

資料 7

資料 7 ミャンマー水インフラセミナー配付資料

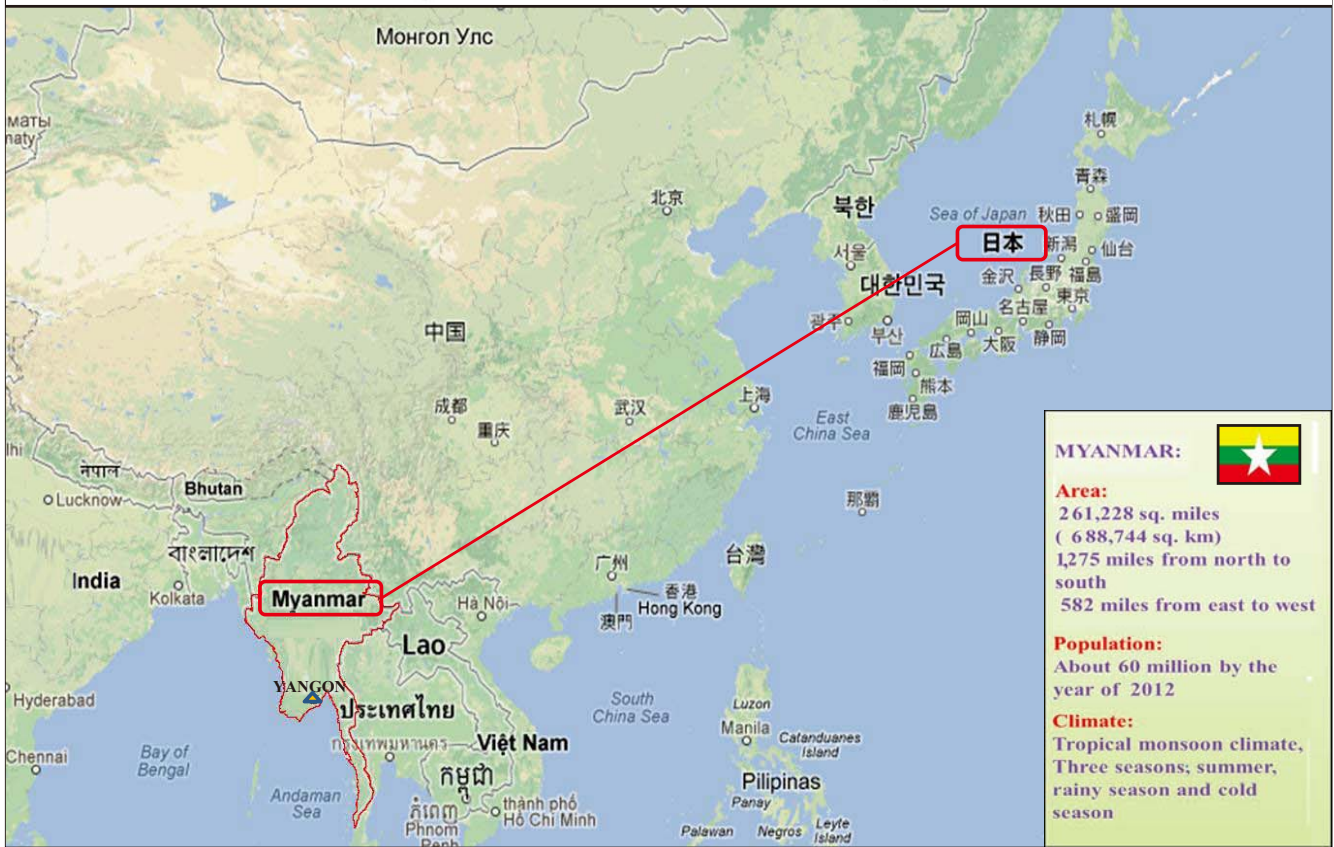
# THE FOURTH MEETING OF “ THE PPP COUNCIL FOR OVERSEAS WATER INFRASTRUCTURE”

CURRENT STATUS AND SPECIFIC TECHNICAL ISSUES ON WATER INFRASTRUCTURE  
AND  
INFORMATION FOR WATER INFRASTRUCTURE PROJECTS IN THE NEAR FUTURE

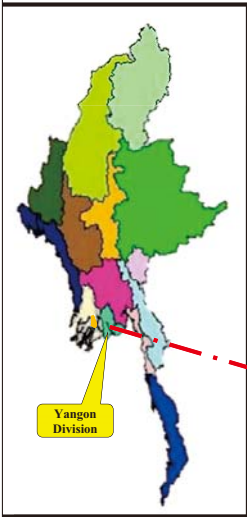
SUBMITTED BY  
Mr. SOE SI  
COMMITTEE MEMBER  
YANGON CITY DEVELOPMENT COMMITTEE

## INTRODUCTION

### The Republic of the Union of Myanmar



## OVERVIEW OF YANGON CITY AREA

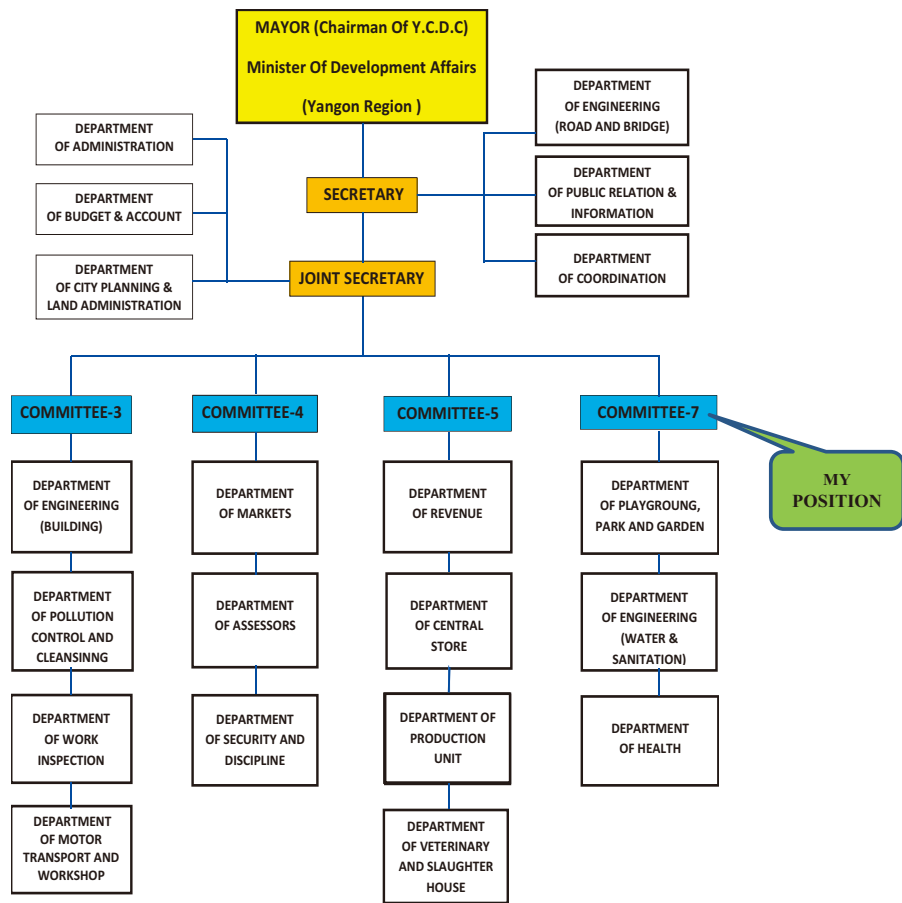


Boundry Of Yangon City Area



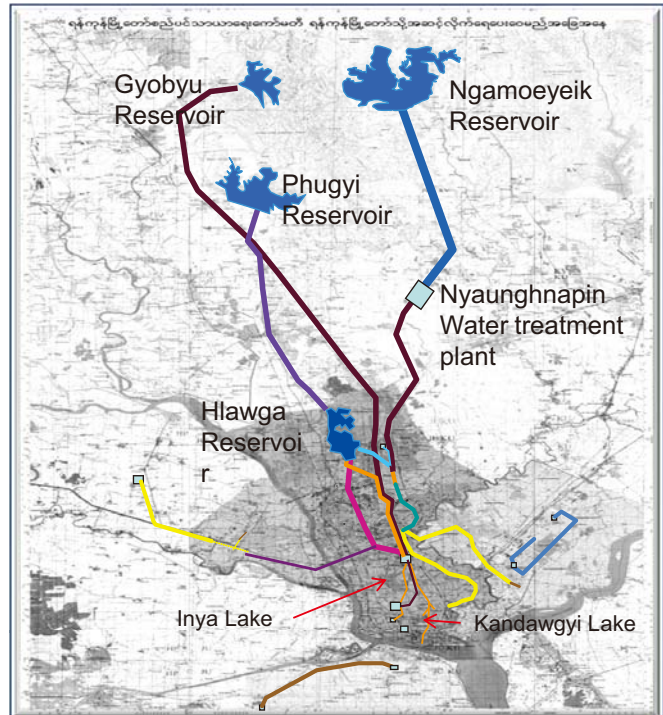
<b>YANGON CITY AREA :</b>	<b>730 Km<sup>2</sup></b>
<b>POPULATION :</b>	<b>About 6 Millions</b>
<b>DISTRICTS :</b>	<b>4 Districts</b>
<b>TOWNSHIPS :</b>	<b>33 Townships</b>
<b>AVERAGE ANNUAL RAINFALL :</b>	<b>2700 mm</b>
<b>MEAN MAX: TEMP: :</b>	<b>33°C</b>
<b>MEAN MIN: TEMP: :</b>	<b>21°C</b>

## ORGANIZATION CHART OF YANGON CITY DEVELOPMENT COMMITTEE



## HISTORY OF YANGON CITY WATER SUPPLY

- 1842 Dug Well (30)
- 1879 Kandawgyi lake (stop using)
- 1884 Innya lake (stop using)
- 1904 Hlawga Reservoir
- 1940 Gyobyu Reservoir
- 1992 Phugyi Reservoir
- 1995 Ngamoeyeik Reservoir
- 2005 Nyaunghnapin Water treatment Plant (1<sup>ST</sup> Phase)



## DATAS OF FOUR MAIN RESERVOIRS



**Hlawgha Reservoir**

Catchment Area	- 10.5 sq miles
Water Surface Area	- 4.4 sq miles
Effective Capacity	- 48 x10 <sup>6</sup> m <sup>3</sup>
Total Capacity	- 54 x10 <sup>6</sup> m <sup>3</sup>
High Water Level	- 62 Ft
Low Water Level	- 47 Ft

