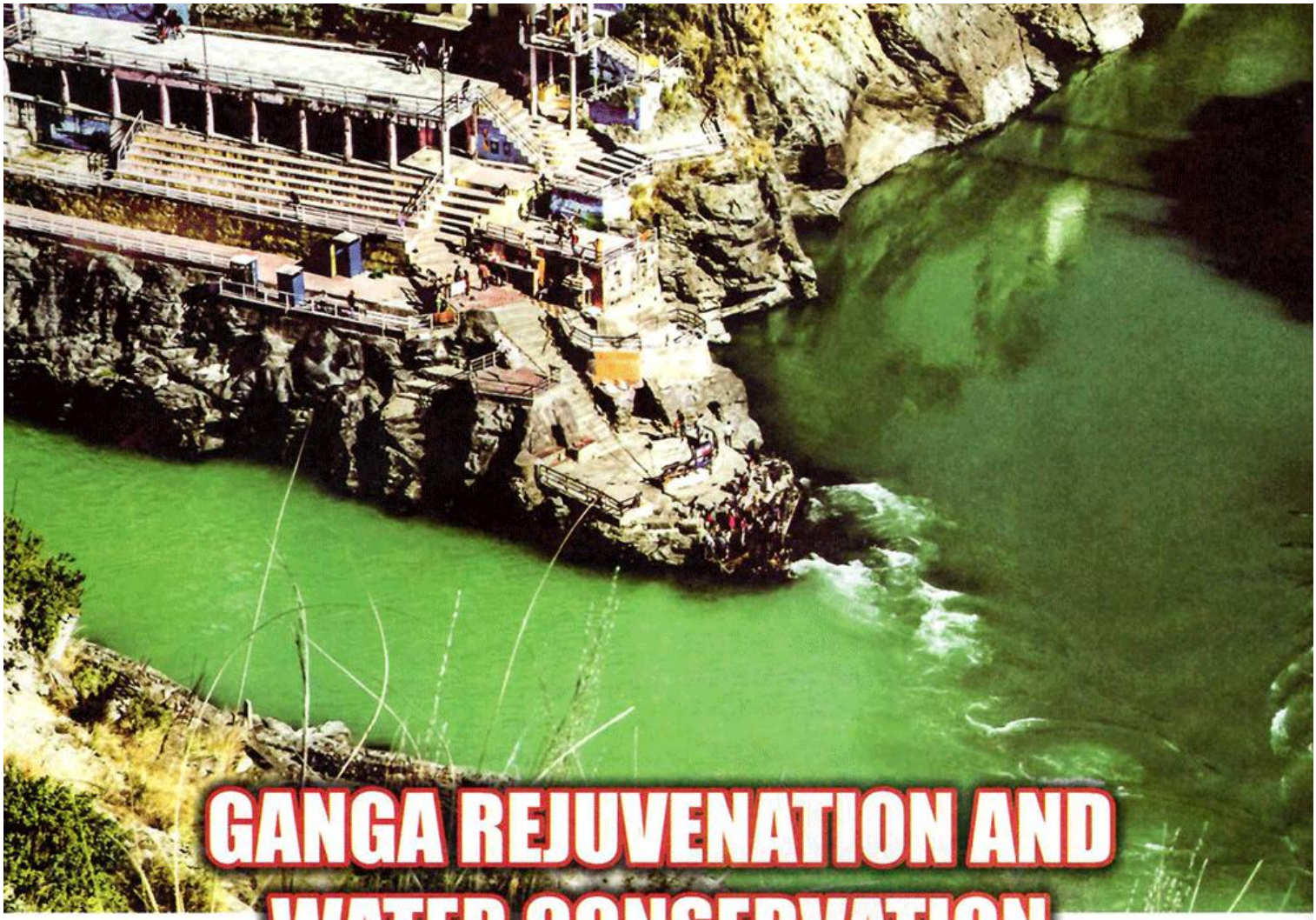

GANGA REJUVENATION AND WATER CONSERVATION

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India's iconic River Ganga, revered as '*Maa Ganga*', faces severe pollution and environmental degradation despite its cultural, spiritual, and ecological significance. Launched in 1986, the Ganga Action Plan aimed to reduce pollution, but its success was limited. The *Namami Gange* programme (2014) has made significant progress in sewage treatment, riverfront development, and public awareness. However, challenges persist due to inadequate infrastructure, climate change, and groundwater extraction. Restoring the Ganga requires collective effort, financial investment, and sustainable practices. It's not just an environmental challenge, but a moral and spiritual responsibility to safeguard India's heritage and future.

