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

Social environment (water-related Institutions, Interest groups, public awareness) in Krishna River Basin

October 2025

Social environment (Water-related Institutions, Interest groups, public awareness) in Krishna River Basin

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 Krishna River Basin Management Studies (cKrishna)

The Centers for Krishna River Basin Management Studies (cKrishna) is a Brain Trust dedicated to River Science and River Basin Management. Established in 2024 by NIT Warangal and NITK Surathkal, under the supervision of cGanga at IIT Kanpur, the centre serves as a knowledge wing of the National River Conservation Directorate (NRCD). cKrishna is committed to restoring and conserving the Krishna River and its resources through the collation of information and knowledge, research and development, planning, monitoring, education, advocacy, and stakeholder engagement.
www.ckrishna.org

Centre 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 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 NIT Warangal (Lead Institute) and NITK Surathkal (Fellow Institute) under the supervision of cGanga at IIT Kanpur. It was submitted to the National River Conservation Directorate (NRCD) in 2025. 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.

Team

N V Umamahesh, cKrishna, NIT Warangal
M. Chandra Sekhar, cKrishna, NIT Warangal
K Venkata Reddy, cKrishna, NIT Warangal
Jew Das, cKrishna, NIT Warangal
G Gowtham, cKrishna, NIT Warangal
Prasantha Majee, cKrishna, NIT Warangal
Eswar Sai Buri, cKrishna, NIT Warangal
Kandula Srikanth, cKrishna, NIT Warangal
Vinod Tare, cGanga, IIT Kanpur
B. Manu, cKrishna, NITK Surathkal
S. Shrihari, cKrishna, NITK, Surathkal
G.S. Dwarakish, cKrishna, NITK, Surathkal
Lakshman Nandagiri, cKrishna, NITK, Surathkal
Jacklin Jeke Nilling, cKrishna, NITK, Surathkal
Saranya P, cKrishna, NITK, Surathkal
Nishanth B, cKrishna, NITK, Surathkal
Karunasindhu Jha, cKrishna, NITK, Surathkal
Ramya D, cKrishna, NITK, Surathkal
Priyanka, cKrishna, NITK Surathkal

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 an in-depth analysis of the principles and practices that support healthy river ecosystems. Our team of experts has meticulously compiled data, case studies, and testimonials to illustrate the significant impact of rivers on both natural environments and human communities. By sharing these insights, we hope to inspire and empower our readers to engage in river conservation efforts.

This report is not merely a collection of statistics and theories; it is a call to action. We urge all stakeholders to recognize the value of our rivers and to take proactive steps to ensure their preservation. Whether you are an environmental professional, a policy maker, or simply someone who cares about our planet, this guide is designed to support you in your efforts to protect our rivers.

We extend our heartfelt gratitude to the numerous contributors who have generously shared their stories and expertise. 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 serve as a catalyst for positive environmental action, fostering a culture of stewardship that benefits both current and future generations.

As you delve into this overview of our rivers, we invite you to embrace the opportunities and challenges that lie ahead. Together, we can ensure that our rivers continue to thrive and sustain life for generations to come.

Centres for Krishna River Basin Management Studies (cKrishna)

NIT Warangal, NITK Surathkal

Table of Contents

List of Figures

1. Introduction

The Krishna River Basin, one of India's most significant and complex river systems, supports millions of people across the states of Maharashtra, Karnataka, Telangana, and Andhra Pradesh. The basin's social environment is deeply intertwined with its water resources, shaping livelihoods, agriculture, industry, and cultural identity. Effective management of the basin's water resources depends not only on hydrological and ecological considerations but also on the institutional frameworks, stakeholder involvement, and public awareness that guide its governance. Over the years, various water-related institutions at central, state, and local levels, along with active participation from interest groups, non-governmental organizations, and community-based initiatives, have played a vital role in addressing challenges such as water allocation, inter-state disputes, pollution control, and sustainable utilization. Understanding the social dimensions—particularly the institutional mechanisms, public participation, and awareness levels provides critical insights into the collective capacity of the basin to manage its water resources equitably and sustainably.

2. Identification of Key Institutions in Krishna River Basin Area

The social environment of the Krishna River Basin is shaped by the collective efforts of multiple stakeholders working toward the sustainable management and equitable distribution of water resources. Government agencies, non-governmental organizations (NGOs), and local community-based organizations play pivotal roles in planning, implementing, and monitoring various water-related programmes and initiatives across the basin. These institutions work at different administrative and functional levels to address critical issues such as water conservation, pollution control, watershed management, irrigation efficiency, and public awareness. Their coordinated actions, supported by policy frameworks and participatory approaches, contribute significantly to improving water governance and promoting sustainable development within the basin.

2.1 Government Agencies: Government agencies form the backbone of water resource management within the Krishna River Basin. These agencies operate at the central, state, and

local levels to plan, regulate, and implement water-related projects and policies. At the national level, institutions such as the Central Water Commission (CWC), Ministry of Jal Shakti, and the National Mission for Clean Ganga (NMCG) provide technical guidance, policy direction, and monitoring support. At the state level, departments of Water Resources, Irrigation, and Groundwater oversee basin management activities, infrastructure development, and inter-state coordination. They are also responsible for ensuring compliance with water allocation agreements and maintaining data on hydrology, water quality, and river basin health. These agencies collectively play a vital role in implementing sustainable water management practices and ensuring that the developmental needs of the basin are balanced with ecological considerations. Some of Government agencies are listed below.