Catchment Area	- 12.7 sq miles
Water Surface Area	- 2.8 sq miles
Effective Capacity	- 38 x10 <sup>6</sup> m <sup>3</sup>
Total Capacity	- 75 x10 <sup>6</sup> m <sup>3</sup>
High Water Level	- 215 Ft
Low Water Level	- 138 Ft



Catchment Area	- 27.27 sq miles
Water Surface Area	- 6.8 sq miles
Effective Capacity	- 90 x10 <sup>6</sup> m <sup>3</sup>
Total Capacity	- 104 x10 <sup>6</sup> m <sup>3</sup>
High Water Level	- 119 Ft
Low Water Level	- 90 Ft

**Phugyi Reservoir**





Catchment Area	- 160 sq miles
Water Surface Area	- 17.19 sq miles
Effective Capacity	- 207 x10 <sup>6</sup> m <sup>3</sup>
Total Capacity	- 222 x10 <sup>6</sup> m <sup>3</sup>
High Water Level	- 107 Ft
Low Water Level	- 81 Ft

## DAILY WATER SUPPLY AMOUNT FOR YANGON CITY

### Daily Water supply amount to Yangon(now)

❖ MGD=Million Gallons Per Day

Gyobyu	27 MGD (122,727 m <sup>3</sup> /day)
Phugyi	54 MGD (245,454 m <sup>3</sup> /day)
Hlawga	14 MGD (63,637 m <sup>3</sup> /day)
Tubewell in YCDC	20 MGD (90,910 m <sup>3</sup> /day)
Ngamoeyeik 1st Phase	45 MGD (204,545 m <sup>3</sup> /day)

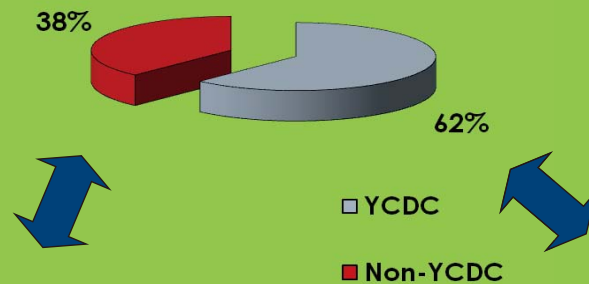
**Total 160 MGD  
(727,273) m<sup>3</sup>/ day**

### After Ngamoeyeik 2nd phase

Gyobyu	27 MGD (122,727 m <sup>3</sup> /day)
Phugyi	54 MGD (245,454 m <sup>3</sup> /day)
Hlawga	14 MGD (63,637 m <sup>3</sup> /day)
Tubewell in YCDC	20 MGD (90,910 m <sup>3</sup> /day)
<b>Ngamoeyeik 1st + 2nd Phase</b>	<b>90 MGD (409,090 m<sup>3</sup>/day)</b>

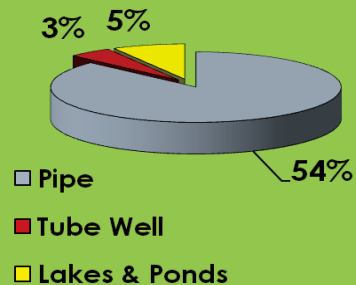
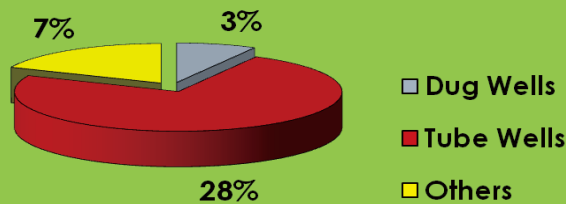
**Total 205 MGD  
(931,818)m<sup>3</sup>/day**

## TYPES OF WATER SUPPLY

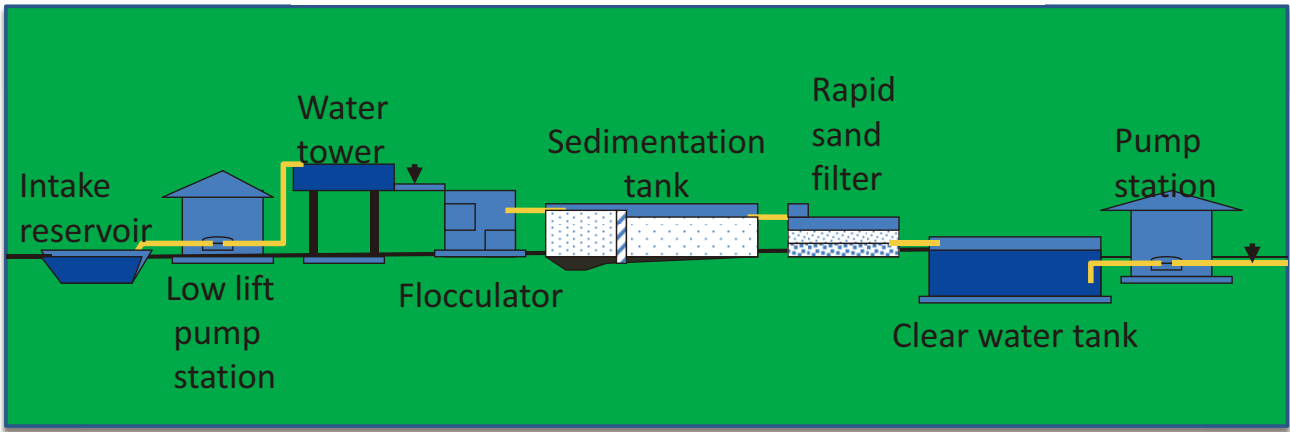


Type of YCDC Supplied Water

Type of non-YCDC Supplied Water



## NYAUNGHNAPIN WATER TREATMENT PLANT



PROFILE OF WATER TREATMENT PLANT



SEDIMENTATION TANKS OF WATER TREATMENT PLANT



POWER SUPPLY STATION FOR W.T.P

## MAIN PUMPING STATIONS IN YANGON CITY WATER SUPPLY SYSTEM

Pyawbwesu Pumping Station



Phugyi Pumping Station



Yanshin Pumping Station



Yegu Pumping Station



## URGENT REPAIRING WORKS FOR TRANSMISSION PIPE LEAKAGES



EXCUVATION FOR PIPE REPAIRING



INSTALLATION OF COLLAR



WELDING AND PACKING WITH LEAD AND JUTE



CONCRETE ANCHOR BLOCK

## CURRENT SOLUTION FOR WATER DEMANDS IN SUBURBAN AREA



SMALL PUMP HOUSE



SMALL TUBE WELL



REHABILITATION OF LAKE

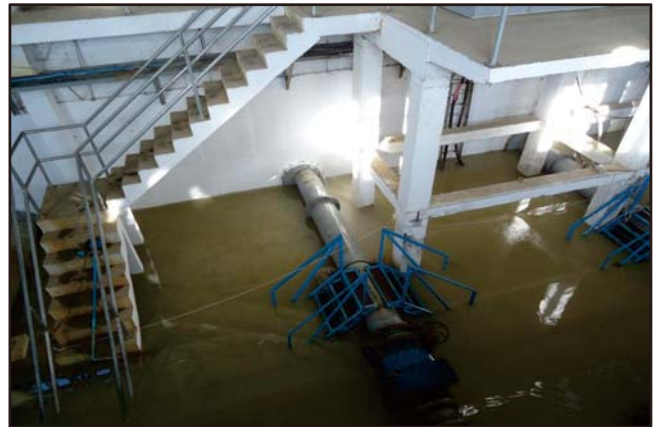


WATER DISTRIBUTED BY WATER TANKER

## RENOVATION OF OLD AGED SECONDARY DISTRIBUTION PIPES



## URGENT SITUATION IN NEW WATER TREATMENT PLANT (NYAUNG HNAPIN)





### CHART OF AVAILABLE WATER SUPPLY STATUS FOR FUTURE

Year	Population (million)	Gallons/Capital/ Day	Average Daily Demand ( MG/m <sup>3</sup> )	UfW (%)	Average daily Consumption ( MG/m <sup>3</sup> )	Average Daily Supply (MG/m <sup>3</sup> )	Coverage Ratio (%)
2010	5.11	25	128/581,818	40	79/359,091	160/727,273	62
2020	7.15	35	250/1136,364	35	192/872,727	295/1340,909	77
2030	8.91	40	356/1618,182	25	323/1468,182	430/1954,545	90
2040	11.11	40	499/2268,182	20	416/1890,909	520/2363,636	84

❖ JICA is formulating the master plan of water supply for 2040.

### HLAING RIVER WATER PROJECT

PLACE - MHAWBI TOWNSHIP  
 CAPACITY - 90 MILLION GALLON  
 DISTANCE TO BE CONNECTED - 19 MILES



## KOKKOWA WATER PROJECT

PLACE - HTANTABIN TOWNSHIP  
CAPACITY - 90 MILLION GALLON  
DISTANCE TO BE CONNECTED - 18 MILES



## TOE RIVER WATER PROJECT

PLACE - TONTAE TOWNSHIP  
CAPACITY - 90 MILLION GALLON  
DISTANCE TO BE CONNECTED - 28 MILES



## WATER QUALITY TEST RESULTS FOR KOKKOWA & TOE RIVER

<b>WATER QUALITY TEST RESULTS FORM</b>		
<b>Client</b> : ကုမ္ပဏီ <b>KOKKOWA RIVER</b>		
<b>Address</b> : _____		
<b>Nature of Water</b> : မြေရေ		
<b>Location</b> : ကုမ္ပဏီရိပ်တံတိုင်း		
<b>Date and Time of collection</b> : 8.12.2011		
<b>Date and Time of arrival at Laboratory</b> : 9.12.2011		
<b>Date and Time of Commencing examination</b> : 10.12.2011		
<b>Results of Water Analysis</b>		
<b>WHO Guideline</b>		
Phosphate	Nil mg/l	
pH	8.2	6.5 - 8.5
Colour (True)	60 TCU	15 TCU
Turbidity	116 NTU	5 NTU
Conductivity	207 micro S/cm	500 $\mu$ S/cm
Total Hardness	90 mg/l as CaCO <sub>3</sub>	500 mg/l as CaCO <sub>3</sub>
Total Alkalinity	104 mg/l as CaCO <sub>3</sub>	
Phenolphthalein Alkalinity	Nil mg/l as CaCO <sub>3</sub>	
Calcium Hardness	58 mg/l as CaCO <sub>3</sub>	
Iron	2.86 mg/l	0.3 mg/l
Magnesium Hardness	32 mg/l as CaCO <sub>3</sub>	500 $\mu$ S/cm
Manganese	Nil mg/l	0.05 mg/l
Carbonate (CaCO <sub>3</sub> )	Nil mg/l as CaCO <sub>3</sub>	
Chloride (as Cl)	6 mg/l	250 mg/l
Sodium chloride (as NaCl)	10 mg/l	
Bicarbonate (HCO <sub>3</sub> )	104 mg/l as CaCO <sub>3</sub>	
Sulphate (as SO <sub>4</sub> )	18 mg/l	200 mg/l
Total Solids	212 mg/l	1500 mg/l
Suspended Solids	113 mg/l	
Dissolved Solids	99 mg/l	1000 mg/l
Phenolphthalein Acidity	1 mg/l	
Methyl Orange Acidity	Nil mg/l	
Salinity	0.1 ppt	
<b>Tested by</b>	<b>Approved by</b>	
Signature: <u>Hein</u>	Signature: <u>[Signature]</u>	
Name: <u>Zaw Hein On</u> B.Sc (Chemistry) (a division of WEG Limited) Chemist ISO TECH Laboratory	Name: <u>Win Aung</u> B.Sc (Civil) 1980, M.MPS Technical Officer ISO TECH Laboratory	

