

India in Search for a New Water Governance

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Abstract

There is no debate on the point that the water is an indispensable natural resource for human survival and development. Also, there is enough authoritative evidence to demonstrate that India is faced with a severe water crisis: depleting water resources mainly ground water, pollution of water resources, rivers, ponds and aquifers, with fill impact of climate change in the forms of erratic rainfalls, floods and droughts. The rising population, unregulated use of irrigation for farming, lack of water conservation efforts and long term planning, instrumental view of water as a resources to be exploited are, among other, the major factors responsible for this crisis. Lack of safe drinking water in many parts of India's rural and urban areas as well as crisis for irrigated farming threatens India's water security and food security both. This a calls for new thinking on water sustainability, long term perspective on water management including conservation, use and recycling water resources and a participatory and holistic water governance in the country. This paper, besides introduction, is divided into three parts: analyzing the nature of India's water crisis, scope for water governance and finally the elements of new water governance in India.

Keywords: Water crisis; Groundwater depletion; Water security; Water sustainability; Water governance.

How to cite this article:

Arunoday Bajpai. India in Search for a New Water Governance. International Journal of Political Science 2020;6(2):57-64.

Introduction

Water is an important natural resource in human life. Water sustains all forms of life on earth, maintains ecologic balance and healthy environment, and used in food production, energy generation, industrial production among others. But India has now come to face an insurmountable water crisis, which has been building over decades. The World Research Institute (WRI, US) warns that India is one of the most water-challenged countries in the world, with the national supply predicted

to fall 50 percent below demand by 2030. A report of the Niti Aayog (2019) warns that by 2030, the country's water demand is projected to be twice to the available supply. India's 21 major cities are likely to reach zero groundwater levels by 2020, affecting access for 100 million people. India's 12 percent population is already living the 'Day Zero' scenario. The water pollution is also on the rise, with all major water sources, rivers, ponds, and aquifers are subject to one or other form of pollution.

The growing population, decentralized and unregulated nature of water use, pressure for increased production, cheap availability of electricity, shift towards water guzzling crops like rice and sugarcane etc, are some of the factors responsible for water stress. The Climate change has taken its own toll with erratic monsoon, droughts and floods. The flood situation in 2019 in certain states like Kerala, Maharashtra and Andhra Pradesh is a grim reminder of things in store. Chennai has become a textbook example of urban water

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scarcity in India. India's multidimensional and ever deepening water crisis calls for a new water governance, characterized by holistic and long term approach, decentralization and participation, transparency and accountability; which will ensure sustainable use and conservation of water resources in the country. Water cannot anymore be viewed as an instrument to be exploited without any consideration. This requires a drastic change in the entire spectrum of India's water regime.

Part I: Nature and Magnitude of India's Water Crisis

A water crisis may be defined as a situation, when adequate and appropriate water resources are not available to meet their demands either due to scarcity of resources, or unsuitability of available water resources or the mismanagement of available resources. India has more than 18 percent of the world's population, but has only 4 percent of world's renewable water resources and 2.4 percent of world's land area (National Water Policy, 2012). India's water crisis is well documented and alarm bells have been raised. India Water Tool. 2.0, a new web platform, designed by the World Business Council for Sustainable Development (WBCSD) in collaboration with World Resources Council (WRI) is the most comprehensive, publicly available online tool evaluating India's water crisis. India is one of the most water-challenged countries in the world, from its deepest aquifers to its largest rivers. Groundwater levels are falling as India's farmers, city residents and industries drain wells and aquifers. And the future may only be worse, with the national supply predicted to fall 50 percent below demand by 2030 (WRI: 2015).

