

DIRE NEED OF WATER GOVERNANCE FOR INDIA'S ECONOMIC GROWTH

Dr. Geetanjali Shrivastava*
Ms. Neelakshi Arora**
Dr. Neeta Vaydande***

ABSTRACT

No economic activity can take place without water whether it is primary secondary or tertiary sector. Physical and economic water shortage are both possible causes of water scarcity. Physical water shortage occurs when natural water supplies are insufficient to fulfil a region's demand, whereas economic water scarcity occurs when water resources are mismanaged. In this study we are mainly going to focus on the economic water scarcity. For this, Water Footprints indicator is used to study the exhaustion of water by its usage. Secondary data have been used to understand the crisis of water and how water governance body is working to manage this issue. Findings of the paper suggest major initiatives being taken up by Central Water Commission and Central Ground Water Board for better management of water.

KEYWORDS: *Water Management, Water Footprints Indicators, Water Usage, Water Governance.*

Introduction

"The earth, the air, the land and the water are not an inheritance from our forefathers but on loan from our children. So, we have to handover to them at least as it was handed over to us."

- Mahatma Gandhi

India is a water rich country with 4% of world's water resources. India ranks 132 in per capita water availability and Indian rivers serve 18% of world population. During 2011 India has joined the list of countries with water scarcity with the drop of per capita availability of water from 1700 cubic meter per person to 1544 cubic meter per person. Despite being bountiful availability of water on earth, usable water still remains scant and apt usage of this small percentage of our essential resource is a matter of utmost concern. Water shortage is worsening, and freshwater abuse is posing a severe danger to economic growth. Millions of people throughout the world lack access to water, or if they have, the water is unfit for human use. Water covers over 70% of the Earth's surface, with just 3% of that being freshwater fit for human use.

Clean drinking water is in short supply, and millions of people throughout the world spend their days looking for it. People who have access to safe, clean drinking water, on the other hand, take it for granted and misuse it. According to the World Wildlife Fund, 1.1 billion people lack access to water, and 2.7 billion experience water shortage for at least one month of the year. There were ten drought years between 1950 and 1989, and five drought years in the previous 16 years (since 2000). The frequency is expected to rise between 2020 and 2049, according to meteorologists. Industrial water usage is a big drain on the world's finite water supply, according to research. So, how do industries that consume a lot of water compare in terms of water use, and which sectors are leading the charge in terms of conservation?

* Assistant Professor, Department of Commerce, The Bhopal School of Social Sciences, Bhopal, Madhya Pradesh, India.

** Assistant Professor, Department of Commerce, The Bhopal School of Social Sciences, Bhopal, Madhya Pradesh, India.

*** Associate Professor, Department of Commerce, The Bhopal School of Social Sciences, Bhopal, Madhya Pradesh, India.

A rise in the production of goods and services over time is referred to as economic growth. Water as a core element is used in diverse sectors that directly and indirectly contribute to the manufacturing, agriculture and domestic sectors. It improves standard of living and reduces poverty which is an important indicator of a robust economy. Water as a limited natural resource is used in production, manufacturing and energy segment. It is needed in almost all the major sectors industries, agriculture, domestic and energy sector. For this, the government should devise an efficient water usage governance system, which will boost India's economic growth.

Water scarcity is a stumbling block to long-term economic prosperity. Rising demand of water with growing population and their changing consumption patterns, along with varying monsoon cycles together with climate change are increasing the unpredictability in estimating future availability of water. As a result, we must urgently improve our knowledge of water resources, water consumption, water management, and water governance. There is no shortage of water in India as Country and has a lot of water resources but there exists improper supervision and water management of water resources in the country. As per NITI Aayog report "Composite Water Management Index" published in the year 2018, specified that about 600 million people in India or nearly half of India's population face acute water tension. The report also states that India is at 120th rank among 122 countries in the water quality Index and 70% of the water is contaminated.

India's growing population, the deteriorating quality of existing water resources due to pollution, and the additional demands of serving India's spiralling industrial and agricultural growth have resulted in a situation where water consumption is rapidly increasing while fresh water supply remains relatively constant. According to the Tata Institute of Social Sciences (TISS), the majority of metropolitan cities are water-short. Ground water supplies over 40% of metropolitan India's water consumption. As a result, most cities' ground water tables are dropping at an alarming pace of 2-3 metres per year. Water shortage has a number of negative consequences on the ecosystem, including lakes, rivers, wetlands, and other sources of fresh water.

