/research-starters/environmental-sciences/ganges-river Accessed 26 June 2026.

⁶[2025 GS1 UPSC Mains] Discuss the Distribution and Density of Population in the Ganga River Basin with Special Reference to Land, Soil and Water Resources. (15 Marks) - Civildaily, www.civildaily.com/2025-gs1-upsc-mains-distribution-and-density-of-population-ganga-river-basin-water-15-marks/ Accessed 26 June 2026.

⁷India's Sacred Ganges River Is Also One of the World's Most Polluted. Will It Ever Be Clean? | South China Morning Post, www.scmp.com/week-asia/health-environment/article/3262259/indias-sacred-ganges-river-also-one-world-s-most-polluted-will-it-ever-be-clean Accessed 26 June 2026.

⁸The River Ganges Hindu Holy Mother Ganga, www.bluebird-electric.net/oceanography/Rivers/The_River_Ganges.htm Accessed 26 June 2026.

DEFINITION OF KEY-TERMS

Industrial Pollution⁹

Industrial pollution is defined as pollution that is caused by industries, which as a result negatively affect substances such as air, water and soil.

Water pollution¹⁰

Water pollution arises when harmful substances, such as heavy metals are released into lakes, streams, rivers, estuaries and oceans, degrading water quality and making it harmful for humans and the environment.

River basin¹¹

“A river basin is an area of land drained by a river and its tributaries”

Transboundary river basin¹²

“A transboundary river basin represents a combined hydrologic and geographic unit shared by two or more countries”

Toxic chemicals¹³

“The term “toxic chemical” means any chemical which through its chemical action on life processes can cause death, temporary incapacitation or permanent harm to humans or animals. The term includes all such chemicals, regardless of their origin or of their method of production, and regardless of whether they are produced in facilities, in munitions or elsewhere.”

⁹ *Industrial Pollution Affects the Environment and Our Health* | The Interfaith Center for Sustainable Development, interfaithsustain.com/industrial-pollution/ Accessed 26 June 2026.

¹⁰ *Water Pollution: Everything You Need to Know*, www.nrdc.org/stories/water-pollution-everything-you-need-know Accessed 26 June 2026.

¹¹ *River Basin Definition & Meaning* | Yourdictionary, www.yourdictionary.com/river-basin Accessed 26 June 2026.

¹² *A Critical Review of the Ganges Water Sharing Arrangement* | Water Policy | IWA Publishing, iwaponline.com/wp/article/21/2/259/66094/A-critical-review-of-the-Ganges-Water-Sharing Accessed 26 June 2026.

¹³ *Definition: Toxic Chemical from 18 USC § 229f(8)* | LII / Legal Information Institute, www.law.cornell.edu/definitions/uscode.php?width=840&height=800&iframe=true&def_id=18-USC-847396133-1416646244 Accessed 26 June 2026.

Heavy metals¹⁴

“Heavy metals are defined as a class of naturally occurring metals with relatively high atomic mass, density, and atomic number, including elements such as mercury, cadmium, arsenic, chromium, thallium, and lead. They are widely distributed in the environment due to various industrial and domestic applications, raising concerns about their potential toxic effects on human health and ecosystems.”

Ecosystem¹⁵

“The complex of living organisms, their physical environment, and all their interrelationships in a particular unit of space.” Therefore living organisms such as plants and animals interact with each other, as well as with the non-living organisms, such as the sun and soil.

Industrial Effluents¹⁶

“Industrial effluent is defined as wastewater or pollutants discharged from industrial facilities, which may contain toxic chemicals and heavy metals, and is typically released into the environment through point sources such as pipelines or sewers.”

BACKGROUND INFORMATION

Historical Context

Humans cannot live without water, oxygen, and soil. Yet, the Ganges River Basin alone impacts over 600 million people, because of the industrial pollution.¹⁷

Geographically, the Ganges River is a river that flows approximately 2,500 km from the Himalayas through northern and eastern India as well as into Bangladesh, where it empties into the Bay of Bengal.¹⁸ However, behind this regular river is hidden a cultural myth, which explains

¹⁴ Heavy Metal - an Overview | Sciencedirect Topics, www.sciencedirect.com/topics/pharmacology-toxicology-and-pharmaceutical-science/heavy-metal Accessed 26 June 2026.

¹⁵ Ecosystem Services | Unece, unece.org/ecosystem-services-0 Accessed 26 June 2026.

¹⁶ Industrial Effluent - an Overview | Sciencedirect Topics, www.sciencedirect.com/topics/earth-and-planetary-sciences/industrial-effluent Accessed 26 June 2026.

