SDGs and JICA activities related to wastewater management

Preparation Workshop on the Asia Wastewater Management Partnership (AWaP)

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I. MDG to SDG

**SDGs: Sustainable Development Goals**

Following the Millennium Development Goals (MDGs), the new SDGs guide development policy and funding for the next 15 years.

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**SDG 6.2**  By 2030, achieve access to adequate and equitable sanitation and hygiene for all and end open defecation, paying special attention to the needs of women and girls.

**Indicator 6.2.1**  Proportion of population using safely managed sanitation services, including a hand-washing facility with soap and water.
I. MDG to SDG

**SDGs: Sustainable Development Goals**
Following the Millennium Development Goals (MDGs), the new SDGs guide development policy and funding for the next 15 years.

**SDG 6.3** By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally.

**Indicator 6.3.1** Proportion of wastewater safety treated
**Indicator 6.3.2** Proportion of bodies of water with good ambient water quality

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Toward Achieving the Sustainable Development Goals (SDGs)

**Three pillars of JICA’s cooperation**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>JICA will realize “human security” and “quality growth” to contribute to the peace, stability and prosperity of the international community. The SDGs accelerates and promotes this cooperation philosophy so that JICA will proactively contribute to achieving the goals with leadership.</td>
</tr>
<tr>
<td>2</td>
<td>JICA will play a pivotal role in achieving the ten goals of the SDGs making use of Japan’s own experience in socio-economic development as well as in development cooperation. [Ten goals: zero hunger, health, education, water/sanitation, energy, economic growth, industry/infrastructure, sustainable cities, climate actions, forests/biodiversity]</td>
</tr>
<tr>
<td>3</td>
<td>JICA will work to secure impact of cooperation on the SDGs through utilizing Japan’s own knowledge, introducing innovations and collaborating with local and international partners in order to accelerate the achievement of the SDGs.</td>
</tr>
</tbody>
</table>
II. SDGs and JICA activities **SDG 6.2**

<table>
<thead>
<tr>
<th>SERVICE LEVEL</th>
<th>DEFINITION</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAFELY MANAGED</td>
<td>Use of improved facilities that are not shared with other households and where excreta are safely disposed of in situ or transported and treated offsite</td>
</tr>
<tr>
<td>BASIC</td>
<td>Use of improved facilities that are not shared with other households</td>
</tr>
<tr>
<td>LIMITED</td>
<td>Use of improved facilities shared between two or more households</td>
</tr>
<tr>
<td>UNIMPROVED</td>
<td>Use of pit latrines without a slab or platform, hanging latrines or bucket latrines</td>
</tr>
<tr>
<td>OPEN DEFEICATION</td>
<td>Disposal of human faeces in fields, forests, bushes, open bodies of water, beaches or other open spaces, or with solid waste</td>
</tr>
</tbody>
</table>

*Note: improved facilities include flush/pour flush to piped sewer systems, septic tanks or pit latrines; ventilated improved pit latrines, composting toilets or pit latrines with slabs.*

Source: Progress on Drinking Water, Sanitation and Hygiene Update and SDG Baselines 2017, WHO UNICEF JMP

**Relating JICA Project:** Cebu and Davao in Philippines, Hai Phong in Vietnam
II. SDGs and JICA activities SDG 6.3.1

SDGs Indicator 6.3.1 (Safety Treated Wastewater) for Good Ambient Water Quality

<table>
<thead>
<tr>
<th>Pollution Source</th>
<th>Domestic Wastewater</th>
<th>Industrial Wastewater</th>
</tr>
</thead>
<tbody>
<tr>
<td>Generated Wastewater</td>
<td>Population multiplied by Daily water consumption per capita (m3/day/person)</td>
<td>Calculation using Inventory</td>
</tr>
<tr>
<td>Generated Pollution Load</td>
<td>Population multiplied by Unit Pollution load (g/day/person) BOD, SS, COD, T-N, T-P</td>
<td></td>
</tr>
<tr>
<td>Counter Measures</td>
<td>On-site Treatment Joukasou, Septic Tank, etc. Off-site Treatment Sewerage Systems</td>
<td>On-site Treatment Pre-Treatment &amp; Sewerage System</td>
</tr>
</tbody>
</table>

Discharged Wastewater: Safety Treated Wastewater to meet Effluent Water Quality Standard

Discharged Load: Generated Pollution Load multiplied by (1 - Removal rate of pollutants: BOD, SS, COD, T-N, T-P) Calculation using Inventory

