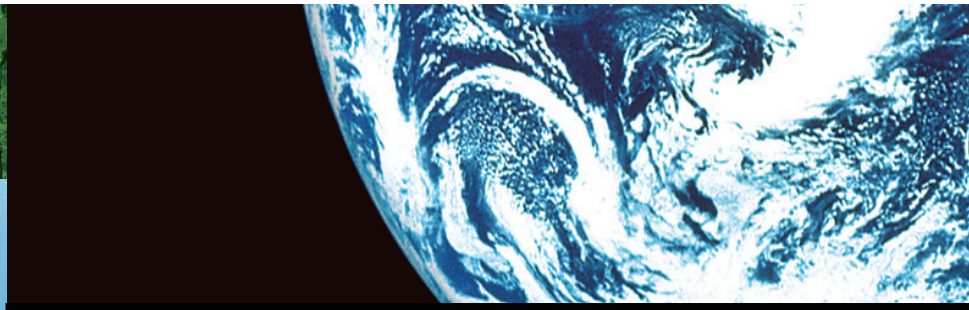
Profile of
Water Utilities/Water Associations

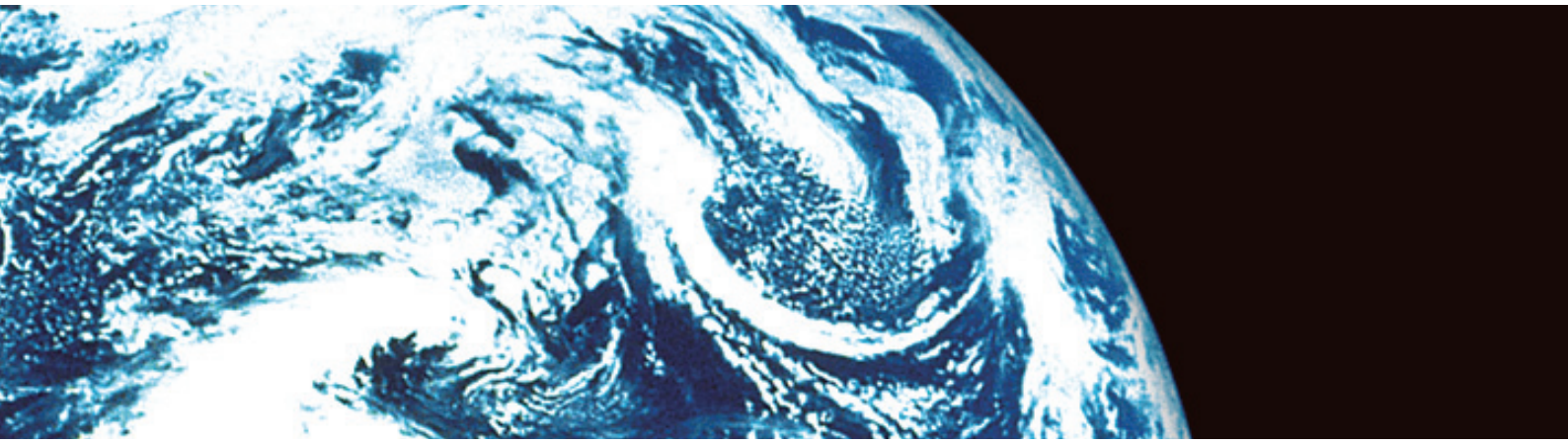
ASPIRE Region



The 4th IWA-ASPIRE Conference & Exhibition

2-6 October 2011
Tokyo, Japan

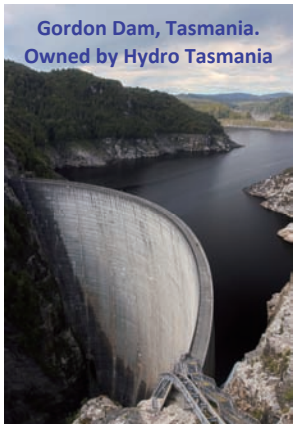
社団法人　日本水道協会
Japan Water Works Association
www.jwwa.or.jp



※Basically the satatistics show the figure of FY2010
※The price quoted in US$ as at the end of each fiscal year

Australia

Australian Water Association



Lucia Cade
President

Organisation Framework

- Board

Lucia Cade President term: 2013

- Executive Officer

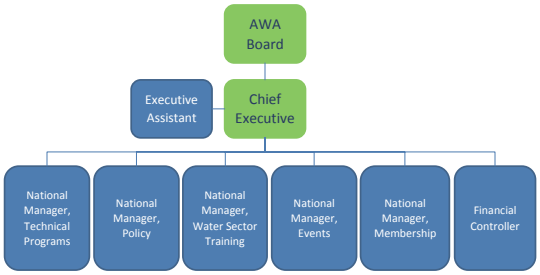
Tom Mollenkopf Chief Executive

- Number of personnel

full-time: 34 part-time: 2

- Members

- Water Supply Corporations
- Private Companies
- University/Investigative Organs
- Individual Members



Activities

- Annual events

OzWater is the nation's premier water conference, convened by AWA annually in May. The Association organises numerous conferences on a wide range of topical issues annually

- Representations to the National Government

The National Government has no constitutional role in water, but does support the National Water Commission that oversees the implementation of a major package of urban and rural water reforms, the National Water Initiative. Governments generally do not subsidise water services. Water utilities are owned either by state or local governments, and there is significant private sector involvement in the provision of water services.

- Providing training programs

The Australian Water Association responds to the training and professional development needs of members and the broader water industry by providing a range of quality, accessible and cost effective training prgrams

- Investigative activity

AWA undertakes research into a wide range of issues, makes submissions to government on behalf of the water sector and develops position papers on critical issues

- Publications

6 weekly publication Water for members of AWA; Annual Report and The Australian Water Directory, published annually; State of the Water Sector Survey, published annually.

Present Challenges

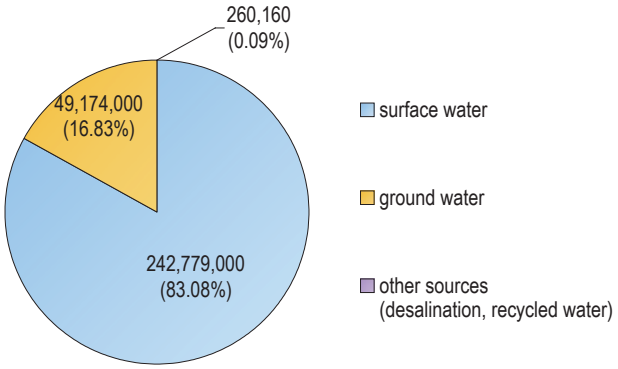
- Adaptation to climate change
- Management of drought conditions
- Structural reform of the water sector
- Management of agricultural water (esp. in the Murray Darling Basin)

Total Population

23,000,000 inhabitants

Drinking Water

-Population served	22,276,000 (96.85%)	inhabitants
-Service Connections :	10,431,000	connections
-Revenue Water :	9,369,000	m3/year
-Ratio of NRW :	<10	%
-Water Resources :	292,213,160	m3/year



-Annual Consumption (Urban Water) 6,112,000 m3/year

Sewerage

-Population Served:	21,010,000 (91.35%)	inhabitants
-Length of Sewerage System :	123,409	kilometres

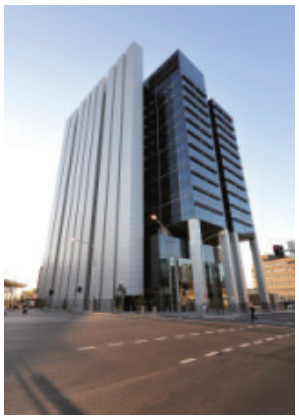
Waste Water Treatment

-Population Served:	21,010,000 (91.35%)	inhabitants

Contact

Australian Water Association
PO Box 222, St Leonards, NSW 1590 Australia
Tel +61 2 9436 0055
Fax +61 2 9436 0155
Website www.awa.asn.au
Email aspeers@awa.asn.au

Sydney Water



Kevin Young
Managing Director

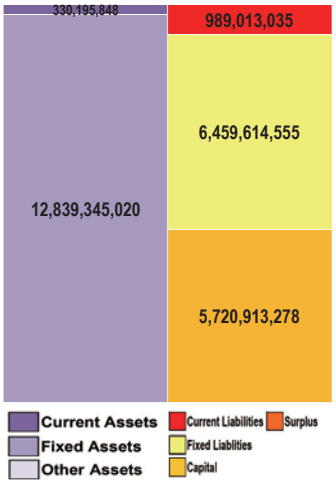
Management

-State Owned Corporation (wholly owned by the NSW Government)

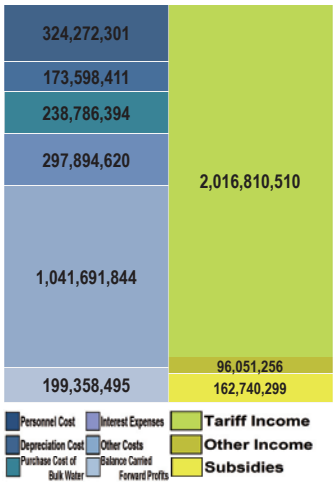
-Self-supporting accounting

Financial Condition (US$ / FY2010)

Balance Sheet



Profit & Loss Statement



Key Problems and Solutions

Sydney like many Australian cities faced serious water shortages during the drought from 1998 until 2010. Like many we chose to invest in recycling and desalination so that 15% of our supply is now diversified into no rainfall dependent sources. We also implemented a significant demand side water conservation program with both residential and business customers, as well as driving down system leakage to the economic level of leakage.

On the environmental front we are faced with an increasing population and in Sydney's west, limited capacity to assimilate the effluent into current river system. Our solutions are being developed but are led by a comprehensive program to build a detailed model to simulate the impact of point and diffuse pollution sources on river and human health. Historically our sewerage system suffers from stormwater infiltration both within our network and in our customers pipes. This leads to overflows to the environment in wet weather. We are continuing to implement cost effective programs where these overflows impact public health at recreational sites such as beaches, and where they impact sensitive environmental sites.

We have just submitted our four year price submission to our independent economic regulator IPART. Our challenge (as for all water companies) is to continue to find efficiencies in operating and capital programs, while maintaining the required level of services to customers and proper repair and replacement of assets for future generations. This invariably still results in price increases above the cost of living, so we are trying to be as efficient as possible to keep this to a minimum. We also continue to focus on customers who are experiencing difficulties in paying their water bills.

Total Population 4,435,000 inhabitants

Area of Operations Covering 12,700 km^3

Drinking Water

-Population served 4,435,000 inhabitants
(100.00%)

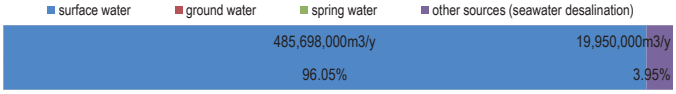
-Service Connections 1,772,000 connections

-Revenue Water 468,735,696 m3/year

-Ratio of NRW 7.30 %

-Annual Consumption 505,610,000 m3/year

-Water Resources 505,648,000 m3/year



-Total Length of Pipeline 21,000 kilometers
Pumping Stations :151 Reservoirs : 259

-Water Treatment Plant

Orchard Hills Water Filtration Plant; 210,000 m3/day

purification is direct filtration dual media sand anthracite with ph correction, ferric chloride and polymer coagulation, lime/CO2 buffering and Chloramination disinfection;

Prospect Water Filtration Plant; 3,000,000 m3/day

purification is direct filtration dual media sand anthracite with ph correction, ferric chloride and polymer coagulation, lime/CO2 buffering and Chloramination disinfection;

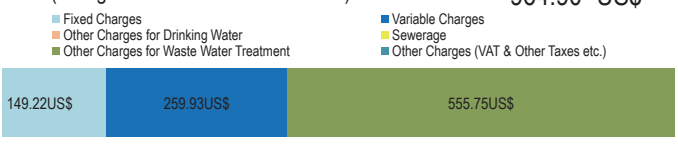
Sewerage

-Population Served 4,333,000 inhabitants
(97.70%)

-Length of Sewerage System 24,000 kilometers

Annual Water Cycle Charges

(Charges for 10㎥/month×12 month) 964.90 US$



Independent Economic Regulator (IPART) has the right to determine the water tariff. (every 4 years)

Contact

Sydney Water
Address 1 Smith Street Parramatta NSW 215
Website www.sydneywater.com.au

Melbourne Water

Shaun Cox
Managing Director

Management

-Owned by the Victorian Government

Day to day we manage Melbourne's water supply catchments, treat and supply drinking and recycled water, remove and treat most of Melbourne's sewage and manage waterways and major drainage systems in the Port Phillip and Westernport region. We build strong relationships with our customers, stakeholders and suppliers in community, government and industry and care for the health and wellbeing of our people. Sustainability is our core principle and central to all our operations. In 1994, the Victorian Government announced that the former Melbourne Water was going to be divided into three retail water companies and a wholesale water company. The present Melbourne Water, as a whole sale water company, supplies to South East Water(1.2 million people), City West Water (300,000 residential) and Yarra Valley Water(1.5 million people).

Current Projects - Water Supply

-Tarago Project
The Tarago Reservoir has been reconnected to Melbourne's water supply network..
-Strategic Fire Breaks
350kms of firebreaks have been built to protect the Thomson and Upper Yarra Catchment...
-M9 Preston - North Essendon Water Main Upgrade
We are replacing the 100 year old water main that services the northern and western suburbs of Melbourne...
-Getting ready for desalinated water
The Cardinia Desalination Integration Project forms an integral part of the plan to secure Victoria's water supplies...
-Toorourrong Reservoir Upgrade Works
We're upgrading Toorourrong Reservoir to bring it in line with new Australian dam safety requirements...
-Tarago Reservoir Upgrade
The Water Resource Alliance, on behalf of Melbourne Water, will carryout works to extend the filter so as to cover the core completely and increase capacity from 24 to 32 gigalitres...
-M102 - North Essendon - Footscray Water Main Renewal
We will be upgrading the M102 pipeline, a 12.5 kilometre water main from Essendon Airport via Maribyrnong and Footscray to Yarraville from 2011...
-Greenvale Pump Station
The Water Resources Alliance (WRA), on behalf of Melbourne Water, is constructing a new pump station and a small section of water main in Greenvale...
-Sydenham Tank Refurbishment
The Water Resources Alliance, on behalf of Melbourne Water has refurbished the Sydenham Water Supply Tank..

Current Projects - Sewerage

-Melbourne Main Sewer Replacement
We are replacing a section of the Melbourne Main Sewer which collects sewage from central Melbourne, Docklands and parts of South Melbourne and Port Melbourne...
-Northern Sewerage Project
We are constructing 12.5km of new sewer to increase the capacity of the sewerage system in Melbourne's growing northern suburbs...
-Former Dandenong Treatment Plant - Rehabilitation and Redevelopment
Melbourne Water and VicUrban are making a major contribution to the economic future of Dandenong...
-Eastern Treatment Plant Upgrade
Construction is underway on a major $418 million upgrade of the Eastern Treatment Plant...
-Werribee River Aqueduct Replacement
We are replacing a sewer aqueduct that crosses the Werribee River, north of the Princes Freeway in Werribee...

Organization Structure

Our Water Supply System

Melbourne Water's supply system comprises:
- 157,000 hectares of protected catchments in the Yarra Ranges
- 10 reservoirs with a total capacity of 1,812 billion litres
- 37 water treatment plants
- 1,062 kilometres of water mains
- 214 kilometres of aqueducts
- 65 service reservoirs
- In 2010/11, with average daily consumption of 963 million litres per day (compared to 989 million litres in 2009/10)
- This year we supplied 351,761 million litres of drinking water to the retail water businesses. This compares with 361,362 million litres in 2009/10 and 371,170 million litres in 2008/09.

Our Sewerage System

Melbourne Water's sewerage system consists of:
- 391 kilometres of sewers
- 9 sewage pumping stations
- The Eastern Treatment Plant at Bangholme and the Western Treatment Plant at Werribee
- Melbourne Water treated a total of 325,308 million litres of sewage at the Eastern Treatment Plant and Western Treatment Plant in 2010/11

Contact

Melbourne Water

Address	100 Wellington Parade, East Melbourne, VIC 3002, Australia
Tel	(+61-3) 9235 7100
Fax	(+61-3) 9235 7200
Website	http://www.melbournewater.com.au/default.asp

Cambodia

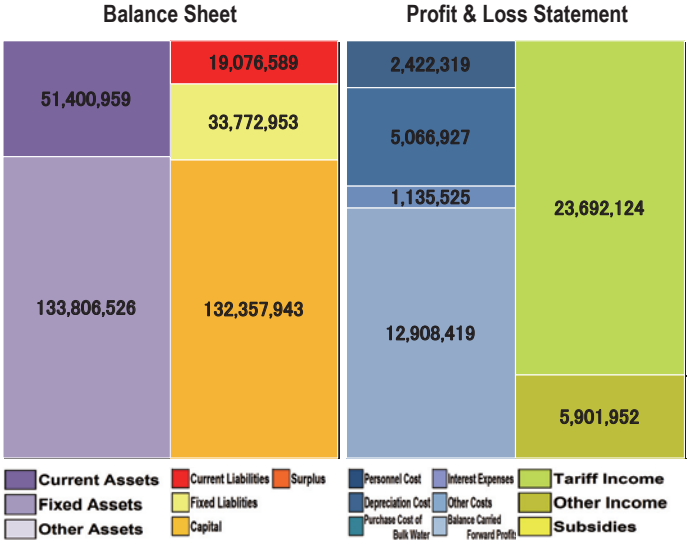
Phnom Penh Water Supply Authority (PPWSA)

H.E Ek Sonn Chan
General Director

Management

-Public enterprise managed by Central Government
-Self-supporting accounting

Financial Condition (US$ / FY2010)



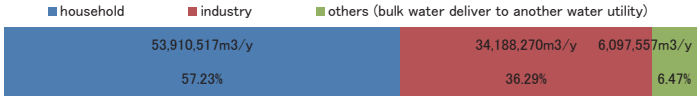
Problems Encountered and Solution Adopted

〇Water demand for the whole capital is more rapidly increasing then expected in the master plan, tending to the water shortage in coming years.
〔Solutions adopted:〕
-By the end of 2012, 130,000 m3/day to satisfy the water demand.
-By 2013, another 130,000 m3/day WTP will start the construction for 2 years time.
〇Cost of raw materials is subject to internationally influenced markets but PPWSA's tariff remains unchanged.
〔Solutions adopted:〕
-Increase efficiency: Reduce NRW (22% in 2001, now 5.85%), Keeping the collection efficiency at highest level: 99.9%
-Improve production efficiency through chemical saving program, while keeping the water quality at WHO standard.
〇Electricity cost is increasing from year to year in line with gradual increase of electricity tariff, resulting in higher production cost.
〔Solutions adopted:〕
-Energy savings project: -Solar Power
〇Road repair and road expansion projects of the Municipality led to broke pipes and pipes relocation.
〔Solutions adopted:〕
-Taking into consideration for new projects.
-Close co-ordination with municipality and standby leak repair team on road repair site.
〇Further expansion to new suburban area, require high investment, but low return.
〔Solutions adopted:〕
-Small scale private provider on site.

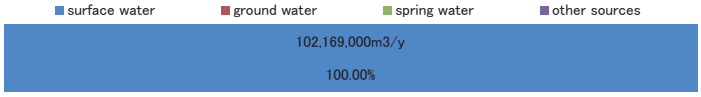
Present Challenge

- Water demand is at the size of supply capacity.
- City Master Plan is unclear or not fully respected.
- Average water tariff getting lower as far as we extend distribution network to sub-urban area.
- The extension of supply network going faster than the construction of asphalt road. Road first or Water first!
- New road work breaks pipe, cause leaks and disrupted of water supply.

Total Population	1,501,725	inhabitants
Drinking Water		
-Population served	1,357,770	inhabitants
	(90.41%)	
-Service Connections	202,292	connections
-Revenue Water	94,197,208	m3/year
-Ratio of NRW	5.85	%
-Annual Consumption	94,196,344	m3/year



-Water Resources 102,169,000 m3/year



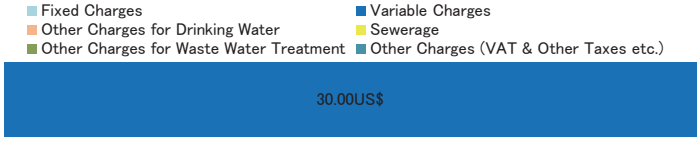
-Total Length of Pipeline 1,882 kilometers
Cast-Iron Pipe/Ductile Iron Pipe, Polyethylene Pipe

-Water Treatment Plant

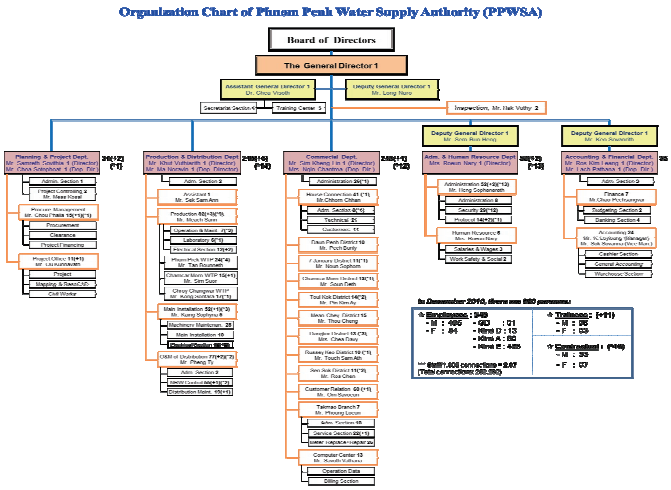
name of WTP	Phum Prek	Chroy Changwar	Chamcar Morn
purification method	Rapid Sand Filter	Rapid Sand Filter	Rapid Sand Filter
ability of processing	150,000m3/d	130,000m3/d	20,000m3/d

Annual Water Cycle Charges

(Charges for 10㎥/month×12 months) 30.00 US$



Central government has the right to determine the water tariff.