- **Krishna River Management Board (KRMB):** This is the most crucial government body for the Krishna River basin. It was constituted under the Andhra Pradesh Reorganization Act, 2014, to manage and regulate the water resources of the Krishna River among the states of Andhra Pradesh and Telangana. Its functions include water allocation, project administration, and resolving disputes. https://krmb.gov.in/
- **Central Water Commission:** The CWC has a regional body, the Krishna Godavari Basin Organization (KGBO), headquarter in Hyderabad. This organization is responsible for a wide range of technical functions, including hydrological data collection, flood forecasting and monitoring of water related projects. The CWC also provides technical guidance for inter-state coordination, flood management, and basin-level planning, ensuring that developmental projects adhere to sustainable water management principles. https://cwc.gov.in/en/kgbo
- **State-level Departments**: The states sharing the basin Maharashtra, Karnataka, Telangana, and Andhra Pradesh each have their own water resources/ irrigation and groundwater departments. These departments are responsible for the on-the-ground implementation of water policies, management of reservoirs (like the Nagarjuna Sagar and Srisailam dams), and the maintenance of irrigation infrastructure. For instance, In Karnataka, the Water Resources Department and Karnataka Neeravari Nigam Limited (KNNL) and Krishna Bhagya Jala Nigam (KBJNL) oversee key projects under the

Upper Krishna Project (UKP), focusing on irrigation expansion and efficient water distribution. The Minor Irrigation Department is engaged in tank rejuvenation, watershed development, and groundwater recharge initiatives across rural regions. Additionally, the Karnataka State Natural Disaster Monitoring Centre (KSNDMC) plays a significant role in flood and drought forecasting, utilizing real-time hydro-meteorological data to support early warning systems and adaptive water management within the basin.

- **District Water Management Agencies (DWMAs):** District Water Management Agencies (DWMAs) play a vital role in promoting integrated watershed development and sustainable natural resource management across the Krishna River Basin. Functioning under the Departments of Rural Development in the riparian states of Maharashtra, Karnataka, Telangana, and Andhra Pradesh, these agencies focus on improving water conservation, soil health, and livelihood security at the grassroots level. Through programmes such as the Integrated Watershed Management Programme (IWMP) and Pradhan Mantri Krishi Sinchayee Yojana (PMKSY–Watershed Development Component), DWMAs implement activities including construction of check dams, farm ponds, percolation tanks, and contour bunds, along with afforestation and soil erosion control measures. They work in coordination with Watershed Committees, Panchayati Raj Institutions, and local communities to ensure participatory planning and effective implementation. By enhancing groundwater recharge, reducing runoff, and improving agricultural productivity, DWMAs contribute significantly to water sustainability, ecosystem restoration, and livelihood improvement throughout the Krishna River Basin.

2.2 Non - Government Organizations: Non-governmental organizations (NGOs) have emerged as key partners in promoting sustainable water management and community awareness in the Krishna River Basin. They focus on diverse aspects such as watershed restoration, river rejuvenation, pollution abatement, and advocacy for equitable water sharing. NGOs also act as intermediaries between local communities and government agencies, facilitating participatory decision-making and capacity building. Several NGOs and

research-based organizations in the basin region engage in awareness campaigns, livelihood enhancement programmes, and policy dialogues aimed at improving water use efficiency and reducing conflicts among user groups. Their grassroots presence and people-centric approach contribute to building social responsibility and fostering a culture of conservation among basin inhabitants. Some of the following Non-Governmental Organizations in Krishna River Basin within four states are explained below.

- **Plastic Fisher (Andhra Pradesh):** Plastic Fischer is a social enterprise dedicated to reducing riverine plastic pollution before it reaches the oceans. The organization designs and implements a low-cost, scalable technology known as the "TrashBoom", a floating barrier system that captures plastic waste directly from rivers and canals. Their efforts focus on providing an immediate, localized solution to the growing issue of plastic leakage from inland waterways. In the context of the Krishna River Basin, Plastic Fischer has been active in Vijayawada, Andhra Pradesh, where they work in collaboration with local authorities and communities to intercept plastic waste from tributaries and drainage channels flowing into the Krishna River. This initiative not only prevents plastic accumulation in the river but also raises public awareness about river pollution and waste management. The organization's approach integrates community participation, circular economy practices, and sustainable waste disposal, thereby linking pollution control with social and environmental well-being across the basin. **Source:** **https://plasticfischer.com** Plastic Fischer's Trash Boom technology deployed in the Krishna River is represented in Figure 1 below

