Residential Training on Groundwater Management in Climate Resilient River Cities

December 5-7, 2023

Anil Agarwal Environment Training Institute (AAETI), Nimli, Rajasthan

Proceedings of the training

Centre for Science and Environment (CSE) in partnership with National Mission for Clean Ganga (NMCG), Ministry of Jal Shakti, Govt. of India conducted the residential training on “Groundwater Management for Climate Resilient River Cities” from December 5-7, 2023. The training was conducted, under the CSE-NMCG capacity building initiative on ‘Making Ganga basin studies water-sensitive’.

The training was aimed to capacitate state / municipal functionaries and other sector players on issues, challenges, and management of groundwater in urban areas.

For the training a total of 40 nominations received from across India and attended by 29 participants, all of which were govt officials from Urban Local Bodies (ULBs), Central Public Works Department (CPWD), Jal Nigam, Forest Department, State Pollution Control Board and Town Planning Depts, etc.

The training was conducted at CSE’s residential training campus, Anil Agarwal Environment Training Institute (AAETI), Nimli Rajasthan between December 5-7, 2023.

The participants were invited to CSE main office, Tughlakabad Institutional Area, Delhi on December 4, 2023, at around 12 noon. The staff from CSE gave a brief introduction to the rainwater harvesting systems and decentralized wastewater management system (DWWTS) followed by the campus visit for live demonstration of the systems. After the lunch at CSE main office, all the participants were taken to the residential training campus, AAETI.

Training Day 1 (December 5, 2023)

The first day of the training on Groundwater Management for Climate Resilient River Cities started with an icebreaking session, where the participants were welcomed, and a discussion was held on their expectations and challenges on groundwater at their respective places. After the discussion, a brainstorming session was conducted by Pradeep Kumar Mishra, CSE, where participants attended an online quiz as a pre-assessment quiz. It was exciting to see that all the participants attended the quiz with great motivation.

The first formal session of the training was on “Managing Groundwater in River Cities – Gaps and Challenges” in which Sushmita Sengupta from CSE, talked about the issues in groundwater management with reference to river cities. She emphasizes how urban expansionism is leading to commercialization of water, putting groundwater into stress. The lands got valued but less importance is given to water, especially groundwater recharge, even though drinking water requirements are met through groundwater. Recharging the groundwater is a need of time, and it must be escalated with concerns from all stakeholders.
The second session was taken up by Vipin Kumar Malik, Scientist (C), Central Ground Water Board (CGWB), Jaipur, on understanding the aquifers and their properties. This session was important to understand the importance of groundwater occurrence and movement and different properties associated with the aquifers. The speaker gave a detailed overview of different parameters to be studied while planning for groundwater recharge. He explained different case studies from various states, where CGWB has implemented groundwater recharge structures with all technical specifications.

In the third session, Vivek Kumar Sah, Programme Officer, CSE talked on the use of advanced technologies to find groundwater recharge locations. He demonstrated the use of different web-portals and softwares where data related to groundwater can be studied, and recharge activities can be planned accordingly.
Photo 3: Pre-Assessment Quiz for brainstorming

Photo 4: Vipin Kumar Malik discussing the concept and properties of aquifers

Training Day 2 (December 6, 2023)
The second day of the training started with the lecture of Sunil Kumar Jain, Former Member, CGWB, on planning groundwater recharge structures to tackle the quantity and quality of groundwater. He emphasized on planning of groundwater recharge structures for various geological regions of country, as per the local conditions. His session was mostly interactive where the participants discussed with him, the scenarios of their respective states and districts on different issues of groundwater. Dr. Jain discussed CGWB’s experience in tackling groundwater issues related to quantity and quality in various parts of country.

In the second session, Vivek Kumar Sah demonstrated the softwares used for planning groundwater recharge structures. He explained the use of Google Earth Pro, QGIS and Bhuvan web portal, where different thematic maps can be created, and can be used for planning groundwater recharge structures.

The last session of the day was taken up by Pradeep Kumar Mishra, Programme Officer, CSE on monitoring of groundwater using advanced devices. The session included demonstration of Digital Water Level Recorder (DWLR) installed at the piezometers of AAETI to monitor the groundwater levels. He demonstrated the use and working of the device, and its effectiveness in understanding the impact of groundwater recharge activities.

Apart from these sessions, a visit to environment monitoring lab of CSE was conducted to brief the participants about the sampling and quality monitoring work done by the organization. The head of laboratory, Arvind Singh Senger explained about the sampling methodology and parameters to be studied during quality monitoring of water and wastewater. He demonstrated the high-tech instruments of the laboratory and their working principles. The participants had a good engagement with him and discussed the issues of their respective states.
Photo 6: Group activity on aquifer mapping

Photo 7: Vivek Kumar Sah, CSE demonstrates the geospatial tools for groundwater mapping
Training Day 3 (December 7, 2023)

The day 3 of the training was kept for field visit to understand the groundwater recharge process, technologies, and impact. For this, the visit to Hero Moto Corp plant, Gurugram was organized by CSE. The head of administration, Mr. Birendra Singh Yadav, welcomed the participants and briefed them about the water conservation journey of Hero Moto Corp. He presented the work of the company and commitment to reduce the usage of groundwater through a shift towards surface water. After the presentation, he organized the visit to the campus of Hero plant, where rainwater harvesting systems were installed to recharge the groundwater. He explained how entire runoff from the campus is diverted to groundwater recharge, by construction of recharge shafts around the campus. He also facilitated the participants by demonstrating the reuse of wastewater generated at the plant. There was a fruitful discussion with the participants.
Photo 9: Overview of Hero Moto Corp’s water journey

Photo 10: Birendra Singh Yadav, Hero Motocorp, explaining the rainwater harvesting systems installed at the Gurgaon plant.
Photo 11: Group photograph of the participants