

Review Of India's Water Governance – Existing Schemes And Programmes For Effective Management Of Water Resources, Underlining Possible Reforms To Meet 21st Century Challenges

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Abstract

Climate change and population growth have made water resources inadequate in comparison to demand. As water usage ascends, water management becomes a daunting obstacle for the government and water companies. The collective involvement of federal, state, and local governments in effective water management and conservation is necessary to improve country's water condition in the future. According to Mihir Shah Committee Report, as water is a state responsibility, the respective State Governments are mainly accountable for the augmentation, conservation, and effective management of water resources. For improved water governance and to ensure a holistic approach, Jal Shakti Ministry was formed in 2019 by merging two ministries, 'Ministry of Water Resources, River Development & Ganga Rejuvenation' and 'Ministry of Drinking Water and Sanitation'. Various state governments are working on the laws and policy frameworks to regulate and manage the available water resources. The paper gives brief review of the various initiatives, schemes and programmes undertaken by state government with the technical and financial support of central government.

Various objectives of the schemes, their focused intercessions, implementation strategies and the comprehensive influence on all the stakeholders are also studied. Comparative analysis of the policies is done to understand the inadequacies & benefits and practicable reforms needed to meet present challenges are included to conclude the paper.

Keywords: Water Governance, Water Resource Management, Government Schemes and Programmes, Mihir Shah Committee Report, Reforms in Water Governance.

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I. Introduction

Water resources, which are one of the many essential life resources for humans, are mismanaged, wasted, and inefficiently used, resulting in pollution and flow reductions below minimum ecological needs. Furthermore, there are inequities in distribution and lack of unified perspective in the planning, management, and use of water resources. Thus, there is a need to introspect human behavior, the existing schemes, policies and programs to give better recommendations. Water governance legislation in every state and union territory, as well as allocation of necessary authority to lower levels of government to deal with local water issues is vital for good water governance. This can't be achieved without equity, social justice, and sustainability based on transparent, well-informed decision making. The decision-making and regulation of water resources should be guided by meaningful participation, transparency, and accountability.

Regarding 'Water', the Constitution of India specifies what the Union, State, and municipal governments can and cannot do. Under the Constitution, 'water' is primarily the duty of the states, with the exception of interstate river waters.

Article 262 of the Constitution contains a section for the resolution of disputes over international rivers and river basins. The 1992 Constitutional changes related to Panchayats and Municipalities added the following entries to the schedules detailing the subject-areas in which the State Governments and legislatures may transfer powers to these bodies so that they may develop into local self-governing institutions. Details about this can be studied in 8th schedule related to Panchayats and 12th schedule related to municipalities.

Water, ground or surface, is used in many sectors. We can Briefly categorize the water usage in India as – Domestic, Irrigation and Industries. Various ongoing schemes and programmes for water resource management in these sectors are reviewed in this paper and some suggestions for strengthening the water governance in India are discussed thereafter.

II. Discussion

What is Water Governance:

Organisation for Economic Co-operation and Development (OECD)	The range of political, institutional and administrative rules, practices and processes (formal and informal) through which decisions are taken and implemented, stakeholders can articulate their interests and have their concerns considered, and decision-makers are held accountable for water management.
Stockholm International Water Institute (SIWI)	Water governance refers to the political, social, economic, and administrative systems that influence the use and management of water.
UNESCO - IHE	It is a complex process that considers multi-level participation beyond the state, where decision making includes not only public institutions, but also the private sector, civil society and society in general.

21st century challenges related to water resources in India:

For fulfilling all water requirements of the country, as per Asian Development Research Institute, India has 4% of world's surface water resources², 433 bcm annually utilizable ground water and on an average 4000 bcm annual rainfall.¹ But spatial distribution of availability of water is very uneven in the country. While the worldwide standard for a "water stressed" country is 1700 m³/year/person, India's current per capita availability is only 1545 m³/year/person, making it one of the most severely water-stressed nations in the world². Climate change and also the global warming will further worsen the situation in upcoming years.

