Virtual Roundtable Meeting / Workshop on Mainstreaming Water-Sensitive Design and Planning (WSUDP) into City Planning in South Africa

25 August, 2021 | 11AM – 1PM SAST

Mainstreaming WSUDP: Status, Opportunities and Challenges in India
• Set up in 1980’s at Delhi, India – as a registered non profit society and a global policy think tank.

• An institution to bridge the gap between information and knowledge; between knowledge and public awareness; to influence public policies and practices for sustainable development.

Recipient of the Stockholm World Water Prize 2005

• Centre of Excellence in the Sustainable Water management area – Ministry of Urban Development (now Ministry of Housing & Urban Affairs, Govt. of India)

• National Key Resource Centre of Ministry of Drinking Water & Sanitation (now Ministry of Jal Shakti)

About Centre for Science & Environment

Developing a demand driven research, capacity building and awareness creation programme.

Working with identified partners / multipliers both state and non – state for past 10 years and beyond with 5000+ alumni
One of the Six Schools at CSE AAETI — a teaching-learning and innovation centre that is designed to find appropriate and affordable solutions for key problems of India and the global south.

➢ 240+ training programmes / workshops
➢ 7000+ Alumni / Community of Practice
helping and working with partners aimed at establishing policy principles, innovative technologies and implementation strategies for water and wastewater management and these efforts have been directed towards meeting twin goals of laying foundations for a water prudent society and adapting to climate change.
Why Global? Why South Asia & Africa

• With strong local roots and deep regional experience the centre can play a crucial role in the interlinking of local and global action, especially in Africa.

• We believe approaches and solutions emerging from various countries (Africa/Asia) will sharpen global action.

• Global initiative can become effective only if unique challenges and potential of each region and emerging solutions in different regions are well integrated to catalyse action locally and globally.
54% of India Faces High to Extremely High Water Stress

- 3 Indian cities greater than 10 million, 53 cities more than 1 million
CSE WRC journey kick started back in 2015. 

Scoping workshop objectives were –

- Mapping priority issues and challenges
- Experience on status of policies, practices and implementation
- Identification of capacity building needs and potential partners
- Developing network of practitioners, regulators and other stakeholders

Towards building partnerships and a demand driven programme ......2014-2018
Water, City & Planning: Embed Within Social and Service Delivery

**WHAT?**

Today’s Sustainable Water & Sanitation – Agenda

**Challenge of innovative policy and practice**

**Challenge of scale** -- implement change at the scale of the transition needed

**Challenge of capacity** – need multipliers in society to implement changes, think and act differently
Rapid Urbanization resulting change in Urban Water Balance

Urban Water Scenario in India

The conventional way:

Bring water into the city – storage, diversion, pipe, pump, treat – from further and further away

Flush and carry the waste out of the city - pipe, pump, treat – further and further away

Rapid Urbanization resulting change in Urban Water Balance
Co-existence of Water Shortage & Abundance:

Water Scenario

Drainage Scenario
Development induced changes of flow path and flooding area:
Pre & Post Urban Development Flood Flow Pattern

Development Impacts: Runoff Volume

Typical pre-development conditions:
- Runoff = 10%
- Infiltration = 50%

Typical post-development conditions:
- Runoff = 55%
- Infiltration = 15%
Increasing intensities and decreasing number of days it rains... rapidly urbanising river basin.

Rapid Urbanization resulting change in Urban Water Balance

Key Urban Challenges

Pre & Post Urban Development:

Hydrologic Changes

Urbanization tends to increase storm water runoff:
- peak flows
- volume
- frequency

From Haltiner (2006)
• Protecting local waterbodies (lakes, ponds and wetlands) for supplementary water sources

• Storm-water management at public places, including open areas in cities

• Increasing water-conservation approaches at various scales (buildings/campus).

**On-site water conservation with rainwater harvesting (RWH) is important to reduce water scarcity incl. use of treated wastewater**
The residential cluster, which occupies the largest share of land use in city and towns, contains building rooftops, sidewalks, paved parking spaces, pervious areas that could be a garden or just open land and accessible roads.

Land-use pattern for different urban centres of India

The average Built up area range for a city/urban area is 21-26% while for open space, it is 74 - 79%.