THE GOVERNMENT OF THE UNION OF MYANMAR  
 MINISTRY OF HEALTH  
 DEPARTMENT OF HEALTH  
 NATIONAL HEALTH LABORATORY  
 35, Hmaw Kun Daik Street, Yangon

**CLINICAL PATHOLOGY DIVISION**  
**WATER CHEMICAL ANALYSIS REPORT**

Name : ကုမ္ပဏီ Lab. Code No. : 1009 **TOE RIVER**  
 Date of Receipt : 9-10-12 Date of Report : 22-10-12  
 Reg. No : 20 Reg. Vol. No : 03  
 Address : \_\_\_\_\_  
 Tap water / Tube well / Shallow well / Others

Test	Unit	Result	Maximum Permissible limit
Colour (TCU)	Pt-Co	80.0	20
Taste & Odour			Not-Offensive
Turbidity	NTU	100.0	5
Total dissolved solvents (TDS)	mg/l	292.0	1000
Aluminum	mg/l		0.2
Chloride	mg/l	9.0	250
Copper	mg/l	0.0	2.00
Total hardness (as Ca CO <sub>3</sub> )	mg/l	65.0	500
Iron	mg/l	9.0	1.00
Manganese	mg/l		0.30
pH		7.6	6.5-8.5
Sodium	mg/l		200
Sulphate	mg/l	28.8	400
Zinc	mg/l	4.0	5
Calcium	mg/l	18.0	200
Magnesium	mg/l	5.6	150
Electrical conductivity	$\mu$ S/cm	59.5	1500
Arsenic	ppm(mg/l)		≤ 0.05

Colour, turbidity and total iron are more than maximum permissible limit.

Dr. Swe Setik  
 Head of Clinical Pathology  
 National Health Laboratory  
 Yangon

Technician

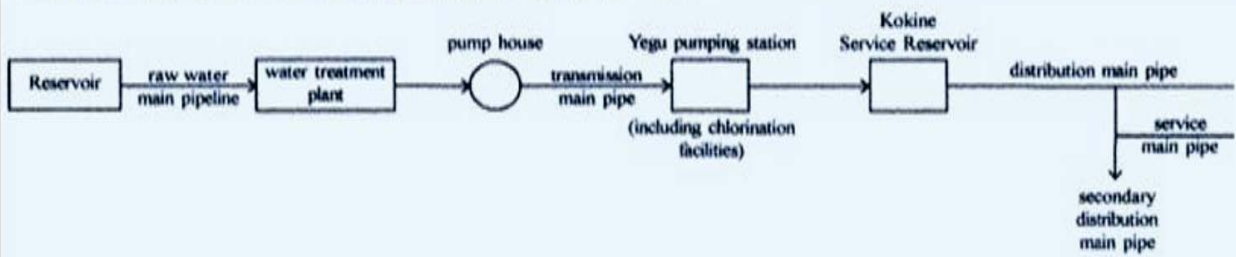
### SEIK KANTAR WATER PROJECT

**PLACE** - DAGON SEIKAN TOWNSHIP  
**CAPACITY** - 30 MILLION GALLON  
**DISTANCE TO BE CONNECTED** - 7.16 MILES

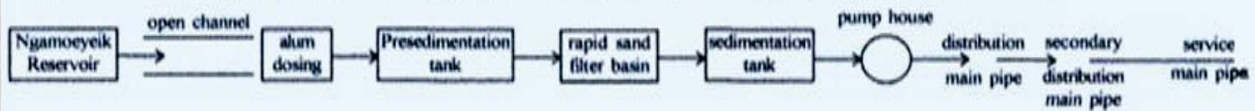


## FLOW CHARTS APPLYING IN WATER DISTRIBUTION SYSTEM IN Y.C.D.C

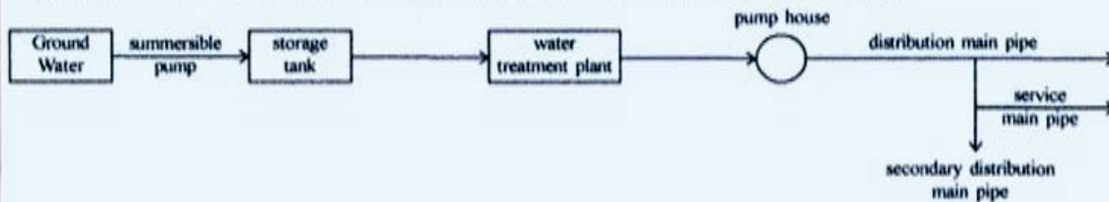
2 (a) Surface Flow Chart Of Water Supply System (Only Gyobyu Reservoir)



(b) Surface Water - Flow Chart Of Water Supply System (Athaya Purification Plant, Ngamoeyek Reservoir Water)



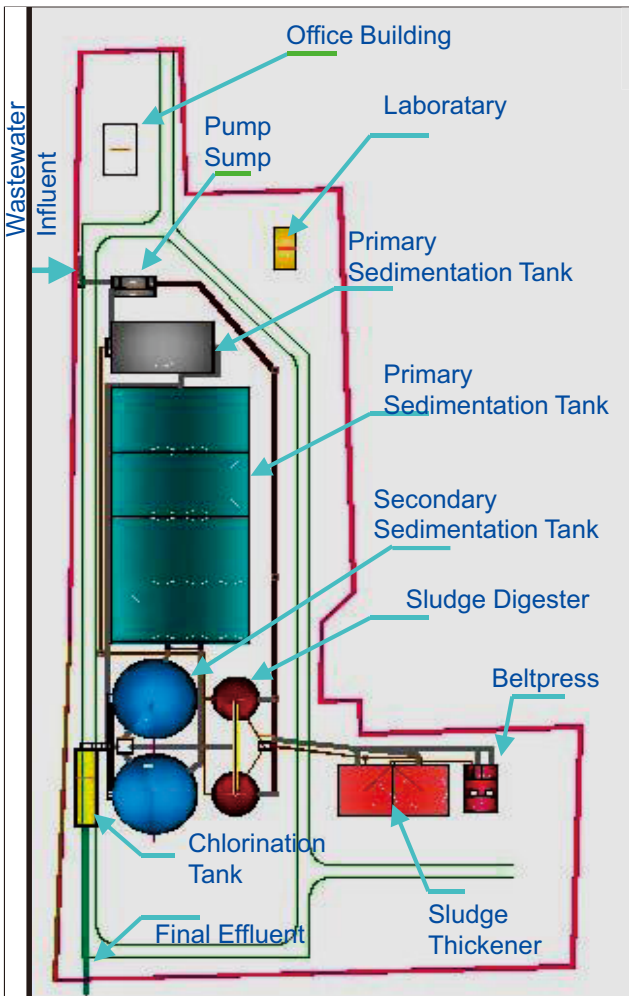
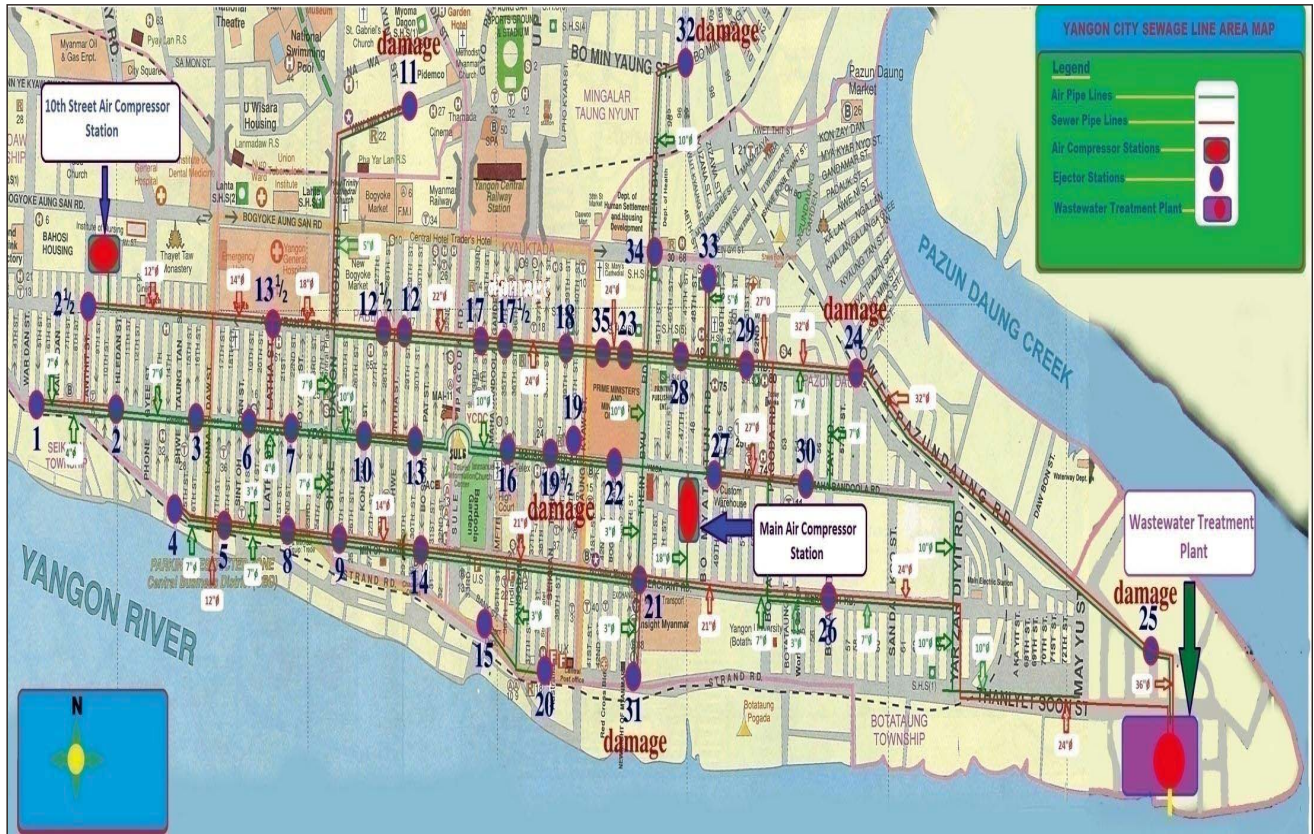
(c) Ground Water - Flow Chart Of Water Supply System (Only Ward 107, Dagon Myothit / South)



