

Third-Party Evaluation of

NAMAMI GANGE PROGRAMME II

Under National Mission for Clean Ganga



FINAL REPORT

Submitted By



asci
Leadership through Learning

Contents

1. EXECUTIVE SUMMARY.....	5
a) Key Findings of Namami Gange Mission – Phase II.....	20
b) Way forward for NGP 3.0:	23
2. OVERVIEW OF THE SCHEME	27
2.1 Background of the Scheme.....	28
a) Brief write up on the scheme including objectives, Implementation Mechanism, scheme architecture/design.....	30
b) Name of Sub-schemes/components	37
c) Year of commencement of scheme	39
d) Present status with coverage of scheme (operational/ non-operational).....	39
e) Sustainable Development Goals (SDG) Served.....	55
f) Fund Flow mechanism (National and sub-national level).....	59
2.2 Budgetary allocation and expenditure pattern of the scheme	60
2.3 Summary of past evaluation since inception of scheme	62
3. METHODOLOGY	64
3.1 Sample size and sample collection process.....	66
3.2 Baseline data on Key Performance Index (KPIs)	69
a) For New Scheme.....	69
b) For Existing Scheme	70
3.3 Evaluation Tools used	70
3.4 Data collection tools.....	70
4. OBJECTIVE OF THE STUDY	72
4.1 Effectiveness of the scheme in terms of achieving its intended objectives as per the scheme guidelines	73
a) Development of Logical Framework Approach (LFA).....	73
b) Performance Rating Scale.....	80
c) Performance Assessment of Projects Under NGP Using LFA developed.....	81
d) Assessment of NGP Performance on Projects with Explanations.....	84
4.2 Additional Parameters.....	103
a) Institutional Structure, Implementation Mechanism, and Delegation of Power... 103	
b) Asset/service creation and its maintenance plan.....	105
c) Convergence with other Schemes and Programmes.....	106
4.3 Gaps in achievement of outcomes	107
4.4 Key Bottlenecks & Challenges	109
4.5 Input Use Efficiency.....	114

4.6	Best Practices/Case Studies.....	114
4.7	Most Significant Change (due to the scheme/intervention).....	116
5	OBSERVATIONS AND RECOMMENDATIONS.....	119
5.1	Thematic Assessment.....	120
5.2	Externalities	129
6	CONCLUSION.....	131
6.1	Issues & challenges.....	132
6.2	Vision for the future.....	133
	ANNEXURES	136
	Nirmal Ganga	137
	Aviral Ganga	143
	Arth Ganga.....	153
	Jan Ganga.....	156
	Gyan Ganga.....	157
	Feedback from State Implementing Agencies	162
	Insights from Interaction with Stakeholders.....	162
	List of Projects selected for evaluation	177
	Interface Between NGP's LFA Outputs with the defined Pillars, Thrust Areas and Action Items	184

List of Abbreviations

AE	Actual Expenditure
AMRUT	Atal Mission for Rejuvenation and Urban Transformation
BE	Budget Estimate
BOD	Biochemical Oxygen Demand
BUIDCO	Bihar Urban Infrastructure Development Corporation
CETF	Composite Ecological Task Force
CETP	Common Effluent Treatment Plant
CMMS	Computerised Maintenance Management System
COD	Chemical Oxygen Demand
CPCB	Central Pollution Control Board
CSR	Corporate Social Responsibility
CNG	Compressed Natural Gas
DGC	District Ganga Committee
DO	Dissolved Oxygen
DPR	Detailed Project Report
DFIs	Development Finance Institutions
ETF	Empowered Task Force
E-flow	Environmental Flow
FSTP	Faecal Sludge Treatment Plant
FC	Faecal Coliform
FCR	Food Chain Reactor

List of Abbreviations

FGDs	Focus Group Discussions
FY	Financial Year
GAP	Ganga Action Plan
G-Hub	Ganga Innovation Hub
GKC	Ganga Knowledge Centre
GPI	Gross Polluting Industries
GIS	Geographic Information System
HAM	Hybrid Annuity Model
HESCO	Himalayan Environmental Studies and Conservation Organisation
I&D	Interception & Diversion
IEC	Information, Education & Communication
IMP	Integrated Management Plan
INTACH	Indian National Trust for Art and Cultural Heritage
JJM	Jal Jeevan Mission
KII	Key Informant Interview
KMDA	Kolkata Metropolitan Development Authority
LFA	Logical Framework Approach
LiDAR	Light Detection and Ranging
LULC	Land Use Land Cover
MLD	Million Litres per Day
MIS	Management Information System

List of Abbreviations

MPR	Monthly Progress Report
MoJS	Ministry of Jal Shakti
MGNREGA	Mahatma Gandhi National Rural Employment Guarantee Act
NABARD	National Bank for Agriculture and Rural Development
NGC	National Ganga Council
NGRBA	National Ganga River Basin Authority
NGP	Namami Gange Programme
NMCG	National Mission for Clean Ganga
NV Lab	National Validation Laboratory
NRCP	National River Conservation Plan
OCEMS	Online Continuous Effluent Monitoring System
O&M	Operation & Maintenance
OECD-DAC	Organisation for Economic Cooperation and Development – Development Assistance Committee
PMG	Project Management Group
PPP	Public–Private Partnership
PRAYAG	Platform for Real-time Analysis of Yamuna and Ganga
PIAS	Pollution Inventorization, Assessment and Surveillance
RCA	River Cities Alliance
RE	Revised Estimate
RTWQMS	Real-Time Water Quality Monitoring System

List of Abbreviations

SBM	Swachh Bharat Mission
SCADA	Supervisory Control and Data Acquisition
SHG	Self-Help Group
SIDBI	Small Industries Development Bank of India
SMCG	State Mission for Clean Ganga
SPMG	State Programme Management Group
SPCB	State Pollution Control Board
SPS	Sewage Pumping Station
STP	Sewage Treatment Plant
TSS	Total Suspended Solids
TSA	Treasury Single Account
ULB	Urban Local Body
URMP	Urban River Management Plan
YAP	Yamuna Action Plan

1. EXECUTIVE SUMMARY

The Namami Gange Programme (NGP) is the world's largest river conservation and revitalisation Programme. It stands out for its unique characteristics and outstanding achievements, and within a short duration of its launch, it has received global recognition and accolades. Being felicitated with the coveted 'Public Water Agency of the Year' award at the Global Water Summit in April 2019 and United Nations (UN) Convention on Biodiversity as one of the top 10 World Restoration Flagships to revive the natural world is a testimony to the Programme's success. Ganga is a source of spiritual, cultural, social, and economic significance to Indians. More than 400 million people dwell along the Ganga River basin (World Bank report, 2013). The health of the river is therefore critical for their livelihoods and well-being. NGP, the flagship scheme approved by the Central Government in June 2014 and launched in May 2015, is implemented by the National Mission for Clean Ganga (NMCG). It aims to provide comprehensive and sustainable solutions for the river Ganga and its tributaries to cover 183 towns and 4,465 villages in 11 states with a focus on major pollution hotspots along the stretch of 97 towns in the five states of Uttarakhand, Uttar Pradesh, Bihar, West Bengal and Jharkhand. The integrated conservation programme, therefore, adopts a river-basin approach and brings together State governments and central ministries with a multi-sectoral mandate to address both water quantity and quality aspects.

The Namami Gange Mission (NGM) represents the first integrated river rejuvenation programme of its scale in India, and arguably one of the largest of its kind in the world. Its uniqueness lies in the holistic, multi-sectoral approach that simultaneously addresses pollution abatement, ecological rejuvenation, sanitation, liquid waste management, and community participation—an unprecedented convergence of infrastructure, ecology, and people-centric initiatives under one umbrella.

The first phase (2014–2021) emphasised building a strong foundation through sewage infrastructure, interception and diversion of drains, riverfront and crematoria development, rural sanitation, and river surface cleaning. A financing innovation, the Hybrid Annuity Model (HAM), was introduced to ensure sustainability by covering construction and 15–20 years of operations and maintenance of sewage treatment plants. By 2020, 314 projects had been sanctioned, 130 completed, and 4,873 MLD of sewage treatment capacity created or under construction, marking a 170% increase over the pre-2014 baseline. Industrial pollution control advanced significantly, with over 87% of Grossly Polluting Industries (GPIs) meeting norms. Ecological efforts, including dolphin conservation, turtle hatcheries, and afforestation of 33,024 hectares,

were complemented by community mobilisation through Ganga Praharis and Jan Bhagidari campaigns. Independent evaluations acknowledged the remarkable shift in infrastructure and governance, though they also noted the need for faster execution, stronger O&M mechanisms, and rural-urban integration.

Building on this base, Phase II (2021–2026) expanded the vision beyond physical assets toward systemic transformation. Key innovations include biodiversity restoration, livelihood integration under Arth Ganga, advanced SCADA and drone systems monitoring, resource recovery and wastewater reuse, and knowledge partnerships with global research institutions. Community-led stewardship was deepened through Jan Ganga. Internationally, NGM-II has been recognised as a pioneering model for climate-smart, river-centric development, with its integrated river basin management framework showcased at Stockholm Water Week 2025 as a global best practice.

As of July 2025, the programme demonstrates substantial progress, with 507 projects sanctioned at a total outlay of ₹41,707 crore, of which ₹20,336 crore (66.5%) has already been utilised. A notable 338 projects (67%) stand completed, while 169 (23%) advance steadily across eleven Ganga basin states and several tributary regions.

Sectoral achievements highlight tangible outcomes. Under Nirmal Ganga, sewerage and sanitation continue to form the programme's backbone, absorbing around 90% of allocations and adding over 3806 MLD of sewage treatment capacity since 2014. Field assessments in Barrackpore, Halishar, and Panipat confirm that the STPs are technically sound, with scope for further optimisation as household connections and water reuse systems expand. Under Aviral Ganga, afforestation and biodiversity efforts now span 33,024 hectares, with ecological recovery visible through initiatives such as CIFRI's Hilsa ranching, carp enhancement, and expanded dolphin rescue centres. Arth Ganga livelihood pilots, including Jalaj centres and fisheries-based enterprises, are delivering measurable socio-economic gains, with fisher incomes rising by 20–30% in some stretches, directly contributing to SDGs 1, 2, and 8. Jan Ganga has significantly deepened citizen engagement, reaching 2.5 crore people and training more than 8,000 Ganga Praharis, while innovative IEC campaigns in West Bengal showcase replicable community mobilisation models. Gyan Ganga continues to build knowledge capital through Urban River Management Plans, emerging pollutant inventories, water quality modelling, and climate change assessments, laying a strong foundation for future integration into ULB and state planning processes.

Key shifts seen in NGM II:

- **Aviral Ganga:** In addition to regulatory e-flows, integrated hydrology, groundwater recharge, and climate-adaptive flow regimes.
- **Nirmal Ganga:** From asset creation to reuse of treated water, sludge valorisation (bio-CNG, compost), and performance-based O&M.
- **Jan Ganga:** Transitioned from generic campaigns to community-led stewardship, plastic ban, and Kumbh-linked outreach.
- **Institutional Development:** Moving beyond NMCG/SPMGs to embedding river basin management into ULBs and state-level governance systems.
- **Gyan Ganga:** Elevated through PRAYAG dashboards, OCEMS integration, AI/ML water quality analysis, and climate studies.
- **Aquatic Biodiversity:** From small pilots to catchment-scale biodiversity parks, wetland restoration, and flagship dolphin/fish conservation.
- **Arth Ganga:** From peripheral activity to a core socio-economic pillar, with women SHGs, eco-tourism guides, and organic farming groups driving livelihoods.

Financial performance reflects a clear improvement over earlier schemes. Between FY 2021–22 and FY 2024–25, the programme was allocated ₹11,595.72 crore, with an impressive ₹9,451.90 crore (96.45% of RE) disbursed. Year-on-year utilisation rates have remained consistently strong: 116% in FY 2021–22 (including TSA rollover), 90.3% in FY 2022–23, 99.8% in FY 2023–24, and 86.3% up to April 2025. These trends highlight strengthened financial management, enhanced institutional capacity, and an improved implementation ecosystem. The programme's achievements markedly depart from earlier challenges under GAP and NGRBA. They reinforce its position as a model for integrated river rejuvenation with environmental, social, and economic benefits.

This third-party evaluation has used a **multi-layered methodology** combining desk review and extensive field-based inquiry. A comprehensive review of programme documents, implementation reports, research studies, media reports, and financial and project datasets has formed the starting point. Project progress data available on the MIS and monthly progress reports have been statistically analysed to identify trends, patterns, and lines of enquiry for subsequent primary research. Comprehensive field visits have been undertaken to a representative sample of projects across multiple states to validate and contextualise these findings. These visits have been complemented by interviews with state and city officials, implementing agencies, and NMCG officials to gain deeper insights into the objectives, processes, and outcomes envisaged under the Namami Gange Programme (NGP). Beneficiary surveys and focus group discussions have also been carried out to capture community perspectives and lived experiences, strengthening the assessment of

social, economic, and ecological outcomes. In addition, consultations have been held with state project teams, implementing partners, NGOs, academics, researchers, and citizen groups to identify achievements, assess challenges, and validate recommendations to enhance the reach and impact of the NGP in its next phase.

The evaluation by ASCI has been conducted in line with the performance indicators outlined in the output–outcome framework prescribed by the Department of Expenditure (DoE) and the National Institution for Transforming India (NITI Aayog), along with the internationally accepted criteria of the Organisation for Economic Co-operation and Development (OECD) Development Assistance Committee (DAC) for evaluating development programmes and policies. Accordingly, the evaluation addresses the relevance and appropriateness of the programme design, cost-effectiveness, efficiency, impacts (including unintended effects), and how lessons learned can inform improved design and execution.

The methodology adopted for this study is designed to provide a representative and comprehensive evaluation of Namami Gange Mission – Phase II (NGM-II). Out of a total of 507 projects, the focus is on 338 completed projects and 169 projects currently in progress. To ensure balanced coverage, a 20% representative sample of completed projects has been finalised. Of this, 15% (47 projects) have been selected using probability-based stratified random sampling, while an additional 6% (18 projects) have been purposively chosen for their strategic importance, high investment value, or innovation relevance, bringing the total sample to 65 projects. The sampling framework follows a three-stage proportional stratified random sampling technique, consistent with the approach used in the third-party evaluation (TPE) of NGM-I. At the first stage, projects are stratified by sector, with weights assigned in proportion to the number of completed projects in each sector, ensuring that sewage treatment, solid waste management, biodiversity, livelihood, and outreach initiatives are all adequately represented. In the second stage, states are selected in proportion to their investment share, giving higher-weightage states greater representation in the sample. The final stage involves the selection of individual projects within states, using criteria such as investment size, diversity, and strategic significance, supported by inputs from NMCG and stakeholder consultations. To supplement the random selection, purposive sampling is applied to capture high-value STPs, ecological pilots, livelihood-linked Arth Ganga projects, and large-scale outreach interventions like Kumbh Mela activity. The shortlisting process allowed for a wide range of projects to be evaluated under NGM-II. Major sewage treatment works include STPs at Kanpur (Pankha, Jajmau, Shuklagunj, Unnao), Farrukhabad, Prayagraj (Naini, Jhusi, Phaphamau), Varanasi (Assi–BHU), Patna (Saidpur, Karmalichak), Rajmahal, Barrackpore, Halishar, Budge-Budge, Panipat, Kondli, Rithala, Poanta Sahib, Haridwar, Munger, Howrah, Bally,

Kamarhati–Baranagar, and Okhla. Industrial effluent projects cover CETPs at Jajmau and Mathura. Ecological projects include biodiversity parks in Mirzapur, Bulandshahr, Hapur, and Badaun, wetland conservation at Kalewala, Numaiya Dahi, and Dahtal Reoti, and dolphin/fish habitat pilots. Knowledge and outreach initiatives include Ganga Knowledge Centre, PRAYAG portal, URMPs, Jalaj, and IEC at Kumbh/Prayagraj. This blended methodology balances statistical rigour with strategic depth, ensuring representation across sectors, states, and investment levels, while also capturing unique lessons from flagship and innovative projects. Overall, the design allows for both quantitative assessment and qualitative insights, providing a robust evidence base for evaluating outcomes, identifying best practices, and informing the future direction of NGM.

RATING	DESCRIPTION
10	Output fully achieved. Contributed organically to Outcome. Lasting influence on Impact.
9	Outstanding output achievement. Strongly linked to Outcome. Contribution to Impact can be easily identified.
8	Noteworthy output achievement. Particularly good links to Outcome and Impact.
7	Strong output achievement. Good links to Outcome and Impact.
6	Very Good output achievement.
5	Good output achievement. Can be further strengthened in the next phase, with minor adjustments and refinement.
4	Average output achievement. Scope exists for expansion and improvement in the next phase. Seek additional support and improve coordination and collaboration.
3	Below average output achievement. Calls for expansion in scale and improvement in performance. Closer and more frequent monitoring is needed. Consider revamping of activities
2	Poor output achievement. Consider revisiting this output.
1	Extremely poor output achievement. Go back to the drawing board and redesign activities.

ASCI has developed a customised Logical Framework Approach (LFA) in line with NGM 1, comprising an overarching impact statement, outcome statement, and eight output pillars. Each pillar has been supported by measurable indicators, making the framework suitable for the present impact assessment study and future evaluations. A numerical scoring scale has been designed to enable cross-comparison of performance across outputs, ranging from 1 to 10, where 10 represents “top-of-the-line performance” and 1 denotes “bottom-of-the-line performance.” This approach has provided a structured, transparent, evidence-based basis for assessing programme effectiveness and generating actionable recommendations.

The programme has gained positive momentum over time, with the steady pace of sanctioned projects reflecting a growing maturity in institutional processes and implementation mechanisms. The substantial rise in long-term non-infrastructure projects, including institutional development, research and development, afforestation, biodiversity conservation, and bioremediation, is particularly encouraging. Many of these—such as pollution assessment, water quality monitoring, and the establishment of the Ganga Knowledge Centre— are ongoing and continuous and therefore are not captured in completion statistics. In contrast, sewage management projects, which constitute the largest share of project numbers and budgetary allocations, typically require three to four years to complete. Moreover, allocations for sewage projects sanctioned under the Hybrid Annuity Model (HAM) include operations and maintenance costs for 15 years, to be released through annuity payments. Against this backdrop, both the pace of completion and budget utilisation under the NGP need to be interpreted with a long-term perspective.

The assessment of Namami Gange Mission – Phase II (NGP-II) against the OECD/DAC criteria reveals its pioneering role in integrated river basin management. The programme remains highly **relevant**, aligning with India's National Water Policy and the SDGs while addressing sewage management, industrial effluent control, biodiversity conservation, and solid waste management. Institutional innovations such as the River Cities Alliance (142 cities) and Urban River Management Plans (URMPs) in 27 towns have firmly embedded rivers within urban planning frameworks.

In terms of **effectiveness**, NGP-II has delivered tangible results. Water quality has improved, with Dissolved Oxygen consistently above 6 mg/L across most stretches and BOD levels reduced below 3 mg/L in several hotspots. Industrial compliance improved dramatically, from 39% in 2017 to 83% in 2024, backed by Online Continuous Effluent Monitoring Systems and CCTV-based sewerage treatment monitoring. Major STPs in Patna, Kanpur, Varanasi, and Kolkata have become operational. Socially, initiatives such as Jalaj (benefiting over 3,000 women) and Ganga Praharis underscore progress in inclusion and behavioural change.

Efficiency has improved through innovative financing models like the Hybrid Annuity Model (HAM), ensuring long-term O&M, and digital tools such as the PRAYAG portal and STP monitoring dashboards. Engagement of IITs, NIUA, CIFRI, and WII added technical depth, while state convergence facilitated smoother execution. However, ULBs' limited financial and technical capacity remains a challenge for asset upkeep.

The impact is visible both ecologically and socio-economically. Biodiversity restoration through Hilsa ranching, dolphin conservation, and wetland rejuvenation

has strengthened aquatic health. Livelihood initiatives have enhanced incomes, while afforestation and wetlands have built climate resilience. Institutionally, the RCA has emerged as a platform for cross-learning and collaborative action.

Sustainability is supported through 15-year HAM contracts, URMPs, community stewardship via Ganga Praharis, and ecological restoration. Yet, scaling up treated water reuse, sludge management, and ULB financing will be crucial for long-term viability.

NGM-II has emerged as a model of **convergence**, aligning river rejuvenation with broader national missions and schemes. Its **Hybrid Annuity Model (HAM)** is now replicated under **AMRUT 2.0** for sustainable STP financing. NMCG's support to **State Pollution Control Boards** has **upgraded laboratories**, enhancing the ecosystem of environmental surveillance. MoUs with multiple ministries—Rural Development, Tourism, Railways, AYUSH, and others—embed river health in sectoral programmes. From promoting Ganga Grams to eco-tourism and treated wastewater reuse, NGM-II demonstrates how cross-sectoral synergy can scale outcomes, making it a truly holistic, multi-disciplinary national mission.

Overall, NGP-II scores high on relevance and effectiveness, moderate on efficiency and sustainability, and has strong emerging impacts. It marks a transition from asset creation to an outcome-oriented, replicable model of river basin management, positioning it as a global benchmark.

A snapshot of the evaluation is given below:

Output 1: Wholesomeness of River achieved Score: 6 <i>NGP thrust area:</i> <i>Primary: Nirmal Ganga</i> <i>Secondary: Aviral Ganga</i>	Output 2: Clean River attained Score: 6 <i>NGP thrust area: Nirmal Ganga</i>	Output 3: Riverbanks transformed into accessible, clean and culturally vibrant spaces Score: 6 <i>NGP thrust area:</i> <i>Nirmal Ganga</i>	Output 4: Institutional Development achieved, and Capacity Building institutionalised Score:7 <i>NGP thrust area: Inter-ministerial Coordination, State's participation, and Capacity building</i>
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Output 5: Research, Monitoring & Learning and Innovative Project Financing Mechanism established Score: 7 NGP thrust area: Gyan Ganga	Output 6: Aquatic Flora and Fauna protected and promoted Score: 6 NGP thrust area: Aviral Ganga	Output 7: Awareness raised and Behaviour Change achieved Score:7 NGP thrust area: Jan Ganga	Output 8: Social Inclusion, Gender & Equity integrated Score: 6 NGP thrust area: Arth Ganga
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Output 1: Wholesomeness of River Achieved (Rating: 6)

NGP-II has significantly improved river wholesomeness through sewage and industrial pollution control, real-time monitoring, and river surface cleaning. By 2025, 213 STPs with 6,000+ MLD capacity were sanctioned, complemented by FSTPs in smaller towns. Industrial compliance rose from 39% in 2017 to 83% in 2024, aided by OCEMS and strict enforcement. Trash skimmers, and 40 real-time monitoring stations enhanced river health. DO levels exceed 6 mg/L in over 90% stretches, while BOD has declined in key hotspots. Biological scores confirm “Very Good to Moderate” status, showing tangible ecological recovery, though challenges persist in urban stretches.

Output 2: Clean River Attained (Rating: 6)

Under “Nirmal Dhara,” NGP-II has delivered large-scale sewage, sanitation, and effluent management infrastructure. By 2025, 213 projects representing 6,800+ MLD capacity were sanctioned, with 3806 MLD commissioned. Mega STPs at Okhla, Kanpur, Patna, Varanasi, and Kolkata, alongside CETPs at Jajmau and Mathura, reduced untreated inflows. Solid Waste Management at ghats (Varanasi, Haridwar, Rishikesh) institutionalised door-to-door collection, segregation, and composting. Sanitation infrastructure at Kumbh Mela enhanced cleanliness. Innovative pilots like TADOX technology furthered replication models. While sewer connectivity and reuse of treated water remain challenges, the programme’s infrastructure and O&M models mark clear progress toward SDG 6 and SDG 11.

Output 3: Riverbanks Transformed (Rating: 6)

Riverfront development has modernised 350+ ghats and 100 crematoria, improving accessibility, cleanliness, and cultural vibrancy. Investments of ₹1,905 crore, with 73% funds utilised, enabled systematic management of public spaces in Varanasi, Prayagraj, Haridwar, and Howrah. Mechanised cleaning and trash skimming supported aesthetics and sanitation. However, sustainability is challenged by limited ULB capacity, damage from floods, and funding gaps for O&M. NMCG is pushing convergence with Smart Cities and AMRUT to strengthen long-term upkeep. Despite constraints, visible cultural and environmental gains—cleaner ghats, improved crematoria, and better management of large congregations—reflect the shift from asset creation to community-driven stewardship.

Output 4: Institutional Development & Capacity Building (Rating: 7)

NGP-II has matured into a governance-led programme, moving beyond infrastructure to build institutional capacity. NMCG was accorded authority status under the Environment Act, strengthening enforcement powers. State Program Management Groups (SPMGs) and 139 District Ganga Committees coordinate local actions. The River Cities Alliance (142 cities) and URMPs integrate rivers into urban planning. Knowledge partnerships with IITs, WII, CIFRI, and NIH bolster scientific support. Over 3,800 officials have been trained in O&M, sludge management, and monitoring. Digital platforms—SCADA, OCEMS, and RTWQMS—enable real-time compliance. This robust institutional framework demonstrates a successful shift toward long-term, integrated basin governance and collaborative river management.

Output 5: Research, Monitoring & Financing (Rating: 7)

Research, digital monitoring, and innovative financing have become central under NGP-II. Platforms like PRAYAG and STP dashboards provide real-time data from 112 monitoring stations, with >85% sites meeting BOD standards. Applied research through IITs and the Smart Laboratory on Clean Rivers (IIT-BHU with Denmark) anchors innovation on pollutants, aquifer recharge, and decision-support systems. International collaborations (World Bank, GIZ, UNEP, JICA) advance climate adaptation and wastewater reuse. Financing innovations include Hybrid Annuity contracts for 40+ STPs. Embedding research, transparency, and finance into programme design has strengthened sustainability, though wider decentralised data use remains a need.

Output 6: Aquatic Flora and Fauna Protected (Rating: 6)

Biodiversity revival has become a flagship achievement. Hilsa ranching released millions of brooders and spawns, improving the upstream fish stock. Indian Major

Carp landings rose significantly. Dolphin conservation, with GPS tracking and rescue centres in Bihar and Uttar Pradesh, enhanced population recovery. Turtle rehabilitation and crocodile nesting support expanded habitats. Afforestation of 33,024 hectares and GIS-based biodiversity mapping reinforced ecological resilience. Studies on emerging pollutants, carbon sequestration, and e-flow linkages integrated science with policy. Recognised as a UN “World Restoration Flagship,” these initiatives link ecology with livelihoods through *Jalaj* and wetland-based culture systems, showing visible recovery despite ongoing threats from pollution.

Output 7: Awareness, Behaviour Change & Social Inclusion (Rating: 7)

Awareness creation under NGP-II has evolved into structured, community-led movements. National Ganga Utsav campaigns, digital outreach, and cultural programmes reached millions, embedding stewardship across age groups. Over 6,000 Ganga Praharis actively monitor biodiversity and plantations, while *Jalaj* empowered 3,000+ women with eco-tourism and aquaculture livelihoods. Youth engagement through *Ganga Praharis*, fostering intergenerational responsibility. Heritage mapping and riverfront walks linked intangible culture to ecological revival. Challenges remain in underutilised district awareness funds and short-term campaign formats, but the scale of participation and integration of livelihoods mark strong foundations for lasting behavioural change.

Output 8: Social Inclusion, Gender & Equity (Rating: 6)

Though not a standalone output, social inclusion is woven across all interventions. *Jalaj* demonstrated women-led conservation, benefitting 3,000+ women through eco-tourism, handicrafts, and aquaculture in 26 sites. Ganga Praharis integrated women and youth in biodiversity monitoring and stewardship. Gender-sensitive roles were created in sanitation and solid waste management, with women engaged as operators and supervisors. Women now participate in District Ganga Committees and URMPs, embedding inclusivity in governance. Challenges remain in scaling pilots and fully utilising funds at district levels, but gender equity and social inclusion are increasingly institutionalised.

The programme has effectively balanced short-, medium-, and long-term priorities, focusing on visible infrastructure development to generate early impact while laying the groundwork for sustainability. Short-term activities, such as the construction of ghats and crematoria, delivered quick, tangible results, achieved the highest completion rates, and played a vital role in building public confidence. These early successes enhanced programme credibility, enabling greater acceptance and support from communities, media, and the wider public, while also creating momentum for

mainstreaming medium- and long-term interventions. Notable achievements in the medium term include enforcing strict regulatory compliance on grossly polluting industries, expanding sewerage treatment coverage across towns, creating new sewage treatment capacity, refurbishing existing wastewater treatment facilities, and improving water quality in multiple river stretches. Long-term measures, such as biodiversity conservation, continuous ecological flow, water reuse initiatives, and the establishment of knowledge centres, have been initiated and are already showing promising results.

Importantly, the programme has also integrated livelihood-focused initiatives under the Arth Ganga pillar, which have meaningfully reconnected people with the river. Interventions such as Jalaj centres, fisheries-based enterprises, and eco-tourism pilots have generated sustainable income opportunities while promoting stewardship of river resources. In several stretches, fisher households have reported 20–30% income gains, while women’s self-help groups engaged in livelihood activities have found new pathways to economic empowerment. These interventions strengthen the socio-economic base of riverine communities and foster a sense of shared responsibility for maintaining the river’s health, linking livelihoods directly with ecological conservation.

A key innovation of the programme has been the successful introduction of Public–Private Partnerships through the Hybrid Annuity Model, coupled with the adoption of the “One City, One Operator” framework. These approaches represent a shift towards comprehensive and sustainable asset management and service delivery, ensuring that infrastructure is created, effectively operated, and maintained over the long run. Together, these initiatives underscore the programme’s evolution into a more integrated, resilient, and forward-looking model of river basin rejuvenation.

The performance evaluation using the Logical Framework Approach facilitates a realistic and fact-based analysis of the Namami Gange Programme. The insights from the evaluation are used to develop a strengths, weaknesses, threats, and opportunities (SWOT) framework, which can be employed to identify achievements as well as areas of improvement and hence guide the recommendations for the future course of the Programme.

The SWOT analysis of the programme:

S	Strengths
	Strategic Direction & Policy Intervention
	• Strong policy anchoring with alignment to SDGs (6, 11, 13, 15), National River Basin Management, and convergence with AMRUT 2.0, Jal Jeevan Mission, SBM 2.0. • Clear strategic thrust under five pillars (Aviral, Nirmal, Arth, Jan, Gyan Ganga) offering a holistic river basin approach. • Stronger policy intent towards basin-level planning via District Ganga Plans.
	Institutional Arrangement
	• Creation of the River Cities Alliance (RCA) and integration of Urban River Management Plans (URMPs) has institutionalised river-centric planning at the city level. • Stronger role of State Missions and District Ganga Committees in monitoring and implementation.
	Coordination & Convergence
	• Effective convergence with other line ministries (MoHUA, MoEFCC, Jal Shakti, and MoHFW) for sanitation, wetlands, and biodiversity. • Partnerships with World Bank, GIZ, JICA, Denmark and international agencies for capacity building and financing.
	Staffing & Skill Sets
	• Deployment of Ganga Praharis, Ganga Mitras, and Ganga Task Force created a dedicated cadre for awareness and monitoring. • Regular training and IEC capacity building activities across states.
	Technology & Innovation
	• Strengthened digital monitoring through PRAYAG portal, Ganga Water Quality Information System, STP Online Monitoring, OCEMS integration, and GIS-based compliance tracking. • R&D initiatives like Smart Laboratory for Clean Rivers (IIT-BHU), Geo-Ganga (ISRO-IIRS) and IIT-based projects on emerging pollutants.
	Civil Society Engagement
	• Community mobilisation through Jalaj livelihood programme, Ganga Praharis, and IEC campaigns. • Large-scale citizen outreach during Ganga Utsavs, Kumbh Melas, and Arth Ganga initiatives.
	Implementation Mechanism
	Asset creation momentum maintained with over 1,100 projects sanctioned , including STPs, FSTPs, CETPs, ghats, crematoria, and SWM facilities

W	Weaknesses (Areas Needing Strengthening)
	Strategic Direction & Policy Intervention • Heavy reliance on asset creation sometimes overshadows softer interventions such as river health integration in land use planning. • Lack of basin-scale hydrological integration in some project designs.
	Institutional Arrangement • ULBs remain underfunded and under-capacitated, leading to gaps in O&M of STPs, ghats, and SWM assets. • Limited staffing strength in State PMGs constrains programme execution.
	Coordination & Convergence • Multiplicity of agencies still creates overlap; district-level convergence is weak. • Integration with industry regulators for CETP compliance needs strengthening.
	Staffing & Skill Sets • Shortage of trained wastewater engineers and plant operators in many ULBs. • Dependence on contractual staff with high attrition in technical areas.
	Technology & Innovation • Gaps in translating R&D outputs into policy and operations. • Digital dashboards are not uniformly functional across states; real-time integration is still evolving.
	Civil Society Engagement • Despite high engagement, funds for awareness campaigns remain underutilised at the district level. • Sustained behavioural change in waste disposal and sanitation still requires deeper reinforcement.
	Implementation Mechanism • Utilisation of released funds is uneven, with delays in project execution. • Asset creation often does not match corresponding O&M financing.

O	Opportunities
	Strategic Direction & Policy Intervention • Expand circular economy models: wastewater reuse, sludge co-processing, bio-CNG generation. • Integrate climate resilience, wetlands, and floodplain management in basin planning. Institutional Arrangement • Strengthen District Ganga Committees with more legal mandate and budget autonomy. • Mainstream URMPs into city development plans across all riverine cities. Coordination & Convergence • Enhance collaboration with industry bodies for cleaner production and effluent management. • Leverage partnerships with multilaterals (World Bank, GIZ) for innovative financing. Staffing & Skill Sets • Expand structured training through IITs, NIUA, and WII for urban river management and ecology. • Build a cadre of certified O&M professionals for ULBs. Technology & Innovation • Scale up real-time monitoring with AI/IoT tools for predictive water quality management. • Integrate R&D on emerging contaminants and the climate-water nexus. Civil Society Engagement • Scale Jalaj livelihood models to all major river stretches. • Deepen youth and women's participation in community monitoring and stewardship. Implementation Mechanism • Strengthen PPP participation in O&M and service delivery. • Adopt performance-linked funding mechanisms to incentivise timely and quality outcomes.

T	Threats (External Risks)
	Strategic Direction & Policy Intervention Rising urbanisation and population pressure in Ganga towns may outpace treatment capacity.
	Institutional Arrangement Lack of financial devolution to ULBs risks the sustainability of assets.
	Staffing & Skill Sets The persistent shortage of skilled workers may delay the optimal operation of advanced STPs/CETPs.
	Technology & Innovation - Rapid pace of industrial change could make current treatment technologies obsolete. - Climate variability may undermine hydrological predictions and infrastructure design.
	Civil Society Engagement Behavioural change fatigue: initial enthusiasm may taper without sustained programmes.
	Implementation Mechanism - Natural disasters (flooding, erosion) threaten assets like ghats and STPs. Non-compliance by industries could undo pollution abatement gains.

The programme is at the cusp of achieving significant results and requires sustained support at all levels. A river rejuvenation effort of this size and complexity cannot be viewed as a short-term sprint; it is, rather, an institutional marathon that demands the convergence of multiple entities, integrating their diverse expertise on a shared platform. The success achieved in the current phase has inspired government agencies, institutions, civil society groups, and citizens alike, strengthening the collective conviction that the Namami Gange Programme must now move towards a more comprehensive and long-term trajectory.

To truly restore and safeguard the Ganga and all its tributaries, what is needed is a Ganga Vision 2047, a holistic river basin management strategy that spans from Gomukh to Ganga Sagar, ensuring ecological integrity, sustainable livelihoods, and cultural vitality across its entire course. This vision should be anchored in recognising that river rejuvenation is an intergenerational mission, demanding continuity, adaptability, and long-term institutional commitment.

The following two decades can be structured into successive programme phases—NGP 3.0 (2027–2037) and NGP 4.0 (2037–2047). Each decade-long phase would build on the lessons of the preceding one, deepening thematic coverage, strengthening tributary management, scaling innovations, and embedding climate resilience and community stewardship at the core. By the centenary of India’s independence in 2047, this phased approach would enable the realisation of a rejuvenated, resilient, and living Ganga, serving as a national symbol of ecological harmony and a global exemplar of integrated river basin management.

This report presents a critical analysis of the programme, highlighting its key achievements and areas of impact. It also identifies domains that require strengthening to support the transition into NGP 3.0 and beyond.

a) Key Findings of Namami Gange Mission – Phase II

1. Significant Expansion of Treatment Capacity

- NGM-II accelerated the creation of sewage treatment infrastructure, with 137 STP projects completed and operationalised, adding substantial capacity in the basin. Despite this progress, the sewage load is projected to reach nearly **16,000 MLD by 2035**, highlighting the scale of future challenges.

2. Strengthened STP Quality and Efficient O&M

- NMCG has considerably improved STP quality with advanced technologies (SBR, MBBR, & UASB) and a robust O&M framework though performance-

based payments, ensuring long-term asset sustainability. Unlike many non-NMCG STPs with high faecal coliform levels, NMCG facilities emphasise disinfection through UV and chlorination. Energy efficiency is achieved via biogas-to-energy recovery and solar plants. Real-time monitoring under Ganga Tarang (PRAYAG) and performance-based contracting provide a replicable model for other river basins facing underutilized and inefficient STPs.

3. **Mainstreaming Innovative Technologies**

- The introduction of advanced treatment methods (e.g., advanced SBR, UV disinfection, nature-based solutions, in-situ drain treatment, and renewable energy generation) has set benchmarks for cost-effective, sustainable wastewater management in India.

4. **Policy and Regulatory Frameworks**

- Formulation of the **National Framework for Safe Reuse of Treated Water** and the enforcement of **E-flow notification** on the Ganga main stem mark significant steps toward systemic regulation, freshwater conservation, and sustainable resource use.

5. **Strengthening Industrial Pollution Abatement**

- Action on more than **4,000 Grossly Polluting Industries (GPIs)**, leading to compliance in 2,682 cases and closure of 801 units, achieved a **28.6% reduction in effluent discharge** (2017–2023).

6. **Community-Centric Livelihood Integration**

- NGM-II linked river health with local well-being by engaging **Self Help Groups (SHGs)** and sensitising nearly **8,000 fishers**, resulting in enhanced monthly incomes (₹5,000–₹11,000). This demonstrates how conservation-led livelihoods can support sustainability.

7. **Biodiversity Conservation and Ecological Recovery**

- The dolphin population has increased since 2019, with sightings in tributaries where they were previously absent. Initiatives for species restoration (dolphins, turtles, gharials, otters, hilsa) and creation of biodiversity parks/wetland conservation projects indicate tangible ecological revival.

8. **Urban and River Basin Integration**

- Through **River Cities Alliance (RCA)**, **Mississippi River Cities and Towns Initiative (MRCTI)** and the global **GRCA** launched at COP28, more than **275 river cities across 11 countries** are now connected. Preparation of **Urban River Management Plans (URMPs)** for cities like Kanpur, Ayodhya, and Aurangabad shows progress toward embedding river health into urban planning.

9. Knowledge, Capacity, and Monitoring Systems

- Development of the **Ganga Knowledge Portal** (1,072+ resources), **PRAYAG** dashboard for real-time water quality monitoring, and establishment of multi-level monitoring systems (OCEMS, third-party audits, CCTV surveillance) have strengthened accountability and evidence-based decision-making.

10. Forestry and Riverine Ecology Restoration

- Over **33,024 hectares of plantations** have enhanced green cover, reduced erosion, and supported riverine ecosystems. Afforestation and organic agriculture projects provide both ecological and livelihood dividends.

11. Cultural and Social Engagement

- More than **5,300 historic sites** are documented, including regular **Ganga Utsavs**, **cleanathons**, **yoga at ghats**, and campaigns like **Paint My City** during **Kumbh**, which have deepened public participation and reinforced the cultural connection with the river.

12. Global Leadership and Partnerships

- Collaborations like the **Indo-Danish Smart Laboratory for Clean Rivers (SLCR)**, international twinning of river cities, and partnerships with funding agencies/knowledge institutions reflect India's emergence as a global leader in integrated river basin management.

13. Improvement in River Health Indicators

- CPCB assessments show **Dissolved Oxygen levels within bathing water quality standards** along most stretches. Biological Water Quality (BWQ) at monitoring sites is mostly 'Good' to 'Moderate', reflecting ecosystem recovery.

14. Institutional Convergence and Local Governance

- Functioning of **139 District Ganga Committees (DGCs)** with more than **4,300 meetings**, establishment of the **Ganga Task Force**, and decentralised engagement with states and urban local bodies have been key for sustained governance.

15. Programme Design and Learning

- NGM-II demonstrated the strength of **basin-wide integrated planning**, backed by political will, administrative resolve, and technical expertise. Its innovative models—**Hybrid Annuity PPP** and **One City One Operator**—are now being scaled as sustainable asset management solutions.

16. Future Direction (Towards NGM-III)

- With measurable improvements in treatment infrastructure, biodiversity, and water quality, NGM-II has proven the feasibility of river rejuvenation. However, the magnitude of untreated sewage, industrial effluents, and the need for tributary coverage demand a **horizontal expansion to more river basins** and **vertical deepening of thematic areas** in the next phase (2026–2031).

b) Way forward for NGP 3.0:

- Glacier health and climate resilience must be built into basin management through a Himalayan Cryosphere Mission, hydrological modelling, and alpine ecosystem restoration to secure flows from Gomukh to Ganga Sagar.
- Asset sustainability requires a ring-fenced O&M fund with blended finance, annuity-linked allocations, and performance-based contracts backed by SCADA/AI-enabled monitoring.
- Gender and social inclusion must be institutionalised by embedding gender-sensitive indicators in DPRs and scaling women-led enterprises in sanitation, fisheries, and eco-tourism.
- FSSM should be mandated through statutory bye-laws in all ULBs, with regulated desludging operators, PPP-based packaged solutions, and incentives for small towns and peri-urban areas.
- URMPs should be made statutory within master plans, while the River Cities Alliance should evolve into a parastatal platform for pooled procurement, peer learning, and financing.
- CETPs must be upgraded for advanced pollutant removal, with ZLD enforced in high-risk clusters and blockchain-based discharge monitoring for transparency and compliance.
- Resource recovery should be scaled through market-linked agreements for treated water, bio-sludge use in agriculture, and large-scale biogas-to-CNG projects integrated with gas networks.
- District Ganga Committees must be given budget allocations with an open-access Basin Data Grid and participatory audits.
- A National Ganga Cadre should be established with engineering, ecology, finance, PPPs, ICT, and climate resilience specialists to provide long-term technical continuity.
- A National Ganga Convergence Framework should align JJM, AMRUT, SBM, and Atal Bhujal with basin-level action plans, supported by a Ganga Challenge Fund pooling central and private capital.

- Long-term financing must be secured through non-lapsable budget allocations, sovereign green bonds, and municipal bond frameworks for river cities.
- The Ganga brand should be amplified globally through an “Incredible Ganga” campaign, positioning NGP as a soft diplomacy tool and global model of river rejuvenation.
- Strategic Behaviour Change Communication (SBCC) should replace IEC, with at least 1% of budgets for campaigns promoting sewerage connections and discouraging untreated discharges.
- Digital platforms and social media should be leveraged to raise awareness on STPs, treated water reuse, and ecological benefits, building citizen ownership at scale.
- A Ganga Innovation Hub (G-hub) should be established to incubate start-ups and technologies in sludge management, bio-CNG, plastic recycling, and mechanised sanitation.
- Basin-level integrated urban water management strategies must include mandatory audits, efficiency reforms, and recycling targets to reduce freshwater dependence.
- Capacity building budgets should be raised to 3% of programme resources, guided by CENA assessments and customised training for ULBs, SMCGs, and operators.
- Nature-based solutions should be mainstreamed for drain cleaning and river rejuvenation, including constructed wetlands, bio-remediation, and phytoremediation. These low-cost, scalable interventions can complement hard infrastructure while delivering biodiversity and climate resilience co-benefits.
- Energy recovery must be institutionalised across STPs with defined biogas, CNG, and electricity generation targets. Mandating energy-neutral or positive STPs under NGP will reduce O&M costs, improve financial sustainability, and advance India’s renewable energy goals.
- Biodiversity and ecological flow must be institutionalised with e-flow regulations, expanded fish ranching, dolphin conservation, and large-scale afforestation.
- Livelihoods should be scaled under Arth Ganga by supporting Jalaj centres, fisher cooperatives, and eco-tourism PPPs, linking income growth with river stewardship.
- Circular economy models must be mainstreamed through bankable contracts for treated water, sludge markets, and waste-to-value enterprises across the basin.