गच्छंस्तिष्ठन् जपन् ध्यायन् भुञ्जन् जाग्रत् स्वपन् वदन्।
यः स्मरेत् सततं गङ्गां स हि मुच्येत बन्धनात्।।

– Skanda Puran, Kashikhand, 27th Chapter, 37th Sloka

"Just as a mountain struck by a thunderbolt disintegrates into hundreds of pieces, similarly, the mass of sins gets destroyed hundreds of times by the mere remembrance of Ganga. One who always remembers Gangaji while walking, standing, chanting and meditating, eating, drinking, waking up, sleeping and talking, becomes free from the bondage of the world."

Since the 20th century, the river Ganga has suffered severe pollution and environmental damage, leading to a high need for its rejuvenation and water conservation efforts. To meet this challenge, the Government of India, in collaboration with various non-governmental organisations (NGOs), scientists and activists, has launched several initiatives, including the famous *Namami Gange* project, which aims to clean and rejuvenate the river.

Ganga: Epicentre of Cultural and Spiritual Bharat & Saviour of Bharat

The Ganga is not just a river but a symbol of *Bharat's* cultural and civilisational heritage. It serves as both a lifeline and a spiritual source, supporting 40 per cent of the population. From *Gangotri* in the Western Himalayas, the 2,525-kilometer-long Ganga River emerges as the confluence of the *Bhagirathi* and *Alaknanda* rivers at Devprayag in Uttarakhand. Every 12 years, the Kumbh Mela is held on the banks of the Ganga at Haridwar and Prayagraj, transforming into a global spiritual gathering. Hindus believe that bathing in the Ganga washes away their sins and aids in attaining salvation, or *Moksha*.

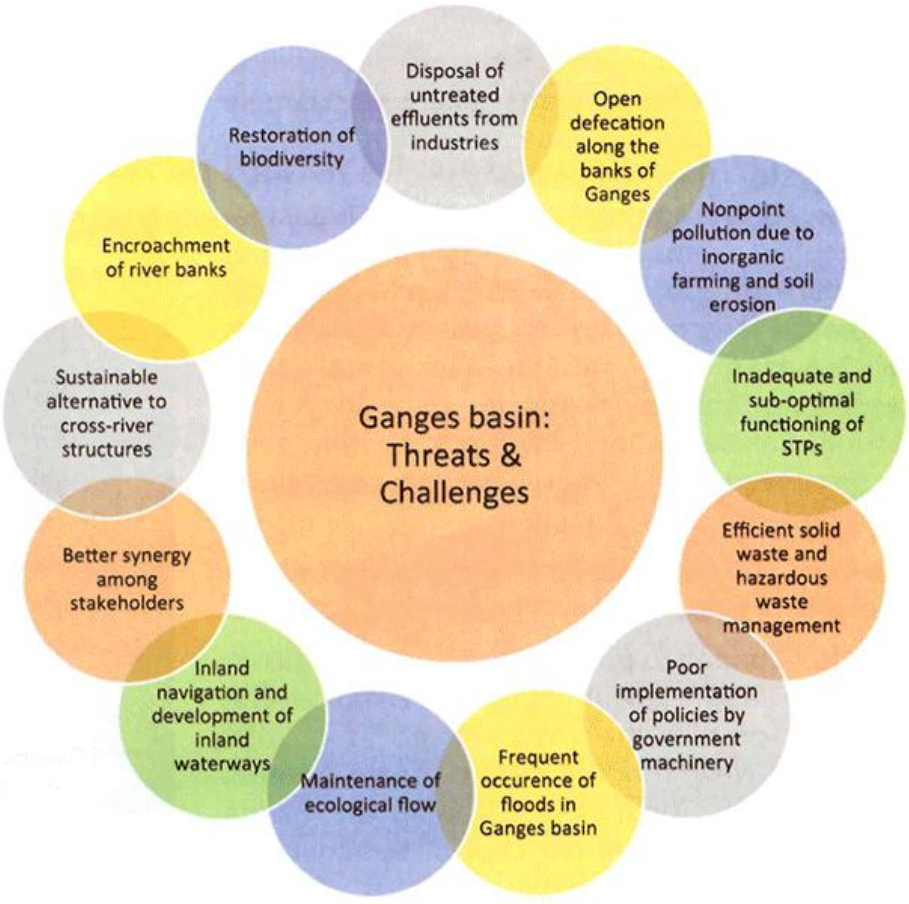
The Ganga has the highest level of dissolved oxygen, giving its water a unique quality. The river basin contributes more than 40 per cent to India's Gross Domestic Product (GDP) and supplies almost one-third of the nation's surface water, with 90 per cent allocated for irrigation purposes. Although highly fertile, the Ganga river basin region harbours a population of more than 200 million people who are currently living in poverty. Nevertheless, the Ganga river is currently confronted with critical pollution, depletion of biodiversity, and environmental hazards, therefore jeopardising its sustainability.

