



# Cambodia

## Water and Sanitation to support ASEAN ESC Model Cities Program Phase 2

Plenary 1/Day 1  
5<sup>th</sup> High Level Seminar on ESC  
28 Feb. – 1 Mar. 2014  
Surabaya, Indonesia  
By Mr. Chin Sothun

# Content

1. Urban Water Supply
2. Urban Sanitation
3. Lesson Learn decentralization
4. Challenges

# 1. Urban Water Supply

## The Vision

*All people access to clean water supply with good quality, affordable tariff and sustainability.*

## The Mission

*To develop water supply systems and service to people with clean/safe, adequate at affordable tariff to improve public health and good living environment.*

## The Goal

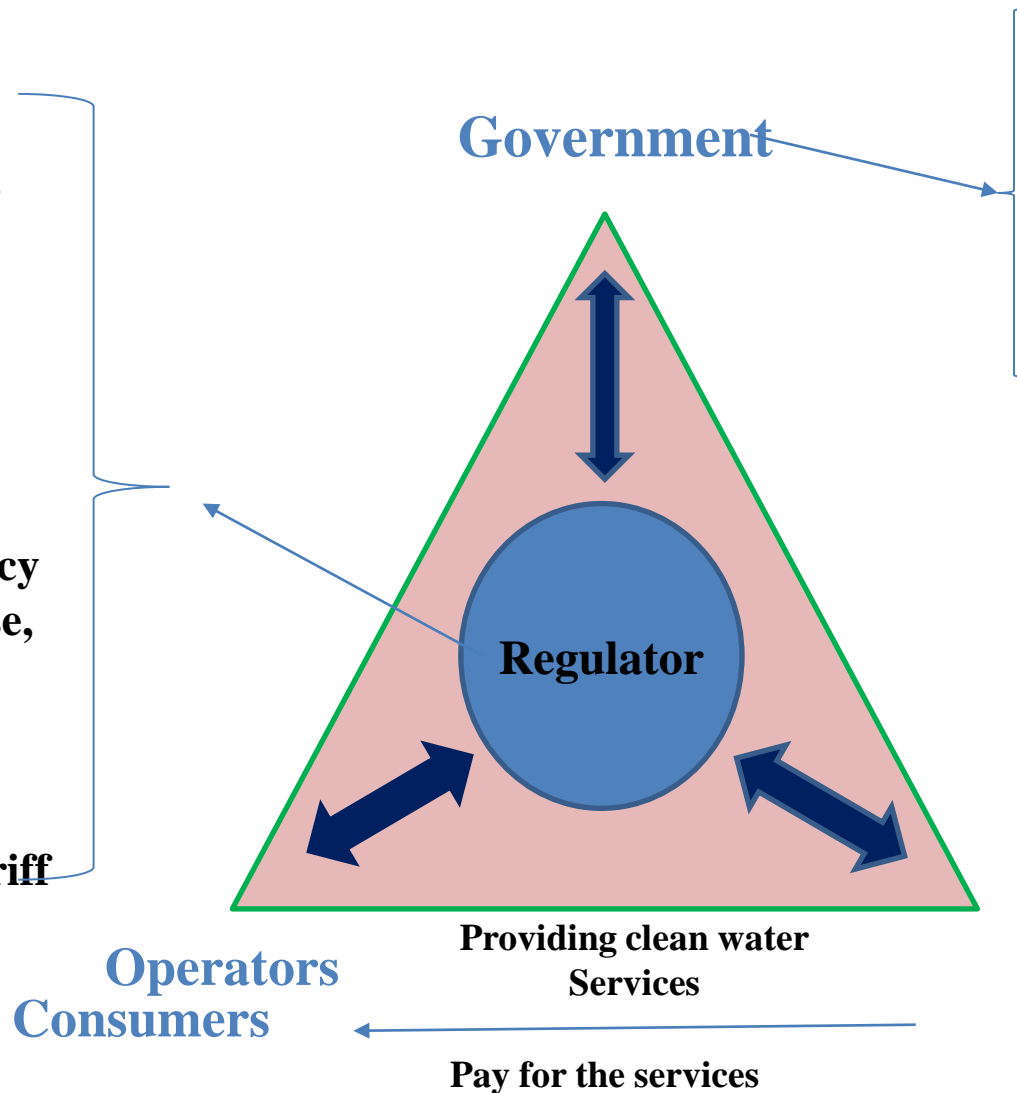
To continue increasing number of urban and peri-urban people access to clean water supply through pipelines in accordance with the CMDGs at least 80% in 2015, 85% in 2018 and 90% by 2025 with good quality, affordable tariff and sustainability.

