



Towards Sustainable Cities DSDS 2015: Regional Dialogue_Chennai

Background Note

The increasing scarcity and deterioration in quality of water resources and their management have highlighted several concerns. Inequitable access to safe drinking water and sanitation continues to be a problem in many areas. Ground water continues to be perceived as an individual property rather than a community resource. Its extraction and exploitation continues inequitably and without any consideration for its sustainability and without adequate understanding of the variations in underground water quality.

The water quality is impacted due to chemical pollution through excessive fertilizer use and reckless dumping of untreated waste into our rivers and water bodies. Increased and unscrupulous usage resulted in the disposal of waste water into the nearby water bodies without adopting safe disposal methods. Most of the waste water and sewage water generated in the cities are partially let into the water bodies leading to major water quality problems of both the ground and surface water sources.

Water has a clear linkage to all the three development dimensions: Environmental, Economic, and Social. The challenges necessitate the need for a sustainable policy regime that facilitates Integrated Water Resource Management (IWRM) for efficient use of what is going to become a scarcer resource globally. The matter is assuming greater urgency as India is rapidly urbanizing and undergoing industrial transformation.

In the water supply sector, India has achieved Millennium Development Goals (MDGs), however in the sanitation sector it is still lagging far behind. Water supply, sanitation, and sewerage in both urban and rural areas need to improve tremendously. Safe drinking water requires proper management of sewage, and better water management requires recycling of water from sewage, since over 70 per cent of supplied water returns through the sewage system. The rural and urban water supply and sewage treatment schemes should be integrated and executed simultaneously and should be under the same umbrella organization at the State level, for the sake of efficiency and financial viability. Water supply bills should include sewerage charges.

The National Rural Drinking Water Programme (NRDWP), one of the six components of Bharat Nirman, emphasizes infrastructure that provides water from outside a given village through 'grid supplying metered bulk water', as an alternate supply system at the sub-district, district and/or state level. Programmes like Swajaldhara, demonstrated that demand driven approach works well in terms of cost, community involvement

and water use efficiency. Participatory management processes encourage and recognise the social, economic and cultural characteristics of the community. Rainwater and roof water harvesting should be scaled up to increase availability of utilizable water. In this regard, Tamil Nadu has been a successful example for the entire country. There is an urgent need for techno-economic innovation to make desalination more affordable.

Tamil Nadu is facing many challenges in ensuring safe and sustainable drinking water supply and sanitation. The present status of water quality in terms of potability in Tamil Nadu in respect of major parameters such as Iron, Fluoride, TDS, Nitrate, Faecal Coliform bacteria in water has been mapped based on the testing of 3,42,854 drinking water sources up to 2011. As per the test results, it is evident that all the districts have at least any one of the quality problems and 3.94% of sources are having quality problems. Excessive extraction is affecting ground water quality. Surface water is stressed due to the pollution by industrial effluents, letting off waste from agricultural operations and untreated domestic sewage. The identification of the polluted water bodies would actually initiate the process of looking into source protection coupled with prevention of pollution. Systematic and concerted efforts are needed to ensure safe drinking water and sanitized environments that promote healthy living.

One of the basic guiding principles of the National Water Policy (2012) of India stresses on the 'Environmental flow' of the rivers. The Madras high court had earlier directed the industrial units in the State to achieve zero liquid discharge (ZLD) and many of the industries had complied. There is an urgent need for similar effective legislation at the State level for regulation of ground water and surface water and providing an explicit and increasing role for Municipal and Panchayati Raj Bodies in planning, management and regulation. Enforcement of law (both environmental and economic regulatory measures) based on the 'Polluter pays principle' as in the case of the Organisation for Economic Co-operation and Development (OECD) and European Community (EC) countries, would bring about a sea change in the existing system.

Regulatory action through pricing of water and sanitation services is critical for its economical and efficient use. Appropriate pricing ensures more efficient utilization, thus increasing water availability in general, and for the poor in particular, who may otherwise actually end up paying a high monetary and health price for less appropriate sources of water.

The sanitation sector scenario in Tamil Nadu presents a grim picture. The Census of India 2011 figures reflect little improvement from the previous decade. Even today, 45.7% of the state's population resorts to open defecation due to the absence of proper sanitation facilities. The situation is worse in rural areas where only 2% of the population is covered by the pipeline sewerage system. As a result, over 73% of rural population defecates in the open. Even the state's Total Sanitation Scheme, introduced in 2006, has failed to change the practice of open defecation. It is evident that lack of sanitation facilities has direct implication on human health, especially the vulnerable sections of our society. Unhygienic conditions are responsible for a number of diseases, having economic, social and environmental impacts.

