

# From MDGs to SDGs:

## Toward Safe and Sustainable Water Supply Systems

Presentation at “International Forum”  
General Assembly & Conference 2015  
(October 22, 2015)

Koichi Matsubara

Urban Engineering Department, The University of Tokyo  
(Nihon Suido Consultants Co., Ltd.)

# Agenda

## 1. Introduction

- Review of MDGs Achievement, Issues remained
- SDGs and Water(Goal 6)

## 2. Case Study

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

## 3. Approach to Sustainability

- Partnership Perspective and Yokohama Forum Statement

## 4. Conclusion and Discussion

# 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"**

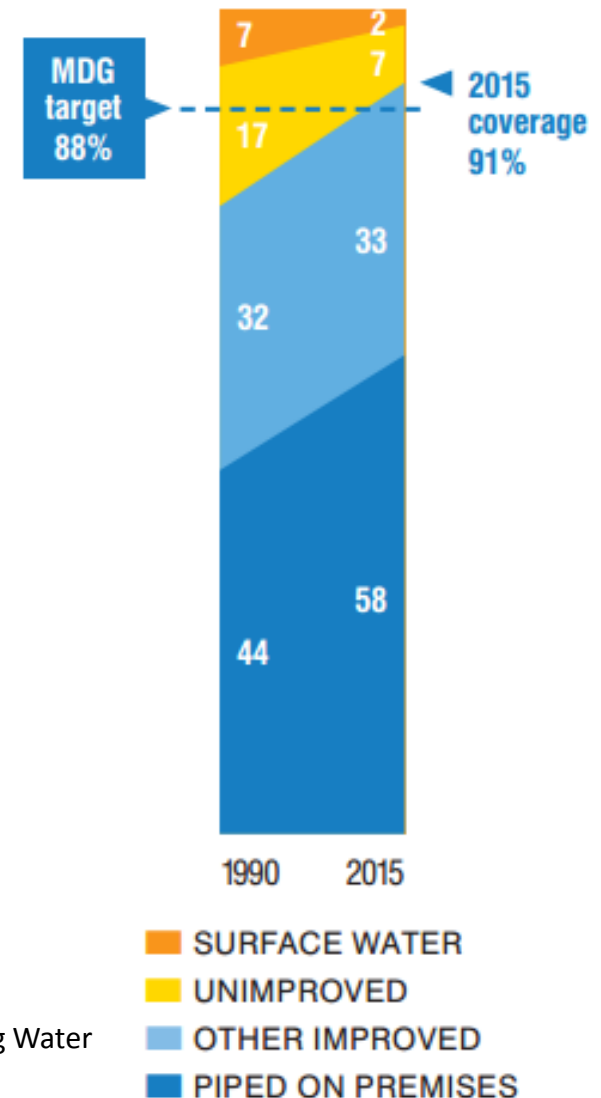
**"91 per cent of the global population now uses an improved drinking water source"**

Source (Notes and Photo): Progress on Sanitation and Drinking Water  
WHO/UNICEF (2015)

# Achievement and Issues Remained <sup>1)</sup>

The MDG target for drinking water has been met

- **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.



# 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” \*<sup>1</sup>  
 ⇒ 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: \*<sup>1</sup> WaterAid (2013) Everyone Everywhere

\*<sup>2</sup> All Symbols are drawn from UN SDGs Websites <http://www.un.org/sustainabledevelopment/sustainable-development-goals>

# Goal for “Water and Sanitation”

- **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





# Goal 6 and Key Concept in Terminology

**6.1** by 2030, achieve *universal* and *equitable* access to *safe* and *affordable drinking water for all*

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

# 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 complied with their water quality standards.<sup>1)</sup>
  - In an estimation, 1.2 billions are at sanitary risk<sup>2)</sup>
- 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?