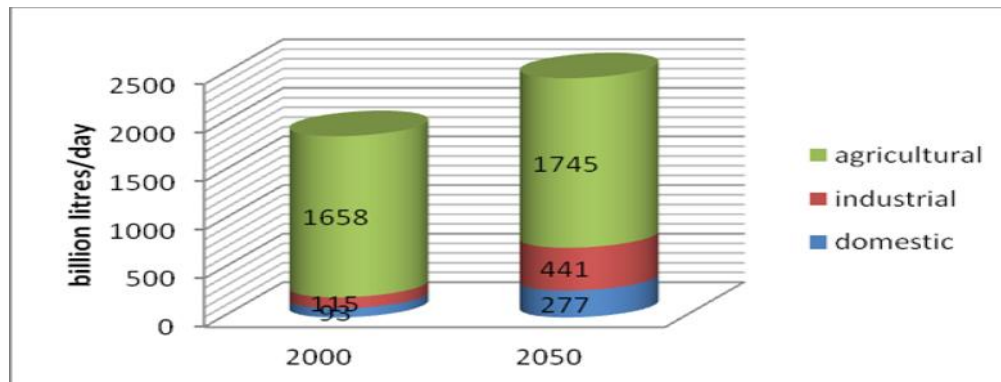
Furthermore, excessive water consumption may lead to water scarcity, which is common in locations where irrigated agriculture is practised, and can impact the ecosystem in a variety of ways, including increased salinity, nutrient contamination, and the deterioration and loss of flood plains and wetlands. Furthermore, water scarcity makes flow management difficult in urban stream restoration. India is experiencing a prolonged water deficit as a result of its weak water resource management system and climate change. According to the OECD's environmental forecast for 2050, India would experience severe water scarcity by 2050. Due to rapid groundwater depletion and inadequate irrigation infrastructure, agriculture consumes 90% of water in India.

India consumes most of its usable water for agricultural purposes while household get only 5% of it. In terms of water share 83% is used in agriculture 12% is used in industries and 5 % is used for domestic purpose. India is the world's second-largest agricultural product producer. India produces 7.39 percent of the world's total agricultural production. 70 % of India's population resides in rural India and it is been seen that agricultural contribution to GDP is the lowest that is 17%. Industry is the second highest consumer of water. The rate of industrial expansion has accelerated the need for industrial water.

Water distribution among agricultural, industrial, and home uses, along with restricted resources, is already limiting development efforts in several nations, including India. Along with water scarcity, widespread water misuse is a concern that is generating serious issues in a country's economic and social growth. As a result, this finite resource should be safeguarded and wisely utilised. Looking at the future perspective and problems rising due to water mismanagement; water governance would be an imperative step to manage water utilization wisely.

Water Management concerns the active administration of water on an everyday, weekly, periodic and yearly basis using mutual operations involving people, Government officials, infrastructure, finance, and other inputs and resources. Water governance, on the other hand, is a wide phrase that refers to a variety of political, social, economic, and administrative institutions that are used to develop and manage water resources at various levels in society. Water Governance in India (Central Water Commission and Central Ground Water Board) is efficient model to overcome problem of water scarcity and water shortage as it will improve to water productivity, water usage and will also lead to reduction in water wastage.

Water Consumption in India



Source: 'Water for People Water for Life', United Nations World Water Development Report, 2003; 'The Global Water Crisis: A Question of Governance', Policy Research Division, Department of Foreign Affairs and International Trade Canada; 'Statistical Yearbook for Asia and the Pacific 2007', United Nations Economic and Social Commission for Asia and the Pacific; 'India's Water Future to 2025-2050: Business as Usual Scenario and Deviations', International Water Management Institute; OS-Connect Database; US Geological Survey -Water Resources; Aquastat Database