- Financing innovation should include blended finance with DFIs, pooled municipal funds, and SME credit lines via SIDBI/NABARD for waste-to-value businesses.
- A National River Basin Analytics Platform should integrate URMPs, satellite monitoring, and climate projections into predictive planning tools for ULBs and states.
- Citizen stewardship should be strengthened through River Clubs, Ganga Praharis, and digital citizen science platforms, linking engagement to measurable outcomes.
- NMCG should take leadership roles in UN Water, Global River Alliances, and regional partnerships, sharing Ganga lessons with India's rivers and the world.
- Behavioural incentives should be embedded in municipal systems, rewarding households and industries for sewerage connections, reuse practices, and pollution prevention.
- Regional training hubs should be established across basin states, providing continuous mentoring and technical support for uniform O&M and project delivery standards.
- Pro-poor and gender-responsive measures must be embedded in all projects, ensuring women, youth, and marginalised groups are systematically involved in decision-making.
- NGP should evolve into a national river rejuvenation framework, replicating its basin-wide approach across other rivers and positioning India as a global leader in integrated river basin management. It can also become a lighthouse of best practices, particularly in STP construction and management, by incorporating global standards that emphasize high-quality asset creation and a long-term maintenance framework through HAM, ensuring sustainability and replicability across the country.

The principles of the Namami Gange Programme (NGP) are strongly aligned with both the global Sustainable Development Goals and India's national development priorities. Its strategy supports broad-based economic growth while ensuring balanced and inclusive development. The programme has accelerated the adoption of advanced technology solutions, pioneered innovative PPP models, fostered process-level innovation, enhanced awareness, and deepened community participation. Experience from implementation clearly demonstrates that when political will, technical expertise, and administrative resolve converge, complex procedures can be streamlined into flexible processes, enabling faster and more effective execution. The sheer range, scale, and pace of activities undertaken under the programme remain unparalleled in the country.

The NGP has set a benchmark and created momentum for integrated planning in other river basins across India. It has shown how a basin-wide approach can unite diverse stakeholders on a common platform to work towards a shared vision. This collaborative model has ensured that benefits reach stakeholders more effectively, generating a wide array of intangible outcomes that are difficult to quantify but equally valuable in building long-term resilience and trust.

With its unique design and demonstrated impact, the NGP holds the potential to evolve into a national framework for all major rivers in India, while also positioning itself as a global best practice in integrated river basin management. Its emphasis on ecological restoration, community engagement, and sustainable livelihoods provides a replicable model from which other nations can learn in their river rejuvenation journeys.



2. OVERVIEW OF THE SCHEME

2.1 Background of the Scheme

The River Ganga has significant economic, environmental, and cultural value in India. Originating in the Gangotri glaciers, the river flows through a length of 2525 km with its basin covering 11 states and affecting more than 400 million people settled on its banks. Ganga and its tributaries (Yamuna, Gomati, Ghagara and many smaller ones) account for 30% of the country's water resources. They are the primary source of water for domestic as well as irrigation purposes, proving to be a lifeline to the millions of Indians who live along its course and depend on it for their daily needs through drinking water, agriculture, industry, fisheries, hydropower, navigation, and cultural services, making it the most populous river basin globally.

The river basin accounts for 26% of India's landmass with a catchment area of 860,000 square kilometres. It is home to about 43% of India's population and 30% of India's towns, including Delhi, Kolkata, Kanpur, Lucknow, Patna, Agra, Meerut, Varanasi, and Allahabad (ESMF 2019, Census 2011).

The river holds unparalleled cultural and spiritual significance in India. It is central to rituals, festivals, and religious practices and is a critical lifeline for livelihoods and ecological services. However, rapid urbanisation, industrial expansion, agricultural intensification, and demographic pressures have caused severe ecological stress on the river system.

It is the most populous river basin in the world (World Bank, 2014) and is characterised by rapid urbanisation with an average population density of 520 persons per square km, as against 312 for the entire country. Further, there is haphazard urbanisation with hundreds of major industries located on the banks of the river, many of them grossly polluting.



Figure 1: Ganga River Basin

Hence, over the last few decades, a combination of domestic and industrial wastewater has impacted the river's physical characteristics, and its natural ability to digest organic waste and self-purify and rejuvenate has been significantly stressed (CPCB, 2013). The high levels of pollution pressure constantly threaten the environmental sustainability and the biodiversity of the river Ganga.

In addition to high pollution loads, the ecological health of the Ganga (and some of its tributaries) had been deteriorating due to high levels of water abstraction for irrigation, municipal and industrial uses.

Recognising the multi-dimensional role of the Ganga, successive governments since the mid-1980s have initiated interventions aimed at pollution abatement and conservation. However, the earlier programmes such as the Ganga Action Plans (GAP I & II) and the National River Conservation Plan had limited outcomes due to fragmented planning, inadequate O&M funding, weak institutional coordination, and insufficient community involvement.

The establishment of the National Ganga River Basin Authority (NGRBA) in 2009 and the National Mission for Clean Ganga (NMCG) in 2011 marked a shift towards an integrated basin-wide approach. The launch of the Namami Gange Programme in 2014 further institutionalised this shift, bringing in enhanced funding, high-level political commitment, and innovative governance mechanisms. The programme has since received international recognition for its river-centric and climate-smart development approach, with global forums such as the Stockholm World Water Week (2025) citing it as a model for integrated river rejuvenation ([Times of India, 2025](#)).

The cumulative experience and lessons from these interventions laid the foundation for Namami Gange Mission – II (2021–2026), which aims to consolidate gains and expand the scope of rejuvenation through decentralised, sustainable, and livelihood-linked approaches.

a) Brief write up on the scheme including objectives, Implementation Mechanism, scheme architecture/design

The Government of India (GoI) has implemented several initiatives over the years to arrest the pollution of the Ganga and revive the river. The Ganga Action Plan (GAP) Phase-I, prominent among such efforts, launched in 1985. Due to the uncurbed flow of industrial and domestic sewage, pollution in the Ganga had reached uncontrollable proportions by the 1980s. GAP Phase-I involved pollution abatement measures in 25 Class-I towns in three states of Uttar Pradesh, Bihar and West Bengal. The majority of funds were allocated in what was called the core schemes. These schemes included the interception and diversion of industrial and domestic sewage to Sewage Treatment Plants (STPs) and the installation of STPs to treat the sewage. Provision of sanitation facilities, installation of crematoriums, development of Ghats, afforestation, and public participation in cleaning the river, categorised as non-core schemes, were given less priority. Further, it did not consider the economic factors that considerably dominate the functioning of STPs.

The GAP Phase-I was extended in 1993 and renamed GAP Phase-II. During 1993 to 1996, the plan was extended in multiple phases, primarily for reducing pollution load and treatment of four major tributaries of the Ganga, the rivers – Yamuna, Gomti, Damodar and Mahananda. Later in 1995, under the National River Conservation Plan (NRCP), river action plans were launched for other major rivers, such as Godavari, Krishna, Mahanadi, Mandakini, etc.

In 1996, GAP Phase-II and NRCP were merged as a centrally sponsored single scheme. Under the NRCP, the Clean Ganga Authority (CGA) was renamed as the National River Conservation Authority (NRCA), which covered all programmes supported by the National River Conservation Directorate (NRCD) under the Ministry of Environment, Forests and Climate Change (MoEF&CC). Under GAP Phase-II, pollution abatement measures were taken up in 59 towns across five states – Uttarakhand, Uttar Pradesh, Bihar, Jharkhand, and West Bengal. While these efforts provided some gains in arresting the rate of water quality degradation, a lot more needs to be done.

GAP-II had shortfalls in planning and implementation mechanisms leading to several issues such as fund deficit for ensuring continuous supply of electricity for operating the sewage treatment plants (STPs), inadequate attention to operations and maintenance (O & M) of STPs, administrative incompatibilities and absence of a single coordinating authority with corresponding powers to give directions to the multiple agencies involved (Singh, 2006). Top-down technocratic approach to problem solving, absence of consultations with local government institutions, lack of measures to build human and institutional capacities and bring public participation are the other shortfalls identified (Das & Tamminga, 2012).

This was reinforced by a report on best strategies to clean up the river prepared by a team from seven Indian Institutes of Technology (IITs). One of the key recommendations in the

report was to take a 'Ganga basin approach', which meant not only cleaning the Ganga, but its tributaries as well. It is recommended that instead of establishing a few projects on the stretch of the Ganga, the whole river basin—that is, all the states coming under the main stem of the Ganga and its tributaries – must come under the ambit of the programme.

With a view to provide an institutional overarching framework for planning, financing, monitoring and coordination between the centre and the Ganga basin states, the GOI had established the National Ganga River Basin Authority (NGRBA) in 2009 under the provisions of the Environment (Protection) Act (EPA), 1986. The objectives were to provide autonomy in decision making by devolution of power to the project authorities and to empower them with improved project management capabilities. Subsequently in 2011 National Mission for Clean Ganga (NMCG) was established as an implementation arm of NGRBA. Subsequently, NGRBA was dissolved consequent to constitution of National Council for Rejuvenation, Protection and Management of River Ganga (referred as National Ganga Council) in 2016 as per Central Government vide notification S.O. 3187(E), dated the 7th October, 2016 under the Environment (Protection) Act, 1986.

The authority notification included a five-tier structure at national, state and district level to take measures for prevention, control and abatement of environmental pollution in river Ganga and to ensure continuous adequate flow of water so as to rejuvenate the river Ganga as below:

1. National Ganga Council under chairmanship of Hon'ble Prime Minister of India.
2. Empowered Task Force (ETF) on river Ganga under chairmanship of Hon'ble Union Minister of Jal Shakti (Department of Water Resources, River Development and Ganga Rejuvenation).
3. National Mission for Clean Ganga (NMCG).
4. State Ganga Committees and
5. District Ganga Committees in every specified district abutting river Ganga and its tributaries in the states.

The figure below depicts the evolution of efforts towards Ganga conservation over the years.

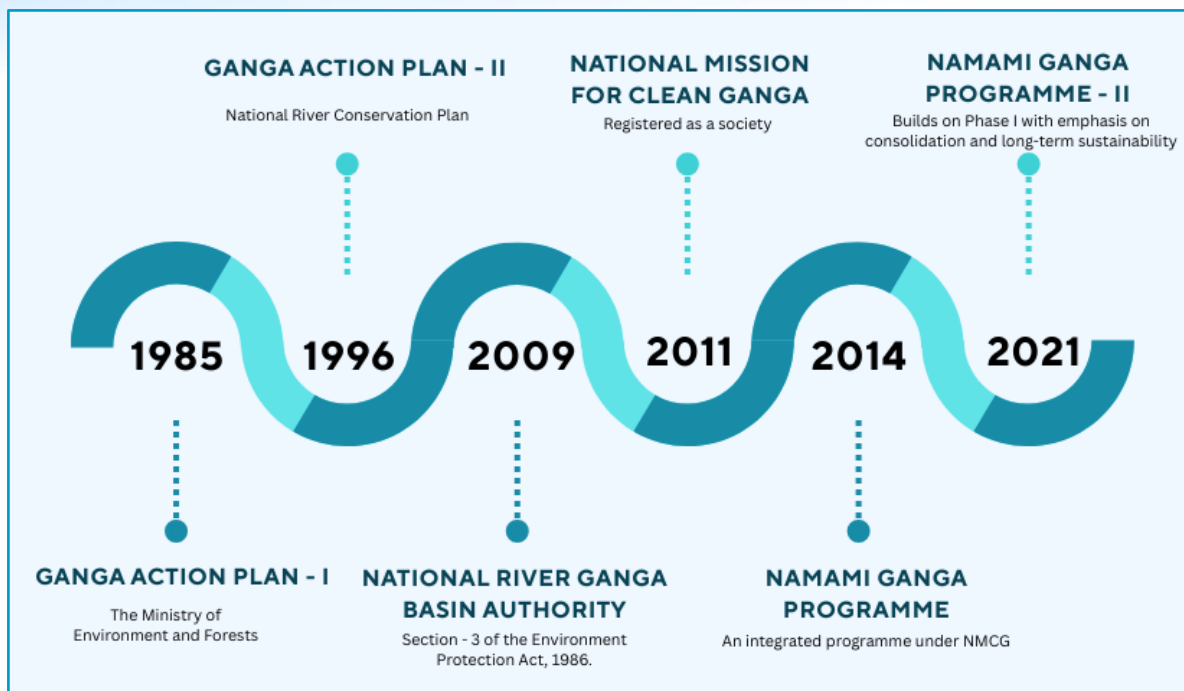


Figure 2: Ganga Rejuvenation Initiatives

As a follow up action of these initiatives and Namami Gange Programme (NGP), a flagship scheme implemented by the NMCG was approved by the Central Government (under Department of Water Resources, River Development and Ganga Rejuvenation, Ministry of Jal Shakti, GoI) in June 2014 and launched in May 2015. It is an integrated conservation programme that brings together state governments and central ministries to adopt a river-basin approach with a multi-sectoral mandate to address both water quantity and quality aspects.

With an integrated and multi-sectoral approach that combined pollution abatement, ecological rejuvenation, improved sanitation, solid and liquid waste management, and public participation. The first phase of the Programme (2014–2021) primarily emphasised creation of sewage treatment capacity, interception and diversion of drains, ghat and crematoria development, rural sanitation and river surface cleaning. Notably, financing innovations such as the Hybrid Annuity Model (HAM) were introduced to ensure long-term sustainability of sewage treatment plants by covering both construction and 15–20 years of operation and maintenance.

Achievements under NGP (till 2020):

- 314 projects sanctioned, of which 130 were completed by 2020.
- 4,873 MLD of sewage treatment capacity created or under construction, representing a 170% increase over the pre-2014 baseline.
- Compliance of Grossly Polluting Industries (GPIs) improved significantly, with >87% meeting discharge norms by 2019.

- Expansion of biodiversity conservation, including protection of the Gangetic Dolphin and turtle hatcheries.
- Large-scale afforestation drives covering over 33,024 hectares of land.
- Greater community mobilization through initiatives like Ganga Praharis and Jan Bhagidari campaigns.

Independent evaluations noted that while NGP created a visible shift in sewage infrastructure and institutional structures, challenges remained in ensuring timely completion, long-term O&M financing, and deeper rural-urban integration.

With the launch of NGP Phase II (2021–2026), the Programme's scope was broadened, moving beyond infrastructure creation to embed wider ecological, institutional, and socio-economic dimensions. The focus areas include:

Key features included:

- **Ecological Restoration:** Expanded interventions in biodiversity conservation (Gangetic dolphin, Hilsa, turtles, fish stock enhancement), afforestation, wetland rejuvenation, and promotion of natural riverscapes.
- **Arth Ganga:** A framework for river-based livelihoods, including organic/natural farming, aquaculture, eco-tourism, Jalaj centres, and market linkages for basin communities.
- **Research, Knowledge and Innovation:** Strengthened collaboration with national and international research institutions for basin-wide studies, water quality modelling, decision-support systems, and innovative treatment technologies.
- **Jan Ganga:** Greater emphasis on community participation, cultural rejuvenation, IEC, and citizen stewardship through Ganga Praharis and volunteers.
- **Institutional Strengthening and Monitoring:** Capacity building of SMCGs and ULBs, convergence across agencies, and adoption of advanced monitoring systems (SCADA, OCEMS, drone surveillance, and geotagging).
- **Circular Economy and Resource Recovery:** Emphasis on reuse of treated wastewater, co-treatment of septage, and scientific sludge management.

At the international level, NGM-II has been recognized as a pioneering model of river-centric and climate-smart urban development, with the programme's innovations showcased at Stockholm Water Week 2025 as best practices in integrated river basin management.

EFFORTS TOWARDS GANGA CONSERVATION

A SHIFT TOWARDS BASIN BASED APPROACH

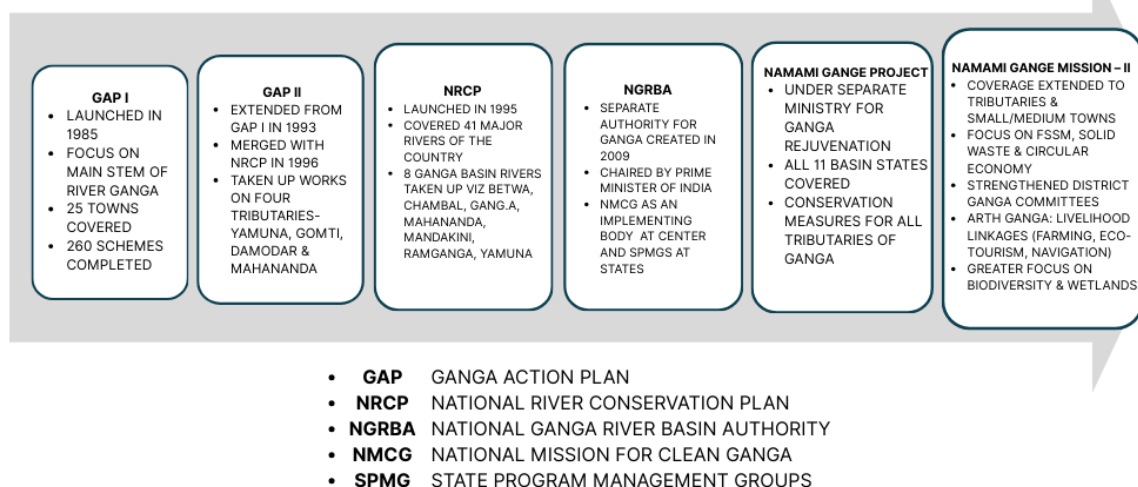


Figure 3: Flowchart depicting the evolution of efforts towards Ganga conservation

These interventions represent a shift from an infrastructure-oriented approach to a comprehensive river basin rejuvenation mission, aligning with global best practices of integrated water resources management.

Lessons from Earlier Initiatives that Informed Namami Gange Mission – II

Some of the noteworthy lessons learned from earlier river rejuvenation initiatives were consolidated and refined in the design of NGM-II. These lessons continue to serve as guiding principles for the Mission:

- Need for a **basin-wide planning framework** instead of fragmented town-centric approaches.
- Importance of a **multi-sectoral and multi-stakeholder strategy**, integrating ecology, livelihoods, and infrastructure.
- Stronger **institutional mechanisms**, with empowered central authority (NMCG), State Missions, and District Ganga Committees.
- Adoption of **innovative financing and sustainable O&M models**, such as Hybrid Annuity Model (HAM) and One City–One Operator approach.
- Emphasis on **ecological rejuvenation**, including biodiversity conservation, afforestation, and wetland restoration alongside pollution abatement.
- Strengthening of **regulation and enforcement on industries**, with OCEMS, SCADA, and real-time monitoring tools.
- Building robust **databases and knowledge systems** to guide policy and research.
- Deepening **community engagement** through Jan Ganga initiatives, cultural mapping, and livelihood programmes under Arth Ganga.
- Encouraging **convergence with national programmes** like SBM, AMRUT, JJM and Smart Cities to maximise impact.
- Recognising the role of **climate resilience and sustainable agriculture practices** in river basin management.

Vision and Objectives of Namami Gange Programme

The vision of Namami Gange Programme (NGP) is to restore the wholesomeness of river Ganga by ensuring continuous flow (Aviral Dhara), unpolluted flow (Nirmal Dhara), geological and ecological integrity.

Three interlinked dimensions guide the Vision Statement of NGP:

1. **Ecological rejuvenation** by restoring flow regimes, pollution abatement, and biodiversity conservation.
2. **Sustainable livelihoods** by linking communities to river health through agriculture, tourism, navigation, and heritage.
3. **Cultural and spiritual connect** by preserving the unique identity of the Ganga as a sacred river and symbol of India's civilizational heritage.

Core Objectives

The objectives of NGP, as articulated since 2014 and reinforced under NGM-II (2021–2026), are to:

- Achieve significant **pollution abatement** through creation of adequate sewage and effluent treatment infrastructure.
- Restore and conserve the **ecological health** of the river through afforestation, wetland rejuvenation, and biodiversity protection.
- Ensure **continuous and sustainable flows**, integrating ecological flow considerations with water use planning.
- Strengthen **institutional arrangements** across national, state, and district levels for coordinated basin management.
- Promote **community ownership and behavioural change**, embedding river stewardship in cultural and livelihood practices.
- Align interventions with **sustainable development goals (SDGs)**, particularly those relating to clean water, sanitation, ecosystems, and climate action.

Strategic Framework: Thrust Areas of NGM-II

The strategy of NGP was earlier articulated through eight pillars and seven technical thrust areas. With the approval of **Cabinet Note II (2022)**, these have evolved into **five integrated thrust areas**, reflecting a more holistic and people-centric approach:

1. **Nirmal Ganga** – Ensuring an unpolluted river through comprehensive wastewater treatment, faecal sludge and septage management (FSSM), industrial effluent control, and solid waste management.

2. **Aviral Ganga** – Securing continuous and sustainable environmental flows, through scientific water management, groundwater recharge, wetland protection, and maintaining e-flows.
3. **Arth Ganga** – Linking River conservation with livelihood generation, including organic farming, inland navigation, eco-tourism, cultural heritage promotion, and river-linked entrepreneurship.
4. **Jan Ganga** – Deepening public participation and community engagement in river conservation, with citizen-led initiatives, Ganga Praharis, District Ganga Committees, and behavioural change campaigns.
5. **Gyan Ganga** – Advancing knowledge, innovation, and research through capacity building, real-time monitoring, digital platforms, and evidence-based policy development.

Implementation Anchors

These thrust areas are supported by:

- **Multi-tier governance mechanisms** (National Ganga Council, NMCG, State Programme Management Groups, District Ganga Committees).
- **Innovative financing and PPP models** such as Hybrid Annuity Model.
- **Monitoring and accountability mechanisms** including real-time water quality monitoring stations and mandatory third-party evaluations.

Together, these elements reflect a shift from a narrowly **pollution-abatement focused programme** to a **comprehensive river basin management framework**, linking ecological rejuvenation with social, cultural, and economic transformation.

Table 1: Linkage between NGP's pillars, thrust areas and action areas

Thrust Area (NGM-II)	Key Action Areas	Relationship to Pillars
Nirmal Ganga (Pollution Abatement for Clean Flow)	- Creation and rehabilitation of sewage treatment plants (STPs) and sewerage networks - Faecal Sludge and Septage Management (FSSM) and decentralised wastewater treatment - Industrial effluent treatment through CETPs, compliance monitoring and ZLD pilots - Integrated solid waste management including segregation, processing and recycling - Real-time surveillance and monitoring systems	- Sewerage Treatment - Industrial Effluent Management - Solid Waste Management - Rural Sanitation
Aviral Ganga (Continuous and	- Enforcing e-flow norms and ecological flow modelling - Catchment area treatment, riparian plantation and groundwater recharge	- Afforestation & Biodiversity - Ecological Restoration

Ecological Flow)	- Wetland rejuvenation and biodiversity corridor development - Research on hydrology and ecological linkages	
Arth Ganga (River-linked Livelihoods and Economy)	- Promotion of organic/natural farming along the basin - River and cultural tourism, eco-tourism and homestays - Fisheries, aquaculture and river-based crafts - Resource recovery and reuse (sludge-to-compost, bio-CNG, circular economy pilots)	- Livelihood Generation - River-based Economy
Jan Ganga (Community Participation and Outreach)	- Intensive Information, Education and Communication (IEC) campaigns - Ganga Prahari and Mitra networks for community stewardship - Behaviour change programmes in schools and youth groups - Community-led ghat and crematoria management	- Public Participation - River-front Development
Gyan Ganga (Knowledge, Research and Innovation)	- Establishment of real-time water quality monitoring stations (RTWQMS) - Development of Decision Support Systems and GIS-based tools - Partnerships with knowledge institutions (IITs, WII, CIFRI, CPCB) - Research on climate resilience, wastewater reuse and biodiversity - Knowledge sharing platforms and digital dashboards	- R&D and Innovation - Digital Monitoring

To achieve its objectives, the Namami Gange Programme was initially provided financial outlay of **₹20,000 crore for the period 2014–2020**, as a 100% centrally financed scheme. Building on this, the Union Cabinet approved **Namami Gange Mission-II (2021–2026)** with an outlay of **₹22,500 crore**, continuing as a centrally sponsored programme with non-lapsable budgetary support.

b) Name of Sub-schemes/components

The projects under NGP fall under two components:

- Component A comprising ongoing externally aided projects (EAP) and non-EAP having remaining central liabilities

- Component B comprising new initiatives undertaken under NGP. All new projects sanctioned under NGP have 100% funding from the central Government for the entire life cycle cost of the assets created including operation & maintenance costs sometimes running into 15 years.
- This structure reflects the dual emphasis of the programme: leveraging international expertise and financing on one hand, while simultaneously introducing innovative, home-grown solutions to address the dynamic challenges of Ganga rejuvenation.

The new initiatives under component B are categorized under 5 major sectors:

- **Pollution Abatement (Nirmal Ganga)** has remained the largest investment head, with 213 sewage treatment projects creating more than 6540 MLD of capacity, complemented by 123 solid waste management projects, 7 CETPs, and 14 surveillance and monitoring projects. These initiatives address both municipal and industrial sources of pollution, supported by R&D pilots for innovative treatment technologies.
- **Ecological Sustainability (Aviral Ganga)** is being pursued through biodiversity and afforestation projects covering over 33,024 hectares, species conservation pilots (dolphin and fish habitats), and enforcement of ecological flow norms. Together, these interventions seek to restore the natural resilience of the river ecosystem.
- **Livelihood Promotion (Arth Ganga)** represents a new thrust under NGM-II, linking river health to local economic development. Initiatives include the promotion of organic farming, fisheries and aquaculture, eco-tourism and river-based crafts, and circular economy pilots such as sludge-to-compost and bio-CNG. **Community Engagement (Jan Ganga)** focuses on fostering citizen ownership of the river. Awareness campaigns, youth and school programmes, Ganga Prahari networks, and ghat/crematoria management initiatives are creating a participatory framework for river stewardship.
- **Knowledge and Innovation (Gyan Ganga)** integrates real-time monitoring, Decision Support Systems, and partnerships with premier research institutions such as IITs, WII and CIFRI. More than 100 real-time water quality stations, climate resilience studies, and basin-wide data platforms support evidence-based decision-making.

Component B: Sectoral Initiatives

While EAPs established the foundational infrastructure and systems, the Cabinet approval of **Namami Gange Mission – Phase II (NGM-II)** expanded the programme's scope through **sectoral initiatives** that address pollution abatement, ecological sustainability, livelihoods, community participation, and knowledge creation in an integrated manner.

Programme Coverage

As of NGM-II, the programme has sanctioned 507 projects with a total outlay of ₹41707.35 crore, of which approximately ₹20,336.45 crore has been utilised. Its coverage spans 11 States/UTs across Ganga basin, with a special focus on the five Ganga main-stem states. In

physical terms, this has translated into significant infrastructure creation, extensive ecological interventions, and expanded community and knowledge partnerships.

Integrated Basin Approach

The integration of **Component A (EAPs)** and **Component B (sectoral initiatives)** has enabled the programme to move from a project-based to a **mission-driven, basin-wide approach**. This dual framework ensures that traditional challenges of sewage and effluent management are addressed alongside newer dimensions of ecological sustainability, livelihood security, and community ownership. In doing so, the NGP has positioned itself not just as a river-cleaning initiative, but as a **comprehensive model of river basin rejuvenation** in India.

c) Year of commencement of scheme

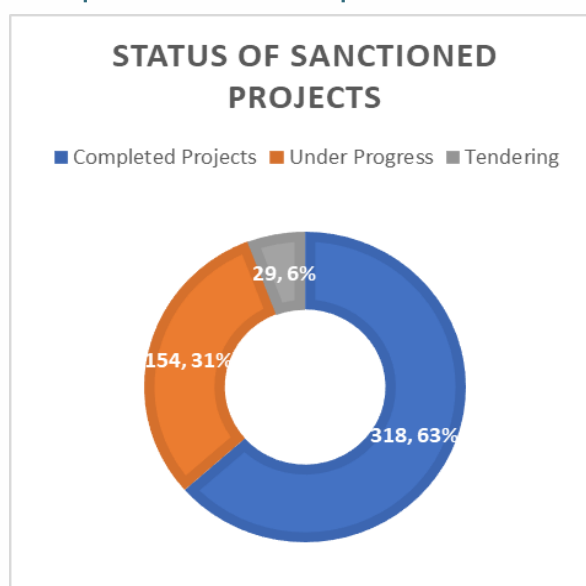
Table 2 details the project components (or sub-schemes) and the corresponding year of sanction of the first project under each component. It can be seen from the table that the sanction of the projects is as per the plan focusing on entry-level and medium-term activities.

d) Present status with coverage of scheme (operational/ non-operational)

Figure 4: Status of Projects Sanctioned

Source: *Monthly Progress Report, MPR (July 2025)*

As on 31st July 2025, a total of 507 projects have been sanctioned under the Namami Gange Programme. These projects span across all five thrust areas of the Mission—**Nirmal, Aviral, Arth, Jan and Gyan Ganga**—covering pollution abatement, ecological restoration, livelihood enhancement, community engagement, and knowledge building. The status of these projects is depicted in Figure below.



As can be seen from the diagram, of the 507 projects sanctioned:

- 338 projects (63%) have been completed and operationalised.
- 140 projects (31%) are in different stages of implementation.
- 29 projects (6%) are in the tendering/procurement stage.
- A majority of completed projects fall under **Nirmal Ganga**, reflecting the Mission's continued priority on pollution abatement, while newer thrust areas—**Arth, Jan, and Gyan Ganga**—are progressing steadily.

This distribution highlights that the Mission has moved from being a primarily infrastructure-driven initiative to a **comprehensive basin rejuvenation effort**, with steady progress across ecological, livelihood, community, and knowledge-based interventions.

Of the **507 projects sanctioned** under the Namami Gange Programme as of July 2025, the largest share continues to be held by **Nirmal Ganga (pollution abatement projects)** with **375 projects**, accounting for **75% of the total portfolio**. Within this category, **261 projects have been completed**, representing nearly **78% of all completed projects**, while 86 are under progress and 28 in tendering stage. This underscores the Mission's continued priority on sewage management, solid waste treatment, and effluent control as core interventions.

The second-largest sector is **Aviral Ganga (ecological restoration and afforestation)** with **71 sanctioned projects**, constituting **14% of the total portfolio**. Out of these, **47 projects have been completed**, while 24 remain under progress. This reflects growing emphasis on maintaining ecological flows, biodiversity conservation, and sustainable catchment practices under NGM-II.

Arth Ganga (livelihood initiatives), introduced as part of the expanded mandate of NGM-II, has seen **11 projects sanctioned**, with 3 completed and 8 under implementation. Though modest in number, these projects represent a paradigm shift in linking river rejuvenation with local economic development, particularly through organic farming, natural resource-based livelihoods, and cultural economy promotion.

Jan Ganga (public outreach and participation) has **17 projects sanctioned**, of which **11 are completed**, indicating consistent efforts towards enhancing community ownership and behavioural change. Similarly, **Gyan Ganga (knowledge and capacity building)** has **24 projects**, with **8 completed and 16 under progress**, highlighting the Mission's strong push on research, monitoring, and knowledge dissemination.

Table 2: Sector-wise status of sanctioned projects under NGP II

Sl. No.	Category	Sector	No of Projects	Sanction Cost (Rs in Cr)	No of Projects Completed	No of Projects Under Progress	No of Projects Under Tendering	Total Fund Released (Rs in Cr)	Total Expenditure (Rs in Cr)	Fund Utilization (%)
1	Nirmal Ganga	Sewage Treatment	228	34804.37	148	55	25	16216.66	16103.12	99.30
		Solid-Waste Management	123	3279.81	98	22	2	2569.26	2499.94	97.30
		Industrial Effluent Treatment	7	983.25	4	3	0	567.85	504.35	88.82
		Surveillance & Monitoring	14	858.74	10	4	0	280.47	275.1	98.09
		R&D	3	6.4	1	2	0	2.99	2.03	67.89
		Sub Total (Nirmal Ganga)	375	39932.57	261	86	28	19637.23	19384.54	98.71
2	Aviral Ganga	Ecological Projects	60	916.06	39	21	0	637.34	558.76	87.67
		R&D Projects	17	68.73	10	7	0	22.94	19.39	84.52
		Sub Total (Aviral Ganga)	77	984.79	49	28	0	660.28	578.15	87.56
3	Arth Ganga	Livelihood Projects	11	46.08	4	7	0	29.92	22.81	76.24
4	Jan Ganga	Public Outreach Projects	18	446.17	13	5	0	282.31	265.21	93.94
5	Gyan Ganga	Knowledge Projects	26	297.75	11	14	1	116.72	85.74	73.46
6	Grand Total		507	41707.35	338	140	29	20726.46	20336.45	98.12

Overall, **338 projects (63%) have been completed**, **140 (31%) are under progress**, and **29 (6%) are in the tendering stage**. The distribution of projects across thrust areas demonstrates the Mission's gradual transition from a predominantly infrastructure-centric programme to a **comprehensive river basin rejuvenation initiative**, balancing pollution abatement with ecological, social, and knowledge-driven interventions.

The projects operationalised under the Namami Gange Programme have been well-received by both citizens and environmental experts, with visible improvements in riverfront

development, sanitation access, and ecological restoration. The design and implementation of many of these projects carry important lessons and can be scaled as **best practice case studies**, fostering peer-learning among states and urban local bodies. A select set of such interventions is presented in the subsequent chapters of this report.

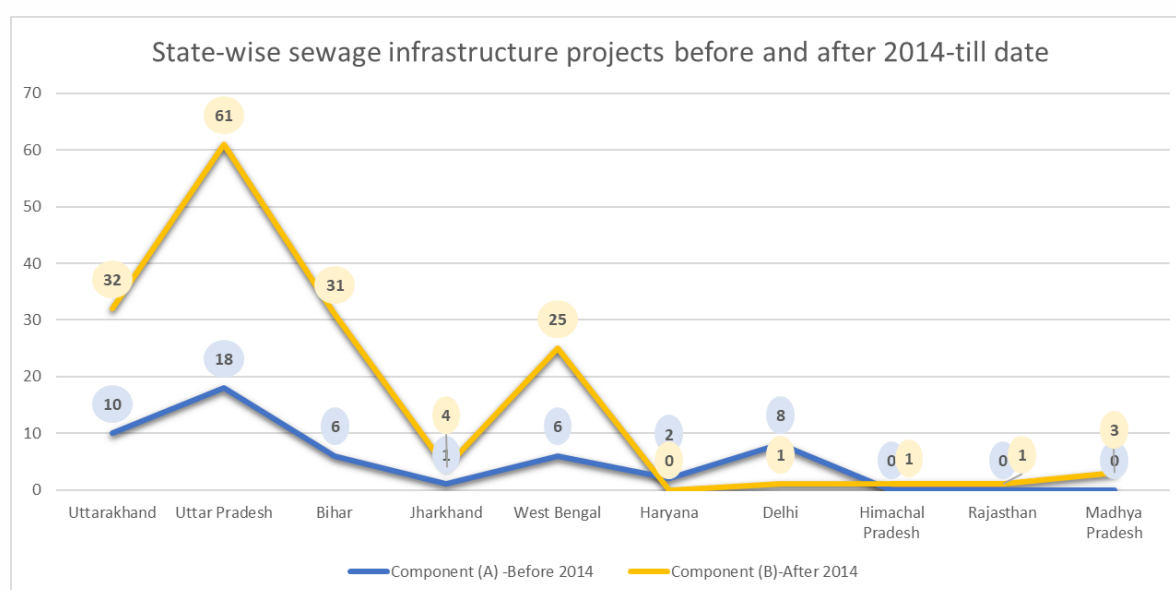
Equally important are the measures taken to address **industrial pollution and effluent management**, which remain critical to sustaining improvements in water quality. Under **Namami Gange Mission – Phase II**, as emphasised in the **Cabinet Note (2021)**, the programme is no longer limited to infrastructure creation but adopts a **comprehensive basin-based approach**, integrating livelihood generation, biodiversity conservation, and community participation alongside pollution abatement.

Recent reviews and independent assessments have highlighted that river water quality has shown “notable improvement in dissolved oxygen levels and reduction in BOD at several monitoring stations” – a positive indicator of the programme’s impact (PIB, 2024; MoJS, 2025). These outcomes underline that the Mission is evolving into a holistic **river rejuvenation model**, with lessons for replication in other river basins of India.

Sewage Infrastructure Projects

Of the 51 projects sanctioned prior to 2014, a treatment capacity of 1,253 MLD was created with an expenditure of about ₹6,820 crore. The largest share of these projects was in Uttar Pradesh (18 projects; 333.5 MLD), followed by Delhi (8 projects; 564 MLD) and Bihar (6 projects; 140 MLD).

Post 2014, under the Namami Gange Programme, the coverage has expanded substantially with 159 projects sanctioned across the basin, involving an investment of ₹27,785 crore and creating a treatment capacity of 4,337 MLD. Uttar Pradesh once again accounts for the highest share with 61 projects (2,089 MLD), followed by Bihar (31 projects; 738 MLD), West Bengal (25 projects; 447 MLD) and Uttarakhand (32 projects; 220 MLD).



State-wise sewage infrastructure projects before and after 2014

Jharkhand, which earlier had a limited presence (1 project; 12 MLD), now has 4 projects adding 250 MLD capacity, while non-main stem states such as Madhya Pradesh, Rajasthan and Himachal Pradesh have been included only after 2014, contributing 276 MLD of new capacity.

Overall, the data shows a four-fold increase in financial outlay and over three times growth in treatment capacity after 2014, with the maximum gains concentrated in the five mainstem Ganga states. This underlines the shift from fragmented pre-2014 efforts to a comprehensive basin-wide approach under NGM-II, as envisaged in the Cabinet Note (2021).

Industrial Pollution abatement

The Namami Gange Programme continues to structurally discourage industrial pollution of the river through a strong regulatory and monitoring framework. From 2022 to 2025, the initiative scaled up compliance measures significantly:

- In the seventh round of GPI inspection (2024), a total of 4,246 Grossly Polluting Industries (GPIs) were inventoried and inspected. Out of approximately 4,000 GPIs, 2,682 (67%) were found compliant, 517 were non-compliant, 523 were temporarily closed, and 278 were permanently closed. Closure or show-cause notices were issued to 523 GPIs collectively.
- Two CETPs—Jajmau (20 MLD) and Mathura (6.25 MLD)—have been completed, reinforcing infrastructure support for pollution control. A third CETP at Banther (4.5 MLD) was also sanctioned.
- These efforts contributed to a nearly 47% reduction in effluent discharge (from 349 MLD in 2017 to 249.31 MLD in 2023) and cut down BOD load by almost 47% (from 26 TPD to 13.73 TPD), signaling meaningful improvements in industrial pollution levels.[i](#)

These outcomes demonstrate a decisive shift from reactive enforcement to a proactive, technology-enabled compliance regime, integrating infrastructure, monitoring, and oversight to ensure sustainable industrial effluent management.

Distribution of Ongoing & Completed Projects Across States

The ongoing portfolio (507 projects) is led by Uttar Pradesh, which accounts for nearly 22% of all ongoing works, a reflection of its long river stretch and heavy pollution load. Projects here are concentrated in sewage treatment, solid waste management, and bioremediation, all of which are critical for tackling urban and industrial pressures along the river. Uttarakhand (13%), the river's origin state, has a significant share of upstream projects, mostly focusing on sewage interception, treatment, and surveillance systems to maintain the purity of the river closer to its source. Downstream states such as Bihar (12%) and West Bengal (12%) also account for sizeable proportions, with Bihar emphasising bioremediation pilots and STPs, while West Bengal hosts several large I&D and treatment plants that safeguard water quality before the Ganga enters the Bay of Bengal. Smaller states, including Jharkhand (2%), Delhi (2%), Haryana (1%) and Madhya Pradesh (1%), host more limited but often strategic interventions, mainly tributary-focused or demonstration-based projects.

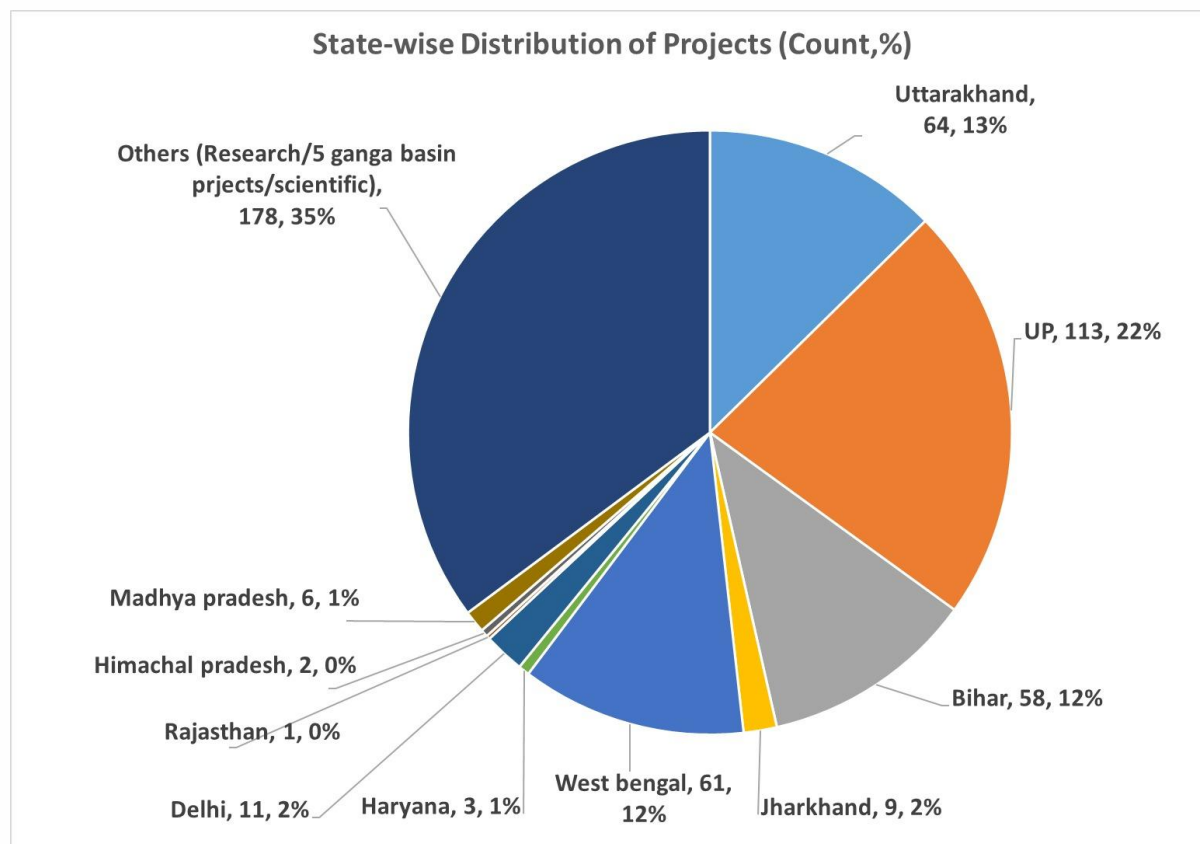
What is most notable in the ongoing portfolio, however, is the prominence of basin-wide scientific projects, which constitute 35% of the total. These include cross-state initiatives on biodiversity, afforestation, ecological monitoring, and research, underlining the shift of NGM-II towards a more integrated, knowledge-driven approach to river basin management.

On the other hand, the completed portfolio (338 projects) reflects steady progress in translating sanctions into delivery. Here too, Uttar Pradesh emerges as the frontrunner with 23% of completed projects, closely followed by Uttarakhand (15%). Both states reflect strong institutional capacity and underline the centrality of their river stretches. West Bengal (13%) and Bihar (11%) together account for almost a quarter of completed works, signalling visible progress in midstream and downstream stretches. Smaller contributions come from Delhi (3%), Jharkhand (2%), Haryana (1%) and Madhya Pradesh (0.5%), largely in sewage treatment and localised pilots. Echoing the trend of ongoing projects, basin-wide scientific and ecological projects account for 34% of all completions, making them the single largest category in terms of share. This reflects the institutional maturity of the programme, with cross-cutting projects in biodiversity, afforestation, research and monitoring reaching tangible outcomes.

