National River Conservation Directorate
Ministry of Jal Shakti,
Department of Water Resources,
River Development & Ganga Rejuvenation
Government of India

SOCIAL ENVIRONMENT OF GODAVARI RIVER BASIN

October 2025

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National River Conservation Directorate (NRCD)

The National River Conservation Directorate, functioning under the Department of Water Resources, River Development & Ganga Rejuvenation, and Ministry of Jal Shakti providing financial assistance to the State Government for conservation of rivers under the Centrally Sponsored Schemes of 'National River Conservation Plan (NRCP)'. National River Conservation Plan to the State Governments/ local bodies to set up infrastructure for pollution abatement of rivers in identified polluted river stretches based on proposals received from the State Governments/ local bodies.

www.nrcd.nic.in

Centres for Godavari River Basin Management Studies (cGodavari)

The Centres for Godavari River Basin Management Studies (cGodavari) is a Brain Trust dedicated to River Science and River Basin Management. Established in 2024 by CSIR-NEERI and IIT Hyderabad, under the supervision of cGanga at IIT Kanpur, the centre serves as a knowledge wing of the National River Conservation Directorate (NRCD). cGodavari is committed to restoring and conserving the Godavari River and its resources through the collation of information and knowledge, research and development, planning, monitoring, education, advocacy, and stakeholder engagement.

www.cGodavari.org

Centres for Ganga River Basin Management and Studies (cGanga)

cGanga is a think tank formed under the aegis of NMCG, and one of its stated objectives is to make India a world leader in river and water science. The Centre is headquartered at IIT Kanpur and has representation from most leading science and technological institutes of the country. cGanga's mandate is to serve as a think-tank in implementation and dynamic evolution of Ganga River Basin Management Plan (GRBMP) prepared by the Consortium of 7 IITs. In addition to this, it is also responsible for introducing new technologies, innovations, and solutions into India.

www.cganga.org

Acknowledgment

This report is a comprehensive outcome of the project jointly executed by CSIR-NEERI (Lead Institute) and IIT Hyderabad (Fellow Institute) under the supervision of cGanga at IIT Kanpur. It is submitted to the National River Conservation Directorate (NRCD) in 2024. We gratefully acknowledge the individuals who provided information and photographs for this report.

Disclaimer

This report is a preliminary version prepared as part of the ongoing Condition Assessment and Management Plan (CAMP) project. The analyses, interpretations and data presented in the report are subject to further validation and revision. Certain datasets or assessments may contain provisional or incomplete information, which will be updated and refined in the final version of the report after comprehensive review and verification.

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Preface

In an era of unprecedented environmental change, understanding our rivers and their ecosystems has never been more critical. This report aims to provide a comprehensive overview of our rivers, highlighting their importance, current health, and the challenges they face. As we explore the various facets of river systems, we aim to equip readers with the knowledge necessary to appreciate and protect these vital waterways.

Throughout the following pages, you will find detailed insights into infrastructure related to water resource management, along with development plans focused on urban areas, sanitation systems, and riverfront management, all of which directly impact the health, safety, and resilience of communities across the basin.

This document is not merely a technical assessment, it is a call to action. We urge decision-makers, planners, community leaders, and citizens alike to recognize the vital role of infrastructure in shaping a more equitable and resilient future. Whether you are involved in policy, engineering, environmental planning, or community development, this report is designed to support informed decision-making and collaborative action across sectors.

We extend our heartfelt gratitude to the many stakeholders, experts, and institutions who have contributed their insights, data to this report. Their invaluable input has enriched this report, making it a beacon of knowledge and a practical resource for all who read it. It is our hope that this report will act as a catalyst for integrated and inclusive development, fostering long-term resilience, public health, and environmental sustainability for both present and future generations.

As you delve into the following sections, we invite you to consider both the challenges and the opportunities presented by the evolving needs of the basin. Together, through informed planning and collective responsibility, we can create a future where infrastructure serves not only human needs but also the long-term health of our environment.

Centre for the Godavari River Basin
Management and Studies (cGodavari)
CSIR-NEERI, IIT Hyderabad

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1. Introduction

The Godavari Basin in India is a diverse region with varying population densities and socio-economic characteristics. The basin is spread over 0.32 million square kilometres, consisting roughly of 72-82 million as per the Indian Census 2011. The Godavari River Basin, one of India's largest river basins, plays a significant role in supporting irrigation facilities for agriculture, domestic water needs, and economic activities. However, rapid environmental changes, increasing water demands for multiple purposes, and climate variability across the region straddling the river has significantly impacted it and its dependent communities. The Godavari River, often referred to as "Dakshin Kashi" or the "Ganges of the South," holds deep cultural and spiritual connections with human society. Here, people are connected to the river Godavari to purify their past deeds and perform a range of rituals from death ritual purification to pilgrimage observances. Along its course, the sacred sites like Nashik, Basara, Bhadrachalam, Paithan, Kaleshwaram (Confluence of Godavari, Pranhita, and invisibly the Sarswati River) depict how mythological associations contribute to the sacrality of riverfronts. As Rana P.B. Singh (2020) explains, in Hindu cosmology, water is viewed as a purifier and a site of divine presence, and sacred places (tirthas and Kundas): their unique natural landscape and beauty, the unusual physical features of the body of water, and the watery place's association with some great sage or site-based mythology.

This report on the Social Environment, focuses on three key areas including water-related institutions that work on conservation, watershed management, groundwater, and other aspects of riverine ecologies; interest groups that work to support water rights and conservation amongst local communities; and public awareness campaigns that involve government outreach campaigns regarding water conservation, as well citizen and NGO-led campaigns to clean and preserve water commons. Each of the chapters brings together key stakeholders invested in helping conserve and sustain river ecologies. While each chapter provides an overview of the institutions involved, there is also a specific focus on institutions, public awareness and interest groups working on the river Godavari Basin.

2. Water-related Institutions

India has several layers of water-related institutions throughout its federal system. At the apex is the Ministry of Jal Shakti, Government of India that collaborates with and manages multiple central and state institutions that work towards water conservation, access, water resources management. The Jal Shakti Ministry also known as the Department of Water Resources, River Development and Ganga Rejuvenation (DoWR, RD and GR) works at the policy level in supporting implementation of water conservation measures centrally and between the various states and regions of India. Amongst its many responsibilities is the adjudication and management of inter-state river water distribution and disputes linked to water sharing. The Ministry lists its major functions as the following: *"*Overall planning, policy formulation, coordination, and guidance in the water resources sector; Technical guidance, scrutiny, clearance and monitoring of the irrigation, flood control and multi-purpose projects (major/medium); General infrastructural, technical and research support for development; Providing special Central Financial Assistance for specific projects and assistance in obtaining External Finance from World Bank and other agencies; Overall policy formulation, planning and guidance in respect of Minor Irrigation and Command Area Development, administration and monitoring of the Centrally Sponsored Schemes and promotion of Participatory Irrigation Management; Overall planning for the development of Ground Water Resources, establishment of Utilizable resources and formulation of policies for exploitation, overseeing of and support to State level activities in ground water development; Formulation of national water development perspective and the determination of the water balance of different basins/sub-basins for consideration of possibilities of inter-basin transfers; Coordination, mediation, and facilitation in regard to the resolution of differences or disputes relating to Inter-State Rivers and in some instances overseeing of implementation of inter-state projects; Operation of the central network for flood forecasting and warning on inter-state rivers, provision of central assistance for some State Schemes in special cases and preparation of flood control master plans for rivers Ganga and Brahmaputra; Talks and negotiations with neighbouring countries, with regard to river waters, water resources development projects and the operation of the Indus Water Treaty. Ensure effective abatement of pollution and rejuvenation of the river Ganga by adopting a river basin approach to promote inter-sectoral co-ordination for comprehensive planning and management"[1]

Going forward we list various water-related institutions that work to conserve, develop and enhance the riverine ecologies of India, including at the central, state and international level. Each section lists apex bodies along with departments and programs that work specifically in relation to the River Godavari. The chapter also lists select departments in some of the states straddling the Godavari that work on conservation and development of the river basin. The chapter also lists international organization, tripartite agreements and other organizations working closely on water conservation in India, especially river Godavari.

[1] Source: https://nrcd.nic.in/Content_Page.aspx?id=3082

2.1 Central Agencies

Under the category of Central Agencies, the report lists major government bodies that work directly under the control and guidance of the Ministry of Jal Shakti to provide support to river basins in India, and their particular functions.