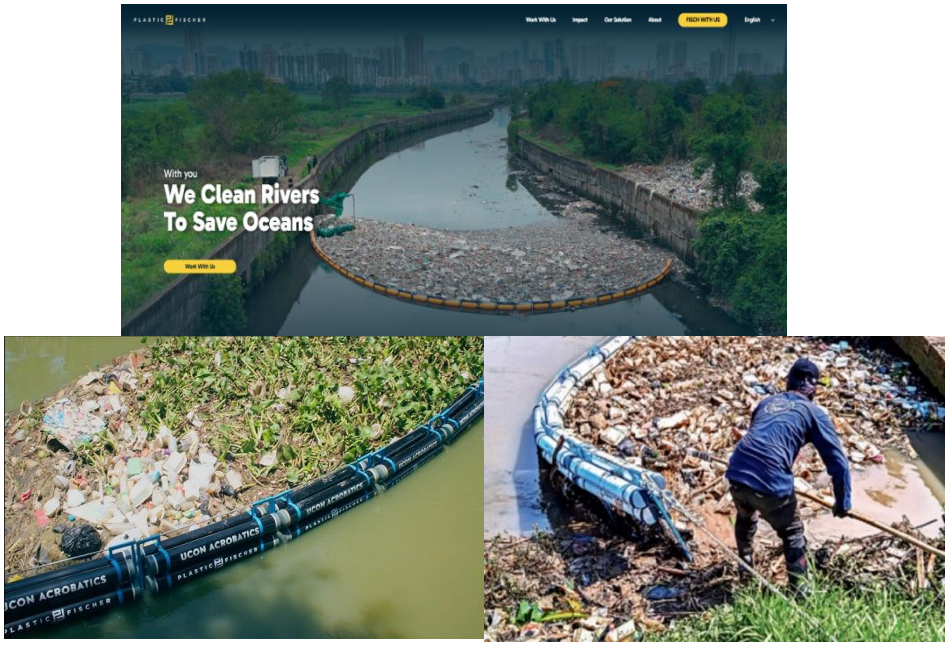

Figure 1: Plastic Fischer's Trash Boom technology deployed in the Krishna River at Vijayawada and Andhra Pradesh, for intercepting plastic waste before it enters the main river channel.

- **Pyaas Foundation (Karnataka):** Pyaas Foundation is a non-governmental organization based in Belagavi district, Karnataka, dedicated to addressing water scarcity and promoting sustainable watershed development in drought-prone regions of the Krishna River Basin. The foundation undertakes extensive water conservation initiatives, including the construction and rejuvenation of check dams, percolation tanks, and farm ponds to enhance groundwater recharge and ensure year-round water availability for agriculture and domestic use. Its projects have transformed several dry villages in north Karnataka by restoring local water bodies, improving soil moisture, and supporting farmers through community participation and awareness programs. Pyaas Foundation emphasizes the importance of collective action in water resource management, encouraging local communities to adopt water harvesting and conservation practices. Through its interventions, the organization plays a crucial role in strengthening the hydrological and social resilience of the

Krishna Basin. **Source:** https://pyaasfoundation.org Water Conservation and recharge works by Pyaas Foundation in Belagavi is shown in figure 2 below

Figure 2: Water Conservation and recharge works by Pyaas Foundation in Belagavi district, Karnataka.

- **Gomukh Environmental Trust for Sustainable Development (Maharashtra):** Gomukh Environmental Trust for Sustainable Development is a Pune-based NGO actively involved in community-led watershed and river basin management in the upper reaches of the Krishna River Basin in Maharashtra. The organization promotes the concept of Negotiated Integrated River Basin Management (N-IRBM), which emphasizes participatory decision-making and equitable sharing of water among various stakeholders, including farmers, women, and local communities. Through capacity building, water budgeting, and groundwater recharge initiatives, Gomukh Trust empowers rural populations to manage their natural resources sustainably. The NGO also undertakes river rejuvenation, catchment treatment, and soil-water conservation programs, integrating traditional knowledge with scientific approaches. By fostering collaboration among government bodies, local institutions, and

community groups, Gomukh plays a key role in improving water security and ecosystem health in the Krishna Basin. Below figure 3 represents the activities of Gomukh Environmental trust for sustainable Development.

Figure 3: Activities of Gomukh Environmental Trust for sustainable development NGO

- **Watershed Organization Trust, WOTR (Maharashtra/ Karnataka/Andhra Pradesh and Telangana):** WOTR was established in 1993, it is internationally recognised non-profit organisation and think tank that engages at the intersection of practice, knowledge and policy across scales and in collaboration with various stakeholders across sectors. WOTR's goal is to ensure water and food availability, along with livelihoods and income security – to support the sustainable growth and well-being of vulnerable and disadvantaged communities in rural India. WOTR has been working with rural communities in India for 3 decades now. As of September 2023, it has touched the lives of over 6.93 million across 7124 villages in 10 states of India – Maharashtra, Telangana, Andhra Pradesh, Madhya Pradesh, Jharkhand, Odisha, Rajasthan, Chhattisgarh, Bihar and Karnataka. It has included participants from 63 countries in training and exposure programmes. On the ground over 2.64 million hectares of degraded landscapes/watersheds have been regenerated, over 158 billion litres of potential water harvesting capacity has been created and agriculture productivity has increased significantly with a 121% increase in area under triple cropping. Farm incomes in most project villages are 2 to 4 times more

than those in control villages. Moreover, it has facilitated over 21,500 SHGs involving 2,52,829 women. Activities of Watershed Organization Trust is presented in figure 4 below.

Figure 4: Activities of Watershed Organization Trust, NGO

- **Aqua Devils Welfare Association (Vijayawada, Andhra Pradesh):** The Aqua Devils Welfare Association is a organization in Vijayawada and Andhra Pradesh which combines environmental conservation with community engagement to promote awareness about the health and sustainability of the Krishna River. The group focuses on restoring the connection between people and rivers through innovative activities such as "Jal Yoga"—a unique initiative that integrates physical well-being with environmental awareness by conducting yoga and clean-up drives in the Krishna River backwaters. Aqua Devils also organizes river clean-up campaigns, awareness rallies, and youth engagement programs to encourage responsible water use and waste management practices. Their approach emphasizes the role of citizens, especially the youth, in preserving local water bodies and reducing river pollution. By fostering a culture of respect and stewardship for natural resources, the association contributes to enhancing public awareness and community participation in river conservation efforts across the Krishna River Basin. Jal Yoga by Aqua devils team is represented in figure 5 below.

