

Namami Gange

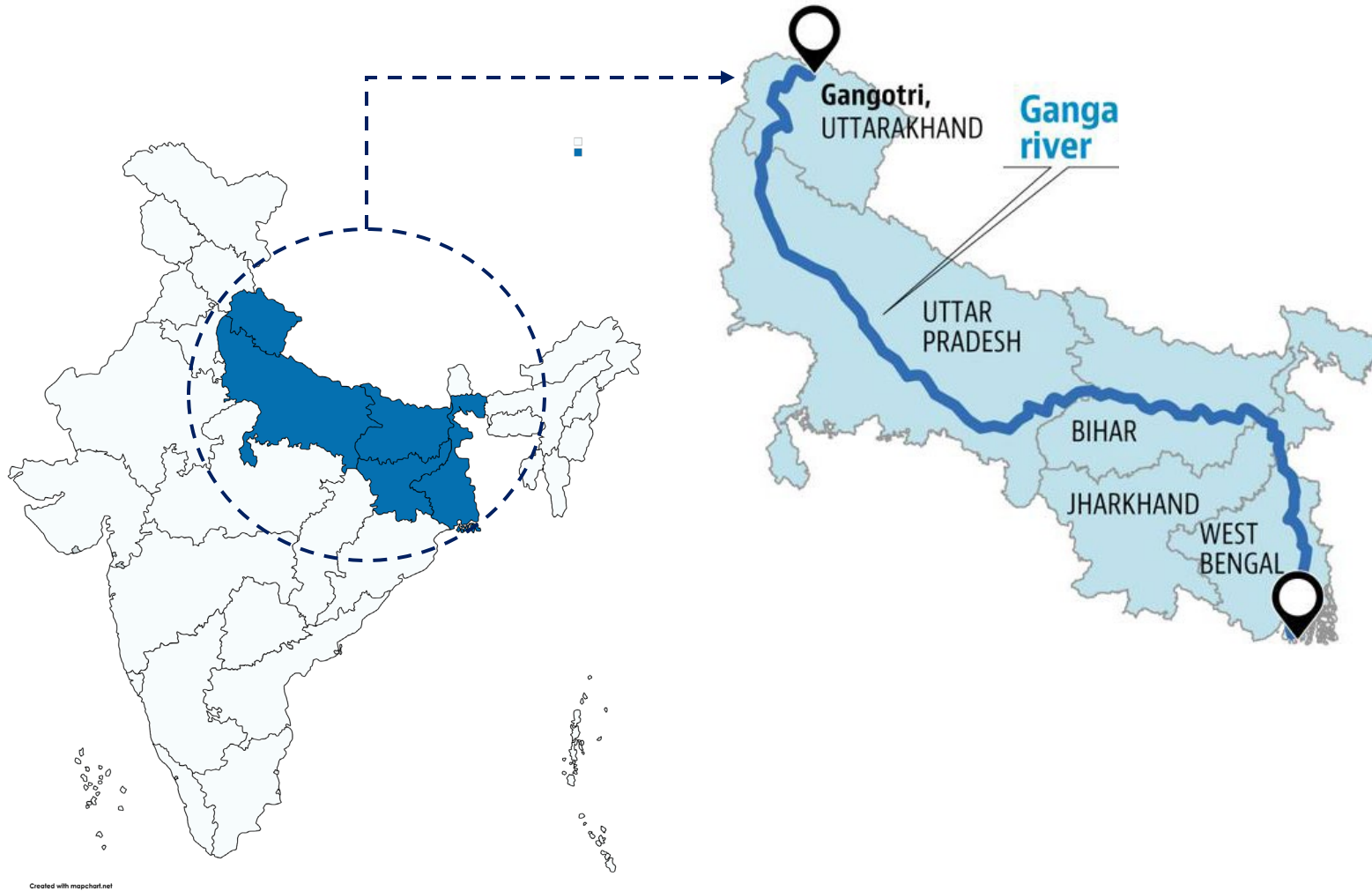
India's Vision for Clean
Rivers and Sustainable
Growth

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Overview - Namami Gange



About Ganga River Basin

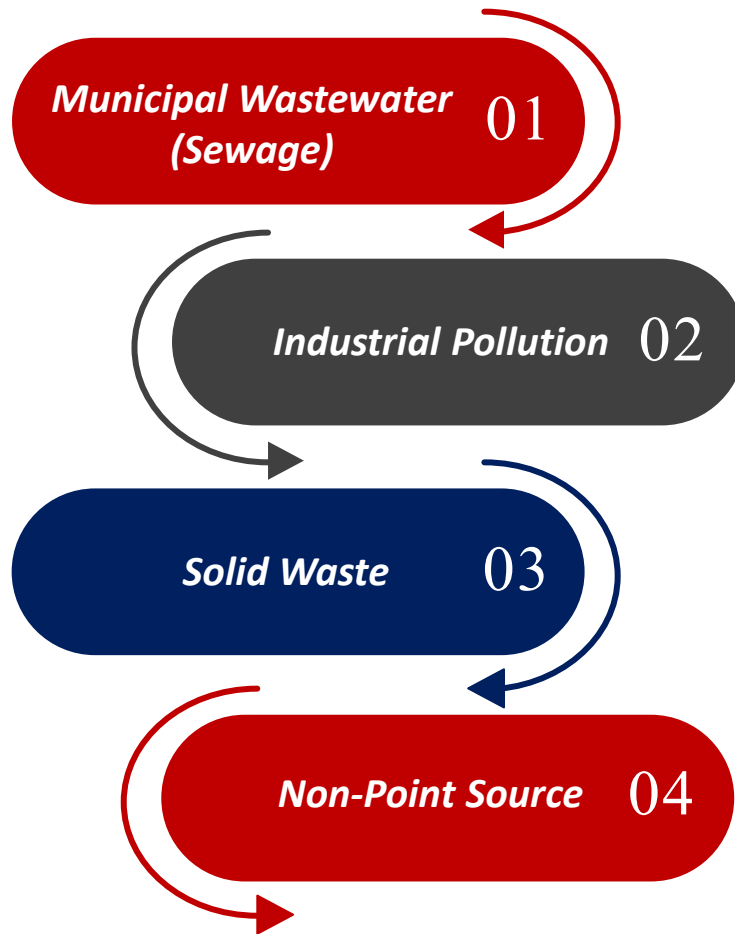
- 11 states in the Ganga Basin with 5 on main stem (Uttarakhand, Delhi, Uttar Pradesh, Bihar and West Bengal).
- Total length of river is 2,525 km with longest stretch of 1,000 km in Uttar Pradesh
- Catchment area of the basin is 8,61,404 sq km.

Facts

- 2,953** Million Litres sewage generated by 97 towns on the Ganga main stem everyday.
- 148** Priority Drains discharging in Ganga.
- 1,072** Industrial pollution (Grossly Polluting Industries (GPIs))

Overview - Namami Gange

Major Polluters



Sr.No.	Project Category	No. of Projects	Sanctioned Cost (in US\$ Crores)	No of Projects Completed	No of Projects Under Progress	No of Projects Under Tendering	Total Expenditure (In US\$ Crores)
1	Pollution Abatement Projects	370	481.12	236	95	39	230.71
2	Ecological Projects	66	11.70	45	21	0	6.29
3	Livelihood Projects	11	0.57	2	9	0	0.16
4	Public Outreach Projects	15	4.88	11	4	0	2.72
5	Knowledge Projects	20	2.58	8	12	0	0.79
Grand Total		482	500.86	302	141	39	240.66

Source: Data as on 30th September 2024

(https://nmcg.nic.in/writereaddata/fileupload/45_Website%20format.pdf)

Transition to a Comprehensive Watershed Management Approach



GAP I
(Ganga Action Plan)

1985

- Focused on the main stem of the Ganga River.
- Covered 25 towns and 260 schemes.
- Implemented between 1985 and 1993.