2.1.1 National River Conservation Directorate (NRCD)

The NRCD has been collaborating with state governments in India to promote the National River Conservation Plan (NRCP) to set-up and manage infrastructure for pollution abatement, and water management in key stretches and tributaries of India's major and minor rivers. NRCP was initiated through staggered phases of the Ganga Action Plan (GAP) from 1985 to reduce the pollution load in the rivers. The NRCP engages with managing pollution of rivers through the following interventions: "(i) Interception and diversion works/ laying of sewerage systems to capture raw sewage flowing into the rivers through open drains and diverting them for treatment; (ii) Setting up of Sewage Treatment Plants (STPs) for treating the diverted sewage; (iii) Construction of Low Cost Sanitation Toilets to prevent open defecation on river banks; (iv) Construction of Electric Crematoria and Improved Wood Crematoria to conserve the use of wood; (v) River Front Development works, such as improvement of bathing ghats; (vi) Public participation & awareness and capacity building, etc."[2]

2.1.2 National Mission for Clean Ganga (NMCG)/ Namami Gange

The NMCG was registered in 2011 and began with the express aim to clean River Ganga through a tiered cooperative system between state and central organizations. The NMCG was constituted as part of the National Ganga River Basin Authority (NGRBA) under the provisions of the Environment (Protection) Act, 1986. In 2016, the NGRBA was dissolved with the constitution of the National Council for Rejuvenation, Protection and Management of River Ganga, also known as the National Ganga Council that engages with a five-tier structure to support the prevention and control of river pollution. The NMCG is a part of the tiered structure working under the directions of National Ganga Council under the stewardship of the Prime Minister, Shri Narendra Modi; the Empowered Task Force (ETF) under the chairmanship of the Honourable Union Minister of the Ministry of Jal Shakti. The NMCG also directs the State Ganga Committees and District Ganga Committees that are abutting the river Ganga and its tributaries.

The Namami Gange Programme is an integrated conservation mission and includes sewerage treatment infrastructure, river surface cleaning, afforestation, industrial effluent monitoring, river-front development, biodiversity, public awareness, and Ganga Gram. The Ganga Gram engages with 1674-gram panchayats straddling the Ganga across five states to assist in drinking water and sanitation facilities.

[2] Source: https://nrcd.nic.in/Content_Page.aspx?id=3082

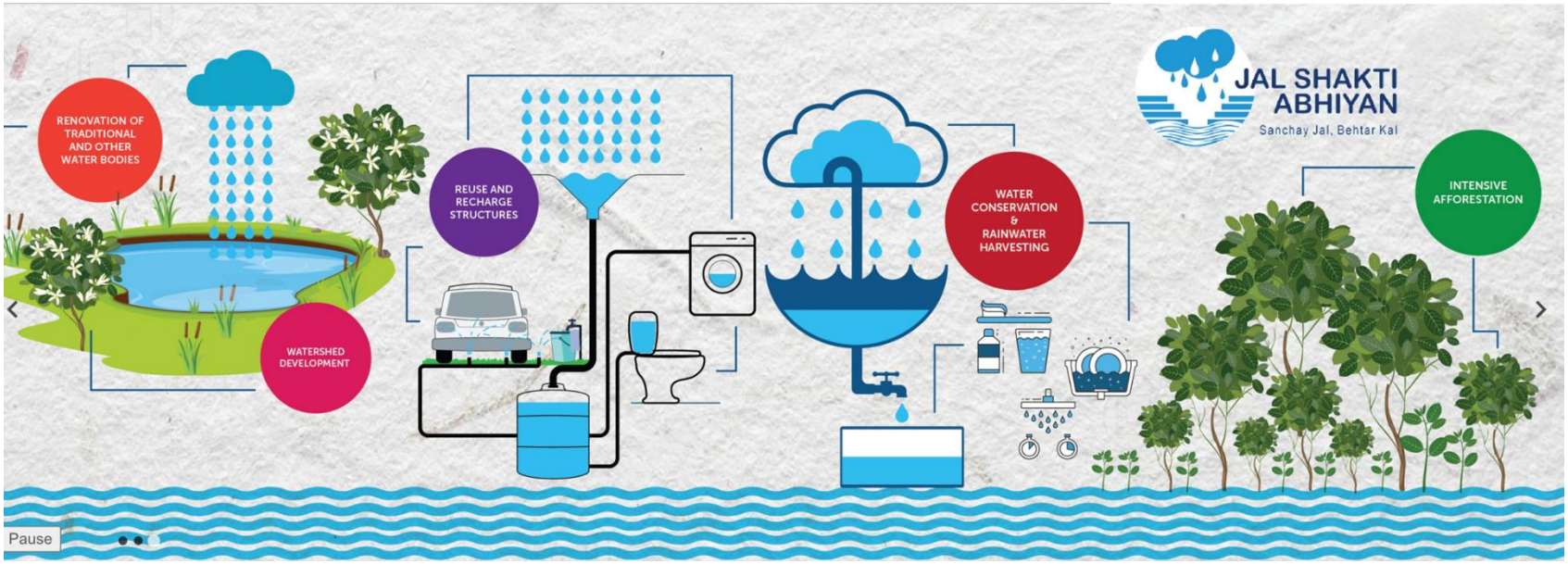


Figure 2.1 National Mission for Clean Ganga (NMCG)/ Namami Gange[3]

2.1.3 Water-resources data management (NWIC)

The National Water Informatics Centre (NWIC) (https://nwic.gov.in/central_stateagencies) which operates under the aegis of the Department of Water Resources, River Development and Ganga Rejuvenation, Ministry of Jal Shakti provides a comprehensive directory of institutionalised systems that deal with data gathering and the construction of databases and include: nine central agencies; 35 state agencies; three river basin agencies; and 2 union territory agencies.

The nine central agencies that engage with water-related data collection in India include the Central Water Commission; Central Ground Water Board; National Remote Sensing Centre; Survey of India; National Institute of Hydrology; Central Pollution Control Board; and the Central Water and Power Research Station.

[3] Source: National Mission for Clean Ganga, https://nmcg.nic.in/index.aspx

The Central Water Commission (CWC) collects and provides time series data on water storage facilities in India, including reservoirs; water resources projects such as irrigation facilities; river flow and glacial lakes; rainfall indicators, surface water quality and reservoir sedimentation studies that list the loss of water storage facilities. As a comprehensive database, the CWC provides important nation-wide data regarding water availability and the state of man-made and natural water resources.
The Central Ground Water Board (CGWB) provides data regarding ground water resources and their 'fitness'. Through a comprehensive database spanning aquifer system of the entire country and Lithology data for 2740 bore locations, the CGWB is the most important database on available water resources for household and community use.
The National Remote Sensing Centre (NRSC) provides data on rainfall, evapotranspiration and soil moisture content. This data also extends to an analysis of ground water potential maps, wastelands, land degradation maps and flood-inundated areas.
Survey of India (SOI) provides territorial data on a on 1:50000 grid size of international, national, state, district and village boundaries.
The National Institute of Hydrology (NIH) provides live data on rainfall and river gauge level discharge.
The Central Pollution Control Board (CPCB) provides data for surface and ground water quality in the country. One of the major mandates of the CPCB is water quality monitoring that it undertakes Water Quality Monitoring (WQM).
The Central Water and Power Research Station (CWPRS) engages in research and development of hydraulic structures, investing in the study of allied disciplines linked to hydraulics. CWPRS engages in research in the following areas: River Engineering River and Reservoir Systems Modelling Reservoir and Appurtenant Structures Coastal and Offshore Engineering Foundation and Structures Applied Earth Sciences Instrumentation, Calibration and Testing Services Advisory.

2.1.4 National Water Development Agency (NWDA)

The NWDA was set up in 1982 to support scientific analysis linked to water utilization and preparation of feasibility reports regarding the development of Peninsular rivers. The main aim of this exercise was to develop a National Perspective Plan (NPP) that would develop the proposed inter-linkage of rivers in India. Under the proposed inter-linkage of rivers (ILR), the peninsular river development project aims to link Mahanadi-Godavari-Krishna-Cauvery by routing water from the major rivers such as Mahanadi and Godavari to feed other needy areas in the Southern part of India. To facilitate better irrigation and overcome prolonged spells of drought and its impact on agrarian communities, the ILR hopes to achieve parity in access to river waters across regions.

