

# INTEGRATED RURAL URBAN WATER MANAGEMENT FOR CLIMATE BASED ADAPTATIONS IN INDIAN CITIES (IAdapt)

---

## Report on International Conference

20<sup>th</sup> November 2019, New Delhi

<b>Proposal Code:</b>	<b>Proposal # A-69683</b>
<b>Submitted to:</b>	International Development Research Centre (IDRC) Canada
<b>Submitted by:</b>	ICLEI South Asia
<b>Project Consortium:</b>	ICLEI South Asia (Lead Member) Athena Infonomics LLC International Water Management Institute (IWMI) Indian Institute of Technology, Madras (IIT M)



## Introduction

An International Conference was conducted on 20th November in New Delhi under the Integrated Rural Urban Water Management for Climate Based Adaptations in Indian Cities (IAdapt) project. The conference was organized by ICLEI – South Asia, in association with the project partners, Athena Infonomics, International Institute of Water Management (IWMI) and IIT Madras. The main objectives of the conference were:

- To disseminate project outcome at national and regional level
- To share project learning from the cities
- To emphasise the need for climate adaptive strategies to sustainably manage water resources in the cities
- To showcase success stories from the project cities in using the governance based and technical tools developed under the project
- To promote uptake of the tools and processes of integrated and collaborative water management planning.

The conference was attended by more than 100 participants, representing government authorities (cities, province and national), institutions, organisations and practitioner from India, Nepal and Bangladesh.

## Inaugural Session

The conference was inaugurated by Mr Rajiv Ranjan Mishra, Director General, National Ganga Mission for Clean Ganga, Ministry of Water Resources, River Development and Ganga Rejuvenation, Government of India on 20th of November at Hotel Surya International in New Delhi who delivered the key note address at the event. Dr. Navsharan Singh, Senior Program Officer from International Development and Research Centre, Dr. Umakant Panwar, India Country Director of Athena Infonomics, Smt. Shobha Banshetti, Mayor of Solapur Municipal Corporation and Mr. Emani Kumar, Deputy Secretary General, ICLEI and Executive Director of ICLEI South Asia were also part of the inaugural session.

**Mr. Emani Kumar, Executive Director ICLEI – Local Governments for Sustainability, South Asia** welcomed the dignitaries, officials and representatives from cities and other participants attending the conference. He mentioned the importance of integrated approaches in management of water resources. He appraised the gathering about the plan for the day that included presentations and panel discussion on learnings from the cities on rural urban or RURBAN platform and Decision Support Tool developed through the project, climate models and projections for water management and potential financial options for integrated water management.

In his special remarks, **Dr. Umakant Panwar, India Country Director, Athena Infonomics**, spoke about the need of initiatives like IAdapt project to strengthen the integrated water governance

in Indian cities. In his speech he gave an overview on the RURBAN interactions for sustainable development of water sector and addressing water governance and explained the challenges to implement RURBAN and catchment level planning.

**Mr Rajiv Ranjan Mishra, Director General, National Mission for Clean Ganga, Ministry of Water Resources, River Development and Ganga Rejuvenation** in his key note address, emphasised the role of rivers as a backbone for country's economy and contribution to GDP growth, apart from their other ecological, recreational and religious roles. He highlighted the vision of National Clean Ganga Mission to ensure effective abatement of pollution and rejuvenation of the river Ganga and to maintain minimum ecological flows in the river Ganga with the aim of ensuring water quality and environmentally sustainable development. He mentioned that the outcomes and learnings of the IAdapt Project will be very useful to his department that is working as a facilitator and adopting collaborative approaches along with information technology, public private partnership models and hybrid annuity models to achieve the goals of this mission. He later complimented all the partners who worked collaboratively on the 'common sense' of developing the IAdapt Framework highlighting the importance of integration and synergies across interdisciplinary areas.

**Dr. Navsharan Singh, International Development and Research Centre**, in her inaugural address mentioned the increasing water demand that is forcing cities to go farther and farther away to get water eventually affecting their expenditure while also increasing vulnerability of urban poor especially women. She also mentioned that sustainable water security cannot be achieved through business-as-usual approaches and city and villages should not be considered in isolation while designing water management plans. She highlighted the relevance of the project outcomes for Indian cities particularly in the context of a changing climate. She congratulated the team and expressed gratitude towards city officials from Solapur and Vijayawada for providing support to the project.

The inaugural session was followed by traditional lamp lighting ceremony by the Director General, National Ganga Mission for Clean Ganga, Ministry of Water Resources, River Development and Ganga Rejuvenation, Smt. Shobha Banshetti, Mayor, Solapur Municipal Corporation, Dr. Navsharan Singh, International Development and Research Centre, Dr. Umakant Panwar, India Country Director, Athena Infonomics and Mr. Emani Kumar, Executive Director ICLEI South Asia.