Projects Status - Completed as on July 2025 (Total)														
S.no	Category	Sector	Uttarakhand	UP	Bihar	Jharkhand	West bengal	Haryana	delhi	Rajasthan	Himachal pradesh	Madhya pradesh	Others (Research/5 ganga basin projects/scientific)	Total
1	Nirmal Ganga	Sewage Treatment	37	49	21	2	16	2	9		1			137
		Bioremediation	1	5	2			1	1					10
		Innovative Projects on Sewerage Treatment							1					1
		Solid-Waste Management (Additional +Old & new ghats+HHHL+CSR)	14	25	15	4	30	0	0	0	0	10		98
		Industrial Effluent											4	4
		Surveillance & Monitoring										13	13	
		R&D Projects											1	1
Total			52	79	38	6	46	3	11	0	1	0	28	264
2	Aviral Ganga	Biodiversity & Afforestation											39	39
		R&D Projects											10	10
Total			0	0	0	0	0	0	0	0	0	0	49	49
3	Arth Ganga	Livelihood Projects											4	4
4	Jan Ganga	Public Outreach Projects											13	13
5	Gyan Ganga	Knowledge Projects											11	11
Grand Total			52	79	38	6	46	3	11	0	1	0	105	

Projects Status - On going as on July 2025 (Total)															
S.no	Category	Sector	Uttarakhand	UP	Bihar	Jharkhand	Westbengal	Haryana	delhi	Rajasthan	Himachal pradesh	Madhya pradesh	Others (Research/5 ganga basin projects/scientific)	Total	
1	Nirmal Ganga	Sewage Treatment	5	31	17	3	16			1		3		76	
														0	
			1	3							-				4
		Solid-Waste Management (Additional +Old)	8	3	3	0	4	0	0	0	1	4	2	25	
		Industrial Effluent									-		3	3	
		Surveillance & Monitoring									-		2	2	
		R&D Projects									-		2	2	
			14	37	20	3	20	0	0	1	1	7	9	112	
2	Aviral Ganga	Biodiversity & Afforestation											21	21	
		R&D Projects											7	7	
			0	0	0	0	0	0	0	0	0	0	28	28	
3	Arth Ganga	Livelihood Projects											7	7	
4	Jan Ganga	Public Outreach Projects											5	5	
5	Gyan Ganga	Knowledge Projects											15	15	
Grand Total			14	37	20	3	20	0	0	1	1	7	64		

Figure 5: State Percentage Share in Projects



Main Stems States Lead Implementation: Uttar Pradesh, Uttarakhand, Bihar, and West Bengal together account for 59% of ongoing and 62% of completed projects, affirming their central role in the Ganga basin.

Scientific and Cross-State Projects Gaining Importance: With 35% of ongoing and 34% of completed projects, basin-wide initiatives now stand as the single largest category, signalling the programme's evolution from infrastructure-centric to knowledge and ecosystem-driven rejuvenation.

Steady Transition from Ongoing to Completed: The distribution across states shows balanced progress, with most states moving from infrastructure creation towards long-term O&M, monitoring, and reuse strategies under NGM-II.

Second, the strong share of basin-wide projects (35% ongoing and 34% completed) highlights the broadening scope of the programme under NGM-II, where river rejuvenation is no longer confined to physical infrastructure but extends to scientific monitoring, ecological resilience, and knowledge partnerships. This duality between state-led infrastructure and cross-state ecological interventions marks the evolving character of Namami Gange as a truly integrated basin management programme.

State Missions for Clean Ganga

The Vision Ganga (2017) document clearly articulates the priorities identified by the States of Bihar, West Bengal, Uttarakhand, Uttar Pradesh, and Jharkhand.

Analysis of performance data and actions initiated by the States as of August 2025 shows considerable variations and execution delays from what was planned. A brief analysis of the individual state performance vis-à-vis the measures planned is presented below.

State Mission - West Bengal



In the state of West Bengal, 24 sewerage Infrastructure projects have been sanctioned for implementation in major cities along the river, out of which 14 projects were completed by July 2025. The remaining are in various stages of implementation. Afforestation activities and riverfront development, as well as ghats and crematoria projects, have been successfully taken up. The state has actively promoted organic farming and various IEC activities, and awareness programmes are conducted to convey its importance in the river ecosystem. While no specific projects are being implemented, the state has taken several steps to promote organic farming. These include:

- Rejuvenation of farmer-managed irrigation system.
- Large-scale adoption of resource conservation technologies.
- Decentralised rainwater harvesting and development of low-cost irrigation infrastructure.
- Rice-based system intensification and diversification.

Flood management and disaster management are also not prioritised, and concrete actions towards mitigation and preparedness are yet to be initiated.



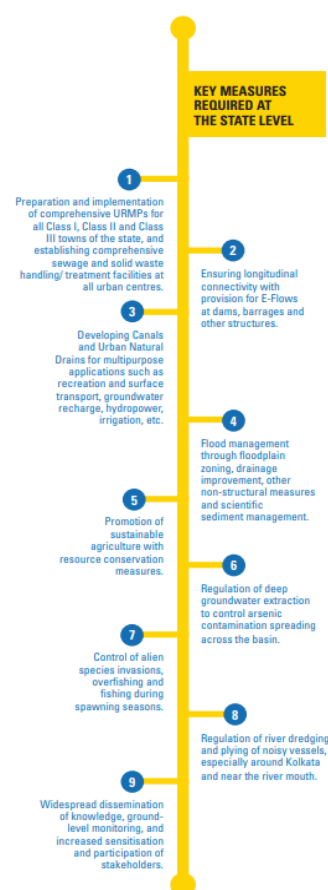
West Bengal

THE STATE of West Bengal lies at the downstream end of the Ganga basin. But its critical importance in the basin accrues from the vast Ganges Delta (covering the Sundarban mangroves) which it shares with the neighbouring country, Bangladesh.

In fact, most of the state lies in the flat deltaic plains with high rainfall and frequent floods, with only the northern part covering some of the Himalayan foothills. Like much of Uttar Pradesh and Bihar, it is a fertile region that hosts a dense population and has extensive agriculture as well as many industries. Its megalopolis capital, Kolkata, located on the western edge of the delta, was earlier also a major seaport and besides has many industries in and around it (such as in the neighbouring districts of Howrah, Hooghly and North 24 Paraganas).

Industries are also clustered in Burdwan district neighbouring Jharkhand and elsewhere. As a consequence of these factors and several large hydro-electric projects and dams such as the Maithon and Panchet dams, and the Farakka, Tilpara and Durgapur barrages, River Ganga, her tributaries and the outfalls have been significantly affected.

WEST BENGLA'S CRITICAL IMPORTANCE IN THE BASIN ACCRUES FROM THE VAST GANGES DELTA WHICH IT SHARES WITH THE NEIGHBOURING COUNTRY, BANGLADESH



Planned measures initiated:

- Preparation and implementation of comprehensive Urban River Management Plans (URMPs) for all Class I, Class II and Class III towns of the state, and establishing comprehensive sewage and solid waste handling/ treatment facilities at all urban centres.
- Promotion of sustainable agriculture with resource conservation measures: Initiated
- Widespread dissemination of knowledge, ground-level monitoring, and increased sensitisation and participation of stakeholders.

Planned measures not initiated:

- Ensuring longitudinal connectivity with provision for e-Flows at dams, barrages, and other structures.
- Developing Canals and Urban Natural Drains for multipurpose applications such as recreation and surface transport, groundwater recharge, hydropower, irrigation, etc.
- Flood management through floodplain zoning, drainage improvement, other non-structural measures, and scientific sediment management.
- Regulation of deep groundwater extraction to control arsenic contamination spreading across the basin.
- Control of invasive species invasions, overfishing and fishing during spawning seasons.
- Regulation of river dredging and plying of high noise-producing vessels, especially around Kolkata and near the river mouth.

State Mission - Uttar Pradesh

In the state of Uttar Pradesh, 69 STP projects has been sanctioned for addressing the issue of the discharge of domestic sewage into the mainstream of the river. 75% of these projects are completed, and the rest are in various stages of implementation. The towns where STP projects are completed (such as Allahabad, Varanasi, Kanpur, Vrindavan) were identified as pollution hotspots and as priority action cities. STPs in Mathura and Moradabad are under progress, while Lucknow and Agra are still under the tendering stage.

Planned measures initiated:

- Preparation and implementation of comprehensive URMPs for all Class i, Class ii and Class iii towns of the state, and establishing comprehensive sewage and solid waste handling/treatment facilities at all urban centres. The major towns identified for priority action are Vrindavan, Mathura and Agra (on River Yamuna),

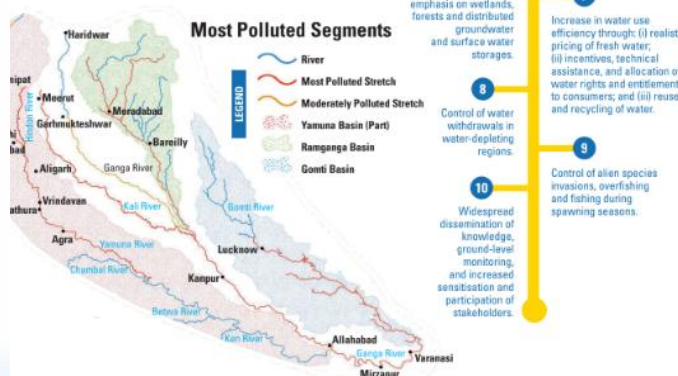


Uttar Pradesh

UTTAR PRADESH is a large state that includes a long stretch of River Ganga in the plains below Uttarakhand and the sub-basins of many of her important tributaries like the Yamuna, Kali, Ramganga and Gomti. It is well populated, and has both extensive agricultural lands and industries.

The main Ganga canals (the Upper Ganga, Middle Ganga and Lower Ganga canal systems) effect major abstractions from River Ganga in her upper reaches of the state, which have affected the river over a long period of time. Coupled with this problem are the large quantities of untreated and partially treated municipal sewage from urban centres and trade effluents from industrial clusters discharging into the river and her tributaries. The net result is extremely high pollution levels in the main river and her major tributaries like the Yamuna, Kali and Gomti rivers, which constitute a major threat to both humans and river biodiversity.

The figure below shows the most polluted stretches at a glance. The immersion of dead bodies and animal carcasses in the river and the increasing chemical fertiliser and pesticide laden runoff from agricultural fields have added to the problems. In addition, dams and barrages erected on the rivers have disrupted the habitats of many river species like the Gangetic dolphin and affected their populations.



KEY MEASURES REQUIRED AT THE STATE LEVEL

- 1 Preparation and implementation of comprehensive URMPs for all Class I, Class II and Class III towns of the state, and establishing comprehensive sewage and solid waste handling/treatment facilities at all urban centres. The major towns identified for priority action are Vrindavan, Mathura and Agra (on River Yamuna), Moradabad (on River Ramganga), Lucknow (on River Gomti), and Haridwar, Gashmukteshwar, Kanpur, Allahabad and Varanasi (on River Ganga).
- 2 Ensuring longitudinal connectivity with provision for E-Flows at dams, barrages and other structures.
- 3 Developing Canals and Urban Natural Drains for multipurpose applications such as recreation and surface transport, groundwater recharge, hydropower, irrigation, etc.
- 4 Promotion of sustainable agriculture with resource conservation measures.
- 5 Regulation of river bed farming and sand-mining from river beds.
- 6 Water resources planning with emphasis on wetlands, forests and distributed groundwater and surface water storages.
- 7 Increase in water use efficiency through: (i) realistic pricing of fresh water; (ii) incentives, technical assistance, and allocation of water rights and entitlements to consumers; and (iii) reuse and recycling of water.
- 8 Control of water withdrawals in water-depleting regions.
- 9 Control of alien species invasions, overfishing and fishing during spawning seasons.
- 10 Widespread dissemination of knowledge, ground-level monitoring, and increased sensitisation and participation of stakeholders.

Moradabad (on River Ramganga), Lucknow (on River Gomti), and Haridwar, Garhmukhteshwar, Kanpur, Allahabad, and Varanasi (on River Ganga)

- Promotion of sustainable agriculture with resource conservation measures.
- Widespread dissemination of knowledge, ground-level monitoring, and increased sensitisation and participation of stakeholders.
- Water resources planning with emphasis on wetlands, forests and distributed groundwater and surface water storage.
- E-flows have been notified for the river Ganga from its origin to Unnao, Uttar Pradesh. After this, the tributaries of the river Ganga from Nepal merge into the river, adding ample flows to the river.
- Rejuvenation of 05 Waterbodies, Façade Improvement and Art Project at Ayodhya project is currently ongoing with 2 of the proposed components completed, working on the 3rd component.
- Advancing Rescue System for the Protection of Stranded Ganges River Dolphins, NGM-II is completed with success with convergence through multiple stakeholders and advance alert system for stranded dolphins.

Planned measures not initiated:

- Regulation of riverbed farming and sandmining from riverbeds
- Developing Canals and Urban Natural Drains for multipurpose applications such as recreation and surface transport, groundwater recharge, hydropower, irrigation, etc.
- Increase in water use efficiency through: (i) realistic pricing of fresh water; (ii) incentives, technical assistance, and allocation of water rights and entitlements to consumers; and (iii) reuse and recycling of water.
- Control of Water withdrawals in water-depleting regions.
- Control of alien species invasions, overfishing and fishing during spawning seasons.

State Mission -Jharkhand

In the state of Jharkhand, a total of 11 projects has been sanctioned, out of which 7 are complete. These include 1 STP at Sahibganj (with the other at Rajmahal), 3 afforestation activities and 3 ghat improvement activities, all at Sahibganj and Rajmahal. While the number of projects planned would seem low, the State has demonstrated a good completion rate.

IEC activities are receiving high funds, but the disbursement is not timely which is accumulating at district ganga committee.

Planned measures initiated:

- Preparation and implementation of comprehensive URMPs for all Class i, Class ii and Class iii towns of the state, and establishing comprehensive sewage and solid waste handling/ treatment facilities at all urban centres.
- Afforestation and slope stabilisation, along with the regulation of road and building constructions in disturbed areas.
- Promotion of sustainable agriculture with resource conservation measures.
- Water resources planning with emphasis on wetlands, forests and distributed groundwater and surface water storage.
- Widespread dissemination of knowledge, ground-level monitoring, and increased sensitisation and participation of stakeholders.

Planned measures not initiated:

- Ensuring longitudinal connectivity with provision for e-Flows at dams, barrages, and other structures.
- Developing Canals and Urban Natural Drains for multipurpose applications such as recreation and surface transport, groundwater recharge, hydropower, irrigation, etc.
- Regulation of sand mining from riverbeds.
- There is a need to initiate activities along the tributaries of the Ganga for pollution abatement.



JHARKHAND state is located downstream of Bihar as the Ganga flows. Much of the state, located on the Chota Nagpur plateau, is hilly and forest-covered. Major industries include mining, mineral processing, and steel industries. Consequently there are several large cities and industrial clusters that are an important source of pollutant discharges. Besides, there are several hydro-electric projects and large irrigation dams such as the Maithon, Tilaya, Panchet and Tenuktan dams on Rivers Barakar and Damodar and the Icha and Chandil dams on River Subarnarekha which affect river flows and biodiversity.

THERE ARE SEVERAL
LARGE CITIES
AND INDUSTRIAL
CLUSTERS
IN JHARKHAND
THAT ARE
AN IMPORTANT
SOURCE
OF POLLUTANT
DISCHARGES

KEY MEASURES REQUIRED AT THE STATE LEVEL

- 1 Preparation and implementation of comprehensive URMPs for all Class I, Class II and Class III towns of the state, and establishing comprehensive sewage and solid waste handling/ treatment facilities at all urban centres.
- 2 Ensuring longitudinal connectivity with provision for E-Flows at dams, barrages and other structures.
- 3 Developing Canals and Urban Natural Drains for multipurpose applications such as recreation and surface transport, groundwater recharge, hydropower, irrigation, etc.
- 4 Afforestation and slope stabilisation along with regulation of road and building constructions in disturbed areas.
- 5 Promotion of sustainable agriculture with resource conservation measures.
- 6 Regulation of sand-mining from river beds.
- 7 Water resources planning with emphasis on wetlands, forests and distributed groundwater and surface water storages.
- 8 Widespread dissemination of knowledge, ground-level monitoring, and increased sensitisation and participation of stakeholders.

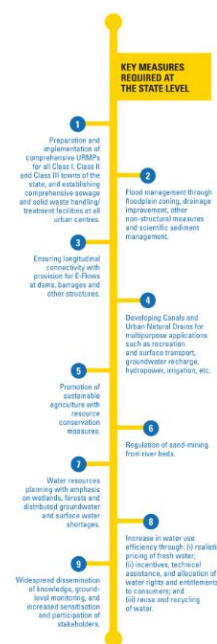
State Mission – Bihar

In the state of Bihar, 38 sewage infrastructure projects have been sanctioned, out of which 21 of the projects are completed. Patna river front development project is completed and operationalised with 16 ghats, 1 crematorium and 3 buildings. The STPs are mostly commissioned and functional.



BIHAR is also a large state that includes a long stretch of River Ganga in the plains down-stream of Uttar Pradesh and covers the sub-basins of many of her important tributaries like the Ghagra, Gandak, Bagmati, Kosi and Son rivers. Bihar is well populated, and has fertile agricultural lands, industries and urban centres. Consequently significant quantities of untreated and partially treated municipal sewage from major towns and trade effluents from industrial clusters discharge into the river and her tributaries. The net result is high pollution levels in the main river and some of her tributaries which affect the health of both humans and the river.

In addition, a few large dams and barrages (e.g. Indrapur barrage on the Son river) have been erected on some of the rivers that affect river species. More significantly, repeated river channelisation and other flood control works (like levees) have affected river morphology and stability of many of her flood-prone rivers like the Kosi river.



REPEATED RIVER CHANNELISATION AND OTHER FLOOD CONTROL WORKS HAVE AFFECTED RIVER MORPHOLOGY AND STABILITY OF MANY OF HER FLOOD-PRONE RIVERS LIKE THE KOSI RIVER

Planned measures initiated:

- Preparation and implementation of comprehensive URMPs for all Class i, Class ii and Class iii towns of the state, and establishing comprehensive sewage and solid waste handling/ treatment facilities at all urban centres. Promotion of sustainable agriculture with resource conservation measures.
- Water resources planning with emphasis on wetlands, forests and distributed groundwater and surface water shortages.
- Widespread dissemination of knowledge, ground-level monitoring, and increased sensitisation and participation of stakeholders.

Planned measures not initiated:

- Increase in water use efficiency through: (i) realistic pricing of fresh water; (ii) incentives, technical assistance, and allocation of water rights and entitlements to consumers; and (iii) reuse and recycling of water.
- Flood management through floodplain zoning, drainage improvement, other non-structural measures, and scientific sediment management.
- Ensuring longitudinal connectivity with provision for e-Flows at dams, barrages, and other structures.
- Developing Canals and Urban Natural Drains for multipurpose applications such as recreation and surface transport, groundwater recharge, hydropower, irrigation, etc.
- Regulation of sand mining from riverbeds.
- A separate drain for the treated water is in the planning phase for better reuse and discharge of treated water without any contamination.
- Tapping of the remaining sewerage line into the system to be sent to STP.
- Solution for the storm water let into Sewerage lines during rainy seasons.

State Mission – Uttarakhand

In the state of Uttarakhand, 34 Sewage infrastructure projects have been sanctioned, out of which 25 projects i.e. 85% of sewage infrastructure projects are completed and rest are under various levels of implementation. The state has implemented 2 afforestation Programmes to ensure slope stabilization and greening. There are 11 ghats projects completed in various cities of Uttarakhand viz. Chamoli, Haridwar, Uttarkashi, etc. to address the pollution caused by tourism and improving the entire experience along the river.

Planned measures initiated:

- Preparation of comprehensive URMPs for Class i, Class ii and Class iii towns of the state, and establishing comprehensive sewage and solid waste handling/ treatment facilities at all urban and tourist centres.
- Afforestation and slope stabilization along with regulation of road and building constructions in disturbed areas.
- Widespread dissemination of knowledge, ground-level monitoring, and increased sensitization and participation of stakeholders.

Planned measures not initiated:

- Ensuring longitudinal connectivity with provision for e-Flows along with development of sustainable hydro power.
- Regulation of sand and gravel mining from riverbeds.

Work Completion Rate of Projects Under NGP

As of 31st July 2025, a total of 507 projects have been sanctioned under the Namami Gange Programme. Of these, 338 projects have been completed, resulting in an overall work completion rate of 63%. The distribution of completed projects varies across thrust areas, with relatively higher progress in pollution abatement and afforestation, while components



Uttarakhand

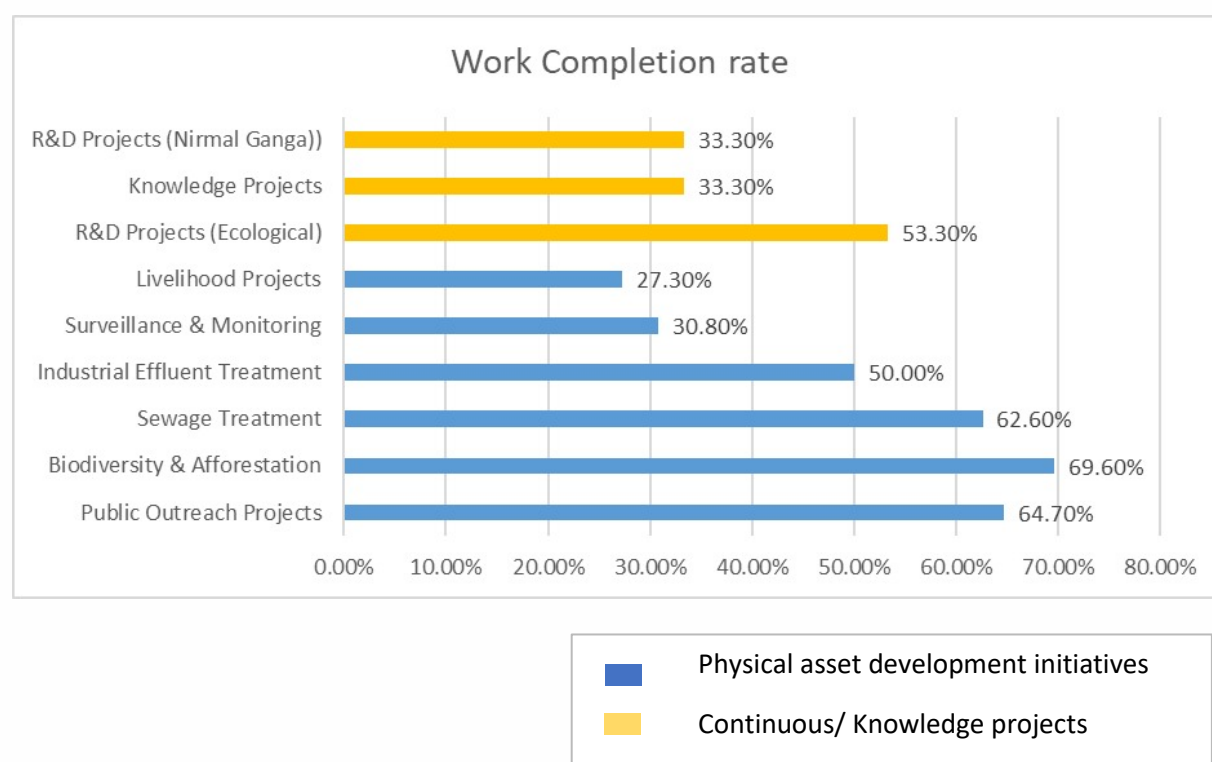
AS THE source of National River Ganga, Uttarakhand is a most important state for ensuring the wholesomeness and integrity of the river. The river and her headstreams in the state are not only held in divine esteem by Indians, but are also a major feature of the state's picturesque setting in the Himalayan range. Hence, tourism (spiritual, religious and recreational) is an important benefit for the state, and preserving a near pristine river system in the region is of key importance. While industrialisation and life-style changes have been relatively slow in the state so far, there have been some amount of deforestation and urbanisation (especially near the lower regions) and increased tourist traffic along with major hydro-electric projects (such as the Tehri, Srinagar and Kotdwar dams) fragmenting the Bhagirathi, Alaknanda and other rivers. These changes have had significant adverse impacts on the Ganga river system, and they need to be addressed urgently.

ALL HEADSTREAMS OF RIVER GANGA ARE NOT ONLY HELD IN DIVINE ESTEEM BY INDIANS, BUT ARE ALSO A MAJOR FEATURE OF UTTARAKHAND'S PICTURESQUE SETTING IN THE HIMALAYAN RANGE

KEY MEASURES REQUIRED AT THE STATE LEVEL

- 1 Ensuring longitudinal connectivity with provision for E-Flows along with development of sustainable hydro power.
- 2 Preparation of comprehensive URMPs for Class I, Class II and Class III towns of the state, and establishing comprehensive sewage and solid waste handling/ treatment facilities at all urban and tourist centres.
- 3 Ensuring proper transport, food and fuel facilities to handle peak tourist loads without stressing the region's ecosystems.
- 4 Afforestation and slope stabilization along with regulation of road and building constructions in disturbed areas.
- 5 Regulation of sand and gravel mining from river beds.
- 6 Widespread dissemination of knowledge, ground-level monitoring, and increased sensitisation and participation of stakeholders.

introduced under NGM-II, such as livelihoods and knowledge-building, show lower completion rates.



Pollution Abatement remains the main driver: With 375 projects sanctioned under Nirmal Ganga, the completion rate is 66%, and Sewage Treatment (63%). This reflects the continued emphasis on hard infrastructure creation, consistent with the observation that pollution abatement remains the backbone of the Mission. Since the responsibility of providing land for STPs rests with the states, delays in land allocation have contributed to slower work completion rates.

Ecological restoration performing well: Biodiversity and Afforestation projects (70%) show high completion, demonstrating traction in ecological and climate-resilience measures, in line with Cabinet Note II's call to broaden the scope beyond sewage treatment.

The components of Arth Ganga, Knowledge, and Surveillance & Monitoring represent ongoing initiatives that extend across the NGM-II cycle, and their relatively lower completion rates—27%, 33%, and 31% respectively—reflect their long-term and continuous nature rather than lack of progress. These projects, by design, require sustained institutional support, steady capacity building, and iterative engagement with stakeholders. It is important to note that completion rates alone do not capture the depth of progress being made. The livelihood projects under Arth Ganga are steadily creating pathways for community-linked economic opportunities, while knowledge-building and surveillance systems are laying the foundation for evidence-based planning, adaptive governance, and long-term river basin management. Far from being lagging components, these areas are steadily maturing into critical pillars for ensuring balanced and sustainable outcomes.

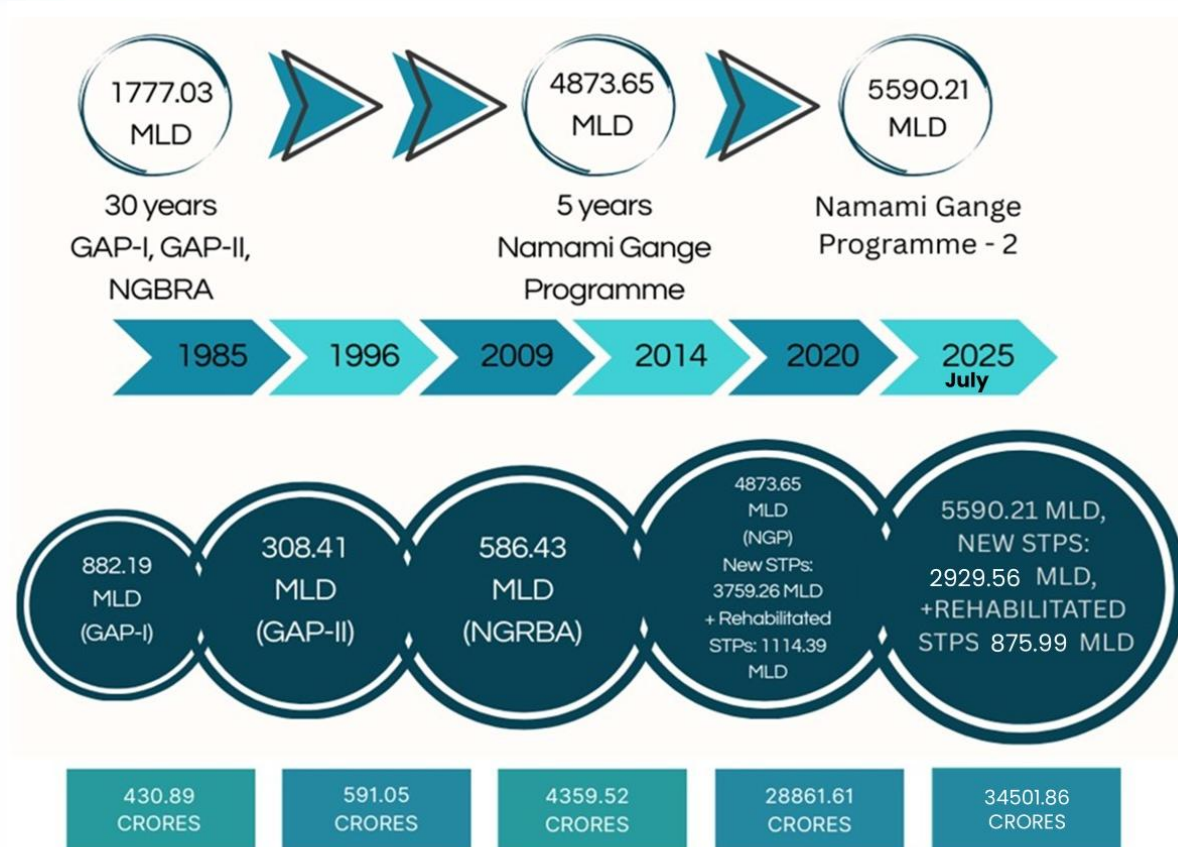
Industrial Effluent Treatment shows moderate progress: At 50% completion, CETPs and effluent projects remain a challenge, despite improvements in GPI compliance through OCEMS. Cabinet Note II flagged this as a persistent risk area due to weak enforcement and high technological demands for ZLD adoption.

The **Cabinet Note on NGM-II (2021)** emphasised the need to:

- Move beyond **fragmented infrastructure projects** to a **basin-wide, multi-dimensional approach**.
- Strengthen **Arth Ganga, Jan Ganga, and Gyan Ganga** to deliver social and economic co-benefits alongside ecological rejuvenation.
- Prioritise **monitoring, R&D, and innovation pilots** for adaptive management.

This momentum of the Programme, both in terms of the pace of sanctioned projects and the steady rise in completed works, reflects a maturing of institutional processes and improved implementation capacity. Equally noteworthy is the substantial increase in non-infrastructure projects post-2014, particularly in the areas of institutional development, research and development, afforestation, biodiversity conservation, livelihood promotion and bioremediation. These shifts underline the transition of Namami Gange from being primarily an infrastructure-driven river cleaning effort to a comprehensive river basin rejuvenation programme, in alignment with the vision articulated in the Cabinet Note II (2021).

Key Highlights



e) Sustainable Development Goals (SDG) Served

The Sustainable Development Goals (SDGs), also known as the Global Goals, were adopted by all United Nations Member States in 2015 as a universal call to action to end poverty, protect the planet and ensure that all people enjoy peace and prosperity by 2030. The 17 SDGs are integrated—that is, they recognise that action in one area will affect outcomes in others, and that development must balance social, economic and environmental sustainability.



It is anticipated that achievements under various components of NGP take India closer to achieving the SDGs. Looking at rejuvenation as a system, NGP promotes a comprehensive and integrated approach of river management as an integral part of urban planning, climate change initiatives and responsible consumption. The SDGs that NGP contributes to are presented below:

Table 3: Contribution of NGP to SDGs

SDG Goal No.	Description of the SDGs that NGP contributes to
1	End poverty in all its forms everywhere.
3	Ensure healthy lives and promote well-being for all at all ages.
4	Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all.
5	Achieve gender equality and empower all women and girls.
6	Ensure availability and sustainable management of water and sanitation for all.
8	Promote sustained, inclusive, and sustainable economic growth, full and productive employment, and decent work for all.
9	Build resilient infrastructure, promote inclusive and sustainable industrialisation, and foster innovation.
10	Reduce inequality within and among countries.
11	Make cities and human settlements inclusive, safe, resilient, and sustainable.
12	Ensure sustainable consumption and production patterns.
13	Take urgent action to combat climate change and its impacts.
14	Conserve and sustainably use the oceans, seas, and marine resources for sustainable development.

15	Protect, restore, and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, halt and reverse land degradation, and halt biodiversity loss.
16	Promote peaceful and inclusive societies for sustainable development, provide access to justice for all, and build effective, accountable, and inclusive institutions at all levels.
17	Strengthen the means of implementation and revitalize the Global Partnership for Sustainable Development.

The NGP directly contributes to SDG 6 (Clean Water and Sanitation) by conserving and restoring freshwater resources, improving water quality, and enhancing water-use efficiency. Through large-scale sewage treatment infrastructure creation, solid waste management, and industrial effluent monitoring, the programme reduces untreated discharge into the Ganga. The adoption of e-flow norms, groundwater recharge initiatives, and reuse of treated wastewater supports integrated water resource management—an approach also emphasised in Cabinet Note II (2021).

In addition to SDG 6, the programme significantly advances SDG 3 (Good Health and Well-being) by reducing waterborne diseases through improved sanitation, effluent treatment, and pollution control. By promoting sludge reuse, waste-to-compost, and bio-CNG generation, NGP also links to SDG 7 (Affordable and Clean Energy) and SDG 12 (Responsible Consumption and Production), reflecting its role in promoting a circular economy in water and waste management.

The NGP's emphasis on Arth Ganga has expanded contributions to SDG 1 (No Poverty) and SDG 2 (Zero Hunger) by supporting river-based livelihoods, promoting organic and natural farming, and enhancing local economic resilience. Projects in fisheries, eco-tourism, and river-linked handicrafts provide sustainable employment, aligning with SDG 8 (Decent Work and Economic Growth).

The ecological restoration measures under Aviral Ganga—including biodiversity parks, afforestation of more than 33,024 hectares, and conservation of species such as the Gangetic dolphin and Hilsa—contribute directly to SDG 13 (Climate Action), SDG 14 (Life Below Water), and SDG 15 (Life on Land). These interventions mitigate climate change impacts, preserve aquatic and terrestrial biodiversity, and restore ecosystem services. The increase of Gangetic dolphin populations between 2019 and 2023 is a notable outcome of these efforts, widely acknowledged in national and international forums.

The programme also contributes to SDG 11 (Sustainable Cities and Communities) by improving waste management systems, riverfront development, and resilient urban planning. Through initiatives such as the PRAYAG dashboard for real-time monitoring and institutional strengthening of NMCG and SPMGs, NGP advances SDG 16 (Peace, Justice and Strong Institutions) by promoting transparency, accountability, and community participation in river governance.

Finally, the programme strengthens SDG 17 (Partnerships for the Goals) through collaboration with international agencies such as the World Bank, JICA, ADB, and UNDP, as well as bilateral cooperation with GIZ and global knowledge exchange. Its recognition at international forums such as Stockholm Water Week reflects the Mission's role as a model for integrated river basin management and climate-resilient development.

Contribution of NGP to National Development Plans (NDP)

From its inception as a river-cleaning initiative, the programme under NGM-II has expanded to embrace ecological rejuvenation, livelihood generation, knowledge-building, and climate resilience, thereby aligning itself with the country's broader vision of sustainable development.

As of July 2025, the programme has sanctioned 507 projects, of which 338 have been completed, involving an investment of over ₹40,000 crore. These include 213 sewage infrastructure projects with a sanctioned cost of ₹34,501 crore, contributing to the addition of 6540 MLD of treatment capacity. In FY 2024–25 alone, seven major STPs were commissioned in cities such as Farrukhabad (47.7 MLD), Ayodhya (33 MLD), and Muzaffarnagar (32.5 MLD), underscoring the programme's role in advancing the national agenda on sanitation and wastewater reuse.

Beyond infrastructure, NGP has completed 39 biodiversity and afforestation projects (out of 60 sanctioned), covering over 33,024 hectares of plantations and multiple biodiversity parks. These interventions reinforce India's National Biodiversity Action Plan and commitments under the UN Decade on Ecosystem Restoration, where NGP was recognised in 2022 as one of the Top 10 Global Restoration Flagship Initiatives.

The programme also supports national priorities on urban resilience and climate action. Water quality improvements in the Kannauj–Varanasi stretch, where BOD levels dropped from 10–20 mg/l (PRS-III) to 3–6 mg/l (PRS-V), reflect progress towards national water quality benchmarks. Real-time monitoring systems such as the PRAYAG dashboard enhance transparency and accountability in line with the Government's push for digital governance.

The integration of Arth Ganga has enabled NGP to directly contribute to rural development, agricultural sustainability, and livelihood creation, consistent with the objectives of Doubling Farmers' Income, Jal Jeevan Mission, and Swachh Bharat Mission. Initiatives in organic/natural farming, fisheries, river-based tourism, sludge reuse and bio-CNG not only provide income opportunities but also advance the circular economy model promoted in India's development strategy.

In alignment with the **Strategy for New India @ 75**, released by NITI Aayog, NGP addresses several of the identified 41 focus areas that require sharper delivery:

- **Integrated Water Resource Management** – through treated water reuse, e-flow enforcement, and groundwater recharge.

- **Sustainable Infrastructure Financing** – via the Hybrid Annuity Model (HAM) for STPs and innovative PPP arrangements.
- **Ecological Sustainability** – through afforestation, wetland rejuvenation, and biodiversity conservation.
- **Rural and Urban Livelihoods** – through Arth Ganga’s interventions in farming, fisheries, and eco-tourism.
- **Institutional Strengthening and Technology** – with online continuous effluent monitoring, decision support systems, and community stewardship models.

Finally, the cultural and spiritual significance of the river continues to be leveraged as a tool for social development. Events such as the **Maha Kumbh**, attended by millions, were linked to ecological drives, including the plantation of **35 crore saplings along rivers and highways** in Uttar Pradesh—blending heritage conservation with environmental stewardship.

f) Fund Flow mechanism (National and sub-national level)

The National Mission for Clean Ganga (NMCG) functions as the Central Nodal Agency (CNA) for implementing the Namami Gange Programme, notified as a Central Sector Scheme. In this role, NMCG receives funds directly from the Government of India for the execution of approved activities.

1. Central Budgetary Allotment / Sanction:

- Funds are allocated by the Union Government under the Namami Gange programme.

2. Sanctioning / Disbursement by NMCG to States / Implementing Agencies (SPMGs / ULBs / contractors):

- NMCG, through its Executive Committees and sanctioning authorities, approves projects (with DPRs), and then disburses funds to State Programme Management Groups (SPMGs) or directly to implementing agencies.
- States / ULBs are expected to provide matching or site requirements like land, agreements etc., depending on project design.

3. Utilisation, Monitoring, and Submission of Utilisation Certificates (UCs):

- Implementing agencies spend the funds in stages as per project implementation schedule, submit periodic progress reports to NMCG / SPMG.
- Utilisation Certificates are submitted by SPMGs / subordinate agencies back to NMCG to confirm use of the funds. Delays in UCs have been flagged as issues in earlier phases.

2.2 Budgetary allocation and expenditure pattern of the scheme

As of 31st July 2025, a total of 507 projects have been sanctioned under the Namami Gange Programme with a cumulative outlay of ₹44,283 crore. Of this, approximately ₹31,216 crore (70.4%) has been released, and around ₹29,470 crore (66.5%) has been utilised

A total of 318 projects (63%) have been completed, while 154 projects (31%) are in progress, and the remaining 29 projects (6%) are at the tendering/procurement stage.

The sector-wise allocation and expenditure reflect the relative emphasis of the programme across its thrust areas.

Key Insights

- With nearly **90% of allocations channelled to Nirmal Ganga**, the programme has ensured that the backbone of river rejuvenation—pollution abatement and sewage infrastructure—is firmly in place. This provides a strong foundation for ecological and community-driven components to scale further.
- **Enhanced Financial Efficiency:** With **66.5% utilisation** of sanctioned funds, the programme reflects a significant improvement in fund absorption compared to pre-2014 efforts. This demonstrates institutional maturity and stronger implementation capacities across states.
- The projects under Ghat cleaning and IHHL are service contract-based projects for a period of 3 years. These projects are taken up with the Ministry of Drinking Water and Sanitation (MoDWS) for the development of IHHLs and SWM in the villages along the Ganga. All these villages are now declared ODF.
- Emergence of New Thrust Areas in NGM-II: Livelihood interventions under Arth Ganga and knowledge-building under Gyan Ganga, though relatively smaller in size, mark a strategic expansion of the programme. These initiatives are paving the way for river-linked economies and evidence-based planning to take greater prominence in the next phase.
- Ecological Strengthening through Aviral Ganga: With over 33,024 hectares afforested and biodiversity projects gaining momentum, ecological resilience and climate adaptation have become a central part of the programme, moving beyond traditional pollution abatement.
- Investments in surveillance and monitoring projects have created a strong platform for real-time water quality tracking and asset oversight. While coverage is still being scaled, the integration of SCADA, OCEMS, and geotagging systems highlights a growing emphasis on technology-enabled monitoring in NGM-II.

Further, Table 4 presents the financial data on actual expenditures as provided by the finance department, NMCG. It provides consolidated year-on-year details of budget estimates (BE) and actual expenditures (AE). Detailed analysis of financial data can be undertaken only after ratification of the data presented and upon receipt of category wise year-on-year data on budget estimates (BE), revised estimates (RE) and actual expenditure (AE).

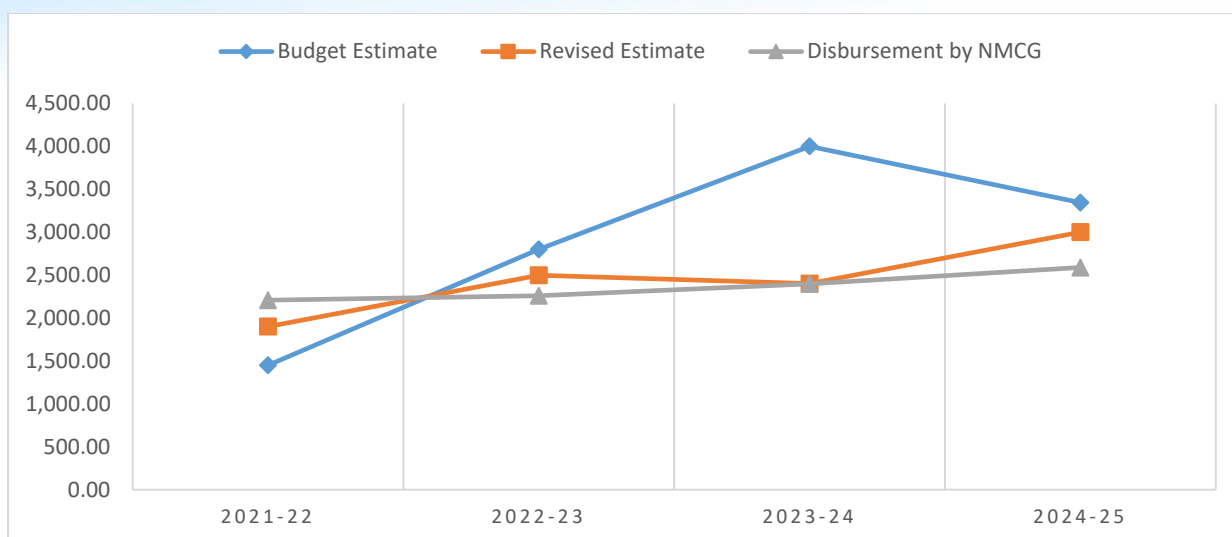


Table 4: Budget Estimate and Expenditure: 2021-2025

Financial Year	Budget Provisions (₹ in crore)		Disbursement by NMCG	Percentage disbursed against RE
	BE	RE		
2021-22	1,450.02	1,900.00	2207.7	116.19
2022-23	2,800.00	2,500.00	2,258.98	90.36
2023-24	4,000.00	2,400.00	2,396.10	99.84
2024-25	3,345.70	3,000.00	2,589.12	86.3
Total	11,595.72	9,800.00	9,451.90	96.45

The budgetary trends during NGM-II (FY 2021–22 to 2024–25) highlight a steady strengthening of the programme’s financial absorption capacity and institutional maturity.

