



Existing Challenge in Domestic Wastewater Treatment in WEPA Countries

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Contents

1. Background of WEPA project
2. Current situation and existing challenges of domestic wastewater treatment in WEPA countries
3. Focus points for Today's Workshop

WEPA (Water Environment Partnership in Asia)

WEPA aims to **promote good governance in water environment management** by **providing, sharing and discussing** necessary information and knowledge of water environment management in the Asian region through the activities.

Three Main Themes of WEPA

- 1) **Domestic Wastewater Treatment**
- 2) **Climate Change and Water Environment**
- 3) **Water Environmental Governance**

WEPA Partner Countries

WEPA has Partners in 13 Asian Countries

1. Democratic Socialist Republic of Sri Lanka (Sri Lanka)
2. Federal Democratic Republic of Nepal (Nepal)
3. Japan (Japan)
4. Kingdom of Cambodia (Cambodia)
5. Kingdom of Thailand (Thailand)
6. Lao People's Democratic Republic (Lao PDR)
7. Malaysia (Malaysia)
8. People's Republic of China (China)
9. Republic of Indonesia (Indonesia)
10. Republic of Korea (Republic of Korea)
11. Republic of the Philippines (Philippines)
12. Socialist Republic of Viet Nam (Viet Nam)
13. Union of Myanmar (Myanmar)



Past Activities on Domestic Wastewater Treatment

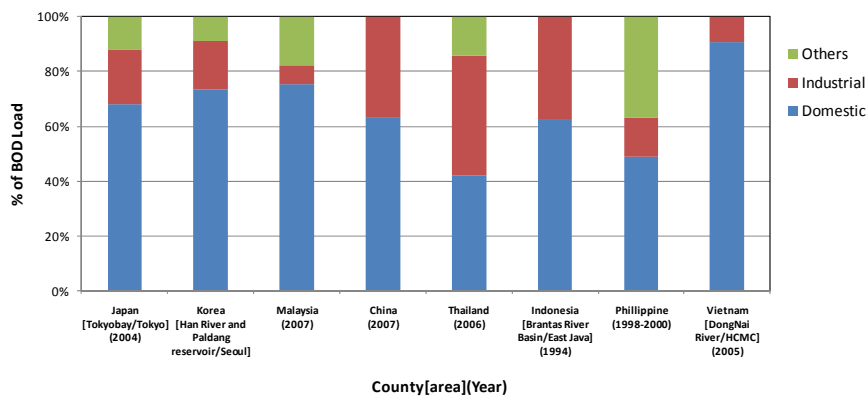
FY2009 Workshop in Hanoi

- Current situation and issues on domestic wastewater treatment in capital city was shared

FY2010 Questionnaire Survey

- Review of national policy for domestic wastewater treatment
- Hot spot identification
- Good practice on domestic wastewater management (mainly single project-level of practice)

BOD Pollution Source by Sector in Selected WEPA Countries/Areas



Methodologies of Domestic Wastewater Treatment in WEPA countries

Category	Treatment Methodologies		
	Anaerobic/ Aerobic	On-site	Off-site/Centralized
No Treatment	—	Discharge from household	Sewerage without treatment facility
Treatment of Only Back Water	Anaerobic	Septic tank	Community septic tank
	Aerobic	Individual night soil treatment tank	Septic tank + Septage treatment plant
Treatment of Both Black and Grey Water	Anaerobic	Septic tank	Sewerage treatment plant (Anaerobic)
	Aerobic	Individual sewerage treatment tank	Sewerage treatment plant (Aerobic)



Typical Treatment Methodologies identified in Asian Cities

Septic Tank in WEPA countries

Septic Tank Coverage Ratio

Vietnam (2008)

National Average: 41 %

Urban Area: 79%, Rural Area: 26%



Philippine (2010)