- Established as a separate authority for the Ganga's conservation.
- Managed the World Bank-assisted Ganga basin project and oversaw the NMCG (National Mission for Clean Ganga) at the central level.

- Launched as an integrated conservation mission.
- Took a basin-wide, multi-sectoral approach, including all Ganga tributaries.
- Continues to be a flagship program for Ganga conservation.



GAP II
(Ganga Action Plan)

1993

- Extended from GAP I, and included the Yamuna, Gomti, Damodar, and Mahananda rivers.
- Merged with the National River Conservation Plan (NRCP) in 1996.



NRCP
(National River Conservation Plan)

1995

- Expanded the focus to 41 major rivers, including 8 Ganga basin rivers (such as the Yamuna, Gomti, Damodar, Mahananda).
- Aimed to conserve all the tributaries of the Ganga.



NGRBA
(National Ganga River Basin Authority)

2009

- Established by the government under the chairmanship of the Prime Minister.
- Introduced a 5-tier governance structure for Ganga conservation efforts.
- In December 2019, the NCG approved the extension of Namami Gange as part of its agenda.



Namami Gange

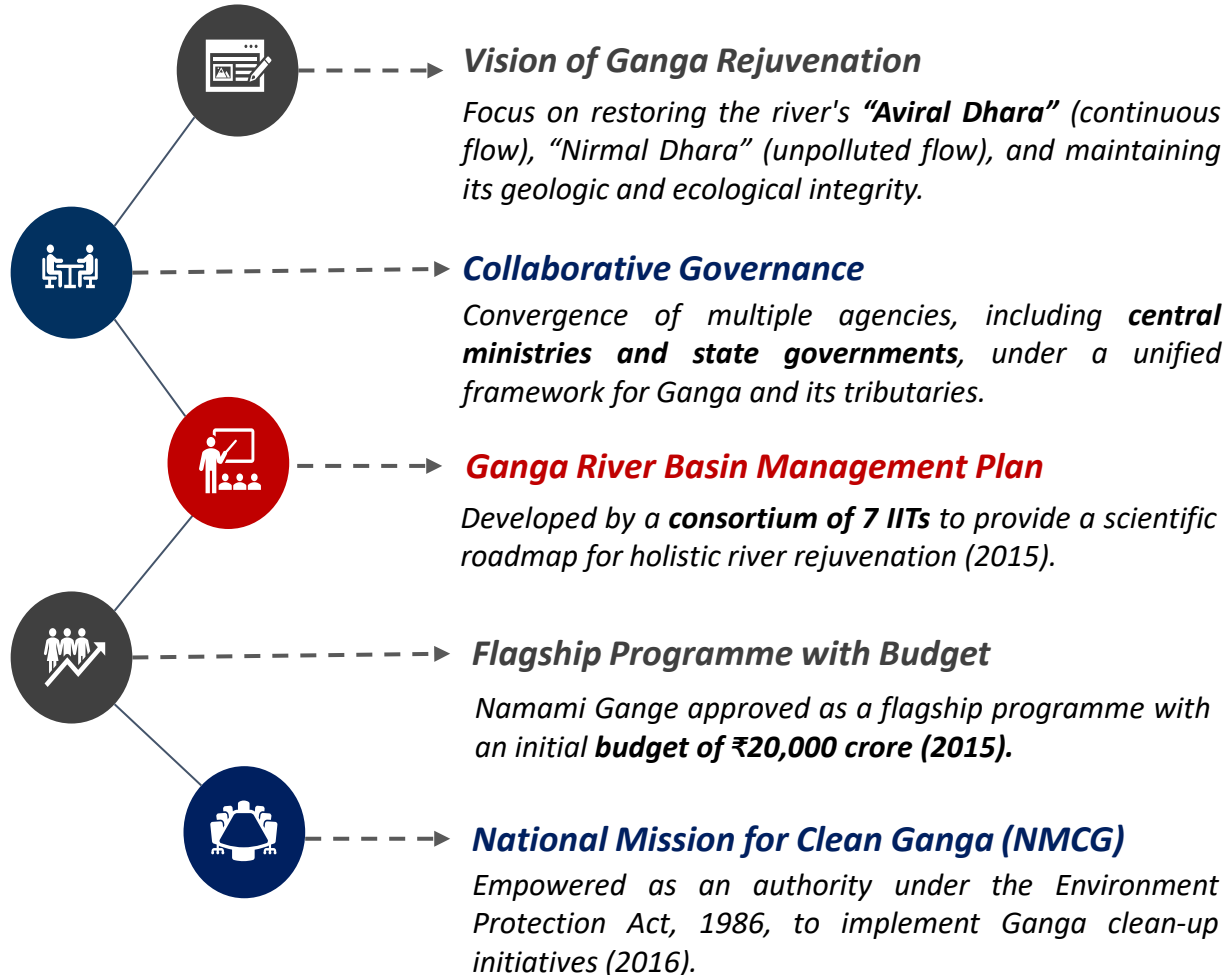
2015



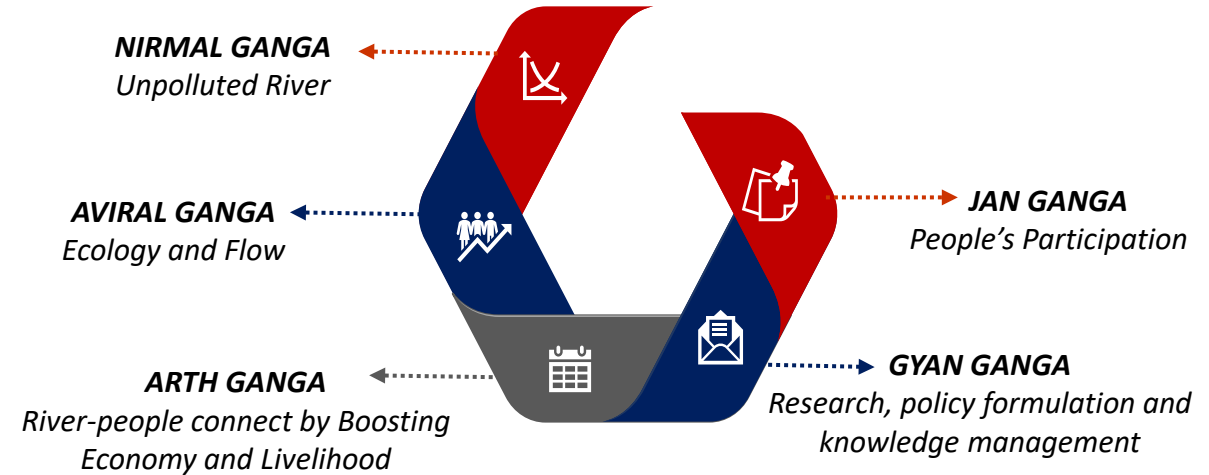
National Ganga Council
(Authority order and formation of NCG)

2016

Vision & Mission of Namami Gange



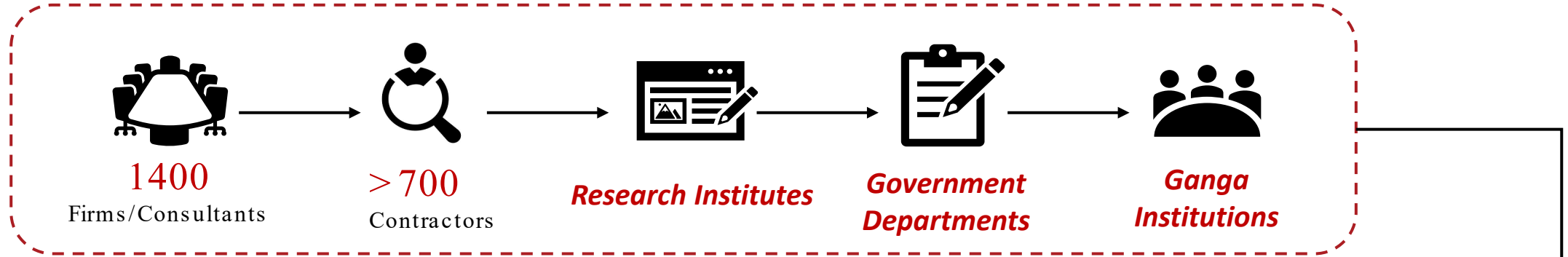
Pillars of Ganga Rejuvenation



Salient Features of Namami Gange

- Comprehensive integrated programme
- 100% Centrally funded programme
- O&M cost for 15 years included
- 5 years dedicated Budget allocation
- Hybrid Annuity based PPP model adopted
- Non-lapsable fund