The tool demonstrates that 54 percent of India's total area is facing high to extremely high stress, and almost 600 million people are at higher risk of surface-water supply disruptions. The north-west states like Punjab, Haryana, Western Uttar Pradesh, Gujarat, Rajasthan and Maharashtra are the extremely high stress areas of India. The states of Punjab and Haryana alone produce 50 percent of the national government's rice supply and 85 percent of its wheat stocks. Both crops are highly water intensive. Groundwater levels are declining across India. Of the 4,000 wells, 54 percent dropped over the past seven years, with 16 percent declining by more than 1 meter per year. Farmers in arid areas, or areas with irregular rainfall, depend heavily on groundwater for irrigation. The Indian government subsidizes the farmers' electric pumps

and places no limits on the volume of groundwater they extract, creating a widespread pattern of excessive water use and strained electrical grids. Northwestern India, of the 550 wells studied in the region, 58 percent have declining groundwater levels. The quality of ground water has deteriorated over the years because of excessive use. Out of India's 632 groundwater quality districts, only 59 are above prescribed limits. These districts are also extremely populous as 130 million people live in districts where at least one pollutant exceeded national safety standards in 2011 (WRI: 2015).

According to a recent report of World Resources Institute (WRI: 2019a), India ranks 13th out of other 17 extremely highly water stressed countries. India has more than three times the population of these countries combined, which underlines the magnitude of India's water crisis. Apart from India's rivers, lakes and streams, India's groundwater resources are severely overused, largely for irrigation. Groundwater tables in some northern states have been declining at a rate of 8 centimeters per year during 1990-2014.

Back at home the National Institution for Transforming India (NITI Aayog), India's premier development agency has published Report titled 'Composite Water Management Index (CWMI) in August, 2019 which warns that India is 'suffering from the worst water crisis in its history, and millions of lives and livelihoods are under threat' (Niti Aayog: 2019). The following highlights of the Report paint a grim picture of nation's water crisis:

1. The water stress is inbuilt in India as she holds about 4 percent of global fresh water with 16 percent of global population dependent on these limited resources.
2. The report states that by 2030, the country's water demand is projected to be twice the available supply by the year 2030. India is dependent on Monsoon rains for her water requirements. At present, 53 percent of agriculture in India is rain fed. The low-rain and no-rain situation will result in a worst water crisis in India's history.
3. India's 21 major cities including Delhi, Bengaluru, Chennai, Hyderabad and others) are likely to reach zero groundwater levels by 2020, affecting access for 100 million people. India's 12 percent population is already living the 'Day Zero' scenario.
4. India is the world's biggest groundwater extractor. The Report reveals that 54 wells

in India are declining in water level due to unsustainable with drawals for irrigation.

5. About 75 percent of households in India do not have drinking water at home, and 84 percent rural households do not have piped water access. Also, 70 percent of India's water is contaminated. India ranked 120 among 122 in the global water quality index in 2018.
6. The water crisis has severe consequences for the physical and human resources of the nation as well as its social stability. About 600 million (nearly 50 percent of India's population) people are dealing with high to extreme water shortage. An average of 200,000 Indian lives is lost every year due to inadequate supply or contamination of water. The water crisis will result in 6 percent loss to the GDP. Inter-State disputes over the water issue has been raising now, with 7 major disputes are pending. Even one expert (Nirola: 2019) suggests that it is high time for India to declare a climate emergency.

The ground water resources are highly stressed in India. Sonali Mc Dermitt (Schiffman: 2017) India is one of the most heavily irrigated areas on earth. While the world uses 70 percent groundwater in Agriculture, it is 90 percent in India. The aquifer in the Indo-Pak border region may go dry during 2025-35. The state subsidy has created addiction among farmers for pumping water. The whole agricultural region, which is the most productive in South Asia, stands to fail. In addition, the South Asian agriculture is facing a perilous future in view of disruptive effects of climate change (Schiffman: 2017). India has 26 million groundwater structures, which have drained out ground water and made the aquifer dry in many parts of the country (Jena: 2015). There is no incentive to save ground water. On the contrary unregulated water use regime along with cheap electricity rates for irrigation has encouraged unsustainable exploitation of ground water in the region. The water scarcity for many South Asians is a daily reality, and as the UN World Water Development Report, 2015 suggests, the situation is going to get worse unless steps are taken to mitigate the crisis (Surie: 2015). The condition of groundwater in the urban areas is not encouraging. A recent study (WRI: 2019) of the 15 cities of South Asia-Bengaluru (India); Colombo (Sri Lanka); Dhaka (Bangladesh); Karachi (Pakistan); and Mumbai (India) finds that only 63 percent people living in these megacities use tap water and rest of them are dependent on other sources including ground

water. The fast receding water table has made the ground water scarce and unusable, with impending consequences like impaired food production, loss of livelihood, migration and conflicts.