Manila: 71%

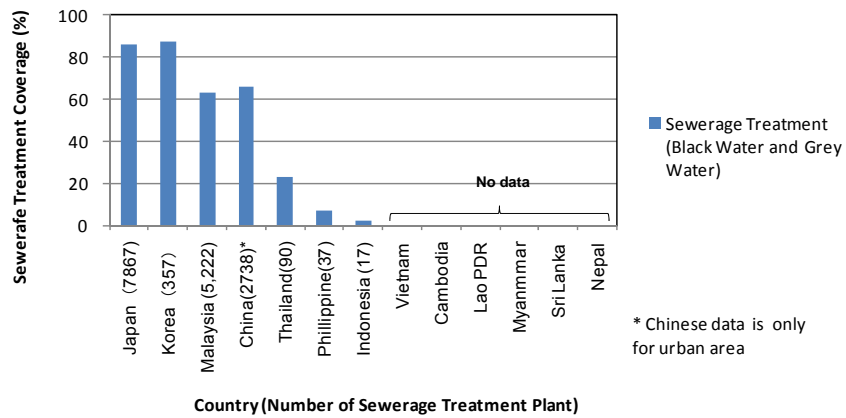


Sri Lanka (Year unknown)

Kandy: 87%

Septic Tank in China

Sewerage Treatment Coverage Ratio in WEPA countries



Sewerage Treatment Facility in WEPA countries



Thailand
(Suburban area)



Philippine
(Manila)



Nepal
(Kathmandu)



China
(Chongqing)

National Plan and Legal System on Domestic Wastewater Treatment in WEPA countries

Country	National Plan	Law/Regulation
Japan	<ul style="list-style-type: none"> Basic Policy for Preparation of Local Prefectural Governments' Vision of Domestic Wastewater Treatment Integrated Development Plan of River-basin Sewerage System 	<ul style="list-style-type: none"> Sewerage Service Act Private Sewerage System Act
Korea	<ul style="list-style-type: none"> 4 River Restoration Project 	<ul style="list-style-type: none"> Sewerage Act
Malaysia	<ul style="list-style-type: none"> National Sewerage Development Plan 	<ul style="list-style-type: none"> Sewerage Services Act
China	<ul style="list-style-type: none"> National Five- Year Plan of Environmental Protection 	<ul style="list-style-type: none"> Law of the People's Republic of China on Prevention and Control of Water Pollution
Thailand	<ul style="list-style-type: none"> Domestic Wastewater Management Plan 	<ul style="list-style-type: none"> The Enhancement and Conservation of National Environmental Quality Act, B.E.2535 Domestic Wastewater Law (Under Preparation)
Indonesia	<ul style="list-style-type: none"> National Domestic Wastewater Management Development Plan 	<ul style="list-style-type: none"> Clean Water Act
Philippine	<ul style="list-style-type: none"> National Program on Sewerage and Septage Management 	<ul style="list-style-type: none"> Clean Water Act
Vietnam	<ul style="list-style-type: none"> Development Policy and Vision of Wastewater Management and Sewerage (Development Policy until 2025 and Vision until 2050) Master Plan for Environment Protection in Three River Basins 	<ul style="list-style-type: none"> Law on Environmental Protection
Cambodia		
Nepal	(Bagmati Action Plan)	
Sri Lanka	(Greater Colombo Wastewater Management Project)	
Laos		
Myanmar		

Current Issues of Domestic Wastewater Treatment in WEPA countries

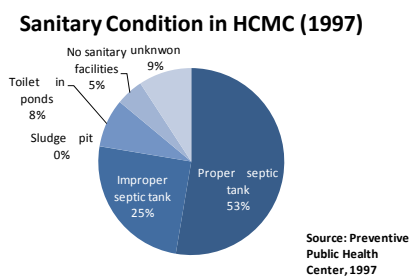
Plan of domestic wastewater treatment has been already prepared in most of WEPA countries/cities except countries/cities without serious water quality degradation. However, many WEPA countries/cities have difficulties in implementation of the plan.