Stakeholders Engagement



Research Institutes

- National Institute of Hydrology
- Indian Institute of Technology (IITs)
- Indian Council of Agricultural Research (ICAR)
- Central Pollution Control Board (CPCB)

Government Departments

- Ministry of Water Resources, River Development and Ganga Rejuvenation
- Ministry of Environment, Forest and Climate Change
- Ministry of Urban department & Farmers Welfare
- State Governments of the Ganga river basin states (Uttarakhand, Uttar Pradesh, Bihar, Jharkhand, West Bengal).
- 57 District Ganga Committee on Ganga Main Stem & Tributaries

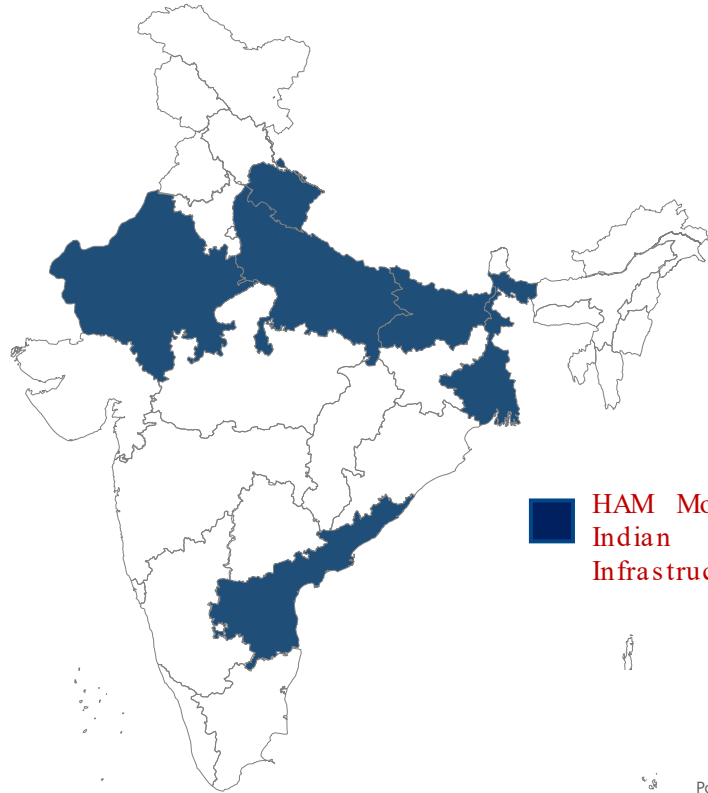
Ganga Institutions

- Ganga Task Force (GTF) (Ex-Servicemen)
- Ganga Praharis / Ganga Bal Praharis / Pravasi Ganga Praharis (WII)
- Ganga Vichar Manch (GVM) (Individual Citizens)
- Ganga Mitras (BHU)
- Nehru Yuva Kendra Sangathan (NYKS) (Ganga Doots)
- National Cadet Corps (NCC)
- National Service Scheme (NSS)
- River Trusts (Community Organisations)
- Science Clubs (Vigyan Prasar)



Innovative Approaches Adopted

About Hybrid Annuity Model (HAM)



HAM Model Adopted across Indian States for Sewage Infrastructure

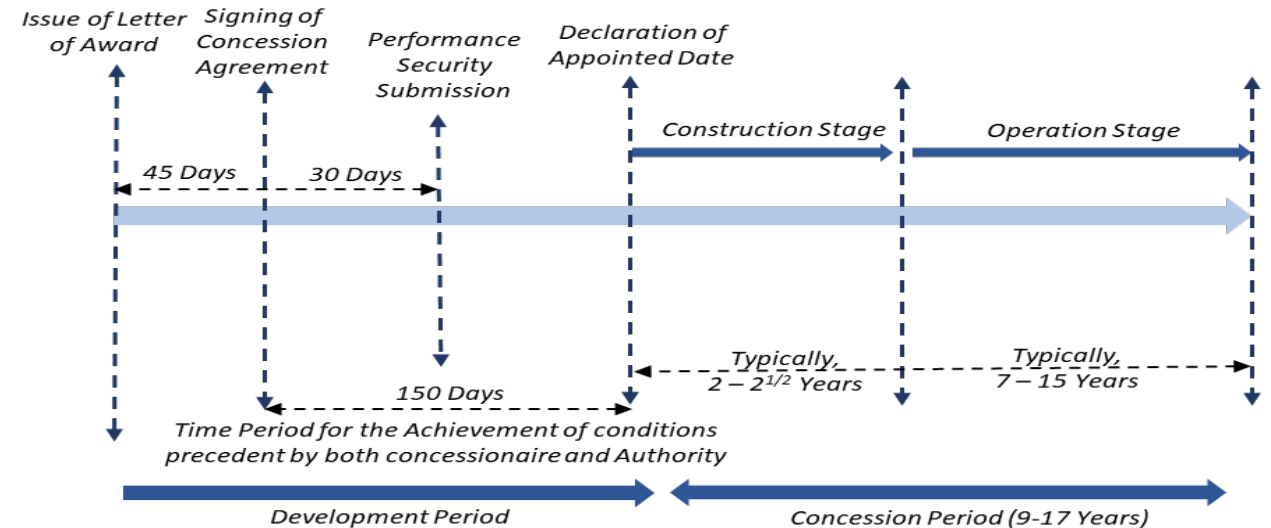
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- In the late 1990s, India developed various PPP models in road transport, with the HAM model gaining approval in 2016 by the road transport ministry.
- Following success in road transport, India's first STPs under the HAM model were launched in Haridwar and Varanasi, with costs of INR 171 Crores and INR 153 Crores under the National Mission for Clean Ganga (NMCG).
- The NMCG report (2020) highlights 29 projects across 9 cities in 4 states, valued at USD 1.4 Billion, with private parties contributing USD 102 Million in capital.

Financial Arrangements under HAM

	Bidding	Construction Period	O&M Period (15-20 Years)
Govt.	Evaluation of Bidder: Life cycle cost = NPV of project cost + NPV of O&M cost over 15 years	40% of capital cost in 5 equal installment based on progress of capital works	Remaining 60% of capital cost via bi-annual annuity payments for 15 years, including interest payment on reducing balance method (Bank rate + X%). Concessionaire receives O&M payments.
Private Players		60% of capital cost (Equity : Debt) Design, construction and build	Operation and maintenance Debt Repayment

Sequence of Events during Contract using the Hybrid Annuity Model



Key Benefits of HAM in Wastewater Sector

Key Benefits

- HAM model attracts private sector investment and incentivizes O&M through performance-based payments.
- Government mobilizes only 40% of initial funding, with the private player arranging the remaining 60% project cost.
- HAM model incentivizes private sector participation by offering a balanced risk-sharing mechanism.
- Financing risk during O&M is borne by the government, with escrow accounts ensuring timely payments to private contractors.
- Model incorporates inflation-adjusted costs over time, especially for long-term projects and O&M expenditures, mitigating inflation risks.
- Performance-based annuity payments create appropriate incentives for private sector providers.
- Assured annuity payments provide confidence to lenders, encouraging debt financing for private contractors.