Figure 5: Jal Yoga Activity by Aqua Devils Team at Vijayawada

2.3 Local Community Organizations: Local community organizations play a vital role in the sustainable management of water resources within the Krishna River Basin, as the livelihoods of millions of people across Maharashtra, Karnataka, Telangana, and Andhra Pradesh are directly dependent on the river and its tributaries. Their active participation ensures that water management strategies are grounded in local realities, promoting equitable use and long-term sustainability. Some of the key local community organizations functioning within the Krishna River Basin include the following:

- **Water User Associations (WUAs):** In the Krishna Basin, numerous Water User Associations operate under state irrigation departments, particularly in regions served by major irrigation projects such as Almatti, Tungabhadra, Srisailam, and Nagarjuna Sagar. These associations comprise local farmers who collectively manage irrigation schedules, maintenance of canals, and distribution of water at the field level. WUAs help ensure equitable water sharing, conflict resolution, and improved water-use efficiency through participatory management.
- **Gram Panchayats (Village Councils):** As the fundamental units of local governance, Gram Panchayats across the basin oversee the management of village ponds, tanks, and small streams. In collaboration with District Water Management Agencies

(DWMAs) and other government programs, they undertake works related to water conservation, desilting of tanks, and rejuvenation of traditional water bodies. Their involvement in schemes like MGNREGA and PMKSY has strengthened local water governance and community stewardship.

- **Informal River User Groups:** Along various stretches of the Krishna and its tributaries, informal groups of fisherfolk, washermen, sand miners, and small-scale farmers depend on the river for their daily livelihoods. These groups often develop unwritten norms and practices for resource sharing and pollution control based on local customs and needs. Their traditional knowledge about river flow, seasonal variations, and water quality is invaluable for planning and implementing community-based river management and conservation programs.

3. Identification of key programmes in operation in the Krishna River basin

3.1 Central Government Initiatives: Central government agencies provide overarching policy direction, technical expertise, and financial support for the integrated management of the Krishna River Basin. Key agencies include the Ministry of Jal Shakti, Ministry of Environment, Forest and Climate Change (MoEFCC), National River Conservation Directorate (NRCD)

- **Ministry of Jal Shakti:** This is the nodal authority for water resource management in India. It is responsible for formulating policies related to water conservation, irrigation, and sanitation. Within its structure, the Department of Water Resources, River Development & Ganga Rejuvenation (while primarily focused on the Ganga, its integrated water management approaches are also applicable to the Narmada Basin) plays a vital role in project planning and implementation.

Key initiavtes of Ministry of Jal Shakti in Krishna River Basin: Ministry supports large-scale irrigation and multipurpose projects such as Almatti, Narayanpur, Srisailam, and Nagarjuna Sagar, which are critical for agricultural productivity, hydropower generation,

and regional water security in Krishna River Basin. It promotes integrated river basin planning through data-driven assessments, reservoir operation coordination, and demand-side water management. The ministry also facilitates inter-state water allocation and dispute resolution through mechanisms such as the Krishna Water Disputes Tribunal, ensuring equitable sharing among riparian states.

- **Central Pollution Control Board**: CPCB is India's apex environmental regulatory authority, constituted under the Environment (Protection) Act, 1986. Mandated to formulate and enforce national standards for water, air, and soil quality, the CPCB plays a crucial role in monitoring and controlling river pollution across the country. This role is especially important in river basins such as the Narmada, where ecological sustainability, public health, and socio-economic activities are closely linked to the maintenance of good water quality. One of the CPCB's key functions is the formulation and periodic revision of guidelines for water quality monitoring. These guidelines are implemented through a nationwide monitoring network that collects data on parameters including biochemical oxygen demand (BOD), chemical oxygen demand (COD), pH, and concentrations of nutrients and heavy metals. The generated data supports assessments of river health and provides a scientific basis for regulatory actions against industries and municipal authorities responsible for pollutant discharges into river systems.

Key initiavtes of CPCB in Krishna River Basin: In the context of the Krishna River Basin, the CPCB's role has been particularly significant. The Krishna is one of India's most important rivers, supporting millions of people along its course and contributing substantially to the state economies of Maharashtra, Karnataka, Telangana and Andhra Pradesh. Recognizing the vital importance of the River Krishna, the CPCB has been actively involved in monitoring its water quality. This includes regular sampling at strategic locations along the river, analyzing the data for compliance with national water quality standards, and identifying pollution hotspots where industrial effluents or agricultural runoff may be compromising the river's health.

- **Ministry of Environment, Forest and Climate Change (MoEFCC):** The Ministry of Environment, Forest and Climate Change (MoEFCC) is responsible for ensuring that

developmental activities within the basin adhere to prescribed environmental regulations. It oversees the Environmental Impact Assessment (EIA) process for large-scale infrastructure projects, including dam construction and riverfront development, to ensure that ecological integrity and biodiversity concerns are adequately considered and mitigated.