- 1) Issues in area uncovered by sewerage treatment
- 2) Issues on development of sewerage treatment plant
- 3) Issues on operation of sewerage treatment plant

Issues in Area uncovered by Sewerage Treatment

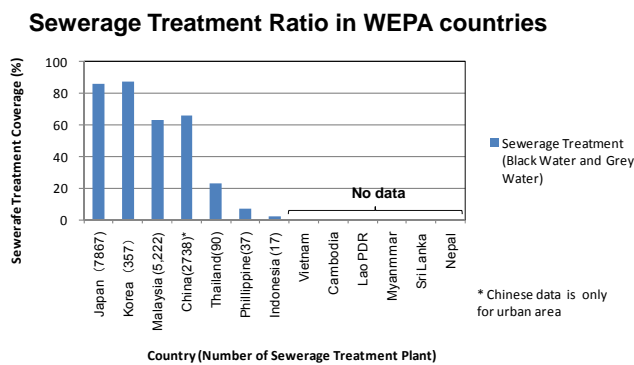
In the most of urban area without access to sewerage treatment, domestic wastewater (only black water) is treated by **individual septic tank**. However, there is difficulties in treatment of septic tank such as **improper installment of septic tank**. In addition, **grey water untreated by septic tank** has negative impact to water environment.

Reported from Indonesia, Thailand, Philippine and Vietnam (HCMC)



Issues on Development of Sewerage Treatment Plant

Sewerage treatment plants are **planned to be developed** especially in the urban area, but many countries/cities have **difficulties in the construction phase**.

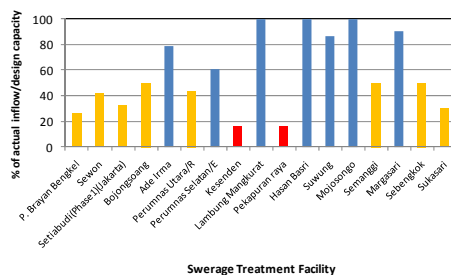


Issues on Operation of Sewerage Treatment Plant

There are some difficulties in operation of constructed sewerage treatment plants such as **less household connections than designed ones**, and **no fee collection from households**.

Reported from Indonesia and Thailand

Percentage of Actual Inflow to Treatment Capacity of Plants in Indonesia (2011)



National Average:
46%

Source: Ministry of Public Work (2011)

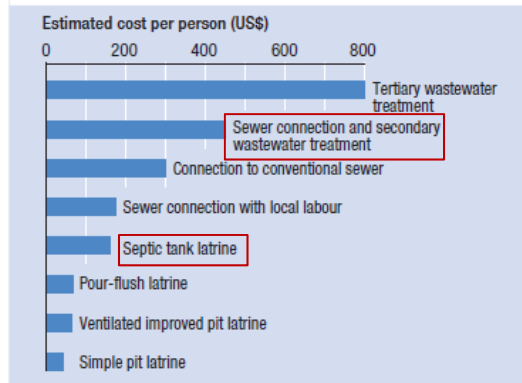
How to improve the domestic wastewater treatment? -Typical Pathway-

Category	Treatment Methodologies		
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Treatment of Both Black and Grey Water	Anaerobic	Septic tank	Sewerage treatment plant (Anaerobic)
	Aerobic	Individual sewerage treatment tank	Sewerage treatment plant (Aerobic)



Typical Pathway to Upgrading of Treatment Methodology

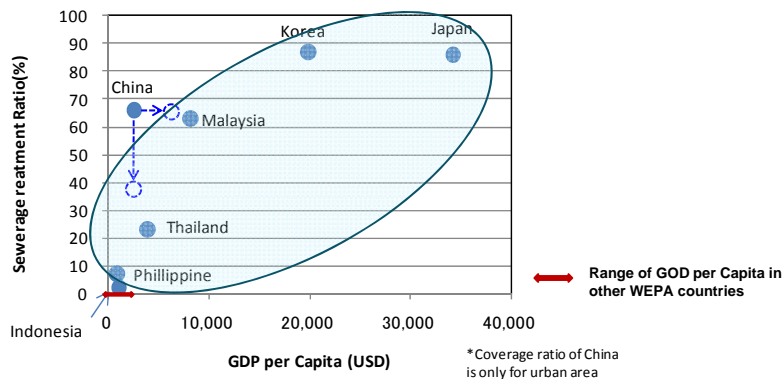
Obstacles for Upgrading to Sewerage Treatment Plant : Financial Aspects