According to the website of the NWDA, the proposed "Interlinking of Mahanadi-Godavari-Krishna-Pennar-Cauvery" will involve:
"A diversion of 15-million-acre feet of Mahanadi flows to the Godavari and a transfer of 30-million-acre feet from the Godavari and its tributaries to the Krishna Basin. Allowing for 15-million-acre feet from the Mahanadi, this would mean a net diversion of only 15-million-acre feet from the Godavari to the Krishna. The link from the Mahanadi to the Godavari will be

along the East Coast and would not involve any lift. The links between the Godavari and the Krishna will be from Polavaram to Vijayawada, Inchampalli to Pulichintala, Inchampalli to Nagarjuna Sagar and Wainganga to Srisailam. The last two links would involve lifts of the order of 360 feet and 400 feet respectively. The transfer of Wainganga waters to Srisailam reservoir on the Krishna would enable the present inflows at Srisailam reservoir of the order of 9-million-acre feet to be utilized upstream in the drought areas of Maharashtra and Karnataka. This is an important benefit and part of the water diverted from Wainganga to Srisailam would enable Andhra Pradesh to provide irrigation in Rayalaseema and Nagarjuna Sagar State-II Command. Waters diverted from Wainganga to Srisailam would be transferred to the Pennar by gravity. It would irrigate the chronically drought affected areas of in Rayalaseema. Part of the supplies could be stored at Gandikota, a natural gorge across the Pennar River. It could then be picked up lower down the Pennar river and diverted south to the Cauvery at the Upper Anicut. Another canal will take off from the Upper Anicut to the Vaigai River"[4]
This ambitious project hopes to offset irrigation and aims to support hydrological variations in interlinking rivers, without destroying the natural ecosystem of any of the rivers.

2.1.5 The Godavari River Management Board (GRMB)

Under the auspices of the Ministry of Jal Shakti, Department of Water Resources, River Development and Ganga Rejuvenation, the Godavari River Management Board works to arrive at equitable arrangements of water sharing and distribution between the states of Telangana and Andhra Pradesh. The GRMB lays down it primary mission as:

1. Collection and compilation of river water availability and utilisation data by itself and from Godavari basin states viz TG & AP and other sources for decision making.

2. Regulating supply of water from storages and barrages of erstwhile AP to successor States.

3. Regulating supply of power generated from Hydro Power Projects in GRMB Jurisdiction.

4. Appraisal of proposals for construction of new projects in AP & TG on Godavari-river basin and giving technical clearance.

5. Acquiring real time water availability and utilisation data for water accounting in Godavari basin in the States of AP & TG.

6. Preparing policy document on water/ power, programmes and practices to monitor and enable effective use of the Godavari water in a sustainable manner with active involvement of all stakeholders.[5]

The primary role of the board is to facilitate the water management between AP and Telangana, especially after the bifurcation of the state in 2014. As part of the Inter-state River Water Disputes Act 1956, the Board functions to oversee power distribution, construction of on-going or new works connected to the development of water resources in the region, appraisal and

[4] Source: https://www.nwda.gov.in/content/innerpage/click-more.php
[5] Quote from https://grmb.gov.in/Displaycontent.aspx?encry=9gu1xufb6P8+cyskkigH8Q==

approval of any on-going work on the basin that may require technical intervention and also approvals, and prioritising allocations in case of conflict or disputed claims.

2.2 State Agencies

In the states that form an integral part of the River Godavari basin, the following departments remain key stakeholders in managing water-related data. In Andhra Pradesh, three data-based agencies, the Groundwater and Water Audit Department; Water Resources Department and the Andhra Pradesh Water Resources Information and Management System (APWRIMS) are important water-related institutions. In Chhattisgarh and Odisha, the Water Resources Department, similarly, supports data gathering and maintenance regarding Daily data (Time series) for Rainfall, River monitoring (level and flow) and Groundwater level. In Maharashtra, where the Godavari begins and occupies major parts of the state, the Maharashtra Groundwater Surveys and Development Agency (GSDA) supports collection and maintenance of ground water data, along with the Maharashtra Water Resources Department. In Telangana, the Groundwater Department, and the Irrigation and Command Area Development (CAD) departments support water data and audits.

The Andhra Pradesh Groundwater and Water Audit Department assesses all major and minor rivers flowing through the state, including the Godavari and its tributaries. It also manages 108 reservoirs in the state, aiming to rescue the state from long-term drought—through a real-time data set of all water resources in the state through the Andhra Pradesh Water Resources Information & Management System (APWRIMS).

The Maharashtra GSDA supports development and augmentation of groundwater resources, including drilling borewells and tube-wells, involving the Rural Water Supply Programme within its ambit. It also provides technical guidance for minor irrigation projects, and strengthening groundwater resources. The Maharashtra GSDA lists as amongst one of its strengths, the development and assessment of groundwater resources in Deccan Trap or Basalt, including having an extensive historical repository on Deccan Trap, metamorphic, sedimentary and alluvial formations in the region.

The Telangana Irrigation and CAD department works to manage major, medium and minor irrigation systems in the state, including harnessing existing man-made reservoirs in the state such as the Osman Sagar Lake in Hyderabad city. Currently, one of the major irrigation projects under the purview of the department is the Ayacut, which covers over 25000 Acres of land. Flood management, hydrological assessment of water in the river basins, construction of new irrigation projects, restoration of flood banks, etc are some of the key areas of intervention.

2.2.1 Mission Bhagiratha

The Telangana state government supports Mission Bhagiratha that is involved in reviving and sourcing water for the state's population through the availability of safe and sustainable piped drinking water. The Mission is involved in collecting data on the geographical elements of sourcing water for piped supply and includes a detailed database of piped water networks in the state. Covering 26 segments in 32 districts, the Mission focuses on Intake Structures, WTP's, Over Head Balancing Reservoirs (OHBRs)/ GLBRS, (OHSRs). As per the Mission

website (https://missionbhagiratha.telangana.gov.in/), there are 77 Intake Structures; 123 Water Treatment Plants (WTPs); 1804 Major Structures; and 35716 Rural OHSRs.

The aim of the Bhagiratha project linked to the availability of pipeline water includes the following elements: "Sourcing water from major rivers or reservoirs fed by these rivers; purify the raw water in nearby Water Treatment Plant; pump treated water to the major OHSRs and Sumps at the highest points; transmit from the highest point through secondary pipeline network to all the habitations by gravity (98%); distribute to each house hold through a modern, rationalised intra village network by providing tap connections to each household" [6]

Below in ***Table 2.1*** we list some of the important government programmes that are working on water conservation and other aspects of immediate intervention in relation to the River Godavari Basin.

[6] https://missionbhagiratha.telangana.gov.in/

Table 2.1 Government programmes on the National and state levels in the Godavari River basin

S. No.	Programme names	Level	Objective	Key Activities	Target Group	Source
1.	Total Sanitation Campaign (TSC)	National	Eliminate open defecation and promote hygiene through community involvement	Toilet construction, school awareness, and PRIs' involvement	Rural households, schoolchildren	Department of Drinking Water and Sanitation, 2012
2.	Nirmal Bharat Abhiyan (NBA)	National	Improve rural sanitation with a community-led demand-based model	Community engagement, sanitation awareness	Rural communities	Nirmal Bharat Abhiyan, GOI 2014–15
3.	Swachh Bharat Mission (Grameen) – Phase I	National	Eliminate open defecation in rural India	Mass toilet construction, behavioural change campaigns	Rural households	Swachh Bharat Mission (Gramin)
4.	Swachh Bharat Mission (Grameen) – Phase II	National	Achieve ODF Plus status and ensure sustainability	Waste management, community involvement, and visual cleanliness	Rural communities	Swachh Bharat Mission – Urban 2.0
5.	National Faecal Sludge and Septage Management (NFSSM) Alliance	National	Improve faecal sludge management in non-sewered urban areas	Policy advocacy, training, and inclusive sanitation practices	Urban local bodies in non-sewered areas	Ministry of Urban Development, 2017
6.	Sant Gadge Baba Abhiyan	State - Maharashtra	Improve urban sanitation through cleanliness drives and public toilets	Waste collection, segregation, and public toilet provision	Urban populations in Maharashtra	AIILSG, 2011
7.	Sujal Nirmal Maharashtra Abhiyan (SNMA)	State - Maharashtra	Improve rural water supply and sanitation	Water quality awareness, sanitation facility development	Rural communities in Maharashtra	Geospatial World, 2016

