



Centre for Science and Environment



Water Aid Bangladesh

Training Programme

Training on Urban Rainwater Harvesting System

Organised by

Centre for Science and
Environment (CSE), New Delhi,
India

In partnership with local host

Water Aid Bangladesh (WAB)

Duration September 24-27, 2016

Venue Chuti Resort, Joydebpur, Bangladesh

Language English

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Programme Schedule

Time	Module	Session Details	
Day 1 (24th September 2016)			
19:30 - 20:30	Introduction and Overview	Welcome and Registration	
		About WaterAid Bangladesh	
		About CSE	MM
		Inauguration	
Day 2 (25th September 2016)			
9:00 - 10:00	Urban Water Challenges	Urban water challenges and need for RWH in Bangladesh	TA
10:00 - 13:00	Water Sensitive Design and Planning (WSDP)	Introduction to Water Sensitive Design and Planning (WSDP)	SS
		Tea break (11:00 to 11:30)	
		Sustainable Urban Drainage System (SUDS) and Storm Water Management	SS
		Introduction to RWH through Documentary film "Rain Catchers"	MM
13:00 -16:00	Tools and Techniques to Design URWH	Lunch break (13:00 to 14:00)	
		Exercise on WSDP	
		Components of URWH & Data Collection Requirements	SJ
16:00 -17:30		Tea break (16:00 to 16:30)	
		Designing of URWH: Storage & Recharge	SJ
Feedback			
Day 3 (26th September 2016)			
8:30 - 13:00	Tools and Techniques to Design URWH	Reflection Session	
		Filtration System in RWH	MM
		Operation & Maintenance of RWH systems	MM
		Brain Storming Exercise	
		Tea break (10:00 to 10:30)	
		Economic Feasibility for RWH	MR
		Do it Yourself: Plan & Design URWH	MM/ SJ
Lunch break (12:30 to 13:00)			
13:00 - 19:00	Field Trip	Field Trip	WAB
Day 4 (27th September 2016)			
8:30 - 13:00	Do it Yourself	Reflection Session	
		Group Presentations	
	Macro Level RWH	RWH as Macro Structure with Community Participation	MR
		Brain Storming Exercise	
Lunch (13:00 to 14:00)			
14:00 - 16:00	Concluding Session	Feedback, Certificate Distribution and Closing Ceremony	

SR-Dr. Suresh Kumar Rohilla, MM-Dr. Mahreen Matto, TA-Dr. Tanvir Ahmed
 SS- Prof. Somnath Sen, SJ-Ms. Shivali Jainer, MR-Dr. Mohit Ray

About Centre for Science & Environment (CSE)

The Centre for Science and Environment (CSE) is an independent public interest research organization that aims to promote an informed public opinion in favor of environmental sustainability and sustainable development. CSE started in year 1980 by late Mr. Anil Agarwal, a leading figure in India's environment movement, to analyze and study the relationship between environment and development.

CSE's work is widely acknowledged for its intellectual leadership and the institution has grown into one of India's most influential and highly vocal environmental NGO. CSE received prestigious international awards **Stockholm Water Prize** in the year 2005 and the **Prince Albert II of Monaco Foundation Water Award** in the year 2008. CSE is actively working in India and South Asia (Bangladesh, Nepal, Bhutan and Sri Lanka).

The centre is recognized by the Government of India as:

National Knowledge Resource Centre (KRC) in the area of sustainable drinking water and sanitation by the Union Ministry of Drinking Water and Sanitation.

Centre of Excellence (CoE) in the area of sustainable urban water management by the Union Ministry of Urban Development.

Nodal Institute for conducting short & long term training programmes for environment regulators by the union Ministry of Environment and Forests (MoEF).

Some notable environmental programmes run by CSE include following:

Sustainable water management that mobilized the country through a water literacy campaign calling for decentralised solutions to water harvesting, control water pollution, urban sewage management, catalyzing policy changes at both national and state levels. In recognition for its efforts, the CSE was awarded the Stockholm Water Prize in year 2005, the highest international award in area of water management.