Key initiavtes of MoEFCC in Krishna River Basin: The ministry's guidelines aim to minimize adverse environmental impacts, enforce pollution control regulations, and promote ecological restoration initiatives. It works in close coordination with state pollution control boards and other environmental agencies to monitor compliance and protect local ecosystems.

3.2 State Government Initiatives: State governments play a critical role in the management of the Krishna River Basin, as water resources, irrigation development, and land-use planning largely fall within the state domain. The riparian states—Karnataka, Telangana, Andhra Pradesh, and Maharashtra—are responsible for implementing basin-specific policies, operating and maintaining irrigation and hydropower infrastructure, regulating groundwater extraction, and enforcing environmental safeguards. Through their respective water resources departments, irrigation authorities, pollution control boards, and river basin agencies, state governments translate central policies into on-ground action, address inter-sectoral water demands, and respond to region-specific socio-economic and ecological challenges within the Krishna River Basin.

- **Upper Krishna Project (UKP), Karnataka:** This is one of Karnataka's largest irrigation schemes in the Krishna River Basin. The project is based on the Almatti Dam and the Narayanpur Dam (on the Krishna River) along with an extensive canal network. In its earlier stages it aimed to utilise ~ 173 TMC (Thousand Million Cubic feet) of water to irrigate ~ 6.08 lakh ha in drought-prone districts of north Karnataka (Bijapur, Bagalkot, Raichur, Yadgir etc). In September 2025 the Karnataka Cabinet approved Phase-III of the Upper Krishna Project: increasing Almatti dam height from 519.6 m to 524.256 m, increasing storage by ~100 TMC and enabling irrigation of ~5.94 lakh hectares. **(**The New Indian Express+2Projects Today+2 **)** The main aim of

this project is to irrigate drought-prone areas in north Karnataka via the Almatti Dam & canal network; raise storage capacity and provide more assured water supply for agriculture. Upper Krishna Project is represented in the figure 6 below.

Figure 6: Upper krishna Project

- **Pattiseema Lift Irrigation Scheme, Andhra Pradesh:** This is a state initiative in Andhra Pradesh that links the Godavari River with the Krishna basin, water is lifted from the Godavari and diverted into the Krishna system (specifically to assist the Krishna delta). It involves ~24 pumps (each ~5,300 HP) lifting water from Godavari to Krishna via a canal system. The goal is to transfer surplus Godavari water to the Krishna delta region. The project was completed in record time (~1 year) and entered the Limca Book of Records. The main aim is to divert flood water from the Godavari River into the Krishna Basin (delta region) via lift irrigation to augment water supply, stabilise delta irrigation, utilise surplus Godavari flows. (Business Standard) Pattiseema Lift Irrigation scheme is shown in the figure 7 below.

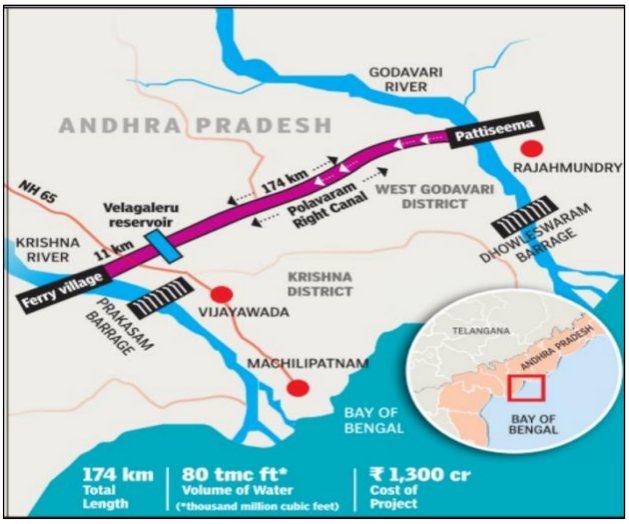

Figure 6**:** Pattiseema lift irrigation scheme

3.3 NGO and Local Community Initiatives: Non-governmental organizations (NGOs) and local community groups play an important complementary role in the management and conservation of the Krishna River Basin. Working at the grassroots level, these stakeholders contribute to awareness generation, community participation, and the implementation of sustainable water management practices. NGOs often support initiatives related to river conservation, water quality monitoring, watershed development, and livelihood enhancement, while local communities bring traditional knowledge and direct stewardship of natural resources.

- **Ghod River Water Fund (by The Nature Conservancy in Maharashtra):** The Ghod River Water Fund (GRWF) was initiated in the Ghod River basin — a tributary of the Bhima, which in turn is part of the Krishna Basin. The main aim is to science-based, collective governance and financing mechanism for water security in the watershed-basin context, bringing together public, private and civil-society stakeholders (wateractionhub.org+2nature4water.org+2) and to implement nature-based solutions (for example, forest/grassland/wetland restoration, recharge structures, sustainable agriculture) upstream in the basin so that downstream water users (communities, agriculture, industries) get more reliable and

improved water supply/quality. The Ghod River water fund is represented in the figure 7 below:

Figure 7: India's First Water Fund in Action: The Ghod River Water Fund

Outcomes of Ghod River Water Fund: The Ghod River Water Fund (GRWF) has advanced from the conceptual stage to the feasibility and planning phase, with its implementation profile documented on platforms such as the Water Action Hub. Early efforts under the initiative include active engagement with local stakeholders across the Ghod basin, which spans approximately 4,574 km^2 and encompasses 472 villages, four towns, a population exceeding 4.5 million people, and a significant industrial presence. The programme emphasizes nature-based solutions, with planned interventions focusing on the restoration of degraded ecosystems such as forests, grasslands, and wetlands, the development of groundwater recharge structures, and the promotion of water-efficient agricultural practices. In parallel, the initiative is working toward establishing robust governance and financing mechanisms, notably through a “water fund” model that links downstream water users and investors with upstream conservation actions, enabling downstream beneficiaries to support interventions that enhance water security. While large-scale measurable outcomes—such as extensive ecosystem restoration or sustained groundwater level improvements—are still in progress, the GRWF is widely recognized as a pioneering and innovative approach within the basin context.