8.	Vasantrao Naik Tanda/Basti Development Scheme	State - Maharashtra	Improve infrastructure for marginalized communities	Provision of water, sanitation, roads, and electricity	Nomadic tribes, Vimukta Jatis	Government of Maharashtra
9.	Maharashtra Urban WASH & Environmental Sanitation Coalition	State - Maharashtra	Strengthen urban WASH systems through collaboration	Knowledge sharing, training, and emergency sanitation support	Urban local bodies and sanitation workers	Maharashtra Urban WASH and Environmental Sanitation Coalition
10.	The Swachhata Trailblazer	State - Telangana	Promote cleanliness and awareness through community engagement	Awareness drives, cleaning of parks, and community areas	Students, community members, and self-help groups	Ministry of Housing & Urban Affairs, 2023
11.	Telangana State Sanitation Strategy (TL-SSS)	State - Telangana	Create clean urban environments through sanitation management	Wastewater management, capacity building, and stormwater drainage	Urban poor and women	State Level Sanitation Committee, 2017
12.	Pattana Pragathi - Toilet Monitoring System (PP-TMS)	State - Telangana	Track sanitation facility construction and maintenance	ICT tools for real-time monitoring	Urban local bodies	Commissioner & Director of Municipal Administration, 2021
13.	Swachh Bharat Mission (Grameen) 2.0 in Telangana	State - Telangana	Achieve and sustain ODF Plus villages	IHHL construction, waste management	Rural villages	Ministry of Jal Shakti, 2023
14.	The Community Incentive Model	State - Chhattisgarh	Encourage toilet construction through financial incentives	Incentives to BPL/APL households, community engagement	Rural households, especially BPL	Rao, 2016
15.	Panchayat and Rural Development Department Initiatives	State - Chhattisgarh	Eliminate open defecation and improve sanitation	Toilet construction, solid and liquid waste management, Gobardhan Yojana	Rural households	Panchayat and Rural Development Department, Government of Chhattisgarh

16.	Community Led Total Sanitation (CLTS)	State - Chhattisgarh	Drive behavior changes through community involvement	Community engagement, monitoring committees, and awareness programs	Rural population	Swachh Bharat Mission Gramin, 2016
17.	Swachh Andhra Mission	State - Andhra Pradesh	Align with SBM to eliminate open defecation and improve sanitation	IHHL, CT, PT construction; partnerships with international agencies	Urban and rural populations	Swachh Andhra Corporation, 2015
18.	Area Sabha Sanitation Committee	State - Andhra Pradesh	Integrated sanitation strategy for urban areas	Safe excreta disposal, wastewater, and solid waste management	Urban communities	State Level Sanitation Committee, 2016
19.	Rural Sanitation Strategies	State - Andhra Pradesh	Enhance rural sanitation coverage	Tailored approaches based on geography, infrastructure improvement	Rural households	TSC, Ministry of Drinking Water Supply and Sanitation, GOI 2011
20.	Swachh Bharat Mission (Grameen); Progress in Madhya Pradesh	State - Madhya Pradesh	Achieve ODF and ODF Plus status in villages	IHHL, CSC construction, mobile monitoring app	Rural communities	Ministry of Jal Shakti, 2023
21.	Rural Sanitation Programme	State - Madhya Pradesh	Reduce waterborne diseases through sanitation	Toilet construction, IEC activities	Rural households	IRC, 1982
22.	City Sanitation Plan (CSP)	State - Madhya Pradesh	Plan and implement urban sanitation with stakeholder involvement	Urban sanitation planning and execution	Urban residents	Baker, Tasgaonkar, & Vaidya, 2011
23.	Drinking Water and Sanitation in Rural Areas	State - Madhya Pradesh	overexploitation, contamination, and inadequate waste management.	Groundwater management, waste treatment	Rural population	Das, 2008

24.	Rural Drinking Water and Sanitation Department (RDWSD)	State - Karnataka	Improve rural and urban sanitation coverage	Toilet construction, water facilities, and awareness	Rural households, PRIs	(KUWS&DB) Government of Karnataka, 2017.
25.	Safai karamchari Kavalu Samiti (SKKS)	State - Karnataka	Empower sanitation workers and improve rights	Worker mobilization, accountability advocacy	Sanitation workers	Obalesh & Singh, 2024
26.	Rural Sanitation Campaigns	State - Karnataka	Reduce open defecation and increase toilet coverage	Grama Yojanas, IHHL construction under SBM	Rural population	Government of Karnataka, 2017
27.	Odisha Rural Sanitation Policy 2020	State - Odisha	Sustain sanitation access and hygiene practices	Solid and liquid waste management, Gram Panchayat involvement	Rural communities	Government of Odisha, 2020
28.	Community Led Sanitation (CLS)	State - Odisha	Achieve ODF through community empowerment	Toilet construction with subsidies, community awareness	Rural households, tribal communities	Options Consultancy Services, 2016
29.	Decentralized Solid Waste Management	State - Odisha	Manage waste through local composting and recycling	MCCs, MRFs, and public participation	Urban local bodies	Housing & Urban Development Department, Government of Odisha, 2023

2.3 International Water-related Institutions

Internationally, water remains an issue of concern and interest. Sustenance of life forms and environmental importance makes waters and water bodies an ongoing source of essential engagement. Some of the important international bodies intervening and working on water and water-related issues include: Blue Water Intelligence (BWI), eWater Group, and several international bilateral agreements that support river water conservation. UN-Water is the dedicated institution that supports and coordinates the United Nations in its work on water and sanitation. UN-Water collaborates with partners and members of the United Nations to support policy, processes, monitoring, reporting and building awareness regarding water conservation and sanitation. UN-Water is also championing “to ensure availability and sustainable management of water and sanitation for all” as

part of the Sustainable Development Goal no. 6. In 2024, the organization launched the UN System-Wide Strategy for Water and Sanitation, which seeks to bring together international collaborative action regarding water conservation and availability for all.
The World Water Assessment Programme (WWAP) was established by UNESCO in 2000 to provide an overview regarding freshwater resources globally. The WWAP has invested in programmes that seek to assess depleting freshwater resources and ways to conserve them; achieving gender equality in relation to accessing water resources; and minimizing conflict linked to sharing limited water resources.

2.3.1 Bilateral Agreements and River Water Conservation

In 2020, the Indian and Danish government signed a bilateral agreement titled the "Green Strategic Partnership" under which the Smart Laboratory on Clean Rivers (SLCR) was set up. SLCR works under the command of the Ministry of Jal Shakti as part of the joint initiative between the Indian Prime Minister Shri Narendra Modi and the Danish Prime Minister Ms Mette Frederiksen in 2021. Established in Varanasi, the SLCR is focused on rejuvenating streams and rivers. Economic, environmental and social sustainability are part of this initiative with the aim to: "To bring the global solutions on current challenges in the field of clean river water and conduct research and development to fit in real environment through Living lab approach to make them scalable and economically attractive"[7].

[7] Source: https://www.slcrvaranasi.com/

Figure 2.2 Images from the SLCR fieldwork in Varanasi[8]

In 2016, India and Israel signed a joint agreement supporting India's urgent need for water security, especially with increasing dangers of climate change, such as heat-based depletions. As part of this agreement, the Israeli government has appointed its first-ever Water Attache to participate and collaborate in water conservation. The Memorandum of Understanding (MoU) that was signed between the two nations, hopes to fulfil the need to develop efficient ways of water conservation, recycle/reuse of wastewater, desalination, aquifer recharge, and water management.