¹⁷ The Ganges: India's Sacred River | WWF, www.wwf.org.uk/where-we-work/ganges Accessed 26 June 2026.

¹⁸ Ganges River | History, Map, Location, Pollution, & Facts | Britannica, www.britannica.com/place/Ganges-River Accessed 26 June 2026.

the sacredness and importance of the river to its people, as well as where it got its other name “Jahnavi” from.

It is said that a goddess named Ganga lived in the heavens and entered Earth in the form of a river to wash away the sins of Lord Shiva. However, she was falling with an immense, destructive force that could not only hurt her but also flood the Earth. King Bhagiratha prayed that Lord Shiva would help her and so he did; he trapped her in his hair and smoothed her fall¹⁹.

Because of the myth, Hindus believe the river is sacred and can wash people’s sins away, purify the soul and end the rebirth cycle. It is also used for various rituals, such as Antyesti, which allows the people who die on the river infinite liberation. It also functions as a beloved place for yoga and meditation, enabling relaxation and a deep connection with one’s soul and spirit²⁰.



Figure 2²¹: Painting showing Bhagiratha on the left, Shiva seated in mediation and goddess Ganga falling towards Shiva

Causes and Contributing Factors

¹⁹ *The Story and Significance of River Ganga*, www.sodhatravel.com/blog/the-story-and-significance-of-river-ganga Accessed 26 June 2026.

²⁰ *The Sacred Ganges River: Lifeline, Culture, and Spiritual Significance - Times of India*, timesofindia.indiatimes.com/religion/hindu-mythology/the-sacred-ganges-river-lifeline-culture-and-spiritual-significance/articleshow/115777499.cms Accessed 9 July 2026.

²¹ *The Significance of Shiva*, www.akramyoga.co.uk/single-post/2017/03/06/the-significance-of-shiva Accessed 10 July 2026.

Industrial Waste and Effluents

The Ganges River Basin in India is affected by various factors, specifically by industrial waste and effluents, such as leather tanneries, and textile bleaching and dyeing. Studies show that roughly 20% of the total volume of wastewater is discharged directly into the Ganges River, without being cleaned first²². As a consequence, the water's quality is degraded, the balance of ecosystems is disrupted, harming organisms and damaging biodiversity. Moreover, health risks might arise such as gastrointestinal diseases, neurological disorders, and cancer, since parts of the river are unsafe for drinking and bathing.

Numerous industrial cities, such as Kanpur, Prayagraj, Varanasi and Patna host industries including Distillery, Pulp, and Paper Mills, Tannery and Sugar Mills, some of which have been identified to dump toxic chemical waste into the water. As previously mentioned, toxic chemical waste can be any discharged waste that contains harmful chemicals, such as solid, liquid or gas that were released from industries. Therefore, they are highly dangerous to waters that are intended to be used by people or animals. Untreated slaughterhouse waste, such as blood, is discharged into the river as well, increasing health risks²³.

Remains from Funeral Pyres

Because of the myth and their beliefs, over 70 million people in India bathe in the Ganga during festival seasons, in order to wash their sins away and purify their souls. The river is also used daily for cleaning clothes and mud-bathing for animals, where various materials, such as floral offerings are used. Dead bodies flow in the river as well, so that the soul will be able to escape the cycle of rebirth and reach heaven²⁴.

However, the combination of these rituals increases public health risks, as it pollutes the water and reduces its quality. The burnt ashes of the bodies can also damage ecosystems and biodiversity²⁵.

²² *Pollution Threat-NMCG-India*, nmcg.nic.in/pollution.aspx Accessed 11 July 2026.

²³ *Ganges River Pollution : A Case Study of Causes of Ganges River Pollution*, knowledgeofindia.com/causes-ganges-river-pollution-case-study/ Accessed 11 July 2026.

²⁴ *Idealistic Journal of Advanced Research In ...*, journal.ijarps.org/index.php/IJARPS/article/download/470/437/440 Accessed 11 July 2026.

²⁵ *Understanding Ash Scattering and Its Environmental Impact*, scatteringofashesatsea.com/post/understanding-ash-scattering-and-its-environmental-impact Accessed 11 July 2026.