- **Broader Community / NGO Initiatives (beyond GRWF):** While the GRWF is a concrete example, more broadly in the basin and in India some other community-driven initiatives illustrate the pattern the main aim is to promote decentralised water management: local recharge structures, rainwater harvesting, pond/tank revitalisation, community monitoring of water usage and quality and to empower micro-stakeholders (villages, farmers, water user associations) to manage water resources more sustainably. For example, the NGO driven approach

Outcomes:

- Local successes in many places: recharge tanks restored; farmers trained in water-efficient practices; communities engaged in citizen-science.
- Improved groundwater recharge and local water security in some villages (though many studies are small-scale).
- Examples: NGO frameworks set up community governance (e.g., the Jal Bhagirathi Foundation's "Jal Sabhas" for village-level water user associations) for improving local water governance. jalbhagirathi.org
- Increased awareness, behaviour change at local level (e.g., water-efficient crops, recharge works).

4. Identifying key stakeholders (those who have direct claim on the river):

The Krishna River Basin is characterized by a mosaic of communities and economic activities. The area is home to a large rural population, a significant number of forest dependent tribal communities, and a growing number of small towns. At the same time, large urban centers are relatively few. The region's socio-economic landscape is further shaped by an evolving agricultural system, diverse industrial enterprises, and livelihoods linked to the river system. In this section, we examine the primary stakeholders—households, farmers,

workers, and local firms—detailing their roles, challenges, and contributions to the basin's social fabric.

4.1. Households

Households along the Krishna River Basin are predominantly rural, with the large population belonging to all the four states. These families depend on the krishna river not only for water but also for fishing, small scale agriculture etc etc. For million households Krishna River basin is a lifeline. It supplies water for drinking, cooking, and sanitation that remain critical in area where piped water is not universally available.

Households in Krishna River Basin face a range of challenges:

- Sanitation and public health — river pollution (untreated sewage, industrial effluent) directly affects health outcomes for riparian communities.
- Large scale development projects particularly dam constructions, have forced many households to relocate. This displacement often disturbs traditional lifestyles and erodes communal bonds that have been maintained from generations

4.2. Farmers

Agriculture forms the backbone of the Krishna River Basin. Traditionally, the region supported subsistence farming characterized by a diverse mix of conventional crops. In recent decades, however, there has been a pronounced shift toward commercial agriculture. Farmers are increasingly adopting water-intensive crops such as rice and sugarcane, along with cash crops like cotton, influenced by market incentives and government policies. This transformation has substantially altered water-use patterns, as the irrigation requirements of commercial crops are significantly higher than those of traditional subsistence farming.

Agriculture in the region is highly dependent on irrigation water supplied by major projects such as (Nagarjuna Sagar, Srisailam, and Almatti). These large-scale irrigation systems enable the cultivation of crops including rice, sugarcane, cotton, pulses, and millets, and play a crucial role in shaping cropping patterns, farm incomes, and rural employment.

Additionally, seasonal water allocations for the Kharif and Rabi seasons are a key determinant of agricultural planning, as predictable releases influence farmers' cropping decisions, access to credit, and overall agricultural productivity.

Farmers in Krishna River Basin face a range of challenges:

- Conflicts & institutional context - Interstate sharing disputes (Maharashtra, Karnataka, Telangana, Andhra Pradesh) are historically handled through the Krishna Water Disputes Tribunal (KWDT) awards and subsequent negotiations; allocations from KWDT remain central to agricultural planning and recurring conflicts.
- Economic Uncertainty – With the move towards the commercial cropping, farmers are increasingly exposed to the risks of fluctuating market prices and external debt. These factors contribute to a cycle of vulnerability and limit investment in sustainable practices.

4.3. Workers

Workers in the Krishna River Basin sustain their livelihoods through a range of river-dependent activities. These include traditional fisheries, which have historically provided a major source of income for many communities, as well as employment in sectors such as sand mining, construction, and hydropower generation. Each of these livelihood sectors possesses unique characteristics and is confronted with distinct challenges.

Fishing has been a long-standing pillar of the riverine economy. For generations, local communities have relied on the Krishna River for food and income through artisanal fishing practices. In recent decades, however, dam construction and industrial pollution have severely disrupted these traditional livelihoods. Changes in natural flow regimes have interfered with fish migration, while rising pollution levels have contributed to declining fish stocks.

4.4. Local firms and industries

Several economic sectors within the Krishna River Basin are closely tied to the availability of river water. Agriculture-linked industries such as sugar mills, rice mills, and agro-

processing units depend heavily on irrigation outputs, making their operations directly sensitive to river flows. Hydropower generation at major dams, including Srisailam and Nagarjuna Sagar, contributes significantly to regional electricity supply and plays an important role in supporting industrial energy needs. In addition, manufacturing activities and resource extraction industries—particularly those associated with the Krishna–Godavari hydrocarbon province—require substantial quantities of water for processing and cooling. The presence of major oil and gas fields within the basin further intensifies industrial demand, creating additional pressure on water and land resources and leading to competing sectoral interests.