2.3.2 eWater Group

As part of an MoU signed between the Maharashtra Department of Water Resources and the New South Wales Department of Industry, Lands and Water, the eWater Group is assisting in the development of integrated water resources management (IWRM) in the Upper Godavari River Basin. The project has been successful in developing a calibrated source model for the upper Godavari sub-basin, and in capacity development of the Maharashtra Department of Water

[8] Source: https://www.slcrvaranasi.com/gallery?pgid=m07zkja3-a942059d-edce-47d1-ac92-209c31f48c0d

Resources. The impact of these two successful interventions has led to better communication between farmers and the water resources department, augmenting water resource management near the Upper Godavari basin. The building of a "community of practice" bringing together academics, scientists, water managers and researchers in eWater has helped impact conservation in the basin, leading to being awarded by the Ministry of Jal Shakti at the 2019 Water Week.[9]

2.3.3 Blue Water Intelligence (BWI)

BWI provides Earth observation data regarding water resources especially focusing on documenting water flows, water level, water stock and water quality. As an AI-driven technology organization, BWI works with national governments to generate data on water bodies to help chart water security and ways on equitable intervention. BWI's Data4Water was a European Space Agency (ESA)-Business Applications and Space Solutions (BASS) collaborative: "By providing accurate and timely river flow forecasts and insightful advice on optimal pumping times, our goal is to empower users like you to make informed decisions crucial to effective water management"[10]. BWI has participated in providing data on the Godavari Basin as it recognizes as being under stress due to emerging concerns with climate change. Linked to multiple sectors, such as agriculture, energy, water transportation, BWI seeks to provide interventions to improve living conditions, and plug the lack of monitoring services on the basin. Undertaking a river water modelling approach, BWI's Data4Water on the Godavari Basin has invested in agriculture and agrifood sector, river water replenishment, fishery management-through a "space data-driven hydrological solution", which is "the solution delineated by BWI is the provisioning of near real-time and forecasts river discharge data, giving out the optimal pumping and replenishment timing information"[11]

[9]Source: https://ewater.org.au/resources/river-basin-models-and-water-sharing-policy-in-the-upper-godavari-sub-basin-maharashtra-india/
[10] https://bwi.earth/data4water-e-workshop-godavari-river-basin/
[11] https://bwi.earth/data4water-e-workshop-godavari-river-basin/

3. Interest Groups

In policy and research literature, "interest groups" occupy a complicated space. They are often linked to lobbies, non-governmental organizations, and/or pressure groups. However, as Meissner (2015) suggests, interest groups should first and foremost be seen as mediating channels between the government and the people in democratic societies. Essentially, a more robust definition of the interest group suggests, "the pursuit of causes or the advancement and defence of particular interests, positions, and people in society" (Meissner 2015: 8). In this chapter, we engage with certain sets of "interests" linked to the conservation of waters and riverine ecologies to suggest that people and organization mediate in different ways to articulate, and in turn, protect their investments in rivers and river basins.

This chapter also discusses the role of non-governmental organizations (NGOs) in water conservation, water management, and other aspects of river basin management- in keeping with the idea that NGOs are a form of interest group. However, Meissner (2015) suggests that while all interest groups may be NGOs, not all NGOs are interest groups. According to Meissner, NGOs become interest groups only when they begin to impact government policy. Keeping these definitions in mind, in this chapter we look at various stakeholders, who are not directly linked to the state or central governments, and their role in impacting river water conservation, with specific reference to the Godavari. The typology that we engage with is based on ongoing community interventions in water management and involve village communities, and NGOs often working together to provide important policy level and other interventions to river water conservation.

The first set of interest groups we discuss are local communities such as gram panchayats that work together to protect and nurture water commons, such as rivers and groundwater. The second set includes non-governmental organizations that have managed to work with both local communities and governments to provide much-needed interventions in water management in India. All examples and discussions are linked to the Godavari River Basin with references to ongoing or past interest groups, community activism or NGO intervention.

3.1 Role of Panchayats and local bodies in water management

The role of local governance institutions-particularly Panchayati Raj Institutions (PRIs) and Urban Local Bodies (ULBs), has become increasingly central to ensuring sustainable and inclusive water management and sanitation services in India. With the enactment of the 73rd and 74th Constitutional Amendments, the grassroots institutions were constitutionally empowered to manage important services related to water and sanitation. Over the years, many national programs and schemes have been initiated for the grassroot level institutions. It helps in making them empowered and authorized to provide good services and maintain discipline in the region. Government programmes like Jal Jeevan Mission and Swachh Bharat Mission are good examples of how local communities and governance bodies are asked to share responsibility of providing water, sanitation and health (WASH) services to rural households. As per the Ministry of Jal Shakti and the Ministry of Finance, the 15th Finance Commission has allocated 1.42 Lakh crore rupees (grant 2021-22 to 2025-2026) to rural local bodies to strengthen water supply and sanitation delivery. This enables

services like piped water supply to each rural household, rainwater harvesting, fecal sludge management, and household waste treatment. The Jal Jeevan Mission mandates that the Gram Panchayat and its sub-committees (VWSC/Pani Panchayat/ water user groups) play central roles in planning, implementation, operations, and governance of rural water supply. The Panchayats are thus institutional anchors for community-driven water distribution and maintain the sanctity of the village by equitable distribution of resources.

Our fieldwork across four locations revealed differences in the effectiveness of local government bodies and public literacy in knowing water rights and supporting conservation efforts. We also found that Gram Panchayats and Pani Panchayats are active in implementing water-related schemes, managing wastewater, and promoting public awareness. Below are some examples from our field sites of the ways in which water conservation is imagined.

3.1.1 Pani Panchayats

The Orissa Pani Panchayat Act, 2002, was enacted to ease and strengthen the irrigation participation management by involving farmers directly in the governance, operation, and maintenance of irrigation systems. This legislation reflects Odisha's commitment to the distribution of water equally and sustainable agricultural development through localized, community-driven institutions. It reflects that water is a shared and finite resource; the Act aims to empower agriculturists as active shared owners of water infrastructure and supply.

The central objective of the Pani Panchayat Act is to promote equitable, efficient, and sustainable management of irrigation systems through structured participation by farmers. The irrigation envisions the farmers, when organized into formal bodies such as Pani Panchayats, can more efficiently manage irrigation activities in their areas. Interestingly, it decentralizes the authority in water governance, and only improves agricultural productivity, but also encourages environmental management by instilling a sense of ownership and collective conscience amongst communities who consume and live with water. Pani Panchayats are assigned a wide range of functions under the Act. They are responsible for preparing cropping programs tailored to local soil and climate conditions, ensuring crop diversity, and planning the maintenance of the irrigation infrastructure within their jurisdiction. This includes minor canals, lift irrigation systems, sub-minors, and field drains. The Panchayats are also responsible for regulating water use according to the *Warabandi* system, which allocates water to users based on an approved rotation schedule. It also plays a dispute resolution role at the grassroots level and is encouraged to undertake environmental initiatives like canal-side tree plantations.

Despite being a good legal structure, the Pani Panchayat faced many challenges in functioning well. Pani Panchayats have struggled with irregular elections, lack of funding, lack of awareness among members, and insufficient technical support.

Patoda Village, Chhatrapati Sambhaji Nagar, MH: Patoda is the ideal/adarsh village where 34 types of innovative activities are being implemented by the local government body (Gram Panchayat). This village has received 24 awards from the state and central government of India. The Gram Panchayat here is proactive and efficient, implementing government schemes effectively and launching community-driven awareness campaigns. The initiatives for water use,

rainwater harvesting, and community participation were observed. With strong leadership and community participation, they have a decentralized water management system that is effective.

Figure 3.1 Adarsh village Patoda
Source: Primary field survey by the cGodavari team

***Bidar, Karnataka*:** Bidar presents a more promising scenario. According to a social activist, areas here benefit from a 24x7 water supply, largely supported by the Manjeera and Karanja reservoirs. The regularity and sufficiency of water supply suggest effective coordination between the government and local authorities. However, further verification is needed to assess how equitably this supply is distributed across different social groups and geographies within the region.

3.1.2 Adarsh Gaon, Patoda, Chh. Sambhaji Nagar

Another inspiring example of river-people connection comes from Patoda, a small village in Chhatrapati Sambhaji Nagar (Aurangabad) district, Maharashtra, located beside the Kham River. Recognized as an ideal/*adarsh* village by the Government of India, Patoda has received several awards at both state and national levels for its efforts in water, wastewater, and solid waste management, biogas generation from food waste, and the use of renewable energy for public needs like water heating and street lighting. The Gram Panchayat and villagers have actively participated

in cleaning the Kham River, which carries waste from Chhatrapati Sambhaji Nagar city and eventually flows into the Jayakwadi Dam and Godavari River. They have installed bar screens to block plastic and debris, demonstrating a strong commitment to environmental conservation and river protection. In this village, the Gram Panchayat plays a crucial role by creating awareness through sustained conservation efforts for the river by keeping the village pollution-free.