Contact

Phnom Penh Water Supply Authority (PPWSA)
Address #45, St. 106, Srah Chork Commune, Daun Penh District, Phnom Penh
Website www.ppwsa.com.kh
Email eksonnchan@ppwsa.com.kh

Hong Kong, China

Water Supplies Department

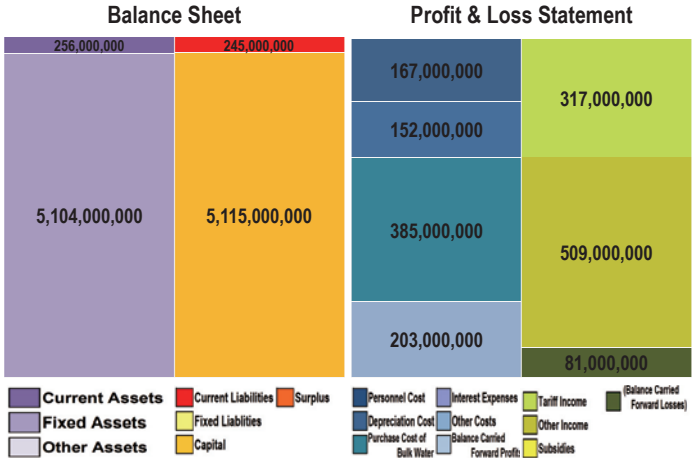
水務署
Water Supplies Department

L T MA
Director

Management

-Public corporation managed by National/State Government
-Self-supporting accounting

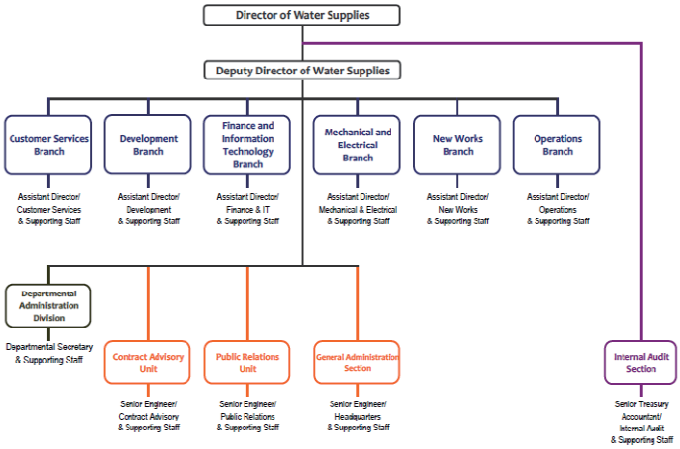
Financial Condition (US$ / FY2010)



Problems Encountered and Solution Adopted

(i) High Leakage Rate, to be encountered by water mains replacement and rehabilitation, pressure management and active leakage detection.
(ii) Aging of Infrastructure, to be encountered by Asset Management and Reliability Centred Maintenance.

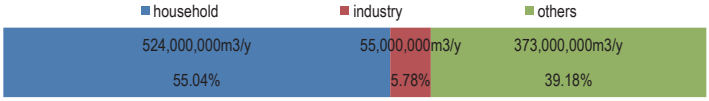
Organization Structure



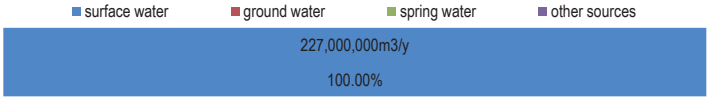
Total Population 7.00mil inhabitants

Drinking Water

-Population served 7.00mil inhabitants
(100.00%)
-Service Connections 2.75mil connections
-Revenue Water 618.00mil m3/year
-Ratio of NRW 35.00 %
-Annual Consumption 952.00mil m3/year



-Water Resources 227.00mil m3/year



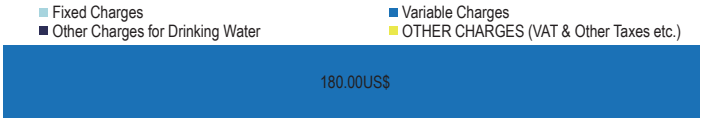
-Total Length of Pipeline 7,919 kilometers
Cast-Iron Pope/Ductile Iron Pipe
Steel Pipe
Polyethylene Pipe
Others

-Water Treatment Plant

name of WTP	Sha Tin Water Treatment Works	Pak Kong Water Treatment Works	Tai Po Water Treatment Works
purification method	Conventional - Circular Clarifier, and RG Filters	Conventional - Rectangular Blanket Clarifier and RG Filters	DAF, Biological Filters
ability of processing	1,230,000m3/d	800,000m3/d	250,000m3/d

Annual Water Supply Charges

(Charges for 10㎥/month × 12 months) 180.00 US$



Present Challenge

(i) Implementation of Total Water Management strategies to ensure sustainable use of water

Contact

Water Supplies Department
Address 48/F Immigration Tower, 7 Gloucester Road, Wan Chai, Hong Kong

Website www.wsd.gov.hk

China

The Macao Water Supply Company Limited

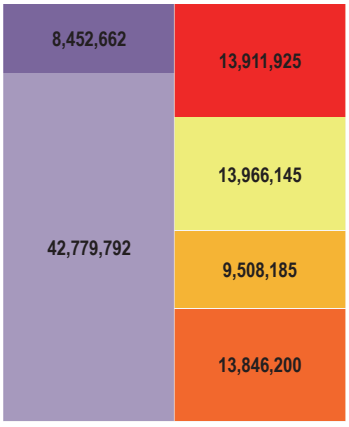
Fan Xiaojun, Felix
Executive Director

Management

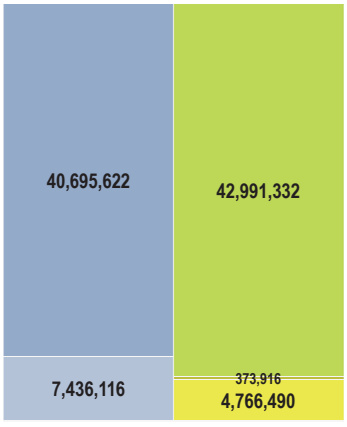
-Contracted out to a private company
-Self-supporting accounting

Financial Condition (US$ / FY2010)

Balance Sheet



Profit & Loss Statement

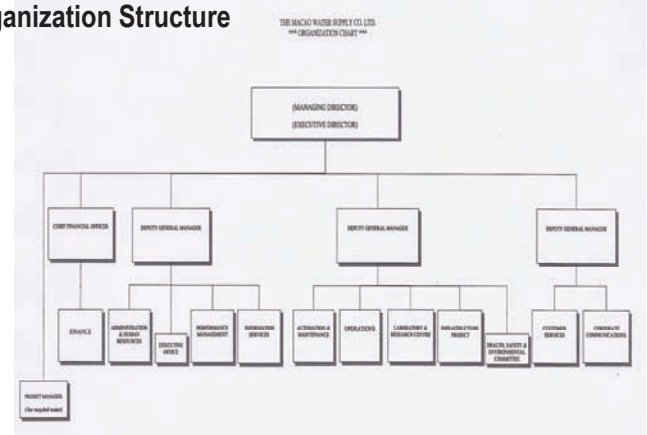


Problems Encountered and Solution Adopted

1, Concession contract renewal. Macao Water, a 100% private utility company, was granted the concession contract in 1985 for a term of 25 years. It was a big challenge for Macao water to get its concession contract renewed. The solution adopted to this challenge was to satisfy both the Regulator and the customers by offering good quality of water supply services, as well to meet the water demand for the development of the city.

2, Salinty problem. the raw water supplied to Macao was affected by sea water ingression in dry seasons, which results in higher salinity in the drinking water. Solutions to this problem were relocation of the intake to the upper stream and an intergrated water river basin management system with related authorities.

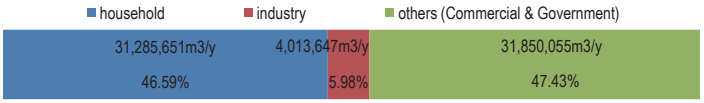
Organization Structure



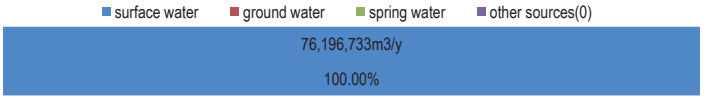
Total Population 552,300 inhabitants

Drinking Water

-Population served 620,698 inhabitants
(112.38%)
-Service Connections 21,126 connections
-Revenue Water 67,149,353 m3/year
-Ratio of NRW 12.50 %
-Annual Consumption 67,149,353 m3/year



-Water Resources 76,196,733 m3/year



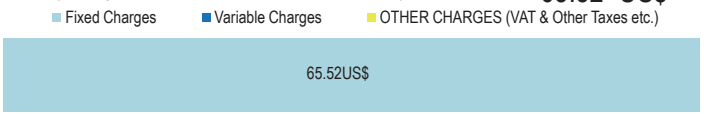
-Total Length of Pipeline 595 kilometers
Cast-Iron Pope/Ductile Iron Pipe
Steel Pipe And Others

-Water Treatment Plant

name of WTP	Ilha Verde	MSRI & MSRII	Coloane
purification method	Clarifier/ Sand filter Pulsator/Sand filter	Dual Media Filtration DAF/UF	DAF/ Sand Filtration
ability of processing	180,000m3/d	120,000m3/d	30,000m3/d

Annual Water Supply Charges

(Charges for 10m³/month × 12 months) 65.52 US$



Present Challenge

1, Human resources. the human resources market in Macao is currently difficult for all employers to have sufficient skilled staff to maintain normal operation and service level, so is it to Macao Water. Solutions to be adopted are to adjust the benefits to the employees and to rely more on high-techs as well good management system.

2, further improvement of customer services level. Solutions to this challenge are applications of internet technology to satisfy younger customers while keeping the same satisfaction level of all other customers.

Contact

The Macao Water Supply Company Limited
Address 718, Avenida do Conselheiro Borja, Macau
Website www.macaowater.com
E-mail executive.director@macaowater.com

Chinese Taiwan

Taiwan Water Corporation

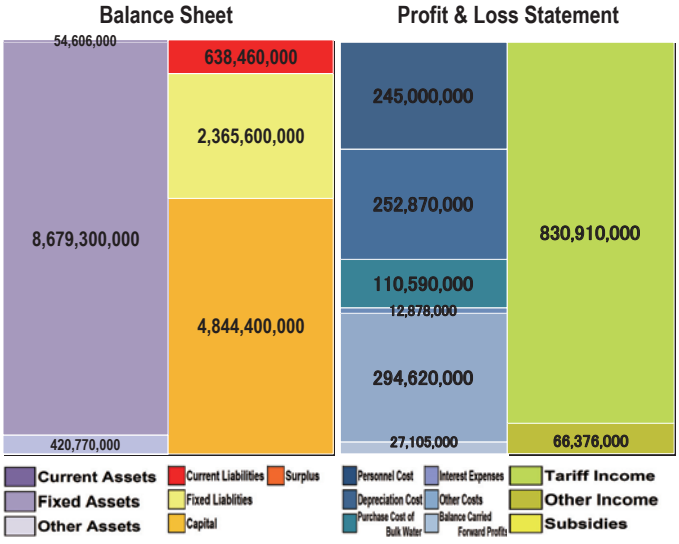
The Banshin Water Treatment Plant

Chen, Fu-Tien
President

Management

-Public corporation managed by National/State Government
-Self-supporting accounting

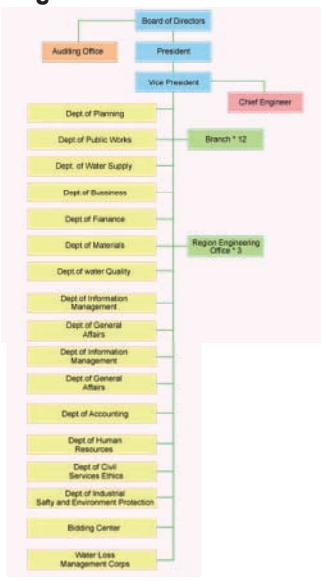
Financial Condition (US$ / FY2010)



Problems Encountered and Solution Adopted

・Aged water infrastructure cause water loss and treatment inefficiency. The solutions adopted include water loss control and drinking water facilities upgrade.
・Heavy rains cause extremely high turbidity raw water. The solutions adopted include alternative water sources, pre-sedimentation tank and two-stage coagulation.

Organization Structure



・Current experienced workforce retirement results in a severe skills shortage.The solutions adopted include new workforce recruitment and younger workers on-job training.

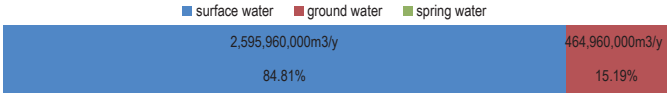
・Customers demand high satisfaction. The solutions adopted include Annual Customer Satisfaction Survey and establishment of Call Center and 1910 toll-free Hotline.

・Low water price policy need to be revised. The solutions adopted include Save Water Advocacy Program and reasonable adjustments for water price.

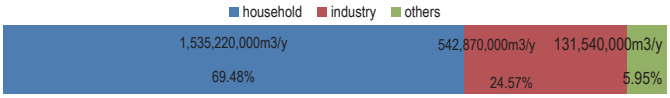
Total Population 23,050,000 inhabitants

Drinking Water

-Population served	17,429,000	inhabitants
	(75.61%)	
-Service Connections	6,282,000	connections
-Revenue Water	2,210,000,000	m3/year
-Ratio of NRW	28.62	%
-Water Resources	3,060,920,000	m3/year



-Annual Consumption 2,209,630,000 m3/year



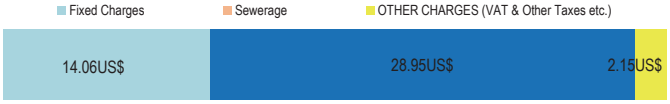
-Total Length of Pipeline 57,210 kilometers
Cast-Iron Pope/Ductile Iron Pipe, Steel Pipe, Poly Vinyl Chloride Pipe, Polyethylene Pipe, And Others

-Water Treatment Plant

name of WTP	Banshin	Liyutan	Fengyuan
purification method	CWT	CWT	CWT
ability of processing	1.2millions	1.1million	1million

Annual Water Supply Charges

(Charges for 10㎥/month × 12 months) 45.16 US$



The Central Government has the right to determine the water tariff.

Present Challenges

・To achieve management of water resources that serves society and benefits the environment at reasonable cost.

・To realize the potential public health benefit of low cost, high quality drinking water by improving access, awareness and perception.

・To design future water regulation that is better at promoting customer service, environmental protection and economic development.

・To combat the impacts of climate change on water supply and alleviate its effects .

Contact

Taiwan Water Corporation
Address NO 2-1, Section 2, Shuang-Shih Road, Taichung City, 40425
Tel 886-4-22244191 ext. 205
Fax 886-4-22294019
Website www.water.gov.tw

Chinese Taiwan

Taipei Water Department

Zhitan Purification Plant : 2,700,000 CMD

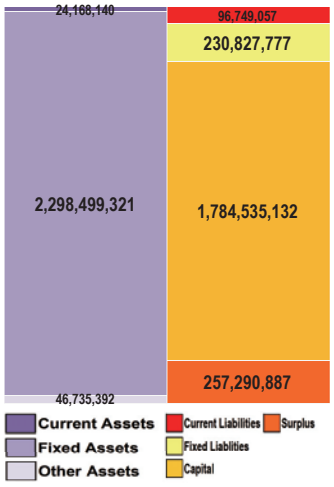
Wu, Yang-long
Commissioner

Management

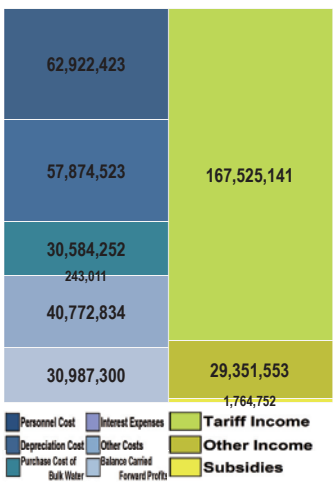
-Public enterprise managed by Local Government
-Self-supporting accounting

Financial Condition

Balance Sheet



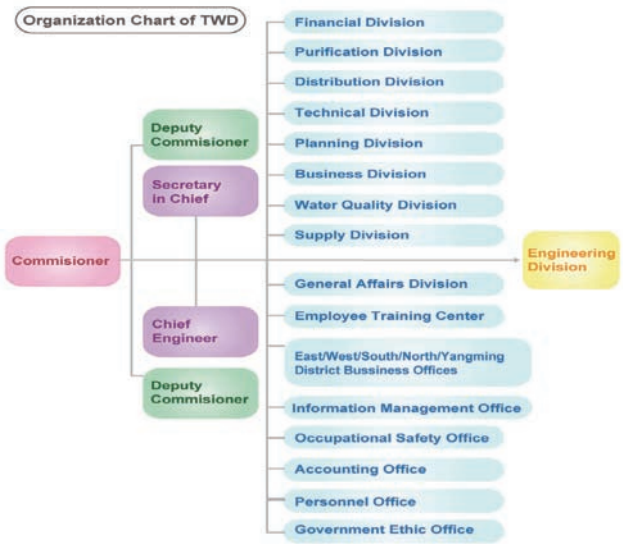
Profit & Loss Statement



Problems Encountered and Solution Adopted

High non-revenue water: implementation of an overall long-term plan of pipeline replacement and other necessary initiatives to reduce leakage rate
Higher risk of water shortages: enhansing reserve supply and spare capacity to meet temporary difficulties
High water consumption: promoting water conservation scheme

Organization Structure



Total Population 3,873,265 inhabitants

Drinking Water

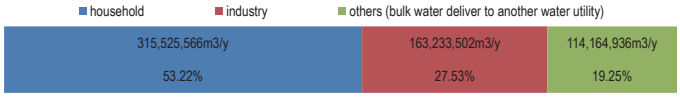
-Population served 3,855,609 inhabitants
(99.54%)

-Service Connections 1,613,195 connections

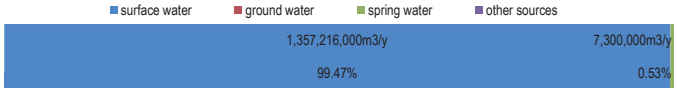
-Revenue Water 592,924,004 m3/year

-Ratio of NRW 32.83 %

-Annual Consumption 592,924,004 m3/year



-Water Resources 1,364,516,000 m3/year



-Total Length of Pipeline 6,179 kilometers

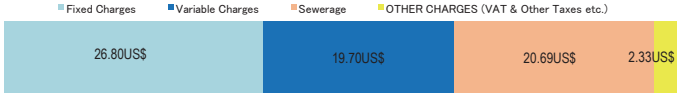
Cast-Iron Pope/Ductile Iron Pipe
Steel Pipe
Poly Vinyl Chloride Pipe and Others

-Water Treatment Plant

name of WTP	Zhitan	Changxing	Gongguang
purification method	rapid sand filtration	rapid sand filtration	rapid sand filtration
ability of processing	2,700,000m3/d	543,000m3/d	416,000m3/d

Annual Water Cycle Charges

(Charges for 10㎥/month × 12 months) 71.59 US$



cf: Central government has the right to determine the water tariff.

Present Challenge

Promoting good drinking water supply by Taipei Water Department
Aiming for green water supply
Building Taipei as a water saving-type city

Contact

Taipei Water Department
Address 131 Changxing Street, Taipei, Taiwan, (ROC) 106
Tel 886-2-8733-5773
Fax 886-2-8733-5678
Website http://english.twd.gov.tw/MP_114012.html

Indonesia

Perhimpunan Perusahaan Air Minum Seluruh Indonesia (PERPAMSI)

Dr. Ir. H. Syaiful, D.E.A.
Chairman of PERPAMSI

Persatuan Perusahaan Air Minum Seluruh Indonesia
TIRTA DHARMA

Organization Franework

- Board

DR. Ir. H. Syaiful, DEA	Managing Director PDAM Kota Palembang - Chairman

- Executive Office

H. Rudie Kusmayadi, BE. M.Si	Managing Director PDAM Kabupaten Bandung - General Secretary

Number of personnel

full time : 34

- Members

- Water Supply Corporation : 402

Organization

PERPAMSI is managed by an Executive Director, supported by four Chief the Bureau;
1. Organisation and Finance
2. Institution Cooperation and Regulations
3. Information system and partner relations

Funding

Income of PERPAMSI sources :
> membership fees 85%
> donors (project support) 5%
> interest on deposit/ investment 10%

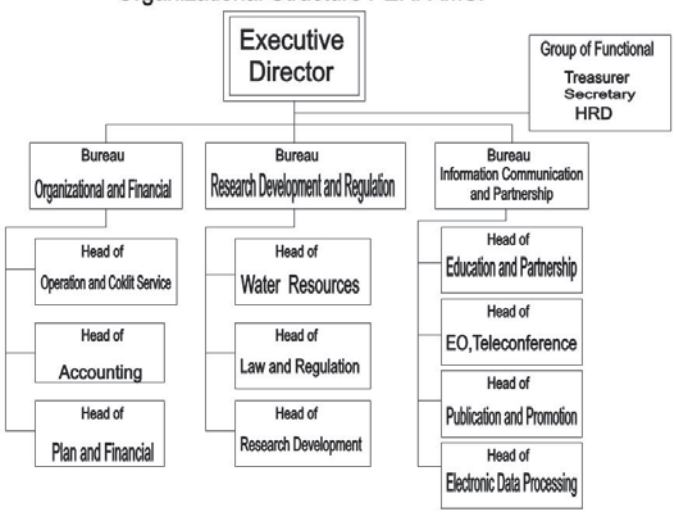
Regional Officer

Each province has a regional (DPD PERPAMSI) office, which is situated in one of the larger PDAM in that province. Presently their main responsibility is coordinating information within the province, but in the coming years they will play a key role in the implementation of projects, trainings and dissemination of best practices.

Magazine

Since 1975, PERPAMSI publishes a monthly magazine named Majalah Air Minum which contains rich information on water sector.

Organizational Structure PERPAMSI



Objectives & Activities

The main objectives of PERPAMSI are :

- To assist the Government in shaping and maintaining the independence of Indonesia, aiming for a just society, where material and spiritual prosperity is spread evenly and based on the principles of Pancasila and the 1945 Constitution, concentrating on the subject of Water Supply;
- To improve management and operation of Water Utilities, based on existing and new guideline and regulations, in a spirit of mutual respect and understanding, to fulfill the requirements for clean water for the whole population of Indonesia.

