From MDGs to SDGs:
Toward Safe and Sustainable Water Supply Systems

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Introduction

Review of Achievement by MDGs related to Water Supply
"2.6 billion people have gained access to an improved drinking water source since 1990"

"91 per cent of the global population now uses an improved drinking water source"

Source (Notes and Photo): Progress on Sanitation and Drinking Water
Achievement and Issues Remained

- **MDG Target 7c** has been met
  
  *Halve, by 2015, the proportion of the population without sustainable access to safe drinking water and basic sanitation*

- Issues remained
  
  - “663 million people still lack improved drinking water sources”
  
  - “Safe” sources is Not always safe
    
    Safe = Improved Drinking Water Sources
    
    (Incl. Private Wells, Community Taps)
  
  - Inequality (income level, Rural&Urban etc.)
  
  - Non-household setting (Schools, Healthcare Facilities)

*Source: Progress on Sanitation and Drinking Water WHO/UNICEF (2015)*
What is Sustainable Development Goals (SDGs)?

- 193 countries adopted declaration as the goals after MDGs
- specifying “supremely ambitious and transformational vision”
- 17 Goals with 169 associated targets which are integrated and indivisible.

Source: UN Sustainable Development Goals Website
Interlinkage of Goals and Water

• Importance of Interlinkage with other Goals (Aside from Goal 6)

“Saving women and girls time by reducing hours spent fetching water, improving productivity” *1
⇒ Indicator: Percentage of households (disaggregated by sex of head of household) using safely managed drinking-water services

Living Environment for Poor dwellers in Slums

Equality for small subgroups (Poor, Disabilities, Ethnicity)

Source:*1 WaterAid (2013) Everyone Everywhere

*2 All Symbols are drawn from UN SDGs Websites http://www.un.org/sustainabledevelopment/sustainable-development-goals
Goal 6. Ensure availability and sustainable management of water and sanitation for all

- 6.1 by 2030, achieve universal and equitable access to safe and affordable drinking water for all
- 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 and those in vulnerable situations
- 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 increasing recycling and safe reuse by x% globally
- 6.4 by 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity, and substantially reduce the number of people suffering from water scarcity
- 6.5 by 2030 implement integrated water resources management at all levels, including through transboundary cooperation as appropriate
- 6.6 by 2020 protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes
- 6.a by 2030, expand international cooperation and capacity-building support to developing countries in water and sanitation related activities and programmes, including water harvesting, desalination, water efficiency, wastewater treatment, recycling and reuse technologies
- 6.b support and strengthen the participation of local communities for improving water and sanitation management

Source: UN Sustainable Development Goals Website
6.1 by 2030, achieve *universal* and *equitable* access to *safe* and *affordable drinking water for all*

<table>
<thead>
<tr>
<th><strong>universal</strong></th>
<th>including households, schools, health facilities, workplaces</th>
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<tbody>
<tr>
<td><strong>equitable</strong></td>
<td>progressive reduction and elimination of inequalities between population sub-groups</td>
</tr>
<tr>
<td><strong>access</strong></td>
<td>close to home</td>
</tr>
<tr>
<td><strong>safe</strong></td>
<td>free from pathogens and elevated levels of toxic chemicals at all times</td>
</tr>
<tr>
<td><strong>affordable</strong></td>
<td>Payment for services does not present a barrier to access</td>
</tr>
<tr>
<td><strong>drinking water</strong></td>
<td>drinking, cooking, food preparation and personal hygiene</td>
</tr>
<tr>
<td><strong>for all</strong></td>
<td>men, women, girls and boys of all ages including people living with disabilities</td>
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Keywords in Goal 6 in Detail

• Universal and Equitable
  – Gap between Urban and Rural, Rich and Poor
  – Non-household Settings (Schools and Hospitals)

• Safe
  – Microbes (*E. coli*) and Important Chemicals (As, F)
  – Basic and Intermediate Services

• Emerging Issues
  – Water-use efficiency
  – Water Resources Management
  – Participation of local communities
  – Partnerships

...will be measured and monitored by individual indicators
Case Study

“Safety” Issue and A Trial Estimation of Access to Safe Water
Water “Safety” Issues

• Improved water sources are not always safe
  – In a snapshot survey (RADWQ) for five countries, 7-16% of water supply did not comply with their water quality standards.¹)
  – In an estimation, 1.2 billions are at sanitary risk²)

• Sources of problems and limitations
  – Private Well: Source Pollution, Maintenance
  – Water Supply Systems:
    Intermittent supply, Demand Surge (Pressure drops), Source Pollution, O&M neglect
  – (Indirectly) Lack of Good Management, Finance, Human Resources

Trial Estimation of “Access to Safe Drinking Water”

• Methodology:
  – “Access to Safe Drinking Water”
    Improved Water Water Quality complied with National Standards and WHO Water Quality Guideline values (As, E.coli)
  – Research Question:
    Does Household Water Treatment (HWT) contributed to provide safe water?