## EXISTING SEWERAGE SYSTEM

- ❑ Sanitation and sewerage for the Yangon City area is main responsibility of Engineering Department (Water and Sanitation) under Yangon City Development Committee.
- ❑ Existing system, conventional sewerage, consists of :-
  - △ Gravity sewers
  - △ 39 pneumatic ejector stations
  - △ Air distribution main
  - △ Two sewage force mains and outlet
- ❑ At present Existing Sewerage System covers only 4.33 km<sup>2</sup> area of CBD and serves around 350,000 peoples, 7% of the city population.
- ❑ Daily Volume of sewage disposal - 111840 gal.(508 m<sup>3</sup>)
- ❑ Major Issues in Existing Sewerage System:-
  - △ To establish proper treatment process for the existing sewerage system.
  - △ To expand and set up the existing sewerage system.
  - △ To improve urban sanitation environment in Yangon City Area

## MAP OF EXISTING SEWERAGE SYSTEM IN DOWNTOWN AREA



## Establishment of Sewage Treatment Plant

### Programme for Sewage Treatment Project

- Detail Design
- Implementation
- Installation
- Commissioning
- Installation
- Training

### Design Criteria:

- **Area of Plant** - 5.56 acres
- **Design population** - 300,000
- **Daily wastewater discharge-** - 14775 m<sup>3</sup>/day
- **BOD influent** - 600mg / l
- **BOD effluent** - 60 mg / l
- **Suspended solid influent-** 700 mg / l
- **Suspended solid effluent-** 40 mg / l

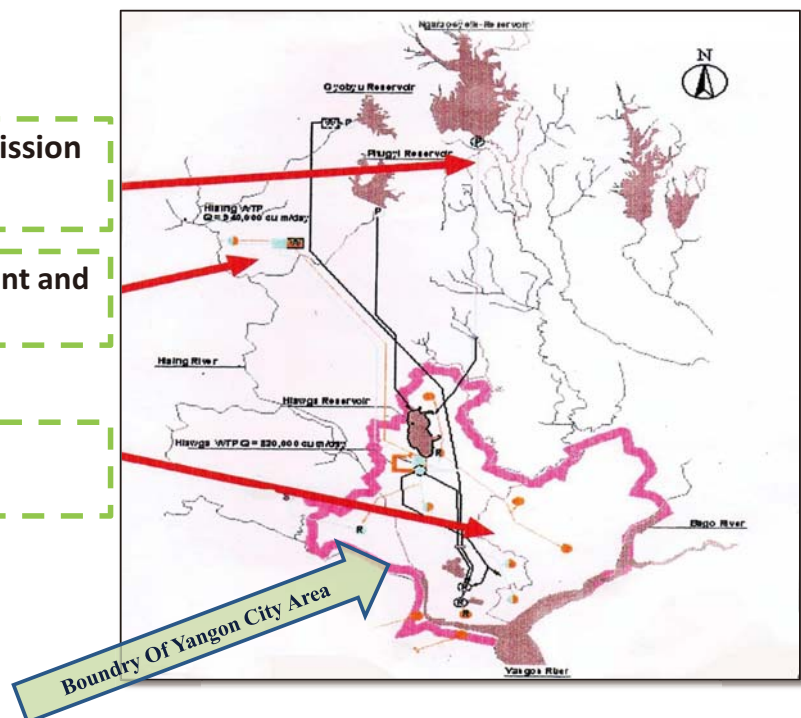
## Layout Plan of Sewage Treatment Plant

## CURRENT ISSUES AND MAJOR CHALLENGES

- Aged pipe (>100 year)in downtown area caused the degradation of water quality.
- Saline water intrusion occurred along Yangon and Bago river bank.
- NRW rate is high (40 %-50%)
- Aging facilities in water supply and sewerage system

## PLANS FOR THE FUTURE WATER SUPPLY

1. Ngamoeyeik Reservoir Transmission pipelines
2. Hlaing river water treatment plant and transmission pipelines
3. Water Distribution Network modernization



**NEW PROJECTS IN WATER SUPPLY AND SEWERAGE SECTORS  
IN YANGON CITY**

- **River Water Treatment Plant Construction**
- **Transmission Pipe Laying Project**
- **Installation of Disinfection Facilities**
- **Distribution Network Transformation and NRW Reduction**
- **Waste Water Treatment Plant Construction**
- **Renovation of Existing Sewer Main**
- **Extension of Sewerage Network**

**Thank you very much.**



# Sewerage System Solutions in Osaka City

— Contribution to Global Water and Environment Management —

Hiroshi SHIROI  
Director for Water and Environment  
Public Works Bureau, City of Osaka

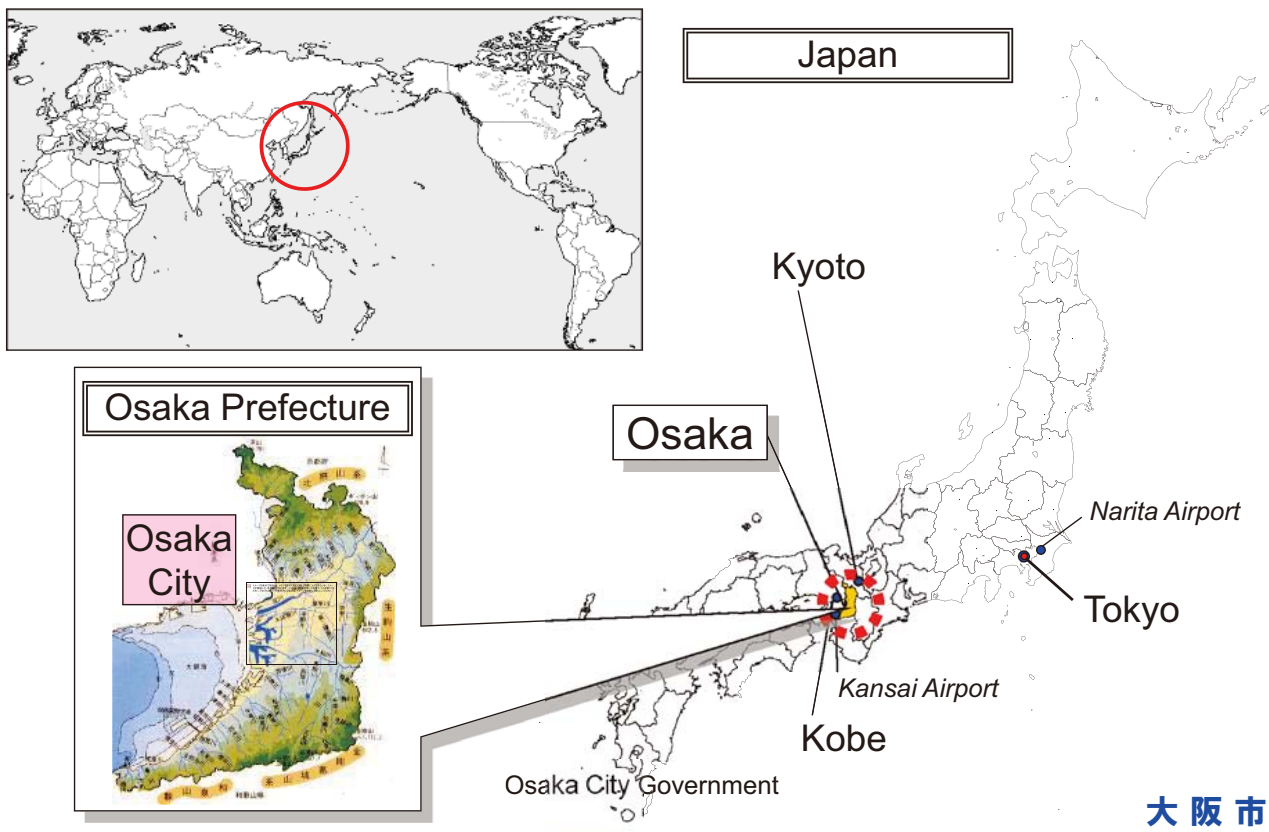
## Contents

1. Brief Outline of Sewerage System in Osaka City
2. Development and Upgrade of Sewerage System
3. Current and Future Activities to offer Solutions
  - 3.1. Cooperation for Capacity Development
  - 3.2. Promotion of “Technology Showcase”
  - 3.3. Osaka Water & Environment Solutions Association (OWESA)



# 1. Brief Outline of Sewerage System in Osaka City

## Location of Osaka City



- Regional sewerage area unit
- Sewage Treatment Plant
- Main Pumping station
- Maishima Sludge Center
- Administrative boundaries

## Sewage Treatment Plant in Osaka City



## Statistics of Osaka City Sewerage System

(As of March 31, 2011)

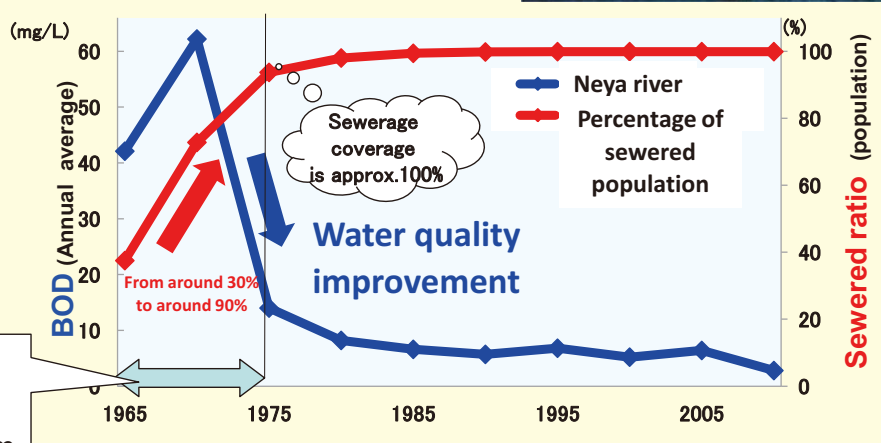
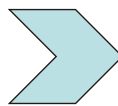
Total population (persons)	2,666,371
Total daytime population (persons)	3,581,675
Served Area (km <sup>2</sup> )	190.5
Proportion of population served by sewerage (%)	99.9
Total sewer length (km)	4,877
Number of sewage treatment plants (stations)	12
Sewage treatment capacity (m <sup>3</sup> /day)	2,844,000
Average volume of wastewater treated (m <sup>3</sup> /day)	1,761,027
Number of pumping stations (stations)	57
Drainage capacity (m <sup>3</sup> /sec.)	1,330