Sand filter (SF)

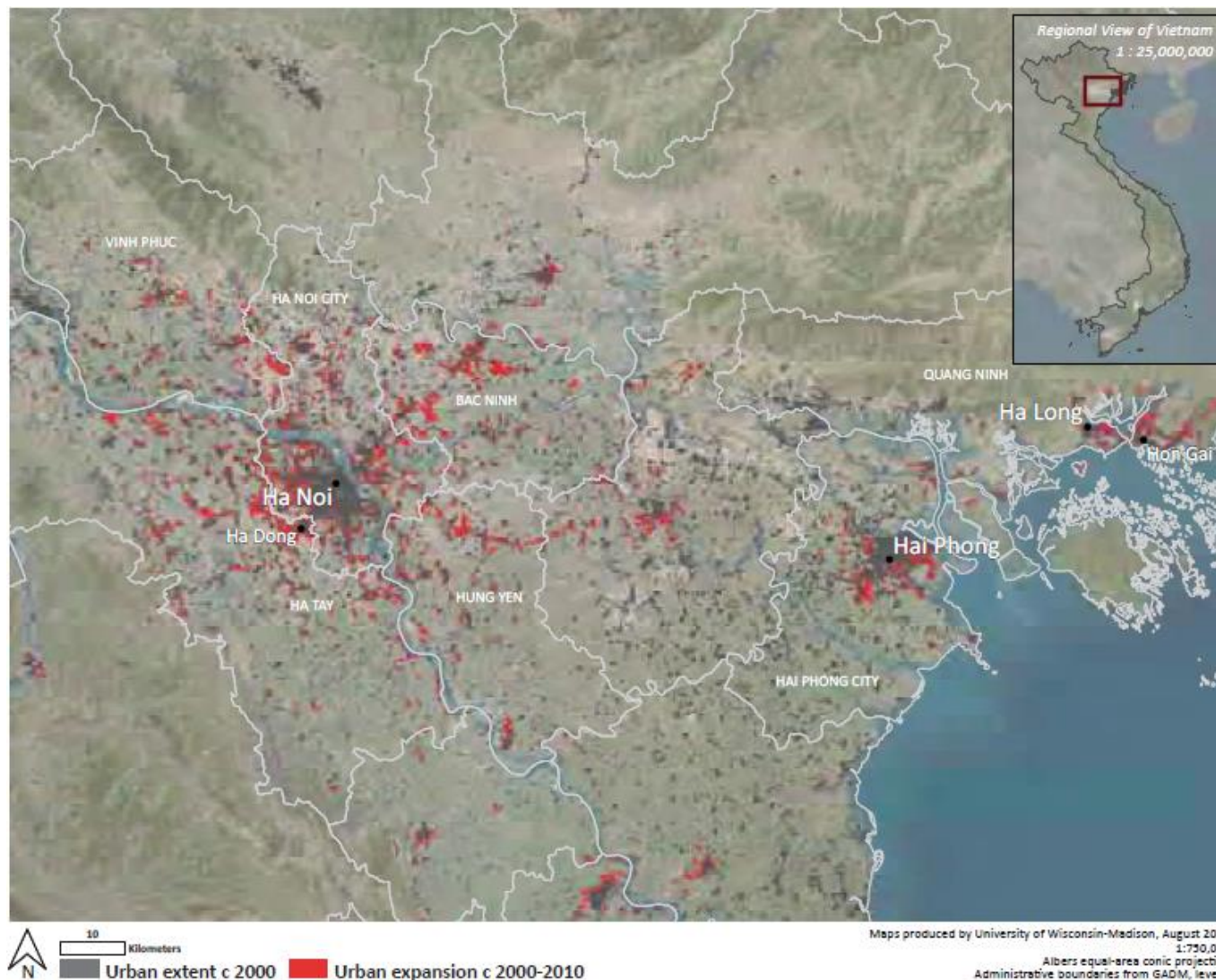


Reverse osmosis (RO)



