

**Workshop on  
Water conservation and waste water recycle/ reuse in Rajasthan  
- Issues and Challenges : Proceedings**

CSE organised the first NURM state level workshop on “Water conservation and waste water recycle/ reuse in Rajasthan - Issues and Challenges” at Jaipur on February 7, 2013.

The workshop was supported by the Department of Urban Development, Rajasthan Urban Structure Finance and Development Corporation (RUIFDCO) and HMC Rajasthan Institute of Public Administration (RIPA), Government of Rajasthan as local partner and host and attempted in bringing about the problems of urban water supply and sewage management with focus on Rajasthan. It also looked at possible solutions to provide water and recycle and reuse the waste water generated.

The workshop is part of various activities supported under the Comprehensive Capacity Building Programme (CCBP) – National Urban Renewal Mission, Ministry of Urban Development and Government of India.

**Session 1: Inaugural Session**

The chief guest of the programme was **Mr. G. S. Sandhu, IAS**, Additional Chief Secretary and Principal Secretary of Department of Urban Development and Housing. He talked about the existing laws and policies of Rajasthan on water conservation and waste management. He also invited CSE for capacity building programmes tailor made for his officials on water and waste issues in partnership with RUIFDCO and RIPA.

**Mr. Rohit R Brandon, IAS**, Director HCM RIPA inaugurated the training programme with his welcome speech where he highlighted the importance of water conservation in a water scarce state of Rajasthan. He cited the example of rainwater harvesting as a solution to the water problems in the area.

**Dr Suresh Kumar Rohilla**, Programme Director, Water Unit, CSE gave a brief about CSE and shortcomings of JnNURM phase I and the goals to be achieved in the phase II of the same. Dr Rohilla set the tone of the meeting and also presented the objectives of the workshop and the key themes to be discussed through the same.

The objectives of the meeting were as follows:

- ⌘ To generate awareness about the best management practices (BMPs), state of art knowledge and reforms in the area of urban water conservation including wastewater reuse/recycle.
- ⌘ To discuss with key stakeholders the concept, issues/barriers and experiences in mainstreaming of the reforms.
- ⌘ To explore capacity building support required to implement projects aimed at mainstreaming urban water and environmental sustainability related reforms in the NURM schemes.

**Ms Sunita Narain**, Director General, CSE presented the current scenario on the state of water and waste management in the state of Rajasthan. She highlighted how the partial treatment of sewage is resulting in an increase in pollution levels and blamed the current water-sewage technology paradigm because it is both capital intensive and resource intensive. She pointed out the at the 75 year old Jaipur city system and how its extension and improvement has not kept pace with the city's development and growth pattern. The faulty metering system, inequitable water tariffs and over exploitation of groundwater add to the existing problems she added. She also reiterated the need for decentralised systems in the management of water and waste in the country.

**Mr. Ashwani Saxena**, Executive, Director, RUIFDCO which is the state level nodal agency for

JnNURM in Rajasthan talked on the Overview of Water and Waste management with special reference to NURM Water and waste projects in the state-update and way forward for the same. His presentation gave a brief outline of the initiatives taken by the organisation under the UIG, UIDSSMT and RAY schemes with innovative approaches for rainwater harvesting, STP, reuse of waste water to name a few. He gave a brief outlook on the proposed environmental improvement plan for river Chambal at Kota and also mentioned the seven proposed STP plants to be installed at the various towns of Rajasthan.

## **Session 2: Urban water conservation and recycle / reuse – Framework, experiences and case studies**

**Dr J. B. Ravinder**, Deputy Advisor (PHE) CPHEEO gave a presentation on the Water Conservation and Reuse / Recycle Policy and Reforms in NURM cities and highlighted the potential and way forward for the same. An overview of the JnNURM reform process in the mission cities was given in his presentation. He also gave a brief overview of the various international guidelines on waste water reuse and recycle – USEPA guidelines and WHO guidelines to name a few.

**Prof Shyam Asolekar**, IIT Mumbai provided an insight on the “Zero Liquid Discharge” Concept which would help in managing our water resources. The technological options for zero discharge are Reverse Osmosis, Thermal/Vacuum Evaporation, Ion Exchange and Electrodialysis. Mentioning about the Zero Liquid Discharge, Prof Asolekar exclaimed the the system has low cost with minimum possible mechanization, simple in operation, suitable for incremental improvement and recycle and reuse oriented.

**Dr Rajesh Biniwale**, NEERI, Nagpur talked on the Phytoid constructed wetland system and gave a brief on the design approach and performance characteristics of the various treatment methods. Highlighting the advantages and successful applications of the phytoid system for treatment of the waste water generated he accepted that constructed wetland system is the need of the day. A glimpse of the successful case studies where this technology has been implemented had also been presented.

**Ms. Sushmita Sengupta**, Deputy programme coordinator, Water Unit, CSE gave a presentation on the scenario of groundwater recharge and source sustainability. A brief into the traditional systems of rainwater harvesting in the state was discussed in the presentation and their present status was highlighted. Also the presentation looked at the encroachment and pollution levels of the lakes and waterbodies at Rajasthan. Policies and laws on preservation of the waterbodies and implementation of rainwater harvesting as solutions were also given.