### **Introductory Session**

Ms. Bedoshruti Sadhukhan, Senior Programme Coordinator, ICLEI South Asia, presented the IAdapt project to the audience. She gave an overview of the background, aim and objectives of the project and explained the projects activities undertaken to achieve these objectives through the project. The major outcomes and outputs of the project was highlighted, and lessons learnt during the implementation of the project was shared with the audience. She briefly mentioned

the highlights from the project catchments in Solapur and Vijayawada as well. The major outcomes of the formation of the RURBAN platform, the IAdapt Framework and the Decision Support tool were explained to the audience.

### **Session I: Integrated Rural Urban Water Management: Principles, Tools and Governance Mechanisms**

The session was moderated by Dr. Umakant Panwar, Athena Infonomics. The key presenters were Dr. Dinesh Kumar Manhachery, Executive Director, Institute for Resource Analysis and Policy, Mr. Sairam M., Associate Director and Ms. Anupama V. S., Associate Consultant from Athena Infonomics, and Mr. Nikhil Kulkarni, Assistant Manager, ICLEI South Asia.

**Dr. Dinesh Kumar Manhachery** presented the use of IUWM for building water-resilient cities in India. In his presentation, he highlighted the urban water crisis in India and the key factors influencing the performance of urban water management systems. He explained the importance of using feasible methodologies for water management as per climatic conditions. For instance, in arid regions with deep water table, septic tanks are environment friendly options of waste management, while rain water harvesting could be a viable alternative to conventional water supply systems in hilly and mountainous areas with high rainfall. He emphasized the need for institutional reforms to reduce environmental damages and promote equitable access to water across social segments.

**Mr. Sairam M., Associate Director, Athena Infonomics and Ms. Anupama V. S., Associate Consultant, Athena Infonomics** then presented the lessons from implementing the IAdapt project in Vijayawada. Mr Sairam discussed the need for rural and urban interactions and collaborations for sustainable water management at catchment level. He shared lessons from Vijayawada city of establishing the RURBAN Platform that supported the local governance system to take collaborative actions for equitable use of water resources. Ms Anupama V. S. later shared the experience developing and implementing the decision support tool (DST) in Vijayawada with the RURBAN Platform members. This tool supports data-driven decision making for catchment level water management.

**Mr. Nikhil Kulkarni, Assistant Manager, ICLEI South Asia**, presented lessons learnt from Solapur city. He explained the overall process adopted to implement the project in the selected micro-catchment in Solapur. He explained the outcomes of water balancing and vulnerability assessment that resulted in the development of the catchment management plan of the Ekrugh micro-catchment in Solapur. He explained the pilot project on rainwater harvesting in Solapur city and constructed wetland system as a low cost option to treat sewage in Solapur micro-catchment.

**Panel Discussion:** The technical presentations were followed by a panel discussion, where the project cities' representatives shared their experience of implementing the project. Mrs. Shobha Banshetty, Mayor, Solapur Municipal Corporation, Mrs. Ujwala Ajaykumar Revaje, Sarpanch, TaleHipparga Village, Mr. Sachin Jadhav, District Program Manager, DWSM, Solapur District were the panellists.

Mrs. Shobha Banshetty spoke about the issues of water supply in the drought prone city of Solapur particularly in summers. She informed that the main water resource for the city is 100 km away that results in high NRW loss and increases the overall cost for augmentation of the water supply. Solapur is working on various projects through the Smart City Mission and AMRUT Mission to addressing water issues. IAdapt project helped Solapur city to build the capacity of cities staff especially on leak detection and rainwater harvesting. Mrs. Ujwala Ajaykumar Revaje, shared the challenges rural areas faces during summers in Solapur and the importance of Ekruk Lake to her village. Mr. Sachin Jadhav, mentioned the importance of collaborative approaches and recent programs initiated by his department to make water resource and overall system more sustainable. He also highlighted the need to replicate such models at all the villages of the district.

#### **Key points of Discussions**

- Water supply schemes of Ekruk, Haglur and Tale Hipparga villages involve ground water abstraction which depends on the water availability in the Ekruk lake.
- Water supply and distribution network in the city is very old and faces leakages at many locations. Transmission and distribution losses are high and NRW losses are about 43%.
- Solapur city has received approval by state government for 2<sup>nd</sup> pipeline from Ujjaini dam.
- Water supply from Ekruk lake having gravity supply is the most economical source compared to Bhima River and Ujjaini dam which requires millions of rupees towards electricity bill payments for pumping of water
- Collaborative actions are required keeping in mind jurisdictional boundaries to be able to manage water resources efficiently.

#### **Session II: Climate Projection Model to support Climate Adaptive Water Management**

Dr. S. Mohan, Professor and Former Head of the Department, Department of Civil Engineering, IIT Madras, presented the climate models and future impact of climate change on water resource in reference to Solapur and Vijayawada. He explained the trends of emission level from past decades and evidence showing impact of these GHG emission on hydrological cycle especially in terms of floods, drought and changes in water flow regime. He explained the increasing vulnerability to these extreme climatic events over the past decades. He discussed

the Representative Concentration Pathways (RCPs) models and common challenges faced while downscaling these stimulations and stress added due to urban heat island impacts. He presented GCM modelling conducted for Solapur and Vijayawada catchment and shared the results of the same.