## 2. Development and Upgrade of Sewerage System

to cope with

Rapid Economic Growth and Urbanization

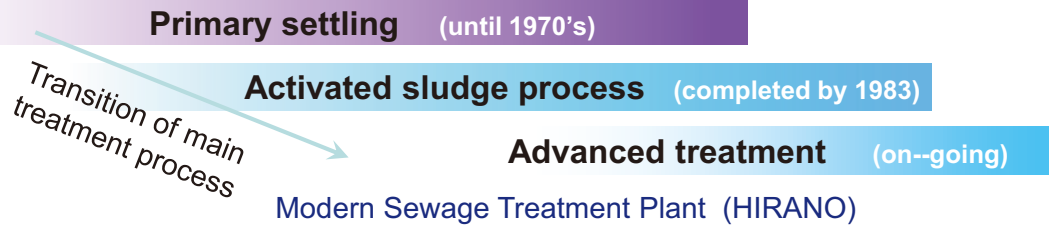
## Environmental Restoration by Sewerage System



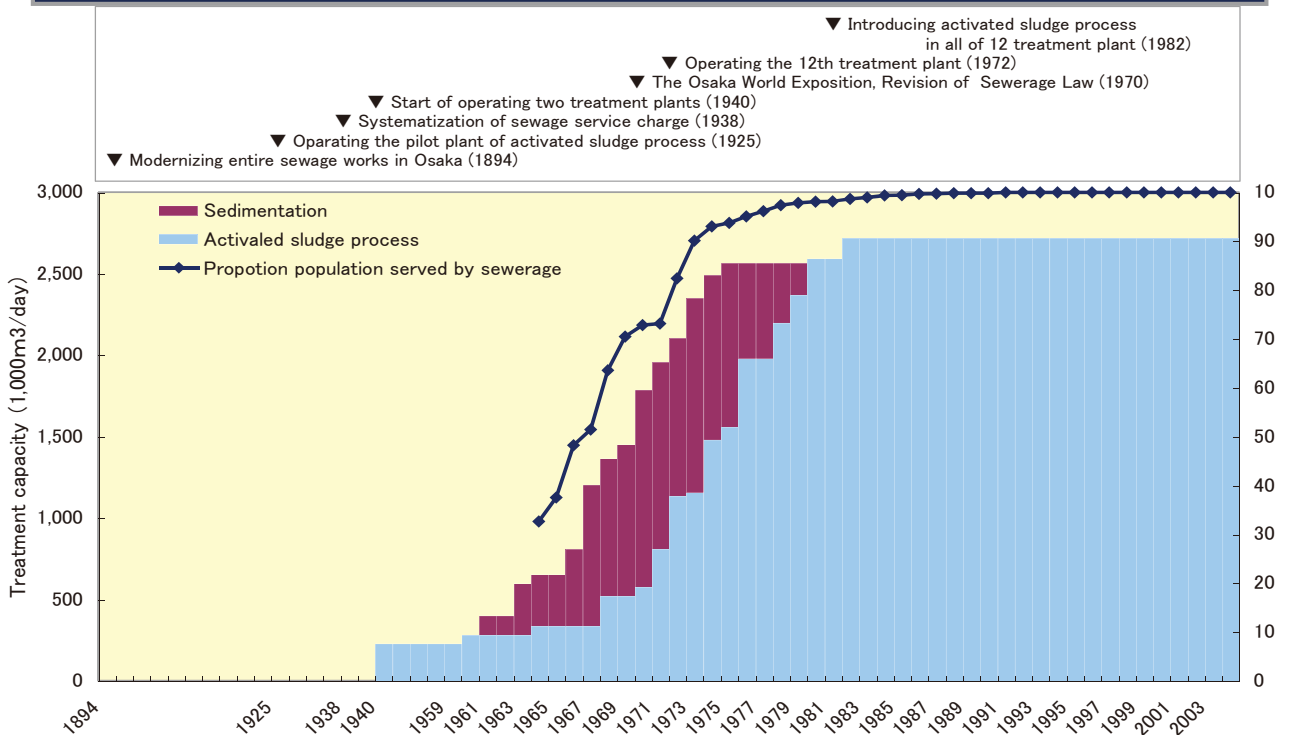
10years of rapid development of Sewerage system

# Osaka's Basic Policy of Sewerage Development

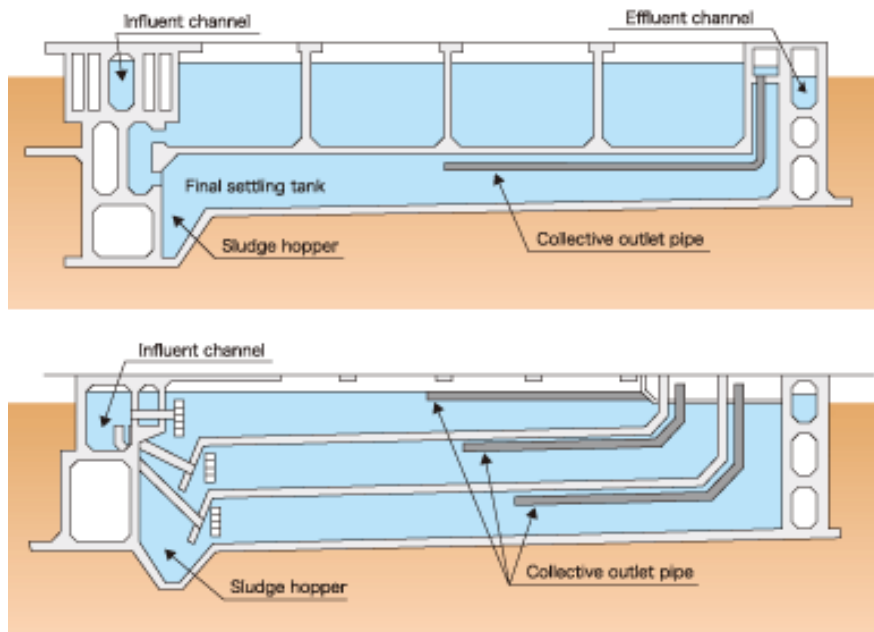
Stepwise upgrading of treatment in accord with the economic development and the budget constraints



## Development Process of Sewerage System in Osaka City



## Examples of Multi-story Wastewater Treatment Facilities



Area required for wastewater treatment ( $\text{m}^2/\text{m}^3$ )

Japanese Average :  $0.8 (\text{m}^2/\text{m}^3)$       Osaka City :  $0.27 (\text{m}^2/\text{m}^3)$

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### 3. Current and Future Activities to offer Solutions

- 3.1. Cooperation for Capacity Development
- 3.2. Promotion of “Technology Showcase”
- 3.3. Osaka Water & Environment Solutions Association (OWESA)

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## 3.1. Cooperation for Capacity Development



- Sewerage O&M and Urban Drainage (FY1991~)  
(selected 10-14 countries)
- Sewerage Management for Vietnam
- Counterpart Training for “Capacity Development on  
Sewerage Management (Phase 2) for Ho Chi Minh City

<Training Items>

Finance, Planning, Design, O&M, Asset Management,  
Public Relations, etc

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## 3.2. Promotion of “Technology Showcase”

R&D and PR activity  
by cooperation between the public and private sectors

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# Research and Development for Technologies Portfolio

## ● Energy / Resource Recovery

◆ Digestion Gas power generation



Tsumori STP

◆ Sewage sludge fuel production



Hirano STP

◆ Photovoltaic Power generation



Jyuhachizyo STP

◆ Recycling of molten slug



Maishima Sludge center / Hirano STP

◆ Phosphorous recovery



Ono STP

## ● Variety of Sewerage Technologies

◆ Flood Control



Stormwater Reservoir



Rainfall radar (X-MP)

◆ Sludge Treatment



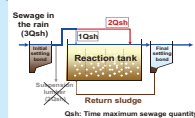
Centralized Sludge melting treatment

◆ Sludge digestion

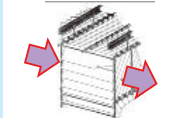


High Concentration thermophilic digestion

◆ CSO Control



3W treatment Process



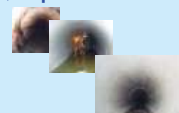
Inclined Plate Settler

◆ Management system



Sewage Pipe management information system

◆ Pipe Rehabilitation



Pipe Renovation

# OSSH (Osaka Sewerage Solutions Hub) as the Center for PR

## ■ Information and dissemination

<Sewerage Science Museum>



Heat exchange system using raw sewage



Exhibition for dissemination



Seminar Room

In 1995, Sewerage Science Museum was established in commemoration of the 100<sup>th</sup> anniversary of the modern sewerage system in Osaka city. It offers lots of touchable exhibits, mini theaters, games, and ride, etc. They provide visitors with an in-depth look at how sewage is treated, the history of sewerage system in the city, as well as information on Global environment conservation.