Fundamental Information for Pollution Load Analysis Daily water consumption per capita (m3/day/person) Unit Pollution load (g/day/person) BOD, SS, COD, T-N, T-P

Removal rate of Pollutants (Treatment Performance of Joukasou, Septic Tank, Sewerage Systems)

Relating JICA Project: Pilot Study with related Ministries in Vietnam in cooperation with WHO
II. SDGs and JICA activities **SDG 6.3.2**

**Ambient water quality standards in WEPA countries**

<table>
<thead>
<tr>
<th>Country</th>
<th>Surface Water</th>
<th>Groundwater</th>
<th>Marine Water</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cambodia</td>
<td>Water Quality Standards in Public Water Areas</td>
<td>Water Quality Standards in Public Water Areas</td>
<td>Water Quality Standards in Public Water Areas</td>
</tr>
<tr>
<td>China</td>
<td>Environmental Quality Standards for Surface Water</td>
<td>Quality Standard for Ground Water</td>
<td>Sea Water Quality Standard</td>
</tr>
<tr>
<td>Indonesia</td>
<td>Water Quality Criteria</td>
<td>Water Quality Criteria</td>
<td>Standard Quality of Seawater</td>
</tr>
<tr>
<td>Japan</td>
<td>Environmental Quality Standards for Water Pollution</td>
<td>Environmental Water Quality Standards of Groundwater</td>
<td>Environmental Quality Standards for Water Pollution</td>
</tr>
<tr>
<td>Republic of Korea</td>
<td>Environmental Standards for Water Quality and Aquatic Ecosystem</td>
<td>Environmental Standards for Water Quality and Aquatic Ecosystem*</td>
<td>Environmental Standards for Water Quality and Aquatic Ecosystem</td>
</tr>
<tr>
<td>Lao PDR</td>
<td>Surface Water Quality Standard</td>
<td>Groundwater Quality Standard*</td>
<td></td>
</tr>
</tbody>
</table>

*Source: WEPA Outlook on Water Environmental Management in Asia 2015*

**Relating JICA Project:** Sri Lanka, Vietnam

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**Relationship between SDG 6.3.1 and 6.3.2**

- **Generated Pollutant Load**
- **Pollutant Source**
  - Houses, Industries
- **Treatment Process Performance**
- **Discharged Load**
- **Run-off Ratio**
- **Transfer Ratio**
- **Run-off Load**
- **Purification Effect**
- **Transferred Load**
- **Main Stream**

Comprehensive Basin-wide Planning

Location of Lake Biwa and Yodo River basin area

Catchment area of Lake Biwa in Yodo River basin area

Size of a catchment area
- Yodo river: 8,200 km²
- Lake Biwa: 3,800 km²
Comprehensive Basin-wide Planning

To meet the Environment Standards, allocation of required pollution load reduction in accordance with Pollution Source is necessary

Calculation and Allocation of Pollution Load in the River Basin

Present Pollutant Loads

<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>Domestic Wastewater</td>
<td>38</td>
<td>413</td>
<td>266</td>
<td>365</td>
<td>360</td>
<td>409</td>
<td>408</td>
<td>409</td>
</tr>
<tr>
<td>Industrial Wastewater</td>
<td>41</td>
<td>40</td>
<td>36</td>
<td>39</td>
<td>32</td>
<td>21</td>
<td>17</td>
<td>14</td>
</tr>
<tr>
<td>Livestock</td>
<td>11</td>
<td>12</td>
<td>13</td>
<td>15</td>
<td>13</td>
<td>19</td>
<td>21</td>
<td>24</td>
</tr>
<tr>
<td>Non Point Source</td>
<td>13</td>
<td>13</td>
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</table>

Allowable Pollutant Load

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</tr>
</thead>
<tbody>
<tr>
<td>Domestic Wastewater</td>
<td>30</td>
<td>50</td>
<td>80</td>
<td>120</td>
<td>120</td>
<td>120</td>
<td>120</td>
<td>120</td>
</tr>
<tr>
<td>Industrial Wastewater</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>Livestock</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Non Point Source</td>
<td>10</td>
<td>10</td>
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</tbody>
</table>

Measures

- Sewerage System
- On-site Systems
- Regulation
- Treatment Facility

Pollutant Load = (Number) X (Unit Pollutant Load) or Measured Value

Example of unit pollutant load: 55g-BOD/capita
### Status of ambient water quality monitoring for public water bodies in Japan