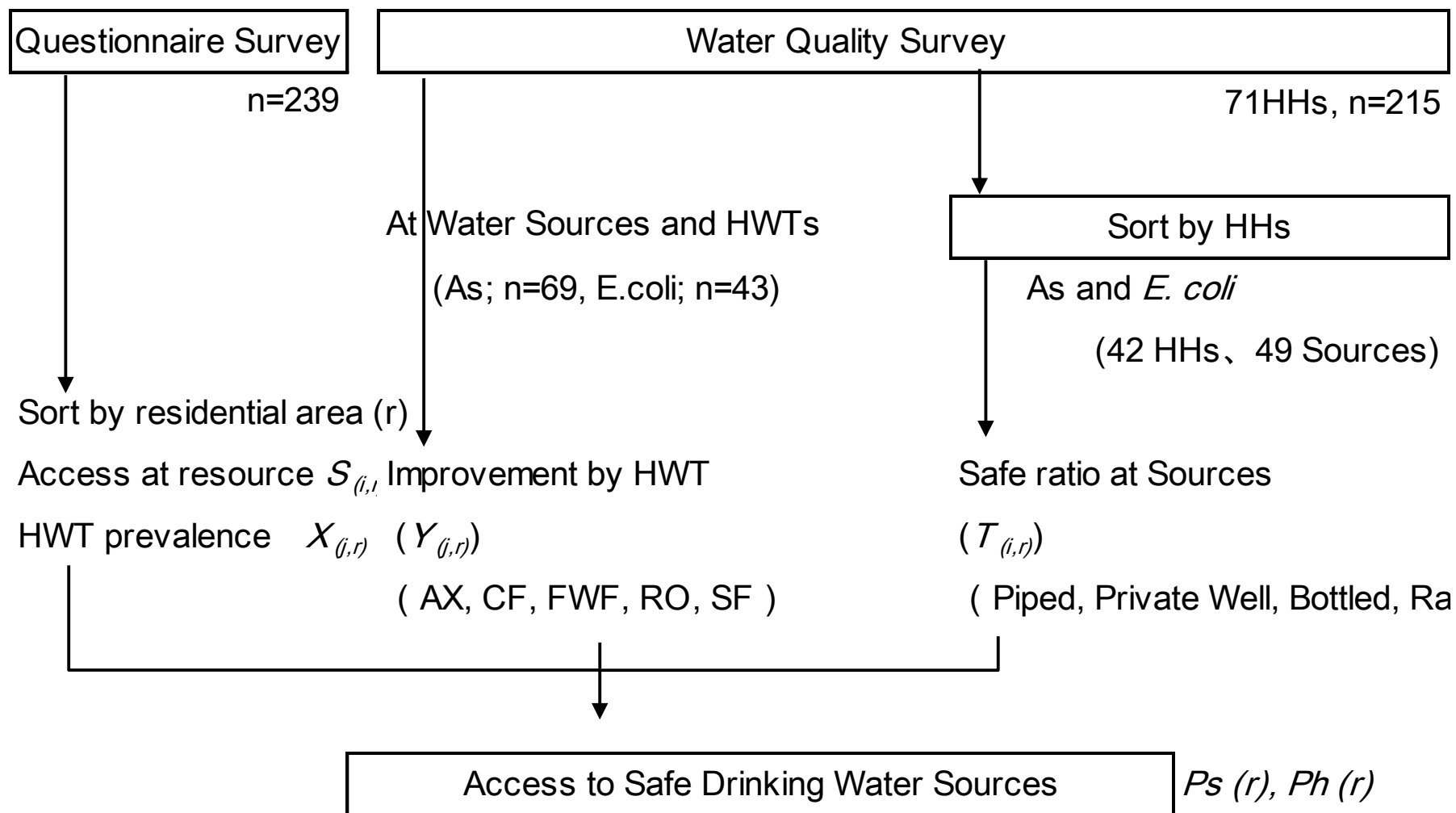
Ceramic Filter (CF)

