Mumbai Water Conclave 2024
Flowing Towards Sustainability

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Introduction

Mumbai, the bustling metropolis on India’s west coast, faces significant water management challenges. With a burgeoning population and rapid urbanization, the demand for water in Mumbai and Mumbai Metropolitan Region (MMR) has been escalating, putting immense pressure on the existing water infrastructure. The city relies heavily on diverse water sources, including rivers, lakes, and reservoirs, to meet its growing needs. Sustainability is nowadays getting the required attention fetching more investments. However, the lack of implementation of water conservation measures in the city remains a major concern for the stakeholders. This report presents key recommendations for water conservation measures aimed at sustainable and economically viable water strategies brought forward by the Mumbai Water Conclave 2024 (MWC’24).
The challenges faced by Mumbai with growing water demand in the city are multidimensional and highly complex. Various challenges identified to discuss in the conclave are listed below:

**Water Management:** In Mumbai, the focus has largely been on the supply side of water management and less focus on demand-side management leading to various source sustainability challenges. The overexploitation of groundwater resources has further increased the concern. There is also a high level of unaccounted-for water in urban areas. Further, poor water infrastructure often leads to leakages in the pipeline. In townships, there is an issue of technological limitations that affect effective water management, coupled with a lack of water meters and water pricing mechanisms.

**Water Quality:** Industrialization and urbanization are driving up water pollution rates. Inadequate wastewater treatment is compromising natural water body quality, posing risks of waterborne diseases from untreated water.

**Water Scarcity and Availability:** The per capita water availability has been reducing in India, despite high rainfall in the country. Countries like Israel have successfully managed their water supply despite low rainfall. There is also an unequal distribution of water that is leading to various water-related conflicts. It is a potential threat indicating a future water crisis for Indian cities.

**Centralized Approach:** Many cities rely on faraway water sources, leading to local water issues in these areas. Only a few cities worldwide manage both their water supply and wastewater treatment within their boundaries.

**Vulnerability to Climate Change:** The growing numbers of urban floods and heat waves have made society vulnerable to climate change. The rising sea level is now questioning the overall developmental model for cities like Mumbai.
Wastewater Management: Wastewater treatment is still at its nascent stage. Freshwater sources are impacted by a lack of limited wastewater treatment, recycling, and reuse of water and it further leads to an increase in the overall water demand of the city.

Policy and Governance: There is an absence of a long-term water security strategy, efficient water pricing mechanism, and any policy/model guidelines for rainwater harvesting. Public behaviour and awareness towards water conservation require equal attention.
Mumbai Water Conclave organised by Mumbai First brought the key decision-making actors associated with water management to a common platform. It included ministers, bureaucrats, academicians, experts, practitioners, consultants, students, international donor agencies, and industry. The discussion was divided into various themes and priority issues were categorised as follows:

1. To create awareness and promote a sense of responsibility and urgency in adopting water-saving behaviors in Mumbai.

2. To highlight diverse water conservation strategies and explore effective implementations to conserve water across Mumbai.

3. To understand how innovation can optimize water usage and encourage adopting and integrating technological solutions for sustainable water management.

4. To know what water-saving methods are practiced by industries, housing societies, and other sectors in Mumbai.

**Inaugural Session/Setting the Context**

The inaugural session of the Mumbai Water Conclave 2024 provided the platform for extensive discussions on adapting sustainable water management practices. It set the stage for showcasing the best practices adopted by global establishments like the World Bank, and the Netherlands Consulate of preservation and effective reuse of water resources. It also brought together eminent experts from institutes like the BARC to shed light on how these organizations aim to enhance the water utility to combat the existing climate challenges in Mumbai.
This session delved into identifying the critical need to preserve freshwater resources, the significance of water conservation, and efficient utilization. It explored the necessity of adopting water conservation practices, the challenges posed by water scarcity, and the opportunities for promoting responsible water usage across various sectors.

Panelists:

1. **Dr. Madhav Chitale**, Hydrologist and Former Secretary Ministry of Water Resources, Government of Maharashtra (VIRTUAL)
2. **Dr. Sanjay Chahande**, Chairperson, Maharashtra Water Resources and Regulatory Authority
3. **Mr. Alessandro Giuliani**, Managing Director, SDA Bocconi Asia
4. **Mr. Alessandro De Carli**, Faculty, SDA Bocconi Asia (VIRTUAL)
5. **Dr. Jairaj Phatak**, Director General, AIILSG
6. **Mr. U. P. Singh**, Former Secretary, Ministry of Jal Shakti, GoI
Strategies for Freshwater Conservation: Diverse Approaches to Saving Our Most Precious Resource

This session focused on various avenues adapted to conserve water, reduce, recycle, and reuse water for non-portable use. It emphasized strategies in rooftop rainwater harvesting in urban areas (reuse), recycling of sewage water, desalination, and water conservation.