The Ganges River now

The Ganges River is facing a frightful crisis, as it is confronting the worst drought in 1,300 years. Climate change, shifting monsoons and industrial pollution are all examples of the various factors that impact the state of the river. As a consequence, livelihoods and ecosystems are destroyed, the quality of the water reduces and health risks continue to arise. The River used to be once practical and popular for the transportation of goods and travel. Now, watercrafts are not able to pass through and therefore are forced to run aground.²⁶

The quality of the river depends on its area. Recent studies show that between the upper ganga stretch and the lower ganga stretch, approximately 15% of the water is safe to drink, 38% is considered to be adequate, and roughly 38.5% requires careful monitoring in order to be used.²⁷



Figure 3²⁸: Photo showing People putting waste into the Ganges River in Muradnagar, Uttar Pradesh.

²⁶ *The Ganges River Is Drying Faster than Ever – Here’s What It Means for the Region and the World - CWR*, cwrrr.org/opinions/the-ganges-river-is-drying-faster-than-ever-heres-what-it-means-for-the-region-and-the-world/ Accessed 11 July 2026.

²⁷ *Assessing the Differential Suitability of Ganga River Water for Drinking, Irrigation, and Industrial Use: A First-Time Report Based on Index Analysis and Unsupervised Machine Learning, Highlighting the Need for Region-Specific Water Management Approaches | ACS ES&T Water*, pubs.acs.org/doi/10.1021/acsestwater.5c00574 Accessed 29 July 2026.

²⁸ *Will the Ganges River Ever Be Clean? - Geographical*, geographical.co.uk/science-environment/will-the-ganges-river-ever-be-clean Accessed 10 July 2026.

Consequences

Environmental and Ecological Damage

Due to the daily pollution, the Ganges river is currently facing an existential crisis and with it its ecosystem and biodiversity. When chemicals, heavy metals and radioactive materials are released into the river, they introduce large quantities of waste in solid, liquid, and gaseous forms. These substances are highly dangerous due to their carcinogenic, bio-accumulative, and reactive properties. Because of their persistence, the degradation of soil and water quality occurs slowly but profoundly. As a consequence, significant water quality parameters such as pH, electrical conductivity, and dissolved oxygen levels are altered, affecting human and animal life as well as ecosystems.²⁹

Animals such as the Ganges River dolphin suffer from it as well. The Ganges River dolphin was discovered in 1801 and can only survive in freshwater. Therefore, the pollution harms not only their home, but also their existence. Recent studies show that the river dolphins have been known to have high levels of persistent toxic chemicals in their bodies, which is likely to adversely affect their health. For that reason they have officially become an endangered species.³⁰

Public health risks

While it is a river that is respected by many Hindus, it is also a place that promises high public health risks, some of them being deadly diseases. The most common are seen to be: Cholera, Typhoid Fever and Dysentery, all of them being life threatening infections mostly in the stomach area³¹. Furthermore, heavy metals discharged into the water not only affect the aquatic ecosystem, but also pose health risks to humans, as neurological disorders, kidney damage and cancer might occur³².

²⁹ Yeshiwas, Almaw Genet, et al. "Scoping Review on Mitigating the Silent Threat of Toxic Industrial Waste: Eco-Rituals Strategies for Remediation and Ecosystem Restoration." *Environmental Health Insights*, U.S. National Library of Medicine, 27 Apr. 2025, [pmc.ncbi.nlm.nih.gov/articles/PMC12035000/](https://pubmed.ncbi.nlm.nih.gov/articles/PMC12035000/) Accessed 29 July 2026

³⁰ *Ganges River Dolphin* | WWF, www.worldwildlife.org/species/dolphin-and-porpoise/ganges-river-dolphin/ Accessed 11 July 2026.

³¹ *The Ganga: Waterborne Illness and Public Health*, storymaps.arcgis.com/stories/17bea593c7b94c009ecd1375cfde9b4d Accessed 14 July 2026.

³² *River Water Pollution: 5 Reasons Why You Should Avoid Taking Bath in Ganga* | Health - India TV News,

Economic Impact

The pollution in the Ganges River Basin in India has significant economic impacts, given that various areas and communities depend on the river. As the quality of the river reduces, so does the agricultural productivity and the aquatic ecosystems as well as the economy of farmers and fishermen, resulting in regional economic instability. In addition, due to the high pollution levels, tourism declines, affecting local businesses and hospitality services, which are crucial for the economy of the country. Moreover, diseases and illnesses, such as cholera, dysentery and hepatitis are deadly for humans and need to be treated immediately. Because of this, many families are forced to spend life savings on medical bills and healthcare treatments, exposing numerous families to economic vulnerability.³³

MAJOR COUNTRIES AND ORGANIZATIONS INVOLVED

Bangladesh

The two neighbouring countries India and Bangladesh have both been facing difficulties with the Ganges River, one of those being since the construction of the Farakka Barrage. The Farraka Barrage was built in 1961 and is 17 km upstream from the border of Bangladesh. It initially aimed to ensure the long-term viability of the Calcutta Port.