- **High Disbursement Efficiency:** Over the four-year period, a total of ₹11,595.72 crore was budgeted, against which ₹9,800 crore was re-allocated (RE). Of this, ₹9,451.90 crore has already been disbursed, reflecting a strong utilisation rate of 96.45% against RE. This high absorption reflects growing efficiency in project implementation and financial management compared to earlier phases.
- **Momentum in Early Years:** In FY 2021–22, disbursement exceeded revised estimates (116.19% of RE), partly due to the utilisation of an unspent grant of ₹315 crore from FY 2020–21, facilitated by the operationalisation of the Treasury Single Account (TSA). This indicates the programme’s ability to channelise pending resources effectively.
- **Stability in Subsequent Years:** FY 2022–23 and 2023–24 show disbursement rates of 90.36% and 99.84% respectively, reflecting near-complete utilisation of revised allocations. These figures are consistent with the maturing processes of project sanctioning, contracting, and fund release mechanisms.

- **Healthy Performance in FY 2024–25 (till April 2025):** Against an RE of ₹3,000 crore, around ₹2,589.12 crore (86.3%) has already been disbursed. With several large infrastructure and ecological projects still under implementation, this indicates a strong likelihood of achieving near-complete utilisation by the end of the fiscal year.
- **Improved Financial Planning:** The alignment between Budget Estimates (BE), Revised Estimates (RE), and actual disbursements indicates better forecasting and coordination between NMCG, MoJS, and implementing agencies. This marks a significant improvement from the pre-2014 GAP and NGRBA years, where large unspent balances were common.

The expenditure patterns of NGM-II reflect a **maturing programme with high financial discipline**. With utilisation levels consistently above 85–95% of RE, the Namami Gange Programme demonstrates both strong fund absorption and adaptability in aligning budgetary provisions with on-ground execution.

2.3 Summary of past evaluation since inception of scheme

Past evaluations of the Namami Gange Programme (NGP) provide critical insights into its performance and challenges. While early reviews were constrained by limited documentation, two key assessments have informed the understanding of programme outcomes: the 2017 Performance Audit by the Comptroller and Auditor General (CAG) and the Third-Party Evaluation by the Administrative Staff College of India (ASCI) for 2015–2020.

The CAG Performance Audit (2017) reviewed the adequacy of mechanisms for fund utilisation, project approvals, and monitoring arrangements. Audit scrutiny of 87 projects with a sanctioned cost of ₹7,992.34 crore provided useful insights into systemic challenges that needed strengthening. Fund utilisation between 2014–15 and 2016–17 ranged from 8 to 63 per cent, reflecting the scale-up phase of the programme, where significant funds were still parked with NMCG, State Programme Management Groups (SPMGs), and executing agencies. Approval of Detailed Project Reports (DPRs) sometimes took between 26 and 1,140 days, which in turn slowed the award of large projects such as Sewage Treatment Plants (STPs). Around 57 per cent of STPs, Interception & Diversion works, and ghat/crematoria projects experienced execution delays, primarily due to land availability, contractor performance, and environmental clearance requirements—issues common in infrastructure development of this scale.

The audit also noted areas where further attention was required to strengthen the programme. By May 2017, states such as Uttar Pradesh, Bihar, Jharkhand, and West Bengal were still in the process of identifying River Conservation Zones, an important step for comprehensive river basin planning. Similarly, the absence of a basin-wide management plan, limited human resources (44–65 per cent at NMCG and 20–89 per cent at SPMGs), and initial delays in setting up the Ganga Monitoring Centre and Automatic Water Quality Monitoring Systems constrained early progress. Water quality improvements were modest at this stage, with coliform levels still high in several stretches. These findings highlighted the importance of systemic reforms, stronger institutional capacity, and more robust monitoring frameworks,

many of which have since been progressively addressed under subsequent phases of the programme.

Third-Party Evaluation of NGM 1 offered a more updated and granular perspective on NGP's progress. As of June 2020, 314 projects had been sanctioned with a committed investment of ₹28,862 crores, of which 130 projects were completed. Sewage infrastructure and ghats/crematoria/riverfront development constituted 79 per cent of the completed projects, reflecting the programme's focus on pollution abatement and visible community-facing assets. A total sewage treatment capacity of 4,873.65 MLD was created, marking a 170 per cent increase over 2014 levels. The three states of Uttarakhand, Uttar Pradesh, and West Bengal accounted for 82 per cent of completed projects, indicating a concentration of outcomes.

ASCI noted an increasing pace of project sanctioning, with numbers rising from 98 during 2014–16 to 146 in 2019–20, an improvement of nearly 50 per cent. The average work completion rate (WCR) across 314 projects was 41 per cent, with afforestation leading at 71 per cent, followed by ghats/crematoria at 63.8 per cent. Institutional development lagged with less than 5 per cent WCR. The evaluation recognised the Hybrid Annuity Model (HAM) and One City One Operator approach as successful models for asset creation and sustainable service delivery, mobilising private financial and technical resources.

Capacity constraints remained an area of concern. In the initial years (2014–16), vacancies in technical/scientific staff exceeded 70 per cent, though these will be reduced to 43 per cent by 2020. At the SPMG level, vacancies ranged from 89 per cent in early years to 37 per cent by 2020 in some states.

At the output level, the commissioning of sewage infrastructure directly contributed to cleaner river flows, while completion of 51 riverfront and ghat projects at an expenditure of ₹634.05 crore (16.4 percent of total expenditure) enhanced public perception and programme visibility. Collectively, these achievements indicate that while systemic bottlenecks and uneven state performance persisted, NGP had begun to demonstrate measurable progress in infrastructure delivery, private sector engagement, and public participation by 2020.

In sum, the past evaluations underline a dual narrative: *CAG's audit* revealed weaknesses in fund utilisation, planning, and monitoring, while ASCI's evaluation highlighted institutional gains, a scaling up of infrastructure creation, and gradual improvements in execution pace. Together, they provide a foundation for strengthening the programme's design, governance, and sustainability in the next phase.

The findings and recommendations of these assessments provide a useful base for any evaluation study on NGP. As Gol plans to extend NGP beyond 2025, a review of targets, achievements, and impact will help in defining the future scope of the programme and scheme. Administrative Staff College of India is conducting this third-party evaluation of the Programme's effectiveness in achieving the environmental, social, institutional, and capacity building goals set out and the impact thereof. It also aims to identify areas for strengthening and expanding the Programme for greater impact.



3 METHODOLOGY

The third-party evaluation of the NGM II aims to assess the extent to which the Programme has met the objectives it set out to achieve as per the performance indicators outlined in output-outcome framework and as prescribed by Department of Expenditure (DoE)/National Institute for Transforming India (NITI) Aayog. It covers a wide range of issues such as the appropriateness of the Programme design, the cost and efficiency of the Programme, its impacts, unintended effects and how the experience gained can be used to improve the design in the future.

Approach

This report is based on the review of Programme documents, implementation reports, media reports and analysis of project and financial datasets. Project progress data available on the MIS and monthly progress reports were statistically analysed to identify patterns and lines of enquiry for primary research. Meetings and key informant interviews were conducted with NMCG officials to gain a deeper understanding of NGP's objectives and envisaged goals, targets, processes, and outcomes. Discussions were also held with a view to identifying the achievements and the challenges involved in Programme implementation.

The observations and findings were refined through subsequent key informant interviews and consultations/discussions with stakeholders, including NMCG officials, private sector operators, and 'interest-based stakeholders' such as the officials of urban local bodies and panchayat raj institutions, project staff, NGOs, etc. In addition to Programme implementation, these interviews and discussions would also be aimed at gaining a deeper understanding of the project-level implementation achievements and challenges. The sampling strategy for selecting the projects is described in Annexure 1. Citizen groups, academics, researchers and media professionals were also consulted extensively.

The evaluation uses the criteria laid out by the Organisation for Economic Co-operation and Development (OECD) Development Assistance Committee (DAC) for evaluating development projects, Programmes, and policies. The six criteria collectively describe the desired attributes of all interventions. The criteria are that all interventions should be relevant to the context, coherent with other interventions, achieve their objectives, deliver results in an efficient way, and have positive impacts that last.

The criteria are used to look at processes (how change happens) as well as results (what changed). They are used to:

- Support accountability, including the provision of information to stakeholders
- Support learning, through generating and feeding back findings and lessons
- Support monitoring and results management, and for strategic planning and Programme design.

OECD criteria contextualised for evaluating NGP

1. Relevance: Is the programme doing the right things?

Contribution of NGP to the overall developmental initiatives of the GoI and the extent to which its objectives and design meet the economic, environment, equity, social, political economy and capacity conditions for the intended beneficiaries - individual, groups and organisations.

2. Coherence: How well does the programme fit?

The compatibility of the programme with other interventions in the country.

3. Effectiveness: Is the programme achieving its objectives?

The extent to which the programme achieved, or is expected to achieve, its objectives, and its results, including any differential results across groups, taking account of the relative importance of the objectives.

4. Efficiency: How well are resources being used?

The extent to which the programme delivers, or is likely to deliver, results in an economic and timely way.

5. Impact: What difference does the programme make?

The extent to which the programme has generated or is expected to generate significant positive or negative, intended or unintended, higher-level effects. The qualitative difference that NGP brings to the quality of life of the communities in the Ganga basin.

6. Sustainability: Will the benefits last?

The likelihood and extent of the overall benefits of NGP to continue beyond the programme period, including financial, social, environmental, and institutional sustainability.

The purpose of the evaluation criteria is to enable the determination of the merit, worth or significance of the NGP. Each criterion is a different lens or perspective through which the programme can be viewed. Together, they provide a more comprehensive picture of the programme, the process of implementation, and the results.

3.1 Sample size and sample collection process

The evaluation study covered a total of 507 projects under Namami Gange Mission – Phase II (NGM-II), comprising 318 completed projects and 154 ongoing projects. Out of these, a 20% representative sample was finalized for in-depth assessment.

This design ensured both statistical representativeness and strategic depth, with adequate coverage of high-value interventions such as major STPs, biodiversity corridor pilots, large-scale IEC campaigns, and Arth Ganga livelihood projects.

Sampling Methodology

The sampling approach follows a three-stage proportional stratified random sampling technique aligned with the methodology adopted during the TPE of NGM-I. The three stages of sampling include:

1. Project Sector
2. State
3. Individual Project (by investment and strategic relevance)

Stratification Criteria

Strata	Sampling Stage	Weightage Basis
Stratum 1	Project Sector	No. of completed projects per sector
Stratum 2	State	State's share in total investment under NGM-II
Stratum 3	Project	The absolute value of investment + strategic considerations

Sample Size and Distribution by Sector

The initial selection of total and sectoral samples is presented below. In this first-stage sampling, the weights are assigned proportionally to the number of completed projects per sector. The final sectoral sample sizes are rounded to the nearest whole number for practical viability.

Table 5: Sector-Wise Sample Design

Sector	Completed Projects	Share (%)	Sample (15%)	Rounded Off	Revised per meeting with NMCG	As the with
Sewage Treatment	144	45%	21.6	22	16	
Solid Waste Management	96	30%	14.4	14	11	
Industrial Effluent Treatment	4	1.3%	0.6	1	1	
Surveillance & R&D (Nirmal Ganga)	6	1.6%	0.8	1	6	

Biodiversity & Afforestation	39	12.3%	5.85	6	6
R&D (Ecological)	8	2.5%	1.2	1	1
Livelihood (Arth Ganga)	3	0.9%	0.45	1	1
Public Outreach (Jan Ganga)	11	3.4%	1.65	2	2
Knowledge (Gyan Ganga)	8	2.5%	1.2	1	2
Total	318	100%	48	48	47

Purposive Sampling (5%) – Strategic Projects

To enrich insights and address critical implementation learnings, 18 additional projects (6%) will be selected using non-random, purposive criteria. These include:

- 4 high-value STP projects (> ₹250 Cr)
- 2 Gyan Ganga GKC & Urban Planning Projects
- 2 biodiversity corridor conservation pilots (e.g., dolphin/fish habitats)
- 1 Composite Ecological Task Force
- 2 R&D Projects under Aviral Ganga
- 2 livelihood-linked projects under Arth Ganga
- 4 large-scale IEC interventions in Jan Ganga (e.g., Kumbh, Magh Mela zones)

Total Sampling Summary

Sampling Category	Number of Projects
Random Sample (15%)	46
Purposive Sample (5%)	18
Total Sample	65

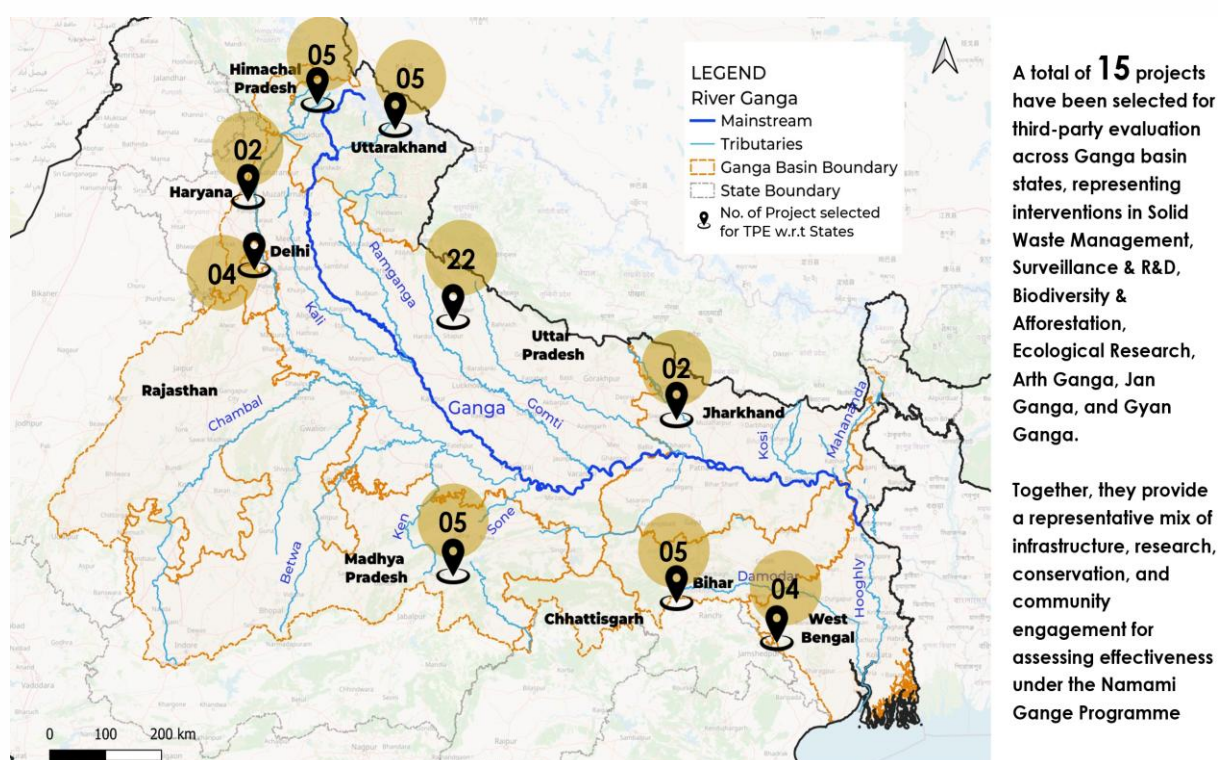
This sampling design ensures representation across diverse sectors, geographies, and investment levels and allows for in-depth analysis of both high-impact and community-focused projects under NGM-II.

Stage 2: State Selection (Proportional to Investment Share)

From each sector, States are selected based on their share of total project investment. States with higher investments in a sector have a higher chance of being included. This ensures the sample reflects the States that contribute most to the sector's outcomes.

Stage 3: Selection of Individual Projects (Based on Diversity and Strategic Relevance)

Within the selected States, individual projects are chosen considering project size, diversity of project types, and strategic importance. Feedback from stakeholders, experts, and NMCG officials is also considered to ensure meaningful and representative project selection.



The map below shows the selected number of projects spatially.

3.2 Baseline data on Key Performance Index (KPIs)

a) For New Scheme

For newly sanctioned schemes, baseline KPIs were drawn from DPRs, appraisal documents, and NMCG project monitoring datasets. The following indicators were captured before implementation:

- **Sewage Schemes:** Proposed capacity (MLD), sewer network length, estimated reduction in untreated discharge.
- **Solid Waste Schemes:** Proposed treatment capacity (TPD), coverage area, expected reduction in open dumping.
- **Livelihood & Biodiversity Projects:** Expected beneficiaries, area under ecological restoration, number of SHGs engaged.
- **Awareness & IEC:** Planned outreach numbers, community mobilization targets.

b) For Existing Scheme

For operational projects, baseline KPIs were collated from NMCG MIS data, SCADA-enabled monitoring, OCEMS feeds, and previous annual reports (2021–22, 2022–23, 2023–24). These included:

- Treated sewage volume (MLD) vs. capacity created
- Biological & chemical water quality parameters (BOD, DO, coliform levels, saprobic index, biodiversity scores) across mainstem and tributaries
- Utilization levels of SWM facilities
- Species richness and diversity indices from biomonitoring studies (CIFRI, WII, CPCB datasets)
- Socio-economic outcomes (income gains from Arth Ganga projects, SHG participation, livelihood diversification)

3.3 Evaluation Tools used

The evaluation adopted a **mixed-methods approach**, combining **quantitative and qualitative tools**:

- **Logical Framework Analysis (LFA)**: Outputs, outcomes, and impacts mapped against indicators for each pillar.
- **OECD-DAC Evaluation Criteria**: Relevance, coherence, effectiveness, efficiency, impact, and sustainability applied across projects.
- **Performance Rating Scale**: 10-point scoring system developed during TPE to provide comparative output-level assessment
- **GIS-based and Dashboard Analytics**: PRAYAG, PMT tool, SCADA/OCEMS, and Ganga Tarang dashboards for near real-time verification.
- **Case Study Methodology**: In-depth analysis of strategically significant projects (e.g., Kanpur STPs, Varanasi ghats, dolphin conservation pilots).

3.4 Data collection tools

Data was collated using a combination of secondary datasets, field verification, and participatory methods:

1. Secondary Sources:

- Project MIS, monthly progress reports (MPRs), and DPRs.
- Annual reports of NMCG (2021–22, 2022–23, 2023–24).
- Lab data from CPCB/SPCBs, WII biodiversity monitoring, CIFRI fishery assessments.

2. Primary Tools:

- Field visits to selected project sites across Uttar Pradesh, Uttarakhand, Bihar, Jharkhand, and West Bengal.
- Structured interviews and KIIs with NMCG/SPMG officials, ULB engineers, plant operators, NGOs, and SHGs.
- Household/beneficiary surveys in Ganga Grams to assess sanitation, awareness, and livelihood impacts.
- Focus Group Discussions (FGDs) with local communities, volunteers, and citizen groups to validate program outcomes

Together, these tools created a robust triangulation process—linking infrastructure performance data with ecological outcomes and socio-economic impacts—to provide a balanced and evidence-backed assessment.



4 OBJECTIVE OF THE STUDY

The third-party evaluation of the NGP-II is undertaken for the Programme period from the announcement of the Programme in 2020 till July 2025 as per the performance indicators outlined in the output-outcome framework and as prescribed by the Department of Expenditure (DoE)/ National Institute for Transforming India (NITI) Aayog.

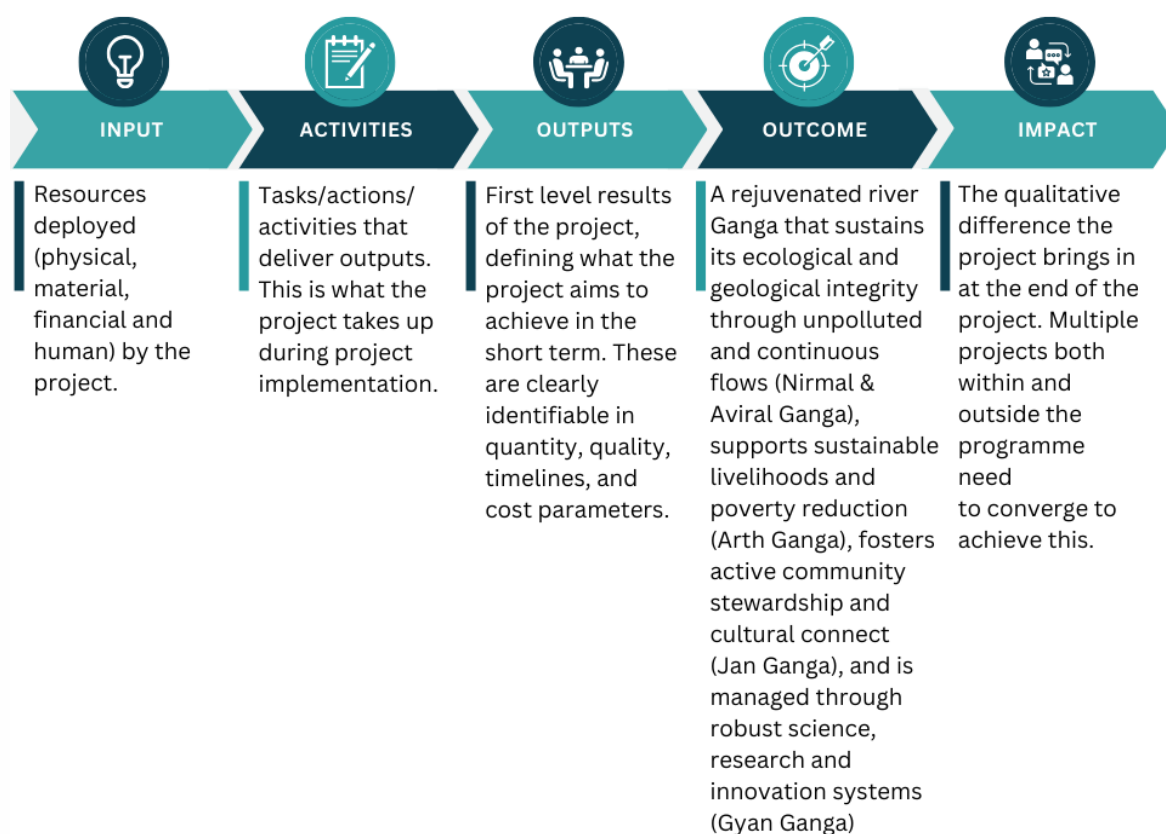
4.1 Effectiveness of the scheme in terms of achieving its intended objectives as per the scheme guidelines

a) Development of Logical Framework Approach (LFA)

The NMCG structured the implementation of the NGP along seven thrust Areas and twenty-one action items as shown in Table 5 (section 2.1.2). The action items were further broken down to projects and sub-projects for implementation, and budget allocations were done on a project-to-project basis. The Programme did not develop a Logical Framework Approach (LFA) or output-outcome framework.

LFA is an important planning tool consisting of a matrix that provides an overview of the Programme's goal, activities, and anticipated outcomes. It provides a set of horizontal and vertical interlocking concepts. The commonly used terminologies in the LFA are: "input", "activities", "outputs", "outcomes" and "impact".

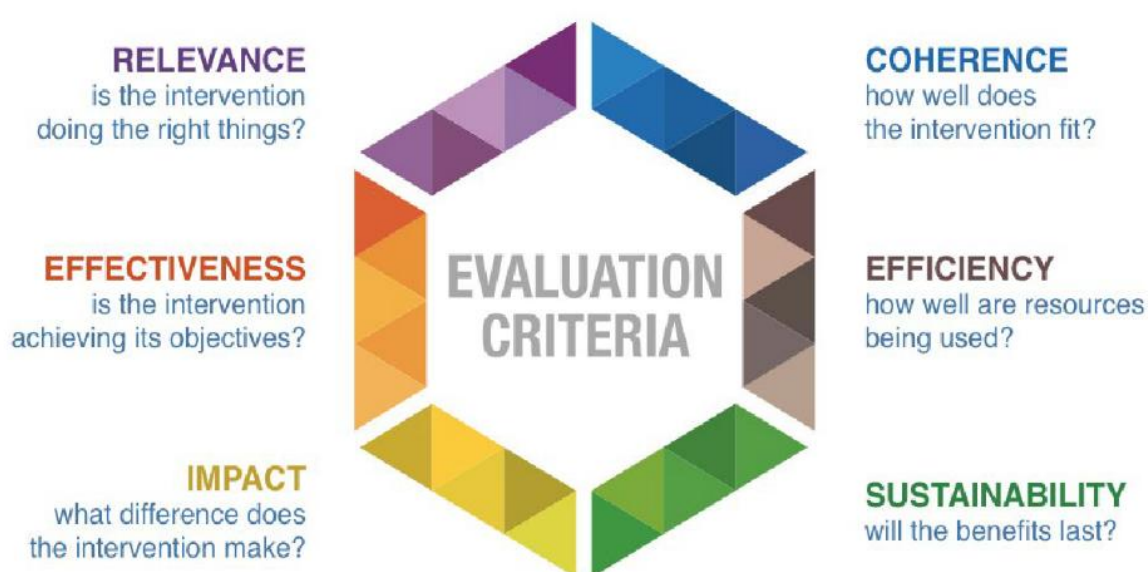
The LFA concept, the definitions of the terms, and the relationships from Input to Impact are presented diagrammatically in Figure 6 below



Given that the LFA and the specific output indicators were not developed prior to the commencement of the programme, the impact evaluation team constructed it post-facto to provide a structured approach to the impact assessment exercise.

The LFA comprises an impact statement, an outcome statement, and eight output pillars. It also captures measurable indicators under each output as applicable for the impact assessment study now, and includes some suggestions for defining measurable indicators for the future as well.

The LFA developed as part of this evaluation study is a useful contribution and can be effectively used for all future assessments of the NGP.



The construction of the LFA is based on the documents accessed from various sources, including:

- Output-outcome framework by DoE.V NITI Ayog
- Impact assessment framework by DAC/ OECD
- Desk research of global frameworks
- NMCG website
- Documents made available to the team from the project authorities
- Consultative discussions
- Vision Ganga document jointly prepared by Ganga and NMCG,
- Gazette notification on NGRBA,
- Annual financial outlays

The goal hierarchy of the LFA was defined and validated through dialogues and discussions with NMCG officials. This was extremely important to achieve congruence of the LFA with

NGP's vision, mission, strategic initiatives, seven thrust areas and twenty-one action items. The LFA is presented in Figure 7 overleaf.

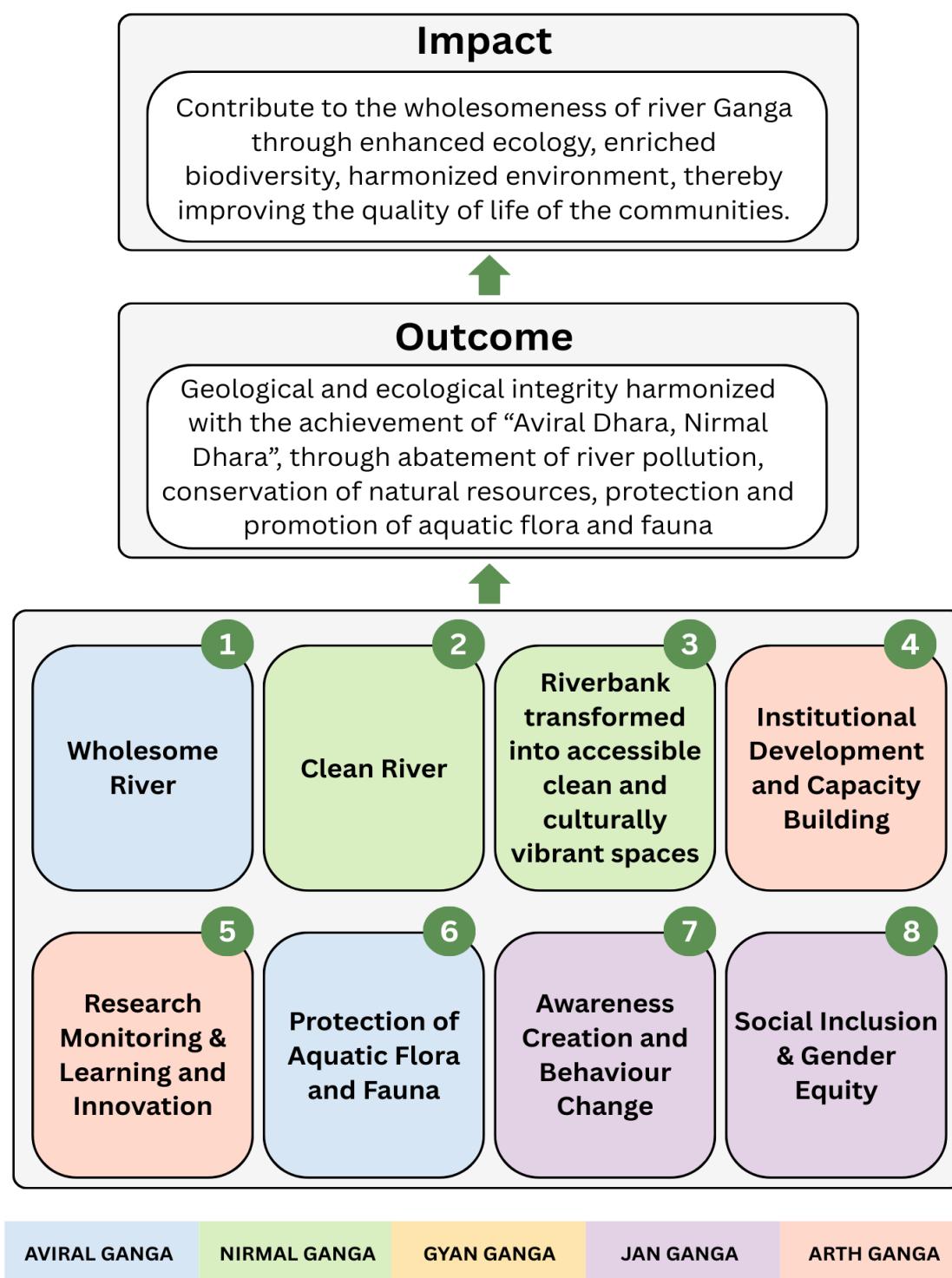


Figure 7: Logical Framework Approach of Namami Gange Programme

The LFA outputs are harmonized and completely aligned with NGP's eight pillars & seven thrust areas. The outputs are also aligned with the main blocks of aviral ganga, nirmal ganga, gyan ganga, jan ganga and arth ganga. Further, it is important to note that the outputs in the

LFA are not “stand alone” outputs. There is a complex inter-play of relationships between and amongst the output, and each of them contributes directly and indirectly to the achievement of the defined outcome. It is also pertinent to note that social inclusion and gender equity is not explicitly addressed in the thrust areas or corresponding action items and instead is subsumed under the thrust area of ‘people’s participation and creating awareness’.

Although the Logical Framework of NGP continues to follow its original architecture of Impact–Outcome–Outputs, the weight and emphasis within the outputs have shifted considerably under NGM-II. This evolution reflects lessons from past evaluations, priorities outlined in Cabinet Note II, and emerging challenges between 2021–2025. The box below highlights the key shifts in emphasis that have redefined the implementation approach of the Mission.

Key Shifts in Emphasis under NGM-II

While the Logical Framework of NGP remains unchanged (Impact → Outcome → Outputs), the relative emphasis within outputs has evolved significantly under NGM-II:

- Wholesome River (Aviral Ganga): In addition to regulatory e-flows, integrated hydrology, groundwater recharge, and climate-adaptive flow regimes.
- Clean River (Nirmal Ganga): From asset creation to reuse of treated water, sludge valorisation (bio-CNG, compost), and performance-based O&M.
- Riverfront Development (Jan Ganga): Expanded from ghat construction to climate-smart river cities, wetland rejuvenation, and floodplain management.
- Institutional Development: Moving beyond NMCG/SPMGs to embedding river basin management into ULBs and state-level governance systems.
- Research & Monitoring (Gyan Ganga): Elevated through PRAYAG dashboards, OCEMS integration, AI/ML water quality analysis, and climate studies.
- Aquatic Biodiversity (Aviral Ganga): From small pilots to catchment-scale biodiversity parks, wetland restoration, and flagship dolphin/fish conservation.
- Awareness & Behaviour Change (Jan Ganga): Transitioned from generic campaigns to community-led stewardship, plastic ban, and Kumbh-linked outreach.
- Social Inclusion (Arth Ganga): From peripheral activity to a core socio-economic pillar, with women SHGs, eco-tourism guides, and organic farming groups driving livelihoods.

The interface and relationship between the LFA outputs with the pillars, thrust areas, and action items is visualised as a matrix and presented in Annexure 2. The outputs in the LFA

along with detailed listing of measurable indicators and means of verification are given in Table 6.

Table 6: LFA - Impact, Outcome and Outputs

Impact	Outcome	Outputs
To contribute to the wholesomeness of river Ganga through enhanced ecology, enriched biodiversity, harmonized environment, thereby improving the quality of life of the communities.	A rejuvenated river Ganga that sustains its ecological and geological integrity through unpolluted and continuous flows (Nirmal & Aviral Ganga), supports sustainable livelihoods and poverty reduction (Arth Ganga), fosters active community stewardship and cultural connect (Jan Ganga), and is managed through robust science, research and innovation systems (Gyan Ganga).	Output 1: Wholesomeness of River achieved
		Output 2: Clean River attained
		Output 3: Riverbanks transformed into accessible, clean, and culturally vibrant spaces completed
		Output 4: Institutional Development achieved and Capacity Building institutionalized
		Output 5: Research, Monitoring & Learning and Innovative Project Financing Mechanism established
		Output 6: Aquatic Flora and Fauna protected and promoted
		Output 7: Awareness raised, and Behaviour Change achieved
		Output 8: Social Inclusion, Gender & Equity integrated

Outputs & Indicators

Outputs	Thrust Areas	Indicators	Means of Verification
Output 1: Wholesomeness of River achieved	Aviral Ganga	- Km of tributaries rejuvenated. - Wetlands restored (ha). - Floodplain area demarcated and managed. - No. of aquifer recharge zones identified/mapped. - Extent of e-flow compliance at barrages/weirs. - Improvement in hydrological balance indicators.	- Project DPRs & completion reports. - CPCB/NMCG monitoring reports. - Field inspections, KIIs with SPCBs and

		Catchment area treatment undertaken. a. Water quality improved b. Utilization of treated wastewater	local stakeholders.
Output 2: Clean River attained	Nirmal Ganga	• STP capacity created vs. utilised (MLD). • No. of drains intercepted/diverted. • CETPs commissioned & % industries connected. • Bioremediation effectiveness (BOD/DO reduction). • % households connected to sewerage networks. • O&M/Cost recovery systems established for STPs. • Reduction in pollution load (BOD, COD, FC) in monitored river stretches. Solid waste management systems operationalised (door-to-door collection, treatment units).	• NMCG Monthly Progress Reports. • SPCB monitoring data & lab test results. • KIs with ULBs/plant operators. • HH/beneficiary surveys.
Output 3: Riverbanks transformed into accessible, clean, and culturally vibrant spaces	Nirmal Ganga	• No. of ghats/crematoria modernised. • Sanitation infra functional during mass gatherings. • % crematoria using clean fuel systems. • Tonnes of solid waste collected daily at riverfronts. • User satisfaction levels. • No. of toilets/bathing facilities constructed. No. of riverfront towns covered under beautification.	• Project completion & O&M reports. • HH/visitor surveys at project sites. • FGDs with pilgrims and local communities.

Output 4: Institutional Development & Capacity Building	Gyan Ganga	- No. of SPCB labs upgraded/accredited. % increase in samples tested annually. - No. of enforcement actions undertaken by CETF. - No. of training/workshops conducted & participants trained. - Establishment of River Cities Alliance/local governance models. - Functionality of SPMG/NMCG structures. - Extent of inter-agency coordination achieved. - Availability and use of Decision Support Systems (DSS).	- SPCB lab records & accreditation certificates. - CETF enforcement logs. - Training/workshop attendance sheets. - KIs with NMCG/SPMG officials.
Output 5: Research, Monitoring & Innovation	Gyan Ganga	- No. of fish released under stock enhancement projects. - Biodiversity corridor pilots implemented. - Smart laboratories established. - PRAYAG/OCEMS dashboards functional & usage stats. - No. of R&D reports/knowledge products generated. - Number of scientific papers published. - Innovations piloted (soil biotechnology, ZLD in CETPs, bio-remediation technologies). - Monitoring frequency and coverage of water quality parameters.	- Evaluation reports from research institutions. - PRAYAG/OCEMS datasets. - Publications and project deliverables. - KIs with researchers/scientists.
Output 6: Aquatic Flora & Fauna protected and promoted	Aviral Ganga	- Dolphin rescue and release cases documented. - Biodiversity parks established/maintained. - Area afforested (ha). - No. of native plant species restored. - Ethnobotanical diversity database developed. - Conservation plans implemented for aquatic fauna. - Population trends of key species (dolphin, otters, fish).	- Field verification/site visits. - WII/CIFRI reports. - Plantation records & satellite imagery. - Project documentation.

Output 7: Awareness Creation & Behaviour Change	Jan Ganga	• No. of IEC campaigns/events conducted. • No. of schools/colleges engaged in outreach • No. of youth/volunteers mobilised. • Sanitation infra functional in Ganga Grams. • % households reporting improved sanitation. • Adoption rates of plastic-free/waste segregation practices. • Awareness levels on water conservation (survey scores). Social media/digital outreach achieved.	• IEC campaign reports. • HH/beneficiary surveys in Ganga Grams. • KIIs with volunteers/NGOs. • Observation during field visits.
Output 8: Social Inclusion & Gender Equity	Arth Ganga	• No. of SHGs engaged in livelihood centres. • % of women-led enterprises supported. • Avg. household income gains from river-linked livelihoods. • No. of cultural heritage assets documented. • Case studies of women/youth leadership in livelihood pilots. • Representation of vulnerable groups in project activities. • Employment generated through Arth Ganga projects.	• HH/beneficiary surveys. • KIIs with SHGs/community leaders. • Livelihood project records. • Cultural documentation outputs.

b) Performance Rating Scale

The overall performance under each of the outputs and to enable comparison across outputs, the evaluation team has developed a numerical scale for assessment. The range of the scale spreads between 10 and 1 in a sliding order, 10 being graded as “top of the line performance” and 1 being graded as “bottom of the line performance”.

The assessment scale and the corresponding explanation of the scale is given in Table 7 overleaf.

Table 7: Performance Rating Scale for LFA

RATING	DESCRIPTION
10	Output fully achieved. Contributed organically to Outcome. Lasting influence on Impact.
9	Outstanding output achievement. Strongly linked to Outcome. Contribution to Impact can be easily identified.
8	Noteworthy output achievement. Particularly good links to Outcome and Impact.
7	Strong output achievement. Good links to Outcome and Impact.
6	Very Good output achievement.
5	Good output achievement. Can be further strengthened in the next phase, with minor adjustments and refinement.
4	Average output achievement. Scope exists for expansion and improvement in the next phase. Seek additional support and improve coordination and collaboration.
3	Below average output achievement. Calls for expansion in scale and improvement in performance. Closer and more frequent monitoring is needed. Consider revamping of activities
2	Poor output achievement. Consider revisiting this output.
1	Extremely poor output achievement. Go back to the drawing board and redesign activities.

While the scale is developed for evaluating the performance of each of the outputs individually, it is equally relevant for evaluating the Programme in its entirety. Given the interlinkages and interdependencies between the outputs and indicators, a weighted average approach can be developed over time to arrive at a composite score. The relative importance of sectors/ initiatives in terms of their contribution to the Programme's goals can also be suitably incorporated.

For the purposes of the study, as the LFA is applied for the first time, the evaluation is undertaken for each output separately. The analysis and score will serve as a baseline for future evaluation and impact assessment studies.

c) Performance Assessment of Projects Under NGP Using LFA developed

The study team used the LFA and its eight output categories to carry out the performance assessment of NGP. This is an overall assessment of the projects based on the evaluation of the status of projects, money spent, activities taken up and the apparent benefits accrued. Discussions with many NMCG officers were the pivotal points to the assessment of the performance.

The 318 completed projects (activities) were first grouped under the concerned LFA output category along with listing of combined number of projects and actual expenditure thereof (detailed in Table 12 below). This was followed by overall performance assessment under each output and providing a numeric score using the performance scale developed (ref. Table 7).

Table 8: Grouping of Completed Projects Under Respective Output in the LFA

LFA Outputs	Completed Projects / Projects taken for implementation	Number of projects	Amount spent in Crores
Output 1: Wholesomeness of River	- Rejuvenation & conservation of Shahdara Drain. - Conserving and sustainably managing Gangetic Floodplains (IMP, Phase I). - Pilot projects on drain treatment using bio-remediation (older pilots in Rishikesh–Haridwar stretch). - Spring rejuvenation initiatives in Uttarakhand (from earlier phase).	47	559.29
Output 2: Clean River	- Sewerage & STP works: Kanpur, Prayagraj, Varanasi, Patna, Rajmahal, Barrackpore, Halishar, Budge-Budge, Panipat, Kondli, Rithala, Poanta Sahib, Munger, Haridwar, Okhla, Bally, Kamarhati, Howrah. - CETPs: Jajmau, Mathura. - Drain bioremediation: Panipat, Tughlakabad. - Earlier phase STPs in Rishikesh, Haridwar, and Allahabad city (completed before 2020). - Pilot projects on faecal sludge management in smaller ULBs (as per 2020 report).	144	1984.42 +495.35
Output 3: Riverbanks transformed into accessible, clean, and culturally vibrant spaces	- Riverfront projects: Patna, Devprayag–Rudraprayag, Gangotri. - River Surface Cleaning. - Ganga Gram sanitation infrastructure. - Rejuvenation of waterbodies & façade improvement at Ayodhya. - Ghat redevelopment works in Haridwar, Varanasi and Kanpur (completed earlier).	96	2495.43
Output 4: Institutional	- Strengthening of PCB Labs. - Raising of CETF Battalion.	4	2.03+275.66

Development & Capacity Building	- Establishment of NMCG and SPMGs (from GAP–NRCP transition). - Capacity building workshops for ULB engineers and SPCB staff.		
Output 5: Research, Monitoring & Innovation	- CIFRI Fish Stock Enhancement. - Aquifer Mapping. - Data generation for groundwater paleochannels. - Development of Ganga Knowledge Portal (from previous evaluation period). - R&D pilots on constructed wetlands and soil bio-technology (documented in 2020).	8	19.39
Output 6: Protection of Aquatic Flora & Fauna	- Biodiversity Conservation & Ganga Rejuvenation (Part I). - Udhwa Lake Bird Sanctuary IMP. - Scientific exploration of ethnobotanical floral diversity. - Afforestation programme. - Dolphin conservation and rescue pilot (2017–2019). - Fish hatchery and aquatic habitat restoration projects supported earlier.	39	539.90
Output 7: Awareness Creation & Behaviour Change	- Involvement of Youth in NGP. - IEC Campaigns (Kumbh-linked). - Yamuna Action Plan outreach. - Public outreach campaigns during 2019 Prayagraj Ardh Kumbh. - School-based awareness drives (2017–2020).	11	255.34
Output 8: Social Inclusion & Gender Equity	- Arth Ganga Framework Model. - Cultural Heritage Documentation (Gaumukh–Ganga Sagar). - Women SHG engagement in Ganga Grams (earlier phase). - Pilot livelihood schemes linked to fisheries and organic farming.	4	275.66
TOTAL		338	20,336.45.06

d) Assessment of NGP Performance on Projects with Explanations

Output No: 1

Output category: Wholesomeness of River achieved

Achievement rating: 6

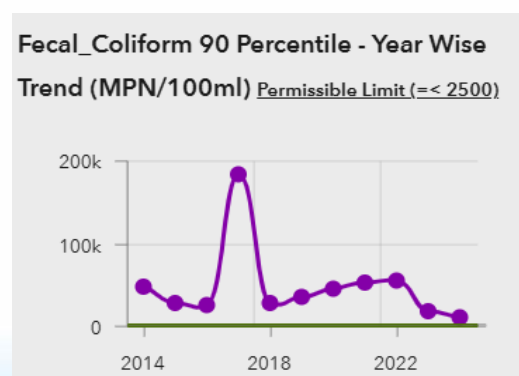
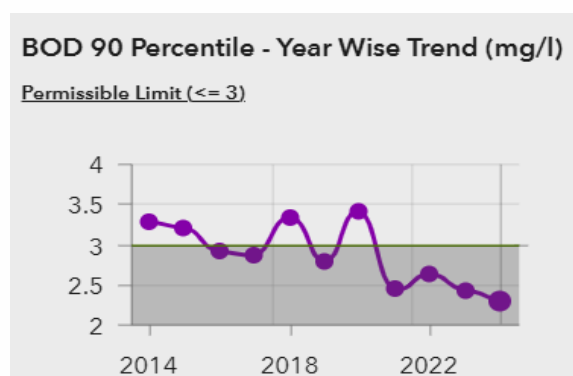
Explanation:

The **wholesomeness of the river** has been pursued through direct interventions in **sewage management, industrial pollution control, and real-time monitoring**, which collectively reflect the Programme's success in improving river water quality.