Why Is Ganga Under Threat?

Industrialisation along both sides of the Ganga has significantly degraded the river's water quality. The continuous discharge of sewage, large volumes of industrial and solid waste, and extensive human and economic activities along its banks are the primary sources of pollution. Adopting a Western development model, coupled with inadequate infrastructure, poor environmental governance, and limited technical expertise, has further worsened the purity of the Ganga's waters.

Ganga Action Plan (GAP)

The Ganga Action Plan (GAP) was launched by the Government of India in 1986 with the main objective of reducing pollution in the river Ganga and improving its water quality. The initiative was launched under the leadership of then Prime Minister Rajiv Gandhi after concerns were raised over the increasing pollution of



the Ganga due to untreated sewage, industrial effluents and religious material. The objective of the scheme was to set up sewage treatment plants, improve sanitation infrastructure and control industrial effluents. Although the goals of the plan were ambitious, its success was limited due to challenges such as inadequate infrastructure, weak implementation and limited public awareness. Despite this, the Ganga Action Plan laid the foundation for future initiatives such as the *Namami Gange* programme.

The Ganga Action Plan aimed to improve water quality, control pollution sources, encourage research and development, adopt new technologies, and restore biodiversity. It focused on treating domestic sewage, industrial waste, and contaminants before entering the Ganga. Phase 1 cost Rs 452 crores, but inadequate resources led to Phase 2 (1993-1996), which expanded to include other rivers in India and was later extended to other rivers following the National River Conservation Plan.

The Ganga Action Plan, despite not achieving its full goals, made significant progress in addressing pollution, improving water quality, completing 652 projects under Phase 2, and constructing 35 sewage treatment plants across five states.

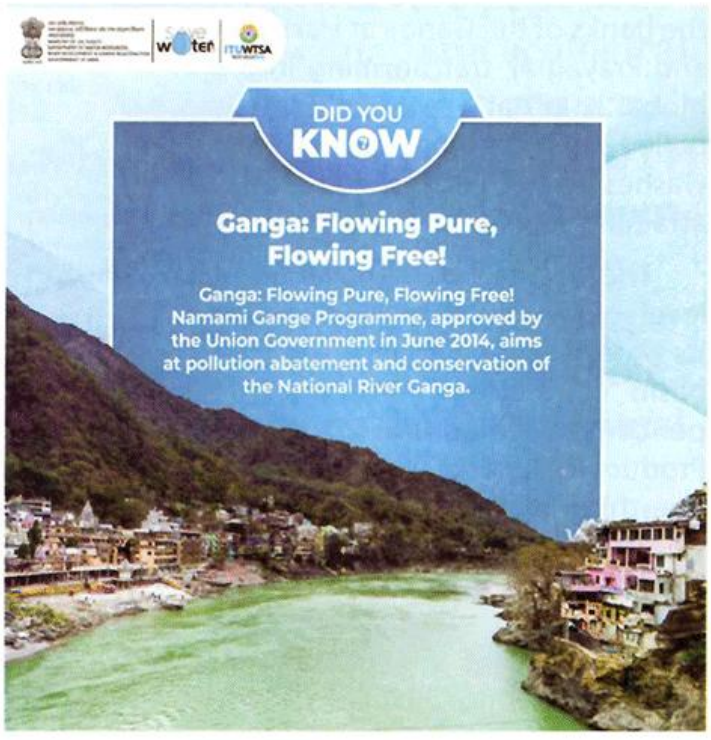
The Ganga Action Plan's failure was largely due to insufficient sewage treatment facilities, inadequate financial resources, and poor collaboration among authorities. Industrial pollution persisted, and governance and enforcement issues were hindered by weak legislation and monitoring systems. The plan's lack of long-term foresight and sustainability resulted in temporary improvements rather than lasting transformations, highlighting the need for improved public awareness and community involvement.