However, in 1974 government officials and researchers came to realize that there would be not enough water in the Ganges to be diverted, without impacting water access to Bangladesh. On December 12, 1996 the Ganges Water Sharing Treaty was signed, yet since then, its requirements have not been fulfilled. For instance, climate change has impacted the rainfall and the flow of the river heavily.

At the moment, both nations are undertaking diplomatic discussions. Bangladesh requests that the 1996 treaty should be reconsidered and renewed.³⁴

www.indiatvnews.com/health/river-water-pollution-5-reasons-why-you-should-avoid-taking-bath-in-ganga-2024-02-29-919278 Accessed 14 July 2026.

³³ Victor Gutierrez, Arman Arya. "The River Ganges." *ArcGIS StoryMaps*, Esri, 27 Apr. 2023, storymaps.arcgis.com/stories/cc9f1db2174748988ac9f4d79864f227

³⁴ *India and Bangladesh Conflict over the Ganges River | Climate-Diplomacy*, climate-diplomacy.org/case-studies/india-and-bangladesh-conflict-over-ganges-river Accessed 11 July 2026.

India

India is the most affected country by the Ganges River pollution. While the river holds deep significance for Hindus, they are currently facing many consequences because of it. Despite it being such an important river, it has been for centuries polluted, making the river unsafe to drink from or to bathe in. Farmers and ecosystems depend heavily on the river, however due to the overwhelming toxic chemicals that are dumped daily into the river, climate change and cultural practices, crop failures occur, the water quality significantly reduces and livelihoods and biodiversity are disrupted.

In recent years, the Indian government has taken different approaches to clean the river, such as signing treaties, raising awareness and multiple projects, including the Namami Gange Programme. Yet few improvements have been successful and noticeable. This is mainly due to the massive population growth, cultural rituals, economic difficulties and bureaucratic fragmentation.³⁵ According to a PRS Legislative research analysis, only 69% of the funds are being used, and therefore only 52% of the cleanup initiative has been achieved.³⁶

Nepal

The Ganges River Basin is shared by both India and Nepal. It is important to mention that Nepal occupies 13% of the total Ganges River and amounts 45% of its average flow, but rises approximately to 70% during dry seasons. Rivers such as Mahakali, Karnali, Sapt Gandaki and Sapt Kosi originate from Nepal, although flow into the Ganges River³⁷. Therefore, Nepal is just as affected by the pollution of the Ganges River, as India and Bangladesh.

On February 12, 1996 India and Nepal signed the Mahakali Treaty, which was an agreement that ensured that both nations had equal rights to utilize the river Mahakali as well as set clear borders of the river. However, India's and Nepal's diplomatic relations continue to face

³⁵ [https://twitter.com/WorldBank, <http://www.youtube.com/WorldBank>, and Person. "The National Ganga River Basin Project." *World Bank*, World Bank Group, 31 Mar. 2023, www.worldbank.org/en/news/feature/2015/03/23/india-the-national-ganga-river-basin-project

³⁶ Pti. "Think Tank Flags Slow Progress in 'Namami Gange' Project, Only 69% of Funds Used." *The New Indian Express*, www.newindianexpress.com/india/2025/Feb/25/think-tank-flags-slow-progress-in-namami-gange-project-only-69-of-funds-used Accessed 29 July 2026.

³⁷ *The Politics of Water Nepal-India*, www.hidropolitikakademi.org/tr/article/29888/the-politics-of-water--nepal-india Accessed 11 July 2026.

a period of tensions, as they are facing some disagreements, one of those being over the 1996 Mahakali Treaty³⁸.

National Mission for Clean Ganga (NMCG)

The National Mission for Clean Ganga officially started on August 12, 2011. Nearly three years later, in June 2014, the Indian government launched its flagship “Namami Gange Programme”. Its purpose is to achieve an effective abatement of pollution, conservation and rejuvenation of the National River Ganga, by taking a radical approach to ensure pure water quality and sustainable development. This radical approach implemented “ecological flows”, with the purpose of incurring permanent water volume, by introducing a Hybrid Annuity model, which requires a 15-year maintenance commitment from private operators, as well as an aligning biodiversity protection, with digital, live pollution monitoring systems.³⁹

The Mission has set a total of 524 projects, achieving a 68% of completion rate of 355 successful projects. Notably, 208 of those were concluded within the last five years⁴⁰.