Review of Literature

India has a good organizational set-up to deal with the water resources sector. But there is lack of appropriate administrative measures for stringent implementation and monitoring of the water problem both at Central and State level. Arrangements for holistic water administration in India is needed. Also, various authorities in the Water Sector should investigate and conducts the water audit. The Constitutional Status of water should be looked into to suit the current requirements of water in the country. The recommendatory nature of National Water Framework Bill – 2016 should be changed to mandatory nature i.e. the Obligatory Constitutional Amendment (**Bhatt & Bhatt, 2018**) India's water future is in danger if current administration trends continues. There is lack of sharp vision for water management in India. Government of India should make efforts for community participation for safeguarding water. For appropriate water management and enforcement, a shift in society is also essential. The water management in India requires People, Politicians and Government to be more Accountable, Responsible and Willing (**Cronin, Prakash, Priya, & Coates, 2014**). Much of the public water infrastructure in the United States has been privatised. Thus, convergence of privatisation in water governance within the US government is an area of rising worry to those concerned in how water governance systems and procedures will be implemented in the country (**Silva Rodríguez de San Miguel, 2020**). India has one another issue that is distribution of water over mutually shared rivers are subject of conflict among Indian states. This problem in India can be solved by involving all stakeholders within standard model which will have positive consequences for water sharing and water conservation (**Khalid, 2020**). Water resource management in India has been a tricky issue and growing over past 50 years due to a variety of reasons. Including increased water demand and growing ecological degradation. The challenges in water management are water availability, variability and increasing withdrawals of water, environment and quality. Conservation, Preservation and Management of water is most crucial aspect for today's Government (**Jain S. K., 2019**). NITI Aayog announced its 'Strategy for New India @75' in December 2018, which clearly specifies objectives for 2022-23 and lists 41 different topics. The 'water resources' plan in this study, on the other hand, is as uninteresting and impractical as the previous National Water Policies (NWP) (**Pandit & Biswas, 2019**). India faces severe but controllable challenges with respect to water resources and water management. However, Government of India responses to current and future water challenges in India display the beginnings of an integrated approach to water management (**Singh, 2011**).

Research Objective

The objective is to understand the problems created due to water scarcity and to study the role of water governance and water management as an effective measure to resolve above listed problems and used these measures as a progressive strategy for economic growth. The study would also recognize measures to safeguard and preserve this highly demanding and exhaustible resource that plays a very important role in the economic growth. In short objective of this study is:

- To Evaluate the reasons of Economic Scarcity of Water in India.
- To know the impact of Water Scarcity on the Economic Growth of India.
- To Study the potential outcome of Water Governance and Water Management in Eradicating the Problem of Water Shortage and Water Scarcity in India.

Research Methodology

The study was conducted using a qualitative research methodology, and it was exploratory in character. Data was gathered from secondary sources as part of the study. The information gathered was structured, analysed, and organised in order to identify water-related issues in India, as well as how they impede economic progress, and relevant solutions were proposed.

Reasons of Physical and Economic Scarcity of Water in India

The quantity of water needed to produce each unit of the goods and services we use is measured by the water footprint. It can be calculated for a particular operation, such as rice farming, a product, such as a pair of pants, or the gasoline we put in our cars, or for an entire multinational corporation. A country's – or the world's – water footprint can also disclose how much water a river basin or an aquifer uses. It enables us to comprehend why our finite freshwater supplies are being depleted and contaminated. The impact is determined by where and when the water is consumed. If it originates from an area where water is already scarce, the ramifications might be severe, necessitating prompt action.

Water issues are frequently linked to the global economy's structure. Many nations have externalised their water footprints by importing water-intensive items from other countries. This places a strain on water resources in exporting countries, where there are typically insufficient institutions for prudent water administration and conservation. Water resource management may be improved not just by governments, but also by consumers, enterprises, and civil society communities.

Lack of government planning, rising business privatisation, industrial and human waste, and government corruption are all blamed for India's water issue. Furthermore, as India's population expands to 1.6 billion people by 2050, the country's water shortage is expected to worsen. Much of India's water issue is due to terrible mismanagement of water resources, bad administration, and apathy about the enormity of the problem, rather than natural disasters. The water problem of India has many facets: Global warming has altered the rainfall pattern in India dramatically.