## ■ R & D of sewerage technology

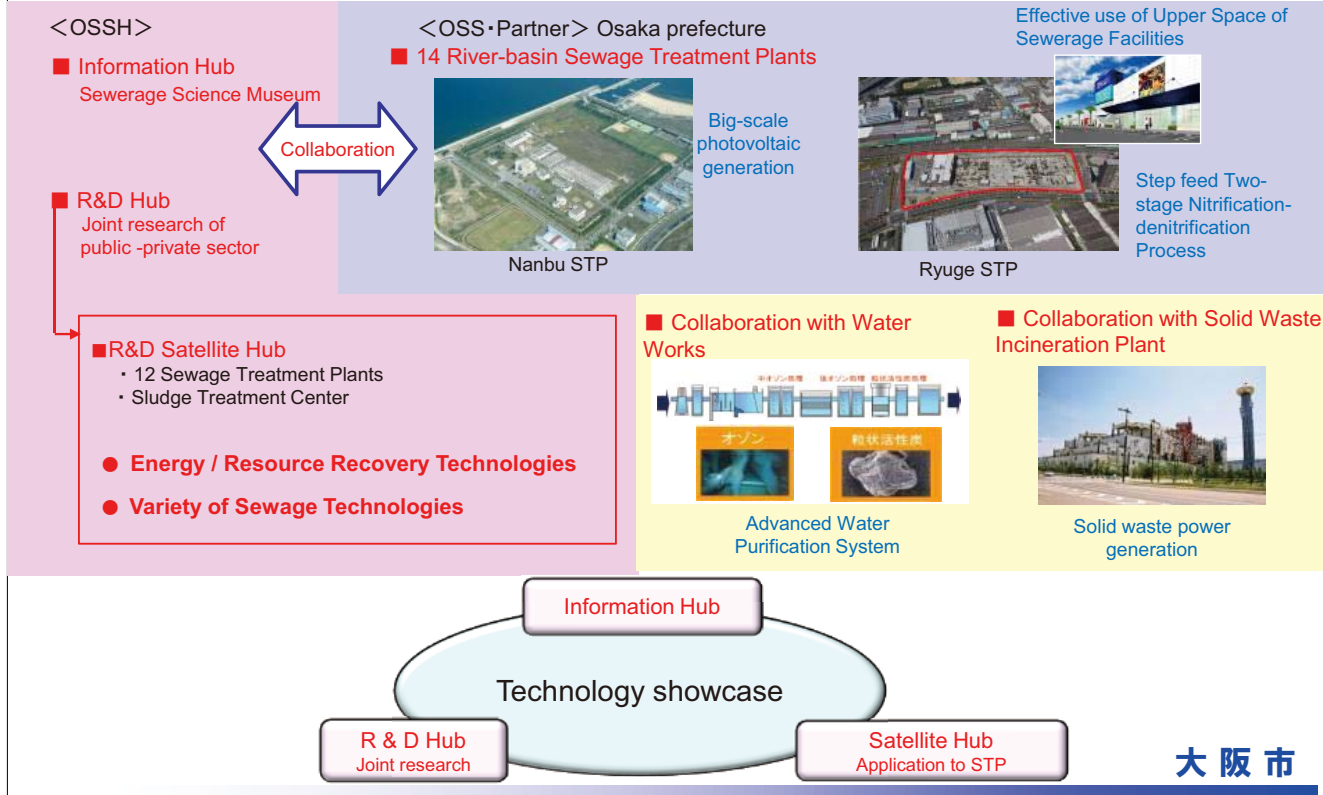
<Technology development Center>



Nakahama STP

Technology Development Center aims to put emerging sewerage technologies into practice as well as human resource development. It provide available space and resource for research group comprising academic, business and government

## Cooperative Framework of OSSH (Osaka Sewerage Solution Partners)

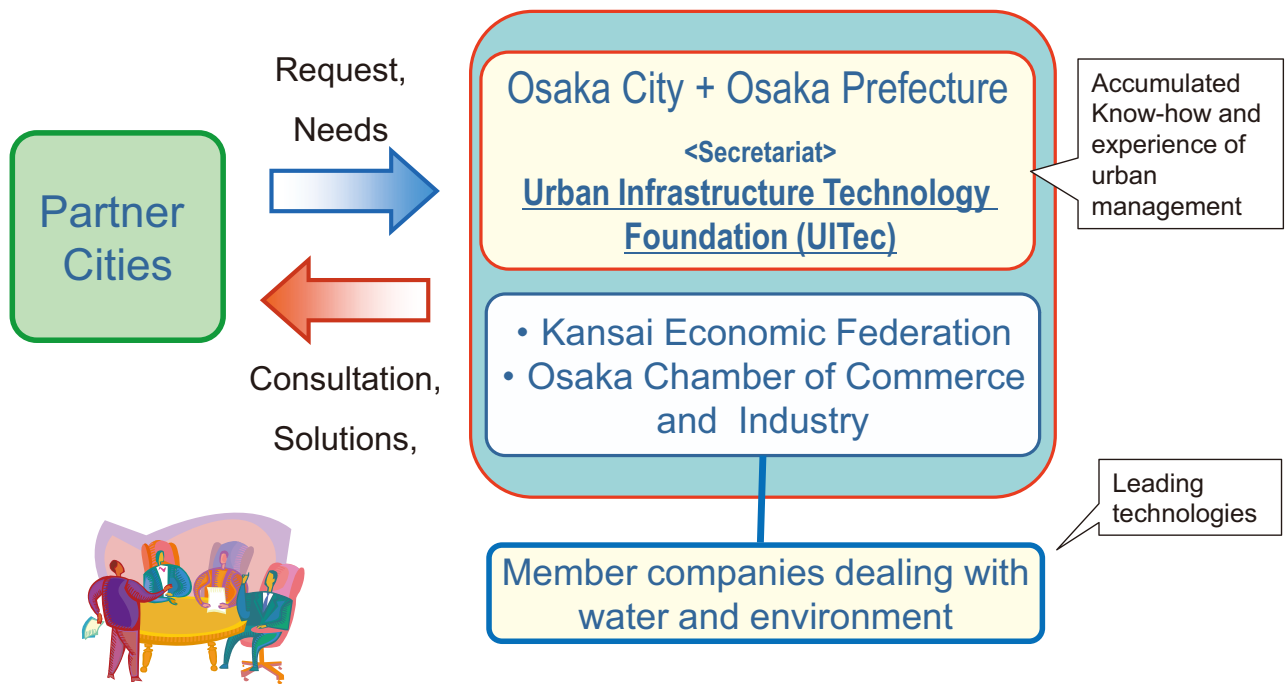


## 3.3. Osaka Water & Environment Solutions Association (OWESA)



# Osaka Water & Environment Solutions Association

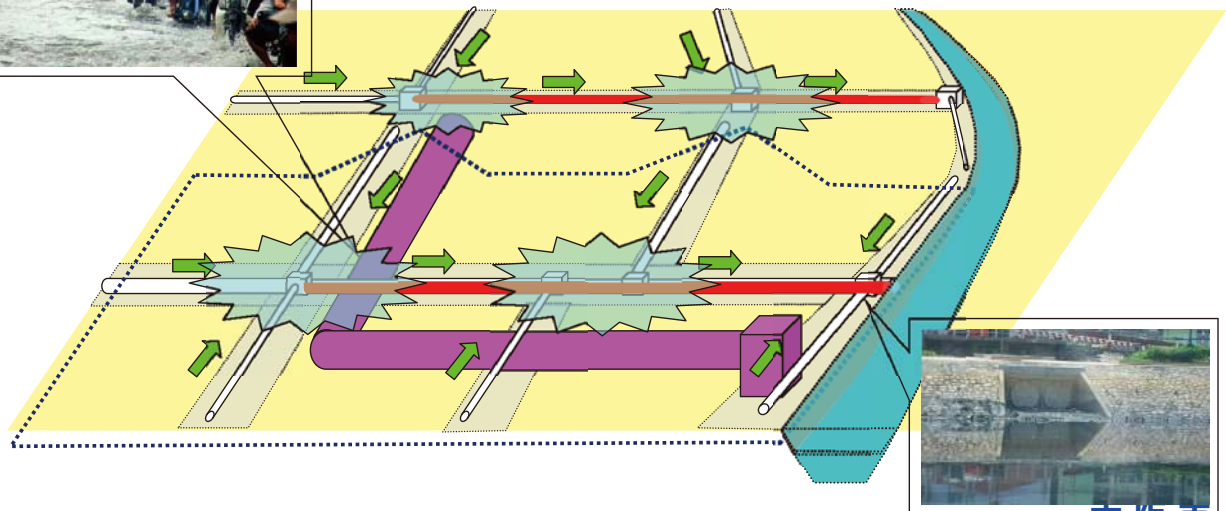
**OWESA** Established in April 2011



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## Project Study of Flood Control (Ho Chi Minh City)

0. Confirmation of Flood Damages / Selection of Countermeasure Sites
1. Confirmation and Evaluation of Existing Facility's Capacity by Basic Research
2. Study of Allocation of Supplemental Facilities
3. Verification of the Advantage of Supplemental Facilities by Simulation (focusing on the effect of tide level)



大阪市

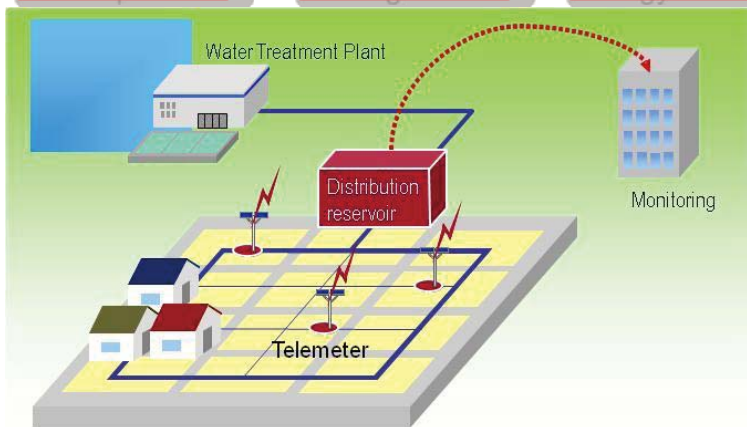
# Project Study of Water Supply (Ho Chi Minh City)

Proposal of water distribution control system including the construction of water distribution reservoir