# Case Study: Hanoi City



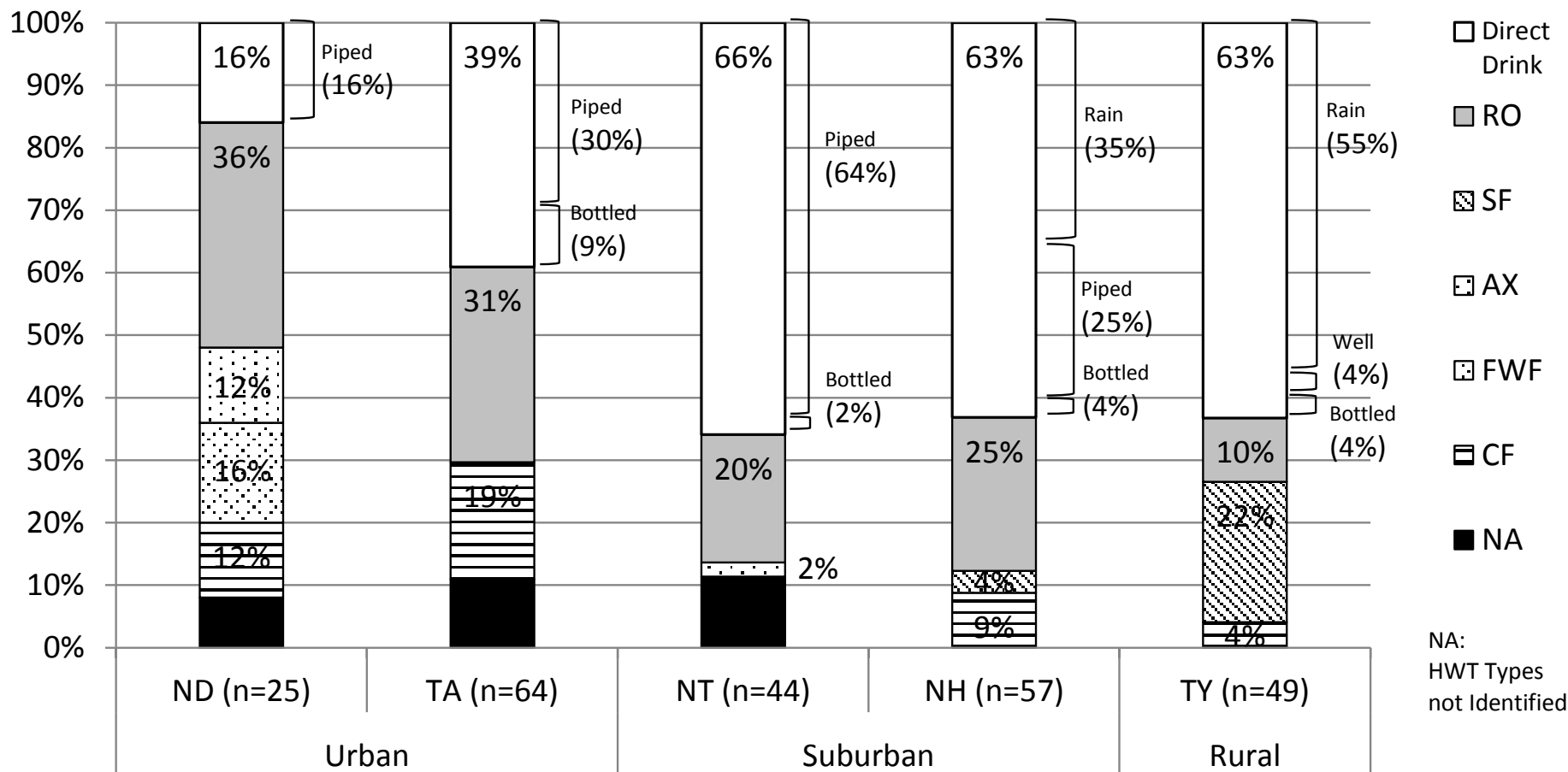
- Hanoi City
  - Pop. 6.5 Million
- Growing City Area and Populations
- **Arsenic Problem**
- Water Quality Survey
  - Hanoi, Vietnam
  - Sampling Period :  
from Nov. 2011 –  
Mar. 2013
- Questionnaire Survey
  - N=239 at Mar. 2012