The standards and guidelines provide enough open area to design the SUDS structures.
Aim: Sustainable Urban Development & Water Management leading to urban ecosystem restoration.
Mainstreaming Water sensitive Urban Design (WSUDP) in India in Policy & Practice

CSE State / City Specific Roadmap:

CSE Publication July & Nov. 2020

Launched in January 2021

Web compendium
Recent updates from India & Next Steps
Mainstreaming WSUDP in Odisha

First state in India to issue Advisory on Implementation of WSUDP in 800+ towns and cities of Odisha in July 2020

- Focus on rain/stormwater harvesting in public spaces like, specially parks and open spaces in the city

- The state has implemented 10,000+ WSUDP / RWH structures in 3 months before rains.
WSUDP in Selected Parks of Bhubaneswar

<table>
<thead>
<tr>
<th>Park</th>
<th>Indira Gandhi Park</th>
<th>Biju Patnaik Park</th>
<th>Neighbourhood Park, Unit 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Area (sq. m.)</td>
<td>54,000</td>
<td>86,490</td>
<td>3,736</td>
</tr>
<tr>
<td>Scale</td>
<td>City</td>
<td>City</td>
<td>Neighbourhood</td>
</tr>
<tr>
<td>Annual RWH Potential (KL)</td>
<td>16,114</td>
<td>25,809</td>
<td>1,115</td>
</tr>
<tr>
<td>Recommended Structure(s)</td>
<td>• Swale</td>
<td>• Swale</td>
<td>• Swale</td>
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<tr>
<td></td>
<td>• Bio-retention Area</td>
<td>• Bio-retention Area</td>
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<td>• Detention Basin</td>
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<td>• Infiltration Basin</td>
<td>• Infiltration Basin</td>
<td>• Infiltration Basin</td>
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<tr>
<td></td>
<td>• Raingarden</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Area of Structures (sq. m)</td>
<td>675 to 1,015</td>
<td>1,081 to 1,622</td>
<td>47 to 70</td>
</tr>
</tbody>
</table>

- RWH structures require **1-3% of total area of Parks**
- **43.04 Mil L** can be harvested from these three parks annually
- Assuming 15 Neighbourhood parks implement RWH in Bhubaneswar, additionally **16.72 Mil L** can be harvested,
- **A total of 59.76 Mil L** can be harvested annually
WSUDP in Selected Parks of Cuttack

<table>
<thead>
<tr>
<th>Park</th>
<th>Biju Patnaik Park</th>
<th>Jugal Kishore Park</th>
<th>Jay Prakash Park</th>
</tr>
</thead>
<tbody>
<tr>
<td>Area (sq. m.)</td>
<td>1,11,940</td>
<td>7,000</td>
<td>12,580</td>
</tr>
<tr>
<td>Scale</td>
<td>City</td>
<td>Neighbourhood</td>
<td>Neighbourhood</td>
</tr>
<tr>
<td>Annual RWH Potential (KL)</td>
<td>33,918</td>
<td>2,121</td>
<td>3,812</td>
</tr>
<tr>
<td>Recommended Structure(s)</td>
<td>• Swale</td>
<td>• Swale</td>
<td>• Swale</td>
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<tr>
<td></td>
<td>• Bio-retention Area</td>
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<td></td>
<td>• Infiltration Basin</td>
<td>• Infiltration Basin</td>
<td>• Infiltration Basin</td>
</tr>
<tr>
<td>Total Area of Structures (sq. m)</td>
<td>1,399 to 2,099</td>
<td>88 to 131</td>
<td>157 to 236</td>
</tr>
</tbody>
</table>

- RWH structures require **1-3% of total area of Parks**
- **39.85 Mil L** can be harvested from these three parks annually
- Assuming 15 Neighbourhood parks implement RWH in Cuttack, additionally **31.81 Mil L** can be harvested,
- A total of **71.66 Mil L** can be harvested annually
<table>
<thead>
<tr>
<th>Park</th>
<th>Indira Gandhi Park</th>
<th>Deer Park</th>
<th>Sector 7 Park</th>
</tr>
</thead>
<tbody>
<tr>
<td>Area (sq. m.)</td>
<td>1,74,000</td>
<td>26,120</td>
<td>12,580</td>
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<tr>
<td>Scale</td>
<td>City</td>
<td>City</td>
<td>Neighbourhood</td>
</tr>
<tr>
<td>Annual RWH Potential (KL)</td>
<td>50,390</td>
<td>7,564</td>
<td>3,170</td>
</tr>
<tr>
<td>Recommended Structure(s)</td>
<td>• Swale</td>
<td>• Swale</td>
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<td></td>
<td>• Bio-retention Area</td>
<td>• Raingarden</td>
<td>• Bio-retention Area</td>
</tr>
<tr>
<td></td>
<td>• Detention Basin</td>
<td>• Trench with Filter Strips</td>
<td>• Trench with Filter Strips</td>
</tr>
<tr>
<td></td>
<td>• Infiltration Basin</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Area of Structures (sq. m)</td>
<td>2,175 to 3,263</td>
<td>327 to 490</td>
<td>40 to 59</td>
</tr>
</tbody>
</table>