Panelists
1. Dr. Ajit Salvi, Deputy Chief Engineer, Sewerage Operations, BMC
2. Shri. Shankar Deshpande, Chief, Town & Country Planning Division, MMRDA
3. Ms. Renu Gera, Sr. Environmental Expert, General Consultants
4. Mr. Anshuman, Director, Water Resources Division, TERI
5. Mr. Srinivas Chary Vedala, CEO, WASH Innovation Hub, ASC
Session III

Harnessing Innovation:
 Technologies Shaping Water Conservation

This session explored technologies adopted in the Desalination of seawater, Rainwater Harvesting, Black & Greywater, and Treatment & Reuse of Industrial Wastewater. It showcased the cutting-edge technologies, tools, and solutions that are revolutionizing the way we manage and conserve water resources, with a focus on sustainability, efficiency, and resilience.

Panelists:

1. Mr. Suresh K. S., Vice President, Larsen & Toubro
2. Mr. Mandar Vaijanapurkar, Head of Sales, Marketing and Service, Danfoss Drives India
3. Mr Ajay Popat, President, Ion Exchange
4. Mr. Nirav Saraiya, Founder, Vivaan Water & Enviro Solutions Pvt. Ltd.
5. Mr. Alkesh Wadhwani, Director, Bill & Melinda Gates Foundation
6. Mr. Anil Kumar, Managing Director- Water Technology, Royal HaskoningDHV
Every Drop Counts: How End-users Contribute to Water Conservation

This session focussed on the crucial role that end-users play in contributing to water conservation efforts. It explored the best practices adopted for conserving, treating, and reusing water in housing societies, industries, hospitals, hotels, commercial centers, etc.

Panelists
1. Mr. Satish Magar, Founder of Magarpatta Township Development
2. Mr. Domnic Romell, President, CREDAI-MCHI
3. Mr. Dhaval Ajemra, Secretary, CREDAI-MCHI
4. Mr. Ashok Kumar Misra, General Manager, Western Railway
5. Mr. Khushrow Major, Jt. Chief Executive Officer, Masina Hospital Trust
6. Dr. Lakshmikanth Hari, Chairperson, Centre for Sustainable Development, K.J. Somaiya Institute of Management.
This section presents the comprehensive recommendations that were put forth during the discussions among speakers and the audience. The challenges that Mumbai is facing can be addressed through a combination of policy changes, technological interventions, and behavioural changes. Following are the key recommendations and major focus areas:

1. **Water Management and Conservation:**
   
a. Mumbai has the luxury of adequate water supply due to sources in the MMR. As such, if it consumes excess water, it is at the cost of the MMR. Therefore, it is our collective responsibility to use/consume water judiciously. Promote water reuse and recycling (treated wastewater for non-potable purposes).

   b. Implement rainwater harvesting with proper operations and maintenance plans that can reduce the water requirement from a large distance and ensure the quality of groundwater is not affected.

   c. Encourage sustainable water management practices in institutions and societies. For example, the Western Railways has implemented various technologies and strategies that have helped in reducing per capita water consumption. Similarly, hospitals like Masina Hospital Trust and colleges have been shifting to modern technologies that help prevent water wastage and make the community residing inside the campus aware of the issues.
d. Develop nature-based solutions for wastewater treatment as done by the Netherlands. Experts have found resonating challenges between the cities of the Netherlands and Mumbai, so a cross-learning opportunity should be tapped to implement similar solutions in the context of Mumbai.

e. Implementing the 5R principle of water management: Reduce, Reuse, Recycle, Recharge, Respect

f. Enforcing water metering and user charges with incentives for conservation. Collaboration between public and private institutions for effective water management

2. Technology and Infrastructure:

a. 40% of the future investment is required for water and wastewater treatment.

b. Builders and homeowners should be encouraged to use newer technologies for conserving water. E.g. discouraging water tubs in bathrooms, encouraging the usage of buckets for bathing instead of showers, redesigning taps to see that they do not flow when not in use, etc.

c. Focus on operations and maintenance of the infrastructure that can increase the life span of any infrastructure. Invest in leakage prevention technology to prevent large volumes of water losses.

d. Explore water-efficient technologies, particularly for housing societies whose challenges are much different than commercial buildings.

e. Develop digital platforms to monitor and manage water in urban settings.

f. Setting up the infrastructure for water harvesting is the easy part. However, the accountability for ensuring that the system works comprehensively and delivers adequately needs to be translated into a maintenance contract for desired results.