# 1. Urban Water Supply (cont.)

## Framework of Urban Water Supply Management

To ensure providing water services is effective, with quality, sustainable justice, equity And transparency by issuing license, regulation, procedures, decision and setting water tariff

Develop and manage policy strategy and planning; and develop technical standards



# 1. Urban Water Supply (cont.)

## Rectangle II: Further Rehabilitation and Construction of the Physical Infrastructure

### Side 2: Water Resources and Irrigation System Management

- The Royal Government will pay more attention to the rights of access of people to clean water supply to ensure food safety and better livelihoods in accordance with the Cambodia Millennium Development Goals (CMDGs) and will also preserve the ecosystem of unpolluted water and clean environment.
- Along with use of resources from development partners and its own resources, the Royal Government will encourage private sector participation in the development and the management of irrigation system and clean water supply.

# 1. Urban Water Supply (cont.)

## Cambodia Millennium Development Goals:

<b>Sector Performance Indicators</b>	<b>Targets</b>		
	<b>2005</b>	<b>2010</b>	<b>2015</b>
<b>Proportion of rural population with access to safe water</b>	<b>30%</b>	<b>40%</b>	<b>50%</b>
<b>Proportion of urban population with access to safe water</b>	<b>68%</b>	<b>74%</b>	<b>80%</b>
<b>Proportion of rural population with access to improved sanitation</b>	<b>12%</b>	<b>20%</b>	<b>30%</b>
<b>Proportion of urban population with access to improved sanitation</b>	<b>59%</b>	<b>67%</b>	<b>74%</b>

# 1. Urban Water Supply (cont.)

*Key Strategies for Implementing the Rectangular Strategy  
Phase II(2009-2013)*

- Promotion of the Private Sector Participation
- Improving Public Utilities
- Protecting the Poor and Subsidy
- Protecting Environment and Promote Sanitation