Namami Gange (Clean Ganga Mission): A Journey Towards Purity

After coming to power in 2014, Prime Minister Narendra Modi's government has taken several steps to protect the river Ganga. In a 2014 speech at New York's Madison Square Garden, Prime Minister Modi said, "Cleaning the Ganga will greatly benefit 40 per cent of the country's population. Therefore, this effort is also an economic agenda."

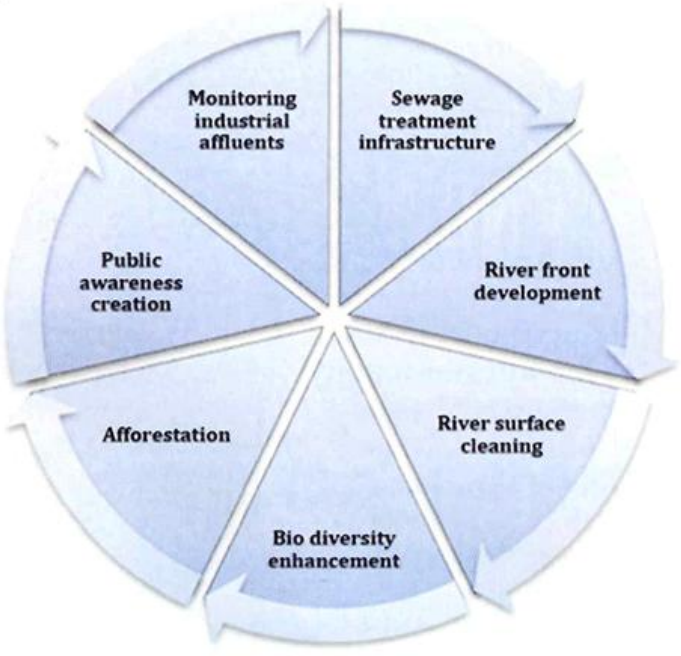
In 2014, the Government of India launched the *'Namami Gange'* mission to rejuvenate the river Ganga. The action plan, approved by the Union Cabinet, increased the budget fourfold and became a central sector scheme. In 2016, the government established the National Council for River Ganga (Rejuvenation, Protection and Management) to prevent pollution and rejuvenate the Ganga Basin. The program focuses on sewage treatment infrastructure, river-surface cleaning, afforestation, industrial effluent monitoring, riverfront development, biodiversity, public awareness, and *Ganga Gram*.

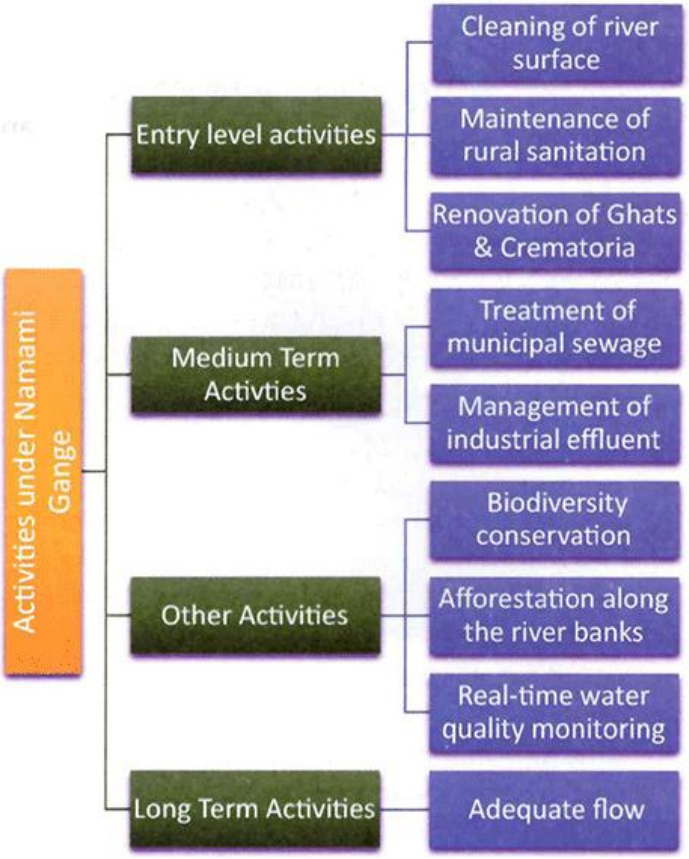
The *Namami Gange* Programme, aims for sustainable development of the Ganga River Basin. Between 2015 and 2021, 815 new sewage treatment plants (STPs) were installed or proposed to reduce untreated sewage impact. Varanasi now has seven STPs, four built under the program. Sustainable sanitation practices are encouraged, and the National Ganga River