Figure 3.2 Patoda as Adarsh village

Source: Primary field survey by the cGodavari team

3.1.3 Sacred groves as community conservation

Along with river conservation, it is crucial to focus on the conservation of sacred groves, which include ethnomedical plants and various floristic compositions. In Telangana state, Mallur Gutta (Hill) of Warangal district is reputed as a habitat for medicinal plants. According to Suthari et al. (2016), "The exploration of Mallur Gutta resulted in the enumeration and documentation of plant wealth representing 470 species of 318 genera pertaining to 95 families of vascular plants." This biodiversity is not only valuable for ecological means but also deeply embedded in the cultural practices of the local communities, particularly the indigenous Koya tribe, who live along the Godavari River. Sacred groves are identified through tribal worship traditions centered around native flora and fauna. As Pandey (2003, as cited in Kandari et al., 2014,p.3) observed, "In rural areas of India, many plants and animals are considered as pious and sacred religiously, having imbibed cultural values among the tribal communities. The religious belief serves as an instrument of protection of those rare forest species". Suthari et al. (2016) also focused on threats to this sacred grove due to anthropomorphic interference including increasing influence of nearby rural and urban populations.

In Gupteshwar village of Jeypore, Koraput district of Odisha, tribal communities are dependent upon their sacred groves for the collection of herbs, medicinal plants, woods, and honey. They sell these forest products on the streets of the Gupteshwar Temple. One of our field respondents, Luna Panda, of the Pragati Foundation, reported that tribal communities are dependent on the forest for their indigenous healing system; and tend to avoid biomedical treatment. In Lonkaput village of Koraput, where the Proja tribe resides, they perform rituals in the hills called "*Chaith Parab".* The

hills are called "Donger" where they go hunting, and if they do not get the hunt, it is considered a misfortune, and the priest suggests the neighbouring village for hunting again. This festival leads to a large feast for the whole community, which creates a shared sense of community conservation in Donger Hill.

3.2 Role of non-governmental organizations (NGOs) in water conservation

Non-governmental organizations (NGOs) play a significant role in water management and its conservation. these organizations are important for community-led solutions, where state or central governance is lacking. In India, over the years, NGOs have helped in many ways with sustainable water management in different regions. From literacy awareness campaigns to clean drives along the *ghat*s, we found various instances of NGO-led interventions in our field sites. Some of these interventions include rainwater harvesting, watershed management, revival of traditional water bodies, agricultural education, and awareness campaigns for sufficient water to water-saving. NGOs include community-led approaches that empower women and youth of the region to enact social and environmental changes. They empower marginalized groups to take ownership of water resources, thereby supporting a shared sense of responsibility regarding commons and resources. For a better understanding of the community engagement strategies, we interviewed a few NGOs that are working for water conservation in the five selected field sites.

3.2.1 The Godavari Initiative (TGI)

As a multistakeholder initiative, The Godavari Initiative (TGI) brings together local communities, governments and several NGOs and funding bodies in a collective to support sustainable solutions linked to conserving the Godavari Basin. Launched in 2024, currently TGI is primarily based in Maharashtra and outlines its main focus areas as: "a collaborative platform aligned with the UN Global Compact's CEO Water Mandate, driving sustainable solutions in critical river basins worldwide. Among the 100 priority basins, eight are in India, with the Godavari River basin as a key focus. By uniting global expertise and regional efforts, TGI fosters collective action to address water challenges and enhance long-term resilience"[12]. The organization has engaged in multiple interventions linked to cleaning and protecting the Godavari, including Harit Kumbh, prioritizing clean and safe Kumbh practices at the Godavari in Nashik.

3.2.2 Namami Goda Foundation

Namami Goda Foundation is a non-governmental collective that works on cleansing and preserving the Godavari, especially in Maharashtra. The Organization has recently launched the Aviral Godavari Mission including "Kund cleaning and rejuvenation". The organization describes itself as "The main goal is to watershed management, Rainwater Harvesting and awareness across communities, while also focusing on planting more trees, reducing plastic pollution, and helping communities with skill development and employment opportunities"[13]. The organization has

[12] Source: https://thegodavariinitiative.in/about-us
[13] https://www.namamigodafoundation.org/about-us

engaged in multiple interventions linked to cleaning and protecting the Godavari, including Harit Kumbh, prioritizing clean and safe Kumbh practices at the Godavari in Nashik. The organization has also invested in dam building on the Brahmagiri by "utilizing trenches and loose boulder dams, water flow will be decelerated, facilitating enhanced underground water recharge. The existing grass on the mountain will be preserved, while ensuring adequate grazing for local cattle herders and farmers. Additionally, new grass will be planted to protect the topsoil, promote grass growth, and mitigate the impact of rainfall, allowing more water to permeate into the ground".[14]

3.2.3 Other NGO interventions

A youth-led non-governmental organization based in Bidar, Karnataka, has made significant contributions to the conservation and revival of traditional water systems in the region. Established in 2013, the group has gained recognition for its efforts in discovering, documenting, and restoring ancient water management structures, particularly in response to recurring droughts. Among its most notable achievements is the discovery of a 600-year-old Bahmani-era well in Hamilapur village, featuring an octagonal, multi-level structure with arches, domes, and a Persian pulley system, which highlights the advanced engineering of historical water systems. The organization also played a pivotal role in rejuvenating the 14th-century Naubad Karez, a sub-surface water transfer system developed during the Bahmani Sultanate for drought mitigation. Through extensive desilting and excavation, they uncovered 27 vertical shafts connected to the Karez, enabling the restoration of this long-defunct system and helping to alleviate water scarcity in Bidar. Their work on the Karez gained national attention and received accolades, including a runner-up award in a public landscape design competition and recognition from the Ministry of Jal Shakti. In addition to these heritage-focused efforts, the team has worked extensively to revive over 350 neglected wells, *kalyani*s, and 30 lakes in and around Bidar. In partnership with other local institutions, they undertook the cleaning and dredging of 170 public wells, leading to the revival of close to half the number of wells. Their initiatives reflect a strong model of community-led water conservation, combining historical knowledge with practical action to restore water access in a drought-prone region.

Another developmental organization based in Bidar, Karnataka, established in 1994, has been playing a transformative role in the fields of integrated watershed management, natural resource management, sustainable agriculture, and rural livelihoods. With a vision to enhance the quality of life for one million poor and marginalized farmers, women, youth, and children in Northern Karnataka, the organization emphasizes community-centric development and capacity building. It has established deep-rooted connections at the grassroots level, enabling it to work effectively and collaboratively with local communities. One of its key achievements includes the promotion of 40 Watershed Management Committees (WMCs) across 50 villages under various watershed development projects. These committees have been instrumental in planning, implementing, and

[14] Source: https://www.namamigodafoundation.org/about-us

maintaining watershed structures that cover approximately 25000 hectares of land, representing an asset value exceeding Rs. 650 lakhs.[15] This initiative has significantly contributed to water conservation, improved agricultural productivity, and enhanced local livelihoods.

In addition, the organization has promoted Village Development Societies (VDSs) in five villages as part of the second phase of the Indo-Swiss Participative Watershed Development Societies (VDSs) in five villages. These institutions serve as comprehensive village-level platforms for implementing and sustaining watershed development activities. Through its participatory and inclusive approach, the organization has demonstrated a successful model of community empowerment and environmental sustainability in one of the most water-stressed regions of Karnataka.

Figure 3.3 Solar-powered dug wells promotion by Pragati foundation, Koraput, Odisha [16]

In the tribal and hilly areas of southern Odisha, a local organization has started several water-related projects that directly help farmers and communities. Their work focuses on simple, low-cost, and environment-friendly solutions that people can manage on their own. One of their main efforts is setting up solar-powered dug wells. These wells use solar pumps to lift water, which helps farmers irrigate their small plots without depending on electricity or diesel. This makes farming cheaper and more reliable. They have also worked on soil and water conservation, like building small bunds (mud walls), levelling land, and creating rainwater storage pits. These activities help stop water from flowing away and improve moisture in the soil, which helps crops grow better. These organizations have introduced Diversion-Based Irrigation (DBI), where water from nearby streams or springs is directed to farms through pipes or small channels using gravity.

[15] Source: https://prawarda.1ngo.in/
[16] Source: https://www.linkedin.com/posts/pragatikoraput_pragati-koraput-is-promoting-dug-well-based-activity-7038471398477971456-lEWz/

This system brings water to places where it was not available before, making farming possible even in remote villages. To save water in rice farming, they are training farmers to use the System of Rice Intensification (SRI). This method uses less water but gives more yield by planting fewer seedlings with more space and watering the field only when needed, instead of keeping it flooded all the time. Another major activity is protecting forests and watersheds. The group works with villagers to take care of the nearby forests and hills. They plant trees, stop deforestation, and protect water resources. As a result, springs and streams that had dried up have started flowing again. Lastly, they promote climate-friendly farming methods. These include planting crops that grow faster and need less water and trying new ways like zero-tillage or intercropping (growing two crops together). These techniques help farmers deal with changing weather and get better harvests with less water.