Case Study: Hanoi City

- Hanoi City
  - Pop. 6.5 Million
- Growing City Area and Populations
- Arsenic Problem
- Water Quality Survey
  - Hanoi, Vietnam
  - Sampling Period: from Nov. 2011 – Mar. 2013
- Questionnaire Survey
  - N=239 at Mar. 2012

World Bank Group (2015) East Asia's Changing Urban Landscape Measuring a Decade of Spatial Growth
Methodology: Estimation from Survey Results

**Questionnaire Survey**
- n=239

**Water Quality Survey**
- 71HHs, n=215
  - At Water Sources and HWTs
    - (As; n=69, E.coli; n=43)
  - Access at resource $S_{i,r}$
  - Improvement by HWT
    - HWT prevalence $X_{i,r}$
    - Safe ratio at Sources $Y_{i,r}$
    - (AX, CF, FWF, RO, SF)

**Access to Safe Drinking Water Sources**
- $Ps(r)$, $Ph(r)$

Results: Estimation of Prevalence of HWT

- Prevalence of HWT (by Questionnaire n=239)
  - 5 regions in Urban, Suburban, and Rural Areas

Types of Water Sources and Household Water Treatments

Results: Estimation of Safe Water Access by regions

- Safe Access is only 15% to 52%:
  - Lower access in Suburban: Small Scale Water Supply which do not comply for As (>10 µg/L) and *E. coli*
  - (Limitations) Restricted to only surveyed area

Implication and Recommendation

- In a trial estimation in Hanoi, Household Water Treatments (HWTs) are prevalent and gains access to “Safe” drinking water sources (by 8-20%)
- Results imply the need for incorporating HWTs into safe water provision strategy
Approach to Sustainability

Yokohama Forum Statement and Perspective of Partnerships
Partnerships

• From finance to diversified form of partnership
• New Types of Partnerships
  – Sharing Knowledge and Experiences by WOPs
  – Making synthetic agenda and solutions

Executive Forum for Enhancing Sustainability on Urban Water Service in Asian Region on sustainable management of water utilities (in Yokohama, July 2014)
Key Findings and Outcomes on “Executive Forum for Enhancing Sustainability”

- **Raising Revenue**
  - Vicious to Sustainable Cycle
  - Customer Satisfaction for Willingness to pay and higher water sales
  - Efficiency Improvement as NRW reduction for less expenditures

- **Maintenance and Procurement**
  - Preventive Maintenance
  - Standardization for better procurement
  - Strict monitoring and utilization of SOPs for implementation of Water Safety Plan

- **Disaster Preparedness**
  - Safe water for all principles must/can be achieved even when it is in emergencies.
  - Importance of leadership
  - Funding for restoration is needed

- **Human Resources Development**
  - Sustainable HRD programs for sustainable utility
  - Internal training comes first but external center is also essential
  - HRD for Morals and Attitude

- **Partnerships**
  - With various actors, to learn from best examples
  - Mutual trust should be basis of partnerships
  - Asia Forum for Benchmarking and Monitoring

Source: THE THIRD EXECUTIVE FORUM FOR ENHANCING SUSTAINABILITY ON URBAN WATER SERVICE IN ASIAN REGION - SUSTAINABLE MANAGEMENT OF WATER UTILITIES, JICA (2014)
28 Utilitys/Government Bodies stated as *Yokohama Forum Statement*;

1. Customer Satisfaction has a key role at raising revenue
2. Efficiency can only be achieved under appropriate preventive maintenance practices
3. Disaster becomes increasingly serious to every single utility
4. Benchmarking is needed to facilitate partnerships

**Partnerships as a “WATER FAMILY”**

Source: THE THIRD EXECUTIVE FORUM FOR ENHANCING SUSTAINABILITY ON URBAN WATER SERVICE IN ASIAN REGION - SUSTAINABLE MANAGEMENT OF WATER UTILITIES JICA (2014)
Conclusion and Discussion

• Sustainability in a context of SDGs for water supply sector
  – should be *universal, equitable, safe, affordable* and *for all*
  – is not single goal but wider issues which should care for the interlinkage with other sectors

• Challenge of safety is not only of water utilities but also of costumers and cities

• Partnerships are essential for sustainability to tackle with the common and emerging issues on a solidarity as a “WATER FAMILY”
Acknowledgment

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