As of 2024, **176 STPs with a cumulative capacity of over 5,000 MLD** have been sanctioned under the Programme, with a large proportion commissioned in critical stretches such as Kanpur, Patna, Varanasi and Kolkata. These interventions have significantly reduced untreated sewage inflows to the river. Complementing this, **faecal sludge treatment plants (FSTPs)** have been taken up to address septage management in non-sewered towns, further contributing to quality improvements.

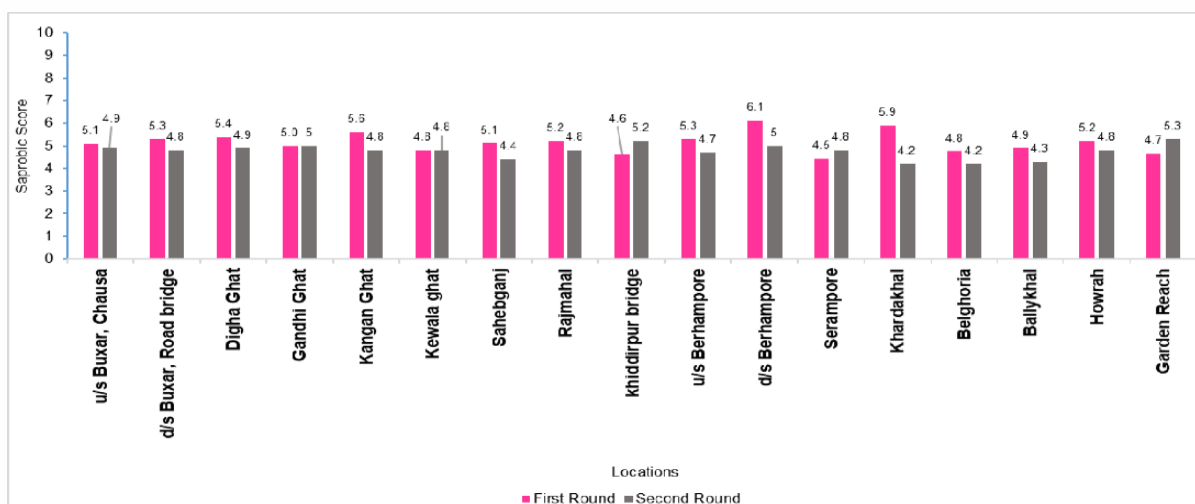
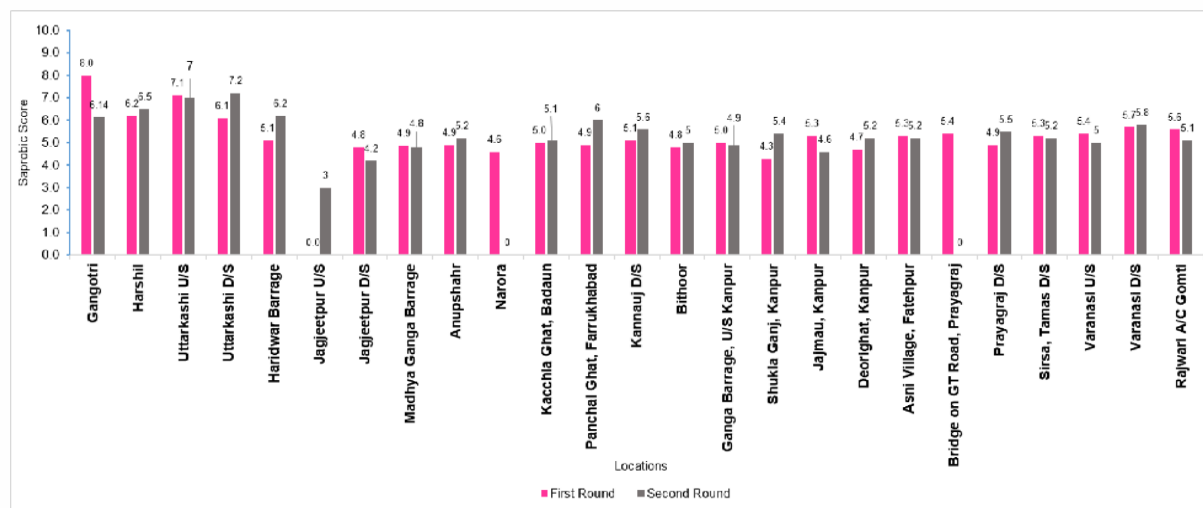
The Programme has placed equal emphasis on **industrial pollution abatement**. A total of **1,395 Grossly Polluting Industries (GPIs)** were identified along the Ganga and its tributaries in 2024, of which **83% are compliant with prescribed discharge norms**. This marks a substantial improvement from the baseline of **39% compliance in 2017**, and reflects the success of interventions such as **OCEMS connectivity for effluent monitoring** and annual third-party inspections coordinated by CPCB and NMCG. Closure directions have been issued to consistently non-compliant industries under provisions of the Environment (Protection) Act, 1986.

Further, **river surface cleaning projects** have been operationalised in 11 major cities along the main stem. Mechanical trash skimmers, installation of screens at major drains, and improved solid waste management near ghats have prevented floating waste from entering the river, enhancing its physical and visual wholesomeness.



A robust real-time monitoring framework has been established to track progress. By 2024–25, 112 manual water quality monitoring stations and 40 Real-Time Water Quality Monitoring Stations (RTWQMS) have been operationalised along the river. In addition, platforms such as the Ganga River Quality Monitoring System (GRQMS) and the Prayag Portal now provide near real-time data to decision-makers and the public, strengthening accountability and timely response.

These interventions collectively point towards a measurable improvement in the wholesomeness of the river. Dissolved Oxygen (DO) levels > 6 mg/L have been reported in more than 90% of monitored stretches since 2022, while Biochemical Oxygen Demand (BOD) has consistently reduced in identified hotspots. Although challenges remain in a few urban stretches, the Programme has built a robust foundation for further improvements through sustained operations and maintenance of commissioned assets.



Saprobic Score across the length of the river is above 4, showing Very Good to Moderate biological water quality.

Output No: 2

Output category: Clean River attained

Achievement rating: 6

A substantial portfolio of projects under the Namami Gange Programme (NGP) is directed towards achieving a clean river through **sewage management, industrial effluent treatment, solid waste management (SWM), sanitation, and septage/faecal sludge management (FSM)**. Together, these constitute the backbone of the “Nirmal Dhara” objective.

As of 2025, more than **193 Sewerage Infrastructure projects** (including **164 STPs and 29 FSTPs**) have been sanctioned, with a cumulative capacity of over **6,800 MLD** across the Ganga basin. Out of these, **over 2,900 MLD capacity has already been created and commissioned**, while the remainder are under various stages of construction. Notable projects include the **90 MLD Panipat STPs (Haryana)**, **65 MLD STP at Howrah**, **24 MLD STP at Barrackpore**, **16 MLD at Halihar**, **62 MLD at Bally/Baranagar**, and **mega STPs at Kanpur, Varanasi, and Patna**.

Industrial effluent treatment has also received attention, with projects like the **20 MLD CETP for the tannery cluster at Jajmau (Kanpur)**, **CETP at Gorakhpur (4 MLD)**, and **upgradation of CETP at Mathura Industrial Area (6.25 MLD)** being key interventions. In addition, **pilot demonstration projects** on innovative wastewater treatment (such as **TADOX technology and electro-oxidation**) have been implemented successfully.

On the sanitation front, **community toilets and solid waste management infrastructure** were developed at large congregational sites such as **Kumbh Mela (Prayagraj, Haridwar, Uttarakhand)**. More than **450 community/public toilets**, **5,000 dustbins**, and **decentralized composting units** were installed across priority towns. **River surface cleaning projects** have deployed **trash skimmers and drain master machines** at multiple stretches, with special focus on Varanasi and Prayagraj.

However, long term impact and sustainability of these activities are unknown. Further, maintaining the water quality of the river (i.e. preventing deterioration) is also an achievement because pressure on the river is increasing continuously due to increased population, urbanisation, agriculture and industrial activities.

Solid Waste Management (SWM) projects such as **ghat cleaning in Varanasi (85 ghats)**, **Haridwar (72 ghats)**, and **Rishikesh (8 ghats)** are now sustained as institutionalized operations. The SWM facilities have integrated **door-to-door collection, segregation, and composting**, thereby reducing solid waste inflow into the Ganga.

Assessment

The progress under **Output 2: Clean River Attained** demonstrates that the programme has significantly advanced in establishing **critical infrastructure for sewage and solid waste management, industrial effluent treatment, and sanitation**.

- The commissioning of large-scale STPs across states like UP, Bihar, West Bengal, and Haryana has led to **tangible reductions in untreated wastewater discharge into the Ganga.**
- Innovations like **HAM-based contracts** have created models for long-term O&M sustainability.
- CETPs and pilot projects have provided **replicable models** for industrial effluent treatment in tannery and textile clusters.
- SWM and river surface cleaning interventions have institutionalized mechanisms for **reducing solid waste inflows** into the river system.

While the challenge of connecting all households to the sewerage network and ensuring treated water reuse persists, the trajectory is clearly positive. The initiatives are aligned with **SDG 6 (Clean Water and Sanitation)** and **SDG 11 (Sustainable Cities and Communities)**.

Considering the scale of interventions, visible outcomes on ground, and strengthened O&M frameworks, this output is assessed at **Rating: 6.**

Output No: 3

Output category: River banks transformed into accessible, clean and culturally vibrant spaces

Achievement rating: 6

Riverfront development projects under NGP-II have been among the most **visible and impactful interventions**, providing modern amenities at ghats, improved crematoria facilities, and continuous river surface cleaning. These projects not only enhance environmental outcomes but also revive the cultural and heritage connect of the river, reinforcing the vision of **Jan Ganga and Arth Ganga.**

A total of **116 projects** have been sanctioned, with a cumulative sanction cost of **₹1905.85 crore**, of which **₹1390 crore (73%)** has been released and utilized. Together, these efforts have supported the modernization of **over 350 ghats and 100 crematoria**, along with mechanized cleaning and trash skimming across major urban centers such as Varanasi, Prayagraj, Howrah, and Haridwar.

Assessment

While the **asset creation has been significant**, long-term sustainability requires stronger convergence between **ULBs, State Missions, and local communities.** Presently, several factors have influenced this shift:

- **Urban Local Bodies (ULBs):** While central and state support enabled rapid asset creation, limited financial and technical capacity at ULB levels has affected upkeep.

- Natural flooding cycles: As a river system with abundant and sometimes unpredictable flooding, ghats and crematoria face recurring damage, requiring adaptive designs and maintenance.
- O&M funding models: Sustained O&M requires innovative financing, convergence with



Ramkund Ghat, Pauri Garhwal



Baradari Ghat, Bithoor



Sarkanda Ghat, Sahibganj



Naithani Ghat, Srinagar



Dalmou Interconnection of Ghats



Madan Mohan Ghat, Sahibganj

schemes like Smart Cities/AMRUT, and enhanced private/community partnerships. have impacted the maintenance of facilities.

However, these factors also highlight the **maturing direction of the programme**: NMCG is increasingly emphasizing sustainable funding models for O&M, integration with Smart City/AMRUT missions, and enhanced private/community participation to ensure longevity of riverfront assets.

Importantly, even with such challenges, **the overall cultural and environmental impact is clearly visible**, with ghats cleaner, crematoria better equipped, and large gatherings (e.g., Kumbh Mela) being managed more systematically than in earlier years.

Rating

The current achievement rating of **6**, should be seen as an **indicator of the next stage of the Programme's maturity**. With asset creation largely accomplished, the focus now lies on:

- Building **sustainable O&M models** for ghats and crematoria.
- Enhancing **institutional convergence** between KMDA, ULBs, and State Missions.
- Promoting **community stewardship of assets**, ensuring shared responsibility.

These measures will ensure that the significant infrastructure created under NGP-II continues to deliver long-term cultural, social, and ecological benefits.

Achievement Rating: 7

Accorded legal status under the Environment (Protection) Act, NMCG now functions as an empowered authority with financial, regulatory, and enforcement powers. This has enabled faster approvals, streamlined fund flows, and strengthened compliance monitoring.



Certificate of Special Recognition

This certificate is awarded to:

National Mission for Clean Ganga under the Ministry of Jal Shakti, India

for their outstanding Climate Smart actions with utilities in the Ganges
basin as part of the 2023 IWA Recognition Programme



TOM HOLLENKOPF
President, IWA



KALA VAIRAVAMORTHY
Executive Director, IWA

Recognized as a “Climate Smart Utility” by International Water Association (IWA)

- State Ganga Committee (SGCs) & District Ganga Committees (DGCs)- Dedicated SGCs have been operationalized in all Ganga basin states, functioning as state-level anchors for project monitoring, inter-departmental convergence, and IEC initiatives.
- DGCs, formed under NGP-II, serve as local convergence platforms for ULBs, departments, and community representatives, ensuring grassroots-level monitoring and grievance redressal.
- River Cities Alliance (RCA)- Launched jointly by NMCG and MoHUA, the RCA has grown to include 140+ member cities by 2024. It provides a collaborative platform for urban river management, enabling cities to share knowledge, exchange best practices, and institutionalize river-sensitive urban planning.
- Urban River Management Plans (URMPs): Piloted with universities such as Jadavpur University (WB), URMPs integrate river health into urban planning frameworks, ensuring sustainable use of riverfronts and integration with master plans. URMPs are now being scaled up in priority river cities.
- Knowledge and Research Partnerships: The IIT Consortium, WII, CIFRI, NIH, CPCB, and leading universities continue to provide specialised technical support. Studies range from dolphin and biodiversity conservation (WII), fish stock enhancement (CIFRI), hydrological modelling (NIH), and pollution assessment (CPCB/IITs).
- The Ganga Knowledge Centre (GKC) consolidates all research outputs and serves as a knowledge hub for basin-wide management.

Capacity Building and Training

Over 3,800 officials from ULBs, SPCBs, line departments, and project agencies were trained during 2021–25. Trainings covered O&M of STPs, sludge management, water quality monitoring, and IEC strategies.

Exposure visits and workshops with international agencies (World Bank, GIZ) have facilitated cross-learning with global river management programmes.

Digital Monitoring and Transparency Systems: SCADA and OCEMS systems operational in STPs/CETPs, linked to CPCB servers. CMMS (Computerised Maintenance Monitoring System) is deployed for preventive maintenance. Centralised online portals for real-time monitoring are being integrated with RCA and NMCG dashboards, enhancing transparency and accountability.

Assessment

This output demonstrates the maturing institutional fabric of the NGP. Unlike earlier phases, which focused on infrastructure, NGP-II has prioritised governance frameworks, partnerships, and capacity building, ensuring long-term sustainability of interventions.

- The creation of RCA and URMPs represents a shift towards embedding river management into city-level planning and governance.
- District Ganga Committees and strengthened SPMGs have brought greater ownership at the state and local levels.
- Capacity-building programmes have directly enhanced the technical readiness of ULBs and implementing agencies.
- Digital systems and OCEMS integration have set a new benchmark for real-time monitoring and compliance assurance.

While greater financial autonomy for ULBs and sustainable O&M funding mechanisms remain critical, the direction is positive. The shift from asset-focused to institution-focused management reflects the programme's evolution into a model for basin-wide governance and integrated water resource management.

The achievement rating for this output is 7.

Output No: 5

Output category: Research, Monitoring & Learning institutionalized and Innovative Project Financing Mechanism piloted

Achievement rating: 7

Explanation

In NGP-I, research and monitoring were treated as supplementary activities with limited investments. Under NGP-II, however, these have been **mainstreamed as core enablers** of programme implementation, with a significant emphasis on **real-time monitoring systems, digital dashboards, and applied research through premier scientific institutions.**

1. Digital Dashboards and Monitoring Platforms

- **PRAYAG Portal** serves as the centralised monitoring and reporting tool for all NGP projects, capturing real-time data on project progress.
- **STP Online Monitoring Dashboard** integrates SCADA and OCEMS, ensuring compliance of more than 150 STPs on parameters like BOD, COD, DO, and TSS.
- **Ganga River Water Quality Information System (GRWQIS)** reports data from 112 monitoring stations, showing that as of 2023–24, 85 sites are compliant with BOD standards, a marked improvement from earlier years.
- **Decision Support Systems (DSS)** have been rolled out for scenario analysis on hydrology, pollution loads, and climate variability.
- **Community-linked portals** capture activities from Jalaj initiatives, Ganga Prahari movements, and River Cities Alliance (RCA).

2. Research and Knowledge Creation

- The IIT Consortium (IIT Kanpur, IIT Roorkee, IIT BHU, among others) has been pivotal in delivering basin-scale hydrological studies, pollution modelling, groundwater mapping, and biodiversity research.
- A significant advancement has been the establishment of the **Smart Laboratory on Clean Rivers (SLCR) at Varanasi (IIT-BHU) with Denmark as partners**, which anchors innovation through three flagship proposals:
 - i. **Decision Support System for Water Resource Management** – a real-time analytical tool for optimizing river water allocation, ecological flow management, and reuse strategies.
 - ii. **Characterisation of Emerging Pollutants & Fingerprint Analysis** – focusing on pharmaceuticals, personal care products, and microplastics, strengthening the evidence base for tackling new pollution challenges.
 - iii. **Hydrogeological Model of the Varuna Basin for Recharge Sites** – a basin-level model to identify aquifer recharge zones, integrating groundwater sustainability into river rejuvenation efforts.
- Other long-term R&D initiatives have documented nutrient profiling of 90 fish species, microplastic inventories across the basin, carbon sequestration potential, and decadal change analysis using historical ecological data.

3. Learning and Institutional Mechanisms

- **River Cities Alliance (RCA)** now has **142 member cities (2024)** and has emerged as a hub for peer-to-peer learning on urban river management.
- International partnerships with **World Bank, GIZ, UNEP, and JICA** have introduced best practices in climate adaptation, wastewater reuse, and ecological conservation.

4. Innovative Financing

- **Hybrid Annuity Model (HAM)** has been institutionalised across **40+ STPs**, ensuring sustainable O&M.

Assessment

By embedding scientific research, digital monitoring, and financing innovations into its structure, NGP-II has transformed this output from being marginal in NGP-I into a **central pillar of programme sustainability**. The SLCR at IIT-BHU is a pioneering model for integrating cutting-edge science, basin-level modelling, and emerging pollutant studies into mainstream river management.

While further progress is needed to enhance state-level access to dashboards and capacity for decentralised data use, the institutional momentum ensures that this output has a strong forward trajectory.

The rating of this output is 7.



Abandoned old bridge Rudraprayag
Fixed and Floating stations - 40 RTWQMS Project



Durgapur barrage, Road Bridge



Monitoring station at Barrage at Kanpur (UP19)



RTWQM station at Shuklaganj, Kanpur (UP26)



Fafamau, Lord Curzon Bridge, Allahabad



River Kosi, D/s of Kashipur, Darhiyal

PRAYAG Portal – Real-Time River Monitoring & Analysis

The Challenge:

Managing the health of rivers like the Ganga and Yamuna requires continuous, reliable data on water quality, sewage treatment, and project progress. Traditional monitoring systems were often delayed, fragmented, and lacked transparency, making it hard to ensure accountability and timely interventions.

The Solution – PRAYAG Portal:

To address this gap, the National Mission for Clean Ganga (NMCG) launched PRAYAG – Platform for Real-time Analysis of Yamuna, Ganga, and their Tributaries. This integrated online portal brings together automated data from sewage treatment plants, water quality stations, and drains through the Online Continuous Effluent Monitoring System (OCEMS).

The portal provides a multi-dashboard interface – including tools like the Ganga Tarang Portal, Project Management Tool (PMT) Dashboard, and Ganga Districts Performance Monitoring System – enabling users to track key water quality parameters such as DO, BOD, pH, faecal coliform, and more, across multiple states.

Impact:

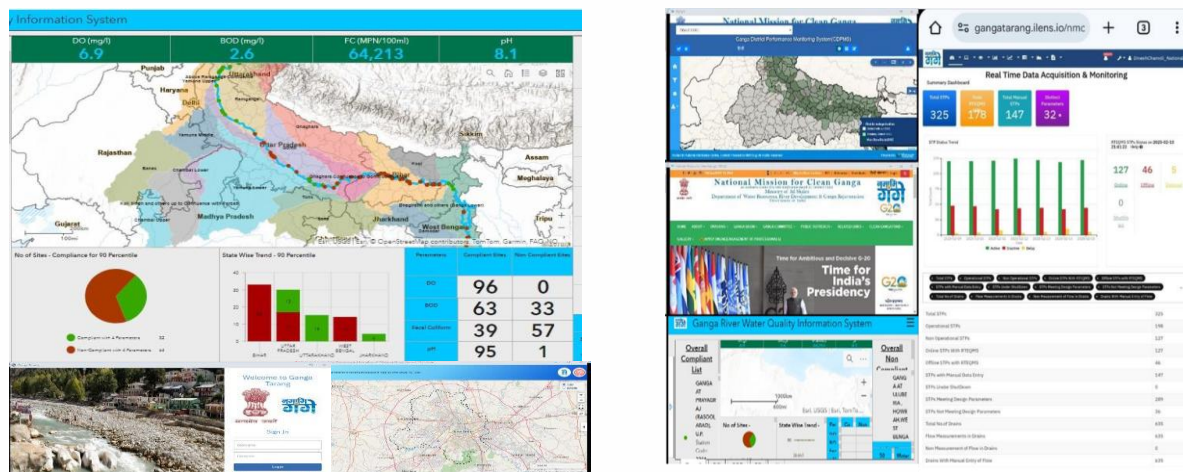
- Enabled data-driven decisions for river restoration.
- Improved real-time monitoring of sewage treatment compliance.
- Enhanced accountability and transparency in project implementation.
- Supported ecological flow monitoring.
- Strengthened coordination among multiple stakeholders with shared, open data.

Collaborations:

Developed using GIS and remote sensing technologies, in partnership with IITs and environmental agencies, the PRAYAG portal integrates diverse datasets to strengthen river basin governance through technology.

Accessibility:

The platform is publicly accessible, allowing researchers, policymakers, and citizens to view water quality trends and restoration progress in real time, making it a pioneering tool for transparent and participatory river management.



Output No: 6

Output category: Aquatic Flora and Fauna Protected and Promoted
Achievement rating: 6

The protection and promotion of aquatic biodiversity has emerged as one of the most visible outcomes of NGP-II. Unlike NGP-I, where biodiversity projects were limited and localized, the current phase integrates species conservation, habitat rejuvenation, and community participation under the broader Aviral Ganga and Arth Ganga thrust areas.

1. Flagship Species Conservation Projects

- **Hilsa Ranching and Fish Stock Enhancement (CIFRI):**
 - Initiated in 2016 and continuing through Phase III (2023–25), this project has released over 1.5 lakh Hilsa brooders, 43–40 lakh fertilized eggs, and 9 lakh spawns upstream of Farakka, with evidence of return migrations as far as Ghaziabad.
 - Indian Major Carps (IMC) stock has shown a population increase from 8.5% to 14.5% in landing sites along the Ganga.
 - CIFRI also initiated wetland-based pen culture and in-situ seed raising at sites like Akaipur and Kundipur, ensuring local recruitment of species.
 - Nutritional profiling of 90 food fish species and studies on emerging pollutants and organic carbon sequestration provide critical insights for long-term sustainability.



Figure 40 Ganga Aqualife Conservation Monitoring Centre – GACMC



Ganga Aqualife Knowledge Centres: Govt. Sr. Sec. School, Pratapnagar, Haryana



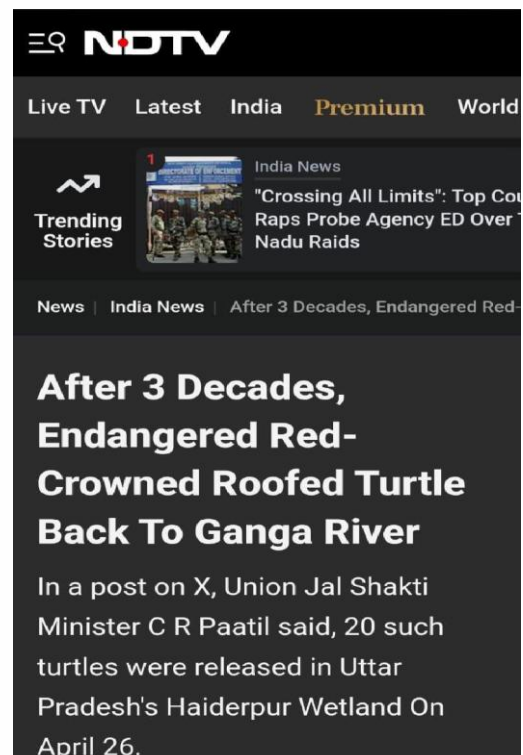
Ganga Aqualife Knowledge Centres: Govt. Abhinav Inter College, Kannauj, U.P.

- **Dolphin Conservation (WII):**

- River dolphin has been declared the **National Aquatic Animal**, and NMCG supports WII for population monitoring, rescue, and awareness.
- Dolphin rescue centres were strengthened at Bihar (Vikramshila Sanctuary) and Uttar Pradesh (Prayagraj stretch).
- GPS tagging and acoustic monitoring have helped track migratory routes and mitigate accidental killings.

- **Turtle and Crocodile Habitats:**

- NMCG projects in Allahabad and Varanasi support turtle rehabilitation.
- Crocodile nesting and conservation awareness campaigns are ongoing with Forest Departments.



2. Biodiversity and Afforestation

- **Afforestation under NMCG:**
 - Over **33,024 hectares** afforested across the basin in collaboration with State Forest Departments (2021–24).
 - Emphasis on **native species plantation** to enhance riverine ecology, stabilize banks, and provide livelihood opportunities.
- **Biodiversity Mapping and Atlas:**
 - **GIS-based mapping of microbial diversity and aquatic species inventories** (215+ species documented).
 - **Biodiversity hotspots** identified in stretches of Bihar, Bengal, and Uttarakhand for long-term conservation.

3. Scientific Innovations

- **Carbon Sequestration Studies:** Highlight the role of wetlands and riverine vegetation in climate adaptation.
- **Hydrological-Biodiversity Linkages:** Studies on environmental flows (e-flow) integrated with fish recruitment and dolphin habitats.

4. Institutionalization and Policy Uptake

- **National Aquatic Animal Conservation Plan:** Adopted by MoEFCC with NMCG inputs.
- **Integration with State Fisheries Departments:** Hilsa ranching model replicated in Brahmaputra and Hooghly rivers.



Rescue & Rehabilitation of Aquatic Species



Rescue & Rehabilitation of turtles



Hatchling management



Rescue activity by Ganga Prahari Rescue & Rehabilitation of aquatic species

Assessment

This component of NGP-II demonstrates **both tangible ecological recovery and strong community integration**. Flagship species such as Hilsa and dolphins show visible signs of revival. Simultaneously, afforestation, wetland restoration, and community livelihood programs like Jalaj link conservation to sustainable development.

Challenges such as **destructive fishing practices, plastic pollution, and limited enforcement** remain, but these are being addressed through **community sensitization, stricter monitoring, and convergence with Forest and Fisheries Departments**.

Recognized as one of the TOP TEN “World Restoration Flagship initiative” at the UN Conference (COP 15)

This output is rated at 6.



Reviving the River Kali through Constructed Wetlands

Once heavily polluted, the River Kali East in western Uttar Pradesh was choking under untreated sewage and declining ecological health. Communities along its banks had lost touch with the river they once depended on.

To bring life back to the river, a new approach was adopted — Constructed Wetlands (CWs), a nature-based solution that works with plants, soil, and natural processes to clean wastewater. Instead of relying only on conventional engineering, CWs were developed in Muzaffarnagar, Meerut, Hapur, and Bulandshahr to treat sewage directly where it was generated.

In Bithoor Nagar Panchayat, a small-scale CW system was set up, showing how even modest interventions could improve sanitation and water quality for local habitations. At the same time, a Knowledge-cum-Skill Development Centre was launched in collaboration with DDA and Delhi University's CEMDE, where frontline workers and officials were trained to operate, maintain, and scale up these systems.



Kali Wetland (Before & After)

The results soon became visible. In Rasulpur Kaliaura village, residents saw the transformation of the Kali River — from dark, foul-smelling water to a visibly cleaner stream. The “before and after” image became a symbol of hope and proof that restoring rivers is possible when communities, science, and nature come together.

What started as a pilot is now a replicable best practice: low-cost, sustainable, and deeply rooted in community participation. It is not just about sewage treatment - it is about reviving ecosystems, building local skills, and restoring people’s faith in their rivers.



Constructed Wetland for a small habitation of Bithoor nagar Panchayat



Knowledge-cum-Skill-Development Centre in collaboration with DDA & CEMDE (Delhi University)

Output No: 7

Output Category: Awareness Creation, Behaviour Change and Social Inclusion

Achievement rating: 7

Awareness creation and behaviour change have been positioned as the **social foundation of NGP-II**, ensuring that physical investments translate into sustainable outcomes. The programme has moved beyond one-off events to a **structured, community-led approach** that integrates cultural heritage, youth participation, and women’s empowerment.

Annual **Ganga Utsav celebrations** have now become a national movement, engaging millions through cultural programmes, river walks, and digital campaigns such as “*My Ganga, My Responsibility*”. Social media outreach has amplified the programme’s visibility, particularly among younger audiences.

At the community level, more than 6,000 Ganga Praharis have been mobilized as local custodians, actively contributing to biodiversity protection, plantation monitoring, and outreach. The Jalaj initiative has further demonstrated how conservation and livelihoods can go together, with over 3,000 women beneficiaries across the basin involved in eco-tourism, handicrafts, and aquaculture.



The **cultural and spiritual dimensions** of the Ganga are increasingly emphasized through heritage mapping, riverfront walks, and urban river management plans (URMPs), ensuring that intangible heritage is preserved alongside ecological restoration. At the same time, challenges remain. While engagement levels are high, funds released to district bodies for awareness often remain **underutilised**, reflecting capacity gaps in planning and execution. Similarly, the **pattern of capacity building**—currently focused on short-term campaigns—requires recalibration towards **sustained, skill-based training for local institutions and communities**. Addressing these areas will further deepen the long-term impact of Jan Ganga.

Based on the sustained outreach, integration of livelihood and gender equity, and cultural revival, this output is rated 7.

Output No: 8

Output category: Social inclusion, and Gender & Equity

Achievement rating: 6

Although this is not an exclusively defined standalone output by NMCG, it is an integral theme, cutting across all outputs. NGP supports social inclusivity and gender equity approach and efforts are made towards enhancing the capacities of women to support livelihoods programmes as well as involve themselves as Ganga Praharis.

NGP-II has sought to institutionalize these principles through dedicated projects, livelihood initiatives, and community-based monitoring mechanisms.

One of the flagship examples is the **Jalaj initiative**, which has demonstrated how conservation can be directly linked to women's empowerment. Operating in over 26 sites across the Ganga basin, Jalaj has created livelihood opportunities for more than **3,000 women beneficiaries**, engaging them in eco-tourism, handicrafts, aquaculture, and local enterprise development. These women-led community organizations also function as **custodians of river health**, supporting biodiversity protection and raising awareness at the grassroots level.



Glimpses of Women and Water Dialogue Series

Similarly, **Ganga Praharis**, a cadre of trained volunteers, have integrated women and youth from riparian communities into biodiversity monitoring and plantation management. Their role has evolved from awareness creation to **active participation in river stewardship**, including rescue of aquatic species, protection of wetlands, and citizen science-based data collection.

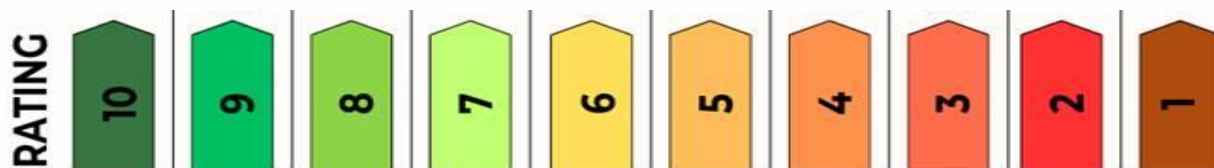
Gender-responsive measures have also been embedded in project design. For instance, in solid waste management and sanitation-related projects, women are engaged as operators, supervisors, and in community mobilization roles. Capacity building and IEC campaigns emphasize **gender-sensitive approaches**, ensuring that women are represented in decision-making forums, including **District Ganga Committees (DGCs)** and **Urban River Management Plans (URMPs)**.

Challenges do remain, particularly with respect to ensuring the **full utilization of funds allocated to social inclusion activities** at district levels and scaling successful pilots basin-wide. However, NMCG's strategy of **embedding gender and social inclusion within livelihood and conservation projects** offers a positive pathway forward. The emphasis on women's leadership in Jalaj and Ganga Prahari initiatives, coupled with targeted IEC and training efforts, reflects a maturing recognition that inclusivity is central to sustainability.

The output is rated at 6.

The overall performance of the projects under NGP using the LFA and the rating scale developed is presented below:

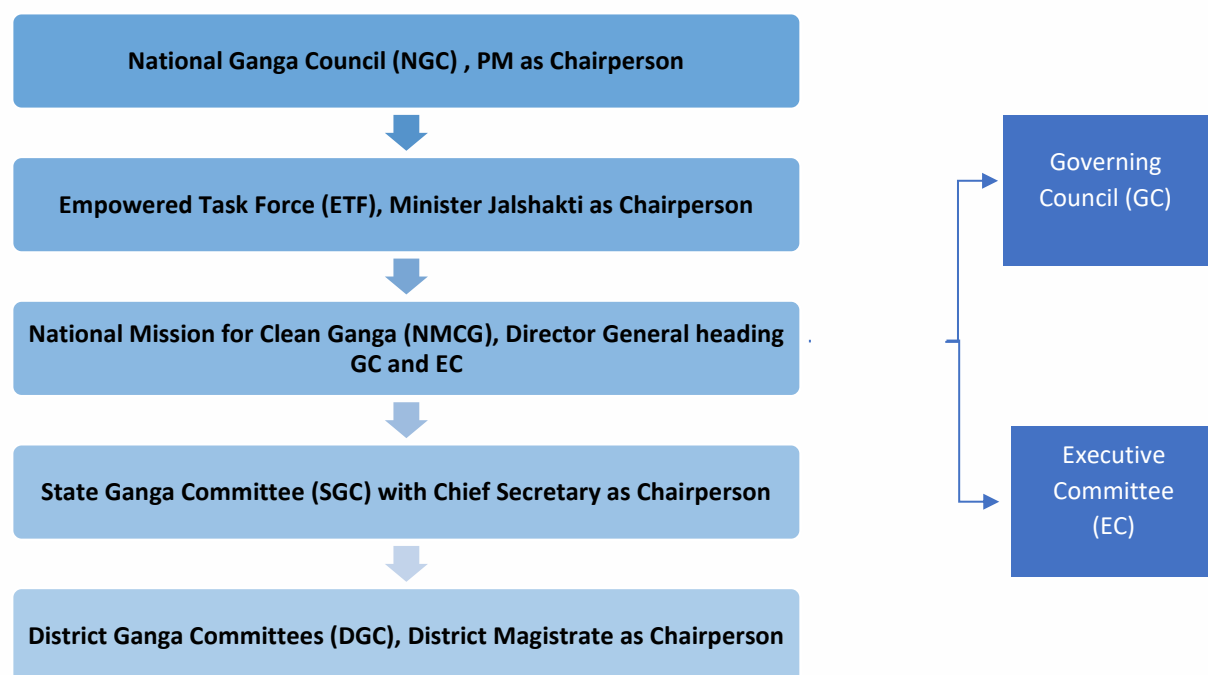
Output 1: Wholesomeness of River achieved Score: 6 NGP thrust area: Primary: Nirmal Ganga Secondary: Aviral Ganga	Output 2: Clean River attained Score: 6 NGP thrust area: Nirmal Ganga	Output 3: Riverbanks transformed into accessible, clean and culturally vibrant spaces Score: 6 NGP thrust area: Nirmal Ganga	Output 4: Institutional Development achieved, and Capacity Building institutionalised Score: 7 NGP thrust area: Inter-ministerial Coordination, State's participation, and Capacity building
Output 5: Research, Monitoring & Learning and Innovative Project Financing Mechanism established Score: 7 NGP thrust area: Gyan Ganga	Output 6: Aquatic Flora and Fauna protected and promoted Score: 6 NGP thrust area: Aviral Ganga	Output 7: Awareness raised and Behaviour Change achieved Score: 7 NGP thrust area: Jan Ganga	Output 8: Social Inclusion, Gender & Equity integrated Score: 6 NGP thrust area: Arth Ganga



4.2 Additional Parameters

a) Institutional Structure, Implementation Mechanism, and Delegation of Power

Initially, established as the implementation arm of the National Ganga River Basin Authority (NGRBA), the National Mission for Clean Ganga (NMCG) draws its mandate from the Environment (Protection) Act, 1986. The NGRBA was dissolved in October 2016 and it was substituted by the National Ganga Council (NGC) and consequently, NGP was brought under the control of NGC. For operational purpose, the NGC has put in place the following five layered institutional arrangements (see Figure 8)



While NGC provides strategic direction to NMCG, the Empowered Committee is mandated with critical decisions on funding and administrative decisions at the national level. As the Executive Head of the NMCG, the Director General (Additional Secretary rank) takes all operational decisions, through Governing Council (GC) and an Executive Committee (EC). Both GC and EC are headed by the Director General. The EC is empowered to accord financial approval up to Rs 1,000 crore. Each state has constituted State Ganga Committee (SGC) with the intention of bringing all stakeholders under one umbrella and at the district level this responsibility is vested with District Ganga Committees (DGCs). **The multi-tier governance structure** of NMCG has been strengthened through regular monitoring at all levels, from the National Ganga Council, which meets twice a year to the Empowered Task Force meeting four times a year, the Governing Council and Executive Committee with 65 meetings held once every month, and the District Ganga Committees which have met 4,535 times on a monthly basis. This layered mechanism ensures continuous oversight and accountability across the entire programme.

The Director General (DG) is head of NMCG, both programmatically and administratively. This position is vested with full powers for project implementation, appointment of contractual staff, consulting staff and third-party appraising agencies. The DG is assisted by DDG and four Executive Directors (EDs), each discharging specific roles in their respective areas of Projects, Technical, Finance and Administration. All project related matters such as feasibility studies, entry level activities, externally aided projects, hybrid annuity projects fall under the jurisdiction of ED (Projects). The key responsibilities managed by ED (Technical) include technical scrutiny, GIS related work, coordination with IITs, c-Ganga and Ganga monitoring centre, monitoring of projects undertaken by CPCB and SPCBs for pollution assessment, Industrial pollution abatement, water quality monitoring and strengthening of laboratories of SPCBs. ED (Finance) is linked to all financial matters, audit responses, CSR coordination and World Bank funding. ED (Administration) is responsible for all administrative matters, bio-diversity conservation, and afforestation, SPMG, office procurement and IT related matters.

The institutional arrangement of NGP is presented below -



An analysis of the responsibilities of the EDs indicates that some closer attention needs to be given to the overlaps in the distribution of responsibilities, particularly between ED (Projects) and ED (Technical). For example, both the EDs manage technical matters. This carries the risk of fragmenting of tasks. Similarly, the responsibility for Externally Aided Projects is split between Project ED (Projects) and ED (Finance), leaving scope for overlaps. Bio-diversity conservation and forestation are the key responsibilities allocated to ED (Administration). Both the functions being more technical and specialized in nature, they should organically belong to ED (Projects), which will ensure more harmonious functional distribution.

State Programme Management Groups (SPMGs): Each Ganga basin main-stem state has constituted a State Programme Management Group (SPMG) as the dedicated institution for effective implementation of the NGP programme activities at the state level. The institutional

arrangements vary slightly from state to state, but each state is vested with the following tasks, headed by a Programme Director:

1. Programme planning and management at state level
2. Providing guidance, support to the state EAs and monitoring implementation of performance
3. Compliance with agreed financial management policies and procedures
4. Release of advance programme funds to the EAs
5. Conducting internal audits and submitting reimbursement claims to the PMG
6. Capacity building of EAs, managing state level IEC campaigns
7. Monitoring and evaluation of programme performance

The typical state level institutional arrangement for programme implementation is presented in Figure 9 overleaf. The projects, technical, finance and administration domains of the central level NGP are mirrored at the SPMG at lower levels, to ensure seamless project implementation. The state level staff managing these functions is guided by NGP staff at the central level.

The State Ganga Committees in all the five main-stem states have been constituted under Gazette notification in 2017, District Ganga Committees have been constituted in 139 districts of five states. The functional efficacy of the state committees varies from state to state.

Recognizing the need for more decentralized approach to enable fast tracking project implementation, the NGP has issued a revised circular in February 2020, overriding the one issued in 2017 on Delegation of Administrative and Financial Powers. This flexible approach reflects the agility of NGP to adjust itself to the changing demands. The powers delegated as per the revised circular is arranged under two categories (i) administrative powers and (ii) financial powers. While the administrative powers have 20 responsibilities, financial powers have 37 responsibilities with corresponding extent of delegation defined well.

A more detailed analysis of the structure, staffing numbers, roles and delegation of power is required, particularly as it applies at the unit of implementation, i.e. State, ULB or PRI for enhanced ownership of NGP. Also required is a detailed assessment of staffing and capacities required at State Project Management Group for effective and sustained progress on wholeness of the river. Human resource planning and advantages of creating a dedicated cadre at National and State level are also aspects that require attention.

b) Asset/service creation and its maintenance plan

NGP II aims at providing comprehensive and sustainable solutions for major pollution hot spots along the Ganga and Yamuna stem. To address the “traditional build-neglect-rebuild” paradigm associated with infrastructure projects, particularly in the wastewater sector, NMCG implemented the Hybrid Annuity Model (HAM) of Public-Private Partnership (PPP) for developing STPs. While this model has been successfully applied in the highways sector, NGP II marked the first use of HAM in wastewater treatment projects in India.

Under this approach, private sector developers are responsible for the design, construction, commissioning, operation, and maintenance of STPs for 15 years from the date of commissioning, after which assets revert to the State Government. Payments are structured with 40% of the capital cost disbursed upon completion of construction, while the remaining 60% is paid as quarterly annuities along with O&M expenses and interest over the concession period. Linking payments to STP performance ensures accountability and sustained operation of assets. While NMCG manages all payments, state water authorities monitor construction progress and O&M activities, ensuring compliance and oversight.

In addition to creating new infrastructure, NGP II also emphasises rehabilitating old STPs and ensuring reliable O&M of all assets sanctioned during the mission. The innovative “One City, One Operator” concept was introduced, making a single operator responsible for all sewage infrastructure in a city—including new and old STPs, pumping stations, and networks—ensuring single-point accountability and uninterrupted operations. This model has been rolled out in seven major towns—Kanpur, Allahabad, Mathura, Patna, Kolkata, Howrah-Bally, and Bhagalpur—where it is integrated with annuity-based O&M and linked to performance standards.

The PPP in HAM, combined with the One City, One Operator approach, is emerging as a successful and replicable framework for asset creation and service delivery. Mobilising financial and technical expertise from the private sector and engaging credible operators are key achievements that will strengthen the long-term sustainability of created assets. Moving forward, the effectiveness of these models must be systematically evaluated, and structured feedback from private partners should inform refinements to further enhance implementation and scalability.

c) Convergence with other Schemes and Programmes

The success of NGP II, a multi-sectoral and multi-disciplinary programme that has evolved from a project-specific to a holistic approach, depends largely on working synergistically with other national missions and schemes. Strong convergence allows the programme not only to derive benefits from ongoing government initiatives but also to contribute its outcomes in ways that amplify broader development impacts. For instance, AMRUT 2.0 supports the circularity ecosystem by enabling wastewater recycling and reuse, complementing NGP’s investments in sewage treatment. Similarly, CAMPA provides resources for afforestation, strengthening catchment areas and enhancing ecological flows. Funding from NMCG has also enabled state pollution control boards to upgrade laboratory ecosystems, significantly improving pollution monitoring and strengthening the overall environmental measurement framework.