Obligations of the Parties in Implementing Hybrid Annuity Model Contracts		
Phase	Obligations of Concessionaire	Obligations of Authority
Development Period	<ul style="list-style-type: none"> • Submit performance security • Procure and execute escrow agreement and substitution agreement 	<ul style="list-style-type: none"> • Procure right-of-way (site) for the project • Procure all applicable permits for environmental protection and forest clearance
	<ul style="list-style-type: none"> • Procure all applicable permits 	<ul style="list-style-type: none"> • Secure approvals for general arrangement drawings for road over-bridges or road under-bridges on the project, if any
	<ul style="list-style-type: none"> • Execute financing agreements 	<ul style="list-style-type: none"> • Appoint independent engineer to administer the concession agreement
Concession Period	<ul style="list-style-type: none"> • Partly finance and construct as per specifications of concession agreement 	<ul style="list-style-type: none"> • Pay to the concessionaire as per the achievement of construction milestones during construction period
	<ul style="list-style-type: none"> • Fulfill O&M obligations as per provisions of concession agreement 	<ul style="list-style-type: none"> • Pay annuities, including interest on annuities, make O&M payments during operation period

Risk Sharing Arrangements between Government and the Private Sector in Various Contract Forms						
Project Risk/Contract Model	Const.	DB	EPC	DBO	DBOT	HAM
Design	G	P	P	P	P	P
Construction	P	P	P	P	P	P
Operations	G	G	G	P	P	P
Revenue Forecast	G	G	G	G	P	G
Revenue Collection	G	G	G	G	P	G
Finanace	G	G	G	G	P	G+P
Const.= Construction	DBOT = Design–Build–Operate–Transfer			DBO = Design–Build–Operate		
DB = Design–Build	EPC = Engineering, Procurement & Construction			HAM = Hybrid Annuity Model		
G	Government	P	Private	G+P	Government + Private	

One City One Operator



Under the HAM PPP Model, NMC G has introduced the **One City One Operator** concept, aiming for a unified solution across the city and the integration of new and existing sewage infrastructure.



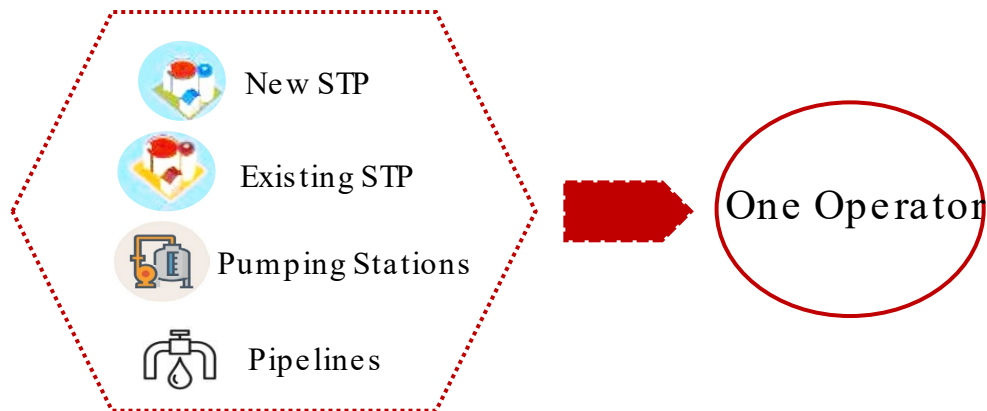
This project integrates the construction of new Sewage Treatment Plants (STPs) and the maintenance of existing infrastructure under one operator for the entire city.



The **Mathura sewage project** represents India's first Integrated Sewage Infrastructure project based on the One City One Operator concept.

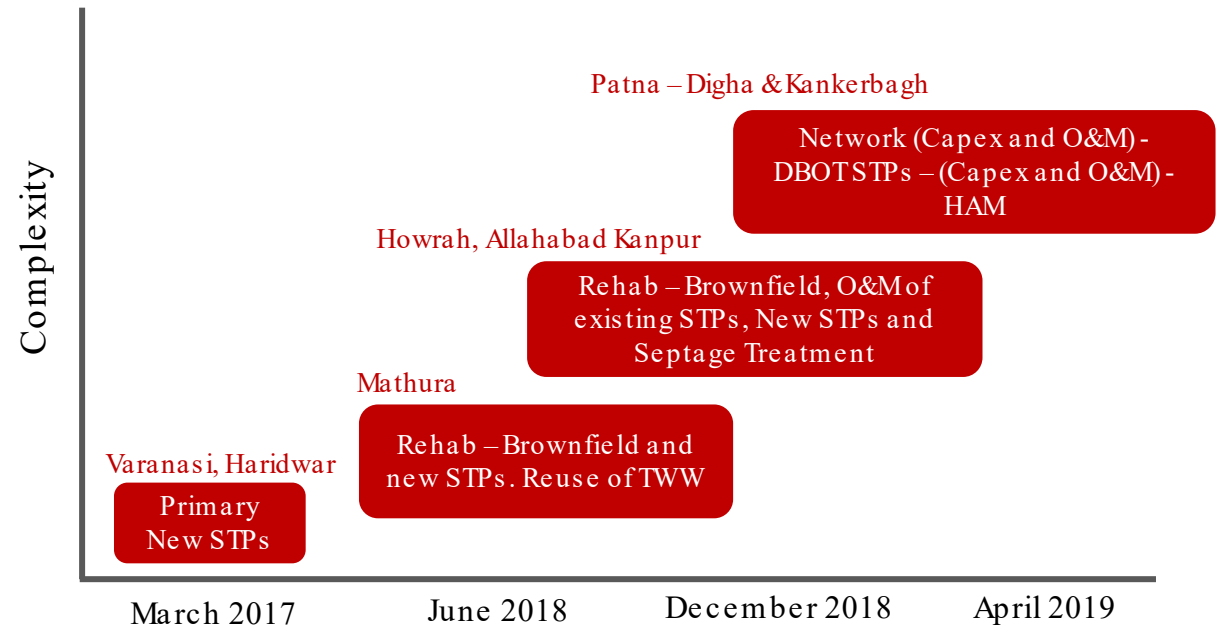


The total project value for the Mathura sewage project is INR 438 Crores.



List of cities under One City One Operator concept

City	Rehabilitation	New Development	Total STP Capacity
Praya graj	254	72	326
Kanpur	425	50	475
Mathura	37.3	30	67.3
Howrah	22	165	187
Patna	-	150	150
Farukkabad	2.7	35	37.7
Mirzapur-Ghazipur	14	39	53



Project Monitoring Mechanisms Adopted

Project Monitoring Tool (PMT)

- A centralized cloud-based system for real-time monitoring of NMCG projects.
- Covers key areas: Sewage Infrastructure, River Front Development, River Surface Cleaning, Afforestation, and Biodiversity.
- Integrates existing MIS with a mobile application for direct data entry by authorized personnel.



Key Components:

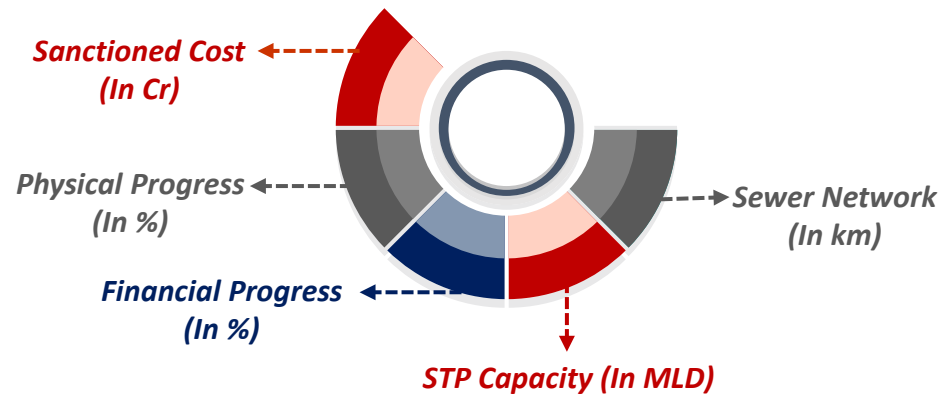
- Project Monitoring Module: Captures essential project elements for operational resources.
- Overall Dashboard: Visual representation of project progress and performance. Displays state-wise total number of projects, financial progress, funding organization details, sewer network, and STP capacity.