India gets more than 80% of its domestic water from groundwater, making it the largest user of groundwater in the world.³ Due to this overuse of groundwater, almost 22% of blocks have been rated as critical or overexploited.⁴

It is estimated that the per capita daily water footprint is 1.24 million lpcd, given that water is utilized in the production of food, dairy products, clothing, and other daily necessities. Agriculture is the country's greatest freshwater consumer, accounting for over 85% of total water use.⁵

The country's water consumption is expected to be double the available supply by 2030.⁶ 83% of the nation's total electrical output is reliant on the consumption of water. In addition, meltwater from snow and ice in the Himalayas is necessary for the generation of about one-third of all coal-based energy, 24% of nuclear electricity, and 22.5% of the world's petroleum refining capacity.⁷

India's water quality index rank is 120 in 122 countries and it secures 133rd place in 180 nations for its water availability.⁸

India has a lot of water-related diseases, and it near about cost the country USD 600 million each year.⁹ Areas that are prone to droughts and floods are more likely to get these diseases, and in the last few years, they have spread to almost 33% of the country. The Intergovernmental Panel on Climate Change (IPCC) says that both average and extreme rainfall will increase during the Indian summer monsoon.⁵

Apart from all the environmental challenges related to water, one of the biggest problems with getting government money for water projects is that the bidding process favors the lowest-cost bidder, not the best provider or the most durable solution. The ability of the community water sector to get commercial funding is limited by the lack of economically viable models for recovering capital costs and making money from operations.⁸

Schemes and programmes for Effective water resource management in India:

Prime Minister launched "Jal Shakti Abhiyan: Catch the Rain" (JSA: CTR) with the theme "Catch the Rain - Where it Falls When it Falls" on 22nd March 2021, the World Water Day, to cover all the blocks of all districts (rural and urban) across the country from 22nd March, 2021 to 30th November, 2021 - pre-monsoon and monsoon period. JSA: CTR campaign had five targeted interventions: (1) rainwater harvesting and water conservation; (2) enumerating, geo-tagging, and inventorying all water bodies; preparation of scientific plans for water conservation; (3) establishment of Jal Shakti Kendras in all districts; (4) intensive afforestation; and (5) dissemination of information. The Jal Shakti Abhiyan for 2022 was launched on March 29, 2022.

Water conservative plan preparation is encouraged by the government these days like Urban River Management Plans. Urban River Management is the process of conserving, developing, and restoring river resources within a city's administrative limits. It seeks to achieve a delicate equilibrium between the ecological, infrastructure, social, recreational, and economic functions of a city's river. It should ensure that the river behaves in a manner that is environmentally sensitive, economically viable, and socially inclusive within the city limits.

The National Action Plan on Climate Change (NAPCC) suggests: "A National Water Mission will be set up to make sure that water resources are managed in a way that saves water, wastes as little as possible, and is shared more fairly across and within states. The Mission will look at the National Water Policy and come up with a plan to make the best use of water by making water use 20% more efficient through regulatory mechanisms with different rights and prices. It will try to make sure that a big part of the water needs of cities are met by recycling waste water. It will also try to make sure that the water needs of coastal cities that don't have enough other water

sources are met by adopting new and appropriate technologies, like low-temperature desalination technologies that let ocean water be used. In collaboration with the states, the National Water Policy would be looked at again to make sure that basin-level management strategies are in place to deal with climate change-related changes in how much rain falls and how fast rivers flow.

The State Specific Action Plans, SSAPs were thought of as a comprehensive policy for integrated water resource management that would be made in each state or union territory to encourage a long-term way of thinking about water governance that was in line with the SAPCCs made by the states under the NAPCC.

The "Framework for SSAP for the Water Sector" was made in 2015, and SSAPs became a strategy in 2016 aiming to promote basin-level integrated water resource management. Since it is a state matter, NWM gives grants to all the states and union territories (UTs) so that they can make SSAPs with the approval of the right people. A grant of Rs. 50 lakhs for 'major' states and Rs. 30 lakhs for 'minor' states.

In view of NWM, the Central Water Commission has finalized the instant guidelines for improving Water Use Efficiency in various sectors like irrigation, domestic and industrial sectors, by incorporating the suggestions regarding the entire draft, received from various organizations like IITs, NITs and WALMIs etc.