World Bank (WB)

The World Bank is a global partnership, which consists of five institutions, that focus on ending poverty and expanding prosperity; its headquarters are in Washington D.C.⁴¹. However, it also addresses economic and environmental problems, including the Ganges River in India.

The World Bank recognizes the importance and significance of the river and supports the Indian government through the \$1 billion National Ganga River Basin Project, which also supports the National Ganga River Basin Authority (NGRBA). While the initial attempt began with the launch of the Ganga Action Plan (GAP) in 1986, the project itself was officially established on April 28, 2011, with the purpose of removing accumulated pollutants and waste. Additionally, investments are also being made in financing infrastructure in the following five

³⁸ *Mahakali Treaty 1996* | ADB's Law and Policy Reform Program, pr.adb.org/resource/mahakali-treaty-1996 Accessed 11 July 2026.

³⁹ *National Mission for Clean Ganga (NMCG)* | IBEF, www.ibef.org/government-schemes/national-mission-for-clean-ganga Accessed 11 July 2026.

⁴⁰ *Press Release: Press Information Bureau*, www.pib.gov.in/PressReleasePage.aspx?PRID=2244007®=3&lang=1 Accessed 11 July 2026.

⁴¹ *Getting to Know the World Bank Group*, www.worldbank.org/en/news/feature/2012/07/26/getting_to_know_theworldbank Accessed 10 July 2026.

mainstream states: Uttarakhand, Uttar Pradesh, Bihar, Jharkhand and West Bengal. The project consists of two phases that differentiate the financial investment.

Approximately \$200 million is invested in order to monitor water quality and develop institutions at the central and state level. Moreover, it is used for the establishment of communications and stakeholder engagement programs as well as to provide technical assistance for city service and environmental regulators.

The remaining funds go to infrastructure investments that are divided into four different sectors: wastewater collection and treatment, control of industrial pollution, solid waste management, and riverfront development⁴².

TIMELINE OF EVENTS

DATE	DESCRIPTION OF EVENT
1801	Discovery of the Ganges Dolphin
1961	Farakka Barrage was constructed
1974	The Indian government and researches realized there needed to be change, or Bangladesh would not have access to water anymore
1986	The launch of the Ganga Action Plan (GAP)
February 12, 1996	The Mahakali Treaty was signed
December 12, 1996	The Water Sharing Treaty was signed

⁴² *The National Ganga River Basin Project*,
www.worldbank.org/en/news/feature/2015/03/23/india-the-national-ganga-river-basin-project Accessed
 10 July 2026.

April 28, 2011	The \$1billion National Ganga River Basin had officially begun
August 12, 2011	National Mission for Clean Ganga (NMCG) launched
June 2014	Indian government established its flagship Namami Gange Programme

RELEVANT UN RESOLUTIONS, TREATIES AND EVENTS

[UN General Assembly Resolution 64/292 \(2010\)](#)

This resolution was adopted by the General Assembly on 28 July 2010 and recognizes the human right to clean and safe drinking water. It aligns closely with the topic, as it functions as an official document that addresses the importance for clean water everywhere and calls member states to assist by providing financial resources as well as international cooperation. Seeing as the Ganges River is important to over 600 million people⁴³ the overwhelming industrial pollution violates this UN-recognized and accepted right.

The 1996 Water Sharing Treaty

Signed on December 12, 1996, The Ganges Water Sharing Treaty is a 30-year legal framework between India and Bangladesh set to expire in December 2026. It is a shared formula between the states on how to manage the shared water of the Ganges River during the dry season, which lasts from January 1 to May 31⁴⁴.

⁴³ *Over 600 Million People Rely on This Sacred Megariver for Water – and It's Rapidly Disappearing*, www.iflscience.com/over-600-million-people-rely-on-this-sacred-megariver-for-water-and-its-rapidly-disappearing-80945 Accessed 29 July 2026.

⁴⁴ *The Ganges Water-Sharing Treaty Needs a Climate Makeover | Think Global Health*, www.thinkglobalhealth.org/article/ganges-water-sharing-treaty-needs-climate-makeover Accessed 9 July 2026.

The treaty was established due to the rising problems the Farakka Barrage caused, which is a barrage that was built in 1975 across the Ganges River, in order to save the Port of Kolkata, which impacts mostly the eastern region⁴⁵.

However, the barrage caused many problems, one of them being reducing the flow of the river in Bangladesh. It was considered an ecological failure, as the framework failed to predict future climate change and focused more about how the river should be divided, rather than on its natural flow⁴⁶.