The main activities of PERPAMSI are focused around the tools required to develop our strategies:

- training and education
- lobbying of policies and regulations
- coordinating of donor activities
- piloting & dissemination of the new technology/ approaches
- implementation of Corporate Plans
- PDAM Public Relation programs
- develop certification schemes
- data collection and benchmarking
- promotion to potential investors
- strong relation with other water associations
- promotion use of clean water with ultimate aim for PDAMs to provide drinking water
- self evaluation of benefit PERPAMSI activities towards members.

Total Population	227,000,000	inhabitants
Drinking Water		
-Population served	49,000,000	inhabitants
	(21.59%)	
-Revenue Water :	51,323,600,000	m3/year
-Ratio of NRW :	38	%
-Intake Amount :	82,780,000,000	m3/year

Contact

Jl. Dewi Sartika no 287 Cawang, Jakarta Timur, Indonesia
Tel 62- 21- 8093777
Fax 62- 21- 80881876
Website www.perpamsi.org
Email perpamsi@perpamsi.org

Indonesia

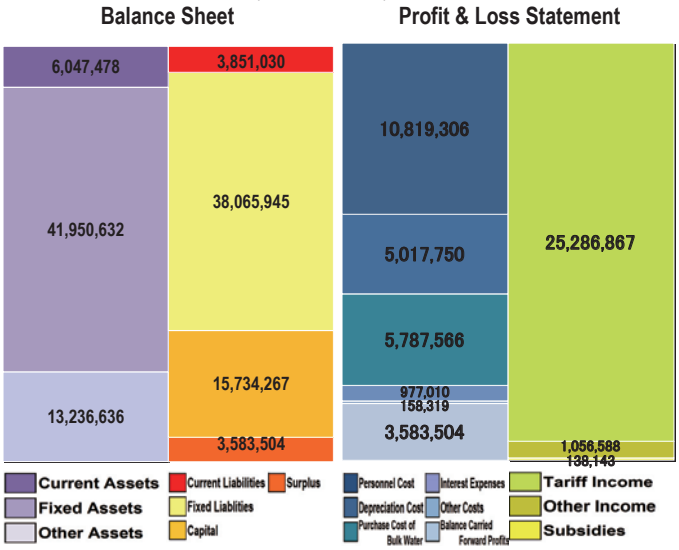
PDAM Tirta Musi Palembang

DR. Ir. H. Syaiful, DEA
Managing Director

Management

-Public corporation managed
by National/State Government
-Self-supporting accounting

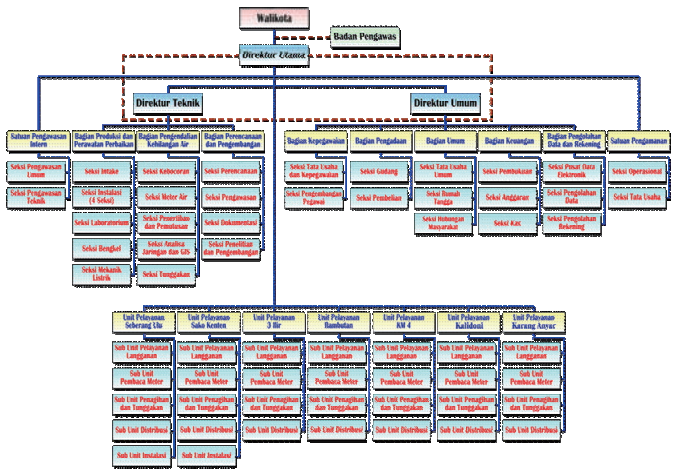
Financial Condition (US$ / FY2010)



Problems Encountered and Solution Adopted

Problem:	Solution Adopted:
・High level of Non Revenue Water	-DMA, Pressure Management, Asset Management, etc
・Intermittent Supply	-Increasing capacity, reduce NRW, replacing old pipe, etc
・Lack of Information Technology	-GIS, Hydraulic Modelling System, etc
・Human resources development	-Training, transfer knowledge, winning programme, etc

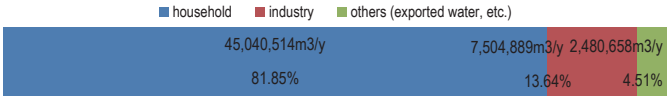
Organization Structure



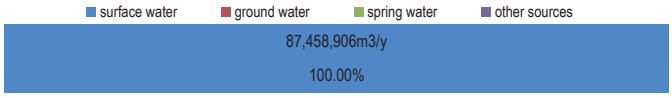
Total Population 1,381,626 inhabitants

Drinking Water

-Population served 1,253,887 inhabitants
(90.75%)
-Service Connections : 157,665 connections
-Revenue Water 55,038,789 m3/year
-Ratio of NRW : 34.85 %
-Annual Consumption 55,026,061 m3/year



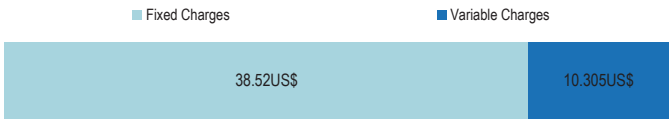
-Water Resources 87,458,906 m3/year



-Total Length of Pipeline: 2,273 kilometers
・Cast-Iron Pipe/Ductile Iron Pipe
・Steel Pipe
・ Poly Vinyl Chloride Pipe
・Polyethylene Pipe
and others
-Water Treatment Plant
name of WTP
3 Ilir, Rambutan, Borang, Poligon, Ogan, Karang Anyar
purification method Conventional
ability of processing 160,000 m³/day

Annual Water Supply Charges

(Charges in US$ for 10m³/month × 12months) 48.82 US$



Present Challenge

・ Non Revenue Water
・ Water quality and continuity
・ Climate Change (source of raw water)
・ Human resources development

Contact

PDAM Tirta Musi Palembang
Address Jl. Rambutan Ujung No.1 Palembang 30114, Indonesia
Tel (+62) 711 350090
Fax (+62) 711 3551800
Website www.tirtamusi.com
Email m_azharuddin@tirtamusi.com

Republic of Korea

Korea Water & Wastewater Works Association

Se-Hoon OH
Mayor of Seoul metropolitan city

Organization Framework

- Board

Se-Hoon OH Mayor of Seoul metropolitan city

- Executive Office

Yong-Cheol CHOI Vice prsident

Number of personnel

full time : 45 part time : 0

- Members

- Utilities : 172

  Public water & wastewater works authorities
  (Seoul city, Busan city, Ulsan city, Daegu city), K-water

- Enterprises : 248

  Manufacturers of water & wastewater works equipment, construction and engineering

- Associations : 9

  Association, academics and institutes interested in water and wastewater works

- Individual Member : 333

  Members/personnel interested in water and wastewater works

Activities

- Annual events

Water Korea

- Providing training programs

Legal education (Article 36 of the Water Act, Article 67 of the Sewerage Act), Specialized education (Strengthening of public officials and practitioners from companies), Entrusted education of the Ministry of Environment (Government funded green industries)

- Publications

The 100 years of water in Korea, Clean water world,(news journal), ect.

- Inspection/Certification services

Certification via institutional standards, Registration of excellent company of water supply pipes renewal, Certification according to the 「Standards for Purifying Water」 Hygiene & Safety Certification

Present Challenges

- Developing the water&wastewater works professionals
- Promoting the water&wastewater works to the public
- Activating the water&wastewater works related certification
- Build a the water&wastewater works' hall set up the association's roll for the government's water industry development program

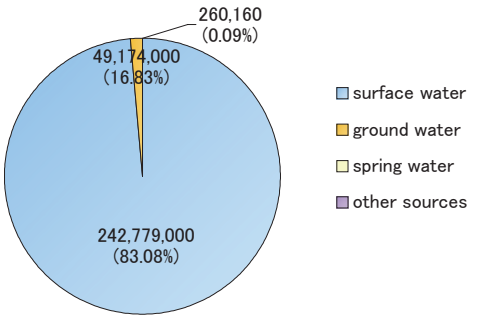
KWWA
KOREA WATER AND WASTEWATER WORKS ASSOCIATION

Total Population

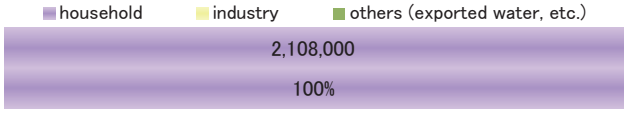
50,643,781 inhabitants

Drinking Water

-Population served	47,336,315	inhabitants
	(93.47%)	
-Service Connections :	6,261,440	connections
-Revenue Water :	4,758,904,326	m3/year
-Ratio of NRW :	17.40	%
-Water Resources :	6,827,601,532	m3/year



-Annual Consumption 1,718,503,203 m3/year



Sewerage

-Population Served:	44,972,114	inhabitants
	(88.80%)	
-Length of Sewerage System :	107,843	kilometers

Waste Water Treatment

-Population Served:	45,264,192	inhabitants
	(89.38%)	
-Length of Sewerage System :	18,589,761	m3/year

Contact

Korea Water & Wastewater Works Association
Ahyundong 711-2, Mapo-gu, Seoul city, Korea
Tel 82-2-3156-7777
Fax 82-2-3156-7778
Website www.kwwa.or.kr
Email masteroftr@kwwa.or.kr

Malaysia

Malaysian Water Association

Ahmad Zahdi bin Jamil
President

Organization Framework

- Board

Ahmad Zahdi bin Jamil president

- Executive Office

Number of personnel

full time : 3

- Members

- Ordinary Members : 1,412
- Associate Members : 319
- Institutional Members : 215

Activities

- Annual events

- Annual General Meeting
- Biennial Conference and Exhibition Water Malaysia and Asia Water
- Specialised Conference and Exhibition Water Loss
- Biennial Borneo Water & Wastewater Exhibition
- Annual community event World Water Monitoring Day
- Technical/Educational Talk and Facility Visit
- International Technical Tour
- Workshop
- Industry Forum / Dialogue
- Series of Training Courses
- IWA Young Water Professionals Membership

- Demanding to the National Government

- Consultative approach for improving the water and sewerage industry such as highlighting Issues on NRW and water industry restructring/Acts
- Participate in budget consultative process

- Providing training programs

Under the flagship of Water Academy, MyWA

- Investigative activity

- Quarterly Water Malaysia bulletin
- Annual statistics on water and wastewater Malaysia Water Industry Guide
- Water supply manual MWA Design Guidelines for Water Supply Systems

- Publication

- Quarterly Water Malaysia bulletin
- Annual statistics on water and wastewater Malaysia Water Industry Guide
- Water supply manual MWA Design Guidelines for Water Supply Systems

- Inspection/Certification services

- Issue certificate for training (MyWA)

Present Challenge

- Developing Water Academy for the industry
- Adding value for members
- Potraying Malaysia as water hub for developing countries

Relationship with IWA

- Governing Member

REPRESENTATIVES IN OTHER BODIES

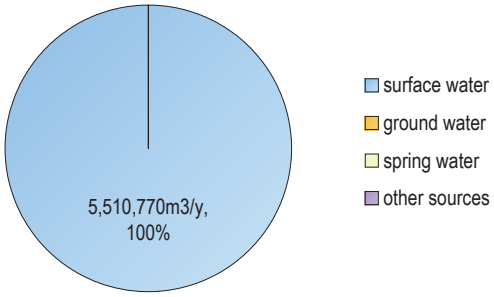
- SEAWUN Board Member
- Executive Committee, MyWater Partnership (MyWP)
- Steering Committee, MyCountry Water Partnership (MyCWP)
- Construction Industry Development Board Malaysia (CIDB)
- Invited to participate in many Government Ministries/Agencies dialogues/seminars/workshops

Total Population

28,250,000 inhabitants

Drinking Water

-Population served	26,611,500	inhabitants
	(94.20%)	
-Service Connections :	6,459,663	connections
-Revenue Water :	3,266,402	m3/year
-Ratio of NRW :	36.37	%
-Water Resources :	5,510,770	m3/year



-Annual Consumption 1,192,455 m3/year

-Total Length of Pipe (in 2009)	127,275	km
-Total Water Treatment Plant (in 2009)	445	nos.
・Total Production	13,213,000	m3/year
・Total Capacity	15,891,000	m3/year
-Total Water Tower & Tank (in 2009)	4,507	nos.

Contact

Malaysian Water Association

No 24, 2nd Floor, Jalan Sri Hartamas 8, Taman Sri Hartamas,
50480 Kuala Lumpur, MALAYSIA

Tel : +603-62012250 / +603-62019521

Fax : +603-62015801

Website : http://www.mwa.org.my

Email : rubby@malaysianwater.org.my

Water New Zealand

Promoting and enabling the sustainable management and development of the water environment

Water New Zealand is an independent not for profit association of water professionals and organisations. It is the country's largest water industry body, providing leadership and support in the water sector through effective advocacy, collaboration and professional development. Members are drawn from all areas of the water management industry including regional councils and territorial authorities, consultants, suppliers, government agencies and scientists.

Clive Rundle
President

Organization Franework

- Board

Clive Rundle President 2 years

(6 members and 2 Co-opted Board Members)

- Executive Office

Murray Gibb Chief Executive

Number of personnel

full time : 7 part time : 1

- Members

- Water Supply Corporation : 51
- Private Company : 200
- University/Investigative Organ : 10
- Individual Member : 500

Water New Zealand is the premier New Zealand organisation for environmental management professionals. This nationwide network of members represents many disciplines; physical and social sciences, public health, engineering, law and management. Water New Zealand attracts decision makers and technologists from central and local government, industry, the academic and research communities, consultants and service/equipment supply organisations, who exchange information about water and wastes issues.

Annual Budget

1,200,000 US$

Activities

- Annual events

Two major conferences held annually

- Water New Zealand Annual Conference & Expo

It is the largest and broadest conference of its kind held in New Zealand. The conference, held annually, provides the water industry with an excellent forum for discussion of the latest technologies, issues and debates, an opportunity for networking and meeting new people in the industry, the largest water and wastewater trade exhibition in New Zealand, a wide range of social events, and much more

- Annual General Meeting

- Providing training programs

- NZ Water & Environment Training Academy - NZWETA

To prioritise skills development and training opportunities in the water and wastewater industry, Water New Zealand has artnered with Opus International Consultants Ltd in a Joint Venture, the NZ Water Environment Training Academy, NZWETA.

- Investigative activity

-Publication

- A five-issue per year journal, Water, and a fortnightly e-newslette Pipeline.
- Newsletter that provides a periodic summary of key media releases and statements.
- The Association publishes and distributes a range of publications relevant to the water and wastes industry. These include technical manuals, guidelines and codes of practice, educational booklets,conference and seminar papers.

Present Challenge

Poor investment analysis, insecurity of funding and fragmented regulatory system

Total Population

4,400,000 inhabitants

Drinking Water

-Population served 3,977,000 inhabitants

(90.39%)

-Service Connections : 1,530,000 connections

Sewerage

-Length of Sewerage System :

24,750 kilometers

Waste Water Treatment

-Annual Volume of Treated Wastewater (included in Sewegarge) :

345,000,000 m3/year

Contact

Water New Zealand
PO Box 1316, Wellington, New Zealand
Tel ++64 4 472 8925
Fax ++64 4 472 8926
Website www.waternz.org.nz
Email enquiries@waternz.org.nz

Philippine

Philippine Water Works Association

Atty. Daniel P. Fandiño, Jr.
president

Organization Framework

-President : Atty. Daniel P. Fandiño, Jr.

-Vice President : 2 (National/International)

-Director : 17

The Board consist of 17 Directors who shall hold office for one year or until their successors is chosen and who shall be elected from among the members.

-Members

- Ordinary Members : 352
- Associate Members : 438
- Individual Members : 351

Activities

- Annual events

Exhibition, Appreciation Seminars, Technical Seminar

- Demanding to the National Government

Funding activities related to water & sewerage.

- Providing training programs

WSP, Appreciation Seminar, Product Standard Seminar, Benchmarking

- Investigative activity

World Health Organization/World Bank

- Publication

PWWA Magazine/Directory, PWWA Newsletter, Technical Proceedings, Product Standard Specifications

- Inspection/Certification services

WSP, National Water Resources Board

Relationship with IWA

Continuing Membership & Cooperation with IWA

Present Challenge

One of the biggest challenges that we are encouteringin the water industry is the lack of water resources in the very near future. Surface water and water recycling is the only source of water (groundwater in most areas are depleted).

Total Population

90,348,000 inhabitants

Drinking Water

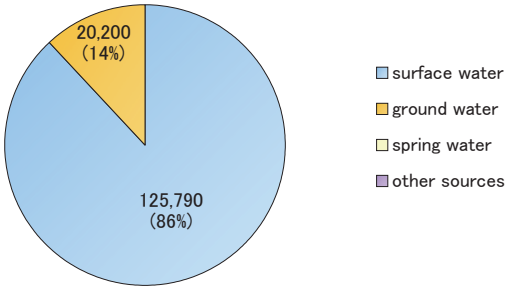
-Population served 13,000,000 inhabitants

(14.39%)

-Revenue Water : 87,594 MCM/year

-Ratio of NRW : 40.00 %

-Water Resources : 145,990 MCM/year



Contact

Philippine Water Works Association

PWWA Building, Katipunan Road, Balara, 1108 Quezon City, Philippines

Tel (0632) 920-7145 , 970-9887

Fax (0632) 9207145 , 927-87-81

Website www.pwwa.com.ph

Email pwwamail@gmail.com

with IWA BIG WIGS

Singapore

Public Utilities Board (PUB)

Water for All: Conserve, Value, Enjoy

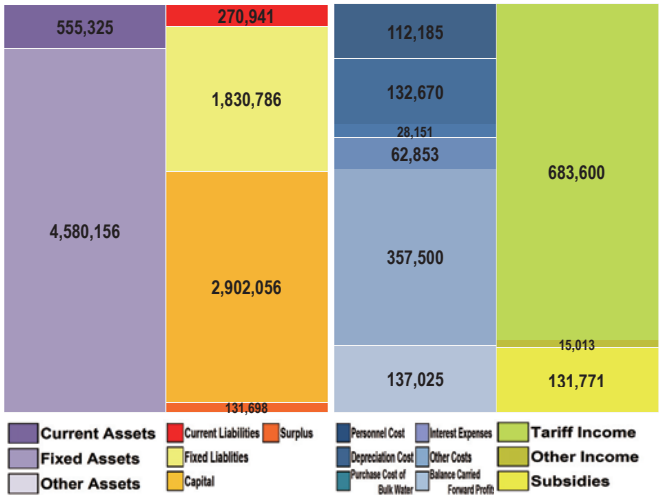
Khoo Teng Chye
Chief Executive

Management

-Contracted out to a private company

-Self-supporting accounting

Financial Condition (000US$ / FY2010)



Problems Encountered and Solution Adopted

PUB waterworks were constructed at different times in the history of Singapore's water supply. A multi-barrier treatment approach was adopted to ensure the health-based standards associated with treated water quality were met. Treatment capabilities of these waterworks are being reviewed regularly with reference to the anticipated challenges and more stringent water quality standards; and upgrading works carried out where necessary.

The problems encountered and solutions adopted are as such:

i. For high TOC in raw water, ozone was adopted in place of chlorination to reduce the formation of disinfection-by-products. Ozone is also efficient for the breakdown of taste & odor compounds.

ii. For high counts of micro-organisms in raw water, membrane filtration was installed in place of sand filters.

iii. To inactivate Cryptosporidium and Giardia which are occasionally detected in trace quantity in certain raw water, UV system was installed to ensure effective inactivation.

The present challenges include:

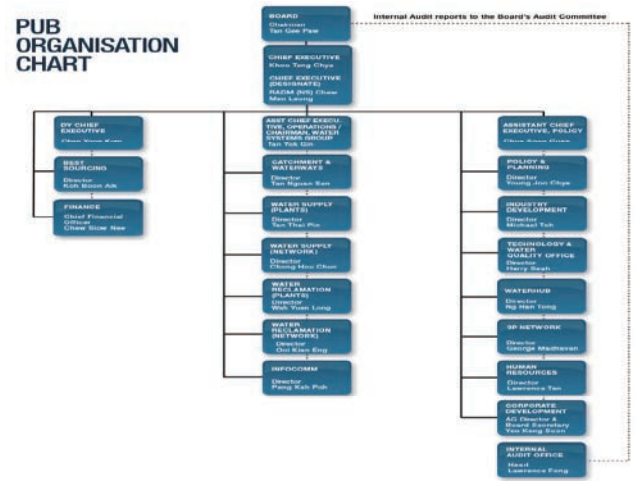
i. More urbanized catchments, with increased population density and activities, leading to higher levels of contaminants such as nutrients.

ii. Integration of reservoirs which will lower the water quality of more pristine reservoirs in the central catchments

iii. Low turn-over of reservoirs as a result of the need to maintain high reservoir stocks for greater water security, leading to higher levels of organics which facilitates algae and micro-organism growth

PUB has begun planning for waterworks upgrading to incorporate cost-effective treatment solutions for these challenges. The key processes in consideration are ozonation and biological activated carbon filters. In addition, PUB is also studying other alternatives such as Advanced Oxidation Processes through R&D projects. This will ensure the production of safe and good quality water in the face of new challenges.