# **1. Urban Water Supply (cont.)**

## **Key Action Plans for 2009-2013**

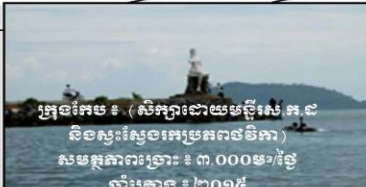
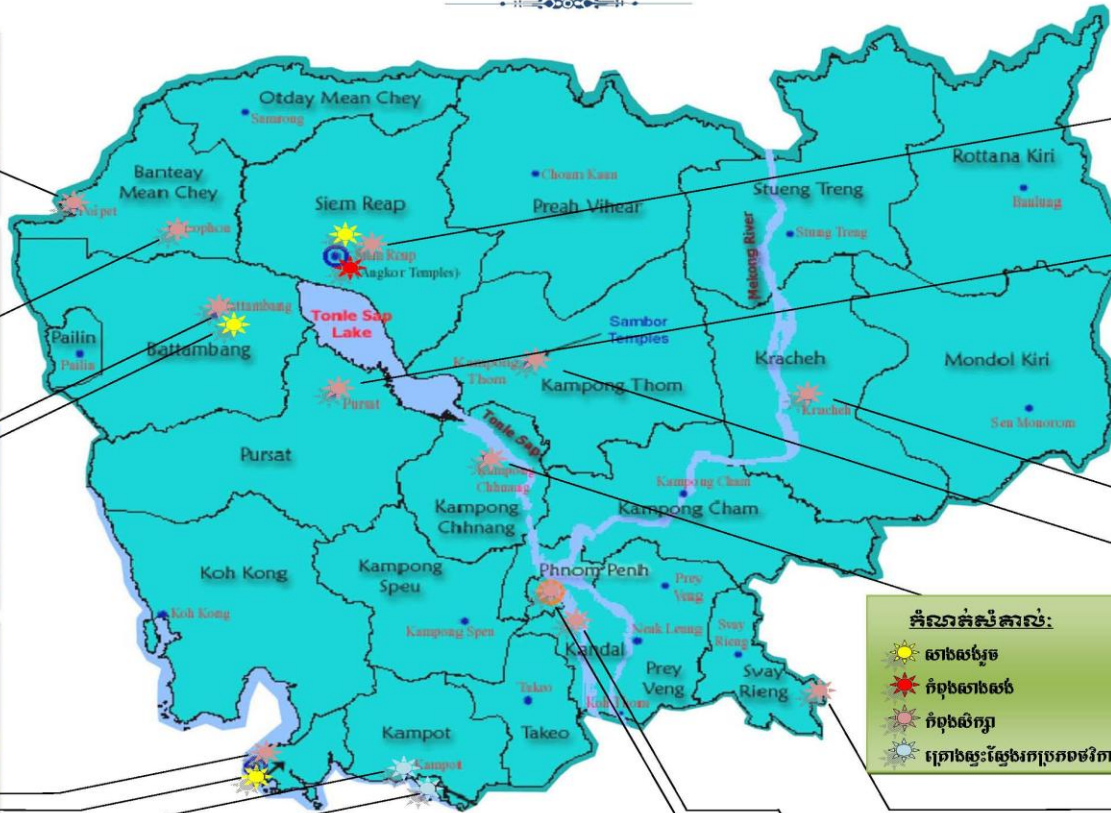
- 1. Institutional Strengthening, Good Governance and Capacity Building**
- 2. Strengthening and Improvement of Public Waterworks**
- 3. Improving and Strengthening Regulations**
- 4. Supporting the Sector**
- 5. Cooperation Projects with DPs**



# 2. Urban Sanitation

## Urban Waste Water Treatment Plant

ផែនការតម្រូវការប្រព័ន្ធធារាសាស្ត្រសំណង់ (រាជធានី-ក្រុង)



ប្រទេស	ឆ្នាំ	សមត្ថភាពចំនួន (ម៉ែត្រ)	ឆ្នាំរៀន
ADB	២០០៤	៦.៤០០	កំពូលសិក្សា
EDCF	២០១៤	១០.០០០	កំពូលសិក្សា
EDCF	២០១៦	៤.០០០	កំពូលសិក្សា



- គំនិតសំខាន់ៗ :**
- ☀ សាងសង់
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# 2. Urban Sanitation