As per Sadguru there are 3 main reasons of Water crisis viz. Inefficient Farming, Rising Population and Tree Cover Loss. In India water is scarce resource with its increasing demand and growing population leading to shortage. Droughts occur on a regular basis, and current water resources are reallocated for urban and other environmental needs, resulting in water shortages. Climate variability aggravates water scarcity. Lack of adequate and effective monitoring of water resources. There are no water laws in India.

You may not realise it or feel it yet, but this deteriorating scenario affects every element of our culture and economy. In fact, the National Institution for Transforming India (NITI Aayog) has termed it "India's biggest water catastrophe." According to the 2018 Composite Water Management Index (CWMI), by 2050, 6% of economic GDP would be lost, and by 2030, water demand will surpass available supply. Food security is also jeopardised due to severe water constraint in areas where wheat and rice are grown.

Concerns of Water Scarcity in India

Growing population result increase demand over supply thereby increasing water scarcity in short, Overexploitation and mismanagement of water. Farmers in India have long used flow irrigation, which wastes a significant amount of water.

Drought and water shortages are wreaking havoc on people all throughout India. As of June 25, 2019, almost 65% of the country's reservoirs were dry. Six of the 17 reservoirs in Maharashtra's west-central state have dried up, making it one of the worst-affected places. Puzhal Lake is a major rain-fed reservoir in Chennai, Tamil Nadu, in the southern state of India. The Operational Land Imager on Landsat 8 captured them on May 31, 2018 (left) and June 19, 2019 (right). Puzhal Lake (also known as Red Hills Lake) is one of the city of Chennai's four principal reservoirs. According to reports from June 21, 2019, the four reservoirs were barely 0.2 percent full.



May 31, 2018



June 19, 2019

Low rainfall over the last few months has contributed to the water problems. For over 200 days, Chennai has been bereft of rain. The northeast monsoon season, which runs from October to December and contributes a substantial amount of the area's yearly rainfall, was one of the city's lightest in 2018. Furthermore, the southwest summer monsoon season, which runs from June to September, has been delayed across India, and has yet to provide significant rain to Chennai.

For the past few years, Chennai has struggled to satisfy water needs. The National Institution for Transforming India reported Chennai, India's sixth-largest city, that could run out of groundwater by 2020. Many news reports state the water shortages are due to low rainfall but also by water mismanagement.

Recommendations and Suggestions

Imposing regulatory measures to prevent water usage, as well as establishing rewards and penalties to encourage prudent water use, will aid in water conservation awareness. All water users should be encouraged to modify their lifestyles to conserve water so that the country can avoid a future water catastrophe. Favourable rules and methods, as well as a sound policy framework for regulating commercial water usage and recycling, should be adopted. The issue of water conservation must be turned into a popular movement through raising awareness. Ground water recharging projects, micro-irrigation, and legislative changes to promote better water management have all been on the government's agenda in recent years. Prime Minister Narendra Modi has also stated that by 2024, every rural home will have access to piped potable water. The Jal Jeevan Mission has provided clean water to 20 million homes in the last year.

The private sector is also assisting in the development of a long-term solution to the situation. Smart Water Purifiers and Auto-Maintenance Systems are examples of new water purification technologies that are paving the road to a brighter future. Indian start-ups are bringing IoT technology, sensors, and a data-driven approach to water filtration, which is a glimmer of hope for solving this problem. Real-time tracking of input water quality, water consumption, and filter use is possible thanks to IoT technology, ensuring safe drinking water. To alleviate India's water problem, we must modify our water recycling and supply methods, as this will reduce water waste. To determine how successfully regulations, protect our water resources, a comprehensive commissioning is necessary. Manufacturing houses should also minimise their water footprints, according to regulatory bodies.

To support proactive decisions and enhance the efficiency of water utilities, digital technology should be used for data collection and analytics. Smart water management technologies may make a water supply system more robust and efficient, lowering costs and increasing sustainability. Digital gauges and sensors, Supervisory Control and Data Acquisition (SCADA) Systems, and Geographic Information Systems are examples of high-tech water solutions (GIS).