3. Policy and Governance:

a. Implement water metering and revise water pricing mechanisms that can help in cost recovery. The idea of cross-subsidizing water services should be brought into practice to ensure equitable water distribution to all sections of society in the city.

b. Develop a holistic water security strategy considering various aspects of the problem. Mumbai can learn from the strategies adopted by Singapore.
c. Create policy and model guidelines for rainwater harvesting.
d. Provide incentives for good water management practices to housing societies (e.g., lower/rebate in property tax).
e. Model guidelines should be drawn up by MCGM for undertaking rainwater harvesting structures by housing societies and establishments. Bring a policy for building water infrastructure auditing to reduce the wastage of water.

4. Public Participation and Awareness:
   a. Raise public awareness of water conservation and sanitation.
   b. Promote behavioural changes to reduce water consumption (e.g., limiting water use, and using wastewater for gardening).
   c. Fostering a sense of individual responsibility towards water use.
   d. Instituting awards to showcase the most water-efficient housing societies and establishments

5. Climate Change Adaptation Measures:
   a. Conduct a risk assessment study for water security against the climate change impact on the city.
   b. Identify the vulnerabilities associated with the citizens in the backdrop of rising sea levels, urban floods, and heat waves.
   c. Strategy for sustainable water management practices centered towards inclusion and geographic equity.
   d. The changing rainfall pattern requires a review of the existing rainwater harvesting systems, so they can capture the high-intensity rainfall and a means to measure the impact of harvesting i.e. enhanced water levels.
   e. Designing of spaces to enhance groundwater seepage. In addition to these key recommendations, the Mumbai Water Conclave 2024 served as the inaugural platform for introducing the Mumbai Sustainability Forum (MSF), for the city's journey towards a more resilient and sustainable future. The MSF will integrate areas like climate change, net zero carbon emission, resilient infrastructure, etc. to make the city sustainable by inviting subject experts and knowledge deficit parties to this common platform.
“Like Singapore, Mumbai should try and become self-sufficient in water”, said Mr. Suresh Prabhu, a former minister in the Government of India, in his address during valedictory.

Mr. Prabhu highlighted that with the increasing population, there is an increase in water demand, which Mumbai sources from the surrounding areas. Villages in these areas raised a concern about their right over these resources. He further stressed that rising sea levels because of climate change could create a water logging situation for Mumbai- a city developed by reclaiming land and conjoining seven islands. Therefore, he urged for a holistic solution for Mumbai by considering different natures, dimensions, and magnitude of the water problem.
Conclusion

Water is the key driving force for any civilization to thrive. Mumbai, one of the most densely populated coastal cities across the globe faces various challenges of water management. The conclave highlighted the challenges being faced by Mumbai in managing its freshwater resources. The challenges are plenty: inadequate infrastructure, inefficient water management practices, and a lack of public awareness all contribute to putting the strain on the elixir of life - water. While there have been several efforts towards making the city resilient to the impact of climate change and mitigating issues related to water security, there is a much wider scope of work to do to achieve the goal of sustainable water management.

The solutions to these challenges that emerged from this conclave are centered on sustainability, innovation, and inclusion. The conclave called for the critical need for collective action and appropriate actions to address the challenges of water sustainability and security. The discussion demonstrated the complexity of the problem by addressing its multifaceted character and proposing practical solutions that include infrastructure investment, demand management, and technological innovations in addition to understanding the existential significance of water. The conclave also emphasized the urgency posed by a growing population and climate change and argued for learning from best practices by developing collaborations at local, national as well as international levels.

Further, a comprehensive approach to water governance should be adopted focusing on equitable access, intergenerational equity, and behavioural change. When the challenge is aggravated by multiple factors, a comprehensive solution is the way forward considering the interest of all stakeholders, the effects of climate change, and the necessity of self-sufficiency.
Dear Mr Narinder Nayar,

I was delighted to go through the reports of the Global Coastal Cities Summit 2023 organised by Mumbai First and sent by you along with your letter of 28th August.

The report ‘Building and Developing Sustainable and Resilient Coastal Metropolises - A Blueprint for Coastal Cities’ has rightly identified the challenges faced by coastal cities such as Rising sea levels, extreme weather events, rapid pace of urbanization, population growth and environmental degradation. I was pleased to read the Outcome of the Summit, Key Recommendations and Implementation Strategies.

I also went through the Session wise Summary of the Summit Proceedings and found the Key Takeaways interesting and insightful.

I congratulate ‘Mumbai First’ for organizing discussions on important issues concerning Mumbai and other Coastal cities at large and appreciate you for the excellent leadership provided by you in bringing about the discussion.

Warm regards

Sincerely

(Shri Narinder Nayar)
Chairman - Mumbai First
Mumbai 400021