Improvement of water pressure

Promotion of leakage control

Improvement of energy efficiency



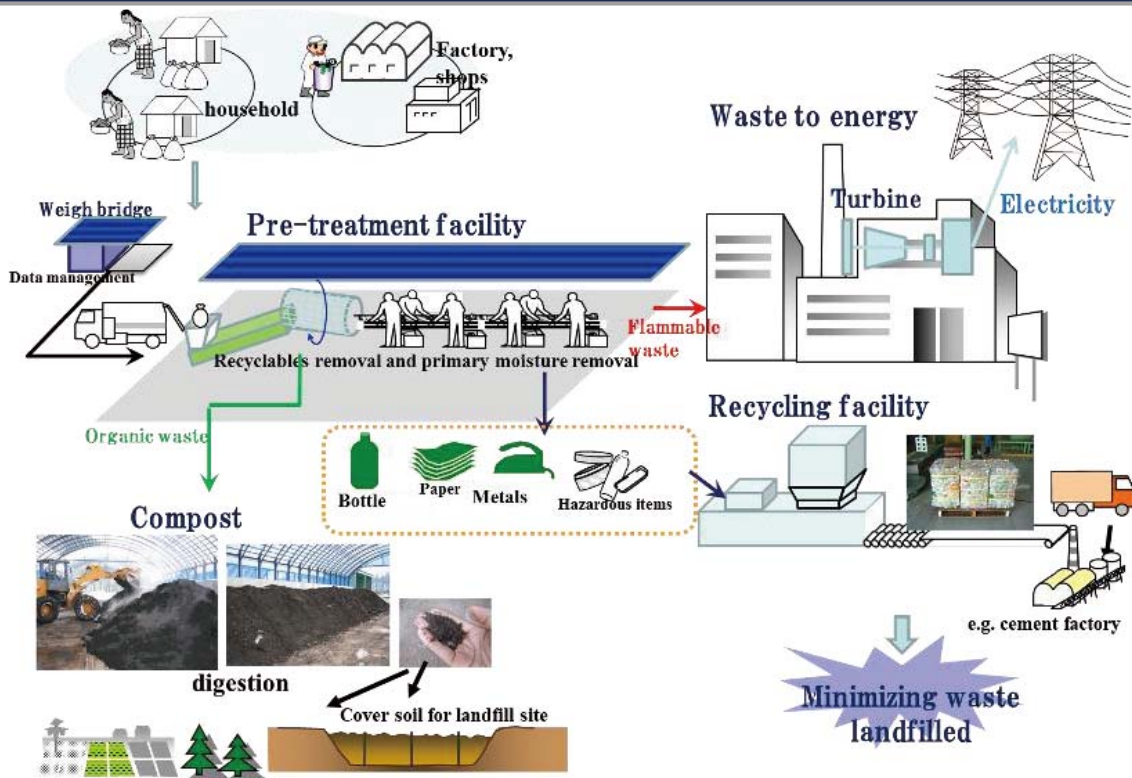
Water pressure check



Meeting with SAWACO

大阪市

# Project Study of Waste Power Generation (Ho Chi Minh City)



大阪市

## Study on Sewerage and Drainage System (Yangon City)

Meeting between Mayor of Yangon City and the Governor of Osaka Prefecture



Meeting between Water and Sanitation Dept. of YCDC and OWESA Team



大阪市

OWESA will surely provide the total solution for your challenges





# For the Transformation into Modern Water Service in Yangon City

**TOYO ENGINEERING CORPORATION**

February 1, 2013  
Tokyo, Japan

## Contents of Presentation

1. Toyo Engineering Corporation
2. Global EPC Operation by Toyo Engineering Group
3. Major Business Domains
4. Study of Water and Waste Water in Yangon city
5. Solution with Japanese Public Water Companies
6. Physical improvement needs “Enabling Activities”
7. Joint Business approach enables “Share the Goal”
8. For Transformation into Modern Water Service

# Toyo Engineering Corporation



As of December 2012

## - Client Value Enhancement -

<<http://www.toyo-eng.co.jp/>>

•Established	: May 1, 1961
•Listed	: The first section of Tokyo Stock Exchange
•Location/Address	
<Head Office>	: 2-8-1 Akanehama Narashino-shi, Chiba 275-0024, Japan
[ TEL ]	: +81-47-451-1111
[ FAX ]	: +81-47-454-1800
<Tokyo Head Office>	: Shin-Marunouchi Building 11 <sup>th</sup> Floor, 5-1 Marunouchi 1-chome, Chiyoda-ku, Tokyo 100-6511, Japan
[ TEL ]	: +81-3-6268-6611
[ FAX ]	: +81-3-3214-6011
•Net Sales (Y2011)	: US\$1.92 Billion
•Backlog of Contracts (Y2011)	: US\$4.37 Billion
•Number of Employees	: 2,339
	<b>Global 10,080</b> (including 818 Domestic Groups)



President and CEO  
Katsumoto Ishibashi



Head Office:  
Chiba, Japan

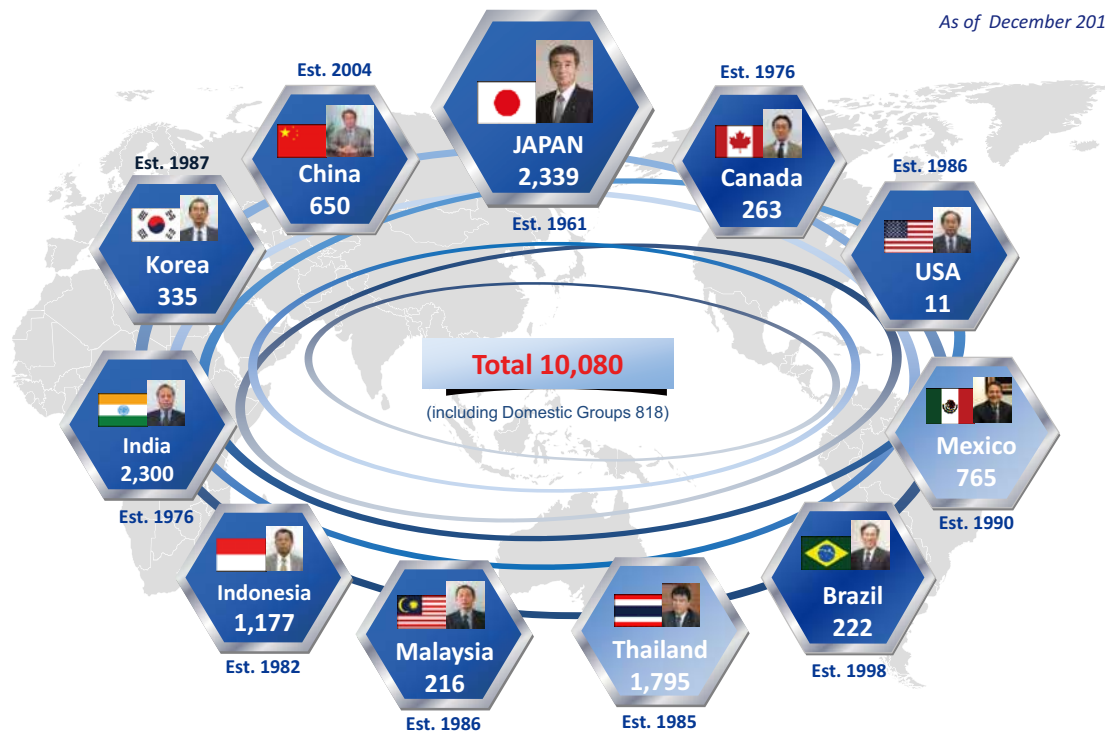


Tokyo Head Office:  
Tokyo, Japan

# Global EPC Operation by Toyo Engineering Group



As of December 2012



# Major Business Domains



Process Plants	Non-Process Plants	
<ul style="list-style-type: none"> <li>• Oil &amp; Gas Exploration &amp; Production</li> <li>• FPSO/Offshore Platform</li> <li>• Oil &amp; Gas Treatment</li> <li>• Gas Processing</li> <li>• LNG</li> <li>• Gas-to-Liquid</li> <li>• Refinery</li> <li>• Aromatics</li> <li>• Petrochemicals</li> <li>• Polymers</li> <li>• Fertilizers &amp; Chemicals</li> </ul>	<ul style="list-style-type: none"> <li>• Power                             <ul style="list-style-type: none"> <li>• Gas Firing</li> <li>• Coal Firing</li> <li>• IGCC</li> </ul> </li> <li>• Transportation System                             <ul style="list-style-type: none"> <li>• Rail Systems</li> <li>• Monorail</li> <li>• Automatic People Mover (APM)</li> </ul> </li> <li>• Infrastructure                             <ul style="list-style-type: none"> <li>• Airport System</li> </ul> </li> <li>• Pipeline</li> <li>• <b>Water</b> <ul style="list-style-type: none"> <li>• <u>Raw Water Treatment</u></li> <li>• <u>Desalination</u></li> <li>• <u>Waste Water Treatment</u></li> </ul> </li> <li>• Utility Facilities</li> </ul>	<ul style="list-style-type: none"> <li>• Industrial Systems                             <ul style="list-style-type: none"> <li>• Pharmaceuticals &amp; Fine Chemicals</li> <li>• Food Processing</li> <li>• Supply Chain &amp; Logistics Solution</li> <li>• Microelectronics &amp; Semiconductor</li> <li>• Mechatronics</li> <li>• Business Consulting and Solution</li> </ul> </li> <li>• Information Technology                             <ul style="list-style-type: none"> <li>• ERP Solution Systems (SAP, MC Frame)</li> <li>• Manufacturing &amp; Logistics Execution Systems</li> <li>• Network &amp; Multimedia Systems</li> </ul> </li> <li>• Environment                             <ul style="list-style-type: none"> <li>• Water and Off Gas Treatment</li> <li>• Waste Disposal</li> <li>• CDM Projects</li> </ul> </li> </ul>

# Study of Water and Waste Water in Yangon city



We have executed “Study on the improvement of water supply and waste water treatment in Yangon, the republic of the union of Myanmar” sponsored by METI Japan, from March to November 2012 and resulted as follows.

1. Japan Study Team investigated the current situation of the water supply and sewerage system and their operation in Yangon city through physical survey and interview with YCDC/ Water and Sanitation Department.
2. Extracted the required Projects to improve the problematic situations in water and sewerage facilities in Yangon city, prioritized and selected the most urgently required 5 Projects.
3. Investigated the cause of existing problems, studied the technical solutions, and defined the Projects' Scope for the practical execution and budgeting.
4. Established the close relationship with YCDC for further improvement of water and sewerage infrastructure. (leading to the training program on water distribution management and NRW reduction for YCDC, executed in Japan in December 2012 by HIDA/METI)

# Solution with Japanese Public Water Companies



## Issues in Water Supply Services

- ☐ High rate NRW (UFW)
- ☐ Low pressure of supply water
- ☐ Rapid increase of the population
- ☐ Water demand increase by modernization
- ☐ Raw water quality Declining

## Issues in Water Business Operation

- ☐ Improvement of income
  - Improvement of work efficiency
  - Effective investment / Asset Management
- ☐ Organization enhancement
  - Long term human resource development
- ☐ Finance Arrangement

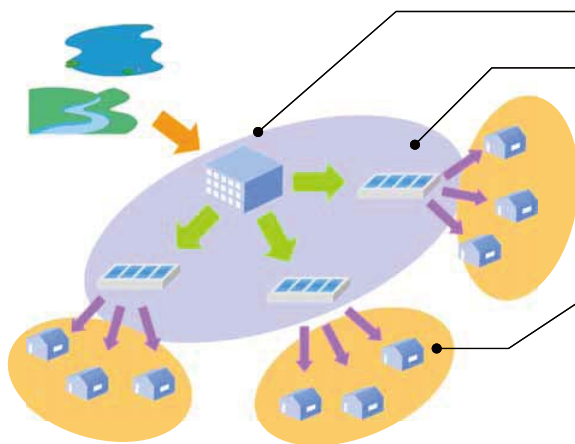
**Toyo provides the comprehensive solutions with Japanese Public Water Companies**

- Not only WTP but also Distribution Network planning and improvement
- Not only NRW Reduction but also Distribution optimization and control
- Not only technical but also commercial enhancement through Joint Business establishment
- Not the limited duration project but the long term business relationship

# Physical improvement needs “Enabling Activities”



## Physical Improvement / Management Work



Efficient Management of WTP

Efficient Distribution in Trunk Mains

- ☐ WTP & Reservoir Management
- ☐ Distribution Reservoir Management
- ☐ Main line Management
- ☐ Distribution Control etc.