Organization Structure



Total Population 5,076,700 inhabitants

Drinking Water

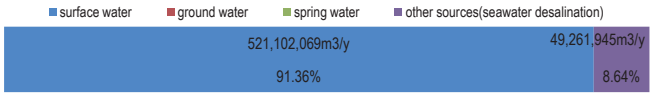
-Population served 5,076,700 inhabitants
(100.00%)

-Service Connections 1,278,076 connections

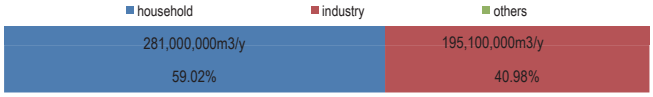
-Revenue Water 476,100,000 m3/year

-Ratio of NRW 5.20 %

-Water Resources 570,364,014 m3/year



-Annual Consumption 476,100,000 m3/year



-Total Length of Pipeline 5,300 kilometers

Cast-Iron Pope/Ductile Iron Pipe
Steel Pipe And Others

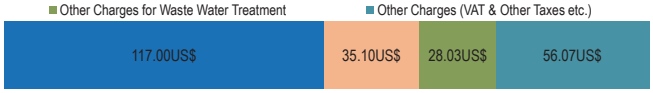
-Water Treatment Plant

name of WTP	Johor River Waterworks (JRWW)	Choa Chu Kang Waterworks (CCKWW)
purification method	JRWW consists of three plants – Plant A, B and C. Plant A and B are conventional treatment plants with coagulation, flocculation and sedimentation for pre-treatment, followed by sand filtration. UV is used for the inactivation of Cryptosporidium and Giardia while chlorine is used for primary disinfection. Plant C has similar pre-treatment as Plant A and B, followed by sand filtration. Plant C does not have UV but has ozone, which is sufficiently strong to inactivate Cryptosporidium and Giardia. There are biologically activated carbon filters as a polishing step after the ozonation process. In addition, chloramination is used to maintain residual disinfection.	CCKWW consists of Phase 1 and Phase 2 Works. Phase 1 is a membrane treatment plant with coagulation, flocculation and sedimentation for pre-treatment, followed by ultra-filtration. Chlorine is used for primary disinfection. Phase 2 is a conventional treatment plant with similar pre-treatment as Phase 1, but utilizes sand filters. Ozone is used for primary disinfection. In addition, chloramination is used to maintain residual disinfection.
ability of processing	273,000 (plant A) 455,000 (plant B) 409,000 (plant C)	Phase1: 182,000 Phase 2:182,000

name of WTP	Chestnut Avenue Waterworks (CAWW)	Woodleigh Waterworks (WoWW)	Bedok Waterworks (BeWW)
purification method	CAWW consists of Stage 1 and Stage 2 Works. Stage 1 is a conventional treatment plant with coagulation, flocculation and sedimentation for pre-treatment, followed by sand filtration. Chlorine is used for primary disinfection. Stage 2 is a membrane treatment plant with coagulation and flocculation, followed by ultra-filtration. Chlorine is used for primary disinfection. In addition, chloramination is used to maintain residual disinfection.	WoWW is a conventional treatment plant with coagulation, flocculation and sedimentation for pre-treatment, followed by sand filtration. Chlorine is used for primary disinfection. In addition, chloramination is used to maintain residual disinfection.	BeWW has coagulation, flocculation and sedimentation for pre-treatment, followed by sand filtration. Ozone is used for primary disinfection. In addition, chloramination is used to maintain residual disinfection.
ability of processing	Stage 1: 273,000 Stage 2: 273,000	204,000	136,000

Annual Water Supply Charges

(Charges for 10㎥/month × 12 months) 236.20 US$



Contact

Public Utilities Board (PUB)
Address 40 Scotts Road #22-01 Environment Building
Singapore 228231
Website www.pub.gov.sg

Viet Nam

Thua Thien Hue Construction and Water Supply State Company Limited

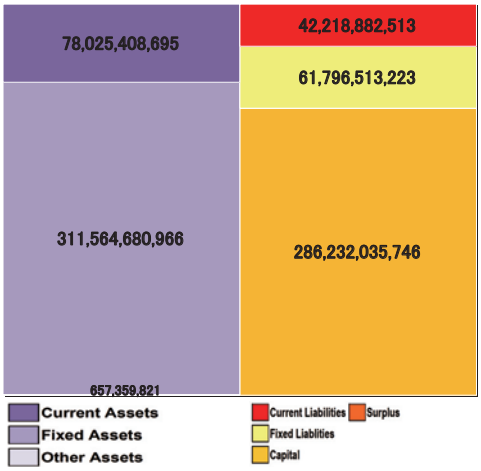
Mr Truong Cong Nam
Director - President

Management

-Public corporation managed
by National/State Government
-Self-supporting accounting

Financial Condition (US$ / FY2010)

Balance Sheet



Problems Encountered and Solution Adopted

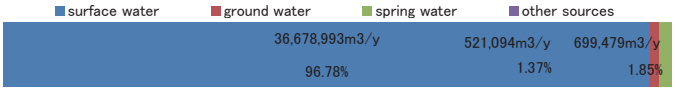
Because of galloping inflation and increasing input costs, Our company has implemented many synchronous measures in order to save the electricity, water, raw materials, chemicals etc.. during production
The total investment in rural areas is higher than the ones in urban areas, besides economic efficiency of the rural areas is low. Therefore, Our company has implemented the method on constructing water works by contribution of the State and people together and used the budget of the national program objectives etc..
The projects on irrigational works and hydroelectricity were established at upper source, caused the decline of water quality such as Fe and Mn is creased highly. In order to ensure safe water supply, Our company has spent much billions to increase treated chemical, cleaning pipeline, technological innovation etc..

Total Population 1,098,039 inhabitants

Drinking Water

-Population served	727,976	inhabitants
	(66.30%)	
-Service Connections	135,156	connections
-Revenue Water	32,461,681	m3/year
-Ratio of NRW	14.35	%
-Annual Consumption	32,461,681	m3/year

-Water Resources 37,899,566 m3/year



-Total Length of Pipeline: 1,757 kilometers
Cast-Iron Pipe/Ductile Iron Pipe Steel Pipe
Polyethylene Pipe and others

-Water Treatment Plant

name of WTP

Quang Te, Da Vien, Tu Ha, Chan May, Hoa Binh Chuong, Binh Thanh, Loc Bon, Vinh Hien, Quang An, Phu Bai, Song Nong, Thuan Hoa B Water Treatment Plants

purification method

Water source of Huong river is pumped from the Van Nien pumping station to Quang te No.2 Water Treatment Plant. Water at the Van Nien pumping station is treated by activated carbon to remove, color, bad smell, poison and Soda to raise the pH of raw water if pH is low. At Quang Te WTP, Our company use the PAC to flocculation, and then pass through the stages of sedimentation, filtration, sterilization by Javen before supply water into the network to the customer.

ability of processing 160,000 m^3/day

Present Challenge

HueWACO's responsibility must supply water all of Thua Thien Hue province. There is nearly 40 % of rural population haven't been supplied clean water. HueWACO had to receive many rural water plants which have backward technology caused much cost for improving.
Climate and environmental change, salt intrusion, the construction of hydroelectric plants in the upper of the river causing hydrological change etc.. have greatly impacted on the water quality.
The process of urbanization caused increasing water pollution. Water tariff have not been calculated correctly and fully. Water tariff is decided by Provincial People' s Committee.

Contact

Thua Thien Hue Construction and Water Supply State Company Limited

Address	103 Bui Thi Xuan Street, Hue City, Vietnam
Tel	84.54.3833710
Fax	84.54.3826580
Email	ctntth@dng.com.vn
Website	www.huewaco.com.vn

Japan Water Works Association

Yoshihiko Misono
Executive Director

Organization Franework

○President: Mr. Shintaro Ishihara (Governor of Tokyo)
○Executive Director: Mr. Yoshihiko Misono
○Board of Directors: 89 (Standing Board of Directors: 27)
○Auditors:3
○Branch System
Regional Branch: 7 / Prefectural Branch: 46 / District Branch in Hokkaido: 5
○Members (as of March 2011)
Official member (Water Utility): 1,348
Special member (Individual): 475
Supporting member (Companies): 524
Honorary member: 4 Total member: 2,351
○History
JWWA's predecessor was founded in 1904 and got authorization of the government on May 12th 1932.

Activities

○Annual events
JWWA holds following two big events annually.
JWWA General Assembly / JWWA Annual Conference and Symposium
○Lobby Activity
We concerns government affairs and organize lobby activities such as;
To submit petition/list of demands to government raised by member utilities
To organize actions by members to influence politicians on special issues
○Training Programs
JWWA provides more than 30 training courses in management/engineering/science/technical areas annually. We have the Kawaguchi Training Center constructed in June 1993.
○Research/Consultation
We conduct researches/studies on issues raised by members and compile report/guideline/manual and standards of water supply equipment and materials. Also, we provide consultation services to member utilities on water supply management/technologies.
○Publications
We publish a journal, manuals, guidelines, reports such as;
Monthly journal "JWWA journal"
"Legal cases relating to Water Supply"
"Guidelines of Design of Water Supply Facilities"
"Guidelines on Earthquake-Resistant Engineering Methods for Water Supply Facilities"

○Inspection Services
JWWA implement inspection of water supply materials, such as ductile iron pipes, to secure "Safe and Stable Water Supply" by fair and strict performance test upon manufacturer's request.
○Certfication Services
Also JWWA issues certifications according to the Regulation of Japanese Waterworks Law on water supply equipments/tools such as faucets, valves, pipe joints, water heaters, materials installed in house etc.

Activities related to IWA

JWWA established the IWA Japan National Committee (JNC) together with the Japan Society on Water Environment (JSWE) and acts as the Governing member of IWA.

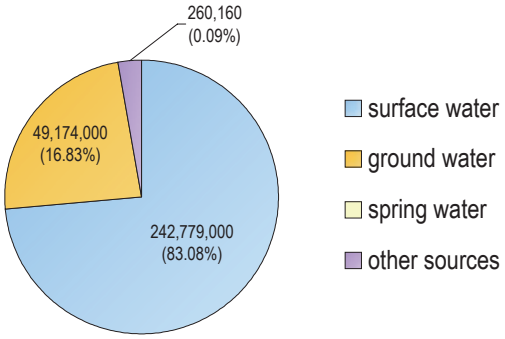
Present Challenges on Water Supply in Japan

<Issues facing at present>
-Revenues of Japanese Water Utilities have been decreasing because of the depopulation and the coming of water-saving society.
-Many Japanese Water Utilities have been running out of funds for renewal and reconstruction of their facilities which had developed during the high-growth period.
-The earthquake-proof rate of most water utilities has been low, and they have been required to respond fast to frequent earthquakes.
-Most Japanese Water Utilities have the difficulty of handling over their technologies due to the mass retirement of skilled staff.
-About 90% of Japanese Water Utilities are small and medium-sized corporations, and most of which have poor operations and maintenance.
<Solutions>
- We are going to take positive action to promote following two measures in order to solve issues we are facing and to build a solid management foundation.
(1) To reorganize small and medium-sized water utilities in diverse styles of consolidation such as complete merger to cooperation on specific works.
(2) To introduce various types PPP in the water supply sector to utilize the private companies' efficient and effective business manner.

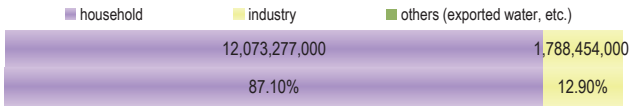
Total Population 127,941,491 inhabitants

Drinking Water

-Population served	124,796,337	inhabitants
	(97.54%)	
-Service Connections :	22,128,303	connections
-Revenue Water :	14,076,486,000	m3/year
-Ratio of NRW :	7.20	%
-Water Resources :	15,823,313,000	m3/year



-Annual Consumption 13,861,731,000 m3/year



Sewerage

-Population Served: 96,084,060 inhabitants
(75.10%)

Waste Water Treatment

-Population Served: 109,645,858 inhabitants
(85.70%)

Contact

Japan Water Works Association
4-8-9, Kudan-Minami, Chiyoda-ku, Tokyo 102-0074, Japan
Tel +81-3-3264-2307
Fax +81-3-3264-2306
Website http://www.jwwa.or.jp/
Email kokusai@jwwa.or.jp

Japan

Sapporo Waterworks Bureau

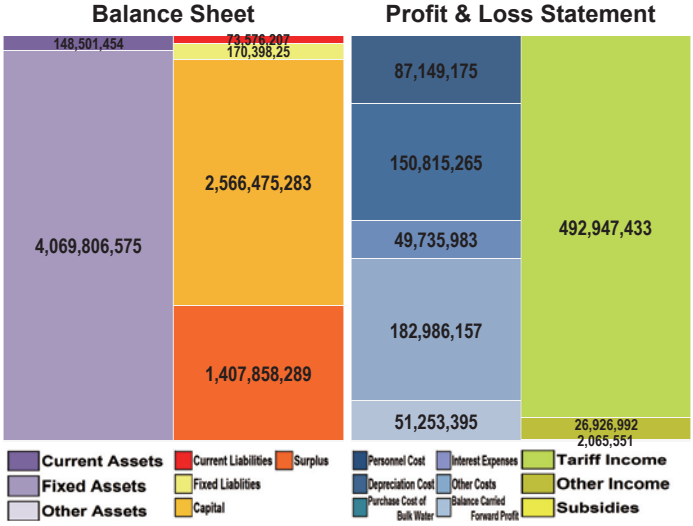
Sapporo Waterworks Museum

Yasuhiro Kitano
Director General

Management

-Public enterprise managed by Local Government
-Self-supporting accounting

Financial Condition (US$ / FY2009)



Present Challenge

- Decrease in Tariff Income caused by decreasing Wholesale Customers, etc., by introducing the private water supply system of ground water.
- Securing revenues for the major renewal of water supply facilities
- Smooth and well-planned inheritancethe of experienced worker's skills to younger workers.
- Further promoting of earthquake-risistant facilities to cope with a large-scale disaster.

Shiraikawa Water Treatment Plant

Total Population 1,909,926 inhabitants

Drinking Water

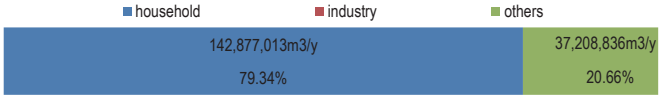
-Population served 1,907,639 inhabitants
(99.88%)

-Service Connections 796,815 connections

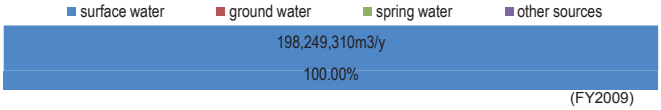
-Revenue Water 180,085,849 m3/year

-Ratio of NRW 7.50 %

-Annual Consumption 180,085,849 m3/year



-Water Resources 198,249,310 m3/year



(FY2009)

-Total Length of Pipeline 5,907 kilometers
Cast-Iron Pipe/Ductile Iron Pipe Steel Pipe
Poly Vinyl Chloride Pipe Polyethylene Pipe and Others

-Water Treatment Plant

name of WTP	Shiraikawa	Moiwa
purification method	rapid filtration	rapid filtration
ability of processing	650,000m3/d	155,000m3/d

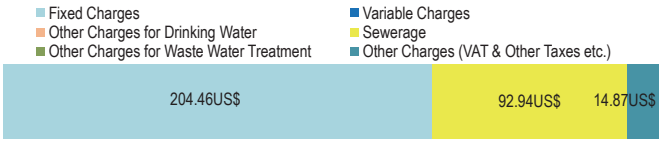
Sewerage

-Population Served 1,909,000 inhabitants
(99.95%)

-Length of Sewerage System 8,155 kilometers

Annual Water Cycle Charges

(Charges for 10㎥/month × 12 months) 312.27 US$



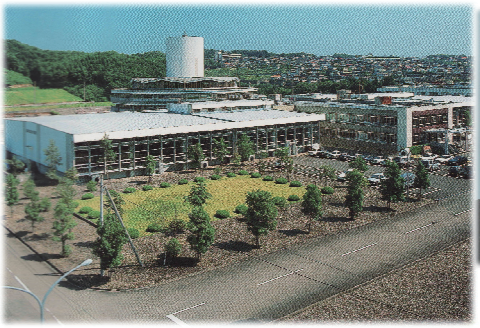
Local Assembly has the right to determine the water tariff.

Contact

Sapporo Waterworks Bureau
Address Odori Higashi 11-chome,Chuo-ku,Sapporo
Website http://www.city.sapporo.jp/suido/
E-mail su.somu@city.sapporo.jp

JAPAN

Sendai City Waterworks Bureau



Moniwa Water Treatment Plant

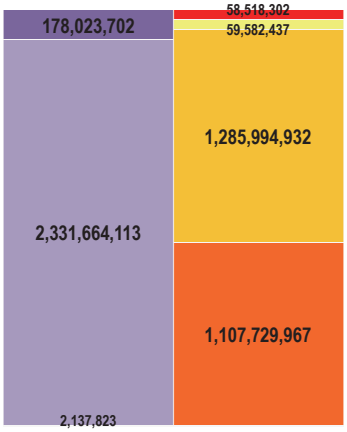
Toru Takahashi
Managing Director

Management

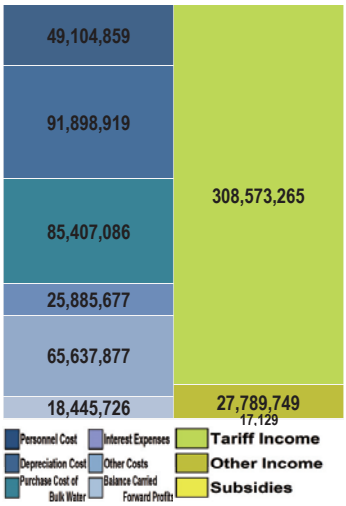
-Public enterprise managed by Local Government
-Self-supporting accounting

Financial Condition (US$ / FY2010)

Balance Sheet



Profit & Loss Statement



Problems Encountered and Solution Adopted

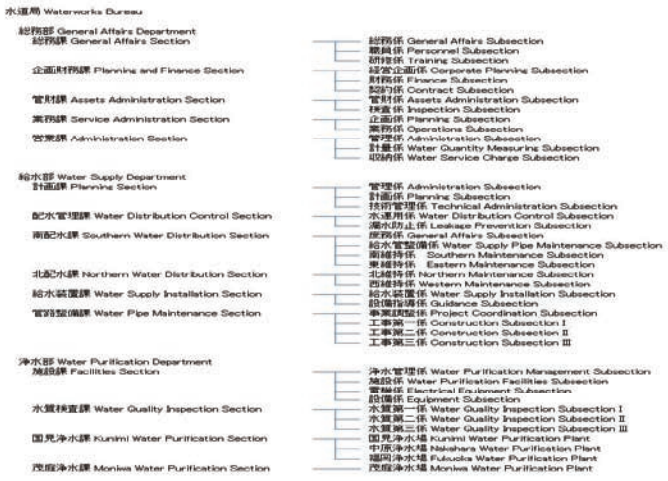
Decreasing water demand
- Shutting down some water treatment plants

Disastrous future large-scale earthquakes
- Enhancing earthquake safety of the water treatment facilities and the water distribution facilities
- Strengthening the function of water supply control and management by reorganizing the block distribution system
- Preparing the emergency water supply facilities

Aging facilities
- Systematic repair and renewal of the facilities

Deteriorating fiscal conditions
- Reducing the labor cost by outsourcing
- Reducing financial burden on interest payments by advanced redemption
- Lease and sale of the unused lands

Organization Structure



Total Population

1,024,725 inhabitants

Drinking Water

-Population served 1,019,713 inhabitants
(99.51%)

-Service Connections 449,322 connections

-Revenue Water 114,855,582 m3/year
-Ratio of NRW 2.35 %
-Annual Consumption 114,855,582 m3/year

-Water Resources 124,254,977 m3/year

-Total Length of Pipeline 3,343 kilometers
Cast-Iron Pipe/Ductile Iron Pipe
Poly Vinyl Chloride Pipe
Steel Pipe
and Others

-Water Treatment Plant

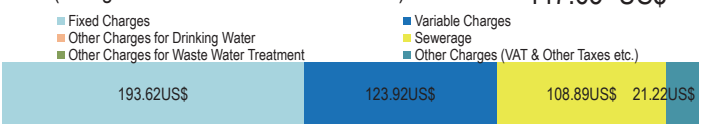
name of WTP	moniwa	nakahara	nojiri
purification method	flocculator clarifier rapid sand filtration	horizontal flow clarifier rapid sand filtration	membrane filter procedure
ability of processing	150,750m3/d	34,500m3/d	190m3/d

Sewerage

-Population Served 1,002,131 inhabitants
(97.80%)
-Length of Sewerage System 4,476 kilometers

Annual Water Cycle Charges

(Charges for 10㎥/month × 12 months) 447.65 US$



Local Assembly has the right to determine the water tariff.

Present Challenge

Water quality management
Countermeasures against disaster
Reinforcing the management base

Contact

Sendai City Waterworks Bureau
Address 29-1,Minamioonoda,Taihaku-ku,Sendai 982-8585 Japan
Website http://www.suidou.city.sendai.jp
E-mail somu@suidou.city.sendai.jp

Japan

Bureau of Waterworks, Tokyo Metropolitan Government

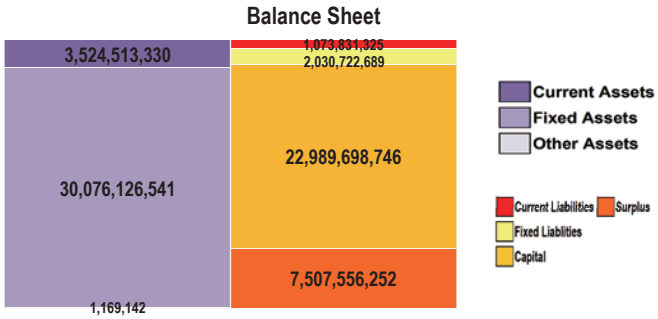
Ogouchi Resevoir

Atsushi Masuko
Director General

Management

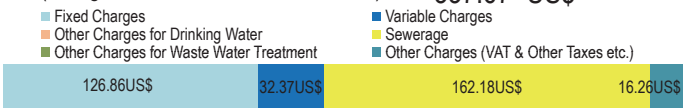
-Public enterprise managed by Local Government
-Self-supporting accounting

Financial Condition (US$ / FY2009)



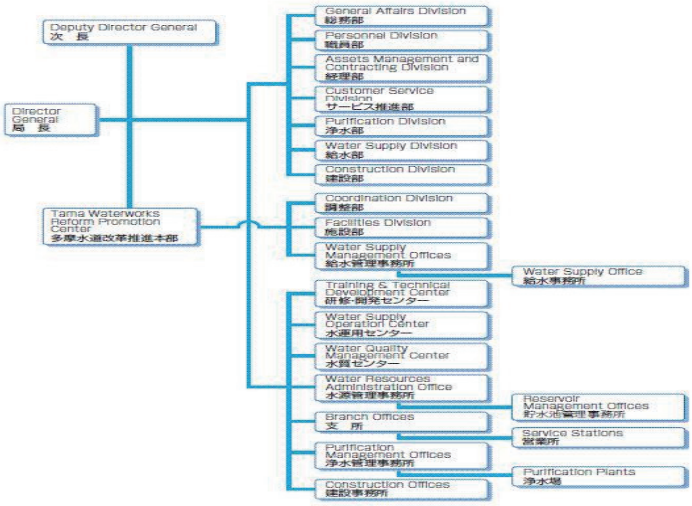
Annual Water Cycle Charges

(Charges for 10㎥/month × 12 months) 337.67 US$



Local Assembly has the right to determine the water tariff.