Food safety and toxins programme has created far-reaching changes in the policies and regulations governing the use of toxins such as pesticides and heavy metals. The two high profile studies (in year 2002 & 2003) that found high concentrations of pesticide residues in bottled water and soft drinks served to highlight public health concerns and are important contributions in managing the toxic fallouts of rapid economic and industrial growth.

Sustainable urban transport and air quality management that has achieved remarkable success in pushing for CNG in all public transport in Delhi and more recently, in pushing for better urban mobility options that have made significant impact on the city's air quality.

Sustainable industrialization is an innovative programme that rates the environmental performance of industry in high environmental impact sectors (such as cement, automobiles, pulp and paper, chlor-alkali, among others), helps motivate industries to make improvements in reducing pollution and improve efficiency of resource use. Green Rating Project (GRP) serves as a model for an alternative form of civil society governance to control industrial pollution in India, and today a good GRP rating is considered as a valuable certification about a company's environment performance.

Addressing the urgent need to introduce meaningful environmental education at the school level in India, CSE's **Green Schools Programme** goes beyond nature education to get children to

evaluate and precisely measure their own environmental footprint using the Green Schools Manual. The Green Schools Network today includes more than 5,000 schools across the country, and the manual has been translated into Hindi, Kannada, Punjabi and Arabic. In addition, *Gobar Times*, a monthly magazine for children, keeps students informed and inculcates environmental values.

CSE has worked closely with journalists for long time, recognizing the powerful role that mass media plays in setting public agendas and shaping public opinion. CSE's **Environmental capacity building with emphasis on media** has several components, from regular briefing workshops for working journalists, maintaining a syndicated feature service to fellowship programmes that enable journalists to take time out to study and report specific issues in-depth.

In the year 2004 Anil Agarwal Green College (AAGC), an education and training initiative of CSE, was established to communicate the science, complexity and politics of environment across India, South Asia and the world. It seeks to build a constituency and cadre of knowledgeable, skilled and committed environmentalists - from students, decision-makers, field-level practitioners, civil society groups, journalists, lawyers, and concerned citizens. As part of this mandate, AAGC serves as a research, academic and capacity building hub that conducts a number of short and long-term courses and training programmes. Short-term courses range from technical workshops on how to build rainwater harvesting systems and decentralised wastewater treatment structures to policy briefings on ecological poverty and food safety, to hands-on training on environmental communication, information management and advocacy. Other training programmes – such as Environment Impact Assessment (EIA), Managing Urban Growth, and Urban Mobility, seek to actively engage with industry representatives and regulators in the country and across the developing world. Over the past five years or so, AAGC has conducted more than 100 training programmes and trained more than 2,500 participants from India and around the world. AAGC has conducted several longer-term courses, one set of which targets students and young professionals from India (titled '**Agenda for Survival**' which is held in June each year), and others that target international students (titled '**Challenge of the Balance**', which is held once in Winter and once in Summer each year).

In order to upscale the training and capacity building activities, CSE is establishing an **Environment Training Institute (ETI)** at Tijara Block in the Alwar District of Rajasthan State in India. ETI aims to strengthen capacities within the government, in the civil society, in the private sector and practitioners and the academia, and will be supported by state-of-the-art research, information services and a platform to interact and exchange ideas on best practices. The ETI will conduct short-term and long-term training programmes, tailored for different target groups, on a wide array of environment and development issues and topics. To encourage participation, the courses offered will be linked to the training needs of the specific target groups and will be synergized with certificate and diploma courses offered by mainstream universities, so that there is value addition to the career of the persons taking the courses.

Global Water Programme of CSE

The water programme of CSE has evolved to help in establish policy principles, innovative technologies and implementation strategies for water and wastewater management in India. These efforts have been directed towards meeting the twin goals of laying the foundations for a water prudent society and adapting for climate resilience.