- RWH structures require **1-3% of total area of Parks**
- **61.12 Mil L** can be harvested from these three parks annually
- Assuming 15 Neighbourhood parks implement RWH in Rourkela, additionally **47.55 Mil L** can be harvested,
- **A total of 108.67 Mil L** can be harvested annually
WSUDP in Selected Parks of Delhi

<table>
<thead>
<tr>
<th>Park</th>
<th>Saket District Park</th>
<th>Park along Ring Road</th>
<th>Neighbourhood park, Greater Kailash</th>
</tr>
</thead>
<tbody>
<tr>
<td>Area (sq. m.)</td>
<td>71,150</td>
<td>7,000</td>
<td>5,940</td>
</tr>
<tr>
<td>Scale</td>
<td>City</td>
<td>Neighbourhood</td>
<td>Neighbourhood</td>
</tr>
<tr>
<td>Annual RWH Potential (KL)</td>
<td>56,921</td>
<td>1,120</td>
<td>950</td>
</tr>
<tr>
<td>Recommended Structure(s)</td>
<td>• Swale</td>
<td>• Bio-retention Area</td>
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<td>• Detention basin</td>
<td>• Infiltration basin</td>
<td>• Trench with Filter Strips</td>
</tr>
<tr>
<td>Total Area of Structures (sq. m)</td>
<td>890 to 1,134</td>
<td>890 to 1,134</td>
<td>88 to 131</td>
</tr>
</tbody>
</table>

- RWH structures require 1-3% of total area of Parks
- Assuming 16,000 parks implement RWH in Delhi
- A total of 12,800 Mil L can be harvested annually
Prime Minister of India
Announced in year 2019
National Programme (s)

- Water Supply

- Water Conservation
Rainwater Harvesting

- Groundwater Recharge
for Sustainability
National Water Mission focus is on ‘Catch the Rain’ to ensure source sustainability of water supply through taps by 2024 to all habitations – a Govt. of India target.

Weblink: http://nwm.gov.in/?q=catchtherain
Jal Shakti Abhiyan:

- Rollout

- Gallery
  - Upload Photo
  - Upload Video
  - Feedback

- Modifications in AMRUT Guidelines
- Guidelines for Urban Water Conservation
- Rainwater Harvesting & Conservation Manual 2019
- Monitoring Framework
The JSA aims at making water conservation a Jan Andolan – a people’s movement through asset creation and extensive communication.

Phase I: 1st July to 15th September 2019 (all States)

Phase II: 1st October to 30th November 2019 (States with retreating monsoon) &

Catch the Rain – National Campaign
India Water Sensitive Cities: — Dashboard

http://amrut.gov.in/content/Dashboard.php
- **Capacity Building of urban local bodies** – state / municipal functionaries roll out 40 training programmes to build cohort of 1300+ no.s in 3 years) to scale up WSUDP across 2000+ urban centers

- **Develop model project** – showcasing WSUDP interventions that will act as learning centers

- **Develop Practitioner’s Toolkit for upscaling WSUDP across all towns/cities**
Some takeaways ....
Successful Innovative Policy Needs to ....

Create a climate for change

Create urgency

Form a powerful coalition

Create a vision for change

Communicate the vision

Empower action

Create quick wins

Engaging & enabling the organisation

Implementing & Sustaining for change

Build on change

Make it part of the culture
“Mainstreaming WSUDP into City Planning in South Africa”

About the Workshop

Aim
The overall aim of this short workshop is to connect with key water sector players and practitioners and discuss opportunities for mainstreaming WSUDP in city planning in South Africa.

Objective
➢ Engage in a multi stakeholder dialogue and experience sharing on mainstreaming WSUDP in South Africa and India
➢ Understand existing WSUDP enabling frameworks – Policy, Planning, Programmes and Projects - in South Africa
➢ Identify opportunities and challenges in implementing WSUDP interventions in South African cities
➢ Identify target cities for implementation of WSUDP intervention as model projects and develop these as learning centres for other cities
Thank you.

Email: srohilla@cseindia.org