Conclusion

The Central Ground Water Board was established to develop and disseminate technologies for monitoring and implementing policies for scientific sustainable development and management of ground water resources, including exploitation, assessment, conservation, augmentation, pollution protection, and strategic planning based on economic and ecological efficiency and equality. "General Guidelines for Water Audit and Water Conservation" have been developed by the Central Water Commission and the Central Ground Water Board. These rules have been distributed to all state governments, pertinent central ministries, and other utilities for the purpose of developing their own unique guidelines.

Water productivity can be increased by embracing the notion of multimodal water usage, which goes beyond the traditional productive sectoral barriers. Crop diversification and the integration of fish, poultry, and other enterprises into the farming system have the potential to increase revenue. By permitting more diverse livelihood choices and promoting ecosystem resilience, the Multiple Water Use Approach can create additional economic advantages and reduce vulnerability. Water resource conservation should be prioritised through watershed development in appropriate locations and the creation of Micro-Water Structures for Rainwater Harvesting. The encouragement of water conservation activities has direct consequences on water resource availability, groundwater recharge, and population socioeconomic circumstances. The functioning of local level water organisations is inextricably tied to effective water management. As a result, institutional restructuring in favour of participatory irrigation management and water users' associations (WUAs) is necessary. With all of these initiatives, India's water issue will be alleviated soon, as they are little steps toward a long-term solution. As Confucius once said, "The man who moves a mountain begins by carrying away small stones."

References

1. Bhatt, N., & Bhatt, K. (2018, 02). An Analysis of Water Governance in India: Problems and Remedies. *International Journal of Advance Engineering and Research Development*. doi:10.13140/RG.2.2.10780.18560
2. Chengappa, R. (2021). The great Indian thirst: The story of India's water crisis, solutions to tackle it. Retrieved from <https://www.indiatoday.in/magazine/cover-story/story/20210329-the-great-indian-thirst-1781280-2021-03-20>
3. Cronin, A. A., Prakash, A., Priya, S., & Coates, S. (2014, 03 05). Water in India: situation and prospects. pp. 425–441. doi:<https://doi.org/10.2166/wp.2014.132>
4. Jain, S. K. (2019). Water Resources Management in India–Challenges and the Way Forward. 117. doi:0.18520/cs/v117/i4/569-576
5. Khalid, P. (2020). Interstate Water Politics: An Analysis of Indian Case Water Governance in India. 01-16. doi:10.35484/pssr.2020(4-II)01
6. Pandit, C., & Biswas, A. K. (2019). Rethinking water management issues. Retrieved 03 28, 2021, from <https://www.thehindu.com/opinion/op-ed/rethinking-water-management-issues/article29620863.ece>
7. Sadhguru. (2019). 3 Reasons for India's Water Crisis. Retrieved from <https://www.ishaoutreach.org/en/cauvery-calling/blog/3-reasons-for-indias-water-crisis>
8. Silva Rodríguez de San Miguel, J. (2020). Water governance in the USA. *Management of Environmental Quality*, 130-145. doi: <https://doi.org/10.1108/MEQ-05-2019-0104>
9. Singh, N. (2011). Federalism and Water Management in India. Retrieved from http://www.mumbaidp24seven.in/reference/federalism_and_water_management_in_india.pdf
10. Water Shortages in India. (2019). *earthobservatory*. Retrieved from <https://earthobservatory.nasa.gov/images/145242/water-shortages-in-india>
11. What is Water Scarcity? (n.d.). *Conserve Energy Future*. Retrieved from <https://www.conserve-energy-future.com/causes-effects-solutions-of-water-scarcity.php#:~:text=%E2%80%9CWater%20scarcity%20is%20the%20lack,to%20clean%20drinking%20water.%E2%80%9D%E2%80%9D>
12. India may run out usable water in a few years. (2017). *Times of India*. Retrieved from <https://timesofindia.indiatimes.com/india/india-may-run-out-usable-water-in-a-few-years/articleshow/58803493.cms>
13. KHEMKA, R. (2016). From Policy to Practice, Principles of Water Governance. *Economic and Political Weekly (EPW)*. Retrieved from <https://www.2030wrg.org/rochi-khemkas-article-in-the-economic-and-political-weekly-epw/#:~:text=The%20Mihir%20Shah%20Committee%20report,restructuring%20water%20governance%20in%20India.&text=However%2C%20effective%20management%20of%20this,environment%2C%20>