### Key points

- Climate change impacts all regions - developed, developing or under developed
- The main challenge in climate modelling is to downscale the impact to a local level because of data challenges and higher levels of uncertainty
- Cities are already stressed due to insufficient infrastructure and climate change exaggerates that stress by accelerating the intensity and frequency of extreme events that results in heat island effect or urban flooding.
- The assessment of GCM models shows the possibility of more droughts in Solapur and increased number of downpours in Vijayawada region.

### Session III: Potential options for financial support for integrated water management

This session was moderated by Dr. Alok Sikka, IWMI Representative India. The presenters included Ms. Subhra Jain, Independent Consultant and Dr. Kaushik Basu, Consultant for IWMI. The session focused on potential of wastewater reuse in urban India and financial feasibility for wastewater treatment and reuse in Solapur.

**Dr. Alok Sikka**, initiated the discussion by sharing information about the waste water industry in India and challenges faced by urban centres in managing waste water. He emphasised the need for governance and technological initiatives to improve overall water management in the cities.

**Ms. Subhra Jain** presented the need to treat waste water in India and efficiency of the present water and waste water systems. She explained current and projected water demands in India and explained the major challenges. She presented the typical water use by key industrial sectors and explained the economic and financial benefits of wastewater reuse in these industries. She explained initiatives to use treated wastewater by industries and agriculture that helps in reducing the fresh water demand using examples from Hyderabad and Chennai.

**Dr. Kaushik Basu** presented the present status of waste water treatment in Indian Cities and suggested that the primary criteria to use the wastewater for industry and agriculture is essential to treat the water at the tertiary level and to reduce the dependence on fresh water to a large extent. But treating water at the tertiary level impose burden on urban local bodies due to the high costs associated with it. He explained the financial modelling conducted for Solapur and Vijayawada under the project to identify potential tariff rate for industry and

agriculture that would support a self-sustaining water system. A cost analysis considering land requirement for tertiary treatment plants along with the operation and management cost was presented for both the cities.

#### Key Points of Discussion

- Urban local bodies are not obliged to treat water beyond secondary level. But tertiary treatment systems can support reuse and recycling to a larger extent.
- ULBs do not have requisite funds for operation and achieve integrated wastewater management system
- Different models can be developed based on type of financial arrangements required if tertiary treatment facility is added to the existing secondary treatment plants and treated water is supplied to industry as well as agriculture.
- A detailed modelling can be conducted to identify the possible ways of recovering the expenditures for sustainable operation of the waste water plants.
- There is need for detailed datasets from primary and secondary sources to support tariff rates

#### Conclusion

The conference was concluded with a vote of thanks from ICLEI South Asia and Athena Infonomics. It was observed from the level of discussions and questions raised from the audience that there is a great interest among urban local bodies in the region on urban water management technologies.

# Registration Sheet

Sr. No.	Name/ नाव	Organization/ संस्था	Designation/ पदनाम	Email & Phone No./ ईमेल आणि फोन नंबर	Signature/ स्वाक्षरी
11.	Sanjay Bhambhani	SMC Solapur	Dev. Engr. (PHE)	smcphew@rediffmail.com	
12.	Venkatesh Chavhan	SRIC Solapur	Asst. Engr.	Ven. at Chavhan	
13.	Madgundi Devidas	S.M.C Solapur	Junior En.	mddeva0004@gmail.com	
14.	Z.A. Nairkhandi	SMC Solapur	Asst. Engr.	9423993966	
15.	<del>S.M. Chavhan</del>	<del>S.M.C Solapur</del>		<del>9423993966</del>	<del></del>
16.	Dr. Rangmar Chavhan	(नि.प. कोल्हापूर) (द.ग.प.)	अ.नि.प.	9827943905	
17.	Dr. Rangmar Chavhan	द.ग.प. कोल्हापूर	अ.नि.प.	9889898955	
18.	श्रीम. इमडे एन.पी.	नि.प. कोल्हापूर	अ.नि.प.	8308158423	
19.	<del>श्री. वी. व्हा. काळे</del>	<del>नि.प. कोल्हापूर</del>	<del>अ.नि.प.</del>	<del>7726950422</del>	<del></del>
20.	श्रीमती मधुकर जाधव	सचिव, जलसंधन अभियान कोल्हापूर	सचिव	meelbhakhi@gmail.com 9518715587	
21.	प्रा. मधुकर जाधव	जलसंधन अभियान कोल्हापूर	अध्यक्ष	9860300830	
22.	जोगदामकर इ.प. कार.	S.M.C. C.C.S	C.C.S	94239930150	
23.	दुर्गा. अ. पार	S.M.C. Solapur	In. P.H.E	9423993015	