4. Public Awareness

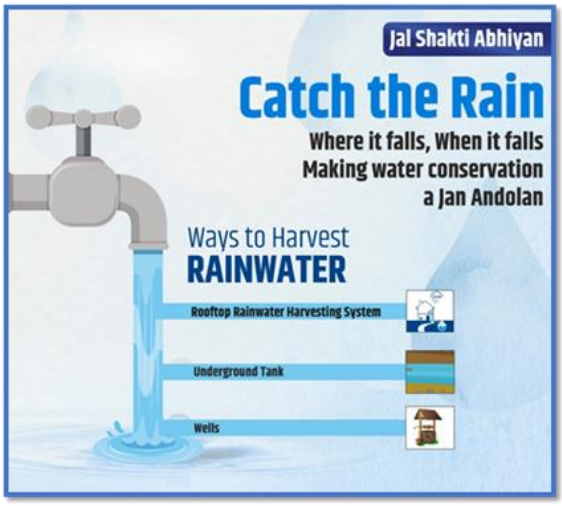
India has implemented a wide range of sanitation and water management programmes at both national and state levels to address open defecation, hygiene, and waste management through community development and infrastructure development. National initiatives like the Total Sanitation Campaign (TSC), Nirmal Bharat Abhiyan, Swachh Bharat Mission (Grameen) Phase I and II have focused on toilet construction, behaviour change, and achieving ODF plus status. Table 16 highlights the diversity of approaches adapted by the government to improve water supply and sanitation at the ground level to the national level. States like Maharashtra and Telangana have introduced region-specific efforts such as the Sant-Gadge Baba Abhiyan, Sujal Nirmal Abhiyan, and Telangana State Sanitation Strategy, emphasizing local governance.

In this chapter, we briefly discuss some of the erstwhile campaigns by NGOs and government departments, along with preliminary survey findings from our fieldwork regarding water conservation, sewage treatment and water usage.

4.1 Government Awareness Campaigns

The Namami Gange Mission invests significant effort and time in supporting awareness campaigns through various public engagement activities. These activities include workshops, seminars, conferences that aim for public outreach and community participation. *Shram daan,* cleanliness drives, plantation drives are often publicized widely and shared through mass media portals.

The "Jal Shakti Abhiyan: Catch the Rain" campaign launched in 2019, 1592 out of 2836 blocks in 256 water-stressed districts of the country was meant to bring awareness regarding rainwater harvesting to offset drought, and declining groundwater tables. The tag line "Catch the rain-Where it falls When it Falls" was launched by the Honourable Prime Minister in 2020, and reached out to all districts in rural and urban India.



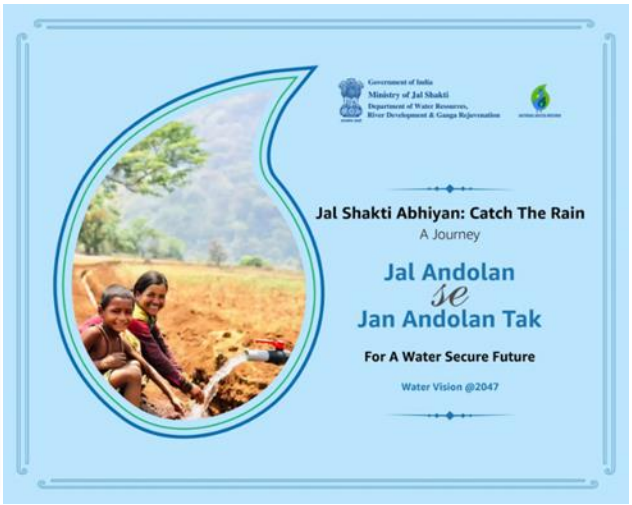


Figure 4.1 and Figure 4.2 Catch the Rain Campaign and Jal Shakti Abhiyan[17]

Figure 4.3 Bhu-Jal News Cover page, Volume 28, 2013.

The Central Ground Water Board (CGWB) has also been actively involved in outreach programs through conferences, seminars and a dedicated newsletter called "Bhu-Jal News" that informs people regarding the need to protect and create sustainable avenues of accessing ground water.

4.2 NGOs and Citizen-based Outreach Programmes

The Namami Goda Foundation has led several key outreach programmes including the Aviral Nirmal Godavari Yatra from Brahmagiri to Rajahmundhry in 2020, to educate people living on the Godavari basin regarding the value of protecting the river and its ecosystem. Additionally, the organization has also launched the My Water Bank Project that promotes rainwater harvesting in Nashik, targeting school children as their primary awareness group.

In 2015, the Clean Godavari Campaign led to a sustained community and government intervention in Nashik, Maharashtra engaging the Green Kumbh Committee formed by the Bombay High Court in response to a PIL regarding river pollution on the Godavari Basin. Citizens, government officials and NGOs participated together to clean the ghats and other places of the river to welcome pilgrims to the Kumbh Mela, and also impress upon them the need to protect and nurture the river basin.

In 2018, ONGC launched the Beat Plastic Pollution campaign by sponsoring and participating in a clean-up of the Godavari river at Rajahmundry in Andhra Pradesh. This including cleaning of the ghats, especially of plastic waste.

Individuals such as Umasri Pujyam, a 15 year old PIO also launched a clean-up drive of the Godavari near Razole in Konaseema district in 2023, mobilizing 100 volunteers from the local community to participate in the drive.

[17] Sources: https://apacnewsnetwork.com/2024/01/jal-shakti-abhiyan-catch-the-rain/; https://www.pib.gov.in/PressNoteDetails.aspx?NoteId=151914&ModuleId=3

References

About us | Namamigoda. (n.d.). Namamigoda Foundation. https://www.namamigodafoundation.org/about-us

Brown, D. A. (2001). The ethical dimensions of global environmental issues. *Dædalus, 130*(4), 59–76. American Academy of Arts and Sciences. https://www.amacad.org/publication/ethical-dimensions-global-environmental-issues

eWater Group. (2024, June 18). River basin models and water sharing policy in the upper Godavari Sub-Basin, Maharashtra, India. eWater. https://ewater.org.au/resources/river-basin-models-and-water-sharing-policy-in-the-upper-godavari-sub-basin-maharashtra-india/

Godavari. (n.d.). The Godavari Initiative. https://thegodavariinitiative.in/about-us

Home | SLCR_IIT(BHU). (n.d.). Society for Learning and Change Research, IIT(BHU). https://www.slcrvaranasi.com/

Kandari, L. S., Bisht, V. K., Bhardwaj, M., & Thakur, A. K. (2014). Conservation and management of sacred groves, myths and beliefs of tribal communities: A case study from north India. *International Journal of Biodiversity and Conservation, 6*(9), 662–670. https://doi.org/10.5897/IJBC2014.0683

Koraput, P. (2023, March 6). Pragati, Koraput is promoting dug well-based solar pump irrigation system in climatically vulnerable rain-fed regions of Koraput District… [Online forum post]. LinkedIn. https://www.linkedin.com/posts/pragatikoraput_pragati-koraput-is-promoting-dug-well-based-activity-7038471398477971456-lEWz/

Media and gallery. (n.d.). Society for Learning and Change Research, IIT(BHU). https://www.slcrvaranasi.com/gallery?pgid=m07zkja3-a942059d-edce-47d1-ac92-209c31f48c0d

Meissner, R. (2015). *Interest groups, water politics and governance*. Springer.

Ministry of Jal Shakti. (n.d.). Press note. Press Information Bureau. https://www.pib.gov.in/PressNoteDetails.aspx?NoteId=151914&ModuleId=3

MISSION BHAGIRATHA. (n.d.). Government of Telangana. https://missionbhagiratha.telangana.gov.in/

NIC. (n.d.). Godavari River Management Board. National Informatics Centre. https://grmb.gov.in/Displaycontent.aspx?encry=9gu1xufb6P8+cyskkigH8Q==

Polina, K. (2024, March 19). Data4Water e-workshop: Godavari River Basin challenges. *Blue Water Intelligence (BWI)*. https://bwi.earth/data4water-e-workshop-godavari-river-basin/

PRAWARDA. (n.d.). PRAWARDA NGO. https://prawarda.1ngo.in/

Suthari, S., Kandagalta, R., Ragan, A., & Raju, V. S. (2016). Plant wealth of a sacred grove: Mallur Gutta, Telangana state, India. *International Journal of General Medicine, 9*, 369–381. https://doi.org/10.2147/IJGM.S83441

Appendix

CENTRE FOR GODAVARI RIVER BASIN MANAGEMENT STUDIES
THE GODAVARI RIVER BASIN: A STUDY ON ACTIVITIES AND APPROACHES TO RIVER-PEOPLE CONNECT.