National Ganga River Rights Act of 2016

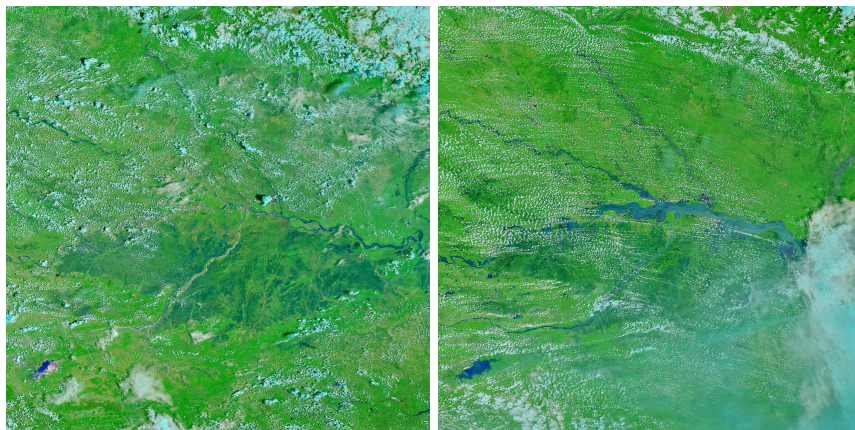


Figure 4: Two photos captured by NASA's Terra Satellite on August 10, 2025 (left) and August 21, 2016 (right)

Within a year, the condition of the Ganges River changed enormously. In 2015 the River was captured in its normal flow and defined channel, however this changed the following year. The Ganges River was massively swollen and the water's color transformed into a lighter shade of blue, due to all the suspended sediment. Land that should've been green vegetation is now seen to be covered in blue water, highlighting the damaged villages and agricultural fields⁴⁷.

⁴⁵ *Political History of Farakka Barrage and Its Effects on Environment in Bangladesh* | Bandung: Journal of the Global South | Springer Nature Link, link.springer.com/article/10.1186/s40728-015-0027-5 Accessed 9 July 2026.

⁴⁶ *India and Bangladesh Conflict over the Ganges River* | Climate-Diplomacy, climate-diplomacy.org/case-studies/india-and-bangladesh-conflict-over-ganges-river Accessed 9 July 2026.

⁴⁷ *Flooding on the Ganges River* - NASA Science, science.nasa.gov/earth/earth-observatory/flooding-on-the-ganges-river-88624/ Accessed 9 July 2026.

Such escalations of the effects of the pollution in the river inspired organizations such as the Ganga Action Parivar, the Community Environmental Legal Defense Fund (CELDF) and the Global Interfaith WASH alliance in 2016 to propose a law in order for the people and the government of India to ensure, defend and preserve the rights of the river. It suggested establishing a sewage treatment system with the aim of safeguarding a complete treatment of human waste as well as other waste matter from homes and buildings. Through monitoring mechanisms, the police would be able to imprison anyone who polluted the river on purpose⁴⁸.

However, the proposal was not passed on to the Indian parliament and failed to become a law, due to the lack of sponsorship and representation by an official Member of the Parliament. Therefore, the government prioritized focusing on its own executive cleanup initiative, namely the Namami Gange Programme, and it remained only a draft written by Non Governmental Organizations (NGOs)⁴⁹.

PREVIOUS ATTEMPTS TO SOLVE THE ISSUE

The Ganga Action Plan (GAP)

The Ganga Action Plan first started on January 14 in 1986 and was created by Shri Rajeev Gandhi, India's then-Prime Minister. The purpose of this plan was to improve the river's water quality and minimise pollution. The initial plan was executed in two phases: GAP1 and GAP2⁵⁰.

The first phase launched in January 1986 and focused on the main stem of the river in the states Uttar Pradesh, Bihar and West Bengal. However, it shut down after 14 years, on March 31 in the year 2000, due to various reasons, such as errors in planning, the poor construction of the Sewage Treatment Plants (STPs) and the unexpected population growth in those cities.

Government officials and scientists soon realized that they could not rely only on the first phase, as other rivers and states contributed to the pollution of the Ganges River as well.

⁴⁸ *India National Ganga River Rights Act of 2016*, ecojurisprudence.org/initiatives/proposed-national-ganga-river-rights-act/ Accessed 9 July 2026.

⁴⁹ *Modi Govt Doing a "rethink" on Draft Ganga Protection Bill That Proposed Armed Force, Arrests*, theprint.in/india/governance/modi-govt-doing-a-rethink-on-draft-ganga-protection-bill-that-proposed-armed-force-arrests/572988/ Accessed 9 July 2026.