In spite of all the efforts at supporting infrastructure by the central as well a state government, the usage of sanitation facilities remains a big challenge. The strategy adopted in Information, Education and Campaign (IEC) is yet to fructify in to actionable outputs. The biological contamination of large number of drinking water sources, primarily due to prevalent open defecation and insanitary conditions around the drinking water sources, is a serious problem. The prevalence of water borne diseases such as diarrhea, cholera, etc. is seen to have decreased in the villages and *Gram Panchayats* where the sanitation programme is being properly implemented.

Civil Society Organizations (CSOs) and Non- Governmental Organizations (NGOs) continue to play an important role in promoting positive changes in the water supply and sanitation sector. The institutional capacities of NGOs in terms of resource mobilization (internal or external), capacity building, networking and public advocacy, and sound internal management are critical for addressing many of the sectoral issues effectively. Capacity-building of the Water User's Associations (WUAs) and Panchayati Raj Institutions (PRIs) should be carried out for strengthening the institutions and it should be given statutory powers to collect and retain a portion of water charges and maintain the distribution system in their jurisdiction.

There is an urgent need for a paradigm shift from purely engineering works to systems that incorporate traditional practices, socio-anthropological as well as the financial and political profile of the local community, and are manageable and maintainable by them. The *Gram Panchayat* as well as the local community needs to be involved at all stages of discussion, planning, implementation, management and maintenance. A business-as-usual (BAU) approach will not be able to plug the gap between supply and demand in the water and sanitation sector.

This session on **Sustainable Drinking Water and Sanitation in Tamil Nadu**, envisages deliberations on equitable access and decentralized distribution system for water and sanitation systems in the State of Tamil Nadu. The session will also deliberate on the key policy and institutional drivers of sustainable water supply and sanitation and showcase some of the best practices.

Chennai as a Smart City- Opportunities and Challenges:

Chennai faces the challenge of ever increasing urban population. This results in poor water and electricity supply, lack of social infrastructure, primitive sanitation, lack of access to toilets and proliferation of slums owing to a lack of affordable housing areas.

Groundwater table has dropped to a significant low and in many parts, groundwater is completely dried or reached a dead-end with hard-rocks. Many farmers have become heavily indebted due to heavy investment on wells. The existing surface water bodies are neglected or encroached or polluted (used as a dumping yard for urban wastes) All these have adversely affected overall health, agricultural activities resulting in shrunk in agricultural income. In turn, unemployment has emerged as a serious problem in these has emerged as a serious problem in these villages.

Keeping in view the expected gap in demand and supply of drinking water for Chennai city, the Chennai Metro Water has taken several measures for water conservation, equitable distribution and plugging of leakages. Indiscriminate extraction of ground water exploitation is being controlled and ground water recharged through roof -top rain water harvesting. This is ensured as a mandatory measure. Improved operation and maintenance is tried out through replacement of the house service lines with non-corrosive MDPE pipes and also by renewal of all damaged distribution mains and PVC/AC distribution mains with C.I Pipes. This is stated to have brought down leakage level in the distribution systems from almost 30 percent to 5 per cent. All this has resulted in substantial improvement in the average ground water level fluctuation of Chennai City.

Chennai Metro Water has also made it mandatory to install a rainwater harvesting structures to get water and sewage connections. There are rainwater harvesting structures being installed in 10,000 buildings every year in the city. Metro Water is distributing pamphlets to the public containing details about different methods of rainwater harvesting structures suitable for different soil types existing the city and urging all building owners to clean silt deposits in their rain water harvesting structures to boost ground water levels further, during the north east monsoon.

Rain Centres are also constructed in area offices of Metro Water, with live models of different rain water harvesting structures suitable for different soil types.

Drinking water supply sources in Chennai, which is fast developing as an IT hub, are monsoon dependent and the city experiences frequent water shortage. The Government has set up sea water reverse osmosis desalination plant and external product water conveyance facilities in Chennai. There are more desalination plants that will be set up in the city.

In Chennai, the decentralized availability of drinking water saw the paradigm shift from a system wholly controlled by engineers and the Chennai Metropolitan Water Supply and Sewerage Board to a level of co-management. Providing such services with people's participation is a model for all large urban cities to consider in the planning and managing of their drinking water. Thus, Chennai serves as a precedent and model for other cities suffering from water scarcity.

Ponneri, in north Chennai would be developed as a smart city. Japan International Co-operation Agency is preparing the master plan for the Chennai-Bangalore Industrial Corridor.

Some of the questions that the deliberations are likely to answer are:

Key questions:

- *What should be a definition of a smart city in the Indian context?*
- *With respect to Chennai what are the key challenges and opportunities in its journey to becoming a smart city?*
- *What are the constraints restricting water availability, supply and distribution in rural areas and convergence with sanitation programmes?*
- *How can the institutional mechanisms be strengthened for tackling geo-genic and anthropogenic contaminants to ensure water security and sustainability?*
- *What are the possible measures for improving water supply and distribution through water conservation and demand management approach?*
- *What are the key institutional drivers for scaling-up rural sanitation programs?*