CSE has been an important thought-leader in water management sector. It has already influenced global policies and strategies to focus on the need for technologies to augment water resources in a decentralised manner through rainwater harvesting and to use that water to optimize on benefits. In 2010, CSE started the South Asia Water Programme involving three countries viz. Bangladesh, Nepal and Sri Lanka. Important objectives of the programme include awareness generation about environment and development as well as capacity building of societies to understand and deal the environmental issues. The programme is successfully ongoing since past five years. Though the main aim of the programme was training government and non-government partners, it has diversified to model curriculum development, knowledge support to a regional rain convention and providing technical guidance on the implementation of model projects related to sustainable water management. In December 2013, a meeting was conducted on South Asia Water Programme Partners and Practitioners at New Delhi, India to review the knowledge gained and shortcomings of this programme. This was essentially to decide a way forward for this programme to take the partners to the next level.

We believe this experience needs to be leveraged to share solutions with other countries in the developing world from South America, Africa and Asia that are enjoined in a common struggle to find ways of meeting the needs of urban and rural populations in the current water and wastewater paradigm which are affordable and sustainable.

In coming five years, the Centre would like to build on expanding this work to other regions in the world in particular focusing on select countries in Africa through experience sharing workshops to identify gaps and challenges in urban water management and complement it later by capacity building in the region through tailor made training programmes.

In February and March 2015, the Centre organized India-Africa experience sharing workshops and a training programme on urban rainwater harvesting and decentralised waste water treatment and reuse. The purpose of these two events was to understand about status of water and waste water management in African countries. In both the events around 14 countries participated from all across Africa. The invited participants represented various government and non-government institutes providing services and working in water and sanitation management aspects. Also CSE Water team on invitation by **Kenya Water Institute, Rwanda Natural Resources Authority and Ministry of Local Government and Rural Development, Ghana** conducted capacity building trainings, supported strategy workshop followed with roundtable meetings to develop a long term partnership. The water team is partner in the **Global Faecal Sludge Management E-Learning Alliance** which is a platform to facilitate development and empower the dissemination of knowledge on faecal sludge management through e-learning means, so that the sanitation challenges can be embraced with deeper insight, advanced knowledge and greater confidence.

To find out more about workshop visit <http://www.cseindia.org/content/india-africa-experience-sharing-workshop-urban-rainwater-harvesting-mainstreaming-sustainabl>

To find out more about training programme in Bangladesh visit <http://www.cseindia.org/node/6166>

To find out more about training programme in Sri Lanka visit <http://cseindia.org/content/international-training-programme-mainstreaming-sustainable-urban-water-management-urban-rain>

To find out more about training programme in Rwanda visit: <http://cseindia.org/content/workshops-mainstreaming-rainwater-harvesting-rwanda-29-june-1-july-2015-kigali-rwanda-1>

To find out more about training programme in Kenya visit: <http://cseindia.org/content/training-programme-mainstreaming-sustainable-urban-water-management-urh>

To find out more about online training on faecal sludge management visit: <http://elearn.cseindia.org/>

About WaterAid Bangladesh

WaterAid Bangladesh is a country programme of WaterAid, an international non-governmental organisation. Our mission is to transform lives by improving access to safe water, improved hygiene and sanitation in the world's poorest communities.

WaterAid has been working in Bangladesh since 1986. WAB had its first formal Country Strategic Plan (CSP) in 2006 which ended in March 2011. The hallmark of the CSP was 'integrated, participatory, empowering' approach to safe water, environmental sanitation and hygiene promotion (IPEA-SWESHP).

PURPOSE OF THE CSP

It is in this backdrop, WAB has formulated this Country Strategy to serve the following purposes:

- i. Governing WAB's programs and organisational effectiveness for the period of April 2011 – March 2016 building on the existing CSP of 2006-11
- ii. Aligning WAB's country strategy with the global strategic aims of WA and contributing in the attainment of the results as envisaged in the success indicators
- iii. Further aligning and appropriating WAB's program strategy and approach to the emerging and pertinent WaSH issues

STRATEGIC OBJECTIVES AND SUB-OBJECTIVE

Global Aim-1: We will promote and secure poor people's rights and access to safe water, improved hygiene and sanitation