III. Conclusions

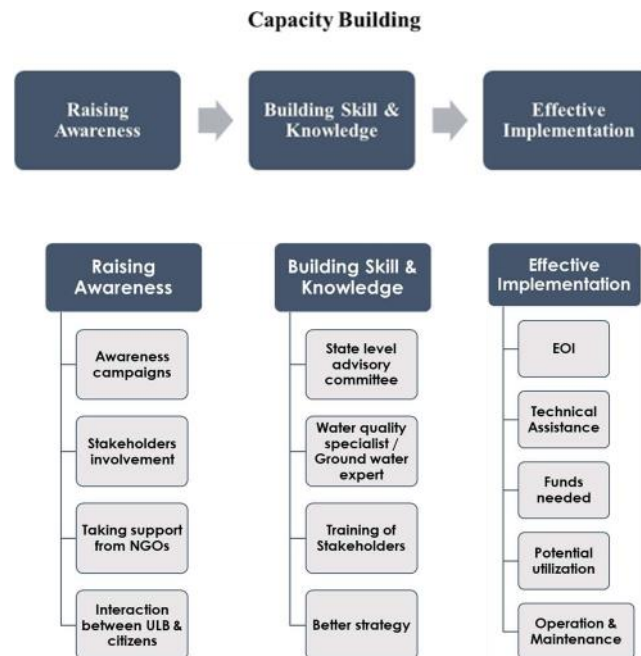
The answer to many of the water related challenges in India can be get by clearly establishing roles and responsibilities related to water resource conservation and management for governments, civil society, private sector and most importantly, all the residents of the country.

In response to governance issues in the water sector, there is no one-size-fits-all solution, magic plan, or utopia; rather, there is a call for locally developed and place-based policies that incorporate regional peculiarities and issues.

Some of many possible recommendations are –

- A nationwide grid can be established where in the main goal is to connect the standalone systems and decentralize the network to Regional Water Dispatch Centers at a smaller level. We need a number of Regional Water Dispatch Centers interconnected and governed by State Water Dispatch Centers, which are governed by National Water Dispatch Centers. This will allow us to monitor the entire water collection and distribution process, even in remote locations, preventing water leaks, pollution, and ensuring a reliable water supply in the future.
- The grid must be set up at macro (Government level), meso (community level) and micro level (individual level) as per requirement.
- The SCADA (Supervisory Control And Data Acquisition) system, SMART TAPS and standalone grids to monitor the common households in water conservation field are some of the technological advancements.
- Short term action plans for conservation of cities lakes & waterbodies –
 1. Water bodies to be notified by Municipal land use records as municipal assets, mentioning their area, location and coordinates
 2. Water bodies should be properly fenced to protect it from encroachment.
 3. A well-planned awareness campaign must be conducted in the localities to highlight benefits gained from them.
 4. The inlet and outlet of the water body should be identified and monitored at frequent interval. Any obstruction in its path must be removed.
 5. Any outfall of domestic/industrial sewage into water bodies must be prevented and only treated effluent as per effluent standard of the State Pollution Control Board, may be allowed to dispose.
- Long-term action plans for conservation of cities lakes & waterbodies –
 1. The waterbodies operation and maintenance can be headed under PPP model for which the 'Multi-Stakeholder Socially Inclusive Model' can be adopted where the neighbourhood residents can actively participate.
 2. Measures like cleaning of Water Body involving de-silting, de-weeding, aeration, reduction of nutrient, removal of floating and other invasive aquatic plant-species or any successfully tested and technologically suitable to the local condition, may be taken up by the ULBs.
 3. A comprehensive water front development at preferably vacant government land around the lake may be taken up keeping in view the eco system-based approach for the aquatic body.
 4. Catchment area treatment like afforestation, storm water drainage management, silt traps, etc., may be undertaken.
 5. Dumping of solid waste into these areas should be made a punishable offence.
 6. The Lakes should live with their inherent natural features to remain as healthy Water Bodies, e.g., fish, frogs, turtles, micro-organisms, zoo planktons, phyto planktons, including varieties of aquatic vegetation.
- By using water saving techniques in agriculture, 6–30% of water can be saved during the Kharif season and 6–21% during the Rabi season.

- If industries, especially thermal power plants, use water more efficiently, they could save 18–25% of the freshwater they use every day.
- Also, putting three of the crops that use the most water (rice, wheat, and cotton/sugarcane) under a Micro-Irrigation System (MIS) can cut the amount of water use by 60%.
- Commercial and residential buildings with more than one floor should be required to make a water budget and a water management plan.
- Indian cities could move toward "Sustainable Urban Development" by making an integrated management framework and interconnecting water, energy, and food infrastructure and smart solution programmes. This could be done as part of CDP.
- Decision-makers at all levels, including those in communities and governments, should have access to accurate, real-time information about the amount, quality, and use of water. For strict monitoring and realistic planning, there needs to be real-time decision support and governance. Information and communication technologies should be improved so that data can be collected and the right action can be taken.
- There should be a policy that encourages the reuse of wastewater in all areas, with specific steps to make it more likely to happen.
- Capacity building can be effectively done for to improve skills for carrying out essential functions, solving problems, defining and achieving goals. This enables organizations and their leaders to develop competencies and skills that can make them more effective and sustainable, to improve lives and address society's most intractable problems.



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