Watershed Management for Controlling Municipal Wastewater in South East Asia

Current and Future Challenges of Water Environment and Wastewater Management in Myanmar

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13th December 2017
Outline

- Background
- Organization and Departments
- Role of waste water management
- Over view of waste water management
- Challenges and issues
- Require action plan
- Concluding remarks
Background
Background Information

Situated in - South East Asia
Area - 261,228 square miles
       - 677,000 sq km
East to West - 582 miles
North to South - 1275 miles
Climate - Tropical monsoon (3 seasons)
Population - About 54.6 million (2017)
Density - 80 per sq km
Administrative - 14 states/divisions
       - 66 Districts (325 Townships)

Annual growth rate: 2.02%

Traditional Water Resource: Rivers, natural or artificial lakes, ponds and underground water

Water pollution caused by: Both industrial and Domestic wastes directly discharge into the water body
Organization and Department
Organizations related to Building Construction

Department of Building, Ministry of Construction

• Committee for Construction Project Appraisal
• Committee for Construction (Capital)
• Committee for the Quality Control of High-Rise Building Construction Projects (CQHP)

Local Authorities

• Yangon City Development Committee
  • Engineering Department (Building)
  • High-Rise Inspection Committee
• Mandalay City Development Committee
• Nay Pyi Taw Development Committee
• Town Development Committees
### Wastewater Treatment Related Ministries
(Various agencies and department engaged in wastewater sector)

<table>
<thead>
<tr>
<th>Agency/Department</th>
<th>Ministry/City/Others</th>
<th>Type of Sanitation Facility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yangon City Development Committee</td>
<td>Yangon</td>
<td>- Sewerage, septic system, Pit latrine with slab</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Activated sludge wastewater treatment plant</td>
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<tr>
<td>Naypyitaw City Development Committee</td>
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<td>- Sewerage, septic system, Pit latrine with slab</td>
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<td>- Activated sludge wastewater treatment plant</td>
</tr>
<tr>
<td>Mandalay City Development Committee</td>
<td>Mandalay</td>
<td>- Septic tank system</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Oxidation pond</td>
</tr>
<tr>
<td>Water and Sanitation Division Building Department</td>
<td>Construction</td>
<td>- Septic tank system</td>
</tr>
<tr>
<td>Department of Development Affairs</td>
<td>Border Affairs</td>
<td>- Septic tank system</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Pit latrine with slab</td>
</tr>
<tr>
<td>Environmental Sanitation Division</td>
<td>Health and Sports</td>
<td>- Systematic latrine Construction</td>
</tr>
<tr>
<td>Department of Health</td>
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</tbody>
</table>
Role of waste water management
Role of Waste Water Management

Waste Water Management

Plan: (a) development of city and town sanitation standard
   (b) improvement and rationalization of wastewater disposal system
   (c) experiences and example set by the two major cities

Global awareness: ASEAN'S vision 2020

Own guide line: Myanmar Agenda 21 (1997)
Over view of waste water management
- Total water withdrawal is less than 5% of the renewable resource available.
- Approximately 91% of the total water withdrawal comes from surface water and 9% from groundwater.
- Groundwater is mostly used for domestic purposes.
- Impact assessments will be needed to ensure that these projects do not compromise other uses, notably for agriculture.

*Myanmar: Urban development and water sector assessment, strategy, and road map. ADB, 2015*
### Achievement of Selected Millennium Development Goal Targets (%)

<table>
<thead>
<tr>
<th>Plan and Targets for Improved Services</th>
<th>Included in Plan</th>
<th>Coverage Target (%)</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban sanitation</td>
<td>✓</td>
<td>70</td>
<td>2016</td>
</tr>
<tr>
<td>Rural sanitation</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sanitation in schools</td>
<td>✓</td>
<td>100</td>
<td>2016</td>
</tr>
<tr>
<td>Sanitation in health facilities</td>
<td>✓</td>
<td>70</td>
<td>2016</td>
</tr>
<tr>
<td>Urban drinking-water supply</td>
<td>✓</td>
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<td>✓</td>
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</tbody>
</table>