Global Aim-2: We will support government and service providers in developing their capacity to deliver safe water, improved hygiene and sanitation

Aim-3: We will advocate for the essential role of safe water, improved hygiene and sanitation in human development

Aim-4: We will further develop as an effective global organization recognized as a leader in our field and for living our values

About the Training Programme

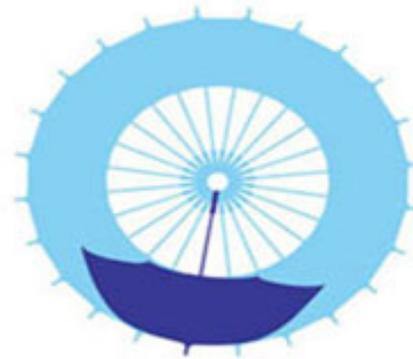
The aim of the training programme is to develop a cadre of practitioners with knowledge, skills and attitude for mainstreaming sustainable and affordable urban rainwater harvesting (RWH) in Bangladesh.

This three day training programme will focus on urban RWH and the potential it holds in augmentation of water availability by using public spaces to recharge their groundwater or store and reuse the rainwater. The training will also showcase examples to bring in required laws to enable individuals to undertake RWH. The participants will get the opportunity to plan and design a RWH system and also learn about best management practices from South Asian countries as well as emerging concepts like water sensitive urban design and planning.

September 24-27, 2016

URBAN RAINWATER HARVESTING

The four day programme will focus on urban RWH and the potential it holds in augmentation of water availability by using public spaces to recharge their groundwater or store and reuse the rainwater.



The training will also showcase examples to bring in required laws to enable individuals to undertake RWH.

September 26, 2016

Half day field **Exposure Visit** is planned to demonstrate RWH system. The visit will provide an opportunity to interact with implementers of rain water harvesting system.

The training is conducted based on state of the art teaching – learning tools consisting of interactive sessions, experiential learning using detailed case studies, working in groups on planning and designing and class room lectures/instructions.

Organisers and Faculties

 <p>Suresh Kumar Rohilla Programme Director Water Management Unit Centre for Science & Environment, New Delhi Email: srohilla@cseindia.org</p>	<p>Dr Rohilla has over 22 years of experience working with national / international NGOs, government and academics. He leads the water programme at Centre for Science and Environment, New Delhi. He is involved in policy advocacy, research and capacity building aimed at mainstreaming water and environmental sustainability in South Asia and Africa. He is Head of the Centre of Excellence in Urban Development sustainable Water Management Area of the Ministry of Urban Development and the National Key Resource Centre of the Ministry of Drinking Water Supply and Sanitation, Government of India. Some of his previous assignments include – Director Environment & Development (Living Ganga Programme) at World Wide Fund for Nature - India, Associate Professor (Environment Management and Sustainability) at Administrative Staff College India, Hyderabad and Lecturer in Environment Management and Sustainability at University of Bradford, U.K; Director (Technical) at the National Capital Regional Planning Board, Ministry of Urban Development and Director - Natural Heritage Division, Indian National Trust for Art and Cultural Heritage (INTACH), India. He holds a doctoral degree from Queen’s University Belfast and post graduation degree(s) from Jawahar Lal Nehru University and School of Planning & Architecture, New Delhi. He is recipient of the British Chevening Indian Young Environmental Manager Fellowship (2001), Fulbright Nehru Environmental Leaders Programme Fellow (2012) and Government of Netherlands Fellowship (2014). He has been an affiliated Visiting Professor / Researcher at University of California – Berkeley in U.S.A.</p>
 <p>Abdullah Al-Muyeed Technical Adviser-WASH WaterAid Bangladesh Email: abdullahal-muyeed@wateraid.org</p>	<p>Dr Abdullah Al-Muyeed received his B.Sc. (Civil) Eng. and M.Sc (Civil and Environmental) Eng. at Bangladesh University of Engineering & Technology (BUET), Dhaka and his Ph.D from the University of Tokyo, Japan, as a prestigious Monbusho scholar. His professional experiences cover graduate and post graduate level teaching and research in renowned universities of Bangladesh and abroad for a decade. He has more than 35 technical papers in National and International Journal and Conference Proceedings. He also worked as Environmental Consultant in different World Bank donated projects. He wrote three text books on environmental engineering and one of the book titled “Water and Environmental Engineering” received the prestigious University Grants Commission Award (UGC) 2012, the highest academic recognition in Bangladesh. Aiming to contribute in the professional sector to improve environmental condition of the country, Dr Muyeed has been working in developing sector as Technical Adviser in WaterAid Bangladesh country office since 2014. He has been working relentlessly to provide innovative sustainable solutions particularly on second generation sanitation that includes environmental pollution, wastewater treatment, faecal sludge treatment/management, waste management.</p>
 <p>Mahreen Matto Programme Manager Centre for Science & Environment, New Delhi Email: mahreen@cseindia.org</p>	<p>Dr Matto is doctorate in Environmental Biotechnology from Aligarh Muslim University, India; her area of research was on ‘Cost Effective and Affordable means of Treating Industrial Wastewater by Enzymes’. She has credit of publishing 9 international research articles in the area of water/waste water management in reputed journals. She has been extensively working in the area of water, waste water and faecal sludge management with Centre for Science and Environment (CSE), India. In CSE, she has contributed in the publication of reports and manuals on Rainwater Harvesting, Decentralised Wastewater Treatment and Reuse, City Sanitation Plan-Trainers manual and City Sanitation Plan-Practitioner guide. She is also been preparing modules and conducting trainings of various stakeholders across India, Bangladesh and Africa on sustainable water management.</p>