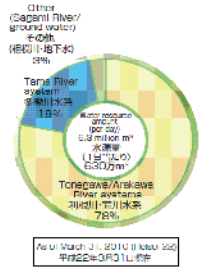
Organization Structure



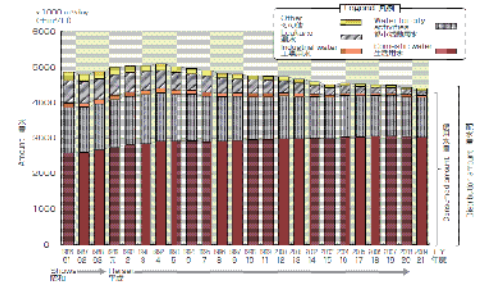
Contact

Bureau of Waterworks, Tokyo Metropolitan Government
Address 8-1, Nishi-Shinjuku 2-chome, Shinjuku-Ku, Tokyo 163-8001, Japan
Website http://www.waterprofessionals.metro.tokyo.jp/index.html
E-mail international_affairs@waterworks.metro.tokyo.jp

Total Population	12,643,876	inhabitants
Water Service Area	1,222.78	km2
Drinking Water		
-Population served	12,643,479	inhabitants
	(100.00%)	
-Service Connections	6,891,095	connections
-Ratio of Revenue Water	95.6	%
-Average Daily Water Supply	4,295,600	m3/day
-Volume of Water Resource	6,300,000	m3



Water Resources



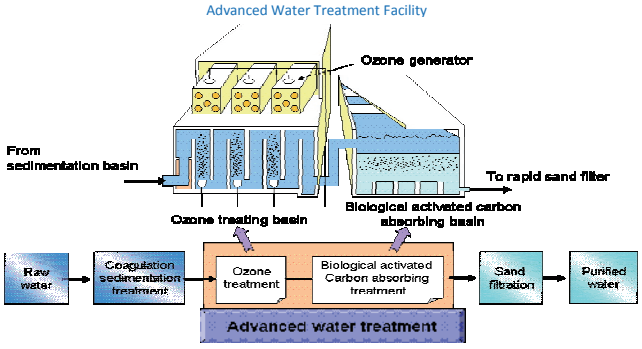
Annual Consumption

-Total Length of Pipeline 25,969 kilometers
Cast-iron Pipe/Ductile Iron Pipe Steel Pipe

-Water Treatment Plant

name of WTP	Kanamachi	Asaka	Higashi-murayama
purification method	Rapid sand filtration (Partially advanced water treatment)	Rapid sand filtration (Partially advanced water treatment)	Rapid sand filtration advanced water treatment
ability of processing	1,500,000m3/d	1,700,000m3/d	1,265,000m3/d

Total Purification Plants Capacity 6,859,500m3/d

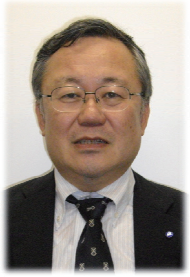


To supply safe and delicious water, Tokyo Waterworks has been introducing advanced water treatment facilities at the water purification plants.
The advanced purification process combines ozonation and biological activated carbon adsorption. With this system, impurities and unpleasant odor compounds are decomposed and removed effectively.

Monitoring Room, Water supply operation center

Japan

Yokohama Waterworks Bureau

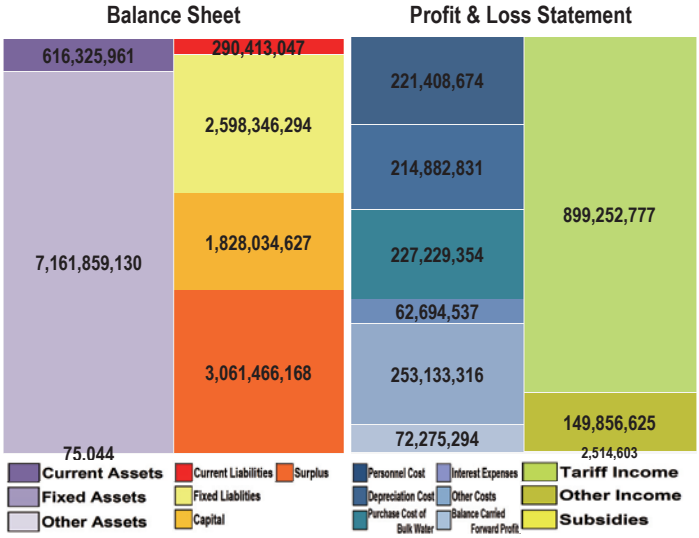


Kazunari Doi
Dierctor General

Management

-Public enterprise managed by Local Government
-Self-supporting accounting

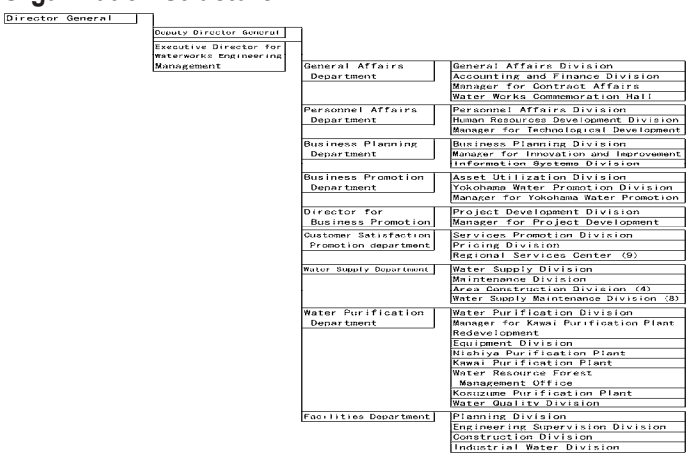
Financial Condition (US$ / FY2009)



Problems Encountered and Solution Adopted

1 To meet the water demand caused by rapidly increasing population from middle of 1960's, we Y.W.W.B. have carried out 8 expansion projects.
2 In these decreasing population era, we have still growing 3.6 millions customers. To response their various need, in 2002, we established "Yokohama Waterworks Bureau Customer Service Center" to provide one-stop services.
3 We have completed the strengthening work for facilities against for natural disasters, such as a gigantic earthquake hit Yokohama. The facilities are anti-earthquake pipelines, underground tank and emergency water taps.

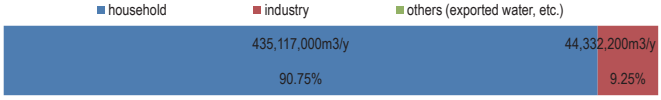
Organization Structure



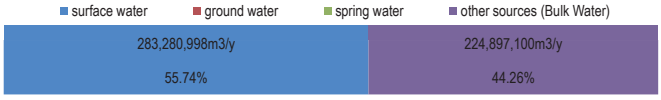
Total Population 3,687,311 inhabitants

Drinking Water

-Population served 3,687,255 inhabitants
(100.00%)
-Service Connections 1,632,902 connections
-Revenue Water 398,901,588 m3/year
-Ratio of NRW 8.30 %
-Annual Consumption 479,449,200 m3/year



-Water Resources 508,178,098 m3/year



-Total Length of Pipeline 9,094 kilometers

Cast-iron Pipe/Ductile Iron Pipe
Steel Pipe
Poly Vinyl Chloride Pipe
Polyethylene Pipe

-Water Treatment Plant

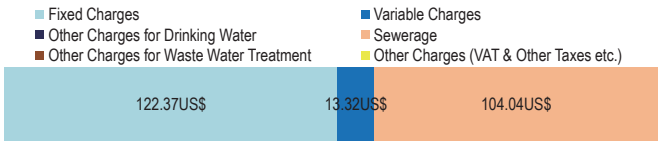
name of WTP	Nishiya	Kawai	Kosuzume
purification method	sodium hypochlorite	sodium hypochlorite	sodium hypochlorite
ability of processing	356,000m3/d	106,400m3/d	1,009,200m3/d

Sewerage

-Population Served 3,678,696 inhabitants
(99.77%)
-Length of Sewerage System 11,704,182 kilometers

Annual Water Cycle Charges

(Charges for 10㎥/month × 12 months) 239.73 US$



Local Assembly has the right to determine the water tariff.

Present Challenge

1 We have to quakeproof our facilities, and have to maintain our pipeline-network systematically.
2 To construct Eco-friendly water supply system, we apply priority of gravity flow system, efficiency of pumping facilities and active use of new energy.
3 Because there are the sluggish economy and the wide spread of water-saving home electronics, water demand and water charge income have declined. So we have to improve our efficiency and have to reform our management.
4 In response to the 2011 off the Pacific coast of Tohoku Earthquake(11 March), we have dispatched several rescue teams to the affected cities in Tohoku and Kanto region, as the manager of J.W.W.A. Kanto branch. Because there are still many cities that have damaged facilities, we are supporting them with member cities in our branch.

Contact

Yokohama Waterworks Bureau
Address 1-1, Minato-cho, Naka-ku, Yokohama, Kanagawa
Website http://www.city.yokohama.lg.jp/
E-mail su-somu@city.yokohama.jp

Japan

City of Kawasaki

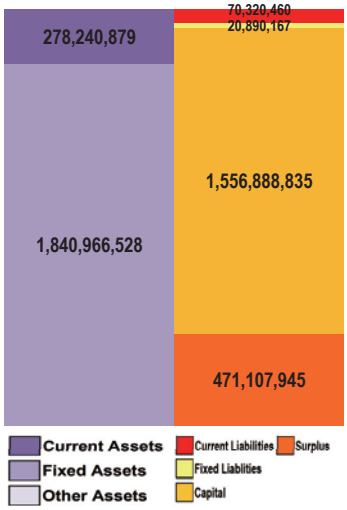
Hiraoka Yoichi
Chief Executive Officer

Management

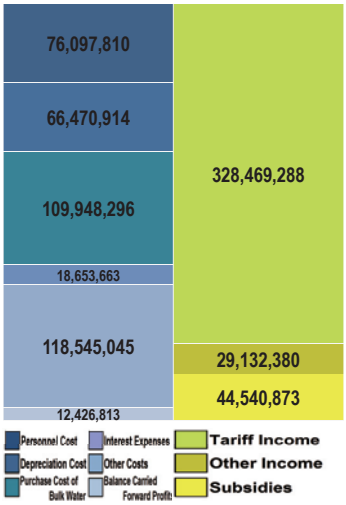
-Public enterprise managed by Local Government
-Self-supporting accounting

Financial Condition (US$ / FY2010)

Balance Sheet



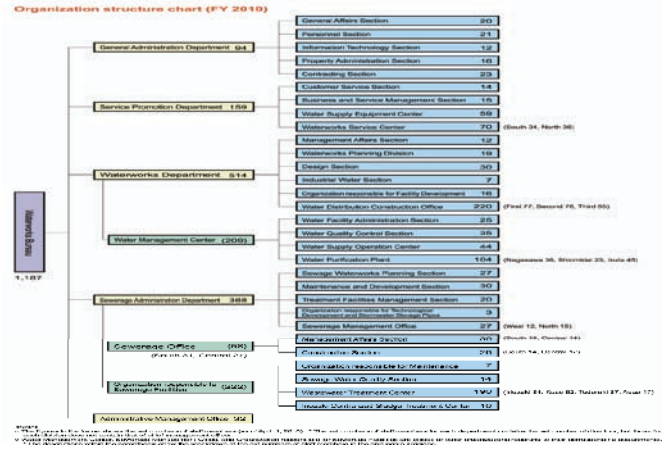
Profit & Loss Statement



Problems Encountered and Solution Adopted

●Problem1 The gap between actual water supply capacity, 1,027,600㎥, and maximum water supply amount, 523,200㎥, in one day (FY2005).
○Solutions Current water treatment capacity is planned to be scaled down to 758,200㎥ by shutting down two plants, Ikuta WTP and Shiomidai WTP, and concentrating the capacity on one plant, Nagasawa WTP. (under construction)
●Problem2 Large scale of renewal of the old water supply facilities.
○Solutions Facilities constructed in high growth period need to be renewed for their aging degradation. Based on the precisely accessed future water demand, City of Kawasaki keeps renewing facilities.
●Problem3 Ensuring drinking water in emergency of earthquake
○Solutions Core water supply facilities such as WTP and distributing reservoirs are in the process of renewal and enhancement. Regarding pipeline, transmission pipes and distribution main pipes are also being replaced to earthquake-resistant pipe, especially the ones to important locations such as hospitals. To ensure drinking water in case of emergency caused by earthquake, the city has set 123 temporary water supply sites almost every 1km.

Organization Structure

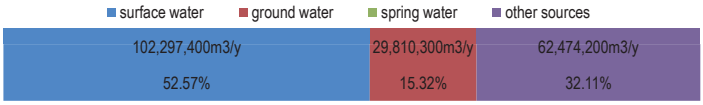


Total Population 1,426,943 inhabitants

Drinking Water

-Population served 1,426,879 inhabitants
(100.00%)
-Service Connections 775,704 connections
-Revenue Water 169,055,881 m3/year
-Ratio of NRW 10.31 %
-Annual Consumption 169,052,857 m3/year

-Water Resources 194,581,900 m3/year



-Total Length of Pipeline 2,448 kilometers
Cast-Iron Pipe/Ductile Iron Pipe
Steel Pipe
Poly Vinyl Chloride Pipe
Polyethylene Pipe

-Water Treatment Plant

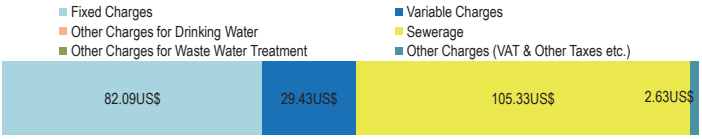
name of WTP	Nagasawa WTP	Ikuta WTP	Shiomidai WTP
purification method	Rapid sand filtation	Rapid sand filtation	Rapid sand filtation
ability of processing	240,000m3/d	100,000m3/d	200,000m3/d

Sewerage

-Population Served 1,403,433 inhabitants
(98.35%)
-Length of Sewerage System 3,035 kilometers

Annual Water Cycle Charges

(Charges for 10㎥/month × 12 months) 219.48 US$



Local Assembly has the right to determine the water tariff.

Present Challenge

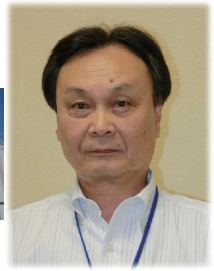
1 Introducing eco friendly schemes
The city provides water with less energy by utilizing gravity flow so the water can be sent without pumps. In order to harness natural energy more effectively, the city has introduced two micro hydroelectric power generators which generate electricity from water running through pipelines. The machines cover about 360 households electric consumption in one year.
2 Improvement of management
City of Kawasaki plans to improve its management by recruiting less number of people to reduce employees, rebuilding a suitable organization structure for the future water supply capacity and promoting outsource of some work to private companies.
3 Globalization
City of Kawasaki dispatches its officials to overseas and receives foreign trainees to contribute to global water problems. At the same time, the city will approach to global water problems under the cooperation between the public and private sector.

Contact

City of Kawasaki
Address 1 Miyamoto-cho Kawasaki-ku Kawasaki, Kanagawa, Japan
Website http://www.city.kawasaki.jp/80/80syomu/home/index.htm
E-mail 80keikan@city.kawasaki.jp

Japan

Saitama City Waterworks Bureau

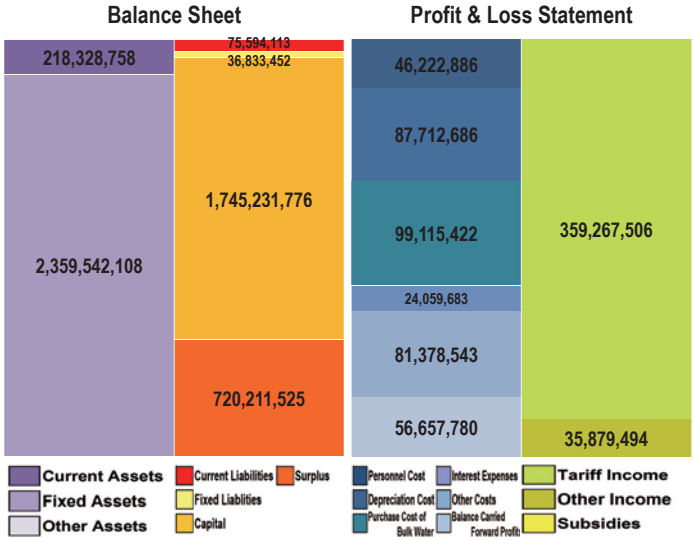


Osamu WATANABE
Waterworks Project Manager

Management

-Public enterprise managed by Local Government
-Self-supporting accounting

Financial Condition (US$ / FY2010)



Problems Encountered and Solution Adopted

・Customer's advanced request for water quality → Making Water Safety Plan / Certification of Waterworks GLP (Good Laboratory Practice) etc...
・Reduction of negative environmental impact → Introduction of energy conservation equipment / Installation of small-scale hydraulic power generation / Promotion of 3R (Reduce, Reuse, Recycle) etc...
・Decrease of water consumption → Cost reduction / Outsourcing / Effective use of private power / Intensification of talent promotion

Organization Structure

Total Population 1,234,274 inhabitants

Drinking Water

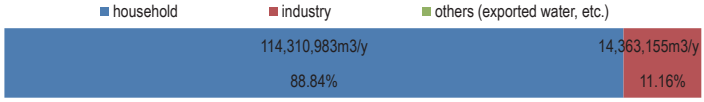
-Population served 1,233,427 inhabitants
(99.9%)

-Service Connections 555,804 connections

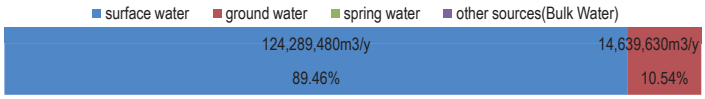
-Revenue Water 128,674,138 m3/year

-Ratio of NRW 6.3 %

-Annual Consumption 128,674,138 m3/year



-Water Resources 138,929,110 m3/year



-Total Length of Pipeline 3,403 kilometers
Cast-Iron Pope/Ductile Iron Pipe
Poly Vinyl Chloride Pipe
Steel Pipe
Polyethylene Pipe and Others

-Water Treatment Plant
Mainly supplied by Saitama Prefectural Government Public Enterprise Bureau

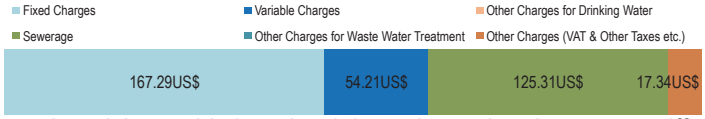
Sewerage

-Population Served 1,085,479 inhabitants
(87.9%)

-Length of Sewerage System 3,027 kilometers

Annual Water Cycle Charges

(Charges for 10㎥/month × 12months) 364.15 US$



Local Assembly has the right to determine the water tariff.

Present Challenge

・Private Public Partnership
・Merger of Waterworks and Sewerage business
・Reagionalization of business

Contact

Saitama City Waterworks Bureau
Address 1-18-2, Harigaya, Urawa-ku, Saitama-city, Saitama Pref, 330-8532, Japan
Website http://www.city.saitama.jp/suido.html
E-mail keiei-kikaku@city.saitama.lg.jp

Japan

Nagoya Waterworks & Sewerage Bureau

Nabeya-ueno Water Purification Plant

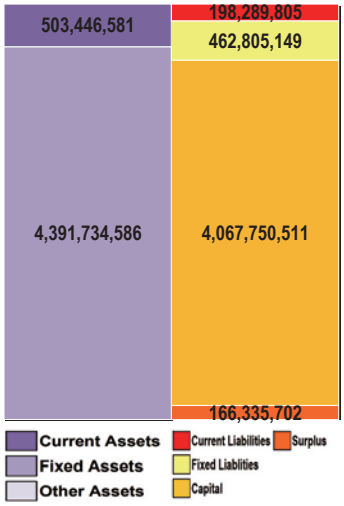
Kazushi HASEGAWA
Director-General

Management

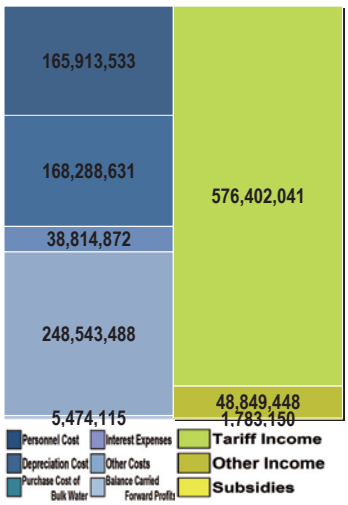
-Public enterprise managed by Local Government
-Self-supporting accounting

Financial Condition (US$ / FY2010)

Balance Sheet



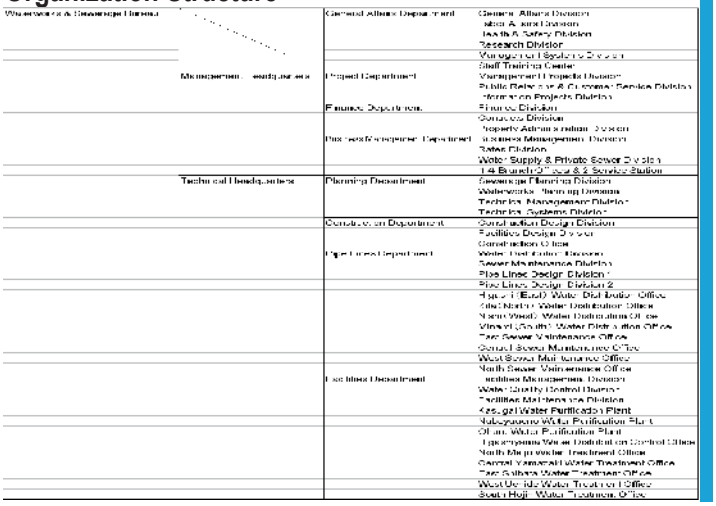
Profit & Loss Statement



Problems Encountered and Solution Adopted

・In Waterworks Water System changes by the gravity-flow area expands and the energy-saving facilities are introduced, and in Sewerage high temperature incineration is introduced and so on.
We settled a mid/long-term plan to achieve the reduction 25% of the Greenhouse Gas (compared with fiscal year 1990) in fiscal year 2020.
・The introduction of the Advanced Wastewater Treatment is advanced for the aquatic conservation.
・Municipalities in the Kiso three rivers basin area declared 'Basin Municipalities' in 2010.
・A lot of international cooperation that is the trainee's from foreign countries and dispatches of the experts and so on has been executed by the request such as JICA for the waterworks and sewerage since 1978.
・The cooperation request of the private company is received for the JICA Preparatory survey on water supply in un-served areas in Sri Lanka (BOP business) in fiscal year 2011, the agreement concerning the mutual collaboration that provides the split of work etc. is concluded, and our staff is sent to a local investigation committee.