# Methodology: Estimation from Survey Results



# Results: Estimation of Prevalence of HWT

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

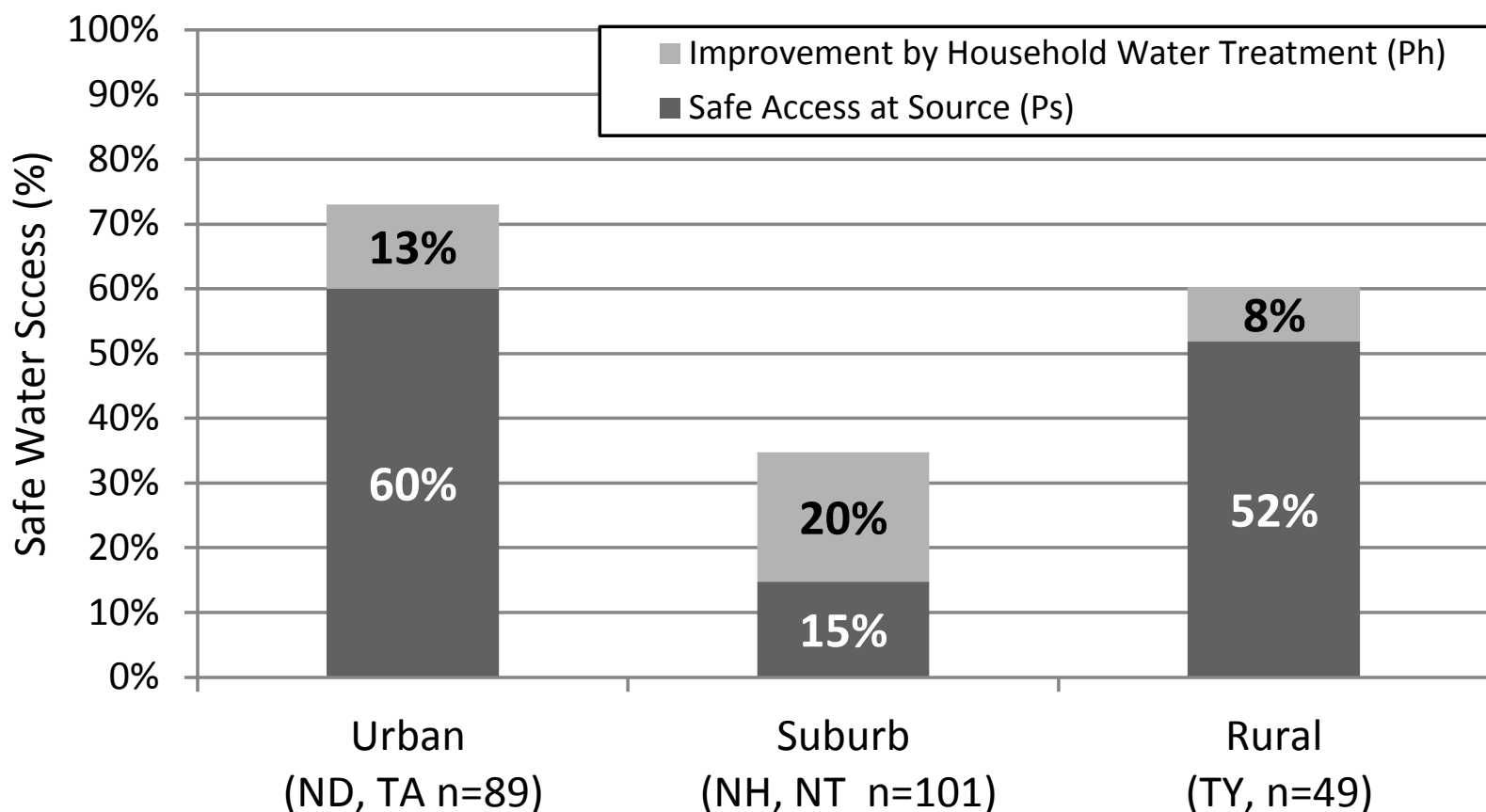


**Types of Water Sources and Household Water Treatments**



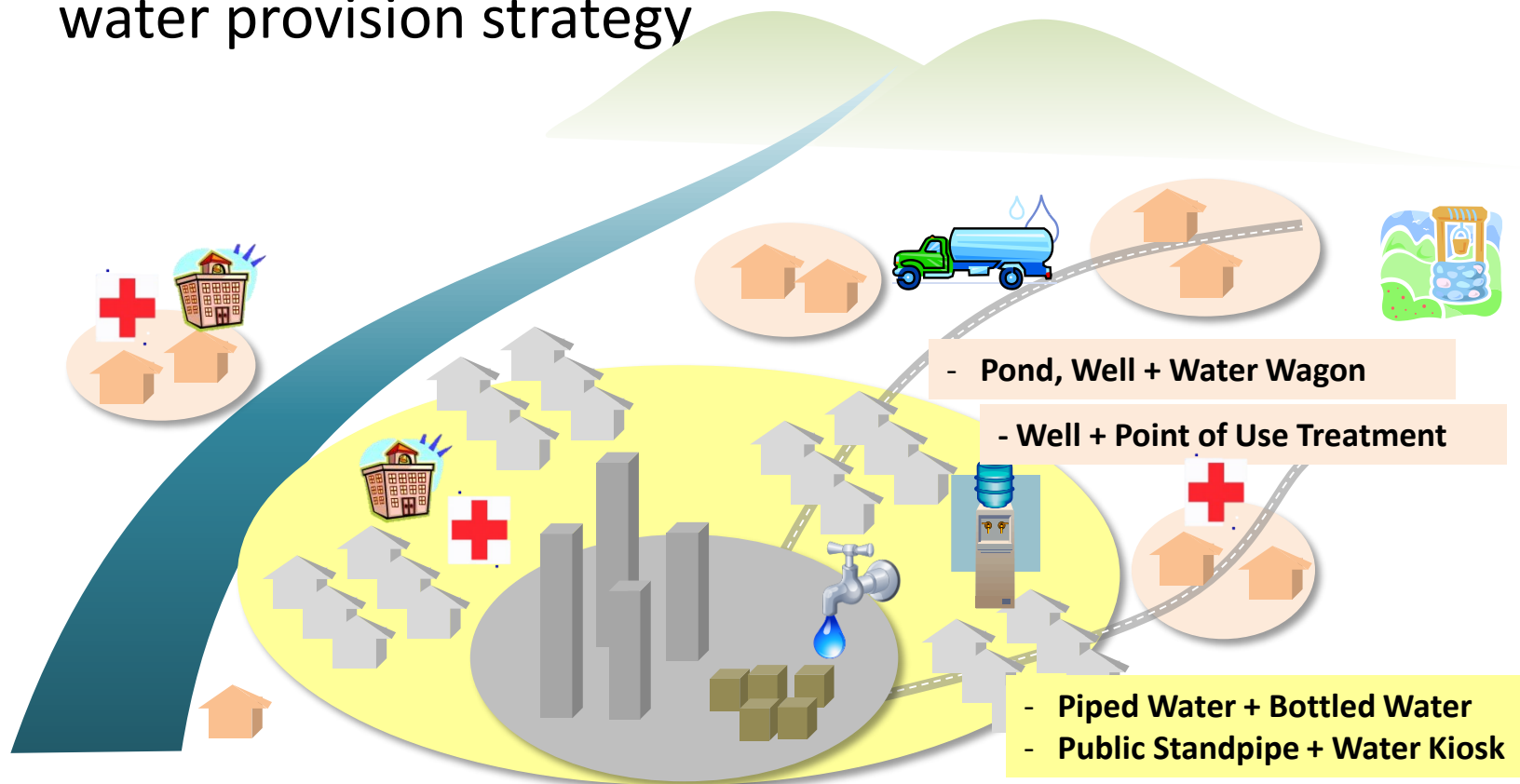
# Results: Estimation of Safe Water Access by regions

- Safe Access is only 15% to 52%
  - Lower access in Suburban: Small Scale Water Supply which do not complied for As ( $>10 \mu\text{g/L}$ ) 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