 <p>Dr. Tanvir Ahmed Associate Professor, Department of Civil Engineering, BUET Email: tanvirahmed@ce.buet.ac.bd</p>	<p>Dr Ahmed received his BSc and MSc Engineering degrees from the Bangladesh University of Engineering and Technology (BUET) in 2003 and 2005, respectively. He received his PhD degree in 2011 from Massachusetts Institute of Technology (MIT), USA. His research interest broadly encompasses environmental modeling and health risk assessment of environmental contaminants. He has also been involved in several national projects as a consultant and EIA specialist. Dr. Ahmed received a number of awards in recognition for his excellence in academic achievements and teaching. These include The Prime Minister's Gold Medal in 1994 for securing the 1st position in Bangladesh in order of merit in the national SSC exam, Malik Akram Hossain Gold Medal in 2003 and Dean's award for academic excellence as a civil engineering student. He received the Schoettler Fellowship and Martin Fellowship for Sustainability while pursuing his PhD at MIT. He was also awarded the Maseeh Award for excellence in teaching from MIT in 2009 while working as a teaching assistant. He co-authored the text book titled 'Environmental Sanitation, Wastewater Treatment and Disposal' and 'Prospects, Principles and Practice of Urban Rainwater Harvesting in Bangladesh: A Guidebook for Professionals, Practitioners and Students'.</p>
 <p>Shivali Jainer Programme Officer Centre for Science & Environment, New Delhi Email: shivali@cseindia.org</p>	<p>Ms Jainer is Graduate in Architecture and Post Graduate in Environmental Planning from School of Planning and Architecture, Delhi. She is trainer in Urban Water Management training programs for municipal functionaries, practitioners, academicians, policy makers, architects. She is mainly working in area of water sensitive urban design and planning and is involved in development of tools for designing sustainable urban drainage system options in urban areas. Her previous experience includes training and research on urban metabolism and growth with field of research focusing on evolving strategies for storm water drainage and resource management in urban areas.</p>
 <p>Prof Somnath Sen Associate Professor, Department of Architecture & Planning, IIT Kharagpur Email: snsen@arp.iitkgp.ernet.in</p>	<p>Prof Somnath Sen did his doctorate from Indian Institute of Technology Kharagpur. He is currently working as Associate Professor, Department of Architecture & Regional Planning, IIT, Kharagpur. Prof Sen has guided two PhD students, published in a number of conferences (international and national) and is working on 3 Industrial Consultancy perspective plans. He has the following honours/distinctions to his credit: Fellow, Institute of Town Planners India, New Delhi; Member, Steering Committee, National Disaster Management Authority, Govt. of India for the preparation of guidelines on Urban Flooding; Member, Board of Studies, SPA Vijayawada, Guntur, Andhra Pradesh, India; Member, Doctoral Scrutiny Committee, BESU, Shibpore, Howrah, WB and Past Council Member, Institute of Town Planners, India; 1992-93 and 1995-96.</p>
 <p>Mohit Ray Head Vasundhara Foundation, Kolkata Email: mohitkray@gmail.com</p>	<p>Mohit Ray, PhD (Engineering) is an environmental consultant and Head, Vasundhara Foundation. He has worked on Kolkata's waterbodies both in academic sphere and also on ground organising people's participation for protection of waterbodies. Professionally he has been involved in Environmental Impact Study for last three decades and a visiting faculty in Jadavpur University.</p>