Part II : Scope for Water Governance in India

The water crisis in India exhibits three silent features which provide scope for water governance in India.

First, the underground water crisis of India is largely man-made, which is amenable to human management. It is true that India's huge population and need for food security places heavy burden on ground water resources. But, it is also true that India has a large network of surface water resources, which if, properly managed and conserved, may help in replenishing India's fast depleting aquifers. The man-made nature of India's water crisis is also attested by the Niti Aayog report (2019). Out of the 24 states reviewed for their sustainable water management practices, 14 states fall in the category of 'low' performance (Niti Aayog: 2019). This leaves ample scope for water governance in India.

Second, One of the silent features of India's water crisis is the decentralized use and exploitation water at every level in rural and urban areas. It has gone totally unregulated by the state. This ground water has been largely used for irrigation without any consideration for its recharge. The major problem is how to regulate this decentralized exploitation of ground water without compromising with the agriculture production. In fact, the water security in India is closely linked with food security.

Third, the water crisis in India as elsewhere is closely linked with other issues including climate issue environment degradation. It's not just the climate issue but the entire breadth of environmental issues we are facing today. Air pollution, poor management of waste, growing water scarcity, falling groundwater tables, water pollution, preservation and quality of forests, biodiversity loss, and land/soil degradation are some of the things we're struggling with (Nirola: 2019).

Existing Framework of Water Management in India

The Government of India has devised various programmes, policies, institutions and legal mechanism from time to time to manage countries

water resources. India is a federal state and the subject of 'water including water supplies, irrigation and canals, drainage and embankments, water storage and water power' finds place in the State List (Entry no17) of the Constitution. However, the subject of 'regulation and development of inter-state rivers and river valleys' (Entry no 56) find place in the Union List. The Ministry of Water resources was created in 1985 by bifurcating the existing Ministry of Irrigation and Power and reconstituting Department of irrigation as Ministry of Water Resources. In 2014, the Ministry was renamed as Ministry of Water Resources, River Development and Ganga Rejuvenation. The Ministry worked as an apex body for formulation and administration of rules and regulations relating to the development and regulation of the water resources in India. Another ministry named as the 'Union Ministry of Drinking Water Supply and Sanitation' was formed in 2011 to address the problem of drinking water by elevating the department of Drinking Water and Sanitation, which was earlier part of Ministry of Rural Development.

However, the report of Niti Aayog (2018) has sensitized the government and other stakeholders. The government is feeling the alarming situation and has become proactive on addressing this issue. Keeping in view the integrated nature of India's water crisis the Union Government formed a new Jal Shakti (water power) ministry, which aims at addressing water crisis in a with a holistic and integrated manner. Thus, the Ministry of Water Resources, River Development and Ganga Rejuvenation were merged with the former Ministry of Drinking Water and Sanitation under the newly created Jal Shakti Ministry. The new ministry has set an ambitious target to provide piped water connections to every household in India by 2024.

There are plethora of acts, rules, institutions and other mechanisms to regulate water sector in India. In 1974, the parliament of India passed the Water (Prevention and Control of pollution) Act, which among other thing has the provision for the establishment of the Central Pollution Control Board (CPCB) to monitor and regulate the status of air, water and noise pollution at national levels. The states also have similar boards, whose activities are coordinated by the CPCB. The Central Water Commission established in 2001 is premier technical institution in the field of water under the Ministry of Jal Shakti. The Commission is mandated to 'promote integrated and sustainable

development and management of India's water resources by using state-of-the art technologies and competencies and by coordinating all the stakeholders'. The Commission is entrusted with the general responsibilities of initiating, coordinating and furthering in consultation of the State Governments concerned, schemes for control, conservation and utilization of water resources throughout the country, for purpose of Flood Control, Irrigation, Navigation, Drinking Water Supply and Water Power Development. It also undertakes the investigations, construction and execution of any such schemes as required (GOI: 2020).