Project & Water Quality Monitoring Mechanisms Adopted

PRAYAS API

PM-DARPAN: Bilingual platform for KPI and data integration.
Facilitates data integration on KPIs for planning, evaluation, and monitoring.

Selected KPIs shared with Ministry's central database include:

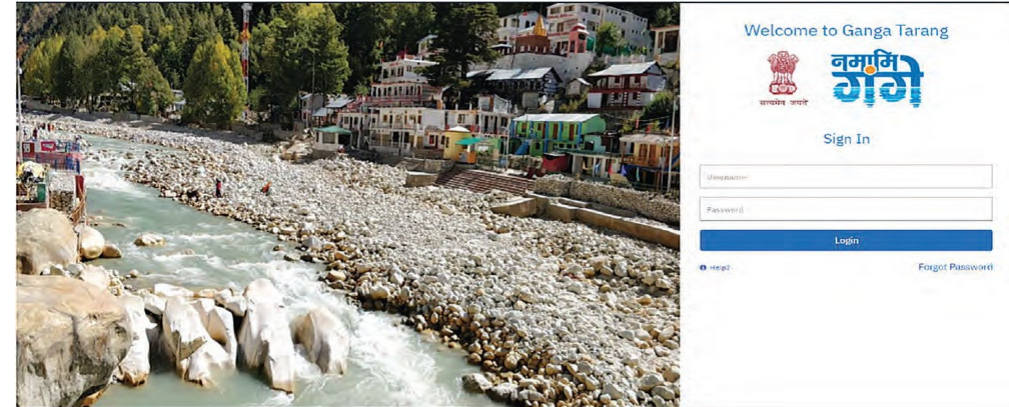


NMCG-Ganga Tarang Portal

- A platform for real-time data acquisition and analytics for Continuous Online Effluent Monitoring Systems.
- Supports open connectivity for any analyzer or device.

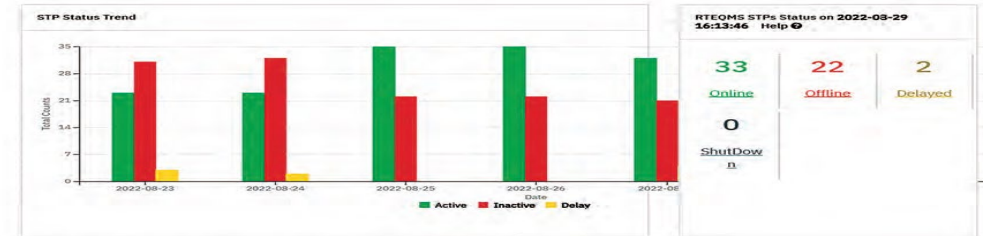
Ganga Tarang Dashboard Features

- State-wise data distribution and capacity utilization of STPs.
- Total sewerage treated per day.
- Monitoring and compliance status for STPs and drains.



Summary Dashboard

Total STPs: 169
Total RTEQMS STPs: 57
Total Manual STPs: 112
Distinct Parameters: 22



Total STPs	169
Operational STPs	131
Non Operational STPs	38
Online STPs With RTEQMS	33
Offline STPs with RTEQMS	22
STPs with Manual Data Entry	112
STPs Under ShutDown	0
STPs Meeting Design Parameters	155
STPs Not Meeting Design Parameters	14
Total No.of Drains	0
Flow Measurements in Drains	0
Non Measurement of Flow in Drains	0
Drains With Manual Entry of Flow	0

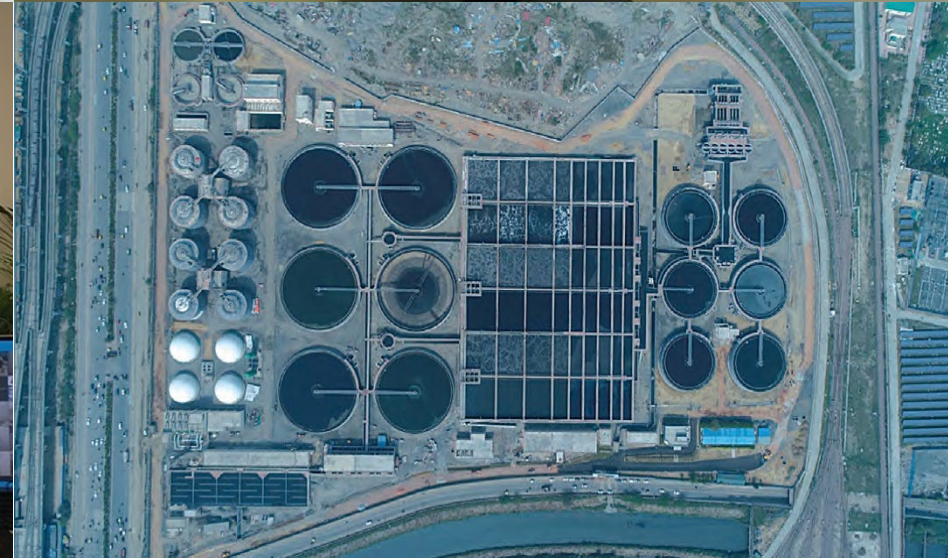
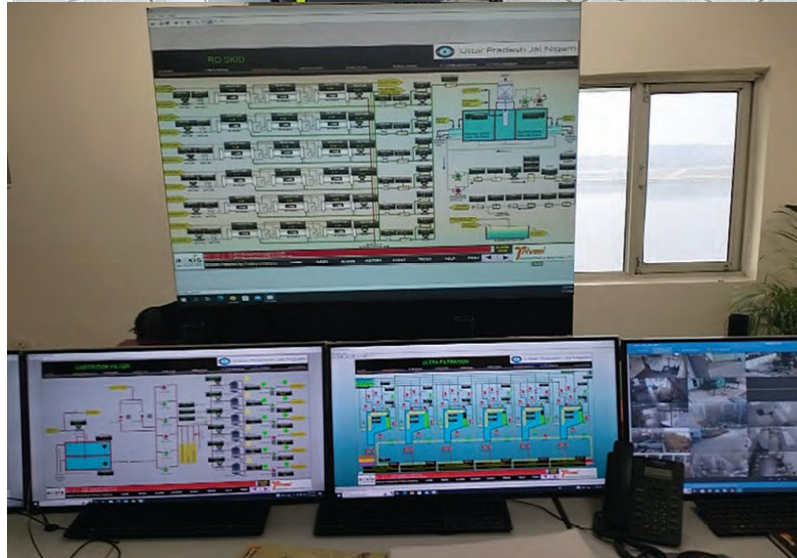
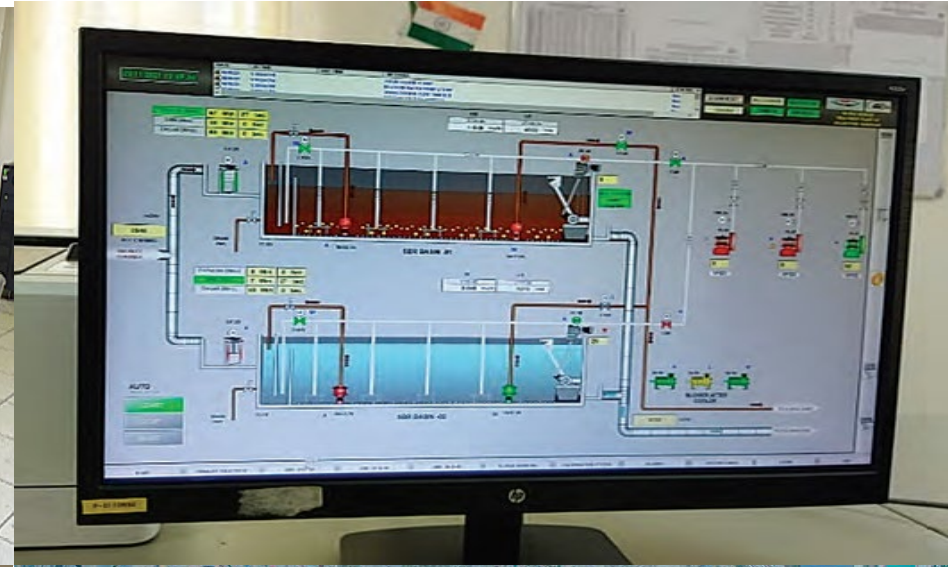
Water Infrastructure Monitoring Mechanisms Adopted

