Urban Water Conservation v.s. Sanitation: Challenges and Opportunities

UN-Water Regional Expert Consultation on Water Security in Asia-Pacific

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Did you know?

2012 Household Water Security Index

• Alarming issues on accessing improved water facilities and sanitation due to poor wastewater management

In South-East Asia

- 378 million people have access to improved sanitation facilities
- 102 million people continue to practice open defecation

(International Water Center 2009: 7)

Cambodia and Viet Nam suffer an annual economic loss of $450 million and $780 million, respectively. These losses are accounted for by attributed from direct health impacts, along with costs for accessing clean drinking water, additional time to access unimproved sanitation and tourism losses due to sanitation-related issues. (World Bank 2007: 3)
Pathway of Sanitation Improvement

Unit costs per household

Open defecation → Unimproved pit latrine → Improved public or shared latrine → Public or unimproved shared latrine → Wet private latrine → On-site septic tank system → Secondary treatment → Tertiary treatment → Reuse

Benefits

Excreta & Water Reuse

Intangibles

Health

Time

Water
Untreated discharge - Open defecation

- Sludge direct to the environment: no service chain

Source: WSP analysis, using BMGF funded research
Untreated discharge - Open defecation

• Sludge direct to the environment: no service chain

- 20% WC to sewer
- 79% On-site facility
- 1% Open defecation

Source: WSP analysis, using BMGF funded research
An example of sanitation in Dhaka city

- Sludge direct to the environment: no service chain

  **CONTAINMENT**  >>>  **EMPTYING**  >>>  **TRANSPORT**  >>>  **TREATMENT**  >>>  **REUSE/DISPOSAL**

  - **20%** WC to sewer
  - **79%** On-site facility
  - **1%** Open defecation

  Source: WSP analysis, using BMGF funded research

  - **Leakage** 2% Effectively treated
  - **Illegally dumped** Not effectively treated
  - **Unsafely emptied**
  - **Safely emptied**
  - **Left to overflow or abandoned**

  **Residential environment**
  - **69%**
  - **9%**
  - **1%**

  **Drainage systems**
  - **69%**
  - **9%**
  - **1%**

  **Receiving waters**
  - **98%**
  - **9%**
  - **1%**

  2% of fecal sludge safely disposed
  98% of fecal sludge unsafely disposed
Unveiled Sanitation Issues in Thailand

Daily production

Domestic wastewater management

90% Grey water
8.83 million cu.m.

10% Toilet
0.98 million cu.m.

90% Cesspool
0.88 million cu.m.

8% Commercial septic tank
0.08 million cu.m.

Faecal sludge management

13% Legal truck (licensed)
0.005 million cu.m.

12% FS treatment plant
~ 0.005 million cu.m.

87% Illegal truck (unlicensed)
0.035 million cu.m.

88% Receiving water
~ 0.035 million cu.m.

73.5 tons
73 % 6.43 million cu.m.

27 % 2.4 million cu.m.

X 80 mg/L
514.4 tons

X 20 mg/L
48 tons

X 450 mg/L
2.25 tons

Groundwater
Management and Policy
Key challenges: Thailand

Existing national wastewater and sanitation policies

- Public Health Act, 1992
- Public Cleanliness and Orderliness Act, 1992
- Enhancement and Conservation of the Natural Environmental Quality Act
- Determining Process of Decentralization to LGOs Act, 1999
- Ministerial regulation on Prescribing Rate of Fee for Fecal Sludge Collection and Transportation
- Building Control Act, 1979
- Etc.

99% Access to Improved Sanitation
(i.e. toilet provision and cleanliness)

No strong enforcement mechanisms for management of wastewater of fecal sludge
(e.g. No punishment and monitoring mechanisms for illegal dumpers)
Key challenges: Viet Nam

Existing national wastewater and sanitation policies

- Decree 88 Urban and industrial Solid Wastes Management
- Law on Protection of the Environment No.52-2005QH11
- Orientation for the Development of Urban Sewerage and Drainage, 1999
- Strategic orientation for sustainable development (Viet Nam agenda 21), 2004
- Viet Nam Environmental Standards
- Etc.

75% Access to Improved Sanitation (i.e. toilet provision and cleanliness)

Specify only Design, construction, and operation of septic tanks
- Do Not regulate on collection and treatment.
Key challenges: Cambodia

Existing national wastewater and sanitation policies

- Law on Environmental Protection and Natural Resources Management, 1996
- Water and sanitation law of the Kingdom of Cambodia, 2003
- National Water Resource Policy, 2004
- Etc.

37% Access to Improved Sanitation (i.e. toilet provision and cleanliness)

No laws, regulations, and standards on the design, construction and placement of latrines and septic tanks
Key Messages – Urban Water Security & Sanitation

- Create enforcement mechanisms in supporting of sanitation policy

- Integrate sanitation chains into water management policy

- Clearly define roles and responsibilities of all concerned authorities

- Nurture innovative financing schemes for sanitation development
The Way the World is Measuring Progress in Sanitation is Insufficient

Sewerage
- Water closet
- Sewer network pumping stations
- Treatment plant
- REUSE/DISPOSAL

Fecal Sludge Management for on-site systems
- Latrine or septic tank
- Vacuum truck
- Primary emptying
- Transfer
- Treatment plant
- REUSE/DISPOSAL
A Toolkit

- A simplified policy guidance on wastewater management jointly developed by
  - UNESCAP
  - UN-HABITAT
  - AIT
The Module 1 focuses on enabling policies to promote wastewater management and sanitation in South–East Asia to contribute to the water security in the region. The remaining modules will be made available in 2016.

**Full e-learning course modality on Integrated Water Resource Management Applications**

- **Module 1:** Wastewater Management and Sanitation is also promoting DEWATS
- **Module 2:** Towards Water Resilient Sustainable Cities
- **Module 3:** Market Opportunities for Decentralized Wastewater Treatment Systems
- **Module 4:** Fundamentals of Integrated Water Resources Management
- **Module 5:** Water and Green Growth

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