Source: Human Development Report 2006, UNDP

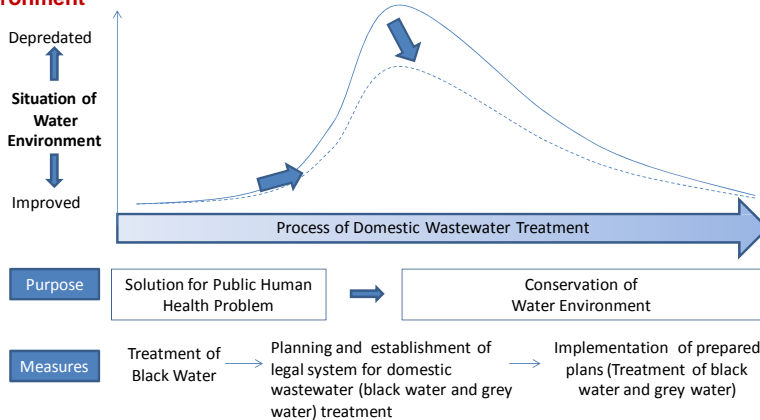
Obstacles for Upgrading to Sewerage Treatment Plant : Financial Situation in WEPA countries

Relationship between Sewerage Treatment Ratio and GDP per capita in WEPA countries



How to improve the domestic wastewater treatment? -WEPA's focuses-

To share “Good Practices(Strategic/programmatic level of experience)” on domestic wastewater treatment among WEPA countries in order to improve the situation of water environment



How to improve the domestic wastewater treatment? - WEPA's focuses-

- 1) Strengthen of existing sewerage treatment plant
- 2) Alternative pathways to upgrading from septic tank to sewerage treatment
- 3) Alternative options to large scale of sewerage treatment plant

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Treatment of Both Black and Grey Water	Anaerobic	Septic tank	Sewerage treatment plant (Anaerobic)
	Aerobic	Individual sewerage treatment tank	Sewerage treatment plant (Aerobic)

Today's Session

Objective

To share “Good Practice(Strategic/programmatic level of experience)” on domestic wastewater treatment in WEPA countries and learn from WEPA partner’s experience

Topic 3-1:Implementation Issues in wastewater treatment

Topic 3-2: Alternative options to large scale of sewerage treatment plant

Today's Session (Morning)

Topic 3-1:Implementation Issues in wastewater treatment

Policy of household connection and domestic wastewater treatment fee collection from the following countries are to be shared

- 1)Thailand (Ministry of Natural Resources and Environment)
- 2)Cambodia (Ministry of Environment)
- 3)Republic of Korea (National Institute of Environmental Research)
- 4)Philippine (Manila Water)
- 5)Malaysia (KETTHA: Ministry of Energy, Green Technology and Water)

Today's Session (Afternoon)

Topic 3-2: Alternative options to large scale of sewerage treatment plant

Alternative pathways to upgrading from individual septic tank to sewerage treatment and alternative options to large scale of sewerage treatment plant

- 1) Indonesia (Department of Public Works)
- 2) Philippine (Metropolitan Waterworks and Sewerage System)
- 3) Vietnam (Institute of Environmental Technology)
- 4) Thailand (Ministry of Natural Resources and Environment)
- 5) China (Ministry of Environmental Protection)
- 6) Japan (Ministry of the Environment)

Questions After the Presentations

For Presenter

- Clarification on the unclear points
- Uniqueness and its reason

For Audience

- Policy/practice interested
- Factors to be considered when the policy/practice in other country will be applied in your country

Thank you