Organization Structure

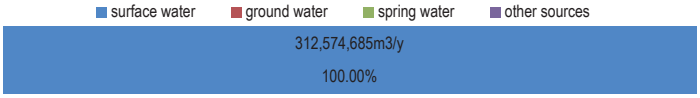


Total Population 2,388,335 inhabitants

Drinking Water

-Population served	2,388,316	inhabitants
	(100.00%)	
-Service Connections	909,957	connections
-Revenue Water	271,266,046	m3/year
-Ratio of NRW	3.91	%
-Annual Consumption	271,266,046	m3/year

-Water Resources 312,574,685 m3/year



-Total Length of Pipeline 8,306 kilometers

Cast-iron Pipe/Ductile Iron Pipe	Steel Pipe
Poly Vinyl Chloride Pipe	Polyethylene Pipe

-Water Treatment Plant

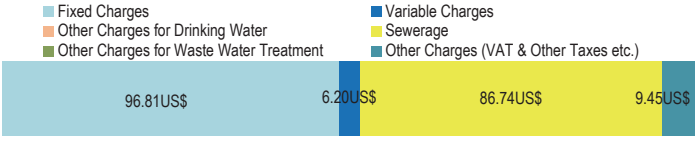
name of WTP	Nabeya-ueno Water Purification Plant	Oharu Water Purification Plant	Kasugai Water Purification Plant
purification method	Rapid Type & Slow Type	Rapid Type	Rapid Type
ability of processing	290,000m3/d	544,000m3/d	590,000m3/d

Sewerage

-Population Served	2,237,900	inhabitants
	(99.0%)	
-Length of Sewerage System	7,656	kilometers

Annual Water Cycle Charges

(Charges for 10㎥/month × 12 months) 199.20 US$



Local Assembly has the right to determine the water tariff.

Present Challenge

・By the driving stop of the Hamaoka nuclear plant due to Tohoku Earthquake, the CO2 emission factor increases. We are feared about influence on the targeted reduction of the Greenhouse Gas.
・It is necessary to exchange information with another city aiming at the problem solution while there is a constant restriction in the overseas deployment by the municipality, and to execute the appeal to the national government.

Contact

Nagoya Waterworks & Sewerage Bureau
Address 3-1-1Sannomaru naka-ku Nagoya, Aichi, Japan
Website http://www.city.nagoya.jp/
E-mail keiei@jogesuido.city.nagoya.lg.jp

Japan

Osaka City Waterworks Bureau

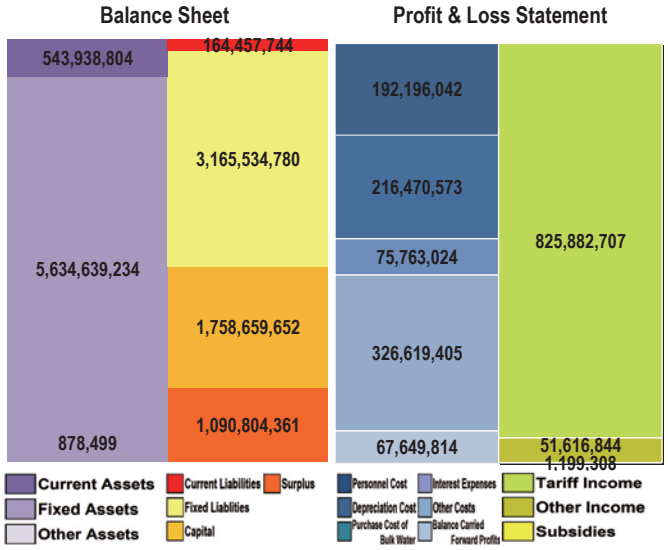
Hiroyuki Inoue
Director General

Management

-Public enterprise managed by Local Government

-Self-supporting accounting

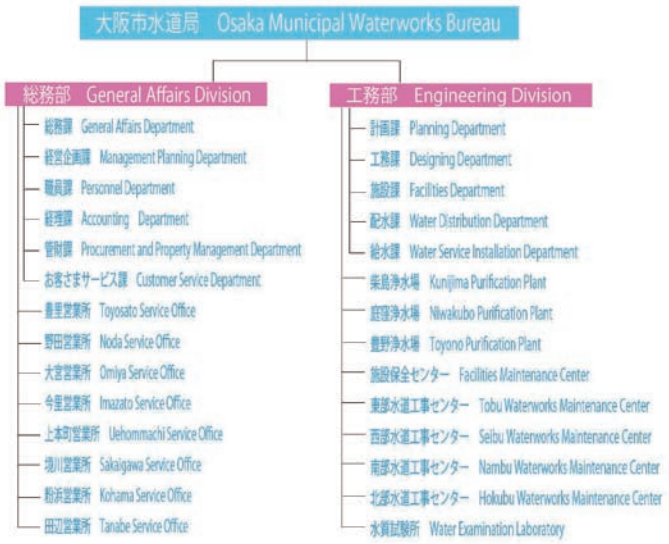
Financial Condition (US$ / 2010)



Present Challenge

・For securement of the business endurance, we are making an effort toward reduction by integration and reorganization of the office with that we wrestle continuously reduction in number of staffs and compression of the enterprise loan's balance.

Organization Structure



Total Population 2,665,373 inhabitants

Drinking Water

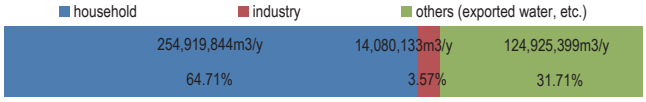
-Population served 2,665,373 inhabitants
(100.00%)

-Service Connections 591,744 connections

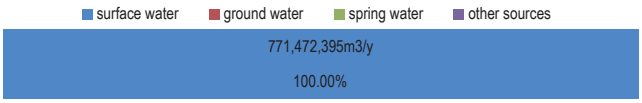
-Revenue Water 393,925,376 m3/year

-Ratio of NRW 4.65 %

-Annual Consumption 393,925,376 m3/year



-Water Resources 771,472,395 m3/year



-Total Length of Pipeline 5,199 kilometers

Cast-Iron Pope/Ductile Iron Pipe
Steel Pipe and Others

-Water Treatment Plant

name of WTP	Kunijima Purification Plant	Niwakubo Purification Plant	Toyono Purification Plant
purification method	Advanced water treatment system	Advanced water treatment system	Advanced water treatment system
ability of processing	1,180,000m3/d	800,000m3/d	450,000m3/d

Sewerage

-Population Served 2,657,379 inhabitants
(99.70%)

-Length of Sewerage System 4,877 kilometers

Annual Water Cycle Charges

(Charges for 10㎥/month × 12 months) 243.81 US$

Local Assembly has the right to determine the water tariff.

Problems Encountered and Solution Adopted

・Osaka Municipal Waterworks Bureau has introduced advanced water treatment system, consists of an ozone treatment process and treatment with granular active carbon, since 2000. This process removes foul or musty odors and greatly reduces trihalomethane, cryptosporidium and other pathogenic microorganisms.

・In the severe management environment that the demand of water which becomes a basis of the watering profit keeps decreasing, we have wrestled carry the specific numerical target, reduction in number of staffs and overhaul of the upkeeping cost, reorganization of the business execution system, and more. As a result, in the watering profit keeps decreasing, it was possible to secure the ordinary profit by reducing the expenses in which that's exceeded.

Contact

Osaka City Waterworks Bureau
Address 1-14-16 Nanko-kita, Suminoe-ku, Osaka, Japan
Website http://www.city.osaka.lg.jp/suido/

JAPAN

Kobe City Waterworks Bureau

Shinichi Omori
Director General

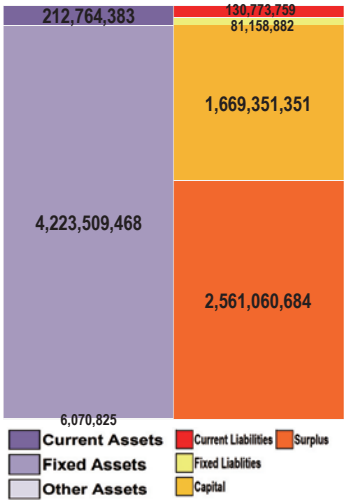
Management

-Public enterprise managed by Local Government

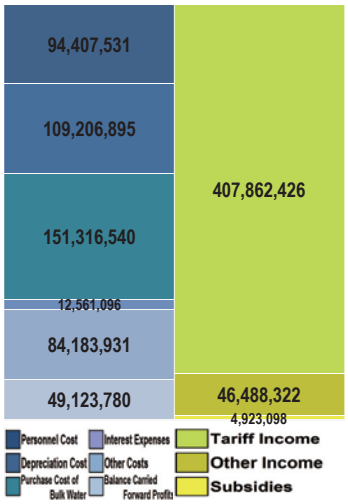
-Self-supporting accounting

Financial Condition (US$ / FY2010)

Balance Sheet



Profit & Loss Statement



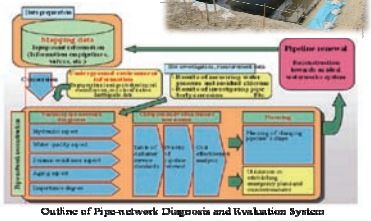
Problems Encountered and Solution Adopted

Our challenges are to secure water for disaster prevention center at the early stage and to complete early emergency restoration, even in the event of an earthquake as devastating as the Hanshin-Awaji Earthquake.
The main measure to achieve aims is as follows.

1.Setting up an emergency water storage system

2.Earthquake-resistant of destribution pipes

3.Construction of Large-Capacity Transmission Main.



Outline of Pipe-network Diagnosis and Evaluation System

Present Challenge

1.Developing pipe analysis system to enable comprehensive evaluation and diagnosis of pipe-networks and prioritization of pipelines for renewal.

2.Promotion of earthquake resistant measures that cooperates with the citizens

3.International contributions for water and infrastructure development

Total Population 1,542,458 inhabitants

Drinking Water

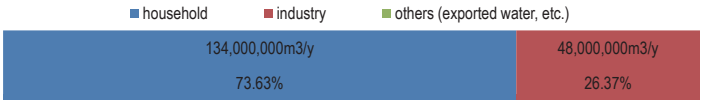
-Population served 1,539,349 inhabitants
(99.80%)

-Service Connections 770,540 connections

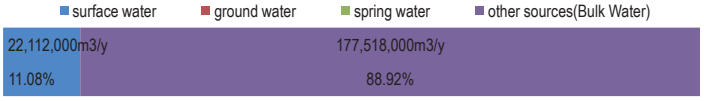
-Revenue Water 182,081,580 m3/year

-Ratio of NRW 5.00 %

-Annual Consumption 182,000,000 m3/year



-Water Resources 199,630,000 m3/year



-Total Length of Pipeline 5,075 kilometers

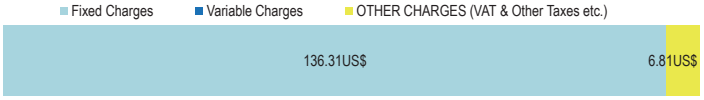
Cast-iron Pipe/Ductile Iron Pipe
Steel Pipe
Poly Vinyl Chloride Pipe
Polyethylene Pipe

-Water Treatment Plant

name of WTP	Sengari
purification method	Rapid sand filtration
ability of processing	108,000m3/d

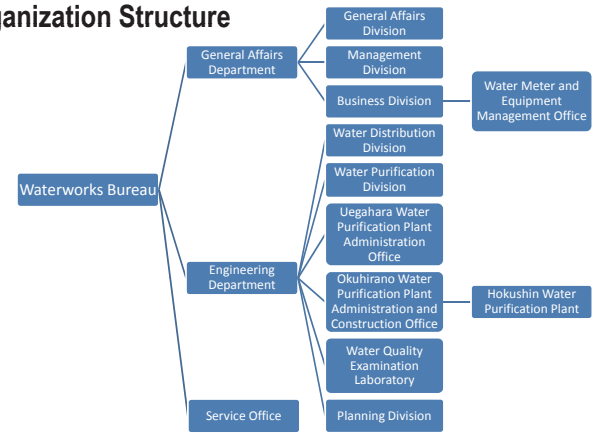
Auual Water Supply Charges

(Charges for 10㎥/month × 12 months) 143.12 US$



Local Assembly has the right to determine the water tariff.

Organization Structure



Contact

Kobe City Waterworks Bureau
Address 6-5-1 Kano-Cho, Chuo-ku, Kobe-city
Website http://www.city.kobe.lg.jp/life/town/waterworks/water/index.html
E-mail itteki_chan@office.city.kobe.lg.jp

Japan

Waterworks Bureau The City of Hiroshima

Akira Miyamoto
Director general

Koyo purification plant

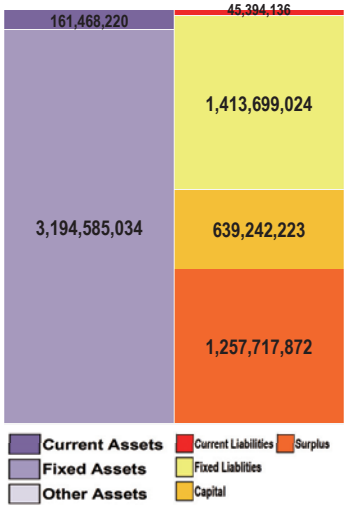
Management

-Public enterprise managed by Local Government

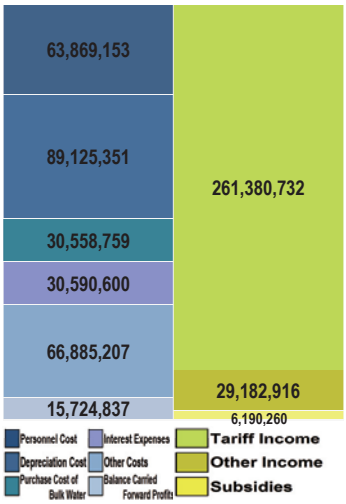
-Self-supporting accounting

Financial Condition (US$ / 2009)

Balance Sheet



Profit & Loss Statement



Problems Encountered and Solution Adopted

・In order to ensure a stable water supply , water facilities were expanded seven times and we have secured water sources.

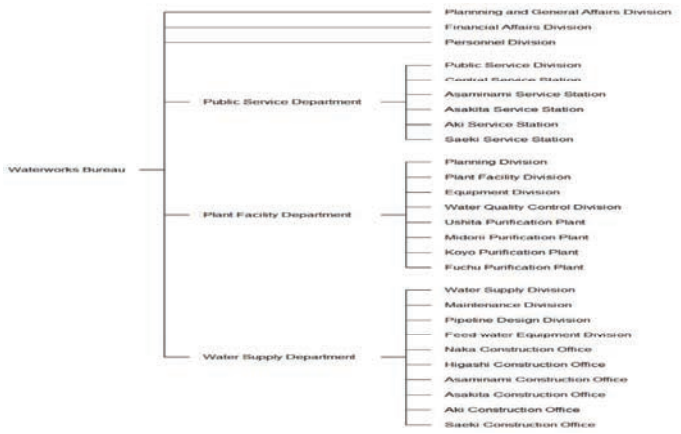
・In order to clear water on the next generation , we acquired forests in the river's headwaters area and mintaining their function as a watershed protection forest.

・So as to decrease of water demand , we are constantly re-evaluating our work and striving to secure a healthy economic standing through more efficient management.

Present Challenge

・Decline of water demand
・Succession of technical
・Upgrade of facilities
・Enviromental measures
・Eathquake-proofing of facilities

Organization Structure



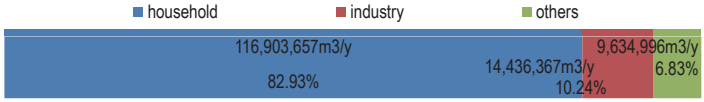
Total Population 1,232,842 inhabitants

Drinking Water

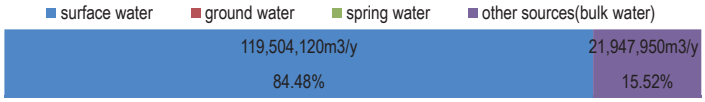
-Population served 1,205,161 inhabitants
(97.75%)

-Service Connections 591,880 connections
-Revenue Water 131,340,024 m3/year
-Ratio of NRW 3.00 %

-Annual Consumption 140,975,020 m3/year



-Water Resources 141,452,070 m3/year



-Total Length of Pipeline 4,500 kilometers
Cast-iron Pipe/Ductile Iron Pipe Steel Pipe
Poly Vinyl Chloride Pipe Polyethylene Pipe and Others

-Water Treatment Plant

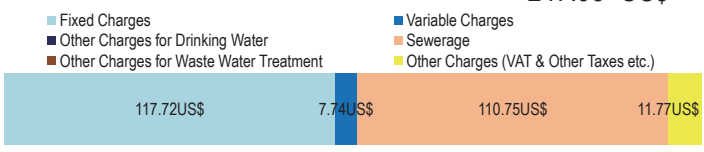
name of WTP	Ushita Purification Plant	Midorii Purification Plant	Koyo Purification Plant
purification method	Rapid sand filtration	Rapid sand filtration	Rapid sand filtration
ability of processing	121,000m3/d	216,000m3/d	216,000m3/d

Sewerage

-Population Served 1,093,250 inhabitants
(88.68%)
-Length of Sewerage System 5,682 kilometers

Annual Water Cycle Charges

(Charges for 10㎥/month × 12 months) 247.98 US$



Local Assembly has the right to determine the water tariff.

Contact

Waterworks Bureau The City of Hiroshima
Address 9-32 Moto-machi Naka-ku , Hiroshima
Website http://www.water.city.hiroshima.jp
E-mail kikakusomu@city.hiroshima.jp

Japan

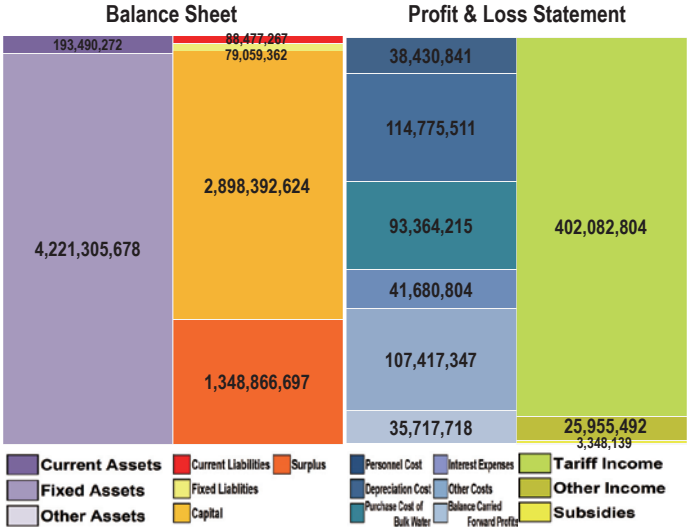
Fukuoka City Waterworks Bureau

Ohara Mitsunobu
Superintendent of Waterworks

Management

-Public enterprise managed by Local Government
-Self-supporting accounting

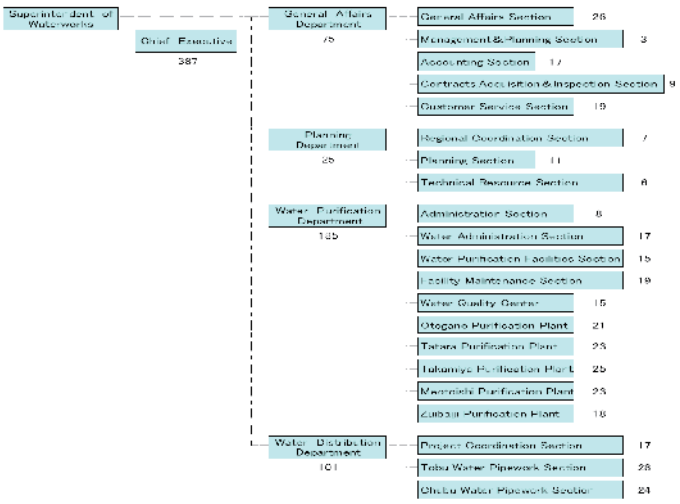
Financial Condition (US$ / 2010)



Problems Encountered and Solution Adopted

○Extraordinary Drought in 1978 and 1994.
- Water Conserving Style Urban Development by introducing effective water distribution system, effective utilization of water and promotion of Water-saving awareness.
○Environmental Deterioration of the water catchment area and Dependence of the Water Resources on the outside of municipal area.
- Development of Watershed Protection Forest and Information Exchange with the residents of water catchment area.
○Sustainable Management.
- Promotions of the Subcontracting of the business offices.

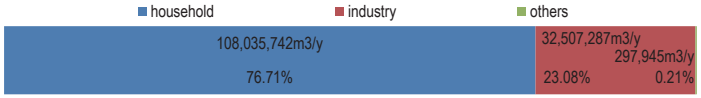
Organization Structure



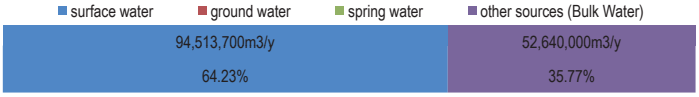
Total Population 1,469,069 inhabitants

Water Supply

-Population served 1,458,000 inhabitants
(99.25%)
-Service Connections 555,118 connections
-Revenue Water 140,884,364 m3/year
-Ratio of NRW 1.43 %
-Annual Consumption 140,840,974 m3/year



-Water Resources 147,153,700 m3/year



-Total Length of Pipeline 4,035 kilometers
Cast-iron Pipe/Ductile Iron Pipe
Poly Vinyl Chloride Pipe
Steel Pipe
Polyethylene Pipe

-Water Treatment Plant

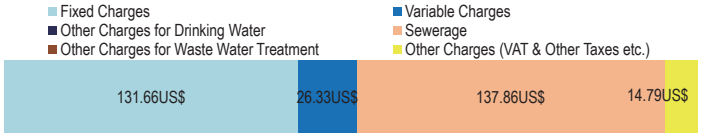
name of WTP	Takamiya WTP	Otogana WTP	Meotoishi WTP
purification method	rapid sand filtration	rapid sand filtration	rapid sand filtration
ability of processing	199,000m3/d	110,500m3/d	174,000m3/d

Sewerage

-Population Served 1,451,057 inhabitants
(98.77%)
-Length of Sewerage System 6,860 kilometers

Annual Water Cycle Charges

(Charges for 10㎥/month × 12 months) 310.64 US$



Local Assembly has the right to determine the water tariff.