<table>
<thead>
<tr>
<th>No. of Monitoring Stations</th>
<th>Frequency</th>
<th>Indicator</th>
<th>Responsible Institution</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicators for human health protection:</td>
<td>Monthly</td>
<td>Indicators stipulated in Environmental Standards</td>
<td>Local government (Ministry of the Environment)</td>
<td>2013</td>
</tr>
<tr>
<td>3,947 (rivers), 405 (lakes and reservoirs), 1,057 (sea)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indicators for the living environment:</td>
<td>Monthly</td>
<td>Indicators stipulated in Environmental Standards</td>
<td>Local government (Ministry of the Environment)</td>
<td>2013</td>
</tr>
<tr>
<td>4,550 (rivers), 475 (lakes and reservoirs), 2,044 (sea)</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Indicators for aquatic biodiversity:</td>
<td>Monthly</td>
<td>Indicators stipulated in Environmental Standards</td>
<td>Local government (Ministry of the Environment)</td>
<td>2013</td>
</tr>
<tr>
<td>1,447 (rivers), 150 (lakes and reservoirs), 125 (sea)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Groundwater:</td>
<td>Monthly</td>
<td>Indicators stipulated in Environmental Standards</td>
<td>Local government (Ministry of the Environment)</td>
<td>2013</td>
</tr>
<tr>
<td>3,680 (outline survey)</td>
<td></td>
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</tr>
</tbody>
</table>

### Evaluation methodology for water quality monitoring in Japan

**Achievement rate of environmental standard** for water in public water zones
(Surface water, marine water and groundwater)

http://www.wepa-db.net/activities_201504outlook2015.htm
Sewered Population Rate (6.3.1) and Improvement of Water Quality

Water Quality of Sumida River and Sewered Population Rate in Tokyo

Source: Environmental Bureau of Tokyo Metropolitan Government

Indicators for Policy Maker, Project Implementation Organization (Public and Private Sector) and Citizen

Policy Maker

Present Condition of SDG 6.2, 6.3
(SDGs Indicator 6.2.1, 6.3.1, 6.3.2)

Progress of the Project & its effect
(Trend of Indicator 6.2.1, 6.3.1, 6.3.2)

Project Evaluation
(Comparison of Cost Effectiveness using Indicator 6.2.1, 6.3.1, 6.3.2)

Project Implementation Organization
III. POLICY RECOMMENDATION TO ACHIEVE SDG 6.2, 6.3

1. Establishment of Legal System:
   Sewerage Law, as well as Basic Law for Environmental Protection, Water Quality Control Law

2. Institutional and Management Arrangements
   Role of Central Government and Municipalities,
   Monitoring and Project Implementation Organization,
   Human Resource Development, Research and Technology Development,
   Public Private Partnership

3. Technology Options
   Off-site Treatment and On-site Treatment,
   Technology Evaluation and Establishment of Design and O&M Manuals

4. Public Relation and Citizen’s Participation
   Citizen’s Recognition to Water Environment Preservation
   Increase of the Awareness and Understanding of citizens as tax payers and users

5. Planning
   Necessity of Effective Planning

6. Financial System for Sanitation and Wastewater Management
   Establishment of Construction and O&M Cost Sharing Principles
   Construction Cost: Subsidy, Local Bond, User Charges, O&M Cost: User Charges, Public Burden

IV. JICA’s Comprehensive Approach

Loan Projects
- Construction
  - Sewage Treatment Plants
  - Pipe Works
    (Trunk Sewer, Branch Sewer, House Connection)
- Consulting Services
  - Detailed Design
  - Tender Assistance
  - Supervising Construction

Preparatory Studies
- Feasibility Study
- Project Plan, Basic Design, Cost Estimation

Technical Cooperation Projects
- Expert dispatch
  - O&M Capacity Building
  - Training Center for Sewerage works
  - Rehabilitation and Improvement Programs
**What is Technical Cooperation Project?**

Technical Cooperation Project is to **combine various operational menu**, such as dispatching experts and providing equipment, in accordance with **agreed plan** for the cooperation to **attain certain outcomes** within **certain time period**.

**CONCLUSION**

I. MDGs to SDGs

II. SDGs and JICA activities

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4. Example of Indicator
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III. Policy recommendation to achieve SDG 6.2, 6.3

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   (Projects and Technical Corporation)
SDGs: Sustainable Development Goals

Following the Millennium Development Goals (MDGs), the new SDGs guide development policy and funding for the next 15 years.

"Ensure availability and sustainable management of water and sanitation for all"

Thank you for your attention.