All data represented in this country highlight document is based on country responses to GLAAS questionnaire unless otherwise stated. COUNTRY HIGHLIGHTS • MYANMAR • GLAAS 2014
Status of Sewage Treatment in Myanmar

Activities of MOC
Water development exhibitions at Head Office of MOC, Naypyitaw
Decentralized Wastewater Treatment System supervised by MOC
➢ Sewage System of Naypyitaw

➢ Sewage System of Mandalay
Existing Sewage System of Naypyitaw

• 20% of new constructed area using sewage treatment plant (Aerobic System)

• 80% using Septic Tank (Anaerobic System) and Pit Latrine with slab

• Sewage collection is combined system

• Sewer pipes are directly connected with waste water treatment plant
Properties Of Wastewater inlet

Biochemical Oxygen Demand (BOD,\text{20* C}) \quad 250\text{mg/lit}
Suspended Solids (SS) \quad 220\text{mg/lit}
Total Organic Carbon (TOC) \quad 160\text{mg/lit}
Chemical Oxygen Demand (COD) \quad 500\text{mg/lit}

Properties of Treated Water

Biochemical Oxygen Demand (BOD,\text{20* C}) \quad 20\text{mg/lit}
Suspended Solids (SS) \quad 30\text{mg/lit}
Chemical Oxygen Demand (COD) \quad 60\text{mg/lit}
EQUALIZATION TANK FOR SEWAGE COLLECTION

AERATION TANK

TREATED WATER COLLECTION OR RETENTION POND
Future Plan of Sewage Treatment Plant in Naypyitaw
Main content of system are
Number of Septic Tank - over 35000
Type of System – Oxidation
Pond(Facultative + Aerobic Pond)
Daily Wastewater discharge – 15000 gal/day
Proposed pilot sewerage and wastewater treatment system in Mandalay

Inner City Area (Between 26th ×35th & 71st × 78th)
Pilot Area (Between 35th × 37th 71st × 78th)

(Source- Mandalay City Development Committee)
EQUITY IN FINANCE

Funds are reported to be largely directed to drinking-water services, however, the number of un-served is greater for sanitation services.

Population with access to improved sanitation facilities

Disaggregated WASH expenditure

Progress on Drinking-Water and Sanitation – Update 2015, WHO/UNICEF
Challenges and issues
Challenges and issues

- Serious shortage of adequate sanitation infrastructure like industrial waste treatment plant
- Weakness in wastewater treatment and water management sector are limited manpower and technical supporting
- Budget limitation; Finance Arrangement for Effective Investment/Asset Management
- Difficulty in the change of awareness to practice among communities
- Less Sustainability due to low cost technology
Require Action Plans
Require Action Plan

- Playing as an important role in waste water management for this – Participation of stakeholders, concerned Authorities, Companies, Public & CSOs

- Collaboration between ministries with best management practice; to enhance organizational capacity and effectiveness of water resources coordination system

- Enhancement and consolidation the existing systems; function the operation, maintenance and rehabilitation of facilities safely, reliably and efficiently

- Enforcement on the guidelines; using minimum sewage effluent guidelines and water quality criteria and monitoring on Physical operations

- Providing the necessary test equipment and Build sewage treatment facilities and in accordance with national policies and capabilities

- Capacity building at both government and private sectors
Concluding and Remarks
Concluding Remarks

Although water resources in Myanmar are generally abundant, localized pollution threatens to render water sources unsuitable for future or downstream uses. This threat results from the virtual absence of any form of treatment of domestic or industrial wastewater and the failure to conduct environmental impact assessments for major development projects.

So, we need to establish a beneficial framework and effective mechanism for managing, developing and protecting water and related resources in an environmental and economical sound manner in order to meet the needs of the people of Myanmar.
Thank you for your time and interest.