## *Pipeline Project*

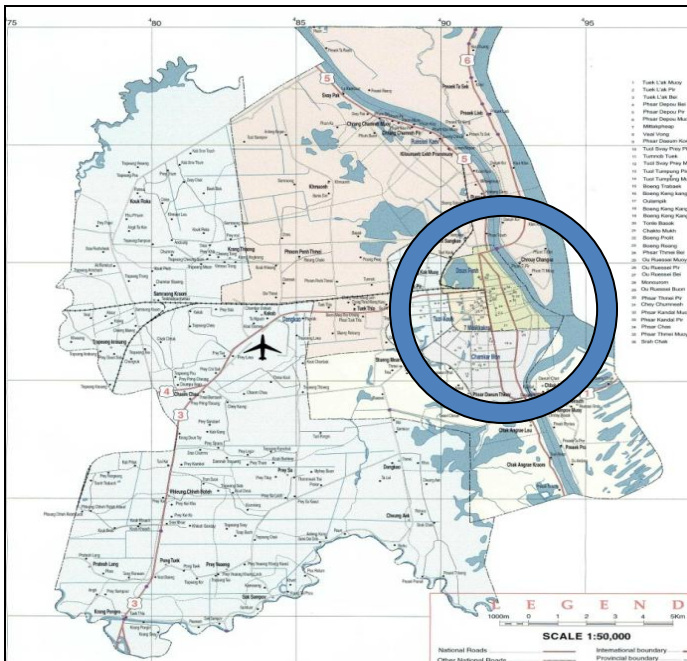
- **Environmental Master Plan:** MOE was conducting the FS (Water Supply, Wastewater, Solid Waste & Air Quality) to cover Siem Reap, Phnom Penh & Sihanoukville Towns in 2010.
- **Water and Sanitation Sector Financing Strategy for Cambodia:** WB was conducting the study & projecting to finalize in 2010.
- **Coastal Sustainable Development:** MLMUC and related institution to develop the Coastal Master Plan Development Study including the water and sewerage infrastructure in 2010.
- **Kampot Wastewater Treatment System:** MPWT was conducting the FS and projecting to finish at the end of 2011.
- **Phnom Penh Sewage Treatment Plant:** MOE & MPWT were conducting the FS and finished in 2011.
- **South East Corridor Towns Development Project:** ADB was conducted the FS in 2011.
- **Integrated Urban Environmental Management Project:** ADB is going to conduct the FS in 2013.