The Central Ground Water Board was constituted in 1970, the National Apex Agency under the Ministry of Jal Shakti, is entrusted with the responsibilities of providing scientific inputs for management, exploration, monitoring, assessment, augmentation and regulation of ground water resources of the country. The Central Ground Water Authority has been constituted to regulate and control the development and management of ground water resources of India. The Authority has identified 162 critical/overexploited areas in different states of the country- NCT Delhi, Haryana, Punjab, Andhra Pradesh, Rajasthan, MP, Gujarat, West Bengal, Uttar Pradesh, Karnataka, Tamil Nadu, UT of Puducherry and UT of Diu for control and regulation of development of ground water resources. As per its new regulations, the construction of new ground water structures is prohibited in the notified areas. Permission of drilling tube wells is being granted only to the Govt. agencies responsible for drinking water supply. It has also drafted a Model bill for adoption by the states to regulate the use and development of ground water. So far only one state (Uttar Pradesh) has adopted this law in February, 2019 (GOI: 2020a).

The Union government has also launched the National Water Mission (now known as Jal Shakti Mission) under the national Plan of Action on Clime Change announced in June 2008. The Mission aims to ensure integrated water resource management helping to conserve water, minimize wastage and ensure more equitable distribution both across and within states. It will focus on basin level integrated water resource management. The Mission will optimize water use by increasing water use efficiency by 20 percent through regulatory mechanisms with differential entitlements and pricing. It will address the water needs of urban areas and coastal cities through alternative

technologies, recycling and alternative sources of water. The mission will develop a comprehensive data base for water resources and will promote citizen and state action for water conservation, preservation and augmentation.

In spite of multiple institutional and legal mechanisms, the government has been managing water resources as in adhoc and fragmented manner as per the needs of emerging water contingencies without any long term perspective as well as a holistic approach. The democratic element was totally missing in the water management process.

Part III : Towards a Water Governance in India

What is Water Governance ?

The water governance in India or in any other country aims at ensuring water security for all stakeholders. Water security means adequate availability of water resources of required quality to meet the valid needs of all. Water security cannot be realized without the conservation, sustainable use, and quality assurance of available water resources in a community.

Thus, water governance consists of all those processes, institutions and procedures, interaction and participation, which are essential for sustainable use and conservation of water resources. The water governance in India need to clearly defined aims, process and procedures to realize the goal of water security in India. While government has integrated institutional framework for dealing with water crisis, its approach continues to be centralized, focused on created more infrastructures and dominated by the government functionaries. The governance is not about creating new institutions and bodies, announcing new policies and programmes, allocating enhanced resources to achieve a given task. It is equally and mainly about participation of people, transparency in operations; decentralized management and finding natural solutions in the entire process of water governance. Thakkar (2019) rightly remarks, 'The primary need is to address the democratic deficit in water governance. The first step in tackling this would be the recognition of this reality as a problem. The water governance ought to be made transparent, accountable and participatory in every sub-sector, including management of rivers, groundwater, floods, and biodiversity, among others'.

The National Water Policy, 2012 (GOI: 2020b) is the first government document, which takes serious note of the impending water crisis in India and lays down principles for water governance. It warns that a growing population and rising needs of a fast developing nation as well as the given indications of the impact of climate change, availability of utilizable water will be under further strain in future with the possibility of deepening water conflicts among different user groups. It raises concerns about challenges to water security, impacts of climate change and water related disasters, skewed access to drinking water between different regions as potential for social unrest, fragmented, unsustainable end inefficient implementation of water projects, inadequate maintenance of existing water and irrigation infrastructure, increasing pollution of water resources, and lack of inter-disciplinary and integrated approach, low consciousness about water issues and low participation of stakeholders. On the ground water the policy says, 'Groundwater, though part of hydrological cycle and a community resource, is still perceived as an individual property and is exploited inequitably and without any consideration to its sustainability leading to its over-exploitation in several areas'.