List of reading and reference material

Research Publications: Centre for Science & Environment, New Delhi

1. Rohilla, S.K. et al. (2014): Urban Rainwater Harvesting, case studies from different agro climatic regions. Centre for Science and Environment.
2. Water Management Team. (2010): Capturing Rainwater, A way to augment Chandigarh's water resources, Centre for Science and Environment
3. Rohilla, S.K. et al. (2012): Churning still water a briefing paper on the state of urban water bodies, conservation and management in India. Centre for Science and Environment.
4. Water Audit for Centre for Science and Environment India. Centre for Science and Environment.
5. Water Management Team. (2010): Rating System for Water Efficient Fixtures - A Way to Sustainable Water Management in India. Centre for Science and Environment.

Articles/Publications: Bangladesh

1. Islam, M. M., Kabir, M. R., & Chou, F. N. (2007). Feasibility study of rainwater harvesting techniques in Bangladesh. *Rainwater and Urban Design 2007*, 726.
2. Ghosh, N. C., & Singh, R. D. (2009). Groundwater arsenic contamination in India: vulnerability and scope for remedy.
3. Yeasmin, S., & Rahman, K. F. (2013). Potential of rainwater harvesting in Dhaka City: An Empirical Study. *ASA University Review*, 7(1), 143-150.
4. Sushmita Sengupta, Amandeep Kang, Nitya Jacob. (2012). Water Wealth, Briefing Paper on the State of Groundwater Management in Bangladesh.
5. Pandey, D. N., Gupta, A. K., & Anderson, D. M. (2003). Rainwater harvesting as an adaptation to climate change. *Current science*, 85(1), 46-59.

International Publications on RWH

1. McKenzie, E. D. and Ray, I. Urban Water Supply in India: Status, Reform Options and Possible Lessons.
2. Butterworth, J. et al.(2011):SWITCH in the city putting urban water management to the test, International water and sanitation centre, Netherlands.
3. Kira, T. et al., Lake Biwa, Experiences and lessons learned, Japan, p-16.
4. Water- The Importance of Integrated Water Management to Achieving Sustainability.
5. Elmer and Fraker (2011): Water Neighborhoods and Urban design, University of California, p-17.
6. Echols, S.Artful Rainwater Design in the urban landscape, Journal of Green Building, Vol. 2, No. 4, pp. 1-19.
7. Grail Research, (2009): Water –The India Story.
8. Dresser, C. & McKee (2004): guidelines for water reuse, US EPA, p-478.
9. Hamidlr, H. and Narendran, M.Role of sewage treatment in public health, Malaysian Water Association.
10. GWP (2004) Catalyzing Change: A handbook for developing integrated water resources management (IWRM) and water efficiency strategies, Global Water Partnership.
11. Khatri, K. et al. (2014): Catalogue of Technologies for Integrated Urban Water Management Global Water Partnership.