5. Examples of enabling/constraining elements to implementation of policies and programmes:

5.1 Enabling Elements:

- **Community Involvement:** Policies that engage local communities in decision-making tend to have greater acceptance and long-term success.

- **Institutional Support:** Strong governmental and non-governmental institutions that ensure proper implementation and monitoring aid policy effectiveness. For example, the cKrishna Centre, under the Ministry of Jal Shakti, plays a critical role in advancing science-based, data-driven basin management by promoting interdisciplinary research and these institutions enable an organized and rule-based approach to decision-making, replacing ad hoc political negotiations with structured policy instruments.

- **Legal Frameworks & Advocacy:** Legal rulings, such as those requiring rehabilitation and compensation, provide legitimacy and enforceability to policy measures.
- **Public Awareness Campaigns:** Increased environmental and social awareness helps mobilize public opinion and resources toward effective implementation.
- **Alternative Livelihood Programs:** When policies integrate employment and skill building initiatives, displaced communities are more likely to adapt successfully.

5.2 Constraining Elements:

- **Political and Bureaucratic Resistance:** Government agencies may prioritize economic growth over social and environmental concerns, delaying or blocking policy execution.
- **Lack of Resources & Funding:** Insufficient financial and infrastructural support results in incomplete or ineffective policy rollout.
- **Fragmented Social Movements:** Internal divisions within activist groups weaken their bargaining power and reduce policy impact.
- **Legal Setbacks & Institutional Failures:** Court rulings that favor development over displacement concerns limit the reach of progressive policies.

5.3 What works for Co – existence?

- **Participatory Decision-Making:** When affected communities have a voice in planning, they are more willing to adapt to changes.
- **Decentralized Water Management:** Small-scale irrigation and watershed management approaches are more inclusive and sustainable.
- **Cultural Sensitivity in Development Projects:** Recognizing and respecting indigenous traditions helps reduce conflict.
- **Compensation & Resettlement Done Right:** Policies ensuring fair land distribution and livelihood restoration foster better integration.
- **Transparent Governance:** Clear communication and accountable institutions help bridge gaps between development and displacement concerns.

5.4 What Doesn't work for Co – existence?

- **Top-down Policy Decisions:** Imposed solutions without community consent led to resistance and non-compliance.
- **One-size-fits-all Resettlement Plans:** Programs that fail to account for local economic and social realities often leave displaced populations worse off.
- **State Repression & Coercion:** The use of force to suppress protests or enforce policies alienates communities and escalates conflicts.

- **Over-reliance on Legal Solutions:** Courts alone cannot resolve deeply embedded socio-economic tensions without broader policy changes.
- **Movements Without Local Grounding:** When social movements prioritize external narratives over local realities, they lose legitimacy among those they aim to support.

6. Strategies for Public Awareness and Participation

The information in this report emphasizes that the challenges—ranging from water quality degradation in Krishna River basin and displacement to inadequate infrastructure and conflicts over water allocation—are best tackled when local stakeholders are not only informed about these issues but are also actively engaged in crafting solutions. One of the key strategies emphasized in the report is the implementation of effective Information, Education, and Communication (IEC) campaigns. The document illustrates how a range of communication approaches—such as community meetings, local radio broadcasts, and the distribution of posters and leaflets—have been employed to convey essential information on the harmful impacts of industrial pollution, deforestation, and unsustainable water extraction. These initiatives have played a significant role in enhancing public awareness of the relationship between environmental health and overall quality of life. By presenting complex technical information in a clear and accessible manner, the report demonstrates how communities can be empowered to recognize local challenges and advocate for more transparent and accountable water management practices.

Furthermore, the report underscores the importance of participatory platforms that formalize public involvement. Local water user associations and community committees have been established as official forums through which citizens can work alongside local authorities and technical experts. These platforms offer a structured space for exchanging feedback and deliberating on water management proposals. The report notes that involving community members in advisory groups or decision-making bodies enables their perspectives to inform more flexible and locally relevant solutions. For instance, when farmers and fishermen share their firsthand knowledge of seasonal flow patterns or

pollution-prone areas, the resulting policies are better aligned with real, on-the-ground conditions.

Technology and digital tools are also integral to this participatory framework. Mobile applications and online dashboards can facilitate the reporting of environmental concerns such as illegal sand mining, water contamination, and infrastructure failures. These platforms enhance transparency while enabling the swift sharing of information. They allow community members to promptly notify authorities about emerging issues, thereby narrowing the divide between citizens and policymakers. By supporting real-time, two-way communication, such technological interventions can significantly improve the responsiveness and effectiveness of water management strategies.

Public awareness and participation are most effective when they are integrated into a dynamic process of monitoring and learning. Regular public hearings and community review workshops are effective methods for ensuring that policies remain responsive to local needs. In this context, the Social environmental awareness and action program was conducted at kudli village, Shivamogga, Karnataka by cKrishna team. The program focused on raising awareness about the critical importance of the Tunga and Bhadra rivers, which converge at Kudli to form the Tungabhadra River. The activities were spearheaded by Prof. Basavaraju Manu and involved students from GHPS Bhadrapura, with the aim of fostering a deeper connection to their local environment and heritage. Figure 8 and 9 below represents the activity conducted at kudli village.