To institutionalise convergence, NMCG has signed Memorandums of Understanding (MoUs) with a wide range of ministries including Human Resource Development, Rural Development, Railways, Shipping, Tourism, AYUSH, Petroleum, Youth Affairs and Sports, Drinking Water & Sanitation, and Agriculture. These agreements aim to integrate river rejuvenation objectives with sectoral mandates. Progress is visible in multiple areas: the Ministry of Drinking Water

and Sanitation is prioritising ODF villages and developing liquid and solid waste facilities in rural areas to establish “Ganga Grams”; the Ministry of Rural Development is aligning PURA (Providing Urban Amenities in Rural Areas) with riverbank villages; the Ministry of Tourism is promoting eco-friendly tourism infrastructure; and the Ministry of Railways is adopting treated wastewater from STPs/ETPs in Ganga zones. The Ministry of AYUSH has initiated conservation plans for medicinal plants, while Youth Affairs and Sports is engaging youth and volunteers in river-related activities.

While the MoUs provide a strong foundation, joint activities have been initiated only with some ministries. Regular inter-ministerial convergence meetings with defined goals, targets, and measurable outcomes would accelerate action on this important dimension of the programme. Beyond direct convergence, the potential for indirect convergence also needs to be systematically studied, for instance, where outcomes of NGP II can complement other sectoral initiatives in urban development, energy, agriculture, and climate resilience. This will help create deeper structural participation among ministries, ensuring that Ganga rejuvenation is mainstreamed into the wider development planning of the Government of India. A strategic long-term focus, backed by clear metrics and timelines, will ensure that both direct and indirect convergence not only accelerate outcomes for the Ganga but also strengthen broader national development objectives.

4.3 Gaps in achievement of outcomes

The assessment of the programme on six OECD/DAC evaluation parameters i.e. relevance, coherence, efficiency, effectiveness, sustainability, and impact, is undertaken using a combination of quantitative and qualitative assessments. Score the performance of the programme on these parameters is also attempted.

The Programme continues to remain **highly relevant**, aligning with the priorities of river basin management in India and directly contributing to the National Water Policy and Sustainable Development Goals. Its focus on sewage infrastructure, industrial effluent control, biodiversity conservation, solid waste management, and community participation reflects a holistic design, ensuring that interventions address both environmental and social imperatives. This is further reinforced by new institutional innovations such as the **River Cities Alliance**, now joined by **142 cities**, and the preparation of **Urban River Management Plans (URMPs)** in 27 towns, which firmly establish the river within the framework of urban planning.

In terms of **effectiveness**, the Programme has achieved significant outcomes. The water quality of the river has shown marked improvements with **Dissolved Oxygen (DO) levels above 6 mg/L across most stretches** and reduction in **Biochemical Oxygen Demand (BOD) below 3 mg/L** in several urban hotspots. Compliance among Grossly Polluting Industries has improved substantially from **39% in 2017 to 83% in 2024**, supported by the widespread installation of Online Continuous Effluent Monitoring Systems. The impact of sewage treatment interventions is evident through the commissioning of major STPs in cities such as Patna, Kanpur, Varanasi, and Kolkata. Community-based initiatives such as **Jalaj**, with more

than **3,000 women engaged in livelihood enterprises** highlight the Programme's effectiveness in social inclusion and behavioural change.

The **efficiency** of implementation has improved considerably with the adoption of innovative financing and monitoring models. The **Hybrid Annuity Model (HAM)** ensures 15 years of assured O&M, thereby reducing risks of non-functionality of assets. Digital tools such as the **PRAYAG Portal, Ganga River Water Quality Monitoring Dashboard, and online STP monitoring systems** have streamlined project tracking and enhanced transparency. The involvement of specialised institutions such as the IIT Consortium, NIUA, CIFRI, and WII has brought technical depth, while convergence with state agencies has ensured smoother execution. However, efficiency remains partially constrained by the **limited financial and technical capacities of Urban Local Bodies (ULBs)**, particularly in operating and maintaining assets, indicating the need for further capacity strengthening.

The Programme's **impact** has been visible both environmentally and socially. Ecologically, initiatives such as **Hilsa ranching (50,000 annually released)**, dolphin conservation, and wetland rejuvenation have helped restore aquatic biodiversity. Socio-economically, enhanced fish catch and livelihood diversification through Jalaj projects have improved incomes for local communities, while afforestation and wetland initiatives have created co-benefits in climate resilience. Institutionally, the Programme has fostered new models of urban-river integration, with the River Cities Alliance emerging as a platform for knowledge sharing and collaborative action across states.

Sustainability of the interventions is being addressed through a mix of **contractual, institutional, and community-based mechanisms**. HAM contracts secure O&M for 15 years, ensuring continued functionality of assets. URMPs and RCA provide frameworks for cities to integrate river health into their long-term planning, while community stewardship through Ganga Praharis strengthens social ownership. Afforestation, wetland rejuvenation, and groundwater recharge efforts further embed ecological sustainability. The way forward lies in scaling up reuse of treated water, enhancing sludge management, and strengthening ULB finances, so that sustainability is not externally driven but institutionally embedded at the local level.

The development impact of NGP-II is defined as contributing to the wholesomeness of the Ganga through improved water quality, restored ecology, enhanced biodiversity, and strengthened community participation. Evidence from water quality monitoring systems, CPCB/ SPCB reports, and independent assessments indicates that progress in this aspect is well on track. Compliance with BOD standards has reached **over 80% of monitored sites** in 2023–24, and dissolved oxygen remains above **6 mg/L** in most stretches. In terms of infrastructure, over **70% of sewage generated from 97 Ganga towns is now treated** with a cumulative capacity of **>3,500 MLD**. Ecological initiatives, including **fish stock enhancement, dolphin conservation, and afforestation**, are further contributing to river health.

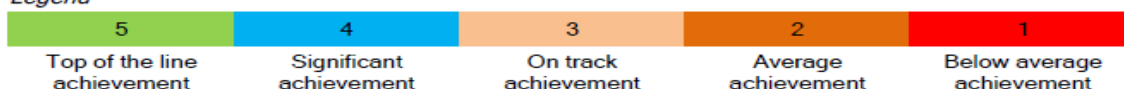
Institutionally, the River Cities Alliance, URMPs, and digital dashboards such as **PRAYAG, STP monitoring, and the Ganga Water Quality Information System** are helping mainstream basin

management into governance structures. While some gaps remain in ULB-led O&M and long-term financial sustainability, overall achievements under NGP-II reflect significant progress and confidence that positive impacts on ecology and community well-being will continue to strengthen as the programme advances into its next phase.

Taken together, the assessment reveals that the Programme scores **high on relevance and effectiveness**, with **moderate progress on efficiency and sustainability**, and emerging but visible impacts. While the challenge of maintaining assets at the municipal level remains, the Programme has clearly transitioned from an asset-creation approach to an **outcome-oriented river basin management framework**, positioning it as a replicable model for other Indian rivers.

Parameters	Scale
Relevance; Effectiveness	5
Sustainability; Coherence	4
Impact, Efficiency	3
None	
None	

Legend



4.4 Key Bottlenecks & Challenges

The performance evaluation using Logical Framework Approach facilitates a realistic and fact-based analysis of the Namami Gange Programme's. The insights from the evaluation are used to develop a strengths, weaknesses, threats, and opportunities (SWOT) framework which can be employed to identify achievements as well as areas of improvement and hence guide the recommendations for the future course of the Programme.

The SWOT analysis presented in Table 9 has been refined following consultations with NMCG officials and diversified group of stakeholders. It provides insights into what factors contributed to the success and how greater Programme mileage can be achieved by leveraging opportunities and overcoming internal weaknesses. Such strategic actions will stimulate cost optimization and more effective implementation of long-term Programme activities.

5	Strengths
	Strategic Direction & Policy Intervention • Strong policy anchoring with alignment to SDGs (6, 11, 13, 15), National River Basin Management, and convergence with AMRUT 2.0, Jal Jeevan Mission, SBM 2.0. • Clear strategic thrust under five pillars (Aviral, Nirmal, Arth, Jan, Gyan Ganga) offering a holistic river basin approach. • Stronger policy intent towards basin-level planning via District Ganga Plans. Institutional Arrangement • Creation of the River Cities Alliance (RCA) and integration of Urban River Management Plans (URMPs) has institutionalised river-centric planning at the city level. • Stronger role of State Missions and District Ganga Committees in monitoring and implementation. Coordination & Convergence • Effective convergence with other line ministries (MoHUA, MoEFCC, Jal Shakti, and MoHFW) for sanitation, wetlands, and biodiversity. • Partnerships with World Bank, GIZ, JICA, Denmark and international agencies for capacity building and financing. Staffing & Skill Sets • Deployment of Ganga Praharis, Ganga Mitras, and Ganga Task Force created a dedicated cadre for awareness and monitoring. • Regular training and IEC capacity building activities across states. Technology & Innovation • Strengthened digital monitoring through PRAYAG portal, Ganga Water Quality Information System, STP Online Monitoring, OCEMS integration, and GIS-based compliance tracking. • R&D initiatives like Smart Laboratory for Clean Rivers (IIT-BHU), Geo-Ganga (ISRO-IIRS) and IIT-based projects on emerging pollutants. Civil Society Engagement • Community mobilisation through Jalaj livelihood programme, Ganga Praharis, and IEC campaigns. • Large-scale citizen outreach during Ganga Utsavs, Kumbh Melas, and Arth Ganga initiatives. Implementation Mechanism Asset creation momentum maintained with over 1,100 projects sanctioned, including STPs, FSTPs, CETPs, ghats, crematoria, and SWM facilities

Weaknesses (Areas Needing Strengthening)

Strategic Direction & Policy Intervention

- Heavy reliance on **asset creation** sometimes overshadows softer interventions such as river health integration in land use planning.
- Lack of basin-scale hydrological integration in some project designs.

Institutional Arrangement

- **ULBs remain underfunded and undercapacitated**, leading to gaps in O&M of STPs, ghats, and SWM assets.
- Limited staffing strength in **State PMGs** constrains programme execution.

Coordination & Convergence

- Multiplicity of agencies still creates overlap; district-level convergence is weak.
- Integration with industry regulators for CETP compliance needs strengthening.

Staffing & Skill Sets

- Shortage of **trained wastewater engineers and plant operators** in many ULBs.
- Dependence on contractual staff with high attrition in technical areas.
- **Technology & Innovation**
- Gaps in translating **R&D outputs into policy and operations**.
- Digital dashboards are not uniformly functional across states; real-time integration is still evolving.

Civil Society Engagement

- Despite high engagement, **funds for awareness campaigns remain underutilised at the district level**.
- Sustained behavioural change in waste disposal and sanitation still requires deeper reinforcement.

Implementation Mechanism

- **Utilisation of released funds is uneven**, with delays in project execution.
- Asset creation often does not match corresponding O&M financing.

O	Opportunities
	Strategic Direction & Policy Intervention • Expand circular economy models: wastewater reuse, sludge co-processing, bio-CNG generation. • Integrate climate resilience, wetlands, and floodplain management in basin planning. Institutional Arrangement • Strengthen District Ganga Committees with more legal mandate and budget autonomy. • Mainstream URMPs into city development plans across all riverine cities. Coordination & Convergence • Enhance collaboration with industry bodies for cleaner production and effluent management. • Leverage partnerships with multilaterals (World Bank, GIZ) for innovative financing. Staffing & Skill Sets • Expand structured training through IITs, NIUA, and WII for urban river management and ecology. • Build a cadre of certified O&M professionals for ULBs. Technology & Innovation • Scale up real-time monitoring with AI/IoT tools for predictive water quality management. • Integrate R&D on emerging contaminants and the climate-water nexus. Civil Society Engagement • Scale Jalaj livelihood models to all major river stretches. • Deepen youth and women's participation in community monitoring and stewardship. Implementation Mechanism • Strengthen PPP participation in O&M and service delivery. • Adopt performance-linked funding mechanisms to incentivise timely and quality outcomes.

T	Threats (External Risks)
	Strategic Direction & Policy Intervention Rising urbanisation and population pressure in Ganga towns may outpace treatment capacity.
	Institutional Arrangement Lack of financial devolution to ULBs risks the sustainability of assets.
	Staffing & Skill Sets The persistent shortage of skilled workers may delay the optimal operation of advanced STPs/CETPs.
	Technology & Innovation - Rapid pace of industrial change could make current treatment technologies obsolete. - Climate variability may undermine hydrological predictions and infrastructure design.
	Civil Society Engagement Behavioural change fatigue: initial enthusiasm may taper without sustained programmes.
	Implementation Mechanism - Natural disasters (flooding, erosion) threaten assets like ghats and STPs. Non-compliance by industries could undo pollution abatement gains.

4.5 Input Use Efficiency

Assessing input use efficiency provides insights into whether financial, technical, and institutional resources are translating into optimal outcomes.

Findings:

- **Financial Efficiency:** As of March 2024, more than **₹35,000 crore** has been sanctioned, with utilisation levels improving from ~65% in NGP-I to **78% in NGP-II** (Annual Report 2023–24). The **hybrid annuity model (HAM)** has enhanced capital efficiency in sewage projects by shifting part of the risk to private partners.
- **Technical Efficiency:** Sewerage infrastructure has expanded significantly (6,000+ MLD sanctioned; ~3,400 MLD operational). However, utilisation rates (~65–70%) suggest scope for improved household sewer connectivity and network integration.
- **Institutional Efficiency:** The **single nodal structure (NMCG at the Centre, SMCGs at the State level, and District Ganga Committees at local level)** has reduced duplication of efforts, while online monitoring tools (PRAYAG, STP dashboards) have ensured transparent resource use.
- **Comparative Performance:** Non-infrastructure components (biodiversity, afforestation, R&D, IEC) have shown relatively **higher input-output efficiency** compared to large capital-heavy projects, since modest investments yielded visible ecological and social gains (e.g., fish stock enhancement, Jalaj livelihood programmes).

Overall, input use efficiency under NGP-II is **positive**, especially due to improved monitoring and contracting models. Going forward, efficiency gains can be enhanced through:

- Faster release and utilisation of funds at district level.
- Greater emphasis on **reuse and circular economy models** to generate returns.
- Strengthening ULB capacity to ensure optimal operation of assets created.

4.6 Best Practices/Case Studies

The success of this integrated programme depends to a large extent on collaboration between stakeholders, cities, States, and departments at local and national level. Capturing learning and disseminating it to promote peer-learning will play a big role in reducing the learning curve and enhance the efficiency and effectiveness of programme implementation. Select best practices are identified for development of detailed case studies.

List of NGP Best Practice Case Studies

Sector	City/State/Plant	Nature of Work
Nirmal Ganga	Mathura (Masani STP), Prayagraj (Kodra, Rajapur), Varanasi (Ramanna, Ramnagar), Moradabad Bareilly	Innovative approaches such as; Packaged/solar-powered STPs; Hybrid Annuity Model; Food Chain Reactor (FCR) Technology; Compliance checks by CPCB for BOD, TSS, pH, Faecal Coliform, etc.; STPs listed above by plant and location
	1. Banthar - Lucknow, Uttar Pradesh 2. Jajmau - Kanpur, Uttar Pradesh	1. Capacity: 4.5 MLD, Cost: Rs.. 136.76 Cr, Treated effluent will be reused 2. Capacity: 20 MLD (350 units) with cost of Rs. 741 Cr, Asia's largest CETP with first odour control measures, Chrome liquor treated separately, chrome cakes sold to industries, CETP discharge to be used for Irrigation purposes Participatory approach developed and implemented for 5 major industrial sectors, i.e., pulp & paper, sugar, distillery, textile and tannery - adoption. Of cleaner technology, as well as upgrades of process technology and the ETP system.
	Not specific to location - Institutional development	Real-time Analysis of Yamuna and Ganga and their Tributaries (PRAYAG) - 'Ganga Tarang' component of PRAYAG, STPs fetch data directly from the Online Continuous Effluent Monitoring System (OCEMS)
Aviral Ganga	Upper Ganga River Basin (glaciers to Haridwar), Haridwar, Unnao, Kanpur, Bhimgoda, Bijnor, Narora	Ensuring ecological flow by specifying minimum water releases from barrages; Floodplain zoning to prevent risky development and support groundwater recharge
Ecological Restoration	Sahibganj (Udhwa Lake Bird Sanctuary), Wetlands of Bihar & UP, 7 Ganga Biodiversity Parks (Mirzapur, Bulandshahar, Hapur, Budaun, UP), Kali River	Wetland conservation, Biodiversity conservation programs (dolphins, turtles, fish), Extensive afforestation, Nature-based solutions, Constructed wetlands for sewage treatment 27 Ramsar sites feature in the Ganga Basin, Conserving and sustainably managing Afforestation: Coverage Area: 33,024 ha,

	(Muzaffarnagar, Meerut, Hapur, Bulandshahr), Bithoor nagar panchayat	plantation in Natural, Agricultural & Urban landscape 59,851 ha plantation done under the CAMPA funding.
Jan Ganga	All Ganga Basin districts	Public engagement activities: Ganga Utsav, exhibitions, plantation drives, festivals, deployment of 3500+ Ganga Prahari, and District 139 Ganga Committees
Gyan Ganga	National institutions (IITs, research bodies, Kanpur, Haridwar, NGRI, IIRS, etc.)	Scientific research, river mapping, real-time STP monitoring, LIDAR/drone mapping, district river maps, climate scenario modelling, Ganga Knowledge Portal, use of archival imagery and geospatial data
Arth Ganga	Haridwar, Mathura (IOCL Mathura Refinery), Sambhal, Gurukul Kangari University - UP	Zero Budget Natural Farming pilots, reuse of treated wastewater and certified sludge, value chain and market development, and documentation of Ganga's cultural heritage
River Sensitive Urban Development	Kanpur, Ayodhya, Chhatrapati Sambhaji Nagar, 145+ cities (River Cities Alliance)	Preparation and implementation of Urban River Management Plans (URMPs), integrated river-sensitive urban planning, digital twin technologies, and global city partnerships for river rejuvenation

4.7 Most Significant Change (due to the scheme/intervention)

The “Most Significant Change” (MSC) analysis highlights the transformations brought about by NGP interventions beyond direct outputs, capturing broader ecological, social, and institutional shifts. The most significant change observed under NGP-II is the shift from a purely project-driven approach to a holistic, basin-wide and community-integrated programme, where ecological revival, livelihood enhancement, and institutional reforms are occurring simultaneously. This marks a clear transition in India's river management paradigm — from infrastructure creation to sustainability, inclusiveness, and resilience.

Observed Changes:

1. Improved River Water Quality

- Continuous water quality monitoring shows a consistent reduction in Biochemical Oxygen Demand (BOD) levels and an increase in Dissolved Oxygen (DO) in key stretches (Varanasi, Kanpur, Patna) between 2017 and 2024 (CPCB, NMCG).
- These improvements are strongly linked to the commissioning of new STPs and reduction of untreated sewage inflow.

2. Community Engagement and Behavioural Change

- Over 8,000 Ganga Praharis and volunteers mobilised; Jalaj livelihood projects created eco-tourism and income streams.
- Awareness programmes in schools and Ganga Grams have shifted behaviours on sanitation, waste disposal, and river stewardship.

3. Biodiversity Revival

- Success of the Hilsa ranching programme (CIFRI), recovery of Gangetic dolphin populations in protected stretches, and wetland rejuvenation reflect ecological revival.
- These outcomes demonstrate that targeted ecological interventions yield measurable conservation results.

4. Institutional Strengthening

- Creation of the River Cities Alliance (RCA) with 142 cities has mainstreamed river-sensitive planning into urban governance.
- The operationalisation of the PRAYAG portal and online STP monitoring dashboards marks a paradigm shift in transparency and data-driven governance.

5. Livelihood and Economic Linkages

- Arth Ganga initiatives linked organic farming, market access, and Jalaj projects to the river economy, providing income support to local communities and reinforcing the “river-people” connect.

From field surveys:

Technological Innovations and Smart River Management (IIT-BHU & SLCR Projects):

The most significant change observed under the Namami Gange programme stems from technology-driven interventions implemented through the IIT-BHU project on Real-Time River Water Quality Monitoring and Predictive Modelling and the Strengthening of Longitudinal Connectivity and Rejuvenation (SLCR) projects. The deployment of IoT-based sensor networks, GIS-integrated dashboards, and real-time data analytics systems has enabled continuous monitoring of pollution loads, sediment dynamics, and flow behaviour. These advancements have strengthened evidence-based decision-making, improved discharge control, and facilitated rapid responses to contamination events. Beneficiaries and implementing agencies highlighted this as a transformative step toward “smart river governance,” shifting the programme from traditional civil infrastructure to data-backed management and early warning systems.

Improved Access to Sanitation and Wastewater Management:

In projects like Rejuvenation of River Kali East through Constructed Wetlands (Muzaffarnagar, Meerut, Hapur, Bulandshahr) and Urban Sewerage Schemes in Varanasi

and Kanpur, diversion of open drains, operation of decentralized treatment systems, and wetland-based polishing have visibly improved sanitation and local environmental quality. Beneficiaries noted reduced odour, cleaner surroundings, and improved neighbourhood health.

Ecological and Biodiversity Restoration:

Projects such as Kalewala Jheel (Muzaffarnagar), Numaiya Dahi Jheel–Kheduva Taal (Prayagraj), and Udhwa Lake Bird Sanctuary IMP (Sahibganj) have led to significant ecological revival. Restoration of hydrological balance, control of invasive species, and habitat enrichment have resulted in the reappearance of migratory birds and aquatic fauna, strengthening ecosystem resilience.

Livelihood Generation and Community-Led Conservation:

At Kalewala Jheel and Udhwa Bird Sanctuary, *Self-Help Groups (SHGs)* were trained for biomass utilization, organic farming, and eco-tourism services. These initiatives created sustainable livelihood avenues for women and youth while linking conservation with economic benefits.

Institutional Strengthening and Coordination:

The IIT–BHU, SLCR, and Kali East Wetland projects collectively strengthened institutional convergence between technical agencies, ULBs, and state departments. Real-time data sharing, third-party monitoring by IITs, and structured reporting systems have enhanced accountability and operational efficiency.

Community Ownership and Behavioral Change:

Initiatives like Jan Ganga and Ganga Mitras have built local custodianship, resulting in sustained river-cleaning activities, waste segregation at source, and broader community awareness of river ecology and sustainability.

Gender and Inclusion Outcomes:

In Kalewala Jheel and Numaiya Dahi Jheel–Kheduva Taal, women's active participation in People's Biodiversity Registers (PBRs), plantation drives, and eco-awareness initiatives reflects enhanced inclusivity, equitable benefit sharing, and recognition of women as key stakeholders in conservation.



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CONNECTING RIVER AND PEOPLE
TO REALIZE ARTH GANGA



5 OBSERVATIONS AND RECOMMENDATIONS

The Namami Gange Programme (NGP), initiated in 2014–15, has evolved through three distinct but interconnected phases, each building upon the lessons and achievements of its predecessor.

5.1 Thematic Assessment

NGP-I (2015–2020):

The first phase established the foundation for Ganga rejuvenation through large-scale infrastructure creation under *Nirmal Ganga*. Key priorities included sewage treatment plants (STPs), interception and diversion projects, effluent treatment plants (ETPs), and solid waste management (SWM) facilities. It also initiated *Aviral Ganga* interventions such as environmental flow notification and spring rejuvenation pilots. The focus was largely on **infrastructure expansion and project sanctioning**, which created a visible platform for action across 11 states.

NGP-II (2020–2025):

Building on this base, the second phase consolidated efforts through *multi-sectoral, multi-stakeholder engagement* and widened coverage under *Jan Ganga* and *Gyan Ganga*. Noteworthy advances included:

- **Scaling up of sewerage capacity:** >6,000 MLD of STP capacity sanctioned, with ~3,400 MLD operationalised across 97 towns.
- **STP Infrastructure Quality Improvement:** STP quality improvement with advanced technologies (SBR, MBBR, UASB) and robust O&M through performance-based payments. Disinfection via UV and chlorination addresses high faecal coliform. Energy recovery from biogas and solar, plus real-time monitoring under Ganga Tarang
- **Expansion of riverfront and ghat development:** 115 projects sanctioned with significant improvements in riverfront aesthetics and public use.
- **Strengthening knowledge systems:** Ganga Knowledge Centre, Geo-Ganga, and Smart Laboratory on Clean Rivers (SLCR) initiated for long-term monitoring and learning.
- **Community and livelihood linkages:** Arth Ganga operationalised through pilots on organic farming, market linkages, and wetland-based livelihoods.
- **Institutional innovations:** Launch of the River Cities Alliance (RCA), district-level Ganga Committees, and expansion of online dashboards for water quality and STP monitoring. While implementation challenges remain—particularly in O&M financing, inter-state coordination, and capacity building at the ULB level—NGP-II has shifted the mission from a project-driven approach to a **basin-wide, outcome-driven programme**.

Way Forward – NGP-III (2025–2035):

The third phase of the programme must now translate the gains of infrastructure and

institutional foundations into **long-term ecological rejuvenation and resilience**.

Recommendations for NGP-III include:

- **Scaling up of Sewage Capacity:** The sewage load in the Ganga basin, estimated at 12,000 MLD and projected to rise to nearly 16,000 MLD by 2035, highlights the scale of the challenge. While NMCG has already initiated projects to add 3,805 MLD of capacity (as of July 2025), with states developing an additional 5,131 MLD, the pace of sewage generation continues to outstrip capacity. This imbalance makes it imperative to further accelerate and expand the creation of STPs, ensuring that infrastructure growth not only keeps up with but also anticipates future demand.
- **Strategic Direction:** Move from town-centric abatement projects to a **holistic basin management framework**, anchored by River Basin Organisations (RBOs) and District Ganga Plans.
- **Technology and Innovation:** Mainstream **nature-based solutions, IoT-based real-time monitoring, AI-driven pollution modelling, and decentralised wastewater treatment** for smaller tributaries and towns.
- **Institutional Convergence:** Strengthen cross-sectoral convergence with AMRUT 2.0, Jal Jeevan Mission, Swachh Bharat Mission, and climate resilience programmes to maximise synergies.
- **Sustainability of Assets:** Prioritise **performance-based O&M contracts, PPP models, and innovative financing mechanisms** (e.g., Hybrid Annuity Model, carbon financing).
- **Community Engagement:** Scale up **Arth Ganga livelihood models, citizen science monitoring, and women-led initiatives** to deepen Jan Ganga.
- **Knowledge and Capacity Building:** Institutionalise advanced training, Smart Labs, and long-term monitoring networks through partnerships with IITs, NIUA, WII, and global knowledge partners.
- **Climate & Biodiversity Integration:** Integrate **climate resilience, floodplain restoration, wetland rejuvenation, and biodiversity conservation** into core planning.

With NGP-I laying the foundations, NGP-II broadening the scope, and NGP-III focusing on **sustainability, resilience, and community-driven outcomes**, the programme is well-positioned to ensure that the Ganga remains not only *Nirmal* and *Aviral*, but also an enduring lifeline for people, biodiversity, and the economy.

Recommendations for NGP 3.0

The rationale for NGP 3.0 sets the context for the recommendations presented in this section. The recommendations are framed with the lens of strengthening the programme for achieving its expanding and enduring mandate. They are therefore crafted by taking a long-term time horizon, allowing sufficient time for institutional preparedness.

Based on the nature of the recommendations, they are grouped under the broad categories presented in Figure 10 below. The specific recommendations under these categories are detailed in the following pages-

Recommendation 1: Glacier Protection and Climate Resilience in the Himalayan Region

Context: Need to integrate climate change and glacier health into river basin management

The headwaters of the Ganga originate from the Himalayas, where glacial retreat and snowmelt patterns are increasingly impacted by climate change. Scientific studies project a significant reduction in glacier mass, altering river flows, sediment transport, and long-term water security. NGP-I and II focused primarily on pollution abatement and infrastructure development, but climate resilience and glacier protection were not explicitly addressed. Protecting these ecosystems is vital for sustaining **Aviral Ganga** and ensuring water availability downstream.

It is recommended that in NGP-III, NMCG should:

- Establish a **Glacier Monitoring and Protection Programme** in collaboration with institutions like Wadia Institute of Himalayan Geology, IIT Roorkee, and international glacier research centres.
- Promote **catchment-scale afforestation and alpine ecosystem restoration** to stabilise fragile zones.
- Integrate **climate resilience metrics** into the Ganga Basin Management Plan, with emphasis on long-term hydrological modelling and risk preparedness.
- Facilitate community-led adaptation initiatives in upper catchments, linking with rural livelihoods, eco-tourism, and sustainable grazing practices.

Recommendation 2: Ensuring Sustainability of Assets through O&M and ULB Empowerment

Context: Asset creation under NGP is significant, but O&M and long-term sustainability remain weak links

NGP-I and II created substantial infrastructure — 190+ STPs, FSTPs, SWM units, and 100+ ghats and crematoria. However, site visits and evaluations indicate under-utilisation of STPs (operating at ~60–70% capacity), gaps in sewer connections, and weak O&M financing at the ULB level. While creation of assets is progressing, their sustainability over the mission life cycle requires dedicated institutional and financial arrangements.

It is recommended that in NGP-III, NMCG should:

- Establish a **dedicated O&M funding mechanism** through blended finance models (user charges, PPP, Viability Gap Funding).
- Mandate **performance-linked contracts** for STP and FSTP operators with SCADA/OCEMS-enabled monitoring.
- Provide **capacity building and financial autonomy** to ULBs for managing O&M sustainably, with periodic evaluation by SMCs.
- Promote **reuse-based revenue models** (e.g., treated water for industries, sludge for agriculture, biogas for energy recovery) to offset costs.

Recommendation 3: Enhancing Social Inclusion and Gender Mainstreaming

Context: Participation of women, youth, and marginalised groups remains under-leveraged. NGP-II witnessed strong engagement through IEC, River City Alliances, and “Jan Ganga” activities. However, evaluation shows that funds released for outreach remain underutilised at district levels, and women’s participation in O&M, livelihoods, and decision-making is still marginal. Harnessing community ownership, particularly among women and youth, is essential for long-term sustainability.

It is recommended that in NGP-III, NMCG should:

- Institutionalise **women-led micro-enterprises** in fisheries, recycling, eco-tourism, and ghat management.
- Expand youth engagement through **River Clubs, citizen science projects, and digital volunteering platforms**.
- Mandate **gender-sensitive indicators** across all NGP projects and integrate these into project evaluation frameworks.

Recommendation 4: Enhance Decentralised Wastewater & FSSM in Non-Networked Areas

Context: 70%+ basin households use on-site sanitation; faecal sludge is poorly managed, contaminating drains and rivers.

Major urban STPs cannot cover the vast basin’s rural and small-town populations. Achieving NGP targets for clean flows and public health needs decentralised approaches and FSSM.

It is recommended that in NGP-III, NMCG should:

- Mandate FSSM plans for all ULBs and non-networked towns, with scheduled desludging, transport, and safe treatment.
- Promote bulk generator and packaged on-site solutions (e. g. Johkasou/Japan model) through state regulation, PPPs, and incentives.

- Launch rural/town FSSM pilots, with IEC and capacity building for market creation.

Recommendation 5: Strengthen Urban River Management Plans (URMPs) & the River Cities Alliance (RCA)

Context: URMPs piloted and RCA expanded to 142 cities, but most towns lack river-sensitive planning and peer learning.

Recent evaluation shows formal URMPs and RCA membership improve both resource allocation and urban resilience, but are not yet mainstream.

It is recommended that in NGP-III, there is a need for

- Expand URMPs to all river cities and towns, embedded in masterplans and Smart City policies.
- Institutionalize RCA as a knowledge and project platform, enabling peer-to-peer support and innovation.
- Incentivize blue-green infrastructure (urban wetlands, floodplains, stormwater management) through central grants.

Recommendation 6: Enhance Industrial Pollution Management & Emerging Contaminant Control

Context: CETPs exist, but gaps in pretreatment, compliance, and management of microplastics/pharmaceuticals persist.

World Bank/GIZ and recent scientific reports along with the field surveys, the highlights rising threats from new toxicants and low compliance rates, especially in small clusters.

It is recommended that in NGP-III, there is need for

- Upgrade CETPs for advanced pollutant removal and mandate real-time discharge monitoring.
- Promote Zero Liquid Discharge (ZLD) for highly polluting industries; enforce source segregation of plastics.
- Support multi-stakeholder emerging contaminant tracking and policy labs.

Recommendation 7: Mainstream Circular Economy – Water/Energy/Manure Resource Recovery

Context: Asset-based resource recovery is still niche (sludge, treated water, biogas); regulatory and market barriers persist.

Circular models remain demonstration-oriented instead of widespread, but studies show large value capture opportunities.

It is recommended that in NGP-III:

- Forge formal market links for treated sludge/fertiliser with the agriculture sector.
- Expand treated water reuse in thermal power/industrial users, with bankable agreements.

- Launch scalable bioenergy pilots (biogas, CNG) at large STPs and FSTPs.

Recommendation 8: Institutionalise Basin-Wide Adaptive Governance, Local Ownership & Data Transparency

Context: Current governance frameworks have evolved, but district/state-level legal and budget autonomy and open data remain limited.

Lack of strong bottom-up ownership and transparency is cited as a barrier to adaptive, responsive programming.

It is recommended that in NGP-III,

- Strengthen District Ganga Committees as statutory, budgeted bodies linked to basin policies.
- Build a public, multi-level open data system for rivers, projects, and outcomes.
- Institutionalize regular participatory audits and feedback with PRI, civil society, and research groups.

Recommendation 9: Build Capacity & Institutional Strengthening at All Levels

Context: ULB, SPMG and operator skill gaps, fragmented training, and lack of long-term professional continuity impede delivery.

Expert reviews and field interviews highlight persistent gaps in technical, financial, and social capacity.

It is recommended that in NGP-III, NMCG should:

- Expand a national training calendar with advanced operations, PPP, and digital monitoring modules.
- Strengthen District Ganga Committees with budget, role clarity, and results oversight.
- Develop interstate and inter-city learning platforms with continuous technical mentoring.

Recommendation 10: Foster Convergence with Allied National Missions

Context: Overlaps with Jal Jeevan Mission, AMRUT 2.0, SBM, Atal Bhujal Yojana exist but not systematically leveraged.

Programme evaluation notes missed opportunities for resource pooling, widespread adoption of reuse, and universal coverage.

It is recommended that in NGP-III, NMCG should:

- Institutionalize State- and District-level convergence frameworks for participatory planning.
- Integrate sewerage/FSSM with JJM rural household coverage and drinking water outcomes.
- Mainstream wastewater reuse in AMRUT, Smart Cities, and industrial/cooling water policies.

Recommendation 11: Establish a Ganga Innovation Hub for Nature-Based and Low-Cost Solutions

Context: River rejuvenation and drain cleaning require affordable, scalable, and sustainable technologies. While infrastructure-heavy solutions dominate, nature-based approaches, such as wetlands, bioremediation, and phytoremediation, offer low-cost, low-maintenance alternatives that can complement conventional systems. Current pilots remain fragmented and lack structured pathways for testing, validation, and scale-up.

It is recommended that in NGP-III, NMCG should:

- Establish a Ganga Innovation Hub (G-hub) as a platform for piloting, evaluating, and scaling innovative, nature-based and circular economy solutions.
- Promote structured pilot testing with impact measurement frameworks to assess performance, cost-effectiveness, and environmental benefits.
- Undertake comparative technology assessments to benchmark solutions and facilitate adoption across states and ULBs.
- Provide incubation and financing support to start-ups, research institutes, and private innovators developing low-cost, low-maintenance technologies.

Recommendation 12: Expand Interventions from Ganga Main Stem to the Entire River Basin with Focus on Yamuna

Context: While interventions under NGP have largely concentrated on the Ganga main stem, tributaries such as the Yamuna exhibit higher levels of grossly polluting industries (GPIs) and pose significant risks to overall river health. Without a basin-wide approach, gains in the main stem risk being undermined by pollution inflows from tributaries.

It is recommended that in NGP-III, NMCG should:

- Expand the programme's scope from the Ganga main stem to the **entire river basin**, with a phased tributary-focused strategy.
- Prioritise the **Yamuna River**, targeting its industrial clusters, drains, and municipal discharges, given its higher concentration of GPIs.
- Develop **basin-wide pollution load mapping** and integrated action plans that synchronise interventions across main stem and tributaries.
- Align basin revitalisation efforts with state pollution control boards, SMCGs, and allied missions to ensure holistic outcomes.

Recommendation 13: Mobilise Private Sector and State Participation through a Ganga Challenge Fund

Context: Long-term sustainability of assets requires deeper participation of both states and the private sector in financing. Current dependence on central allocations limits financial flexibility and reduces ownership at the state and city levels. A structured mechanism to mobilise private

capital will ensure stronger commitment and shared responsibility for asset creation and maintenance.

It is recommended that in NGP-III, NMCG should:

- Establish a **Ganga Challenge Fund** to pool central allocations with capital mobilised by states and private investors.
- Encourage states to leverage this fund by designing projects co-financed with **private sector equity and blended finance instruments**.
- Use the fund to catalyse innovative financing tools such as **green bonds, pooled municipal bonds, and viability gap funding** for wastewater and riverfront projects.
- Ensure that state participation creates **long-term skin in the game**, improving accountability, service delivery, and sustainability of assets.

Recommendation 14: Develop a Dedicated NMCG Cadre and Robust Management Structure

Context: A programme of national importance and socio-economic significance, such as NGP, requires a strong, stable, and skilled institutional backbone. Currently, NMCG operates with a loosely structured organisation, relying heavily on deputations and short-term contracts, with limited career pathways and several vacancies. To ensure continuity, efficiency, and accountability, a dedicated cadre with assured tenure and multidisciplinary expertise is essential.

It is recommended that in NGP-III, NMCG should:

Establish a multidisciplinary Ganga Cadre, on the lines of NHAI, comprising professionals in engineering, wastewater, forestry, agriculture, biodiversity, project monitoring, finance, PPP, behaviour change communication, ICT/data analytics, climate resilience, and disaster management.

Commission a cadre design and HR structure study to define staffing patterns, competencies, career progression, KPIs, and performance-linked incentives. In the transition period, strengthen organisational management with programme management consultants and domain experts.

Expand NMCG's future role beyond engineering and execution to include policymaking, regulation, advocacy, innovation, O&M oversight, climate resilience, and monitoring, thereby evolving into a comprehensive institution for integrated river basin management.

The National Highways Authority of India (NHAI) is empowered by the NHAI Act, 1988. The NHAI is entrusted with National Highways Development Project, which is mandated with the development, maintenance, and management of the national highways. The highways are transnational in nature, carrying about 40% of the total road traffic. The NHAI has developed a set of national guidelines and technical manuals to strictly adhere to while implementing road development projects across the country. The NHAI is headed by the Chairperson, who is a serving IAS officer, supported by six Members (Finance, Administration, PPP, and Projects 1 and 2, and Technical) besides one Chief Vigilance Officer. Each of the six Members is supported by a strong team of General Managers, Dy. General Managers and Managers.

The NHAI at the headquarters is organized along functional lines that make accountability more effective by providing functional support to all project implementing agencies at the field level. It is a lean organization which is empowered to hire talent from the external market on long-term contracts. At least one third of the NHAI staff are cadre based, with autonomously defined recruitment, increment, promotion, and employment policy. The Parliament Committee which studied the institutional arrangement in 2017, had recommended 100% of permanent cadre-based arrangement in NHAI. This kind of arrangement is worth considering by NMCG to be implemented over the next five years, because river Ganga and national highways share common trans-boundary heritage and inter-state ownership.

http://164.100.47.193/lsscommittee/Public%20Undertakings/16_Public_Undertakings_25.pdf

Recommendation 15: Develop a Structured Asset Handover and Sustainability Plan

Context: Over the next decade, a significant number of assets—including riverfronts, lakes, biodiversity parks, and STPs reaching the end of their O&M concession periods—will need to be transferred from NMCG to state governments and local bodies. Without adequate preparation, this transition could risk sustainability, efficiency, and long-term functionality of these assets.

It is recommended that in NGP-III, NMCG should:

- Prepare a **comprehensive asset handover framework** covering technical, financial, and institutional aspects of transfer to states and ULBs.
- Undertake **capacity building of state and local bodies**, including assessment of manpower needs, O&M skill gaps, and institutional readiness.
- Facilitate the creation of **state-level budgetary provisions and dedicated funds** to ensure adequate financing for post-transfer maintenance and service delivery.
- Pilot structured handovers with detailed **transition management plans** in select states before rolling out basin wide.

Recommendation 16: Evolve NGP into a National River Rejuvenation Framework and Lighthouse of Best Practices

Context: NGP should evolve into a national river rejuvenation framework, replicating its basin-

wide approach across other rivers and positioning India as a global leader in integrated river basin management. It can also serve as a lighthouse of best practices, especially in STP construction and management, by adopting global standards that emphasize high-quality asset creation, advanced treatment technologies, and long-term O&M frameworks through HAM. Focus on disinfection, energy recovery, and performance-based contracting will ensure sustainability and replicability across the country.

5.2 Externalities

The Namami Gange Mission-II (NGM-II) has generated several positive externalities that extend well beyond its immediate objectives of river rejuvenation.

1. Strengthening of River Basin and Small River Rejuvenation:

NGM-II has created a ripple effect by motivating state governments to initiate their own small river rejuvenation and conservation programs. For example, under the Small River Rejuvenation & Conservation Plan, the Uttar Pradesh government identified and successfully took up 19 rivers, including Gomti, Varuna, Sai, and Budhi Ganga, for targeted interventions. Similarly, focused projects for river conservation have been undertaken in Shivna, Mandakini, Rispana & Bindal, Kosi, Budhi Gandak, and Ramrekha, further contributing to integrated river basin strengthening.

2. Learning for Other Schemes:

The experience gained through NGM-II has enhanced the effectiveness of other programs such as the National River Conservation Plan (NRCP). NRCP has already covered 57 rivers across 17 states, including smaller rivers like Nambal in Manipur and Zuari in Goa, with an investment of over ₹8,900 crore. A key outcome has been the creation of nearly 3,000 MLD sewage treatment capacity, helping mainstream lessons from NGM-II into broader water conservation efforts nationwide.

3. Catalyzing Industrial Water Management Practices:

The Central Pollution Control Board (CPCB), drawing from the NGM framework, has institutionalized charter-based, participatory approaches with industries in the pulp & paper, sugar, distillery, textile, and tannery sectors. These charters emphasize technological upgradation, waste minimization, and recycling. The result has been significant reductions in freshwater consumption, wastewater discharge, and overall pollution load, while improving compliance in industrial hotspots.

4. Replicable Models for Urban Water Management:

The adoption of the Hybrid Annuity Model (HAM) for STPs under NGM-II has provided a replicable financing and operations model for other urban water programs such as AMRUT. This ensures sustainable long-term O&M funding, thereby transforming the approach to urban sanitation infrastructure across India.

5. Promotion of Water Reuse and Circular Economy:

A National Framework for Safe Reuse of Treated Wastewater has been developed by NMCG and circulated to all states and stakeholders. It provides guidelines for state-level reuse policies, economic models for treated water markets, and prioritization of reuse in urban water management. With national targets of 50% reuse by 2025 and 100% by 2050, and tools such as city-level templates, this framework lays the foundation for large-scale adoption of water reuse. Complementary guidelines from CPCB (Draft 2024) are expected to further institutionalize safe reuse practices nationwide.

Together, these outcomes demonstrate how NGM-II is not just rejuvenating the Ganga but also creating system-wide impacts in water conservation, industrial practices, and urban water management.



6 CONCLUSION

6.1 Issues & challenges

The assessment of NGM-II highlights that while significant progress has been made in expanding the scale and scope of the programme, certain issues and challenges continue to persist which require systematic attention. These are outlined below:

1. Strategic Direction and Policy Intervention

The transition from NGM-I to NGM-II has broadened the mandate of the Mission to include Aviral Ganga, Arth Ganga, Jan Ganga and Gyan Ganga. However, alignment of state-level river rejuvenation policies with the central framework remains partial. In some instances, legacy challenges of weak enforcement of effluent discharge norms and limited mainstreaming of river health in urban and industrial policies slow down the overall pace of outcomes.

Way forward: Greater integration of NGM with state urban policies, climate resilience strategies, and emerging river-basin planning frameworks can ensure coherence and consistency in policy direction.

2. Institutional Arrangements

SPMGs have strengthened over the years, but variations in institutional capacity across states remain a challenge. Delays in land acquisition, DPR preparation, and contractual clearances often impede project timelines. Furthermore, Urban Local Bodies (ULBs) have limited involvement in O&M and revenue sustainability of assets, thereby affecting long-term viability.

Way forward: Creation of special land-banks for NGM will help in faster implantation of projects. Building dedicated institutional cadres at the state and city level, and providing ring-fenced resources for O&M, will ensure sustainable management of assets.