**Ms. Sakshi Dasgupta**, Deputy programme coordinator, Sustainable Building Programme, CSE presented a case on the judicious use of water efficient fixtures at home and highlighted the quantitative amount of water which can be saved through such measures. A brief overview of the various international benchmarks on water efficient fixtures – Australia's Water Efficiency Labelling and Standards and the USA's Water Sense implemented by the Environmental Protection Agency under the Energy Policy Act 1992 was given. Also the lack of any standards on water efficiency in the Bureau of Indian Standards and the National Building Code were highlighted. Examples of water efficient fixtures were also given in the presentation.

## **Session 3: Panel Discussion - Operational challenges and strategies for mainstreaming reforms in NURM projects**

**Prof Brijgopal**, a retired as Professor of Environmental Science at the Jawaharlal Nehru University, New Delhi and an aquatic ecologist presently working on the conservation of lakes and water bodies highlighted the importance of the same and measure to protect the valuable resources.

**Dr Tej Razdann** from the NGO – Jheel Sanrakshan Society at Udaipur gave a critique on the National

Lake Conservation Plan (NLCP) also highlighting the stakeholder participation and capacity building absent from the programme. The conservation efforts using the Green Bridge Technology on the Ahar river was demonstrated and how it can be a solution for an integrated lake basin management and integrated water resource management.

**Prof Prithvi Singh Kandhal**, Associate Director Emeritus, National Centre for Asphalt Technology, USA and an independent expert working on porous pavements demonstrated the successful use of the same for groundwater recharge. How porous asphalt pavements at parking lots and streets can improve the groundwater level was highlighted by him using successful case studies across the world.

**Prof Narender S. Rathore**, Dean Academics, Aayojan college of Architecture talked on water conservation and waste water reuse and recycle at building level and also highlighted the existing issues and challenges within the state. He explained the various green building rating systems prevalent in India and also cited some successful case studies of the same.

**Dr Rana Chatterjee**, Scientist, RCGWB presented the present scenario of the groundwater levels within the Rajasthan state and also threw some light into the quality aspects of the same. He gave importance to aquifer measurement and monitoring as important requirements for aquifer management.

**Prof Rohit Goyal**, Professor & Dean Academic Department of Civil Engineering Malaviya National Institute of Technology (MNIT) explained the use of remote sensing data and GIS as a tool for effective management and analysis of data in a quick and efficient manner.

**Mr. M. S. Rathore, CEDS** discussed on the State of water conservation in relation to climate change and highlighted the need for water conservation for the same.

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#### **Session 4: Panel Discussion - Mainstreaming reuse and recycle**

**Mr. Kuldeep Ranka, IAS**, Jaipur Development Authority presented a general scenario of the case of water in the state of Rajasthan and highlighted the roles, initiatives and achievements of JDA for the same. The efforts and success of JDA in relation to water treatment and recycling and rainwater harvesting were put forward in particular.

**Prof A. B. Gupta**, MNIT gave a decentralised approach on treatment of wastewater through the deep shaft process and RBC process. A comparative case study was shown for Jaipur city using a centralised wastewater treatment system and an RBC system and the cost benefit of the same over the centralised system was also explained.

**Dr Rajesh Biniwale**, NEERI gave a presentation on the importance of mainstreaming decentralised wastewater treatment and reuse / recycle and the market forces related to the development of the same. He also discussed the way forward and the further initiatives which need to be undertaken in the near future.

**Prof R. K. Manohar**, SMS Medical College highlighted the use of treated waste water and the probable advantages and disadvantages associated with the same. He highlighted the health hazards and disadvantages of use of wastewater for agriculture and landscaping purposes giving adequate solutions for the same at the same time.

**Dr. Anand Plappally**, IIT Jodhpur correlated energy consumption with the water usage at domestic level and agriculture usage. He explained how if water consumption is managed the energy consumption and the eventual costs would also decline in all sectors.

**Prof Jai Shree Chandra**, RIPA gave a vote of thanks and in her closing remarks said that scarcity of water is a grave concern not just in Rajasthan but at a global level as well. Water conservation and recycle and reuse of wastewater are indeed the need of the day.

More than 90 participants from different corners of the state were present. The participants included government officials, researchers, NGOs, academicians, medical practitioners, students from Rajasthan as well as different parts of the country. There were experts from Indian Institute of Technology (IIT), Mumbai, National Environmental Engineering Research Institute (NEERI) and Central Public Health & Environmental Engineering Organisation (CPHEEO). CSE researchers also shared their experiences on the issues.

The workshop concluded with the idea that there was a need of capacity building programmes to promote decentralised water-waste management systems and CSE definitely needs to get involved in the state programmes and train the government officials on the tools, techniques and policies on decentralised techniques of water management related to reforms of JNNURM.