Research Articles from Journals

1. Raghavan, S. Traditional Rainwater Harvesting in India, Ganga Trust, Chennai.
2. Koul, D. et al. (2012): Traditional water management systems – An overview of Ahir-pyne system in Bihar plains for India and need for its revival, Indian Journal of traditional knowledge, vol.11 (2), pp. 266-272.
3. Sharvil, S. al. (2009): Water Audit - Need of the hour, BIS Seminar.
4. Srinivasan, V. et al. (2010): Sustainable urban water supply in south India: Desalination, efficiency improvement, or rainwater harvesting? Jour. Of Water Resources Research, Vol. 46, pp. 1-15.
5. Kulluru, S. K. at el. Water Balance studies in Vijaywada Sustainable water management in India considering likely climate and other changes, International journal of advanced scientific and technical research, Issue 2, Volume 4, pp. 65-74.
6. Jain, S. K. (2012): Sustainable water management in India considering likely climate and other changes, Jour. of Current Science, Vol. 102, no. 2, pp.177-188.
7. Dhiman, A. V. (2010): Towards Sustainable Approach- Water Sensitive Design, Architecture - Time Space & People, pp. 18-22.
8. Patel, A. and Krishnan, S. Groundwater situation in urban India: Overview, Opportunities and Challenges.

Articles: Water Sensitive Urban Design & Planning, Sustainable Urban Drainage System

1. Ballard, B. W. et al. (2007): The SUDS manual, CIRIA C697, London.
2. Ballard, B. W. et al. (2007): Site handbook for the construction of SUDS, CIRIA C698, London.
3. Guide to Sustainable Drainage Systems (SUDS) - Practical guidance for developers on achieving sustainable drainage, Southampton City Council, UK.
4. Rijke et al. (2008): comparative case studies for mainstreaming water sensitive design- Australia and Netherlands, 11th International Conference on Urban Drainage, Edinburgh, Scotland, UK.
5. Wong, T. H.F. (2007): Water Sensitive Urban Design – the Journey Thus Far, Western Australian Planning Commission.
6. (2008): Better Urban Water Management, Western Australian Planning Commission.
7. ACT Parliamentary Counsel (2009): Water ways-Water sensitive urban design Australia-general Code, Australia.
8. McAuley, A. et al. Planning for water sensitive urban design in the Darwin region- tools to facilitate sustainable urban development, Sydney Australia.
9. A water efficient landscape, State of California.
10. Taylor, A.C. and Fletcher, T.D. (2007): Estimating life cycle costs of stormwater treatment measures, Australian Journal of Water Resources, Vol 11 No 1, pp. 79-92.
11. EPA (1999): Storm Water Technology Fact Sheet- Vegetated Swales, US.
12. EPA (1999): Storm Water Technology Fact Sheet- Bioretention, US.
13. Jayasooriya, V.M and A.W.M. Ng (2013): Development of a framework for the valuation of Eco- System Services of Green Infrastructure.
14. City of Yarra (2007): Water Sensitive Urban Design Guidelines- WSUD Implementation Report.
15. Carmon, N. et al. (1997): Water-sensitive Urban Planning: Protecting Groundwater, Journal of Environmental Planning and Management, Journal of Environmental Planning and Management, 40(4), pp. 413-434.
16. The Natural Edge Project (2009): Water Transformed: Sustainable Water Solutions for Climate Change Adaptation.

CSE Publications & Reports

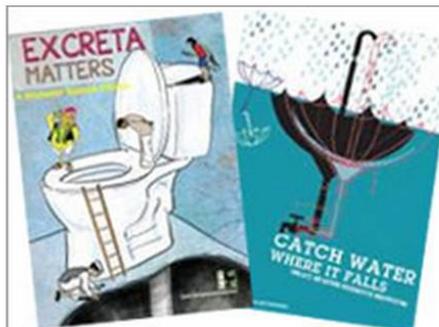
CSE publishes books, manuals and reports on environmental issues for knowledge dissemination. Some of recognized publications related water and sanitation are shown below. For more information on the publications visit CSE Store.



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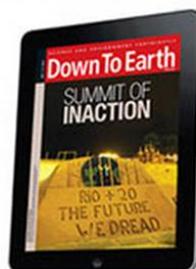
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