3. Coordination and Convergence

Although convergence with programmes such as AMRUT, SBM, Smart Cities, and Jal Jeevan Mission has been emphasised, ground-level coordination remains fragmented. SPMGs, ULBs, and line departments often work in silos, limiting synergies in sewerage connectivity, SWM, and reuse of treated water.

Way forward: Establishing joint planning mechanisms, with clear accountability frameworks for inter-departmental tasks, can deepen convergence and accelerate impact.

4. Staffing and Skill Sets

The Mission continues to depend on contracted staff and consultants in many states. High attrition among project personnel and lack of specialised technical manpower at ULBs pose challenges to continuity and institutional memory. Limited financial management and procurement expertise at local levels also delay project execution.

Way forward: Structured training, capacity building, and retention strategies for technical and managerial staff are essential for sustaining implementation momentum.

5. Technology and Innovation

While advanced technologies such as SCADA, OCEMS, CCTV based monitoring and geo-spatial monitoring have been introduced, their adoption is uneven across projects and states. Leveraging CCTV-based monitoring through AI-enabled systems can significantly strengthen early detection of malfunctioning, enable predictive maintenance, and enhance overall operational efficiency.

Way forward: Encouraging innovation pilots (e.g., IIT-BHU Smart Laboratory, IIT-Delhi IND-Rivers) and scaling them systematically will strengthen technology adoption across the basin.

6. Civil Society Engagement

Initiatives such as Ganga Praharis, Ghat Parikramas, and mass IEC campaigns have enhanced visibility, but funds released to districts for IEC often remain under-utilised. Engagement is still more event-driven than institutionally embedded, and linkages with livelihood missions and women's groups are at a nascent stage.

Way forward: Embedding community engagement into project design, with structured monitoring of IEC outcomes, will ensure that social mobilisation remains a pillar of the Mission.

7. Implementation Mechanism

The accelerated sanctioning of projects under NGM-II reflects strong progress in expanding the program's reach. With asset creation receiving due priority, the focus is now shifting towards strengthening long-term sustainability through improved operation and maintenance (O&M). Increasing attention is being given to enhancing utilisation of STPs, expanding household sewer connections, and advancing reuse of treated water, thereby addressing challenges of under-utilisation and ensuring that infrastructure delivers its intended outcomes.

Way forward: Stronger performance-based monitoring, integration of revenue models for O&M, and deeper involvement of ULBs can ensure that assets created translate into lasting environmental outcomes.

6.2 Vision for the future

It is recommended that in NGP-III, NMCG should:

- Glacier health and climate resilience must be built into basin management through a Himalayan Cryosphere Mission, hydrological modelling, and alpine ecosystem restoration to secure flows from Gomukh to Ganga Sagar.
- Asset sustainability requires a ring-fenced O&M fund with blended finance, annuity-linked allocations, and performance-based contracts backed by SCADA/AI-enabled monitoring.

- Gender and social inclusion must be institutionalised by embedding gender-sensitive indicators in DPRs and scaling women-led enterprises in sanitation, fisheries, and eco-tourism.
- FSSM should be mandated through statutory byelaws in all ULBs, with regulated desludging operators, PPP-based packaged solutions, and incentives for small towns and peri-urban areas.
- URMPs should be made statutory within master plans, while the River Cities Alliance should evolve into a parastatal platform for pooled procurement, peer learning, and financing.
- CETPs must be upgraded for advanced pollutant removal, with ZLD enforced in high-risk clusters and blockchain-based discharge monitoring for transparency and compliance.
- Resource recovery should be scaled through market-linked agreements for treated water, bio-sludge use in agriculture, and large-scale biogas-to-CNG projects integrated with gas networks.
- District Ganga Committees must be given budget allocations with an open-access Basin Data Grid and participatory audits.
- A National Ganga Cadre should be established with engineering, ecology, finance, PPPs, ICT, and climate resilience specialists to provide long-term technical continuity.
- A National Ganga Convergence Framework should align JJM, AMRUT, SBM, and Atal Bhujal with basin-level action plans, supported by a Ganga Challenge Fund pooling central and private capital.
- Long-term financing must be secured through non-lapsable budget allocations, sovereign green bonds, and municipal bond frameworks for river cities.
- The Ganga brand should be amplified globally through an “Incredible Ganga” campaign, positioning NGP as a soft diplomacy tool and global model of river rejuvenation.
- Strategic Behaviour Change Communication (SBCC) should replace IEC, with at least 1% of budgets for campaigns promoting sewerage connections and discouraging untreated discharges.
- Digital platforms and social media should be leveraged to raise awareness on STPs, treated water reuse, and ecological benefits, building citizen ownership at scale.
- A Ganga Innovation Hub (G-hub) should be established to incubate start-ups and technologies in sludge management, bio-CNG, plastic recycling, and mechanised sanitation.
- Basin-level integrated urban water management strategies must include mandatory audits, efficiency reforms, and recycling targets to reduce freshwater dependence.
- Capacity building budgets should be raised to 3% of programme resources, guided by CENA assessments and customised training for ULBs, SMCGs, and operators.
- Nature-based solutions should be mainstreamed for drain cleaning and river rejuvenation, including constructed wetlands, bioremediation, and phytoremediation. These low-cost, scalable interventions can complement hard infrastructure while delivering biodiversity and climate resilience co-benefits.
- Energy recovery must be institutionalised across STPs with defined biogas, CNG, and electricity generation targets. Mandating energy-neutral or positive STPs under NGP will reduce O&M costs, improve financial sustainability, and advance India’s renewable energy goals.

- Biodiversity and ecological flow must be institutionalised with e-flow regulations, expanded fish ranching, dolphin conservation, and large-scale afforestation.
- Livelihoods should be scaled under Arth Ganga by supporting Jalaj centres, fisher cooperatives, and eco-tourism PPPs, linking income growth with river stewardship.
- Circular economy models must be mainstreamed through bankable contracts for treated water, sludge markets, and waste-to-value enterprises across the basin.
- Financing innovation should include blended finance with DFIs, pooled municipal funds, and SME credit lines via SIDBI/NABARD for waste-to-value businesses.
- A National River Basin Analytics Platform should integrate URMPs, satellite monitoring, and climate projections into predictive planning tools for ULBs and states.
- Citizen stewardship should be strengthened through River Clubs, Ganga Praharis, and digital citizen science platforms, linking engagement to measurable outcomes.
- NMCG should take leadership roles in UN Water, Global River Alliances, and regional partnerships, sharing Ganga lessons with India's rivers and the world.
- Behavioural incentives should be embedded in municipal systems, rewarding households and industries for sewerage connections, reuse practices, and pollution prevention.
- Regional training hubs should be established across basin states, providing continuous mentoring and technical support for uniform O&M and project delivery standards.
- Pro-poor and gender-responsive measures must be embedded in all projects, ensuring women, youth, and marginalised groups are systematically involved in decision-making.
- NGP should evolve into a national river rejuvenation framework, replicating its basin-wide approach across other rivers and positioning India as a global leader in integrated river basin management. It can also become a lighthouse of best practices, particularly in STP construction and management, by incorporating global standards that emphasize high-quality asset creation and a long-term maintenance framework through HAM, ensuring sustainability and replicability across the country.

In line with the evolving mandate of the Namami Gange Programme and considering the recommendations emerging from ongoing evaluations and partner inputs, NMCG may consider articulating a Vision Statement for NGP-III. This vision could reflect the transition of the programme from a river-specific initiative to a national river rejuvenation framework, anchored on clean and continuous flows, advanced infrastructure, long-term O&M mechanisms, and climate-resilient river governance. By embedding community stewardship, sustainable livelihoods, and cultural heritage into river management, the Vision would reaffirm rivers as central to India's ecological security and future prosperity.

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ANNEXURES

Consolidated Findings from Beneficiary Perception Survey and Stakeholder Consultations (Key Informant Interview Outcomes)

The following section presents a systematic analysis of the beneficiary survey findings along with the outcomes from KII interactions, segregated under the Namami Gange thematic pillars, along with cross-state observations and key findings derived from the data collected to date.

Nirmal Ganga

The household survey conducted across four states—**Bihar, Delhi, Uttar Pradesh, and West Bengal**—assessed citizen awareness, sewer connectivity, service performance, and satisfaction with sewage treatment plants (STPs). The findings reflect varying levels of infrastructure efficiency, behavioural awareness, and satisfaction under the **Nirmal Ganga** component of the Namami Gange Mission.

a) Sewage Treatment Plants

Bihar

Awareness and Outreach

- 100% of respondents were aware of the local STP—indicating excellent communication and visibility.
- 35% learned through posters/hoardings and another 35% through community meetings.
- No respondents reported a lack of awareness campaigns, suggesting effective IEC (Information, Education & Communication) implementation.

Household Connectivity

- 100% households reported connection to underground sewer networks.
- Minimal use of multiple disposal systems (5%).

Service Delivery and Impact

- 98% observed noticeable improvements, mainly cleaner streets and reduced sewage overflow.
- 74% reported no sewage-related issues; remaining reported foul smell (13.6%) and overflow near houses (8.7%).

Satisfaction and Perception

- 74% somewhat satisfied, 15.5% very satisfied, and 10.7% not satisfied.
- Overall satisfaction stands at 89.3%, the highest among surveyed states.

Implication for Nirmal Ganga

Bihar shows **strong alignment with Nirmal Ganga objectives**—universal connectivity, high awareness, and visible improvements suggest effective sewage treatment and reduced discharge into local water bodies.

Delhi

Awareness and Outreach

- Only **25%** respondents were aware of local STPs; **68%** were unaware.
- **68%** have never seen any sanitation awareness campaign—indicating a major communication gap.

Household Connectivity

- **80%** connected to sewer lines; **8.5%** unsure of connection.

Service Delivery and Impact

- Reported improvements: cleaner streets (**25%**) and reduced overflow (**23%**).
- Major issues: overflow near houses (**25.5%**) and foul smell (**22%**).

Satisfaction and Perception

- **42%** somewhat satisfied, **28.5%** very satisfied, **16%** neutral.
- Combined satisfaction at **70.5%**, showing moderate performance.

Implication for Nirmal Ganga

Infrastructure exists but **awareness and engagement remain low**. Stronger IEC and participatory mechanisms are needed to enhance citizen ownership and ensure STPs contribute visibly to river cleanliness in the Yamuna sub-basin.

Uttar Pradesh

Awareness and Outreach

- **69%** aware of STPs; **31%** unaware.
- **17%** received awareness through social media—highest among states—showing potential for digital campaigns.
- **42%** never saw any campaign.

Household Connectivity

- **49%** connected to sewer lines; **11%** depend on septic tanks.

Service Delivery and Impact

- **36%** unsure of improvements; **27%** saw no change; **22%** noticed cleaner streets.
- **49%** had no major issues, but **31%** faced multiple sewage-related problems.

Satisfaction and Perception

- 38% not satisfied, 36% somewhat satisfied, 14% uncertain.
- Overall satisfaction at 52%—among the lowest.

Implication for Nirmal Ganga w.r.t STPs

Low sewer connectivity and mixed satisfaction indicate a need for **infrastructure strengthening, improved O&M, and intensified communication** to prevent untreated discharge into Ganga tributaries.

West Bengal

Awareness and Outreach

- 62% unaware of STPs, 34% aware, 4% partially aware.
- 93% never saw any sanitation awareness campaign—the weakest outreach across all states.

Household Connectivity

- 58% connected to sewer lines, 41% not connected.
- 79% use open drains for wastewater disposal; only 4% use underground sewers.

Service Delivery and Impact

- 66% respondents “did not know” of any improvements—indicating low visibility.
- Overflow near homes was the most common issue (54%).

Satisfaction and Perception

- 54% not satisfied, 34% somewhat satisfied, 11% very satisfied.
- Overall satisfaction: 45%, lowest among the surveyed states.

Implication for Nirmal Ganga

West Bengal reflects **weak service delivery, low engagement, and minimal awareness**. Strengthening STP utilization, sewer coverage, and communication is crucial to achieving Nirmal Ganga goals in its Ganga basin towns.

Overall Findings and Comparative Insights

Parameter	Bihar	Delhi	Uttar Pradesh	West Bengal	Overall Avg.
STP Awareness (%)	100	25	69	34	53.8
Households Connected to Sewer (%)	100	80	49	58	71.7
Satisfied (%)	89.3	70.5	52	45	68.2
Not Satisfied (%)	10.7	16	38	54	29.4

Wastewater Disposal Methods (Overall %)

Method	Bihar	Delhi	Uttar Pradesh	West Bengal	Overall
Underground sewer	34	69	34	4	30
Open drains	27	9	43	79	45
Septic tank	33	6	21	9	18
Multiple systems	5	4	2	1	3
Others	0	12	1	7	4

Awareness Channels Reported (Overall %)

Awareness Type	Bihar	Delhi	Uttar Pradesh	West Bengal	Overall
News / Newspaper	17	7	21	4	14
Posters / Hoardings	35	1	9	0	11
Door-to-door	10	2	3	0	4
Community Meetings	35	0	2	1	9
Social Media	3	0	17	0	7
All of the Above	0	20	4	1	5
Never Seen Any	0	68	42	93	51

Cross-State Observations

1. Bihar demonstrates best performance in awareness, connectivity, and satisfaction, serving as a model for Nirmal Ganga success.
2. Delhi shows good infrastructure but poor awareness—highlighting the need for communication-focused interventions.
3. Uttar Pradesh and West Bengal lag due to low connectivity, high open drain dependency, and limited citizen engagement.
4. Across states, 51% households never saw any sanitation campaign, pointing to a critical IEC and behavioral change gap.
5. 45% of households still discharge wastewater into open drains, undermining the clean river objectives of Nirmal Ganga.

Summary implications for STPs

The survey findings suggest that while significant progress has been achieved in creating STP infrastructure under Namami Gange, **citizen-level awareness, last-mile connectivity, and operational efficiency** vary greatly across states.

- **High-performing states** like Bihar demonstrate the benefits of integrated IEC and service delivery.
- **Moderate to low-performing states** (Delhi, Uttar Pradesh, West Bengal) require intensified focus on awareness, monitoring, and functionality of sewer networks.

Strengthening **Information, Education & Communication (IEC)** mechanisms, ensuring **universal household connectivity**, and **community-level feedback systems** will be vital to achieve and sustain the “Nirmal” (clean river) outcomes envisioned under the Namami Gange Mission Phase II.

a) Riverfront Development - Uttarakhand

Ganga River Front Development - Devprayag-Rudraprayag	The Construction Activities are completed by WAPCOS & and is handed over to the Nagar Nigam. Devprayag – Toilet Facilities, Cleanliness of Ghats, Maintenance of the Ghats, paintings, lighting, Waste Collection and all the activities are well maintained. Rudrapryag – Current situation of infrastructure developed is not visible due to recent flooding.
Ganga River Front Development – Gangotri	1. As part of the Riverfront Development Project in Gangotri, several infrastructure improvements were undertaken, including the construction of pooja ghats, steps and barricades to prevent soil erosion, and amenities such as changing rooms and toilets for devotees. These developments were completed during 2022–2023. 2. However, due to the region’s extreme weather conditions, including landslides and cloudbursts, periodic damage occurs to the infrastructure. As a result, annual maintenance and rework activities such as painting and repair of structural damages are carried out regularly to ensure safety and accessibility.
Ganga River Front Development - Badrinath	As part of the Riverfront Development Project in Badrinath, Construction work is carried out by WAPCOS with 5 years of O&M with a stretch of 200mts along the temple side. Several infrastructure improvements were undertaken, including the construction of pooja ghats, steps and barricades to prevent soil erosion, and amenities such as changing rooms and toilets for devotees. These developments shall be completed by end of December.

Highlights

- Uttar Pradesh (specifically Prayagraj):
 - Highest daily usage (100%) and perceived "very clean" ghats (80%).
 - Toilets are more accessible and cleaner (65%) with 45% reporting no problems.
 - 100% respondents mention plastic, paper, and religious items as waste types.
- Bihar (Ganga RFD):
 - Most report clean or moderately clean ghats (52.9% and 47.1% respectively).
 - 70.6% find toilets inaccessible, with 94.1% reporting lack of running water and 88.2% locked toilets.
 - Waste types are largely flower offerings (100%), religious items (100%), and plastic bottles/bags (94.1%).

All figures represent the share of surveyed respondents for each state/project and underscore clear strengths and gaps in public utility, cleanliness, and waste management at the river front sites.

b) Procurement of Trash Skimmer & River Surface Cleaning - Varanasi



c) Ganga Gram – Construction of Toilets Project, covering Sirashu (Uttarakhand), Belwan (Uttar Pradesh), Ankichak (Bihar), Udhwa (Jharkhand), and Hooghly (West Bengal)

Village/ State	Functional Toilets (%)	Reported Open Defecation Reduced (%)	Women's Safety/ Privacy Improved (%)	Regula r Use (%)	Awareness/ Training (%)	Linked to Schem e (%)	Access for Vulnera ble (%)
Sirashu (UK)	High (most say "Yes")	Yes (all)	Yes	All	Some	Some	Yes, all
Belwan (UP)	Moderate (scattered "abandone d" toilets)	Some ("some reduction"; not always "significant")	Yes, but variable	Some/ All	Few	Some	Varies; "some do"

Ankichak (Bihar)	Very high (over 90%)	Very high ("yes, significantly reduced")	Almost all "Yes, significantly improved"	Nearly all use	Minimal	Minimal	Yes, all
Udhwa (Jharkhand)	High	Yes (most say "significantly reduced")	Strong "Yes"	All	Some	Yes	Yes, all
Hooghly (WB)	High (most say "Yes/Needs repair")	Some reduction ("significantly reduced" less frequent)	Yes, majority	All	Minimal	Yes, several	Yes, all

Aviral Ganga

Conserving and sustainably managing three wetlands:

- i. Kalewala Jheel (Muzaffarnagar District),
- ii. Numaiya Dahi Jheel Kheduva Taal (Prayagraj District)
- iii. Dahtal Reoti wetland (Ballia District)

The wetland conservation initiatives at Kalewala Jheel (Muzaffarnagar) and Numaiya Dahi Jheel-Kheduva Taal (Prayagraj), implemented by the Department of Environment, Forest and Climate Change, Uttar Pradesh, aim to restore wetland ecology and enhance biodiversity under the Namami Gange Mission.

At Kalewala Jheel, key interventions include installation of 125 geo-tagged boundary pillars, completion of People's Biodiversity Registers (PBRs) in four villages, and plantation of 22,000 saplings. Wetland Mitras play a central role in regular cleaning, awareness, and monitoring activities. However, Gram Samaj land ownership, staff shortages, and seasonal flooding have delayed field operations, while water hyacinth regrowth remains a recurrent challenge.

At Numaiya Dahi Jheel-Kheduva Taal, implementation is progressing with community engagement and biodiversity assessment activities initiated. Both sites demonstrate strong community participation, particularly through Wetland Mitras and school awareness drives, but face similar institutional coordination and technical manpower constraints.

Long-term sustainability will depend on capacity building, institutional convergence, and community-led stewardship to ensure continued conservation and eco-tourism development around these wetlands.

Rejuvenation of River Kali East by development of in-situ Constructed Wetland System at eight locations in following District i.Muzaffaranagar, ii.Meerut, iii.Hapur, iv.Bulandshahar (UP)	Current Construction Status Approximately 95% of the civil works have been completed. The constructed wetland systems span roughly 1,100 meters each, combining a 1,000-meter main stretch with a 100-meter buffer zone. These include: • Two oxidation ponds (total 500 meters; 250 meters each side) • Filtration segments totaling 300 meters • A phytoremediation vegetative zone extending 200 meters The current Dissolved Oxygen (DO) stands at a critical 0.35 ppm, with an objective to raise it to about 4 ppm to sustain aquatic life. The wetlands currently treat about 140 million liters per day (MLD) from the drainage system and an additional 170 MLD from river inflows, with seasonal surges during monsoons leading to transient flooding. Aeration is promoted using gabion structures and extensive trash screens, which are regularly cleared, removing up to 150 kg of debris daily. Of the Rs.8.25 crore project cost, Rs.4.45 crore has been disbursed, and Rs.2.28 crore remains pending. A User Fee model is under consideration for long-term sustainability. Once operational, the system is expected to reduce BOD/COD by over 50% and significantly enhance river water quality.
Biodiversity Conservation and Ganga Rejuvenation, Part-1	The upscaling of the project from focusing solely on the main Ganga stem to encompassing the entire Ganga basin was driven by several critical environmental, social, and operational factors, primarily articulated during the monitoring committee meetings, consultations, and workshops held during Phase One of the project. The critical factors that drove the decision to upscale the project included: 1. Ecological and Environmental Necessity: • Cleaning Scope: It was recognized that the Ganga cannot be cleaned just by cleaning the main stem. • Pollution Load: The main stem river brings in the pollution load, necessitating efforts across the wider basin to address the sources of contamination. • Habitat Provision: The basin effort was needed because the river provides habitat to the freshwater species. 2. Social and Community Dependence:

	- Human Dependency: Many people are dependent all along its basin, making the conservation and rejuvenation efforts relevant to the entire region, not just the main course. 3. Success and Proof of Concept from Phase One: - The work already accomplished through the mainstream Ganga project (Phase One) had showcased that things can be worked upon. - The initial phase demonstrated that people are willing to participate and want to contribute to the Ganga river conservation at the community level. This success provided the justification for upscaling the project to the entire Ganga basin state. 4. Operational Realizations: - The decision to upscale the process for the entire basin led to the realization that a bigger team would be needed. - This bigger team required a dedicated place and more facility for operations, such as GIS analysis, data storage on a spatial platform, and ecotoxicological analysis. This realization contributed to the establishment of the Ganga Aqualife Conservation Monitoring Center (GACMC). Following the decision to upscale for the entire Ganga basin, a similar model was subsequently sought for replication across the country, leading to a parallel project focused on six other major rivers.
Establishment of Four Ganga Biodiversity Parks in following districts of U.P: i.Mirzapur ii.Bulandshahar, iii.Hapur and iv.Badaun (one park for each District)	The work is in progress wrt to all biodiversity parks. This beneficiary data captures environmental, social, and economic impacts observed by the community mainly around Mirzapur area, the only surveyed district among the four planned biodiversity parks in UP. Conservation awareness has increased for 62.5%, though only 19% indicate new jobs or livelihood generation would come.

a) Project Assessment: CIFRI – Fish Conservation and Stock Enhancement of Ganga River Basin (Phase III)

Implementing Agency: ICAR-CIFRI

Funding: NMCG under Namami Gange (₹313.84 crore for 2023–26)

CIFRI's engagement in the Ganga basin spans nearly a decade, beginning in 2016 with pilot studies on Hilsa migration. Following encouraging results, the programme expanded:

- Phase I (2016–18): Initial Hilsa studies, short-term stock assessments.
- Phase II (2020–23): Broadened objectives to include Hilsa ranching, Mahseer broodstock work, Indian Major Carps (IMC), and awareness programmes.
- Phase III (2023–26): Current phase, with a focus on large-scale ranching, biodiversity monitoring, livelihood linkages, and scientific innovations.

Project Objectives (from CIFRI Annual Report & DPR):

1. Enhancement of fish biodiversity through captive breeding, ranching, and fingerling release.
2. Conservation of threatened species (Hilsa, Mahseer, other indigenous species).
3. Monitoring ecological indicators of fish health, catch trends, and migratory behaviour.
4. Livelihood support for fisher communities through stock enhancement and awareness building.
5. Knowledge generation on aquatic biodiversity to feed into NGP's Gyan Ganga pillar.

Key interventions under Phase III include:

- Hilsa Conservation: Ranching ~50,000 Hilsa annually upstream of Farakka, release of 43–40 lakh fertilised eggs, 9 lakh spawns, and ~1.5 lakh adult Hilsa in 2023–24. Tagging programmes confirmed return migrations, with juveniles sighted as far upstream as Ghazipur.
- Stock Enhancement of Other Species: 54.44 lakh fingerlings (IMC, Mahseer, native carps, freshwater prawns) released across multiple sites. IMC share in fish landings rose from 8.5% (2016) to 14.5% (2024).
- Infrastructure Development: Establishment of Hilsa cage aquaculture facilities at Farakka (seasonally dismantled during monsoons), pen enclosures in wetlands (Akaipur, Bijpur, Kundipur).
- Biodiversity and Livelihood Integration: Awareness programmes reached 7,916 fishers, with reported income increases: ₹11,000/month (middle stretch), ₹5–6k (upper), and ₹8k (lower stretch), compared to 2019 levels.
- Scientific Output: Nutrient profiling of 90 fish species, carbon sequestration studies, microplastic inventories, and advanced pollution analysis (ICPMS).

OECD-DAC Based Assessment

1. Relevance

- Directly aligns with NGP thrusts (*Nirmal Ganga, Aviral Ganga, Arth Ganga, Gyan Ganga*).

- Responds to critical problem of declining native fish diversity and fisher livelihoods.
- Nodal officer underlined that fishery conservation is not only ecological but socio-economic, as 20–25 million people depend on river fisheries.

2. Effectiveness

- In 2023–24, 54.44 lakh fingerlings of IMC, Mahseer, Hilsa released in Ganga stretches across 5 states.
- 798 Hilsa tagged for migration studies; 76 lakh Hilsa spawns released.
- 7,916 fishers sensitised through biodiversity awareness camps.
- 20–25% increase in CPUE recorded in stocked stretches over 3+ years.
- Improved environmental health indicators: DO consistently >6 mg/L; BOD/COD reductions observed.
- CIFRI reports increased Catch Per Unit Effort (CPUE) in some stretches where ranching repeated for >3 years.
- Monitoring indicators include: survival rate of stocked fingerlings, recapture rate of tagged Hilsa, CPUE trends, biodiversity indices.

3. Efficiency

- Utilises CIFRI's existing hatcheries and labs, reducing infrastructure duplication.
- Funded fully by NMCG — officer noted timely fund releases were critical for breeding cycles.
- Some efficiency issues flagged: seasonal delays in breeding, high logistic costs for transporting fingerlings upstream, and shortage of technical manpower in field units.

4. Impact (Potential/Observed)

- Biodiversity gains: recovery of indigenous carp and Mahseer populations in stocked sites.
- Livelihood impact: improved catch reported in Bihar and West Bengal stretches; fisher households showed greater willingness to adopt closed-season rules.
- Knowledge impact: Hilsa tagging produced the first scientific migratory evidence upstream of Farakka.
- Socio-cultural impact: revival of Hilsa runs is seen as both an ecological and cultural achievement.

5. Sustainability

- Success depends on community buy-in: SHGs and fisher cooperatives must be more actively engaged.

- Nodal officer cautioned that invasive species (tilapia, common carp) continue to threaten long-term sustainability.

Monitoring and Performance Indicators

The project maintains a rigorous reporting cycle (monthly, quarterly, half-yearly, annual), with data uploaded to the **Ganga Portal**. Key performance indicators include:

- **Stocking indicators:** No. of fingerlings released, ranching of Hilsa, Mahseer broodstock survival.
- **Biodiversity indicators:** Species richness (215 species tracked), population share of IMC (rise to 14.5%), new species documented.
- **Environmental indicators:** DO >6 mg/L, pH balance, decline in BOD/COD.
- **Livelihood indicators:** Increase in average fisher household income (range ₹5k–₹11k/month).
- **Community indicators:** No. of fishers sensitised (7,916 in 2023–24), school/community outreach.
- **Scientific output:** Publications, conference presentations, nutrient profiling of 90 species, microplastic inventories.

Challenges (from CIFRI officer + Annual Report)

- Seasonal dependency: breeding & stocking restricted to short biological windows.
- Plastic and emerging contaminants: persistent pollution undermines biodiversity gains.
- Logistics: transporting large volumes of fingerlings to upper stretches is costly and time-consuming.
- Invasive species: fast-breeding exotics compete with natives, undermining conservation.
- Community engagement: fishers are sometimes reluctant to cooperate with closed-season or no-fishing zones.
- Data gaps: long-term ecological datasets are limited, making it difficult to measure true biodiversity recovery.

Insights from CIFRI Nodal Officer

- “Livelihood linkages are key – fishers must see direct benefit from conservation, otherwise sustainability will remain weak.”
- “Monitoring must focus on survival and recapture rates, not just number of fingerlings released.”
- “Funding from NMCG has been timely, but future phases must ensure recurring O&M support for hatcheries and monitoring.”
- “Hilsa conservation is a flagship opportunity for NGP – ecological, economic, and cultural.”

Way Forward

1. Expand Hilsa conservation programme with interstate collaboration (WB–Bihar–UP).
2. Strengthen fisher SHGs and cooperatives for community-led management.
3. Integrate wetland rejuvenation with fish biodiversity programmes.
4. Develop PPP models for IMC hatcheries to avoid germplasm contamination.
5. Expand studies on microplastics, carbon sequestration, and emerging pollutants.
6. Develop invasive species management strategy under NMCG.
7. Integrate value-chain approaches (cold chain, branding, eco-tourism with Arth Ganga).

Takeaways

- CIFRI project demonstrates that stock enhancement + fisher sensitisation can yield ecological and socio-economic co-benefits.
- Monitoring success indicators (recapture, survival, CPUE) is crucial — simple output metrics like “number of fingerlings released” are insufficient.
- Future NGP biodiversity projects must move beyond stocking to ecosystem-based restoration + livelihood integration.
- With Hilsa and Mahseer conservation showing initial gains, NMCG should replicate this model to other migratory species and tributary corridors.

b) Project Assessment: Patanjali–PORI Project on Floral Diversity, Ethnobotany & Phytochemical Profiling

Implementing Agency:	Patanjali Research Foundation	with PORI
Funding:	₹4.32 crore (NMCG – 56%, PORI – 44%)	
Duration:	18 months	(2022–24)
Coverage:	26 sites across Uttarakhand, Uttar Pradesh, Bihar, Jharkhand, West Bengal	

1. Project Description and Evolution

This project represents the first large-scale attempt under Namami Gange to document **floral biodiversity, ethnobotanical knowledge, and phytochemical potential** in the Ganga basin.

Key components included:

- **Floral Mapping & Herbarium:** 1,117 species, 660 genera, 152 families documented; 4,336 field numbers, 17,344 specimens curated.
- **Ethnobotanical Compendium:** 114 medicinal plants documented across 58 families and 62 disease conditions.
- **Phytochemical Profiling:** 234 samples collected; *in silico* profiling for 10 key medicinal plants with anti-cancer, anti-neurodegenerative, and antiviral potential.
- **Training & Capacity Building:** 42 sessions, 631 participants (farmers and healers).
- **Publications:** 49 scientific articles, 21 books & monographs including 3 volumes on floral diversity, 1 ethnomedicine compendium, and state-wise flora books.

The project was executed with **Patanjali's field network of Karyakartas**, who played a critical role in accessing local communities and healers, ensuring smooth ground-level operations across five basin states.

2. OECD-DAC Assessment

Relevance

- Aligns strongly with NGP's biodiversity and afforestation component, and indirectly with Arth Ganga through farmer/healer capacity building.
- Design responded to gaps in ethnobotanical documentation, phytochemical profiling, and local traditional knowledge systems.
- Local knowledge was central: farmers and healers provided vernacular names, plant uses, and site-specific inputs.

Effectiveness

- **Vegetation mapping** completed for all 26 sites, meeting the target of 25–30 sites.
- **Herbarium** completed and deposited at Patanjali Research Foundation Herbarium.
- **Ethnobotanical compendium** compiled across 18 districts, documenting uses in 62 disease categories.
- Training reported strong participation: 631 trained, with farmers reporting adoption of organic practices.
- Outputs (books, monographs, herbarium, phytochemical leads) are substantial scientific contributions.

Efficiency

- ₹4.32 crore budget was well-utilised; PORI's share was even increased by ₹99 lakh to meet project demand.
- 18-month timeline was realistic and adhered to; deliverables met on schedule.
- Financial management and cost-sharing between PORI and NMCG were smooth and timely.

Impact

- **Scientific impact:** discovery of new records for India/region, *in silico* drug leads, 49 scientific papers, and monographs.
- **Conservation impact:** identification of threatened species and soil-water quality profiling to inform conservation.
- **Socio-economic impact:** training enhanced farmer awareness, skill adoption, and commercial potential of medicinal plants.
- **Knowledge systems:** revived healer traditions; created a bridge between traditional medicine and modern pharmacognosy.

Sustainability

- Herbarium curation and digital databases (aligned with GBIF, POWO, Tropicos) ensure long-term scientific value.
- Training networks (549 farmers, 82 healers) provide a community-level sustainability model.
- However, herbarium upkeep and database maintenance are resource-intensive — **long-term financial continuity is uncertain without dedicated budgets or PPPs.**
- Strong partnerships (BSI, FSI, AYUSH, universities, industry) are essential to scale outcomes.

3. Monitoring and Performance Indicators

- **Biodiversity:** 1,117 species documented, new national and regional records.
- **Ethnobotany:** 114 medicinal plants, 62 disease categories.
- **Training:** 42 sessions (80.25 hrs), 631 participants (farmers & healers).
- **Publications:** 49 papers, 21 books/monographs.
- **Database:** Structured digital herbarium with GPS, phenology, and morphology.
- **Community engagement:** Strong farmer and healer participation; >70% healer engagement in East UP & West Bengal.

4. Challenges

- **Administrative hurdles:** multiple permissions (PCCF, Biodiversity Boards, DMs) required; lead-times were high.

- **Community risks:** uneven healer participation in some states; trust-building needed.
- **Environmental risks:** soil/water pollution threatens medicinal plant survival and phytochemical stability.
- **Financial risks:** herbarium and digital database upkeep are resource-heavy; reliance on project grants is unsustainable.
- **Institutional fragility:** no binding MoUs with state/national institutions yet for long-term continuity.

5. Insights from Nodal Officer / Project Partners

- Local knowledge is indispensable for biodiversity documentation.
- Herbarium and phytochemical profiling outputs are scientifically valuable but underfunded for maintenance.
- Farmers and healers showed genuine adoption interest, especially in organic farming and ethnomedicine practices.
- “Future success depends on formal partnerships (BSI, AYUSH, universities) and benefit-sharing frameworks to engage local communities equitably.”

6. Way Forward

- **Digitisation & Integration:** Deposit all herbarium data in national/global repositories (GBIF, India Biodiversity Portal).
- **Partnerships:** Formalise collaborations with BSI, FSI, AYUSH, universities.
- **Financial sustainability:** Develop costed maintenance plans; explore PPP/endowment models.
- **Community empowerment:** Certify farmer-producer groups; integrate healers into AYUSH networks.
- **Mainstreaming:** Incorporate biodiversity/ethnobotany into KVKs and agricultural university curricula.
- **Policy integration:** Embed biodiversity monitoring as part of NMCG’s performance indicators.

7. Takeaways for NGM-II

- **Multi-disciplinary biodiversity projects** (floristics + ethnobotany + phytochemistry + soil/water analysis) generate actionable conservation knowledge.
- **Training networks** (farmers + healers) can sustain outcomes if anchored to state extension systems.

- Herbarium + digital databases are invaluable assets but require dedicated maintenance funding.
- Future projects should focus on wetland-based medicinal plant models, benefit-sharing frameworks, and industry-linked value chains for high-value plants.
- Scaling is possible through MoUs with state agencies, AYUSH, and industry partnerships.

Arth Ganga

To develop a framework model for implementation of Arth Ganga concept	Adopted a district-specific planning approach across five livelihood sectors—Agriculture, Fisheries, Biodiversity, Renewable Energy, and Tourism—linking them with ongoing schemes such as ODOP, PM-KUSUM, and Blue Revolution for operational synergy. 53 customized district plans outlining implementable, livelihood-linked interventions. Impact & Strategic Outcomes: • Established a livelihood–ecosystem balance framework for nearly 40 crore people in the Ganga basin. • Mainstreamed sustainable income generation models into river conservation. • Created a replicable policy integration model that can serve as a reference for future basin-linked livelihood programs (NGM-III and beyond). Sustainability & Way Forward: 1. Institutionalize Arth Ganga cells at district and state levels for continued handholding and convergence. 2. Limit unsustainable tourism in ecologically sensitive stretches through carrying-capacity norms. 3. Promote non-polluting, artisanal livelihoods with centralized marketing and branding support via NMCG. 4. Integrate periodic monitoring of livelihood–environment trade-offs in river health indices. Implementation Status: The consortium’s mandate ended post-submission. Several recommendations have been informally adopted by NMCG and basin states. To ensure continuity, Phase-II should focus on operationalization and impact tracking of Arth Ganga outcomes.
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Capacity building programme for leveraging of community Resource and Appropriate local resource Based on Technology to Adopt Arth Ganga Modal (HESCO)	The capacity building program aimed to upgrade livelihoods and promote water conservation across states including Uttarakhand, Bihar, and Jharkhand. Strategic Overview and Impact: The program drove high community involvement, achieving 70% women participation. It also exponentially strengthened local governance by growing collaborating Voluntary Organizations from an initial 4 to 25-30 members. The widespread adoption of activities like natural color formation demonstrates effective community engagement. Long-Term Sustainability: Sustainability relies on ensuring income generation through activities utilizing locally available resources and raw materials. Continuity is guaranteed by empowering local Voluntary Organizations and establishing Ganga Resource Centers as permanent training and entrepreneurship hubs.
Connecting River and people to Realize Arth Ganga (Jalaj)	The Jalaj project has resulted in substantial, measurable improvements in local livelihoods, as demonstrated by survey data from Bagalpur, Bihar. Survey-Driven Livelihood Changes • 89% of participants reported improved or more stable livelihoods after engaging with Jalaj project activities, indicating a strong shift toward income security and job diversification. • 91% are now applying new skills gained through the project in their day-to-day work or economic activities, illustrating effective skill transfer and sustainable impact. • 84% witnessed new sources of income emerge in their communities, such as eco-tourism, handicrafts, and organic agriculture, all promoted by Jalaj centers. • Additionally, 94% observed greater involvement with river conservation and awareness programs, underscoring the link between ecological protection and tangible livelihood benefits. Jalaj.xlsx These percentages directly demonstrate that the Jalaj project's training and community engagement initiatives have led to significant, evidence-based enhancements in livelihood outcomes, in line with the project's mission and national objectives. Case Example from visit: Uttarkashi, Uttarakhand The program currently involves 14 Self-Help Groups (SHGs), each consisting of 6–8 women actively supporting the initiative. The Jalaj program promotes livelihood opportunities around water bodies by integrating conservation with eco-tourism. Women earn a

	sustainable income by selling handwoven handicrafts, jute bags, fabrics, and local food items. Anand Ganga Homestay, located on the banks of the Ganges River in Uttarkashi is known for its serene and spiritual environment. It offers comfortable accommodation, organic vegetarian meals, yoga sessions, and local trekking experiences.
Exploring Policy Pathways for aligning Livelihood Restoration of Riverine Communities with Conserving Ganga	The project is designed to document and analyse policy pathways to align livelihood restoration of riverine communities with the conservation of the River Ganga basin. It emphasises policy research rather than only infrastructure or restoration works. It suggests a socio-economic dimension (livelihoods of the riparian populations) along with an ecological/hydrological dimension (river conservation)
Proposal to document Cultural Heritage along river Ganga from Gaumukh to Ganga Sagar (Bay of Bengal)	Approach Comprehensive documentation of living traditions, crafts, built heritage, rituals, and foodways across riverine districts. The project engaged local stakeholders and practitioners to ensure inclusivity and authenticity. Impact: • Significantly enhanced local awareness of cultural and natural heritage among citizens and administrators. • Strengthened community pride and participation in heritage-linked economic activities. • Created a knowledge base supporting future initiatives under the Arth Ganga framework for livelihood regeneration. Sustainability & Way Forward: • Recommend establishment of Ganga interpretation centers, spiritual circuits, and community-run museums. • Promote heritage-based tourism, crafts, and performing traditions as sustainable livelihood avenues. • Encourage institutional partnerships (design and craft institutes) for long-term engagement. • Integrate cultural mapping outcomes into urban riverfront and eco-tourism planning. Status: Despite COVID-19 delays, INTACH achieved core documentation goals. Outputs remain relevant for integration into future NGM-III cultural and economic initiatives.

Integrated Management Plan (IMP) for Udhwa Lake Bird Sanctuary, Sahibganj (Jharkhand)	The Integrated Management Plan (IMP) for Udhwa Lake Bird Sanctuary, prepared by Sálím Ali Centre for Ornithology and Natural History (SACON) under the Namami Gange initiative, aims to address conservation, hydrological restoration, and community livelihoods across six components. The National Mission for Clean Ganga (NMCG) sanctioned ₹2.7 crore for FY 2024–25, with an additional ₹14 crore expected next year. Key achievements include 100% wetland mapping (LiDAR, bathymetric, and LULC surveys), construction of seven check dams for erosion control, and dredging of 38.4 hectares to restore lake connectivity. Manual removal of 17.5 hectares of invasive water hyacinth is ongoing, with SHGs trained to utilize biomass for handicrafts. Infrastructure improvements include camera surveillance towers, thermal drones, and a refurbished Nature Interpretation Centre. Major challenges persist—no dedicated forest staff, unresolved land ownership and encroachments, and conflicts with local fishing communities. The sanctuary’s remoteness, poor road access, and low literacy levels (36%) hinder awareness and enforcement. Long-term sustainability depends on staff recruitment, land regularization, and community-inclusive livelihood programs to reduce dependence on sanctuary resources while ensuring biodiversity conservation.
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JAN GANGA

a) Rejuvenation of 05 Waterbodies, Façade Improvement and Art Project at Ayodhya

- Around 82% of residents were unaware of the Jan Ganga initiative before its start, suggesting the need for stronger communication and outreach.
- Only 13% of citizens participated in awareness or clean-up activities; however, two-thirds (66%) perceive improved public attitude toward the river and local waterbodies.
- Artistic interventions — including murals and cultural motifs — are the most recalled components (61%), highlighting the success of the visual awareness approach.
- Tourism and footfall have seen a clear upswing: 72% report a slight increase, and 18% note a significant rise in visitors.

- Community engagement has improved for more than half of respondents, but only one-third feel strong ownership, showing a gap between awareness and long-term citizen involvement.
- Stakeholder interactions revealed that the third project component related to IEC (Information, Education & Communication) was largely unknown to local stakeholders and beneficiaries, indicating limited visibility and weak integration of awareness campaigns at the ground level.
- Despite these gaps, overall satisfaction is high — 93% are very or somewhat satisfied, appreciating the enhanced aesthetics, revived ghats, and increased sense of civic pride.

Gyan Ganga

a) Project 1: Online Monitoring of STPs using PRAYAG Portal

Project Description / Current Status

The PRAYAG (Platform for Real-time Analysis of Yamuna and Ganga) Portal was launched by NMCG to enable centralized, real-time monitoring of all operational Sewage Treatment Plants (STPs) across the Ganga Basin. The system integrates data from SCADA, Online Continuous Effluent Monitoring Systems (OCEMS) and field inspection modules, allowing continuous tracking of inflows, outflows, and effluent quality parameters such as BOD, COD, and TSS. Currently, the portal monitors over 180 STPs under the Namami Gange Programme, providing a digital interface for project performance and compliance assessment. The platform also connects with Ganga Tarang, District Monitoring Dashboards, and Project Monitoring Tools, ensuring transparency and timely decision-making by NMCG and State Ganga Committee (SGC).

OECD–DAC Criteria Evaluation

Relevance

The project addresses the critical need for data-driven environmental governance and directly supports the Nirmal Ganga pillar. It fills an existing gap in STP operations, enhancing transparency and accountability across the Ganga Basin. The initiative aligns with national priorities under Digital India and Swachh Bharat Mission.

Effectiveness

Through PRAYAG, NMCG has improved real-time oversight of effluent discharge standards, enabling rapid responses to non-compliance. However, integration of smaller and legacy STPs, particularly in Tier-II cities, remains in progress.

Efficiency

Digitization minimizes manual inspection costs and enables optimal utilization of technical staff for troubleshooting and O&M supervision. The centralized dashboard reduces redundancy and improves reporting efficiency.

Impact

Enhanced monitoring has contributed to better compliance with discharge norms, supporting

improved water quality outcomes across multiple river stretches. The initiative has strengthened institutional coordination and accountability.

Sustainability

The project's sustainability depends on continued maintenance of the digital infrastructure, capacity building for state officials, and periodic technology upgrades. Once institutionalized at the ULB level, it can sustain long-term.