SCADA (Supervisory Control and Data Acquisition)

- Enables local and remote control of Sewage Treatment Plants (STPs) and Effluent Treatment Plants (ETPs).
- Real-time data monitoring and interaction with sensors, valves, and motors via HMI software.
- Event logging and error notifications for quick response.
- Used in approximately 70 SCADA-based STP plants across 11 states, including Online Continuous Effluent Monitoring Systems (OCEMS).

Benefits:

- Troubleshooting and problem prevention.
- Remote equipment control and reduced downtime.
- Energy cost savings and process improvements.
- Fully automated operation with minimal manpower.



Solid Waste Management

Ghat Cleaning

- **Widespread Efforts:** Ghat cleaning activities at major locations like Haridwar, Kanpur, Varanasi, and Prayagraj ensure waste does not enter the river, enhancing overall cleanliness.
- **Solid Waste Systems:** These efforts are complemented by solid waste management systems that ensure proper waste disposal and prevent littering along the ghats.
- **Investment & Cultural Preservation:** An estimated Rs. 44.81 crore has been allocated for cleaning, preserving the cultural and spiritual importance of these ghats, and keeping the river pollution-free.

River Surface Cleaning

- **Trash Skimmers:** Deployment of trash skimmers along the Yamuna stretch in Delhi removes floating debris and waste, improving surface water quality.
- **Prevention of Riverbed Contamination:** Solid waste collection prevents debris from sinking to the riverbed, enhancing long-term water quality.
- **Integrated Solid Waste Management:** Community involvement and municipal bodies ensure sustainable solid waste management, reinforcing the skimmer operations.



Rural Sanitation

- Open Defecation Free (ODF) Villages: All 4,465 villages along the Ganga's banks have been declared ODF, significantly improving rural hygiene and environmental health.
- Massive Infrastructure Effort: Over 11 lakh Independent Household Latrines (IHHL) were constructed, with an investment of Rs. 829 crore.
- Complementary Waste Management: Liquid waste management systems were developed in Ganga villages, with Rs. 124 crore allocated to address specific sanitation needs
- NMCG supports the Department of Drinking Water & Sanitation in implementing sanitation measures across Ganga villages, ensuring a coordinated and effective approach.
- Future Initiatives: The program's next phase, SBM (Grameen) 2.0, will focus on sustained sanitation improvements and liquid waste management in rural areas, ensuring long-term cleanliness along the river.





AVIRAL GANGA INITIATIVES

“To ensure that sediments, nutrients and other natural constituents are continuous & adequate throughout the river network”

Revitalizing Ganga through Eco Agriculture Practices

Sustainable and Eco-Agriculture to Rejuvenate River Ganga

- **Promotion of Sustainable Practices:** Encouraging eco-friendly agricultural methods to reduce pollution and runoff into the Ganga.
- **Organic Farming Initiatives:** Supporting farmers in transitioning to organic farming to enhance soil health and water quality.
- **Integrated Water Resource Management:** Implementing practices that promote efficient water use and management in agriculture.

Afforestation

- **Tree Planting Campaigns:** Initiatives aimed at planting native tree species along the Ganga to improve biodiversity and stabilize riverbanks.
- **Community Engagement:** Involving local communities in afforestation efforts to foster a sense of ownership and responsibility.
- **Monitoring and Maintenance:** Regular assessment and care for planted trees to ensure survival and growth.

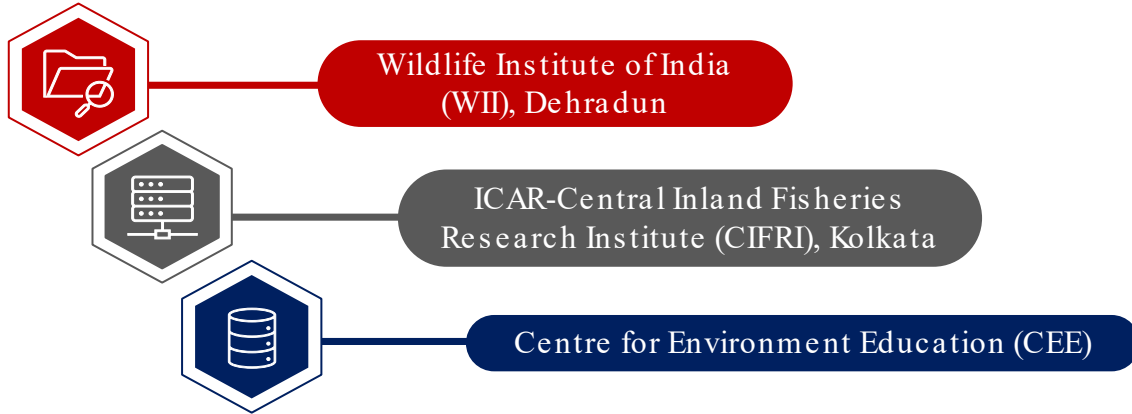


Conserving Aquatic Biodiversity in Ganga Basin

Biodiversity Conservation for Ganga Rejuvenation

Importance of Biodiversity: Recognized as a natural indicator of the ecological health of the Ganga.

Collaborations with Premier Institutes



Key Projects:

- **Aqualife Research & Monitoring:** Research initiatives to monitor aquatic life in the Ganga.
- **Training & Capacity Building:** Workshops and training programs for stakeholders involved in biodiversity conservation.
- **Community Participation:** Engaging local communities in conservation efforts to promote sustainable practices.
- **Fish & Fishery Research & Restoration:** Efforts to restore fish populations and their habitats.



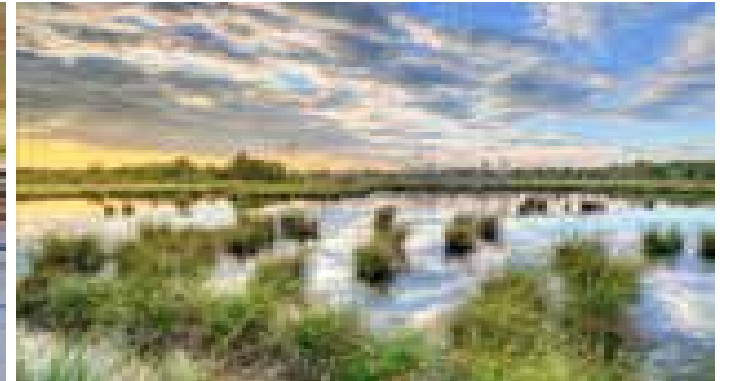
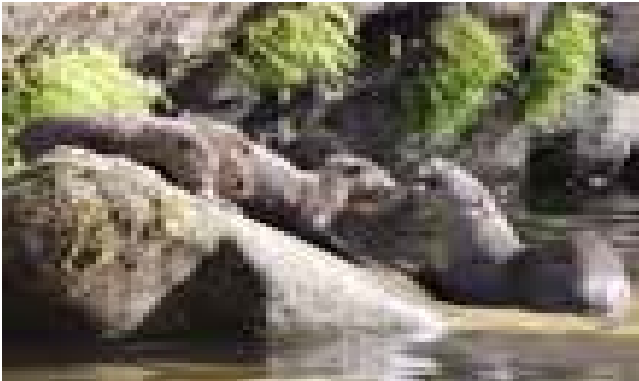
Conserving Aquatic Biodiversity in Ganga Basin

Wetland Mapping and Conservation

- Groundwater Recharge: Utilizing wetlands for natural groundwater replenishment.
- State Wetland Authority Formation: Establishing dedicated authorities for wetland conservation.
- Detailed plans for 226 wetlands in Uttar Pradesh. Identified wetlands in Uttarakhand for conservation initiatives.
- Toolkit Development: Creating management tools for urban water bodies and wetland management, including pilot studies in Bhagalpur, Bihar.
- Ramsar Sites: Six new Ramsar sites notified in Uttar Pradesh in 2020 for international wetland conservation.