Figure 8: Activity at GHPS Kudli

Figure 9**:** Activity at GHPS Bhadrapura

The choice of Kudli village as the location is significant. Its historical and cultural importance as a sacred confluence makes it an ideal setting for an environmental awareness program. The program wasn't just about cleaning a river; it was about connecting students to their heritage and the spiritual significance of the rivers. The local phrase "Thunga panam, Ganga snanum" (Drinking Tunga water is equal to bathing in the Ganga) emphasizes the reverence the community holds for the Tunga River, a powerful sentiment that can be leveraged to motivate conservation efforts. Drawing Competition: "Namma Nadi – Namma Jeevana" (Our River – Our Life) A drawing competition was organized for the school children of GHPS Bhadrapura to engage them creatively with the theme of river conservation. The competition encouraged students to visually explore various facets of the rivers. Visually impactful posters were prepared and displayed around the school campus. These posters served as powerful educational tools, addressing critical topics such as scarcity of clean water, cultural and environmental value of rivers etc. Figure 10 and 11 below represents the drawing competition activity and posters presented at kudli village

Figure 10: Drawing activity at GHPS Kudli

Figure 11**:** Posters at GHPS Bhadrapura

The program culminated in a hands-on near river stretch cleaning activity near the Tunga-Bhadra Sangama. This initiative involved school students and staff, demonstrating the practical application of the awareness gained. The activity aimed to empower students to take direct responsibility for their local environment. Figure 12 represents the cleaning activity.

.

Figure 12: River Stretch cleaning activity

In summary, the strategies identified to address constraints through public awareness and participation include the empowerment of local communities through capacity building, the creation of formal participatory platforms, and the utilization of technology for real-time information sharing. These measures not only enhance the effectiveness of water management policies but also build a foundation of trust and accountability between communities and government agencies. The information and experiences documented in the report will be useful for sustainable river basin management will be achievable when informed, engaged, and empowered citizens are at the heart of the process.

6. Conclusion

The Krishna River Basin represents a complex socio-environmental system where water resources underpin livelihoods, economic development, cultural identity, and ecological integrity across multiple states. This report highlights that effective basin management extends well beyond hydrological and engineering considerations, requiring strong institutional frameworks, inclusive governance mechanisms, and active public participation. The analysis of key institutions—ranging from central and state government agencies to non-governmental organizations and local community groups—demonstrates that multi-level and multi-stakeholder engagement is essential for addressing challenges such as inter-state water sharing, pollution control, infrastructure development, and sustainable water use. Government agencies provide the policy direction, regulatory oversight, and technical capacity necessary for basin-scale planning, while state-led initiatives translate these frameworks into region-specific actions. Complementing these efforts, NGOs and community-based organizations play a critical role in grassroots implementation, awareness generation, and the integration of traditional knowledge with scientific approaches. Initiatives such as watershed development, river rejuvenation, and water funds illustrate the potential of collaborative and nature-based solutions to enhance water security and ecosystem resilience.

The identification of key stakeholders—households, farmers, workers, and local industries—underscores the diverse and often competing demands placed on the Krishna River. These groups face shared challenges related to water availability, quality degradation, displacement, and economic uncertainty, making equitable and transparent governance imperative. The assessment of enabling and constraining elements further reveals that policies are most effective when they are participatory, adequately resourced, institutionally supported, and sensitive to local socio-cultural contexts.

Finally, the report emphasizes that public awareness and participation are central to sustainable river basin management. Community engagement initiatives, educational programmes, participatory platforms, and the use of digital tools have proven effective in

bridging the gap between policy and practice. Experiences such as the environmental awareness programme at Kudli village demonstrate how culturally rooted and locally relevant interventions can foster stewardship and long-term behavioral change.

In conclusion, sustainable and equitable management of the Krishna River Basin can only be achieved through an integrated approach that combines robust institutions, inclusive governance, informed communities, and continuous learning. Placing people at the center of river basin management—while balancing developmental needs with ecological preservation—offers the most viable pathway toward long-term water security and resilience in the Krishna River Basin.

7. References

Central Pollution Control Board. (n.d.). Guidelines for water quality monitoring. Retrieved March 21, 2025, from https://www.cpcb.nic.in

Krishna River Management Board (KRMB). (n.d.). *About KRMB*. Government of India. Retrieved from https://krmb.gov.in/

Maharashtra Pollution Control Board – https://mpcb.gov.in/

Karnataka State Pollution Control Board – https://kspcb.karnataka.gov.in/

Central Water Commission (CWC). (n.d.). *Krishna Godavari Basin Organization (KGBO)*. Government of India. Retrieved from https://cwc.gov.in/en/kgbo

Plastic Fischer. (n.d.). Reducing plastic pollution in rivers. Retrieved from https://plasticfischer.com

The Nature Conservancy. (n.d.). Ghod River Water Fund. Retrieved from https://wateractionhub.org

Pyaas Foundation. (n.d.). Pyaas Foundation – Water conservation and watershed development. Retrieved from https://pyaasfoundation.org

The Nature Conservancy. (n.d.). *Ghod River Water Fund*. Water Action Hub. Retrieved from https://wateractionhub.org

Andhra Pradesh State Pollution Control Board – https://pcb.ap.gov.in/