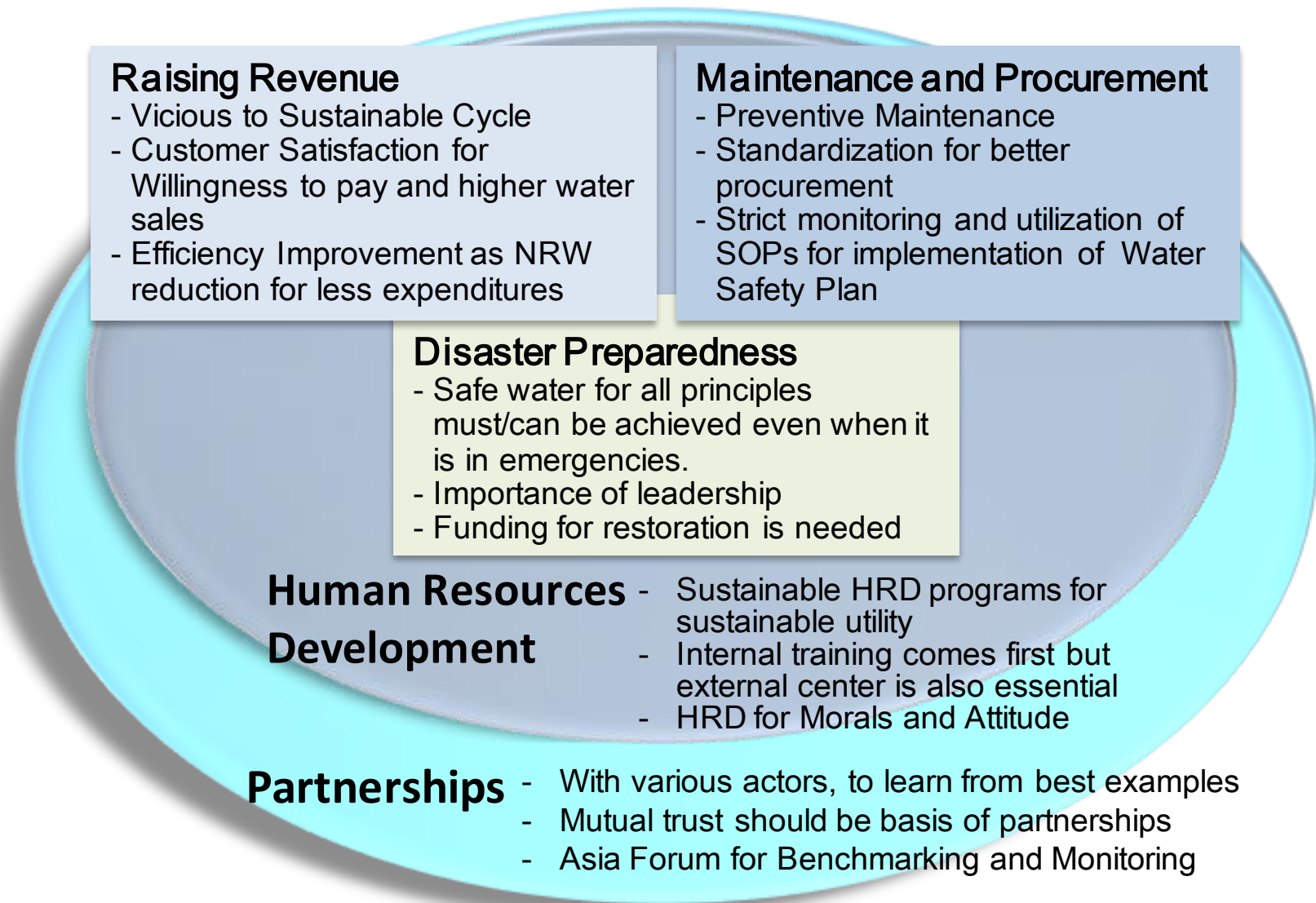
- From finance to diversified form of partnership
- New Types of Partnerships
  - Sharing Knowledge and Experiences by WOPs
  - Making synthetic agenda and solutions



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”



# Key Findings and Outcomes on “Executive Forum for Enhancing Sustainability”

An Approach (3/3)

Held by JICA and City of Yokohama, 2014

28 Utilities/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”

# 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

- “Yokohama Forum” was held by JICA and Yokohama City.  
The synthesis was made as a result of many utilities and organizations commitments including Japan Waterworks Association.
- Data and Photos in Hanoi were taken by Dr. Do Thuan An
- Original Research by Matsubara et al., (2015) was fully advised by Prof. Takizawa (University of Tokyo) and Dr. Kuroda (NIES)
- Ms. Takahashi (WaterAid Japan) provided resources of SDGs