Present Challenge

○Development of Water Resources prepared for the extraordinary drought and the increase of water demand.
○Renewal and Reconstruction of the aging facilities developed after 1965 (Japan's period of rapid economic growth).
○Reinforcement of Water Quality Control to supply safe and pure quality water more than ever.
○Promotions of Publicity Activities to construct the relationships of mutual trust with the customers.
○Reinforcement of Disaster Contingency Planning and Risk management by reconstructing earthquake-resistance facilities.
○Capacity Buildings and Smooth Succession of Core Technology Corresponding with the simplification of organization and the mass retirement of staff caused by the aging society with fewer children.
○Financial Consolidation by the equalization of funding requirements and the reduction in balance of bonds.

Contact

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E-mail somu.WB@city.fukuoka.lg.jp

Japan

Kitakyushu City Waterworks Bureau

Kazuhiko Yoshida
Managing Director

Honjo Water Purification Plant

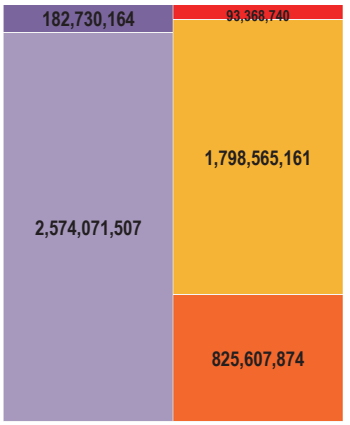
Management

-Public enterprise managed by Local Government

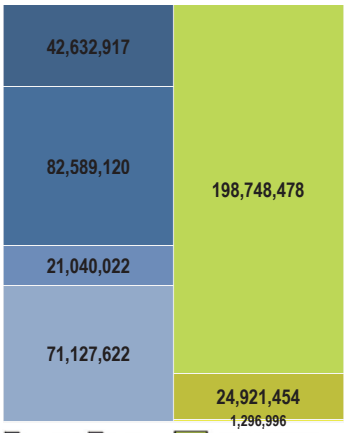
-Self-supporting accounting

Financial Condition (US$ / FY2009)

Balance Sheet



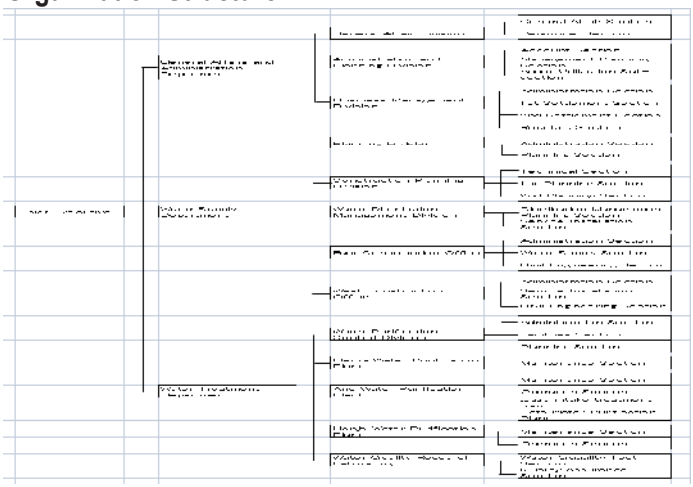
Profit & Loss Statement



Problems Encountered and Solution Adopted

Kitakyushu City Waterworks Bureau was inaugurated by the consolidation between Water Supply Department of former Moji City and Kitakyushu Waterworks Agency in 1 January, 1964. Our city was obliged to restrict the water supply for about 2 months because of drought in 1967 and 1968 for the second consecutive year. Then our city's waterworks bureau set the water resource development as one of the most important policies and developed Aburagi Dam in fiscal year 1971, Masubuchi Dam in fiscal year 1973, and Onga River Estuary Weir in 1983, in order to respond the challenges of "drought" and "water demand growth accompanying the development of the city'"In addition, our city participated in the development of Yabakei Dam in Oita Prefecture beyond the border between prefectures in 1977, then accomplished Yabakei Water Conveyance Channel, and promoted further stabilization of water resource capacity. As a result, we made possible to realize drought-tolerance and cheapest water rate in Fukuoka Prefecture.

Organization Structure



Total Population 993,360 inhabitants

Drinking Water

-Population served 988,848 inhabitants
(99.55%)

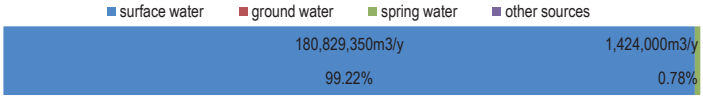
-Service Connections 469,457 connections

-Revenue Water 106,187,569 m3/year

-Ratio of NRW 4.01 %

-Annual Consumption 178,664,050 m3/year

-Water Resources 182,253,350 m3/year



-Total Length of Pipeline 4,275 kilometers
Cast-Iron Pipe/Ductile Iron Pipe

-Water Treatment Plant

name of WTP	Ano	Ideura	Honjo
purification method	rapid sand filtration	rapid sand filtration	rapid sand filtration
ability of processing	300,000m3/d	255,200m3/d	141,000m3/d

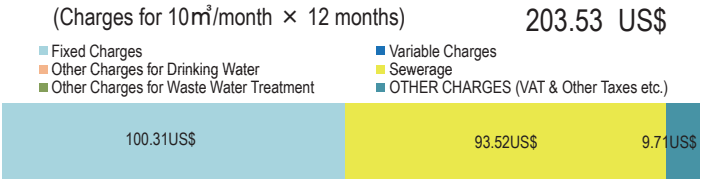
Sewerage

-Population Served 987,771 inhabitants
(99.44%)

-Length of Sewerage System 4,324 kilometers

Annual Water Cycle Charges

(Charges for 10㎥/month × 12 months) 203.53 US$



Local Assembly has the right to determine the water tariff.

Present Challenge

As to our city's water utility, water demand has been continuously decreasing against the backdrop of the progress of the declining birthrate and aging population, enhancement of water-saving consciousness, and shift to groundwater by large-scale consumers due to prolonged economic stagnation, etc. and the environment surrounding waterworks has drastically changed as in growing interest in the safety and palatability of water and response to crisis management, and business challenge has also become diversified and sophisticated.In this circumstance, Kitakyushu City Waterworks Bureau has been implementing water utility having 6 policy goals of "Safe, secure and palatable water for customers", "Stable water supply at any time", "Water supply maintaining inexpensive price", "Citizen-friendly waterworks", "Waterworks promoting environmental conservation, energy saving countermeasures", and "Waterworks contributing to the world", with the basic philosophy of "Customer Reliable Waterworks" as a long-term managerial principle in 2006.

Contact

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Water Supply in Japan

1. Overview of water supply services

(1) Geomorphology and Hydrology in Japan

Japan is an archipelago, made from four large islands and many other small islands. Among them, 6,852 islands have more than 100 m of coastline, and around 400 islands are inhabited. The length of Japanese archipelago is over 3,000 km. The highest mountain is Mt. Fuji (3,776m) located at the border of Shizuoka Prefecture and Yamanashi Prefecture. The longest river is Shinano River (367km) meandered from Gumma Prefecture, Nagano Prefecture to Niigata Prefecture. The largest lake is Lake Biwa (671km2), located in Shiga Prefecture.

Since Japan lies from north to south, covering a wide range of latitude, the climate varies from cold zone (northern area), temperate monsoon zone (central area), to subtropical zone (southern area). The average temperature in Tokyo, located in central area, is 15 degrees Celsius (ranging from 5 degrees Celsius at the lowest to 27 degrees Celsius at the highest). In Sapporo, located in cold zone, the average temperature is 8 degrees Celsius (ranging from -5 degrees Celsius to 21 degrees Celsius). In Naha, located in subtropical zone, the average temperature is 22 degrees Celsius (ranging from 16 degrees Celsius to 28 degrees Celsius). This diverse climate range results in rich natural environment and ecosystem. Also, because of the diverse climate and topology, every region has different water environment.

The average precipitation in Japan is 1,718 mm/year, higher than the world average (880 mm/year). Again, precipitation in Sapporo, Tokyo, and Naha is 1,029 mm/year, 1,322 mm/year, and 2,816 mm/year, respectively. Recently, local heavy rain and torrential shower have been occurring frequently.

Diagram 1 shows the gradient of major rivers all over the world. Comparing to the rivers in the continents, the rivers in Japan are short and steep, so rain fallen in the watershed flows out rapidly. In cold zone, dams are constructed to capture snow melt.

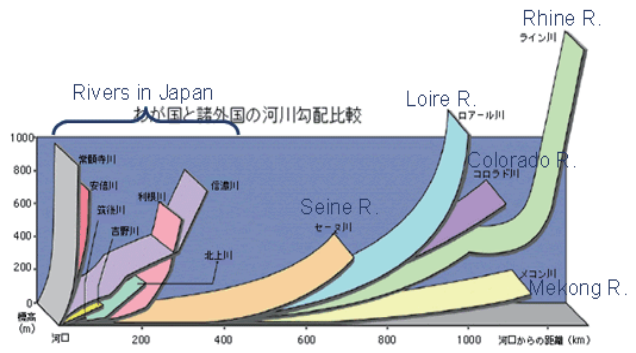


Diagram 1. Rivers around the world

Additionally, the population in Japan is around 128 million. Eleven cities have population exceeding 1 million people. The average density is 319 persons/km^2. The highest density is 5,750 persons/km^2 in Tokyo Metropolitan Area, and the lowest density is 72 persons/km^2 in Hokkaido Prefecture.

(2) Development of Modern Waterworks

In 1854, around 200-year period of isolation was ended by the Japan-US Treaty of Amity. After the treaty, active trading with foreign countries had caused Japan to experience epidemics of water-borne diseases such as cholera, typhus, etc. The number of patients in the 20 years from 1868 was approximately 410 thousands, and half of them lost their lives. Since then, to address water-borne diseases, related authorities started to emphasize the importance of modern waterworks construction. Port cities were especially motivated to introduce waterworks since these cities were at high risk of outbreaks.

First, Kanagawa Prefecture asked a British Engineer, Henry Spencer Palmer, to investigate and design water supply system in Yokohama City, one of the port cities in Japan. In this water supply system, completed in 1887, water was taken from Sagami River, filtered with sand, and supplied using iron pipes with pressure. By 1900, water supply systems were constructed in Hakodate City (1889), Nagasaki City (1891), Osaka City (1895), Tokyo (1898), Hiroshima City (1899), and Kobe City (1900), one after the other.

After the introduction in ports and large cities, water supply systems had spread all over Japan. Despite the expansion of modern water supply systems, the number of patients suffering from water-borne diseases such as cholera, dysentery, typhoid, and paratyphoid, was not reduced until 1940s. The decrease in patient number was brought by the introduction of disinfection, which was strengthened under American control after World War II. In 1957, disinfection was required by the newly implemented Waterworks Act. After the new regulation started, the number of patients suffering from water-borne diseases decreased significantly. The coverage of piped water supply as of 2006 is more than 97% with very few patients.

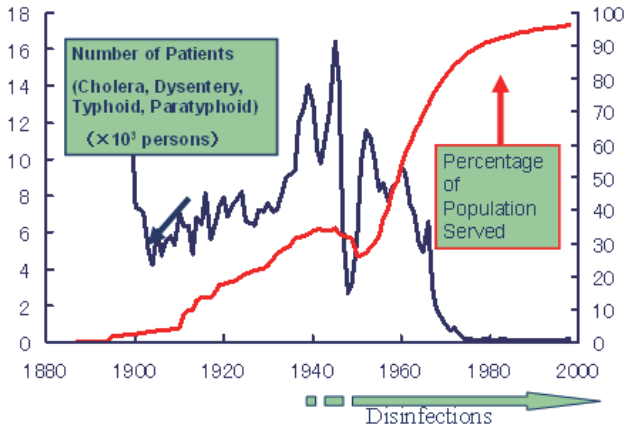


Diagram 2 Development of modern waterworks

(3) Administration System concerning Water

The Japanese administration system has three layers: state, prefectures, and municipalities. Both prefectures and municipalities, including cities, towns, and villages, are considered as local governments. Among 47 prefectures, the largest prefecture in terms of population is Tokyo Prefecture (12.8 million) and the smallest is Tottori Prefecture (0.6 million). The number of municipalities had been reduced from 3,232 (as

of 1999) to 1,810 (as of 2008) by around 1400. This reduction was resulted from municipality merge promoted by the national government.

The national government is constituted from 1 office and 11 ministries. Among them, the ministries in charge of water-related affairs are as follow:

-Water Supply - Ministry of Health, Labour and Welfare
-Water Environment - Ministry of the Environment
-River Control, Water Resource, and Sewage System - Ministry of Land, Infrastructure and Transport
-Industrial Water - Ministry of Economy, Trade and Industry
-Agricultural Water - Ministry of Agriculture, and Forestry

(4) Administration System concerning Water Supply Services

a. Role of Ministry of Health, Labour and Welfare

-Governance of Waterworks Act
-Approval of business license
-Facility standards
-Structure and material standards of water service installation
-Drinking water quality standards
-Supervision of Laboratory
-Supervisory guidance and on-site inspection
-Financial assistance
-Promotion of research and development

b. Role of Water Utilities

With the compliance of the requirements of the Act including Facility Standards, Drinking Water Quality Standards, etc., water utilities must supply water to their consumers at all times. Because water is indispensable for daily life, water should be available from taps 24 hours a day. However, when consumers fail to pay tariff, water utilities can suspend the supply to them according to rules of supply. Also, in case of drought or destruction of facilities caused by national disaster, the obligation can be exempted. On the contrary, in the case that water has possibility to harm human health, water utilities must suspend the supply immediately and notify their consumers.

It is important to clarify the rules of supply between water utilities and their consumers. Therefore, water utilities have to set the contracts concerning tariff and cost allocation of water service installation in advance, and let them be publicly known. The rules of supply are usually implemented as a bylaw, when public utilities provide services. Generally speaking, water service installation before the meter is a property of water utilities, and service installation after the meter until the tap is a property of consumers.

To supply safe water, water utilities have to assure hygiene as well as comply with Drinking Water Quality Standards. Water utilities have to keep water supply facilities clean and take measures to prevent contamination, such as cleaning and locking water treatment plants, reservoirs, etc.

Furthermore, the Act requires health check-ups for workers in treatment plants every six months, to prevent the contamination of water from the workers infected with water-borne diseases.

Also, drinking water utilities are required by the Act to provide the consumers with information pertaining to the results of water quality inspections and related information. The implementing regulation of Waterworks Act defines contents of information, which water utilities are expected to make available as the following.

-Plan / Results of water quality inspections
-Implementation system of waterworks
-Cost of business/water charge
-Water supply equipment / facilities
-Sanitary management plan of water tank
-Results of extra water quality inspections
-Crisis management

(5) Types of Water Supply Services

a. Water Supply Business (1,572 businesses as of March 31,2007)

Water supply business provides water to more than 101 people according to general needs. In principle, water supply businesses are managed by municipalities. Business license is approved by the Ministry of Health, Labour and Welfare or Prefecture Governor depending on the population served.

b. Bulk Water Supply Business (102 businesses as of March 31,2007)

Bulk water supply business is a business that provides treated water to water supply businesses. Most of the bulk water supply businesses are managed by either prefecture or a group of municipalities. Business license is approved by the Ministry of Health, Labour and Welfare or Prefecture Governor depending on the volume served.

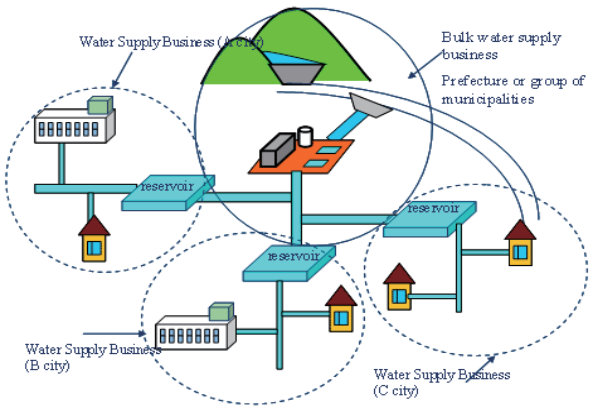


Diagram 3 Bulk Water Supply Businesses

c. Private Water Supply (7,737 systems as of March 31,2007)

Private water supply system supplies water in dormitories, company residences, and sanatoriums for private use. The population served is more than 101 persons or the capacity of the facility is more than 20 m^3/day. The confirmation of the design of facilities by the governor is required before construction.

d. Private Water Supply Facility

Private water supply facility has more than 10 m^3 of tank, and provides only received water from water supply business.

Diagram 4 Private Water Supply System

and Private Water Supply Facility

A big Water Supply Business of scale (as of March 31, 2007)		
No	Name of Water Supply Business	Design maximum daily supply
1	Tokyo	6,000,000 m^3/day
2	Osaka City	2,430,000 m^3/day
3	Yokohama City	1,800,000 m^3/day
4	Kanagawa Prefecture	1,588,000 m^3/day
5	Chiba Prefecture	1,440,000 m^3/day
6	Nagoya City	1,244,000 m^3/day
7	Kyoto City	1,050,000 m^3/day
8	Kawasaki City	1,026,000 m^3/day
9	Sapporo City	958,000 m^3/day
10	Hiroshima City	811,000 m^3/day

A big bulk Water Supply Business of scale (as of March 31, 2007)		
No	Name of Bulk Water Supply Business	Design maximum daily supply
1	Kanagawa Water Supply Authority	2,535,000 m^3/day
2	Saitama Prefecture	2,433,000 m^3/day
3	Osaka Prefecture	2,160,000 m^3/day
4	Aichi Prefecture	1,740,000 m^3/day
5	Hanshin Water Supply Authority	1,289,000 m^3/day
6	Hyogo Prefecture	750,000 m^3/day
7	Okinawa Prefecture	602,000 m^3/day
8	Miyagi Prefecture	553,000 m^3/day
9	Kitachiba Water Supply Authority	534,000 m^3/day
10	Nara Prefecture	484,000 m^3/day

(6) Coverage

In Japan, 124 million people use tap water, constituting 97.3% of total population (2006). Major portion of the rest, around 3.7 million people, use their own wells or unregulated small scale water supply services without the access to tap water from

Population Served and Unserved by City,Town and Village

	City	Town	Village
Total Population	99,510	24,770	2,470
Population Served	97,450	22,570	2,160
Percentage of	97.9%	91.1%	87.7%

water supply businesses regulated by the Act. Diagram 6 shows that the coverage is different in each prefecture, and six prefectures have coverage less than 90%. Also, it shows a gap between urban areas and rural areas. Unlike the high coverage in cities (98%), the coverage in towns and villages are relatively low (91% and 88% respectively).

Therefore, the national government is continuing to promote the expansion of water supply businesses so that these people can have access to water that satisfies Drinking Water Quality Standards.

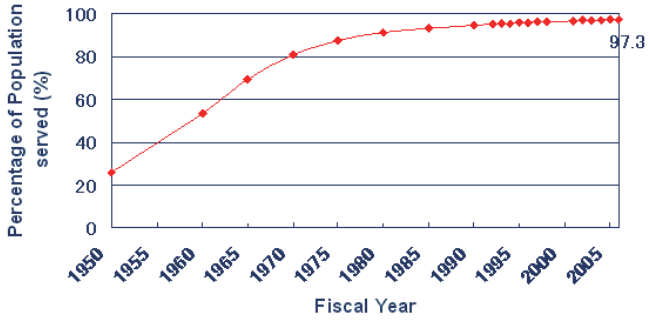


Diagram 5 Coverage of water supply

(7) Water Sources

Surface water (including dam, river and lake) consists 72% of total annual intake, and ground water (including river-bed, shallow and deep well) consists 26% (2006). Therefore, most of the water supply sources can be easily influenced by pollutions such as eutrophication, oil spill accidents, etc.

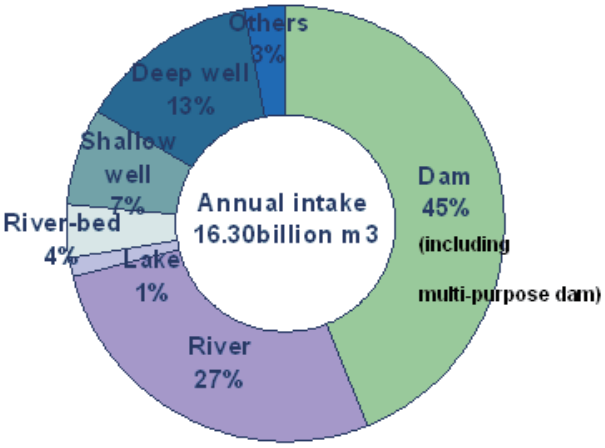


Diagram 6 Water source

(8) Types of Treatment Plants

Water utilities select the type of treatment plants according to the quality of source water. Rapid sand filtration is most commonly used (76%), while 20% of water utilities only have the process of disinfection without filtration. Recently, more and more water utilities (22%) have adopted advanced water treatment method such as activated carbon, ozonization, biological treatment, air stripping, prechlorination, etc., to cope with the deterioration of source water quality. Advanced water treatment plants can reduce odor, iron/manganese, trihalogenerated methanes, ammonium, free carbon dioxide or volatile organic carbon.