⁵⁰ *Ganga Action Plan: Objectives, Phases, Achievements & More!*, testbook.com/ias-preparation/ganga-action-plan Accessed 8 July 2026.

Therefore, the second phase added seven states: Uttar Pradesh, Bihar, West Bengal, Uttarakhand, Jharkhand, Delhi, and Haryana⁵¹. It was launched in 1993, but was merged in 1995 with another operation, named the National River Conservation Plan (NRCP).⁵²

National Ganga River Basin Authority (NGRBA)

The National Ganga River Basin Authority (NGRBA) was launched on 20 February 2009 in New Delhi by the Indian government⁵³, under the Environmental (Protection) Act, 1986, making it a legal authority⁵⁴.

It was established to coordinate river basin management across multiple states. The authority planned and funded large-scale initiatives, such as constructing sewerage systems and river bank restorations. However, it also focused on ensuring an effective reduction of pollution and conservation of the river by maintaining environmental flows, managing wastewater and regulating activities that caused pollution. It proposed various techniques, such as raising awareness and protecting flood plains, to safeguard the river's ecology. While its goal was to eliminate river pollution by 2020, NGRBA was dissolved in 2016 by the Indian government and replaced with the National Ganga Council (NGC)⁵⁵.

The Namami Gange Programme (NGP)

The Namami Ganga Programme has been previously mentioned in the study guide, particularly its success completing 355 out of 524 projects.

⁵¹ *Ganga Action Plan, Launch Date, Objectives, Phases, Achievements*, vajiramandravi.com/current-affairs/ganga-action-plan/ Accessed 8 July 2026.

⁵² *Ganga Action Plan (GAP). The Ganga Action Plan Was Launched By... | by Dr. Gunjan Goyal | Medium*, gunjangoyal14.medium.com/ganga-action-plan-gap-c759416a2137 Accessed 8 July 2026.

⁵³ *Function and Power of NGRBA-NMCG-India*, nmcg.nic.in/ngrbaread.aspx Accessed 10 July 2026.

⁵⁴ *National Mission for Clean Ganga (NMCG) | IBEF*, www.ibef.org/government-schemes/national-mission-for-clean-ganga Accessed 10 July 2026.

⁵⁵ *Namami Gange: PM-Led Body Fails to Meet Even Once*, www.downtoearth.org.in/water/namami-gange-pm-led-body-fails-to-meet-even-once-61468 Accessed 10 July 2026.

To better understand, the Namami Ganga launched in June 2014 and Rs.26,824.86 crore (approximately \$2.81 billion USD) were invested by the Indian government. For the year 2025-2026 further Rs.3,400 crore (roughly \$356 million USD) were added to the budget⁵⁶.

The Programme aims to ensure better sewage treatment, advance riverfront development, restore healthy biodiversity as well as raise public awareness. Recent initiatives include rescuing the Ganga Dolphin, while strengthening a citizen built community that consists of 160 trained personnel and 2000 members. Moreover, the return of 7979 hatchlings back into the river was achieved, which is an estimated hatching success of 96.7%⁵⁷

Ganga Gram Yojana

The Ganga Gram Yojana is an Indian government initiative under the Namami Gange Programme, which aims to turn villages along the river into clean model villages in order to stop waste effluents from entering the water body, by improving sanitation.⁵⁸ It was launched on January 5, 2016 by the then Union Minister of Water Resources, River Development and Ganga Rejuvenation, Uma Bharti, at Puth village in the Hapur district of Uttar Pradesh.⁵⁹

In its first phase, the project focused on 306 villages. By August 2017 approximately 4,470 villages along the Ganga had been declared Open Defecation Free (ODF), meaning millions of sanitation infrastructure were constructed and restored.

After the achievement of ODF, the Ganga Gram gradually absorbed into broader programmes, such as the Namami Gange Programme and other rural sanitation and development schemes.⁶⁰

Pavitra Ganga Project

⁵⁶ *Namami Gange and the Ganga Cleaning Mission's Hidden Cost: Displacing Riverbank Communities - Frontline*, frontline.thehindu.com/environment/namami-gange-displacement-riverbank-cleaning-up-river-restoration/article70955264.ece Accessed 11 July 2026.

⁵⁷ *Press Release Page | Press Information Bureau*, www.pib.gov.in/PressReleasePage.aspx?PRID=2244007®=3&lang=2 Accessed 11 July 2026.

⁵⁸ *Facts at a Glance: Tripura*, www.pib.gov.in/newsite/PrintRelease.aspx?relid=104801®=3&lang=2 Accessed 30 July 2026.