# 2. Sanitation

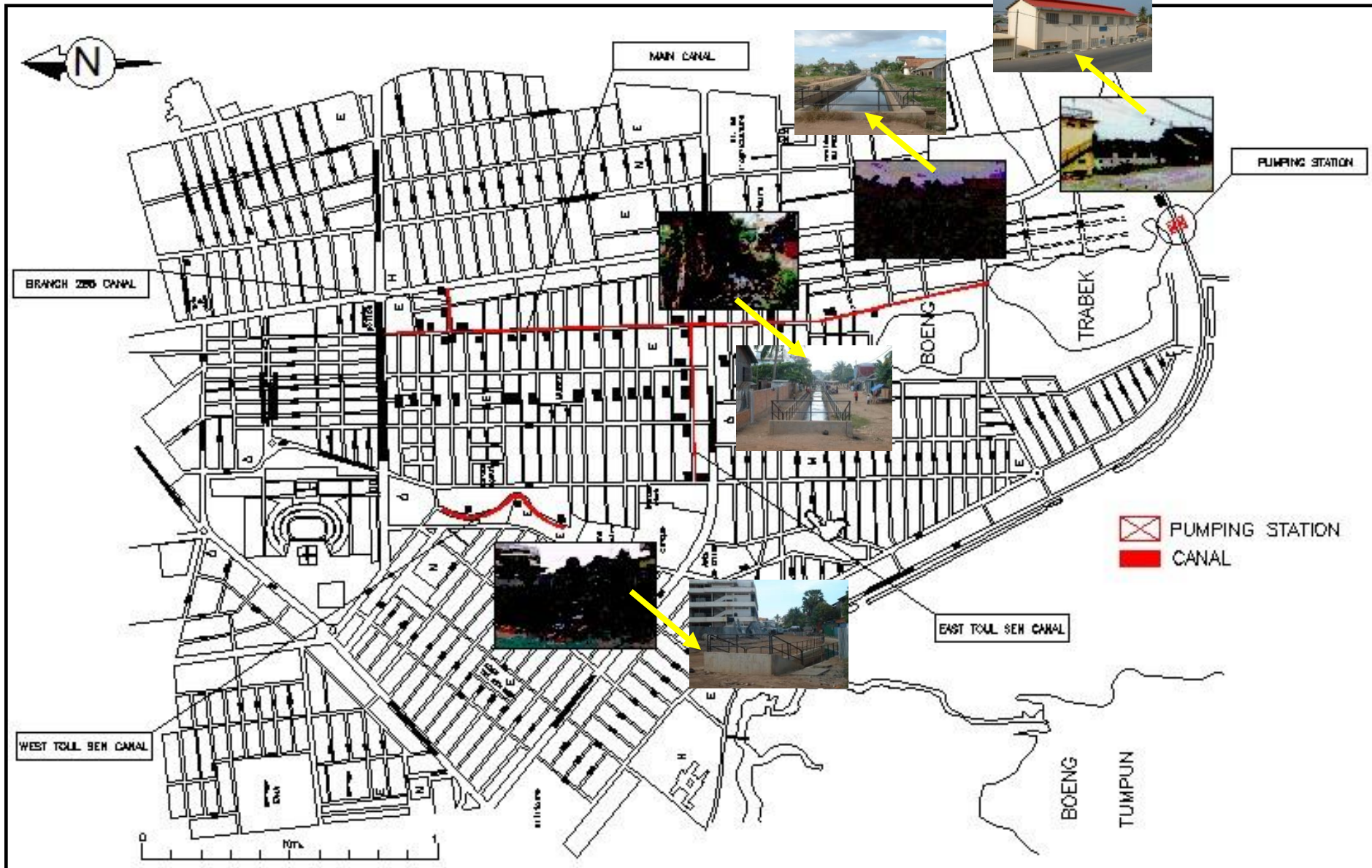
## *Phnom Penh Capital*

-Combined Sewer System  
-No Wastewater Treatment  
Plant Yet

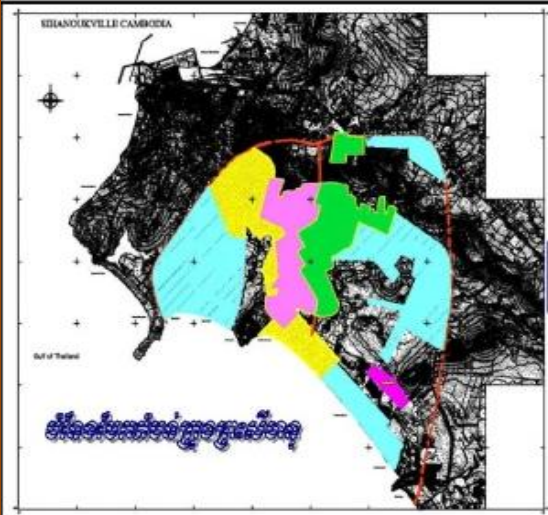
- Concrete lining of:
  - Boeng Trabek Canal and its branch with the length of 2,410.60m, width varies from 2.7m to 8.1m internally and depth varies from 2.15m to 2.69m.
  - East Tuol Sen canal with the length of 588.76m, 2.8m width and depth varies from 2.15m to 2.64m.
  - West Tuol Sen Canal with the length of 521.32m, 2.6m width and depth varies from 1.5m to 1.57m.
- Rebuilding of Boeng Trabek Pumping Station with a capacity of 8m<sup>3</sup>/sec.



