

Importance of Science and Technology in Water Management in India

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Abstract:

Science and Technology plays important role in our day to day life, without which modern lifestyle can't sustain. With the help of innovative ideas and modern technologies life becomes easier and better. In the era of globalization and Information and Communication Technology (ICT) problems can be solved in seconds using modern technologies. In most of the countries, therefore, governments emphasize and encourage innovative technologies in order to tackle some major issues. Like many other countries, water sector management is also in a crisis state in around the world and India is not an exception. According to the recent Reports of NITI Aayog India in facing it's worse water crisis in history. By 2020, 21 major cities would have dried up their groundwater. Around 70 percent of India's water is contaminated. Therefore the present government is focusing on water management in the country by initiating several new policies or schemes. While dealing with this serious issues government has given importance on science and technological innovations. Hence this paper aims to analyse the importance of science and technology in water management in India.

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1. Introduction

Technologies in today's world become un-separable from day to day lives of people. Without the use of technology human life becomes dull and dysfunctional. Each sphere of human life is surrounded by technological innovation either in this form or in that. Technologies have touched all the corners of human life whether it's electricity or mobile phones. With the help of innovative ideas and modern technologies life becomes easier and better. In the era of globalization and Information and Communication Technology

(ICT) problems can be solved in seconds using modern technologies.

In most of the countries, therefore, governments emphasize and encourage innovative technologies in order to tackle some major issues. Like many other countries, water sector management is also in a crisis state in around the world and India is not an exception. According to the recent Reports of NITI Aayog India in facing it's worse water

crisis in history.¹ Around 600 million Indians are facing high to extreme water scarcity. Around 2 lakh people die every year due to inadequate access to potable water. By 2020, 21 major cities would have dried up their groundwater. Around 70 percent of India's water is contaminated.²

For that water management has attended utmost importance in today's context in India. Therefore the Government in power has invested in making proper and new water management schemes which will be helpful in bringing the scarcity into a manageable account by thriving focus on technological innovations.

II. INNOVATIVE SCIENCE AND TECHNOLOGY FOR WATER MANAGEMENT IN INDIA

According to Rajiv Tokoo, "Sensor-based technology can be used in urban areas, too. These can be installed on the pipelines and can gauge leakage as well as contamination. Israel has already implemented this technology."³

Another innovative technology of water management is using on-site technology or recycling systems. The water which is used in large spaces like- malls, commercial hubs, hotels, among others can be recycled for reuse. This technology is being adopted across countries, including India. Using this technology one could recycle the water into potable water, graywater or blackwater depending on what the structure needs the most.⁴

Further it is worth mentioning here that Researchers at the Indian Institute of Technology developed a \$16 nanoparticle water filtration system. Although cheap filtration systems have been created in the past, this was the first that had the ability to remove chemical components like lead and arsenic from the water. The iron and arsenic trapping ions released by nanoparticles make up the chemical filter. The purifier has several levels of membranes to block contaminants.⁵

Some students, researchers and scientists in India from various fields have created many impressive innovative technologies to manage water resources:

- An IIT dropout and an IIM graduate,⁶ has made a 'fit-and-forget' device which converts all the contaminated water from bore well hand-pumps at the very source to supply clean water. This device kills 99 per cent microbes and supplies clean water to people.⁷
- Three MBA graduates⁸ have created a new device which has provided a new spin to rainwater harvesting. This technological innovation saves water while recycling plastic.
- 'Retas' is another venture which was named after the Sanskrit term for the flow of rainwater provides a smart resolution of utilizing the abundance of rainwater to meet the post-monsoon water scarcity in Gurugram.

¹"Taps to Run Dry, India's Water Crisis to Worsen by 2030: NITI Aayog Report," <http://www.india.com/news/india/india-is-facing-worst-water-crisis-in-history-likely-to-get-worse-niti-aayog-report-3111740>, Accessed on 23rd August, 2018.

² Ibid.

³<https://www.proptiger.com/guide/post/3-new-age-techniques-adopted-for-water-conservation>, Accessed on 6th February, 2020.

⁴ Ibid.

⁵ Ibid.

⁶ Anjan

⁷"Quenching Thirst: 5 Brilliant Innovations Helping Indian Cities Save Water,

<https://www.thebetterindia.com/184868/bengaluru-lake-revive-volunteer-ulsoor-work-eco-friendly/>, Accessed on 5th February, 2020.

⁸AnkitMagan, Neeraj Chauhan and Priyank Jain,

- Six students⁹ of Classes VI to VIII from across various city schools who came together to form ‘Team Livewire’ and introduce two innovative solutions to the problem.

III. USE OF SCIENCE AND TECHNOLOGY BY GOVERNMENT OF INDIA

Department of Science and Technology of the Government of India has set up important knowledge network for evolving customized technological solutions for water challenges suited to specific social context. **The government of India has adopted “Water Technology Initiative”**, in August 2007 in order to promote Research and Development activities to provide safe drinking water at affordable cost and in adequate quantity using appropriate Science and Technology interventions evolved through indigenous efforts.¹⁰ Considering the quality of safe drinking water, focus has been given on implying nano-material and filtration technologies. This initiative also includes the pilot testing of credible number of products and referencing of selected technologies to the social context of the application region. In August 2009, following of directives of Honorable Supreme Court, Technology Mission on Winning, Augmentation and Renovation (WAR) for Water has been launched to undertake research-led solutions, through a coordinated approach, to come out with technological options for various water challenges in different parts of the country.¹¹

In a specific discussion on Integrated Water Resource Management, a framework has been designed to improve the management of

water resources based on four key principles adopted at the 1992 Dublin Conference on Water and the Rio de Janeiro Summit on Sustainable Development. According to **Sanjay Marwaha, Regional Director, Central Ground Water Board**, “Combining social awareness with technology solutions is the key to effective Integrated Water Resource Management,”¹²

V. CONCLUSION

From the discussions above it can be concluded that several technological inclusions in the process of water management in India has bring new hopes and creative ideas to save water. By promoting new technologies in water harvesting and water recycling system it will able to solve the problem of water scarcity in many areas around the country in near future. These methods should be popularized by the central as well state governments on immediate basis. Because, it has been witnessed by people that due to lack of proper rain water harvesting measures, our water resources are being wasted in large scale even in the time of such alarming water scarcity. Government of India has undoubtedly highlighted the issue of water scarcity and the need of proper water management. But due to inefficiency and adequacy in service delivery and political unwillingness these measures have just remained at the policy level only. In actual field hardly major changes have been taken place so far. Therefore it’s the need of the hour to pay utmost importance to the issue of scarcity of water and for that effective water management mechanisms should be used with the help of various technological innovations.

⁹Rohan Shenoy, ShaommikKelkar, DhruvaIyer, Sidak Arora, Dhruva Jain and ChaitanyaRaghavan

¹⁰<https://dst.gov.in/water-technology-initiative-programme-wti>, Accessed on 5th February, 2020.

¹¹ Ibid.

¹²AvneepDhingra, “Technology or Ecology? What’s best for Water

conservatio,”<https://www.geospatialworld.net/blogs/technology-or-ecology-whats-best-for-water-conservation/>, Accessed on 5th February, 2020.

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