It laments that the Issues related to water governance have not been addressed adequately. Mismanagement of water resources has led to a critical situation in many parts of the country. Some of the principles of water governance identified by the policy are: integrated perspective considering local, regional, State and national context, environmentally sustainable water use, keeping in view the human, social and economic needs, adhering to the principle of equity and social justice in access to water resources, managing water as common community resource, treating safe drinking water and sanitation as preemptive needs, an integrative perspective to all elements of water cycle and demand management for effective use of water.

It pleads for adopting good governance practices in water sector through transparent informed decision making to achieve the objectives of equity, social justice and sustainability. Meaningful intensive participation, transparency and accountability should guide decision making and regulation of water resources. Though, policy has many sound elements of water governance, but the governance remains clueless as how to put in place these elements to achieve the desired goals.

Besides the government efforts, many observers have identified the necessary principles of Water governance in India. According to Mollinga and Tucker (2010) the context of water governance in India consists of increasing demands on water, proliferating water controversies, increasing prominence of the environmental aspect of water resources and the limited scope and flexibility of present institutional arrangements. For them any framework of water governance should address issues at three levels: the material/technical side, the institutional side of water resources management, and the water resources knowledge system. As regards the material/technical dimension the challenge is to design and operate water infrastructures for multiple uses and users; in the case of institutional challenges, an important issue may be to reform the present bi-polar governance system between the state and the village by creating an intermediate level of management; and as regards the knowledge system, there is a need to rethink water resources professionalism in interdisciplinary ways through training and education in water management expertise. Gosh (2013), after analyzing the nature of India's water crisis, lists some vital elements of water governance in India: increasing participation of people in irrigation management; going for innovation in the industrial use of water; developing partnership with stakeholder in municipal water use; and educating about water data; and integration of public water institutions.

In the context of South Asian water crisis, particularly floods across inter-state rivers, Surie (2015) suggests sharing of water resource and flow data not only among people but also among nations of the region, which has been a major drawback in South Asia due to political reasons. For addressing ground water crisis in India, another scholar Sonali McDermid suggests abolishing subsidy on power, which promotes exploitation of ground water resources, new incentives to save water, diversification of agriculture to save water in irrigation and launching community based water harvesting projects to recharge aquifers (Schiffman: 2017). The over exploitation of ground water resources for farming sector has attracted the attention of many observers. A Report of Livemint (2017) highlights on the basis of public data and the reports of Shah Committee (2016) that the proportion of farmers dependent on ground-water irrigation has rose sharply over the past couple of decades. The lax regulation on water use, lopsided price incentives, and high energy subsidies to farmers have encouraged relentless exploitation

of groundwater through bore wells. The inefficient use of water in agriculture is the main source of inefficiency in India's water governance regime. India's farms consume more water to grow same amount of crops compared to global averages. While the farm sector is an obvious candidate for urgent water reforms, non-farm use of water also suffers from unplanned usage and waste. A majority of India's households are dependent on ground water for their day to day water requirements.

Bhatt (2018) notes that administering water and achieving Integrated Water Resources Management for sustainable use and economic development is both a technological and a governance test. He suggests that Right to Water should be declared as a Fundamental Right and the subject of 'water' should be included either in the Union List or the Concurrent List of the Constitution for its better management. Beyond regulations, licenses, restrictions, and penalties, the state policy should also focus on the knowledge dissemination to help, guide, influence, and coordinate the public water use, along with public participation at all levels water administration.