Small River Rejuvenation

- Integration with MNREGA: Activities for rejuvenating small tributaries of the Ganga linked with employment generation through MNREGA.
- GIS-Based Inventory: Creating a geographic information system (GIS) inventory of rivers across districts.
- Employment Opportunities: Focused on generating jobs for returning migrant laborers.
- Identified Districts: 73 districts across Uttar Pradesh, Bihar, Jharkhand, Madhya Pradesh, and Rajasthan targeted for rejuvenation activities.
- Activities Include: Desilting of kunds, ponds, and bawaris | Construction of embankments | Development of water harvesting and storage structures | Afforestation initiatives | Bank protection efforts.





JAN GANGA INITIATIVES

“To enhance public awareness,
promote people river connect, large
scale participation and involvement of
community and common masses”

Community Participation Initiatives

GANGA UTSAV

Ganga Utsav was organized on November 4, 2019, to commemorate the declaration of the Ganga as the National River of India. This vibrant event featured a multitude of activities aimed at engaging students and youth, including river cinemas, quizzes, storytelling, and games focused on ecological learning. The celebrations fostered awareness and appreciation for the river's significance while promoting community involvement in conservation efforts.



GANGA AMANTRAN

Ganga Amantran was a remarkable 34-day river rafting expedition that covered over 2,500 kilometers of the River Ganga, from Devprayag to Gangasagar. This initiative represented one of the largest social outreach programs through adventure sports, aiming to connect with millions of people along the river's banks. The expedition team included members from the Armed Forces, National Disaster Response Force (NDRF), scientists from the Wildlife Institute of India (WII), CSIR-IITR, and NMCG, all working collaboratively to promote awareness of Ganga's importance.



GREAT GANGA RUN

The Great Ganga Run was organized on September 15, 2019, in New Delhi to raise awareness about the River Ganga. Nearly 20,000 participants joined this marathon, showcasing their commitment to environmental conservation. Additionally, a special "Run for Women" event was held in Varanasi on International Women's Day, March 8, 2019, further emphasizing the initiative's focus on inclusivity and community participation in protecting the river.



GANGA QUEST

Ganga Quest is an interactive online platform designed to enhance knowledge about the Ganga and rivers in general. It serves as a competitive initiative aimed at assessing knowledge gaps and attitudes toward river conservation. Through quizzes and educational resources, Ganga Quest encourages participants to deepen their understanding of ecological issues and fosters a sense of responsibility towards river health.



GYAN GANGA INITIATIVES

“Promoting research and knowledge management and evidence-based policy making under Ganga Knowledge Centre”

Knowledge Hub Initiatives

GANGA KNOWLEDGE CENTRE (GKC)

The Ganga Knowledge Centre (GKC), established under the National Mission for Clean Ganga (NMCG), aims to enhance the implementation quality of the National Ganga River Basin Authority (NGRBA) program. As a premier knowledge institution, GKC focuses on creating and managing knowledge resources, fostering research innovation, and facilitating stakeholder dialogues. It collaborates with universities, institutions, and NGOs to address knowledge gaps and promote sustainable practices related to the Ganga River Basin.



cGANGA

The Centre for Ganga River Basin Management and Studies (cGanga), established at the Indian Institute of Technology, Kanpur (IITK) in 2016, acts as a Centre of Excellence for data collection and knowledge dissemination for the sustainable development of the Ganga River Basin. Serving as a think tank for NMCG and the Ministry of Water Resources, cGanga organizes an annual India Water Impact Summit, focusing on collaborative strategies to address challenges in river basin management.



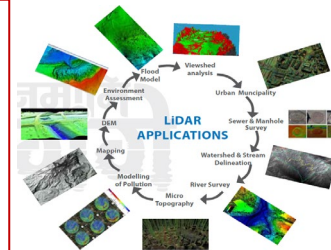
CULTURAL MAPPING

Cultural mapping along the River Ganga involves documenting its tangible, intangible, and built heritage in partnership with INTACH. This comprehensive documentation spans the entire Ganga from its origin to Ganga Sagar, covering aspects such as places of religious, historical, and cultural significance, temples, and heritage buildings. The project also highlights intangible heritage, including poems, songs, crafts, and belief systems, enriching the understanding of the river's cultural significance.

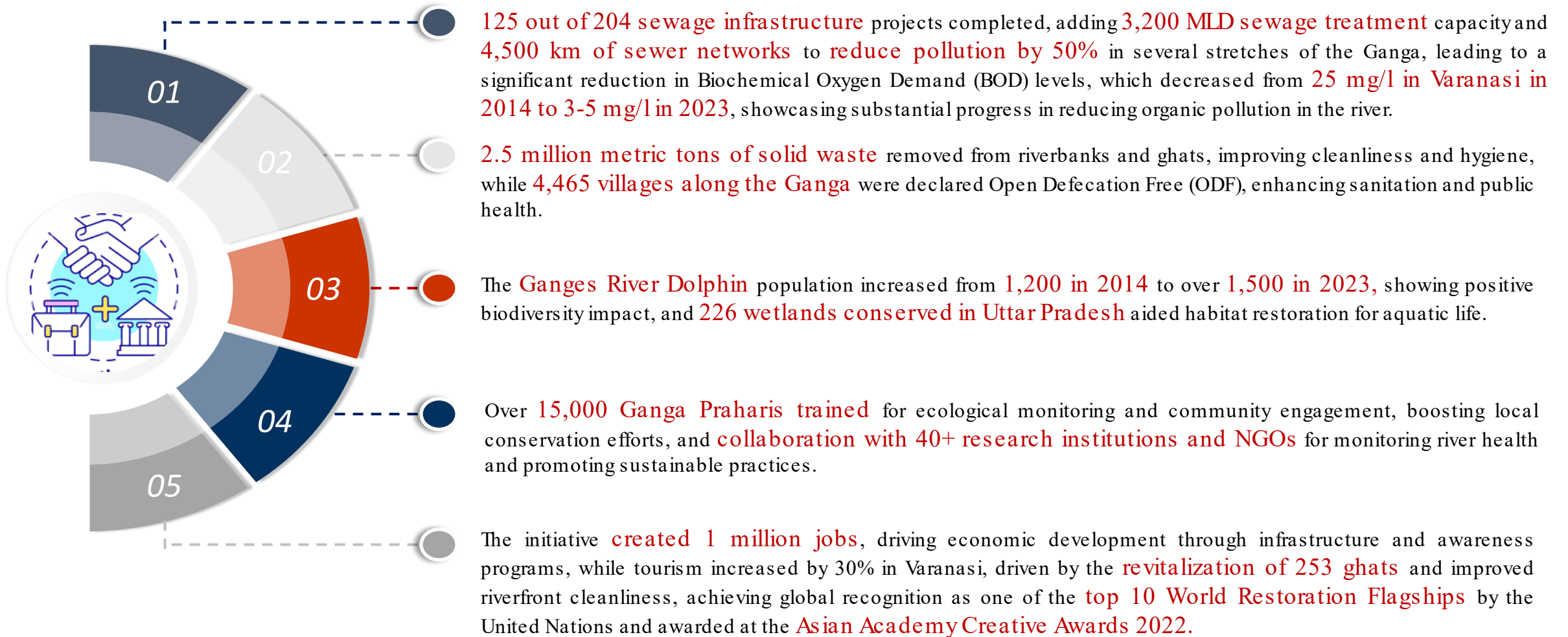


LiDAR MAPPING

LiDAR (Light Detection and Ranging) technology has been harnessed by NMCG, in collaboration with the Survey of India, for the Ganga Rejuvenation project. This initiative involves mapping approximately 45,000 square kilometers across five major states: Uttarakhand, Uttar Pradesh, Jharkhand, Bihar, and West Bengal. Key components include data acquisition via airborne LiDAR sensors, GIS dataset generation, field data collection, and capacity-building efforts, all aimed at improving management strategies for the Ganga River Basin.