Coherence

PRAYAG aligns with NMCG's integrated monitoring strategy, complementing other systems like **Ganga Tarang**, **Bhuvan-Ganga**, and the **Water Quality Dashboard**. It provides a model for replication under other river basins.

b) Project 2: Collection and Computerization of Legacy Data at 'Ganga Knowledge Centre' (GKC)

Project Description / Current Status

The Ganga Knowledge Centre serves as a centralized digital repository for data generated under NMCG projects, including hydrological, ecological, and socio-economic datasets. The initiative focuses on digitizing legacy data from earlier phases of Ganga rejuvenation to support evidence-based planning, policy analysis, and research collaborations.

Currently, over 15,000 data files covering basin modeling, groundwater, and pollution mapping have been integrated, and data visualization tools are being developed to improve accessibility for state and academic users.

OECD-DAC Criteria Evaluation

Relevance

The GKC directly supports the *Gyan Ganga* thrust area by institutionalizing data governance and enabling informed decision-making. It fills a strategic gap in historical data accessibility, improving the quality of project planning and monitoring.

Effectiveness

The GKC has successfully digitized and consolidated legacy datasets, though wider access protocols and interoperability with PRAYAG and CPCB systems are still evolving.

Efficiency

The project optimizes data retrieval and minimizes duplication across implementing agencies. Time and costs associated with project appraisals and feasibility studies have been reduced due to centralized access.

Impact

By preserving and systematizing multi-sectoral data, the project enhances scientific and administrative capacity for basin-wide management. It contributes indirectly to improved policy formulation and resource allocation.

Sustainability

Institutional embedding of GKC within NMCG's operational framework ensures longevity, provided continuous data updates, user training, and technological maintenance are undertaken.

Coherence

The project complements other knowledge-based interventions under NMCG, such as Geo-Ganga (ISRO) and Smart Laboratory on Clean Rivers (IIT-BHU), fostering inter-institutional convergence.

Project 3: Data Generation for Aquifer Mapping with Focus on Paleochannels (NGRI Project)

Project Description / Current Status

Implemented by the National Geophysical Research Institute (NGRI), this project involves high-resolution aquifer mapping of the Ganga–Yamuna Doab (Kaushambi–Kanpur stretch) to identify paleo-channels and groundwater recharge zones. Using advanced electromagnetic and seismic techniques, the study delineated ancient channels and subsurface water-bearing formations critical for restoring base flows to the Ganga.

Preliminary findings revealed an ancient buried river channel extending nearly 200 km, with significant potential for natural recharge and aquifer rejuvenation, providing a scientific basis for groundwater management strategies. Recently, a ~200 km long buried river channel was discovered, with a storage potential of ~3,500-4,000 million cubic metres and over 150 Managed Aquifer Recharge (MAR) sites identified for Phase-I implementation.

OECD–DAC Criteria Evaluation

Relevance

The project is highly relevant under *Aviral Ganga*, addressing the need for ensuring environmental flows through groundwater-surface water connectivity. It also aligns with India's *National Water Policy* and *Atal Bhujal Yojana*.

Effectiveness

NGRI has completed mapping and generated actionable data for recharge interventions. Effectiveness can be enhanced through integration with state groundwater boards and local recharge programmes.

Efficiency

Targeted use of geophysical technologies ensured high-resolution results with optimized field time. However, replication at basin scale will require significant financial resources.

Impact

The project contributes to understanding the natural hydrological dynamics of the Ganga Basin

and informs sustainable water resource planning. It enhances scientific capabilities for climate-resilient groundwater management.

Sustainability

Sustainability is dependent on institutional linkages with state departments, continued funding for hydrogeological monitoring, and inclusion of mapped recharge zones into development planning.

Coherence

The study complements **Hydrogeological Modeling (IIT-BHU)** and **Geo-Ganga (ISRO)**, forming part of NMCG's integrated scientific approach toward rejuvenation. It integrates hydrology, geology and river-basin management in a coherent manner.

Project 4: River Water Quality Monitoring Systems

Project Description / Current Status

Under the aegis of National Mission for Clean Ganga (NMCG), a network of real-time and manual monitoring stations has been established along the main stem of the River Ganga and its tributaries to measure key water-quality parameters (e.g., BOD, DO, faecal coliform, pH). As of 2024, more than **112 monitoring stations** are operational across the Ganga Basin. In several priority stretches:

- The stretch from Kannauj to Varanasi in Uttar Pradesh improved from PRS III (BOD 10-20 mg/L) in 2015 to PRS V (BOD 3-6 mg/L) by 2022.
- In Varanasi, BOD levels declined from the 6-10 ppm range (in PRS IV classification) to 3-6 ppm (PRS V) by 2022; upstream faecal coliform counts dropped from ~1,300 MPN/100 mL in 2017 to ~490 MPN/100 mL in 2024, and downstream from ~23,000 MPN/100 mL to ~4,900 MPN/100 mL.
- These results reflect the strengthened monitoring capability under NGP-II, providing robust data for decision-making and compliance.

OECD-DAC Criteria Evaluation

Relevance

Continuous monitoring is fundamental for evaluating project outcomes and compliance. The system directly supports pollution abatement and river health assessment efforts. It aligns with national water-policy goals and international obligations (SDG 6, SDG 14, SDG 15).

Effectiveness

The number of stations and parameters monitored has significantly increased compared to NGP-I, providing a strong evidence base for policymaking.

Efficiency

Automation through online analyzers has enhanced data reliability and reduced laboratory processing time, optimizing both manpower and cost.

Impact

Consistent improvements in water quality demonstrate the tangible outcomes of NMCG interventions. The monitoring system has also built institutional confidence and data-driven governance. Quantitative evidence indicates tangible river-health gains: for example, BOD reductions to 3-6 mg/L in priority segments, and faecal-coliform reductions in Varanasi from ~23,000 to ~4,900 MPN/100 mL. These changes reflect improved ecological conditions and safer bathing zones.

Sustainability

To ensure sustainability, periodic calibration of sensors, timely data validation, and dedicated budget for O&M are essential. Integration with PRAYAG ensures long-term functionality.

Coherence

This initiative integrates seamlessly with other projects like PRAYAG, CETP/STP O&M, and Knowledge Centre, promoting cohesive and adaptive management of the Ganga Basin. It also aligns with the mandates of CPCB and state pollution-control boards, creating a unified information ecosystem.

Feedback from State Implementing Agencies

Insights from Interaction with Stakeholders

The discussion with the Project Director, UKSPMG, highlighted several systemic and operational areas crucial for strengthening the monitoring, evaluation, and sustainability framework of Namami Gange projects in States. The key insights are summarized below under thematic areas for inclusion in the evaluation findings.

1. Enhancing Data Collection, Automation, and Integration

The Project Director emphasized that effective monitoring requires transitioning to automated, interconnected, and real-time systems. The need for uniformity in reporting and seamless integration of data across departments was identified as a critical reform area.

- A **dedicated online portal** should be developed at the national level to automatically integrate data from multiple sources and enable the quick generation of analytical graphs and reports.
- Monthly and quarterly reports must adopt a **standardized format** across all states to avoid inconsistencies in data collection and interpretation.
- **Sensor-based monitoring systems** should be installed, particularly in high-resource-consuming establishments such as hotels and resorts, to measure water usage. The installation cost of these sensors should be included as part of the project cost and linked to loan authorities for compliance tracking.
- Interlinking **health, environment, and soil data** is essential for a holistic understanding of environmental and human health impacts.

2. Strengthening Execution and On-Ground Assessment

While compliance improvements are necessary, the Director highlighted that the major bottleneck lies in **execution quality and ground-level monitoring**.

- Monitoring must capture the **actual ground status of each project**, including fund flow, implementation progress, and completion levels.
- **Execution gaps** remain a significant challenge, often overshadowing compliance issues.
- A robust accountability mechanism should ensure that **repeated violators** face clear enforcement action, especially in cases where similar lapses recur across multiple project cycles.
- Developers and implementing agencies should be subject to **continuous compliance checks** through digital and sensor-based monitoring systems to ensure transparency and responsibility.

3. Sustainability and Resource Management

The Project Director underscored that the long-term **sustainability of assets** is often neglected in favor of rapid infrastructure creation. Sustainable design, water reuse, and ecological balance must become integral to project planning and monitoring.

- Project assessments should shift focus from mere asset creation to ensuring **durability and long-term functionality** of the infrastructure.
- High-water-consuming establishments such as resorts and hotels should be **incentivized to recycle wastewater** through metered monitoring, reducing pressure on freshwater resources.
- River management activities must respect the **natural flow dynamics**. Cement-based constructions on riverbeds alter sediment movement and self-cleaning mechanisms, necessitating more ecologically sensitive interventions.

4. Improving Planning and Policy Frameworks

Effective monitoring and sustainability must be supported by **strong policy linkages and planning mandates**.

- The **Central Government's funding support** should be made conditional upon specific **policy compliance** at the state level, such as adopting the 19-parameter framework.
- There is an urgent need to prepare **district-level master plans**, as unplanned growth often leads to design failure and infrastructure overloading. Examples include small plots being converted into high-rise buildings, causing severe strain on existing systems.
- Planning for **rivers, lakes, and aquifers** should be done in an integrated manner, recognizing their interdependence.
- Urban development authorities must create systems to **regulate construction and population density**, ensuring that the right to sell property does not compromise environmental and infrastructural stability.
- Greater attention and funding should be directed toward **smaller, ecologically sensitive regions**, such as mountain areas, rather than focusing solely on large-scale infrastructure projects.

5. Environmental and Public Health Linkages

The Project Director emphasized that monitoring systems should not only track physical progress but also integrate **environmental health and pollution indicators** to assess long-term community well-being.

- Environmental monitoring must capture **toxic pollutants** such as arsenic and lead from industrial discharges, which pose direct risks to human health.

- The Health Department should collaborate closely with environmental agencies to establish a **'district cancer cell'**, linking patient data to water and soil quality indicators.
- Existing systems for **testing residual chemicals in food grains** like wheat and rice are grossly inadequate, with only a few labs (e.g., in Noida and Hyderabad) available for such testing. Expansion of such facilities is essential for comprehensive public health monitoring.

6. River Basin and Ecological Protection

From an ecological perspective, the Director cautioned against interventions that interfere with the river's natural processes.

- **Construction on riverbeds** disrupts sedimentation and the river's natural cleansing capacity; future riverfront projects should prioritize maintaining natural flows.
- **Glacier protection** needs to be treated as an integral part of basin-level planning since glacier health directly impacts the water availability and long-term sustainability of the Ganga basin.
- Development interventions must strike a balance between **necessary infrastructure and ecological preservation**, with clearly defined environmental safeguards.

7. Governance and Systemic Reforms

The Director suggested institutional and systemic reforms to make monitoring an effective deterrent and planning tool rather than a procedural formality.

- A **centralized, real-time online dashboard** should be developed to integrate project progress, compliance status, and fund utilization metrics across departments.
- Enhanced **inter-departmental coordination** between Urban Development, Environment, Water Resources, and Health Departments can facilitate evidence-based decision-making.
- Strengthened monitoring systems should serve a **dual role** — ensuring compliance while also deterring lapses and incentivizing sustained performance.

State Name: Haryana

1. Project Description

Two key interventions were taken up in Panipat under the Namami Gange Programme:

1. **Sewerage and STPs (90 MLD):**
Four STPs (10 MLD, 20 MLD, 25 MLD, 35 MLD) were commissioned between 2019 and 2022 to treat municipal sewage and reduce pollution loads into the Yamuna.
2. **Panipat Drain Demonstration Project:**
A pilot bio-remediation/nature-based solution project for drain treatment aimed at reducing BOD, COD, and coliform levels before discharge into the Yamuna.

Both interventions fall under the *Nirmal Ganga* thrust area, with the STPs targeting infrastructure-based sewage control, and the drain pilot testing low-cost scalable alternatives.

Effectiveness & Efficiency

The intervention has created significant treatment capacity, yet utilisation remains below design load due to incomplete sewerage networks. Currently, treated effluent shows BOD levels between 25–30 mg/L, nearing compliance with CPCB norms (≤ 30 mg/L). While the infrastructure is functional, the intended water quality benefits are not fully realised because inflows remain restricted. Local consultations during the site visit revealed that citizens perceive some improvements in sanitation and odour control, but these impacts are still limited in scale.

The STPs were completed within planned timelines and budgets with NMCG support. However, O&M performance is a concern. Once transferred to urban local bodies (ULBs), the plants have



Sewerage and STP (90 MLD) at Panipat
(STP I - 10 MLD, STP II - 20 MLD, STP III - 25 MLD, STP IV - 35 MLD)



faced technical and financial constraints. Operators noted that budgetary allocations for O&M are insufficient, leading to reliance on ad-hoc arrangements. This undermines efficiency in terms of sustaining designed treatment standards.

Monitoring and Indicators

- Installed Capacity: 90 MLD (10 + 20 + 25 + 35 MLD).
- Utilisation: Below design due to incomplete sewer networks.
- Effluent Quality: BOD ~25–30 mg/L; COD <250 mg/L.
- Compliance Monitoring: Online monitoring integrated with the PRAYAG dashboard.
- Community Feedback: Household surveys planned to capture perceptions of sanitation and odour reduction.

Challenges

- Incomplete sewerage connectivity prevents plants from operating at full load.
- Weak O&M systems and limited budgets at ULB level.
- Dependence on external technical support for monitoring and maintenance.
- Community awareness of project benefits remains limited.

Way Forward

- HPCB: End-to-end sewer connectivity is critical to achieve full utilisation.
- PHED engineers: O&M budgets are inadequate for sustained operations.
- Community feedback: Improvement in sanitation and odour, but demand for more outreach.

Detailed Action Plan (from Site Visit)

1. Strategic Engagement at State Level

- Convene dedicated meetings with SPMG and Urban Development leadership.
- Align state priorities on fund utilisation and inter-agency coordination.

2. Optimising Utilisation of STPs

- Develop operational roadmaps to ensure full-capacity utilisation.
- Adopt performance monitoring frameworks for compliance and efficiency.

3. Capacity Building & Maintenance

- Regular training for STP operators and engineers.
- Develop maintenance protocols and asset management plans.

4. Sustained Monitoring & Knowledge Sharing

- Regular state- and city-level review meetings.
- Document and disseminate best practices from Panipat as replicable models.

Panipat Drain Demonstration Project:

A pilot project for in-situ treatment of Panipat Drain has been initiated under the National Mission for Clean Ganga (NMCG) as part of the Yamuna Action Plan. The project is being executed on a demonstration basis to reduce the high pollution load from Drain No. 1 and Drain No. 2, which carry untreated sewage and industrial effluents before joining the Yamuna River. It is expected to improve water quality, minimize foul odour, and serve as a model for scaling up in other polluted drains across the Ganga basin. This pilot project marks a significant step towards demonstrating cost-effective and sustainable alternatives for urban wastewater management, complementing conventional STPs under NMCG.

State Name: Bihar

1. Project Description

In Bihar, the selected projects under Namami Gange investments span both infrastructure-based sewage treatment and urban rejuvenation through ghat development.

- **Ganga River Front Development (Patna):**

Implemented in two phases, Phase I redeveloped 16 ghats at a cost of ₹336.73 crore, and Phase II added three more ghats. The project sought to improve accessibility, sanitation, and cultural vibrancy along Patna's historic riverfront.

- **Sewerage Infrastructure and STPs (Patna & Munger):**

- **Saidpur STP (60 MLD):** Commissioned in April 2021, with adjoining 55 km sewer network covering ~15,000 HHs.
- **Karmalichak STP (37 MLD):** Operational since 2020, with SBR technology.
- **Pahari STP:** New facility with 15-year O&M contract.
- **Munger STP (45 MLD):** Commissioned in August 2024, serving ~17,000 HHs with ~158 km of sewer lines.

These projects represent a combined strategy of wastewater management & solid waste management under Nirmal Ganga.

2. Through the lens of OECD–DAC Assessment

Relevance

- Bihar's ghats are culturally and religiously significant, making riverfront development a priority for heritage and tourism.
- STPs address Patna and Munger's chronic sewage inflows, directly aligned with *Nirmal Ganga*.

Effectiveness

- **Ghats:** Despite physical improvements, lack of bins and dysfunctional toilets undermines effectiveness. Waste often re-enters the river, reducing intended benefits.
- **STPs:** Plants at Saidpur and Karmalichak are functional, with effluent quality nearing NGT standards, but inflow remains below design capacity due to incomplete sewer connections.
- **Munger STP:** Operating at ~50% capacity due to limited inflows, with stormwater and soak pits complicating treatment.

Efficiency

- Infrastructure was delivered largely within time and cost. O&M has been contracted to
- private agencies (Toshiba, Voltas, VA Tech, EMS Ltd.), but challenges persist with stormwater inflows, inflow variability, and sludge disposal.

Impact

- **Ghats:** Improved aesthetics and access, but citizen dissatisfaction persists due to locked toilets and weak waste systems.
- **STPs:** Significant pollution load reduction potential (over 140 MLD capacity in Patna and Munger combined). Citizen consultations indicate better sanitation but remain cautious due to continued discharge into drains (nallas).

Sustainability

- **STPs:** Long-term viability depends on sewer connectivity, stormwater management, and reuse of treated water (currently limited).
- **Ghats:** Sustainability hindered by governance gaps, delayed resettlement of families, and lack of clear O&M roles.

3. Monitoring and Indicators

- **Riverfront (Patna):**
 - Dustbin provision and cleanliness levels.
 - Toilet functionality and usage.
 - Encroachment/resettlement status.
- **STPs (Saidpur, Karmalichak, Pahari, Munger):**
 - Installed vs. utilised capacity (all operating below full load).
 - Effluent quality: BOD ~25–30 mg/L; CPCB/NGT standards under review.
 - SCADA and OCEMS monitoring in place; quarterly 3rd-party tests.
 - Sludge management (currently dumped, not reused).

4. Key Challenges

- **Ghats:**
 - Insufficient dustbins and waste collection systems.
 - Locked or non-functional toilets.
 - Lack of staff for maintenance
 - Delays in resettling ghat dwellers.
- **STPs:**
 - Underutilisation due to incomplete sewer networks.
 - Stormwater intrusion altering inflow parameters.
 - Treated water discharged into contaminated drains, reducing net benefit.
 - Low reus for treated water and sludge.

5. Insights from Stakeholders

- SPMG & BUIDCO: Highlighted monitoring via OCEMS, geotagging, and monthly reports; admitted penalties imposed on some STPs for non-compliance.
- Urban Development Dept: Future focus on reuse of treated water and tapping remaining lines.
- Community Feedback: Citizens welcomed visible improvements at ghats but expressed dissatisfaction with toilets and waste handling.

6. Way Forward

1. Complete sewer network connections to maximise STP utilisation.
2. Develop robust reuse strategies for treated water (irrigation, industrial use).
3. Integrate informal waste workers into municipal systems at ghats.
4. Unlock and operationalise toilet facilities through clear O&M contracts.
5. Institutionalise IEC campaigns to reduce littering and promote civic responsibility.
6. Strengthen sludge management with co-processing or composting options.

7. Takeaways for NGM-II

- Infrastructure is necessary but insufficient: sewer connectivity and governance reforms are critical.
- Riverfront projects must link O&M with citizen use: locked toilets and weak waste systems undermine investments.
- Reuse of treated water remains an untapped opportunity for Patna and Munger.

- Integration of informal systems (waste pickers, community awareness) is essential for sustainability.
- Bihar's experience underlines the need for strong convergence between infrastructure, institutions, and community engagement.

State Name: West Bengal

Project Assessment: West Bengal – STPs and I&D Projects



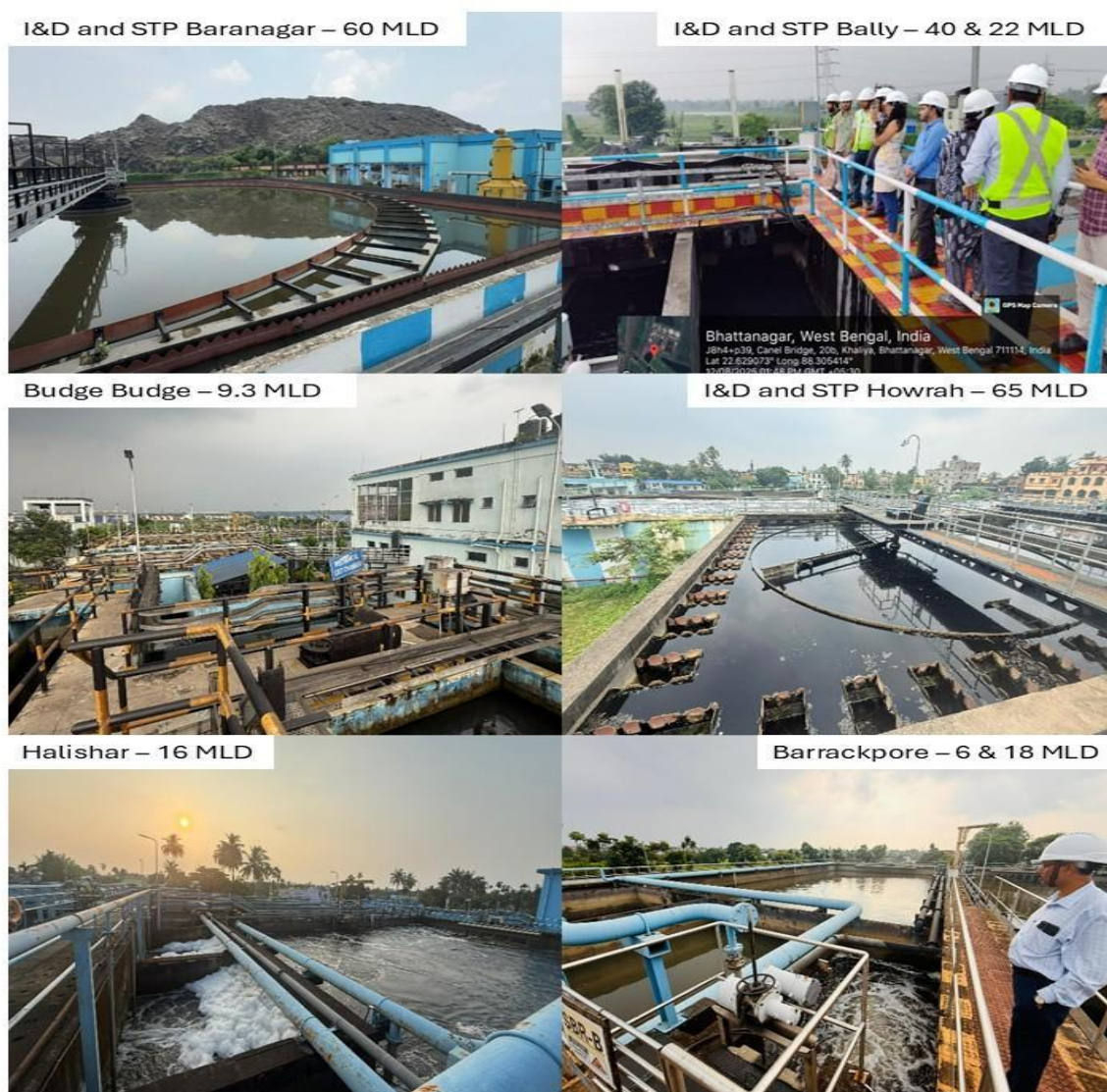
1. Project Description

Between 11–13 August 2025, the evaluation team visited six STP/I&D projects in West Bengal and conducted KIIs with the West Bengal State Programme Management Group (WBSPMG), KMDA, and operators. The projects included:

- Barrackpore STPs (24 MLD: 6 + 18 MLD)
- Halishar STP (16 MLD)
- Budge-Budge STP (9.3 MLD)
- Howrah STP (65 MLD)
- Bally STPs (40 MLD & 22 MLD)
- Kamarhati & Baranagar STP (60 MLD)

Together, these projects account for ~236 MLD treatment capacity in the Kolkata Metropolitan Region along the Hooghly stretch of the Ganga.

2. OECD–DAC Assessment



Relevance

These sites are critical urban hotspots discharging into the Hooghly. The projects directly align with *Nirmal Ganga*, aiming to reduce untreated sewage inflows.

Effectiveness

- All STPs visited were technically functional and maintained, but capacity utilisation is uneven. Barrackpore runs at ~50% of design load due to incomplete household sewer connections (~60% achieved).
- Treated water is consistently discharged into rivers or canals, with no large-scale reuse frameworks. A small pilot at Barrackpore uses treated water in fishery ponds, but this remains an exception.
- Star ratings under the Jal Hi Amrit scheme were impacted, with Barrackpore and Halishar plants scoring only 2–3 stars due to non-reuse of treated water and documentation gaps.

Efficiency

- Construction timelines were largely met, and O&M contracts (10–15 years) are in place.
- Monitoring systems (SCADA, CMMS, OCEMS) are partially operational; OCEMS is still pending at Halishar and Bally.
- Efficiency in sludge management remains poor: at Bally and Howrah, sludge concentration was found to be only 0.5% (vs. the expected 3%), making biogas recovery unviable.

Impact

- The plants have reduced direct sewage discharge into the Hooghly, with effluent quality meeting prescribed standards.
- Community-level impacts (sanitation and odour reduction) were acknowledged during discussions, though low awareness of plant benefits persists.
- Reuse potential remains untapped, undermining wider economic and environmental co-benefits.

Sustainability

- Institutional roles are fragmented: KMDA manages O&M, while ULBs are minimally involved beyond household connections. This weakens accountability and long-term sustainability.
- Lack of structured reuse agreements (for agriculture, industries, or municipal use) undermines financial sustainability.
- Sludge disposal is ad-hoc, with minimal use as fertiliser at Barrackpore, while other plants hand over sludge to municipalities without valorisation.

3. Monitoring and Indicators

- **Functionality:** All six STPs operational; capacity utilisation varies.

- **Monitoring:** SCADA and CMMS active in most plants; OCEMS pending at some sites. External labs (NV Lab) conduct monthly testing; SPCB/CPCB inspect quarterly.
- **Institutional Role:** KMDA leads oversight; ULBs' involvement in O&M is negligible.
- **Community Linkages:** HH connections remain incomplete; reuse awareness is limited.

4. Key Challenges

- **Underutilisation:** Barrackpore at ~50% capacity due to slow household connections.
- **Reuse Gap:** Treated water diverted into canals/rivers; no industrial/agricultural reuse agreements.
- **Sludge Management:** Very low sludge concentration (0.5%) prevents energy recovery; disposal largely unproductive.
- **Institutional Fragmentation:** Weak convergence between KMDA, ULBs, and WBSPMG.

5. Insights from Stakeholders

- **KMDA officials:** Plants technically functional, but full utilisation depends on ULB enforcement of sewer connections.
- **ULBs:** Reported minimal involvement, primarily responsible for house connections and grievance handling.
- **Operators:** Highlighted sludge management as a major operational bottleneck, with no pathway for biogas recovery.
- **SPMG:** Cited strong IEC activities despite limited manpower, but acknowledged reuse and documentation challenges.
- **Community:** Limited awareness of the plants' benefits, though some improvement in sanitation perception was noted.

6. Way Forward

1. Finalise and enforce reuse frameworks for treated water (agriculture, industry, landscaping, fisheries).
2. Standardise sludge treatment and valorisation pathways to overcome inefficiencies.
3. Accelerate household sewer connections, especially at Barrackpore.
4. Strengthen ULB involvement in O&M, moving beyond household connections to monitoring and oversight.
5. Streamline fund release mechanisms and improve DPR/documentation processes.
6. Expand IEC activities linking treated water reuse and sludge utilisation with community and industry benefits.

7. Takeaways for NGM-II

- West Bengal has achieved strong infrastructure roll-out, but capacity utilisation, sludge valorisation, and reuse gaps significantly limit impact.
- Institutional convergence (KMDA-ULBs-SPMG) is essential for long-term sustainability.
- A circular economy approach—reuse of treated water and productive sludge management—should become a priority in NGM-II.
- Enhanced community engagement and ULB ownership will be critical for scaling outcomes across the basin.

State Name: Uttar Pradesh



State Name: Jharkhand



State Name: Uttarakhand



List of Projects selected for evaluation

The below table gives the selected number list of projects for evaluation.

S no.	Sector	Projects	State	Status as per MPR	Scope of Appraisal
1	Sewage Treatment (Sewage Infrastructure	Sewerage Works in Sewerage District 1, Kanpur	Uttar Pradesh	Completed (September 2021) O&M - 5 Years	Assessment of O&M Phase
2	, Bioremediation & Innovative Projects on Sewerage Treatment)	1. I &D and STP works at Pankha (30 MLD) and Jajmau (130 MLD) at Kanpur 2. I&D and STP works at Shuklagunj (5 MLD) 3. I&D and STP works at Unnao (15 MLD)	Uttar Pradesh	1. Completed (July 2023) O&M - 15 Years 2. Under Progress 3. Completed (January 2024) O&M - 15 Years	1. Pankha - Assessment of O&M Phase Jajmau (130 MLD) - COD yet to be declared - Assessment of Project Construction Activities 2. Shuklagunj (5 MLD) - Assessment of Project Construction Activities 3. Unnao (15 MLD) - COD yet to be declared - Assessment of Project O&M Phase
3		I&D and STP works at Farrukhabad 47.7 MLD [Hathikhana (17.7 MLD) & Bharoghat (30 MLD)] at Fategarh	Uttar Pradesh	Completed (Nov 2024) O&M - 15 Years	Assessment of O&M Phase
4		I&D and STP works of 42 MLD (Naini), 16 MLD Jhusi and 14 MLD Phahphamau at Prayagraj	Uttar Pradesh	Completed (June 2023) O&M - 15 Years	Assessment of O&M Phase
5		I&D and STP works of 50 MLD at Assi-BHU Sewerage at District Ramana, Varanasi	Uttar Pradesh	Completed (June 2021) O&M - 15 Years	Assessment of O&M Phase

6	Saidpur Sewer Network at Patna	Bihar	Completed (June 2022) O&M - 5 Years	Assessment of O&M Phase
7	Saidpur STP (60 MLD) and adjoining Network at Patna	Bihar	Completed (February 2021) O&M - 5 Years	Assessment of O&M Phase
8	Sewerage system with Sewer network at Karmalichak, Patna	Bihar	Completed (Feb 2023) O&M - 10 Years	Assessment of O&M Phase
9	Sewerage scheme and STP (3.5 MLD) at Rajmahal	Jharkhand	Completed (June 2022) O&M - 10 Years	Assessment of O&M Phase
10	Sewerage system with Sewer network and [STP - 24 MLD (STP I - 6MLD and STP II - 18 MLD)] at Barrackpore	West Bengal	Completed (June 2022) O&M - 5Years	Assessment of O&M Phase
11	Sewerage scheme and STP (16 MLD) at Halishar	West Bengal	Completed (June 2022) O&M - 5Years	Assessment of O&M Phase
12	Sewerage System and STP (9.3 MLD) at Budge - Budge	West Bengal	Completed (March 2022) O&M - 5Years	Assessment of O&M Phase
13	Sewerage and STP (90 MLD) at Panipat (STP I - 10 MLD, STP II - 20 MLD, STP III - 25 MLD, STP IV - 35 MLD)	Haryana	Completed (January 2018)	Assessment of O&M (under ULB)
14	Phase-I STP (45 MLD), Phase-II STP (114 MLD) & Phase-III STP (45 MLD) at Kondli	Delhi	Completed (July 2023)	Assessment of O&M (under ULB)
15	Phase-I STP (182 MLD) at Rithala	Delhi	Completed (February 2024)	Assessment of O&M (under ULB)
16	Sewerage scheme for 3.75 MLD STP at Poanta Sahib [Zone II (1.72 MLD) & Zone III (1.72 MLD)]	Himachal Pradesh	Completed (Dec 2021) O&M - 15Years	Assessment of O&M Phase
17	Survey and Investigation of Shahdara drain under the	New Delhi	Completed	Assessment of project

		project for rejuvenation & conservation of the drain with nature-based treatment- Soil Bio-Technology .			components and completed activities
36		Executing pilot/demonstration project - Treatment of Panipat Drain	Haryana	Completed	Assessment of effectiveness of Bioremediation
37		Treatment of Tuglakabad Drain	Delhi	Completed	Assessment of effectiveness of Bioremediation
18	Solid Waste Management	Ganga River Front Development - Patna	Bihar	i. Patna- <i>Completed</i> : Ghats-16, Crematoria - 1 <i>Ongoing</i> : 3 Ghats	Assessment of project components and completed / Ongoing activities
19		Ganga River Front Development - Devprayag-Rudraprayag	Uttarakhand	ii. Devprayag-Rudraprayag <i>Completed</i> - Ghats-7, Crematoria - 4	Assessment of project components and completed activities
20		Ganga River Front Development - Badrinath	Uttarakhand	iii. Badrinath- <i>Ongoing</i> - 1 Ghats	Assessment of project components and Ongoing activities
21		Ganga River Front Development - Gangotri	Uttarakhand	iv. Gangotri <i>Completed</i> - Ghats-1, Crematoria - 1	Assessment of project components and completed activities
22		River Surface Cleaning - Varanasi	Uttar Pradesh	Completed	Assessment of project components and completed activities
23		Procurement of Trash Skimmer/Drain Master machine for River Surface Cleaning - Varanasi.	Uttar Pradesh	Under Tendering	Assessment of project need and components

24		Ganga Gram - Construction of toilets across Gram Panchayats near Ganga River (States-Uttarakhand, Uttar Pradesh, Bihar, Jharkhand and West Bengal)-through Ministry of Drinking Water & Sanitation - 5 Villages to be covered namely - Sirashu (Uttarakhand), Belwan (Uttar Pradesh), Ankichak (Bihar), Udhwa (Jharkhand), Hooghly (West Bengal)	5 Ganga Basin States	Completed	Assessment of project components developed and completed activities
25		Sanitation Infrastructure for Maha Kumbh Mela 2025 at Prayagraj	Uttar Pradesh	Under Progress	Assessment of project components and completed activities
26	Industrial Effluent Management	20 MLD CETP for Tannery cluster at Jajmau, Kanpur	Uttar Pradesh	Completed (at stabilization stage)	Assessment of completed construction activities
27		6.25 MLD CETP for Textile Printing Units at Mathura	Uttar Pradesh	Completed	Assessment of O&M activities
28	Surveillance, R&D	Strengthening of Laboratories of UKPCB, UPPCB (Phase - I).	Uttarakhand, Uttar Pradesh	Completed	Assessment of the outcome of completed activities
29		Pollution inventorization, Assessment and Surveillance on River Ganga Basin - PIAS [2023 - 2026] (Phase II)	5 Ganga Basin States	Under Progress	Assessment of ongoing monitoring activities & its effectiveness
30	Biodiversity & Afforestation	Conserving and sustainably managing three wetlands: i. Kalewala Jheel (Muzaffarnagar District), ii. Numaiya Dahi Jheel Kheduva Taal (Prayagraj District) iii. Dahtal Reoti wetland (Ballia District)	Uttar Pradesh	Under Progress	Assessment of project components and ongoing activities

31		Integrated Management Plan (IMP) for Udhwa Lake Bird Sanctuary, Sahibganj	Jharkhand	Phase I- Completed Phase II- Under Progress	Assessment of project components and completed (Ph- I) / ongoing (Ph-II) activities
32		Rejuvenation of River Kali East by development of in-situ Constructed Wetland System at eight locations in following District i.Muzaffaranagar, ii.Meerut, iii.Hapur, iv.Bulandshahar (UP)	Uttar Pradesh	Under Progress	Assessment of project components and ongoing activities
33		Biodiversity Conservation and Ganga Rejuvenation, Part-1	5 Ganga Basin States	Completed	Assessment of project components and completed activities
34		Establishment of Four Ganga Biodiversity Parks in following districts of U.P: i.Mirzapur ii.Bulandshahar, iii.Hapur and iv.Badaun (one park for each District)	Uttar Pradesh	Under Progress	Assessment of project components and ongoing activities
38		Afforestation programme in Uttar Pradesh	Uttar Pradesh	Completed	Assessment of plantation taken up by NMCG in U.P
35	R&D (Ecological)	Scientific exploration of floral diversity near the Ganga river banks for ethnobotanical purposes	5 Ganga Basin States	Completed	Assessment of project components developed and completed activities
39	Arth ganga (livelihood)	To develop a framework model for implementation of Arth Ganga concept	5 Ganga Basin States	Completed	Assessment of project components and completed activities
40		Capacity building programme for leveraging of community Resource and Appropriate local resource Based on	5 Ganga Basin States	Under Progress	Assessment of project components and ongoing activities

		Technology to Adopt Arth Ganga Modal (HESCO)			
41		Connecting River and people to Realize Arth Ganga (Jalaj)	5 Ganga Basin States	Under Progress	Assessment of project components and ongoing activities
42	Jan Ganga	Involvement of Youth in Namami Gange programme 26 Districts	5 Ganga Basin States	Completed	Assessment of project components and completed activities
43		IEC activities during Maha Kumbh 2025 (Jan Ganga)	Uttar Pradesh	Under Progress	Assessment of project components and ongoing activities
44	Gyan Ganga	Data generation for aquifer mapping with focus on paleochannels in parts of Ganga, Yamuna and Doab in Kaushambi- Kanpur stretch	Uttar Pradesh	Completed	Assessment of project components and completed activities
45		Collection and Computerization of legacy data at 'Ganga Knowledge Centre'	Multiple States	Under Progress	Assessment of project components
46		3 proposals under the Smart Laboratory on Clean Rivers (SLCR), Varanasi : i.Decision Support System for Water Resource Management ii.Characterization of Emerging pollutants & Fingerprint analysis iii.Hydrogeological Model of Varuna Basin for Recharge Sites	Uttar Pradesh	Under Progress	Assessment of project components and ongoing activities
47		Online monitoring of STPs using PRAYAG portal	Multiple States	Under Progress	Assessment of monitoring framework
48	4 high-value STP projects (> ₹250 Cr)	Sewer Networks, SPS and STP (30 MLD) at Munger	Bihar	Completed (June, 2024) O&M - 15 Years	Project operation and maintenance

49		1. Bally STPs (STP I: 40 MLD, STP II: 22 MLD) 2. Kamarhati & Baranagar STP (60 MLD) 3. Howrah STP (65 MLD)	Kolkata	Completed (Feb 2024) O&M - 15 Years	Project operation and maintenance
50		Construction of 564 MLD STP at Okhla	New Delhi	Completed (March 2025)	Assessment of O&M (under ULB)
51		I&D and STP works at Haridwar (Jagjeetpur - 68 MLD, Sarai - 14 MLD)	Uttarakhand	Completed (February 2020) O&M - 15 Years	Project operation and maintenance
52	2 Gyan Ganga GKC & Urban Planning Projects	Preparation of Urban River Management Plans (URMPs) and its implementation in the member cities of the RCA	5 Ganga Basin States	Under Progress	Assessment of project components
53	2 biodiversity corridor conservation pilots (e.g., dolphin/fish habitats)	Advancing Rescue System for the Protection of Stranded Ganges River Dolphins, NGM-II (Platinista Gangetica) A	Uttar Pradesh	Under Progress	
54		Fish stock enhancement including Hilsa and livelihood improvement for sustainable fisheries and conservation in river Ganga (Phase-II)	5 Ganga Basin States	Completed	Assessment of project components and completed activities
55	1 Composite Ecological Task Force	Raising of one composite ecological task force (CETF) Battalion Territorial Army for NMCG (Phase-I)	Uttar Pradesh	Completed	Assessment of effectiveness of CETF in rejuvenation of River Ganga for its tributaries
56	2 R&D Projects under Aviral Ganga	Conserving and Sustainably Managing Gangetic Floodplain of Uttar Pradesh - Integrated Management Plan (Phase-I)	Uttar Pradesh	Completed	Assessment of project components and completed activities
57	2 livelihood-linked projects under Arth Ganga	Exploring Policy Pathways for aligning Livelihood Restoration of Riverine Communities with Conserving Ganga	5 Ganga Basin States	Project Closed (April 25)	Assessment of project components and completed activities

58		Proposal to document Cultural Heritage along river Ganga from Gaumukh to Ganga Sagar (Bay of Bengal)	5 Ganga Basin States	Completed	Assessment of project components and completed activities
59	4 large-scale IEC interventions in Jan Ganga	Rejuvenation of 05 Waterbodies, Façade Improvement and Art Project at Ayodhya	Uttar Pradesh	Completed	Assessment of project components and completed activities
60		Public Relations and Public Outreach of Yamuna Action Plan III	Delhi	Under Progress	Assessment of project components and ongoing activities

Interface Between NGP's LFA Outputs with the defined Pillars, Thrust Areas and Action Items

Thematic Block (NGM-II)	Thrust Areas	Detailed Action Areas	Mapped Pillars	Linked Logical Framework Outputs
1. Nirmal Ganga (Pollution Abatement)	a. Wastewater Management	- Construction of new STPs (171 nos.)- Rehabilitation of STPs- Decentralised STPs in smaller towns- Laying of sewer networks- Promotion of FSTPs and co-treatment facilities	Pillar 1: Clean River Pillar 2: Infrastructure Pillar 3: ULB Services	Output 2: Clean River
	b. Industrial Pollution	- Common Effluent Treatment Plants (CETPs)- GPI regulation and compliance enforcement- Monitoring of industrial discharges- Zero liquid discharge initiatives	Pillar 1 Pillar 4: Regulation	Output 2 Clean River
	c. Solid Waste Management	- Integrated SWM systems- Waste segregation & processing at source- Linkages with SBM 2.0-	Pillar 3: ULB Services	Output 2 Clean River

		Plastic waste collection and recycling		
	d. Rural Sanitation (Ganga Grams)	- FSTPs in Ganga villages- Organic/natural farming practices- Decentralised waste systems- Panchayat-led management	Pillar 5: Livelihood & Rural Engagement	Output 8: Social Inclusion
2. Aviral Ganga (Ecological Flow)	a. Environmental Flow Maintenance	- Enforcing e-flow norms at barrages/dams- Modelling of environmental flows- Regulation of upstream abstractions	Pillar 4: Aviralta	Output 1: Wholesome River
	b. Water Use Efficiency & Reuse	- Reuse of treated water for irrigation/industry- Incentives for reuse in ULBs- Water audit of high-consumption users	Pillar 4Pillar 6: Resource Efficiency	Output 1 Wholesome River
3. Arth Ganga (River-linked Livelihoods)	a. Sustainable Livelihoods	- River-based tourism & homestays- Herbal plantation clusters- Support to SHGs and FPOs	Pillar 5: Livelihood Economy	Output 8: Livelihood Equity
	b. Circular Economy	- Sludge-to-compost or bricks- Bio-CNG production from STP sludge- Plastic waste to fuel models	Pillar 6: Innovation Economy	Output 8: Livelihood Equity
4. Jan Ganga (Community Participation)	a. Public Outreach Campaigns	- Ganga Utsav, Ganga Quest- IEC in schools/colleges- Use of digital media for outreach	Pillar 7: Participation Pillar 8: Behaviour Change	Output 7: Awareness & Behaviour
	b. Community Volunteers	- Ganga Mitras and Praharis- Public grievance and feedback systems- Stakeholder involvement in ghats, crematoria	Pillar 8	Output 7 Awareness & Behaviour
5. Gyan Ganga (Knowledge & Innovation)	a. Applied Research & Pilots	- Ganga Innovation Hub (G-Hub)- R&D in decentralised STPs, sludge reuse- Pilot testing of low-cost technologies	Pillar 6: Innovation Pillar 7: Knowledge Systems	Output 5: Research, Learning, Monitoring

	b. Digital River Monitoring	- RTWQMS installations (74 new)- Real-time STP dashboards- GIS and hydrological modelling	Pillars 4 & 6	Output 5 Research, Learning, Monitoring
6. Riverfront Management	Urban River Integration	- Construction of ghats (16), crematoria (8)- Riverfront landscaping- Eco-friendly lighting and signage- Tourist amenity zones	Pillar 2: Infrastructure Pillar 3: Urban Planning	Output 3: Riverfront Development
7. Biodiversity & Ecosystems	a. Species Conservation	- Dolphin/fish conservation plans- Breeding zone protection- Biodiversity corridor mapping	Pillar 4: Ecology Pillar 6: Resilience	Output 6: Aquatic Life Conservation
	b. Afforestation & Wetlands	- Plantation target: 24,000 hectares- Riparian buffer zone restoration- Wetland rejuvenation & linking with Ramsar sites	Pillar 6	Output 6
8. Institutional Strengthening	a. Capacity Building	- Training for SPMGs, ULB engineers, contractors- SOPs for O&M- Toolkits for DPR prep and audits	Cross-cutting	Output 4: Institutional Development
	b. Governance & MIS	- MIS & dashboard deployment- ULB service performance tracking- Convergence with Jal Jeevan, SBM, AMRUT	Cross-cutting	Output 4



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