Shah (2018) has identified the major shortcoming in the prevailing water management paradigm such as focus on command and control, Bureaucratic governance, uni-dimensional view of water as a economic resource, uni-disciplinary view in knowledge domain, instrumental view of water as resource to be exploited, supply side focus on management of water, no attention on sustainability, lack of transparency, among others. He outlines nine principles for the effective water governance in India: decentralized intervention in place of centralized command and control with focus on local conditions and diversity; multidisciplinary approach to understand the water resource; partnership with and involvement of primary stakeholders; Multidimensionality in the use of water resource; breaking the institutional silos, demand management and sustainability; equity in access to water, transparency and easy access to information; and national model water law for better coordination at various levels.

Ahmed and Araral (2019) conducted a study of eight Indian states to assess the performance of water governance post-SDGs period on the basis of survey method. The water sector performance measures they used include drinking water adequacy, overall water productivity, industrial water productivity, and agricultural water productivity. The study also estimates the correlation between

water law, policy, and administration, and the drinking water performance and economies of the states. They found that all the water governance variables are positively correlated with drinking water performance. Their findings suggest that water governance in the eight Indian states under study may have improved, as reported by survey respondents. Nirola (2019) suggests educating the public about entire cycle of water (conservation, use and recycling); managing demand for water without wastage; controlling the water consumption at irrigation level without inflicting food security; launching an aggressive programme of nature based solution, which is resilient and supports livelihood.

Thakkar (2019) finds that water governance in India suffers from the lack of reliable information on water, absence of any initiative to restructure the water institutions, a distressed groundwater lifeline, push for large dams, increasing footprint of the urban water sector, and the sorry state of its rivers. He claims that the Mihir Shah Committee report (2016) and the NITI Aayog report (2018) admitted that the data systems related to water in the country are limited in their coverage, robustness, reliability and efficiency. According to the Shah committee the next big challenge before India facing is a crisis of groundwater sustainability. While North India is most affected, and is guzzling down groundwater at a rate 70 percent faster than estimated earlier, the western and southern India are not far behind. Groundwater is, has been, and is going to remain India's lifeline for a long time to come. But, neither national policy nor national or state water resource establishments acknowledge this reality. There is an urgent need to protect groundwater recharge, enhance recharge where possible, and most importantly, regulate the use of groundwater. Given the gravity of the situation, if groundwater sustainability becomes the goal, there may not be any case for big dam projects, which adversely affect groundwater recharge and sustainability. But the government is moving towards big irrigation, hydropower, multipurpose and river-linking projects.

Conclusion

The foregoing discussion on the ground water crisis in South Asia and India suggests that the ground water resources of India are fast depleting due to increasing population and unsustainable use and lack of effective governance of water resources. The ground water problem in India has taken the

form of crisis, threatening the water security for vast number of people across the country. While the government of India has devised various mechanisms over the years like institutions and laws, it proved ineffective in addressing the impending water crisis. In last decade or so, the government has become more sensitive to the problem and it has been highlighted at various levels. In order to shortcomings in the water governance in India, as identified by various scholars and studies, the following elements needs to be integrated in the emerging water governance in India:

1. The focus should be on developing a robust water data base which is reliable and comprehensive to be shared by all stakeholders.
2. There is need for integration in approach at three levels: institutional integration; knowledge integration to have better understanding of water domain; and usage integration across different requirements of water.
3. The sustainability of water resources should be ensured by demand management, efficient use of available water resources, and regulation of water use along with incentives to save water, recharging of ground water resources; and recycling of water for reuse. The instrumental view of water needs to be replaced by treating it as a sustainable resource.
4. The water governance in India needs to be decentralized at community level, keeping in view geographical and need diversities regarding water resources in India.
5. Water should be treated and managed as a community resource. The days of personalized use of water are over.
6. Among democratic elements, the participation of primary stakeholders in water governance, ensuring equity in access to water resources, and transparency in the entire spectrum of water governance are important elements to be integrated in the water governance.

The water governance in India should incorporate these elements in a holistic manner with long term perspective in order to be relevant and effective.

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