



Aishani Goswami

Programme: M.Tech (Water Resources Engineering and Management)

Project Title: City Rehydrate: A Comprehensive Toolkit for Sustainable City Water Projects

Host Organization: TERI School of Advanced Studies

Year: 2019

Abstract:

Water related issues cannot be solved through mere technical or managerial solutions; hence, there is a need to understand the issue in a multidimensional fashion before an intervention is suggested. City Rehydrate toolkit helps to capture these dimensions and their relationships to develop a holistic picture. The toolkit is designed on the principle that recognizes the role of people and place interactions for place making. Further, Vester's model was used to quantify these relationships to strengthen the understanding of water issues, and arrive at a sustainable solution. Through a study of 15 village ponds in Gurgaon, CityRehydrate toolkit is applied and tested to recommend a decentralized solution. The flexible nature of the toolkit allows it to be used for any site and context, depending on the project goals. The scope of modifying and using this toolkit for centralized planning or policy making can be further explored.

Project Outcome:

- The outcomes of the study have been presented at an international conference: (Under the theme of 'Governance: Knowledge Management and Innovation')
- Aishani Goswami and Ranjana Ray Chaudhuri (2019). City Rehydrate - Comprehensive toolkit for sustainable city water projects, Water Future Conference – Towards a sustainable water future, September 24-27, 2019, Bangalore, India.

Field/Experiment photographs:



Fig. Photos from conference presentation



Fig. Field visit photos of Gurgaon pond



Apoorv Nandwana

Programme: M.Tech(Water Resources Engineering and Management)

Project Title: Analysis of Local Institutions and Governance – Case Study of Villages in Western Rajasthan

Host Organization: UNNATI Organization for Development Education

Year: 2020

Abstract: Decentralization of governance is an effective system for equitable and sound managing of a common property resource like water. The robust governing mechanism ensures equity among stakeholders as well as sense of belongingness for the environment. The study focuses on the lowest level of administration that is at the village and Gram Panchayat. The application of participatory rural appraisal approach was used to analyze how people and institutions organize themselves while managing and governing a scarce resource like water. A well preserved and functioning governance mechanism is effective when people comply with the local management instruments. It was observed that the water management system in the villages was in line with the Integrated Water Resource Management approach.

Project Outcomes:

- Development of a multidimensional aspects of sustainable water management through traditional water conservation structures, namely, ponds and lakes in a water scarce region to support decision making by the government and the project implementation bodies like Civil Society Organizations (CSOs).
- Alignment of projects with MNREGA scheme for optimization of labour involved in reviving traditional structures.

Field/ Experiment photographs:



Fig. Well managed Shiv Sagar Nadi, Chawli village, Rajasthan



Fig. Well managed pond Bavdi, Rol village, Rajasthan



Fig. Poorly managed and dried-up pond in Sunda Sagar, Gugriyali village, Rajasthan



Fig. Unregulated sand extraction using JCB machine, Mundiya Nadi, Mundiya village, Rajasthan



Divyansh Upadhyay

Programme: M.Tech(Water Resources Engineering and Management)

Project Title: Identifying the Technological Option for Fluoride Mitigation in Mewat District, Haryana

Host Organization: Sehgal Foundation

Year: 2018

Abstract:

Water is a vital resource for the survival of human beings and drinking water should be free from pathogens, impurities and other chemicals which affect its quality. Fluoride is an element which is present in the earth's crust and released from industrial pollution. It affects water quality severely if it exceeds its permissible limit as prescribed by World Health Organization standard. Nearly 62 million people in India suffer from fluorosis and there are 20 such states which face the severe problem of excess of fluoride in drinking water. In the present situation, there is a great need to develop fluoride removal technologies so that good quality of drinking water may be available to people and health risks can be reduced at a greater scale. The innovation choice relies upon area explicit parameters and on the relative significance given to various criteria by the partners included, different scores can be utilized as reference esteems and encourage the improvement of better alternatives. Lab scale trials for Tulsi and Moringa were done where Moringa showed fluoride absorption capacity and can be up-scaled as a food material to fight against fluorosis.

Project Outcome:

- Proposed the effectiveness of two locally available organic food materials, Tulsi and Moringa for which positive results were obtained, to treat drinking water for fluoride removal.
- Contributed to the sensitisation and awareness program started by M/S Sehgal Foundation through a radio centre at Ghaghas in Mewat district, posters, and pamphlets.

Field/ Experiment photographs:





Harsh Ganapathi

Programme: M.Tech (Water Science and Governance)

Project Title: Feasibility Study of Riverbank Filtration along Yamuna River in Agra and Mathura and Numerical Modeling using MODFLOW

Host Organization: National Institute of Hydrology, Roorkee

Year: 2018

Abstract:

India is facing daunting pressure in attaining drinking water security. Population dynamics together with expanding urban agglomeration due to migration of rural population affect drinking water security particularly in urban and per-urban areas. Riverbank Filtration (RBF) is a natural treatment technology being used in many European countries and USA for more than a century to provide drinking water to the settlements along the riverbank. RBF technique is also gaining popularity in India along alluvial plains of many rivers.

The proposed RBF schemes of the National Institute of Hydrology, Roorkee at Agra and Mathura in Uttar Pradesh have been considered in the study. Both the RBF sites are located along the right bank of the Yamuna River plagued with the problem of drinking water due to intrinsic groundwater salinity problem and deteriorating water quality of the Yamuna River. The study includes geological and topographical features, physico-chemical analysis of the water and soils along with numerical modeling of the river-aquifer using MODFLOW. A comprehensive analysis of geological and topographical features, physico-chemical parameters of groundwater and soils samples together with the results of the numerical modeling of the river-aquifer of the proposed RBF sites has been presented in this dissertation.

Project Outcome

The results obtained from the study were used in Peysa Jal Suraksha - Development of Six Pilot Riverbank Filtration Demonstration Schemes in Different Hydrogeological Settings for Sustainable Drinking Water Supply. A MoWR project.

<http://nihroorkee.gov.in/sites/default/files/Report-Peya-Jal-Suraksha.pdf>

Field/ Experiment photographs:



Fig. Water works at Yamuna riverbank



Fig. Fluoride test of groundwater sample using spectrometer.



Fig. Bore well installation to test the feasibility of Riverbank filtration on the site.