Basin Authority oversees project implementation. Community engagement platforms, such as *Ganga Vichar Manch* and *Ganga Praharis*, engage local communities. The Ganga Knowledge Centre (GKC) improves NGRBA programmes, and the Centre for the Management and Studies of the Ganga River Basin (cGANGA) promotes sustainable development.

The *Namami Gange* programme has achieved several milestones, including 200 sewerage projects approved for Rs 31,810 crore, 116 of which have been successfully implemented. The programme also focuses on riverfront development, collecting and disposing of floating solid trash, and restoring indigenous and imperilled species in the Ganga River ecosystem. The Wildlife Institute of India, Central Inland Fisheries Research Institute, and Uttar Pradesh State Forest Department are working on projects to restore aquatic species. The Forest Research Institute has drafted a comprehensive project report for afforestation activities, aiming to enhance forest production and biodiversity. The programme has also implemented public awareness initiatives and industrial effluent monitoring, along the Ganga River drainage system. The Ministry of Drinking Water and Sanitation has designated 1,674 *Gram Panchayats* and implemented rural sanitation programmes in Jharkhand.





More Efforts Are Required

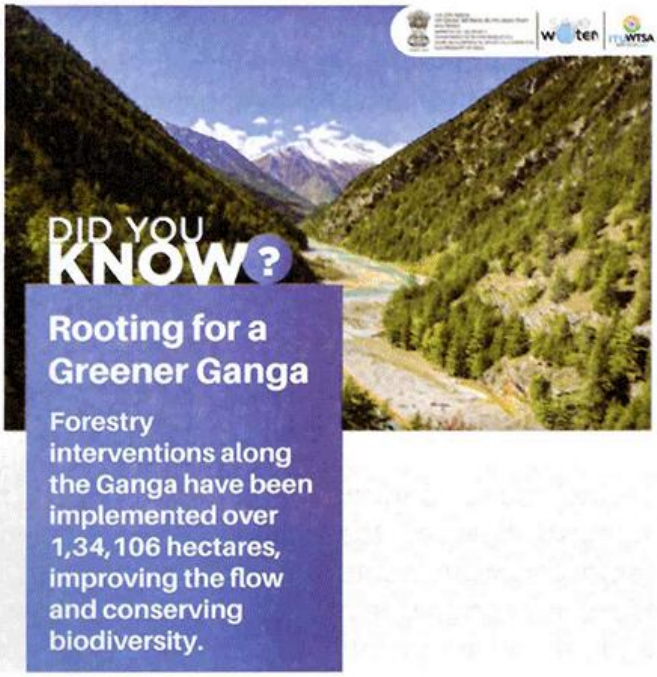
In an audit report of 2017, the Comptroller and Auditor General (CAG) of India identified substantial shortcomings in the financial management, planning, execution, and monitoring of the *Namami Gange* project. As a result of these issues, the programme's objectives have been delayed.

