

An analysis of Urban Water Management through the existing government schemes and projects

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ABSTRACT

In most of the urban areas we have started facing urban flooding when it rains and drinking water shortage in dry months. Ground water is depleting day by day and we are forced to depend upon water sources from far off places. In the beginning of civilization, we started from settling down near a water body and then spread away gradually with digging out water from well, bringing water from a distant place through aqueducts and pipelines, drawing water from deep bore wells using submersible pumps, using canals to rejuvenate drying river as in case of Sabarmati and digging out the riverbed to recharge water. In order to serve the increasing population of the cities, with every step ahead we are falling back due to its own limitation in solving our increasing water crisis. 'Day zero' for various cities are being declared at alarming rate. The objective of this study is to understand the gaps in the areas of urban water management through an analysis of the schemes, projects and planned by Government of India. This paper further enquires the effectiveness of those interventions through research papers, articles and narratives by experts of related areas.

Keywords: Water rights, water ownership, water management, community management, water crisis

INTRODUCTION

India is a country of 2.25 Lakhs SQ. KM. of urban land having 53 Million plus Cities and 31.16% of Indian population. In most of the urban areas we have started facing urban flooding when it rains and drinking water shortage in dry months. According to 'Discussion Paper (TERI), October 2014' on NWP 2012, we receive approximately 50% of annual precipitation in only 15 days for which we have storage capacity of only 18% (Kumar & Bharat, October 2014). About 70% of usable water is contaminated and ground water is depleting at the rate of 10 CM per year. UNICEF estimates water gap for India in the year 2030 to be 50% which is alarming.

To solve urban crisis, we in general put tremendous pressure on rural population and the native flora and fauna, sometimes leading to even their extinction. We have examples where dams have been catastrophic and check dams have led to improved water table, Gujarat being a good case example. In various parts of Karnataka, there are people setting examples by using grey water coming out of city for agriculture purpose and creating catchments for ground water recharge. Many a times, government plans for further infrastructural developments which does not take into considerations these small yet effective alternatives. River interlinking projects are in pipeline. Many experts are in favor and many against it owing to their own areas of expertise. Talking to different experts and understanding the issues critically from different subjects' perspectives will be an eye-opener. Government has same plans for all the regions in India where geology is completely different from North to South and East to West, hence the behavior of water is also different.

Water management is critical and its national level crisis has been strongly recognized by Ministry of Water Resources (Ministry of Water Resources, GoI, 2012). Water governance, community based aquifers management, revival of traditional water harvesting structures and water bodies, planning and implementation of water resource projects with consultation of all stakeholders, mapping of aquifers, incentives & penalties, integrated supply & sewage tax and need for change in perception of ground water from individual to community property are among several other recommendations of this policy. It further advocates for a National Framework Law as an umbrella statement of general principles for governing powers of Centre, States and Urban Local Bodies / Panchayat Raj Institutions. 'A Framework

for India Water Policy’, a report published by ‘National Institute of Advanced Studies’ analyzes the hydrological cycle of India and suggests that linking of rivers, rain-water harvesting, artificial recharge and desalinization have potential to alleviate water crisis in limited ways. It also raises a question of synonymy and differences in State’s ownership and people’s ownership of water. It further recommends constitutional recognition of water rights and water science as a basis for water related laws, statutes and regulations. While needs have been identified and aptly put, structure to integrate community based management with a regular monitoring and auditing by Local Bodies needs to be worked out.

METHODOLOGY AND RESULTS

Annual reports by Indian Institute of Water Management, Bhubaneswar gives an idea of ground water changes and changes in stream flow in different monitored period in nearby regions. Figure 1 and Figure 2 are two examples where manual monitoring and software has been used(ICAR-IIWM 2019, 2018-19).

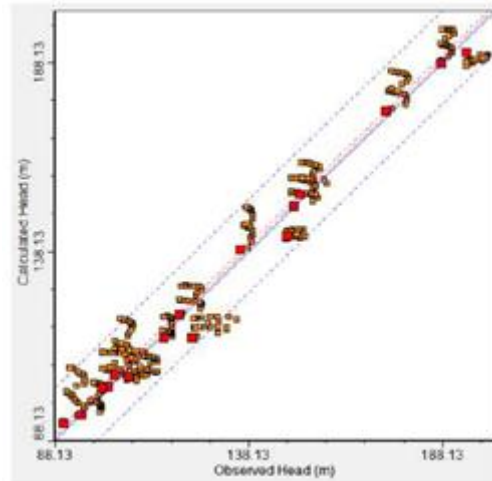


Figure 1: Cluster Diagram of observed and simulated groundwater level for the calibration period.

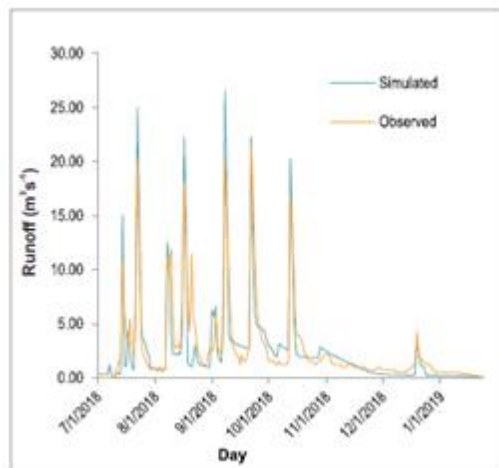


Figure 2: Comparison of observed and simulated stream flow for the validation period.

It suggests technical ways to monitor ground water resources. Reports by ‘National Institute of Advanced Studies’ suggests various ways to limit water crisis. Different reports, schemes and policies by Government of India has been studied and analyzed to understand the present situation in terms of water crisis and the related initiatives. Further, research papers and articles have been referred to understand the various ways of ‘Water stock’ analysis. New concepts such as ‘Net zero water’ in building industries have been studied. Best practices and alternative related techniques from around the world have been referred.



CONCLUSION

This paper inquires the water rights and ownerships of state and people by analyzing the schemes and the projects, and various levels of interventions related to water crisis, planned by Government of India. It further explores the applicability and scope of community management of water as an alternative/supplement to state sponsored water management.

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