DATE: …. /…../…… QUESTIONNAIRE NO. ……...

Greetings! We are conducting a study on the human activities and approaches around the Godavari River Basin. The study topic focuses on natural resource conservation, so I kindly request that you respond to the questions openly and honestly. Please remember that your answers will be kept confidential for research purposes. If you prefer not to answer any of these questions, that is completely acceptable. If you would like to pause or take a break at any time, please let me know.

Thank You!
Yours truly
Asif Qureshi
Department of Civil Engineering
Email ID: asif@ce.iith.ac.in

CONSENT OF THE RESPONDENTS

I _____ S/O _____ I am a resident of village _____ Block _____ District_____ State_____ Pin _____. The researcher explained the purpose of the study in detail. I have read and understood all the above information and I am giving my consent to take relevant information from me and my family. I am sharing authentic information related to socio-demographic profiles _____. This is being taken into our full cognizance. The due information should be used only for research purposes and confidentiality should be also maintained. If the above information is useful to our society, it can be used for scientific purposes and publication without revealing our identity.

Date: / / Signature

Socio-Demographic Information:
Name:
Age:
Gender:
Education:
Caste/Tribe:
Religion:
Family Type:
Marital status:
Occupation:
Household income monthly:
Village:
District:

Frequency and Type of River use:

1. How often do you visit the river?

- Daily
- Weekly
- Monthly
- Rarely

2. For what primary purpose do you visit the river?

- Domestic use
- Agricultural
- Fishing
- Religious Rituals
- Other (Specify)

3. What changes have you noticed in the river's environment over time?

- Changes in water quality
- Pollution
- Vegetation
- Changes in river flow and water levels

4. In your opinion, do these changes affect your daily life or livelihood?

- Yes, significantly
- Yes, to some extent
- No impact
- Not sure

Water Collection Method and Timing:

5. What is your primary source of water collection?

- Well, /Public Tap
- Govt. water supply
- River

- Rainwater collection
- Others (specify)

6. What method do you use to collect water?

- Buckets
- Pots
- Pipes
- Plastic Containers
- Others (specify)

7. At what time of day do you usually collect water?

- Early Morning (Before 8 AM)
- Late morning (8 AM-12 PM)
- Afternoon (12 PM- 4 PM)
- Evening (4 PM-8 PM)
- Night (After 8 PM)

Time and effort in water collection:

8. How much time does it take you to collect water on average?

- Less than 15 minutes
- 15-30 minutes
- 30-60 minutes
- More than 1 hour

9. How far is the water source from your home?

- Less than 500 meters
- 500 meters- 1 Kilometre
- 1-2 kilometres
- More than 2 kilometres

Water use & practices:

10. Do you use river water directly for drinking or cooking?

- Yes
- No
- Occasionally

11. Are you aware of any restrictions or guidelines for using river water in your community?

- Yes
- No

Water Treatment and Purification:

12. Do you purify the water after collecting it?

- Yes
- No
- Occasionally

13. If yes, what method do you use for purification?

- Boiling

- Filtration
- Chlorination/Tablets
- UV Purifier
- Other (specify)

Health impacts:

14. Have you or your family members experienced any health issues that you believe are related to water usage?

- Yes
- No
- Unsure

15. If yes, which of the following issues have occurred most frequently?

- Diarrhoea
- Skin infections
- Reductive health issues (Menstruation, pregnancy, infections, etc.)
- Stomach pain
- Gastrointestinal illness
- Other (Specify)

16. Do you think water-related diseases are a common issue in your community?

- Yes, very common
- Somewhat common
- Rarely
- Not at all

17. If water-related health issues occur, do you seek medical treatment?

- Always
- Sometimes
- Rarely
- Never

18. Are you aware of any govt. or NGO program related to safe drinking water in your area?

- Yes
- No
- Not sure

Flood and Drought Condition Assessment

19. When did the last major flood occur in your area?

- Less than 1 year
- 1-3 years ago
- 3-5 years ago
- More than 5 years ago

20. How often do floods typically occur in your area?

- Every year
- Every 2-3 years
- Every 3-5 years

- Rarely

21. What was the primary cause of the recent flood in your area?

- Heavy rainfall
- River overflow
- Dam release
- Other (please specify)

22. What management practices were implemented after the last flood?

- Relief camps and shelter
- Distribution of food and water
- Medical aid and health services
- Infrastructure repair
- None of the above

23. Do you believe flood management practices in your area are effective?

- Yes, very effective
- Somewhat effective
- Not effective
- Unsure

24. Are there early warning systems in place for floods?

- Yes
- No
- Unsure

25. When did the last major drought occur in your area?

- Less than 1 year
- 1-3 years ago
- 3-5 years ago
- More than 5 years ago

26. How often does drought typically occur in your area?

- Every year
- Every 2-3 years
- Every 3-5 years
- Rarely

27. What was the primary cause of the recent drought in your area?

- Insufficient rainfall
- Over-extraction of groundwater
- Climate change
- Other (please specify)

28. What management practices were implemented after the last drought?

- Water rationing and distribution
- Crop insurance and compensation
- Groundwater replenishment project
- Public awareness campaigns

- None of the above

29. Do you believe drought management practices in your area are effective?

- Yes, very effective
- Somewhat effective
- Not effective
- Unsure

30. Are there early warning systems in place for droughts?

- Yes
- No
- Unsure

31. Are you aware of any government or local programs that offer assistance or guidance for flood or drought relief?

- Yes
- No

Environmental impact & cultural significance:

32. Do you think your activities impact the cleanliness of the river?

- Yes, very much
- Somewhat
- Not at all

33. Do you participate in any religious or cultural rituals by the river?

- Always
- Sometimes
- Rarely
- Never

34. In your opinion, how important is the river for cultural events in your community?

- Very important
- Somewhat important
- Not important

Community Engagement Strategies:

35. Have you ever experienced water scarcity in your region?

- Yes
- No
- Not sure

36. Have you attended any community awareness programs related to river conservation?

- Yes
- No

37. How would you rate the importance of preserving the river for future generations?

- Very important
- Important
- Neutral

- Not important

Questionnaire for an Ethnographic study.
Health and Environment

1. What changes have you noticed in the river's environment (such as water quality, pollution, or vegetation) over time, and how do these changes affect the well-being of the community?
2. How do you think the quality of water in the river affects the health of people in your community?
3. Can you describe any health challenges you or your family face that may be related to the river's condition?
4. How do you think water quality from the river affects women's reproductive health in your community?
5. How does the division of labor for water collection work during pregnancy or menstruation?
6. Are there specific concerns about using river water for drinking, bathing, and cooking for pregnant women or new mothers?
7. Are there traditional practices around water that new mothers follow during the postpartum period? If yes, how do these practices impact recovery?
8. Is there any awareness in your community about the impact of contaminated water on women's health, especially reproductive health?

Social and Cultural Perspectives

9. Have you ever experienced any supernatural incident in the river such as any mythological stories related to Ghosts, spirits, etc.?
10. If yes, how does it affect your beliefs regarding the river?
11. How does the river serve as a gathering place or social space within your community?
12. Can you describe any ways in which the river strengthens or challenges community bonds? (if any conflicts occurred anyway)
13. What cultural practices or festivals related to the river are important to you, and how do they reflect your community's identity?
14. How do you feel about the current state of these cultural practices around the river?

Economic Perspective

15. In what ways does the river support your livelihood or the local economy (such as fishing, agriculture, tourism, etc.)?
16. How does pollution in the river affect your work, and what cost does it bring to your community?

17. Have you or others in your community had to invest in alternative solutions or practices due to the current state of the river?
18. Have you received any support (such as grants or subsidies) to reduce the economic impact of conservation efforts? If not, what kind of support would be helpful?

Governance, Policy, and Public Awareness

19. What policies or regulations related to the river are you aware of, and how do you feel about them?
20. Have you ever been involved in the decision-making process regarding river conservation?
21. In what ways have local community leaders or organizations contributed to managing or protecting the river?
22. How have policies about pollution control or water management affected your community or your activities by the river?
23. Can you describe any instances where the government's policies conflicted with community practices or needs?
24. What do you believe the government could do to improve its relationship with local communities regarding river management?