Achieving Urban Water Security
Through an Integrated Urban Water Management approach (IUWM)
India Water Week
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New Delhi, India
Concept Note for 1 Day Training

Context

Globally, more people live in urban areas than in rural areas, with 54 per cent of the world's population residing in urban areas in 2014. Asia remains mostly rural, with 48 percent of population living in urban areas. Asia is urbanizing faster than the other regions and is projected to be 64 per cent urban, by 2050. Just three countries -India, China and Nigeria, together are expected to account for 37 per cent of the projected growth of the world's urban population between 2014 and 2050 (World Urbanization Prospects 2014).

Today, the total population of India is of 1.2 billion out of which over 400 million people live in urban areas. According to the Department of Economic and Social Affairs of the United Nations, projections predict a total population of 1.6 billion in 2050, where the urban percentage is steadily increasing. From current 32.7% urban population, the rise is estimated to go to 37% by 2025 and 50% by 2050 (World Urbanization Prospects 2014). Already, Delhi is the second highest urban agglomeration in the world with 25 million inhabitants just after Tokyo.

According to the Joint Monitoring Program of the World Health Organization (WHO) and UNICEF, 97% of the urban population in India has access to improved sources of water in which only 51% has access to piped water on premises. The access rate to improved sanitation in urban areas is of 60% in 2012. However, household sludge, in the absence of waste water treatment, is discharged directly into the environment, and sanitation facilities of most public institutions (hospitals, schools, bus stations) are inadequate. WHO estimates that diarrheal diseases caused by poor water supply requirements, sanitation and hygiene are responsible for over 20,000 deaths per year.

Water security is under intense pressure in many urban areas, and the very nature of urbanization contributes to water stress situations both from a quantity and quality perspective, owing to the following main factors: rapid population growth, changing life styles, poor waste water management and sanitation, competing demands on the resource, and urban water consumption likely to double by 2025. As India continues to urbanize further, these challenges will only increase unless properly addressed and planned for.

Today most planners don't realize the importance of holistic and integrative approaches that show the interrelationship of economic activities together with the need to break silos between sectors. In addition, important social disparities in terms of access to basic services call for more inclusive approaches, and local stakeholders are more and more willing to participate in planning and decision making processes, paving the way for a new water democracy. Given the increasing challenges that urban planners and water utilities are facing, there is a need to explore new ways of managing water systems. The Integrated Urban Water Management (IUWM) approach provides an innovative framework for interventions over the entire water cycle and a reconsideration of the way water is used (and reused).

2. An overview of the IUWM approach

The Integrated Urban Water Management (IUWM) approach is the proposed paradigm shift for urban water management; it is not a prescriptive model, but a process that invites current cities and emerging ones to adjust their current planning and management practices, given their own priorities, hydrological and socio economic contexts.

It is based on the following key concepts:

- **Participation of Key Stakeholders:** coming from the public, private and social sectors representing different socio economic activities that have an interest in water in urban areas. Ideally, the diagram[1] below shows the type of stakeholders who could be involved in the visioning process, but an agreement needs to be reached with the Representatives of the Local Government who remain the main convener. Not all have the same role and responsibility, but all need to be aware and contribute.

  The rational for the participation of key stakeholders can be described as follows:

  - Breaking 'silos' between different sectors and activities;
  - Reaching a common understanding and vision of challenges and activities;
  - Understanding and balancing interests and needs of different stakeholders;
  - Optimizing resources and capacities that are available at various levels;
  - Strengthening cooperation, sustainability and ownership;
  - Ensuring the selection of appropriate solutions;
  - Inducing behavior change and realistic demand management.

- **Urban Water Security through a holistic approach,** this implies managing water resources and its waste in a new integrated way, with a focus on the following:

  - Considering the whole urban water cycle as one system within the watershed;
  - Aiming for water security through diversity and optimum use of all potential sources of water, matching water quality with purpose of use ;
  - Aiming for a better utilization of natural systems for water and wastewater treatment;
  - Considering storm water / rainwater catchment systems as a potential source;
  - Better managing use of water, effluents, water demand and hygiene behavior;
  - Strengthening leakage management and maintenance;
  - Strengthening resilience of urban water systems that are facing drought or floods, and that are subject to more frequent extreme weather patterns;
  - Providing safe water supply and sanitation services for all.

- **Waste Water is a Resource:** implies to realize that waste water is not wasted water and that it can be used productively, as indicated below:
  - Grey water can be reused for irrigation, urban agriculture and industrial processes, treated or untreated depending on the purpose of its use and its legislation
  - Nutrients in waste water (grey and black) can be used for energy production and fertilizer production
  - There is a considerable possibility to generate revenues and employment through the productive use of waste water.
  - Positive impact on the environment and quality of life can be significant.

[1] From SWITCH Training Modules

- **Optimum Infrastructure Design:** This implies the following key points:
  - Technology selection for water supply, waste water treatment and sanitation, is based on a multi-criteria decision support system to analyze a wide range of indicators.
  - Such indicators include water quality, economic condition of households, size of population, access to advanced technologies and skilled manpower, availability of land, institutional set up and more.
  - This includes green infrastructure and low cost and energy efficient options, natural systems and innovative technologies

- **Effective Water Governance*:*** Water Governance with an IUWM perspective encompasses many aspects as shown in the diagram below, with the main following key elements:
  - Adopting a new mind set, a holistic and cross sectoral approach Linking urban water management with overall urban planning;
  - Adjusting some of the policy and legislation concerning the use of water and reuse of waste water;
  - Analyzing aspects of centralized and decentralized management;
  - Assessing the economic and financial impact of adopting an IUWM approach;
  - Building the capacity of technical and managerial staff;
  - Sharing information with the public and users.

IUWM Modules

GWP together with the University of Florida and the Water Partnership Program of the World Bank are currently finalizing a series of modules on IUWM aiming to promote the approach and on how integrate it in urban planning. The modules will support the planning and decision making for an integrated approach. These modules include the main following components:

- A stakeholders engagement process;
- An institutional analysis tool;
- IUWM Diagnosis indicators and analytical tools;
- A water balance model, analyzing all options related to water supply sources, waste water management and sanitation
- A technology selection tool based on the above
- An economic and financial analytical process.