Impact of Namami Gange





Replicating Success

Connecting India's Rivers Through
the Inspiration of Namami Gange

NANGIA & CO LLP

Scaling the Namami Gange Success: A Comprehensive Blueprint for India's Rivers

1

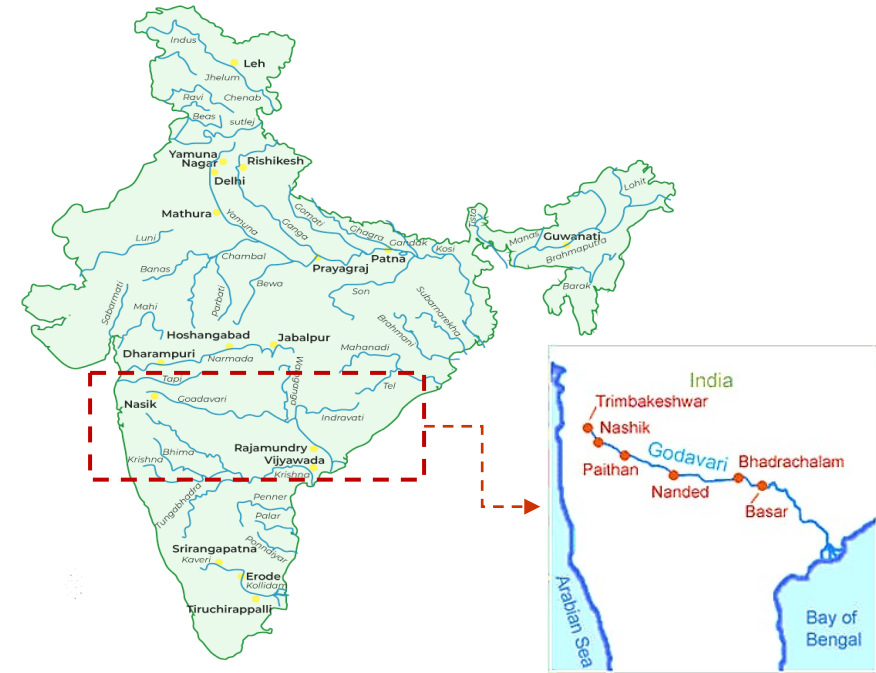
Expanding the Namami Gange Model Nationwide

Following the success of **Namami Gange**, this holistic model now serves as a **blueprint** for revitalizing India's rivers. It embraces a **systemic approach**, focusing on entire river ecosystems while balancing environmental restoration, community participation, and economic sustainability. This adaptable framework promises a **sustainable future** for India's diverse river systems.

2

Beyond Ganga: Crafting India's River Rebirth

Ignited by the Namami Gange Mission's success, the vision extends to rivers like the **Godavari, Yamuna, Krishna, Narmada, and Brahmaputra**, emphasizing a **networked approach** to **entire river basin as well as parts of rivers** interconnectivity. This initiative aims to ensure **water security** for millions in urban and rural areas, driven by **co-creation & sustainability principles**, revitalizing our rivers for a secure future.



3

The Aviral-Nirmal-Jan-Gyan-Arth framework remains at the core of efforts

- ❑ **Aviral:** Guaranteeing optimal water flow to maintain ecological integrity.
- ❑ **Nirmal:** Deploying effective pollution control strategies for cleaner rivers.
- ❑ **Jan:** Fostering active public engagement to cultivate community stewardship.
- ❑ **Gyan:** Advancing knowledge management to support sustainable practices.
- ❑ **Arth:** Boosting economic initiatives that uplift local communities while safeguarding the river ecosystem.

4

Collaborative Institutional Framework

Recognizing that government efforts alone are insufficient for effective river rejuvenation, we will implement Public-Private-People Partnerships (PPPP) to ensure sustainability. Collaboration with local governments, the private sector, civil society, and communities is crucial for maintaining this initiative across India. This multi-sector approach combines government initiatives, private expertise, and grassroots activism, optimizing resource use and leveraging diverse knowledge to achieve sustainable outcomes.

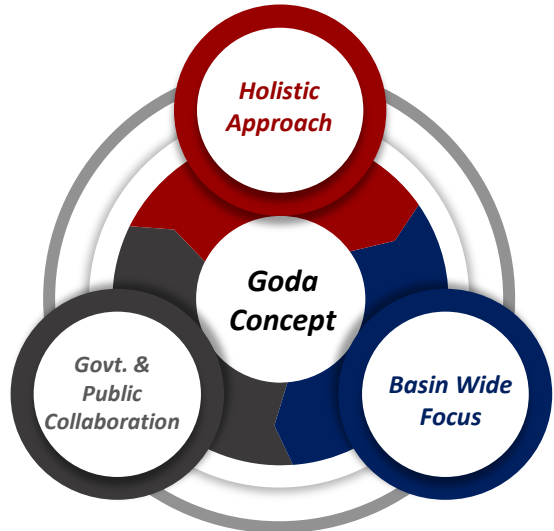
5

Targeting Critical River Systems: The Godavari as a Pilot

The Godavari River, India's second-largest river flowing through multiple states, presents an ideal candidate for this integrated rejuvenation approach. The project will serve as a **demonstration** of how **regional efforts** can cascade into national change, addressing unique challenges like pollution, flow regulation, and sustainable livelihoods for river-dependent communities.

Conceptualization of "Namami Goda Nashik Project" – A Pilot Initiative

- Drawing inspiration from the **Namami Gange** program, the **Namami Goda** initiative envisions the comprehensive rejuvenation of the entire River Godavari. However, recognizing the scale of the project and the need for robust collaboration, Nashik Municipal Corporation (NMC), as a ULB, has initiated the **Namami Goda Nashik Project** as a focused pilot program.
- This pilot aligns with two key components of the broader Namami Goda vision—**Nirmal Goda** and **Jan Goda**.
- Through this pilot, NMC aims to set a precedent for other municipal corporations along the Godavari basin, fostering broader participation in the **Namami Goda** program.
- To this end, NMC has issued an RFP to select a Project Management Consultant (PMC) to spearhead pollution abatement and sewerage infrastructure development, along with riverfront enhancements.



The Namami Goda initiative follows this same model, reflecting the understanding that a river's revival requires both environmental and cultural restoration.

The Namami Goda concept mirrors this by engaging communities along the Godavari's banks in rejuvenation efforts, echoing Gandhi's belief: "A nation's culture resides in the hearts and in the soul of its people."

Takes a source-to-delta strategy, rejuvenating the Godavari from Trimbakeshwar to the Godavari Delta, focusing on pollution reduction and ecological sustainability throughout the basin.



Namami Gange Anthem Clip



<https://www.youtube.com/watch?v=qyJC6mXICak>

Discussions



Reference Links

- https://www.iipa.org.in/cms/public/training_course/8
- <https://cganga.org/>
- https://nmcg.nic.in/stateganga_committees.aspx
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Thank You