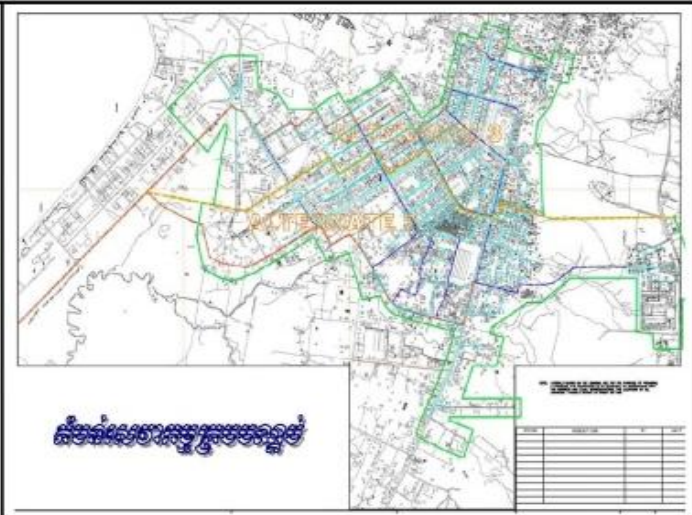
# LOCATION MAP



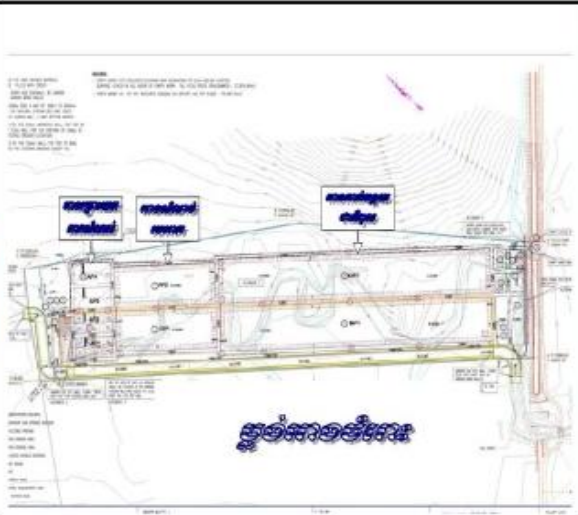
# របាយការណ៍ប្រភាពសង្ខេបស្តីពីការបញ្ចប់ការងារគំរោងគ្រប់គ្រងទឹកភាគសំណង់រាងក្រុងព្រះសីហនុ និង សកម្មភាពការងារ (ADB)



ទីតាំងបំណងគំរោងគ្រប់គ្រងទឹកសីហនុ



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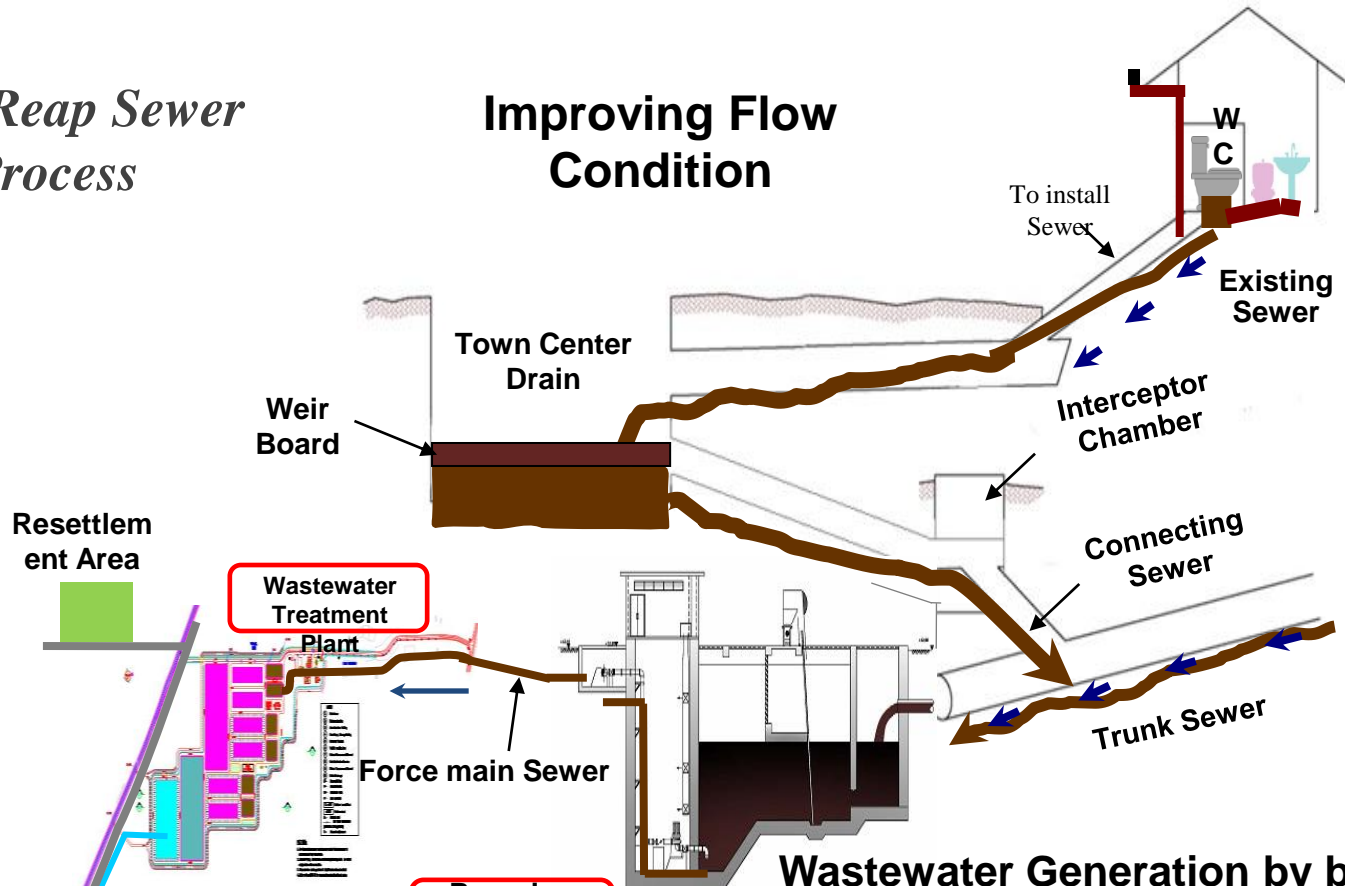
# 2. Urban Sanitation (cont)