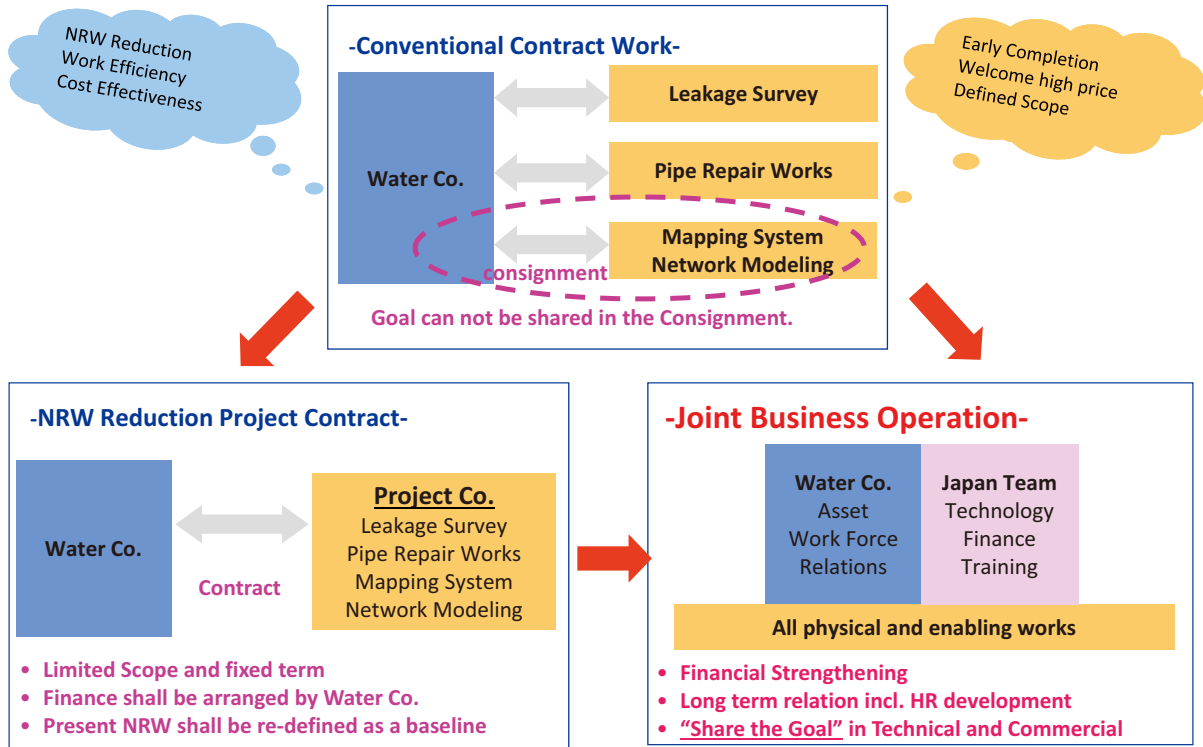
NRW reduction in Service lines

- ☐ Supply Service Management
- ☐ Leakage survey, Repair
- ☐ Network planning etc.

## Enabling Activities (Program Management)

Network Planning & Modeling, Data Acquisition and Analysis, Asset Management, Financial enhancement, Long term HR development program, etc.

# Joint Business approach enables “Share the Goal”



# For Transformation into Modern Water Service



## The Way Forward

Although YCDC/ Water Sanitation would be capable to execute the projects through the operation of historic water facilities, following points should be strengthened.

1. Experience of design and operate the modern WTP.
2. Water Network Management / Water distribution control
3. Water Quality control
4. Computerization, field data acquisition and analysis, Customer data management, etc.
5. Modern design organization with engineering standardization
6. Labor safety management

Yangon’s water service facilities are entering the stage of transformation into a modern water service.

Project should be executed with sufficient Technical Guidance, Project Management guidance for execution, adequate safety education and instruction from Japan team, through the joint organization with Japan.



**Thank you for your attention.**



**TOYO ENGINEERING CORPORATION**

# Water Business and Contribution in Overseas Countries by the Federation of Japan Water Industries.Inc

01/02/2013

**4<sup>th</sup> Meeting of the PPP Council for Overseas Water Infrastructure  
February 1<sup>th</sup>, 2013**

Dr. Hiromichi Sakamoto (Director General )  
Mr. Tatsuo Morimoto  
Federation of Japan Water Industries.Inc.

## The introduction of The Federation of Japan Water Industries.Inc Purpose

- Make extensive adjustment of waterworks, industrial water supply and sewerage industries ;
- Establish necessary regulations and promote their improved measures ;
- Request, advise and cooperate on policies with the Diet and other government organs and municipalities ;
- Promote development and export of the industries concerned ;

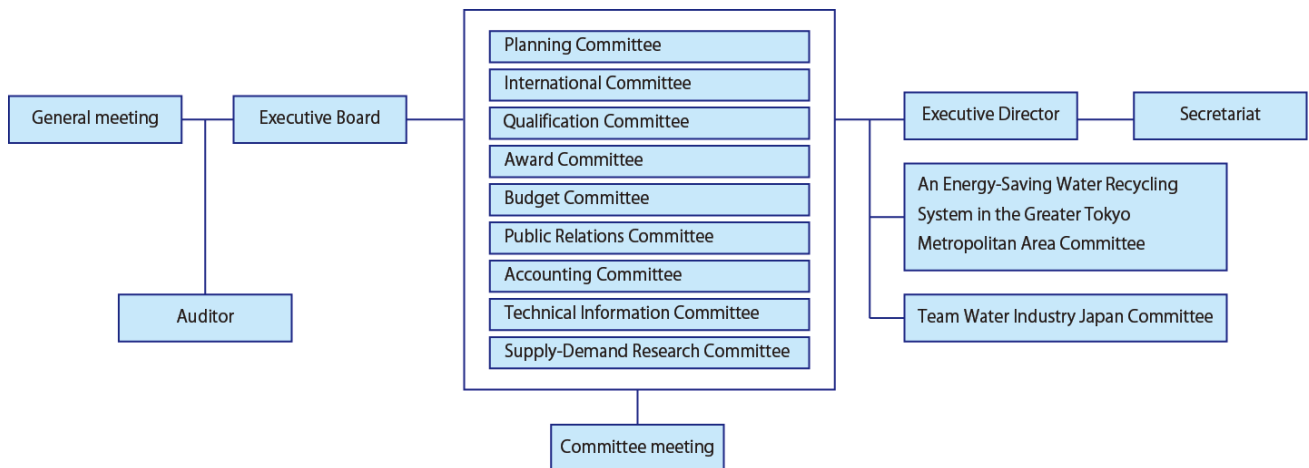
# Purpose

- Collect and prepare data and information materials of investigations, researches and statistics with respect to waterworks, industrial water supply and sewerage industries ;
- Facilitate exchange of information and circulate materials ;
- Publish a bulletin;
- Hold lecture meetings, training courses and exhibitions.

# History

- The Federation of Japan Water Industries, Inc. was originally founded under the name of Japan Water Industry Association, as the sole representative organ of waterworks, industrial water supply and sewerage industries in Japan.
- In September 1968, it was reorganized as a corporate Juridical person.

# Organization



# Activities

1. Advancement to congress, governmental organizations and municipalities
2. Support for business cooperation and various events of governmental organizations, municipalities and related associations
3. Public relations
4. Lecture, training and facility visit tour
5. International cooperation and international conference
6. Cooperation on the measures toward earthquakes and disasters

# Activities

Water development exhibitions

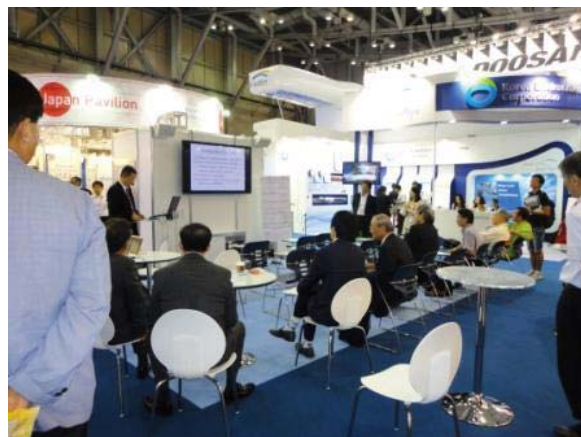


## Activities

Special Seminar at JAPAN Pavilion  
IWA World Exhibition in Busan

**発表テーマ:『The Correspondence and Problem of the water supply for Great East Japan Earthquake on March 11 』**

- September
- 18
- 2012
- 14:30~15:00
- BEXCO



## **Today**

### **Highest quality service in the World**

- Japan has successfully achieved the highest quality of water supply services marked by the followings;
  - Service coverage (piped water) : 97%
  - Leakage : 7% (national average),  
3% (Tokyo)
  - Thoroughgoing customer management.
  - Drinkable water is available anywhere and anytime

## **Present situation of world water supply systems**

- Since 1990 The privatization of waterworks has been increased
- Asia, South America, Africa, Europe
- Global Water companies from France, United Kingdom, Germany
- Philippines, Singapore, the Republic of Korea and China
- French water companies more than 150years

## Federation Of Japan Water Industries. Inc

- Support Water Supply, Sewerage and Industrial Water Supply Systems
- 230 members
- Establish necessary regulations
- Promote development of industries
- Collect data and information materials investigations, researches and statistics.
- Lecture meeting, training and exhibitions

## **Toward International Cooperation**

- Japanese water industries will cooperate for both technical and managerial improvement of international water supply services by high technology.
- Japan's water supply services, adjusting to population decrease, climate change, etc, will be an international valuable reference for other countries.

# Establishment of Team Japan Waterworks Industries

- Established in October 2008
- Federation of Japan Water Industries Inc.
- Discussions on many water issues
- Contribute to dissolve difficult problems
- In domestic and in other countries
- Provide drinking water for people

## **International contribution & International development**

### **International contribution**

- to world economy and technical development.
- Help the other country and the area.
- Do not expect a reward.

### **International development**

- Being active to achieve a purpose of the contribution.
- The act of a side providing service.
- Business continuously.
- Profit appear.



## Conclusions

- (1) From a global perspective, the number of people who have no access to safe water has reached 0.8 billion, many in the developing countries.
- (2) Japan is responsible for providing technical and financial support to water supply services in developing countries.
- (3) Domestic system to support the international cooperation activities of the water supply service should be established.
- (4) A new organization should be established in cooperation with between waterworks industries and public sectors, so as to contribute international needs and domestic one as well.

Thank you !

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