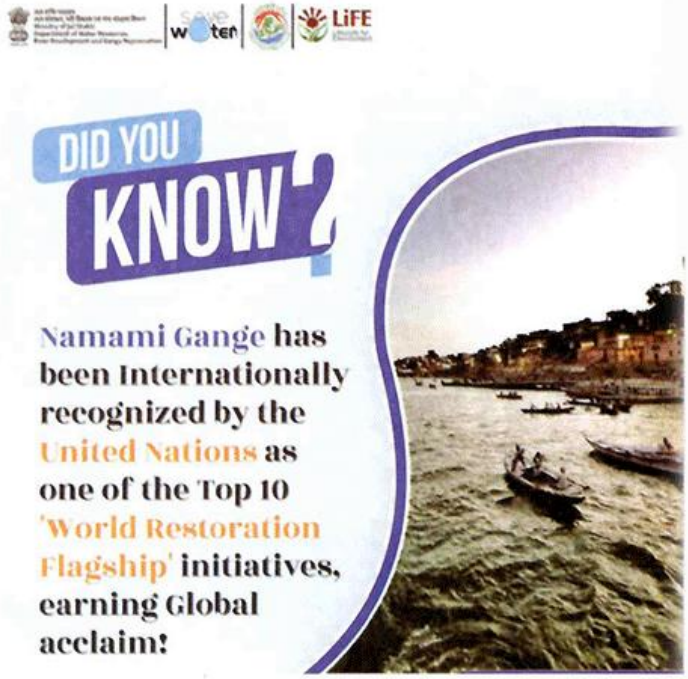
India's substantial monsoon rains, responsible for 80 per cent of the nation's overall precipitation from June to September, present two primary challenges. Throughout the monsoon season, the treatment plants experience an overwhelming influx of both sewage and rainwater, resulting in an insufficient processing capacity.

However, for the remaining eight months of the rainy season, the river's insufficient water content hampers its capacity to dissolve pollution, causing an increase in the concentration of pollutants. The government is confronted with the task of adequately managing pollution during these periods of drought, when the sluggish flow of the river fails to efficiently remove contaminants. Nevertheless, except for these exceptional instances, the river maintains a highly pristine condition owing to its inherent

robustness and structural integrity. Consequently, sewage treatment plants (STPs) reach their maximum capacity during the monsoon season and are unable to manage elevated levels of pollution throughout the dry season. Furthermore, companies that were closed due to their contribution to pollution in the tributaries of the Ganga river are frequently permitted to resume operations or operate unlawfully, therefore underscoring the lack of uniformity in pollution management.

An analysis, published in Nature's Scientific Reports, has revealed that the river experiences a significantly reduced water flow during the summer season. The projection indicates that in the next few years, the extensive section of the river extending from Varanasi to Kolkata will experience minimal water flow throughout the months without monsoon season. The study indicates that the river's groundwater flow may have declined by 50 per cent since the 1970s as a result of excessive extraction of groundwater. Over the next three decades, this could potentially decrease by as much as 75 per cent in comparison to the 1970s, resulting in higher pollution levels due to the decreased solubility of sewage and other contaminants. If prompt measures are not implemented to regulate groundwater extraction within the 2-3 kilometre region of the river, certain sections of the river may go extinct in the next decades. This will have a profound effect on the ecology of the river and the towns that rely on it for irrigation, drinking water, and industrial purposes. Furthermore, several studies indicate that climate change could impact the flow of rivers. However, this study precisely quantified the extent of decrease in base flow and groundwater extraction by utilising extensive satellite data, hydrological modelling, and other analytical techniques. Between 1999 and 2013, the study revealed that the rate of groundwater depletion during summer ranged from 0.5 to 38.1 cm per year. If the present pace of groundwater extraction persists, the Indo-Gangetic region could experience a substantial decline in food production.





Common Cause

Restoring the River Ganga is an exceedingly intricate endeavour owing to its profound socio-economic and cultural importance, alongside persistent exploitation. This extensive and multifaceted initiative has not been undertaken before on a worldwide scale and necessitates cooperation among several sectors and the involvement of every eligible individual. Individuals can make diverse contributions to further the sanitisation of the Ganga. Contributions of money are one of the main methods to express assistance. The process of restoring the health of a river as extensive and densely inhabited as the Ganga necessitates a substantial financial investment. Although the government has substantially expanded the budget, it may still be inadequate. The Clean Ganga Fund has been created to enable public involvement by offering a formal forum for individuals and organisations to make financial contributions towards the cause. A further essential strategy is to embrace the concepts of minimising, repurposing, and reclaiming. An often overlooked fact is that the inadequate management of domestic garbage and wastewater can ultimately lead to the pollution of waterways.

Acknowledging the intricate and multifaceted character of the Ganga rejuvenation initiative, attempts have been undertaken to enhance collaboration among several ministries and between the central and state governments. This entails increased participation in the planning process and enhanced monitoring at every level of government. Although the government's primary emphasis is on constructing sewage infrastructure, residents have the opportunity to make a valuable contribution by reducing their water consumption and waste generation. Efficiently reusing and recycling water, organic trash, and plastic can significantly reduce the strain on river restoration endeavours. ❑

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