⁵⁹ "Ganga Gram Yojana Launched by Union Government." *Latest News, Breaking News, LIVE News, Top News Headlines, Viral Video, Cricket LIVE, Sports, Entertainment, Business, Health, Lifestyle and Utility News | India.Com*, 6 Jan. 2016, www.india.com/education/ganga-gram-yojana-launched-by-union-government-1572969/

⁶⁰ *Ganga Gram Project | Competition in Focus - Education - Read This Story on Magzter.Com*, www.magzter.com/stories/Education/Competition-in-Focus/Ganga-Gram-Project Accessed 30 July 2026.

The Pavitra Ganga Project was a research and innovation initiative which started on February 1, 2019, however officially launched at an event held on March 2, 2019 by the European Union, under the Horizon 2020 program, as well as the Government of India's Department of Biotechnology (DBT). In addition, the Flemish Institute for Technological Research (VITO) and further organizations such as The Energy and Resources Institute (TERI), were important partners of the project.⁶¹

The Pavitra Ganga's purpose was to improve wastewater treatment and monitoring, enable water reuse, and resource recovery opportunities for urban rural areas in India as well as increase stakeholder engagement. For instance, wastewater and safety plants were established in Kanpur and Delhi. Moreover the project achieved to develop policy and social support for innovative wastewater technologies, manage the co-creation of workshops, and implement multi-criteria decision analyses.

On January 31, 2024 it officially concluded its scheduled completion date.⁶²

POSSIBLE SOLUTIONS

Investing in Common Effluent Treatment Plants (CETPs)

It is widely known that industrial pollution affects the health of the River Ganga and with it ecosystems, the environment, biodiversity, animals and the many people that depend on it. Common Effluent Treatment Plants (CETPs) are facilities designed to treat wastewater from multiple units. They therefore treat wastewater first, before discharging into the river. The implementation of CETSPs will have many benefits, such as reducing toxic pollutants, improving water quality and rebuilding the homes of many species. Industries could invest in medium-sized CETSPs, which would be more beneficial, affordable and achieve better pollution control.

Nevertheless, LEDCs often struggle to raise funds in resources, which are crucial for operations and the maintenance of CETPs as well as to hire qualified and skilled employees, who ensure stability and consistent performance. Moreover, mixed wastewater from different industries is likely to have different characteristics, increasing the disruption and complications within the biological water treatment process

⁶¹ "Pavitra Ganga." *Pavitra Ganga* | *Pavitra Ganga*, 2 July 2024, pavitra-ganga.eu/en

⁶² CORDIS, cordis.europa.eu. "Delivering Clean Water to Vulnerable Communities on the Ganga." *CORDIS*, 30 Oct. 2023, cordis.europa.eu/article/id/447339-delivering-clean-water-to-vulnerable-communities-on-the-ganga

Implement Source Reduction Technologies

Source reduction technologies design strategies that prevent or eliminate waste generation at the point of origin. Industries could install automated sensors, vision inspection systems, and high-accuracy digital fillers, in order to prevent alignment errors. Additionally, it is important to replace old equipment with modern tools, which ensure less physical waste. Thus, if industries implement these technologies, fewer toxic chemicals and heavy metals will be dumped into the river. As a result the water quality will improve, aquatic ecosystems will recover and communities that depend on the Ganges for drinking water, farming, and fishing will face fewer health risks.

However, this strategy faces barriers, including finance, product quality and technical complexity. For instance, employees need extensive training for each operation required and the change of products can affect the performance and strength of the technologies.

Enhance Solid Waste Management

Wastewater and solid waste management strategies aim to improve how waste is collected, recycled, treated, and safely disposed of, as well as establish protocols to prevent pollution from being directly dumped into the river. Through this mechanism, river pollution is reduced, aquatic biodiversity preserved, water quality improved and public health risks are minimized. For instance, fish, turtles, dolphins would be less likely to consume plastic or become trapped in plastic bags.

Specifically, the installation of Common Effluent Treatment Plants (CETPs) treats wastewater from different industries and ensures it is treated before entering the river. Furthermore, strengthening monitoring systems and adopting cleaner production technologies force regular inspections, resulting in the reduction of wastewater and industrial pollution being dumped into the Ganga.

However, the implementation presents distinct challenges, such as developing nations facing financial difficulties to fund these operations and lacking the needed resources for this development. As a consequence, governments may hesitate to enforce environmental regulations, given that these industries are crucial for employment, export and import as well as overall economic growth.

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