## *Siem Reap Waste Water Plant*



# 2. Urban Sanitation (cont)

## Siem Reap Sewer Process



Rice Field



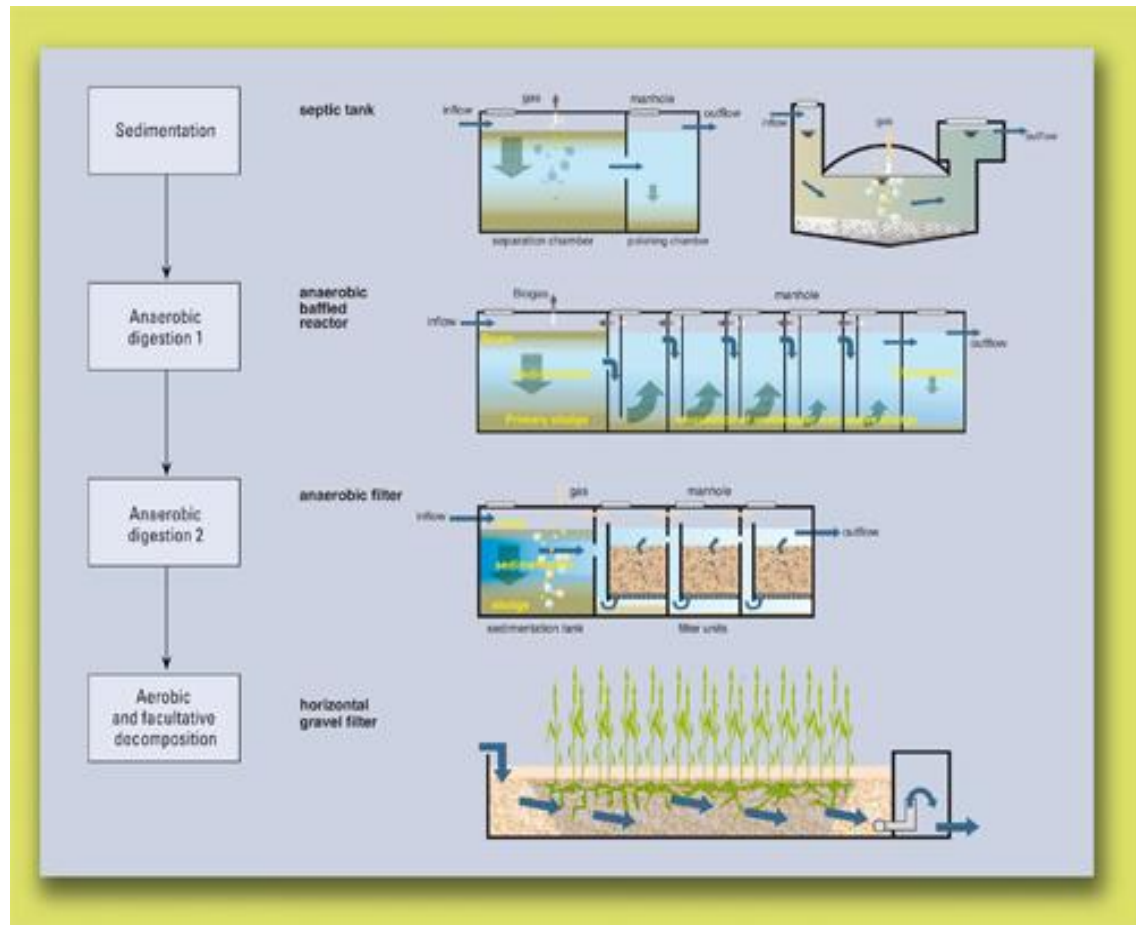
Wastewater Generation by both districts

Description	2010	2015	2020	2025	2030
East	3,915	4,907	6,049	7,379	8,909
West	7,484	9,250	11,310	13,716	16,526
<b>Total</b>	<b>11,399</b>	<b>14,157</b>	<b>17,359</b>	<b>21,095</b>	<b>25,435</b>

# 3. Lessons Learn decentralization

## The DEWATS system (ESC BORDA CAMBODIA)

- Sedimentation  
(25% to 40% pollution reduction)
- Anaerobic digestion-1<sup>st</sup> (ABR)  
(65% to 75% pollution reduction)
- Anaerobic digestion-2<sup>nd</sup> (AF)  
(75% to 90% pollution reduction)
- Aerobic and Facultative decomposition (HGF)
- Aerobic Pond





# 3. Lessons Learn decentralization

## Types and Sources of Wastewater

### Types of wastewater DEWATS can treat:

- Domestic wastewater;  
Schools, Hospitals, Communities, hotels, orphanages, temples.....
- Organic Industrial wastewater;  
Food factories, Slaughter houses, Animal farms, Tofu, markets.....
- DEWATS can treat mixed gray-water and black-water
- DEWATS can treat only black-water with Biogas option
- DEWATS does not treat rain/stormwater



# 3. Lessons Learn decentralization

## Type and Source of Wastewater

- DEWATS pipelines (collection systems):
  - PVC pipes (8.5) dia. 60cm/100cm/150cm
  - Shallow installation depth 20cm to 150cm
  - In Cambodia pipeline slope is from 0.5% to 1% (Effluent pump an option)
  - Manhole installed every 12m of pipeline and at turning points



# 4. Key Challenges

## Urban Water Supply

- *Access to clean and safe water is low*
- *Access to water is linked to poverty*
- *Not enough legal framework for development and regulation of the sector*
- *Funding needs are significant*
- *Availability of financial resources still low.*
- *Human resources' skill and experience is low*
- *Infrastructure is in bad condition.*

## Urban Sanitation Challenges

- *Sewerage and drainage is alarming, flooding during the raining season, climate resilience and requires urgent intervention to address the issues;*
- *A further deterioration is expected through rapid town development, land use & zoning development and the basic infrastructures (flood protection, water flow regulation system, town center drain, diver channel...);*
- *Not adequate human resources, empowerment and financial resources for O&M and management of the sewer system;*
- *Lagoons in north and south of Phnom Penh are shrinking but the city has to treat its wastewater as it strives to be a modern City*
- *Efficiency of WWTP is low*



**Thanks for  
your attention!**