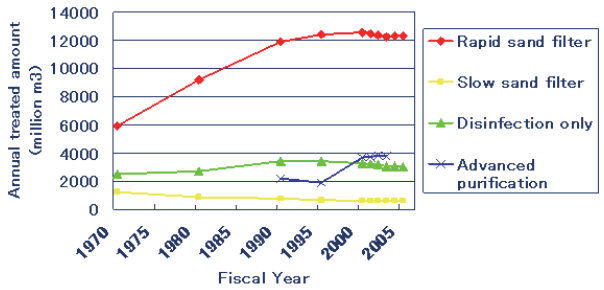


Diagram 7 Type of water treatment

(9) Leakage Control

Leakage affects the management of water supply businesses since the process of water treatment requires huge costs. Therefore, water utilities have made great efforts to reduce leakage. In 1970s, only 78% of water distributed reached taps, but in 2006, more than 92% of water distributed reached taps (This ratio is called effective water ratio). Therefore, leakage had improved down to only 8%. The goal of effective ratio is set to be 98% for large water utilities and 95% for small water utilities by the national government.

Leakage is caused by some sort of pipe damages. Pipes could have cracks caused by load or vibration from traffic, or pipes might be corroded by acidic soil. When leakage appears on the ground, it is easily detected and pipe can be rehabilitated immediately. However, when leakage occurs underground, its detection is not easy. Therefore, leakage control survey, rehabilitation and renewal of old pipes should be conducted according to plans made by water utilities.

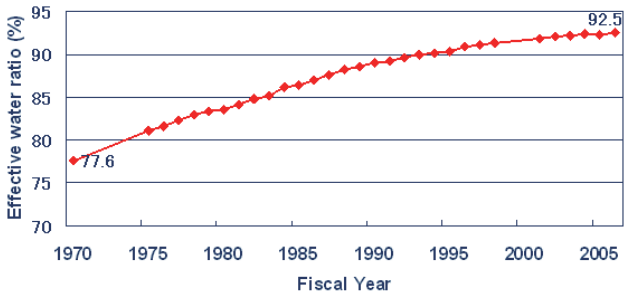


Diagram 8 Effective water ratio

(10) Costs

The average cost of supplying 1 m^3 of revenue water is approximately 180 yen/m^3 in 2005. Recently, depreciation and purchase of water from bulk water supply businesses have occupied more than before because of the rehabilitation of old facilities and the increasing usage of bulk water supply businesses, to secure water quality and quantity.

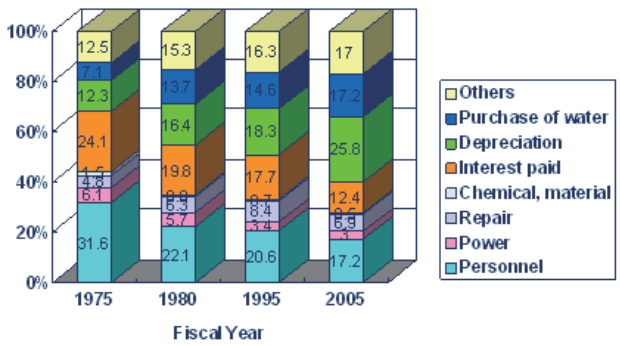


Diagram 9 Cost

As opposed to the cost (179.74 yen/m^3), the unit price of water, calculated by dividing revenue by total revenue water, is 175.21 (yen/m^3).

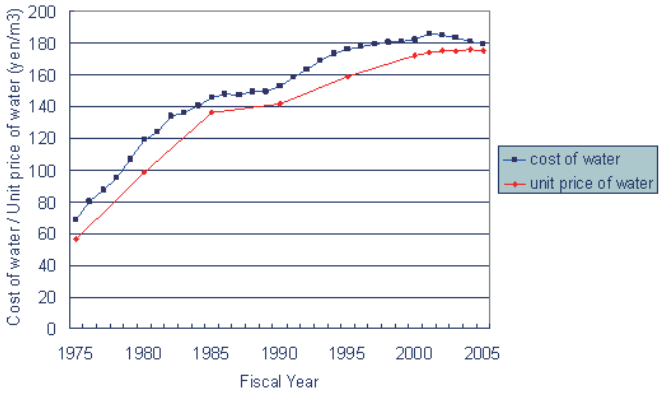


Diagram 10 Trend of cost and price of water

(11) Subsidy from National Treasury

The Act allows the national government to subsidize part of their business costs to local governments, when local governments manage water supply business or bulk water supply business. Subsidy is classified into two categories. One is the subsidy of water source development or advanced treatment plants construction by water utilities. The other is the subsidy of the facility construction by small water supply businesses (Population served is less than 5,000). This subsidy system has contributed greatly to the expansion of water supply services and the control of the local gap among water supply businesses. The budget of subsidy from National Treasury in 2009 is around 96 billion yen.

(12) Guidelines for the Management and Assessment of a Drinking Water Supply Services

In 2005, guidelines for the management and assessment of a drinking water supply services (JWWA Q 100) were developed by Japan Water Works Association, based on the basic concept of ISO/TC 224, to improve the service of drinking water supply by the quantification of waterworks. These guidelines include a performance indicators system, comprised of a set of performance indicators (PI), context information and variables.

(13) The guideline of asset management of water supply businesses

The current generation is responsible for the deliberate renewal of water supply facilities and the succession of sound asset to next generation. In this context, the role of water supply utilities, in charge of the management of water supply businesses, is especially important.

In Japan, water supply facilities were constructed rapidly during the high-growth period in 1970', and these facilities are now facing the aging problems and are about to reach the peak of renewal demand. Therefore, the same imminent problem and the necessity of deliberate renewal of aged water supply facilities are shared among all of the water supply utilities.

In 2004, Ministry of Health, Labour and Welfare, announced the Waterworks Vision and showed "Stability" and "Sustainability" as one of the long-term goals. In order to strengthen the foundation of the water supply management, the Ministry emphasized the importance of deliberate maintenance and renewal of water supply facilities, based on mid-long term financial balance. However, the approaches for the renewal of water supply facilities and the assurance of finance by water supply utilities have not been sufficient.

In July of 2008, the Ministry reviewed and revised the Vision. In the revised Vision, it is described that the deliberate rebuilding or renewal of water supply facilities, their efficient maintenance and operation, and the assurance of finance will be promoted based on the technical platforms, from a medium and long term perspective, with the introduction of asset management. Also, in order for consumers to understand necessary cost share for the renewal of facilities, the detailed study for public relations will be promoted.

The asset management is systematic activities conducted by water supply utilities to realize efficient and effective management of water supply facilities, considering their life-cycle, from the long-term viewpoint. Therefore, the Ministry issued the guideline to promote the implementation of asset management among water supply utilities, through thorough understanding of its importance.

2. Regulations

(1) Waterworks Act

Waterworks Act was promulgated on June 15, 1957, and came into effect on December 14, 1957 after the promulgation of related Cabinet Order and Ordinance of the Ministry of Health and Welfare.

The purpose of this Act is to supply clean, ample, and inexpensive water, and through water supply, this Act shall contribute to the improvement of public health and living environment. From this perspective, the Act was implemented to make the construction and management of water supply appropriate, and to protect and promote water supply business especially at the initial stage. The Act regulates water supply businesses, bulk water supply businesses (a business that supplies treated water to water supply businesses), and private water supply systems. In addition to business management, the regulations of this Act cover the construction of water supply facilities, hygienic measures, etc.

In order to expand water supply business in a well-planned manner and address various problems at that time, the Act was amended in 1977. Wide-Area Water Supply Reinforcement Program and the regulations of private water supply facilities were introduced.

Furthermore, in 2001, the Act was amended so that water supply businesses can entrust services to a third party with high technical capacity for better management, because most of the water supply businesses were managed by small municipalities, and their management of water quality, etc. were very vulnerable. In the case of merging between two water businesses, business license became able to be obtained by notification rather than approval by the relaxation of regulations. Also, to prevent further outbreaks of water-borne diseases resulting from polluted water, schools and amusement parks, which are used by many people but without inhabitation, became regulated as a private water supply system. It became clear that the responsibilities of private water supply facilities management had to be written in the rules of supply to promote better management of these facilities, which the Act had not applied.

Waterworks Act (Act No. 177 of June 15, 1957)

This English translation of the Waterworks Act has been prepared up to the revisions of Act No. 87 of 2005. This is an unofficial translation.

Chapter1 General Provisions (Article 1 to 5)
Article 1 Purpose of This Act, Article 2 Responsibility, Article 3 Definitions of the Terms, Article 4 Water Quality Standards, Article 5 Facility Standards

Chapter1.2 Wide-Area Water Supply Reinforcement Program (Article 5.2)

Chapter2 Water Supply Business
Section1 Business License, etc. (Article 6 to 13)
Article 6 Business License and Management Actor,Article 7 Application for License, Article 8 Standards for License, Article 9 Conditions, Article 10 Change of Business, Article 11 Suspension and Abolition of Business, Article 12 Supervision of Construction by Engineer, Article 13 Notification and Inspection before Commencing Supply

Section 2 Services (Article 14 to 25)
Article 14 Rules of Supply, Article 15 Obligation to Supply, Article 16 Structure and Material of Water Service Installations, Article 16.2 Water Service Installations Works, Article 17 Inspection of Water Service Installations, Article 18 Request for Inspection, Article 19 Water Supply Technical Manager, Article 20 Water Quality Inspection, Article 20.2 Registration, Article 20.3 Disqualification, Article 20.4 Standards for Registration, Article 20.5 Renewal of Registration, Article 20.6 Obligation to Undertake Entrustment, etc. ,Article 20.7 Notification of Changes, Article 20.8 Operational Rules, Article 20.9 Suspension of Abolition of Operation, Article 20.10 Keeping and Making Available for Public Inspection of Financial Statements, Article 20.11 Order for Conformity, Article 20.12

Order for Improvement, Article 20.13 Rescission of Registration, etc., Article 20.14 Bookkeeping, Article 20.15 Collection of Reports and On-site Inspection, Article 20.16 Public Notice, Article 21 Health Check-up, Article 22 Hygienic measures, Article 23 Emergency Suspension of supply, Article 24 Fire Hydrant, Article 24.2 Provision of Information, Article 24.3 Entrustment of services, Article 25 Exception for Small Water Supply Business

Section 3 Designated Water Service Installation Works Contractor (Article 25.2 to Article 25.11)
Article 25.2 Application for Designation, Article 25.3 Standards for Designation, Article 25.4 Chief Engineer of Water Service Installations Works, Article 25.5 License for Chief Engineer of Water Service Installations Works, Article 25.6 Examination of Chief Engineer of Water Service Installations Works, Article 25.7 Notification of Changes, etc., Article 25.8 Standards for Business, Article 25.9 Attendance of Chief Engineer of Water Service Installations Works, Article 25.10 Report or Submission of Material, Article 25.11 Rescission of Designation, etc.

Section 4 Designated Examining Body (Article 25.12 to Article 25.27)
Article 25.12 Designation of Designated Examining Body, Article 25.13 Standards for Designation, Article 25.14 Public Notice of Designation, etc., Article 25.15 Appointment and Dismissal of Officers, Article 25.16 Examiner, Article 25.17 Obligation of Confidentiality, Article 25.18 Rules of Examination Affairs, Article 25.19 Approval of Business Plan, etc., Article 25.20 Bookkeeping, Article 25.21 Order of Supervision, Article 25.22 Report, Inspection, etc., Article 25.23 Suspension of Abolition of Examination Affairs, Article 25.24 Rescission of Designation, etc., Article 25.25 Conditions attached to designation, etc., Article 25.26 Administration of Examination Affairs by the Minister of Health, Labour, and Welfare, Article 25.27 Delegation to Ordinance of the Ministry of Health, Labour and Welfare

Chapter3 Bulk Water Supply Business (Article 26 to 31)
Article 26 Business License, Article 27 Application for License, Article 28 Standards for License, Article 29 Conditions, Article 30 Change of Business, Article 31 Application Mutatis Mutandis,

Chapter4 Private Water Supply System (Article 32 to 34)
Article 32 Confirmation, Article 33 Application for Confirmation, Article 34 Application Mutatis Mutandis, Chapter4.2 Private Water Supply Facility (Article 34.2 to Article 34.4), Article 34.2, Article 34.3 Obligation of Inspection, Article 34.4 Application Mutatis Mutandis

Chapter5 Supervision (Article 35 to 39)
Article 35 Rescission of License, etc., Article 36 Instruction of Improvement, etc., Article 37 Order of Suspension of Water Supply, Article 38 Change of Conditions of Supply, Article 39 Collection of Reports and On-site Inspection

Chapter6 Miscellaneous provisions (Article 40 to 50.3)
Article 40 Emergency Support of Water Supply, Article 41 Recommendation of Rationalization, Article 42 Purchase by Local Government, Article 43 Request for Pollution Control of Water Sources, Article 44 Subsidy from National Treasury, Article 45 Special Arrangement by the State, Article 45.2 Promotion of Research and Development, etc., Article 45.3 Fees, Article 46 Affairs to be Handled by Prefecture, Article 47 (Deleted), Article 48 Jurisdictional Governor, Article 48.2 Replacement of Terms and Phrases Concerning Cities Establishing Health Centers and Special Wards, Article 48.3 Appeal, Article 49 Replacement of Terms and Phrases concerning Special Wards, Article 50 Exception for Private Water Supply System Established by the State, Article 50.2 Exception for Private Water Supply Facility Established by the State, Article 50.3 Transitional Measures

Chapter7 Penal Provisions (Article 51 to 57)
Supplementary Provisions

(2) Supervisory Guidance

Before establishing water supply business or bulk water supply business, water utilities have to obtain business license from Ministry of Health, Labour and Welfare or Prefecture Governor. The Ministry or Prefecture approves business license, when application satisfies the standards for licensing.

To supervise water supply businesses and bulk water supply businesses, the Ministry collects reports on construction of water supply facilities and business management, and conducts on-site inspection. Usually, the Ministry collects reports regarding their performance of the management once a year. For on-site inspection, staffs from Water Supply Division, Ministry of Health, Labour, and Welfare, visit offices and water treatment plants. Among the approximate 500 water utilities whose business licenses were approved by the Ministry, 50 to 70 water utilities are chosen to have on-site inspection annually on the base of the reports.

In addition, the Ministry holds Tap Water Technical Training once a year. The training is focused on the relevant year's administrative tendencies related to water supply and examples of good practices of risk management. The training is intended for water supply technical managers.

A water utility has to have one technical manager to take charge of the technical aspect of water business administration.

(3). Waterworks Vision

In June of 2004, Ministry of Health, Labour and Welfare developed Waterworks Vision to show a map towards future goals shared among stakeholders of water supply services by analyzing and evaluating current situation and future prospects. In the Waterworks Vision, practical strategies and schedule to achieve the goals were described. Since then, the Ministry had promoted related measures according to Waterworks Vision, and in July of 2008, the Ministry reviewed and revised the Vision in order to make it a more precise guideline.

3. Water quality

(1) History of Drinking Water Quality Standards

The Waterworks Ordinance (the “old Waterworks Act”) of 1890 did not include provisions for drinking water quality standards (DWQS). In 1908, the Council on Waterworks laid down the “Agreed Method of Water Examination” as the national

standard method for inspecting water quality. In 1958, the DWQS were established based on the current Waterworks Act, which was enacted in the previous year. After minor amendments in 1960, 1966, and 1978, the standards went through a substantial amendment in 1992. In May 2003, about 10 years after the previous amendment, the standards were revised in response to the amendment to the Guidelines for Drinking Water Quality of the World Health Organization (WHO).

When the Waterworks Act was enacted in 1958, twenty-nine items were set as the first DWQS. Since then, the Ministry of Health (the predecessor of the Ministry of Health, Labour and Welfare) has made a series of amendments on the standards to comply with the latest scientific knowledge. Among those amendments, the one conducted in 1992 was especially significant. The standard items were increased from 26 to 46 in order to substantially reinforce and enhance drinking water quality management.

(2) Fundamental Principle of the Current DWQS

In July 2002, in response to the undergoing discussion of the 3rd Guidelines for WHO's Drinking Water Quality Guidelines, the ministry consulted with the Health Science Council on Japan's basic concept of Drinking Water Quality Standards revision.
A special committee for water quality (chaired by Professor Magara) was formed to discuss the concept of the revision of standards as well as the water quality management systems such as examination frequency. In April 2003, according to the report submitted by the council and the result of public comments, the new standards and the water quality management systems were formed and went into effect in April 2004.

Before this amendment, the DWQS were set only for items that are commonly seen throughout the nation as cause of the problems. For problems that are seen only locally or in the specific water purification methods, governmental instructions were made as a form of administrative guidance. In the amendment, such principles were reconsidered, and new standards were established based on the two fundamental principles below.

Firstly, the standards are set for all items that have the possibility to cause an adverse effect on human health or living condition regardless of the specialty of the locality, types of water source, or purification methods, even if the detection level of these items is low on a national basis. Secondly, water utilities are obliged to carry out drinking water quality examination only for the basic items and may omit some of the non-basic items from analysis according to their local situation. To make their examination appropriate and transparent the new system requires each water utilities to prepare 'Annual Water Quality Examination Plan' that indicates the boundaries for analysis, and to publish their plans for water consumers beforehand.

Diagram 12 shows the scheme of the drinking water quality control in Japan. As shown in the diagram, three-layered group forms a pyramid-shaped structure.

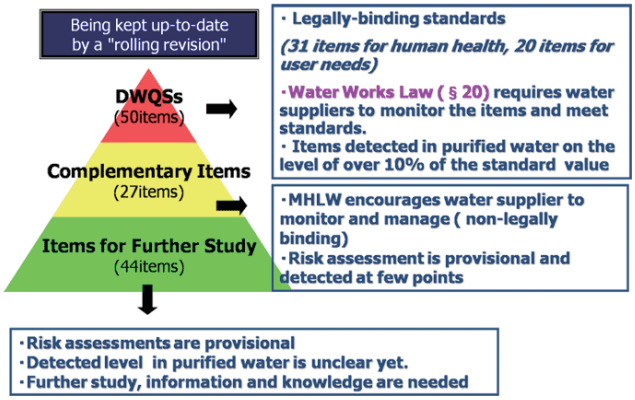


Diagram 11 Scheme of Drinking Water Quality Control

The group on the top of the pyramid is the legally binding standards. Around thirty items are set from the viewpoint of human health, and around twenty items are set from the viewpoint of other reasons including user needs regarding water quality. These items are selected for their detection rate (over 10% of the standards value) in purified water in Japan. The Waterworks Act requires the water utilities to monitor tap water quality regularly in order to make sure that water meets the standards.

The middle group is items not-legally binding with target values. Those items are set to complement the standards and the Ministry encourages water utilities to monitor and achieve the targets. The bottom group contains a list of items that require further study for risk assessment and a grip of detection level. The DWQS is to be updated by rolling revision according to scientific knowledge, with consideration of health-based value such as TDI, detection rate, and progress of treatment technology.
Since 2004, the standards were continuously revised and current DWQS includes 50 items.

(3) Control of Pathogenic Organisms

As mentioned in the "Overview of Water Supply Services", the number of the patients suffering from waterborne diseases has decreased rapidly by the introduction of disinfection. The coverage of water supply as of 2006 is more than 97% with very few patients.

This result indicates that disinfection is effective for preventing waterborne diseases. Moreover, even after ordinal treatment process, such as sedimentation and sand filtration, there still remains a possibility of contamination with bacteria. Also, water can be contaminated in the process of distribution, since bacteria can enter pipes due to low pressure or breaks in pipes.

The Act requires that tap water contains more than 0.1 mg/L of residual chlorine, and on a daily basis, the inspection has to be conducted at taps at the end of distribution network.

Even now, some infectious diseases caused by drinking water were reported almost every year. But many of them occurred at very small-scale water utility because of inappropriate management or inefficient disinfection.

Currently, one of the greatest concerns in this field is how to deal with chlorine-resistant pathogens such as Cryptosporidium and Giardia.

In June 1996, an outbreak of cryptosporidiosis occurred in Ogose Town (Saitama Prefecture) and 8,800 cases were reported. This was the first incident associated with a public water supply in Japan. In this case, more than 70% of the community population reported severe diarrhea. The cause of the outbreak confirmed insufficient management of purification process.

In October 1996, the Ministry of Health, Labour and Welfare issued the tentative guidelines for cryptosporidium treatment in waterworks (Revised in 1998 and 2001). In March 2007, the newly revised guideline (not tentative), “The guidelines for cryptosporidium treatment in waterworks”, was published. The guideline suggests that water utilities assess the risk level of potential contamination of each water treatment plant. Risk level is assessed by the detection of indicator organisms in raw water and the type of the raw water as shown in Diagram 15.

The guideline also shows necessary preventive measures for each risk level. If a water treatment plant is categorized as Level-4 or Level-3, water supplier is expected to apply countermeasures. As shown in Diagram 16, for Level-4 plant, it is required to keep turbidity of filtered water to less than 0.1 degree and for Level-3 plant, it is required to follow same measures as Level-4 or install UV irradiation system.

(4) Water Safety Plan

The concept of Water Safety Plan (WSP) was proposed by WHO in its 3rd Guideline for Drinking Water Quality issued in September 2004. The plan is a management tool, which introduces a comprehensive risk assessment and risk management approach encompassing all steps in water supply.

WSP's essential concepts are as follows:

1. Identify hazards (including potential hazards) from all steps in water supply system and evaluate each hazard's risk level. According to the risk level, identify critical control points and prioritize the response measures to be taken.

2. Conduct constant monitoring of operational aspect of facilities (Not only tap water quality - monitor and maintain its performance level at all critical control points)

WSP applies HACCP (Hazard Analysis and Critical Control Points) methods to the water supply. HACCP is a system which is used in the food industry for identifying and controlling known food safety hazards and critical control points. It enhances safety through a systematic, science-based program. In the food industry, before the introduction of HACCP, surprise investigation was employed.

The objectives of WSP are to minimize contamination of source water, to remove contamination through treatment, and to prevent re-contamination during storage, distribution and handling of drinking water on the basis of multiple-barrier approach.

Introduction of WSP is expected to result in effects such as the following:

-Unified identification and evaluation of water supply systems
-Reduction of risks and improvements in safety
-Re-evaluation of systems by means of objective methods
-Elimination of unfounded assumptions
-Improvement and streamlining of maintenance and control levels
-Clarification of priority regarding crucial control points
-Improvement of operators' maintenance and control ability
-Transfer of technology to the next generation (through unified documentation)
-Improvement of communications with concerned third parties
-Increase of accountability on water safety to consumers
-Approach to watershed areas-related stakeholders in order to secure better water quality at water sources

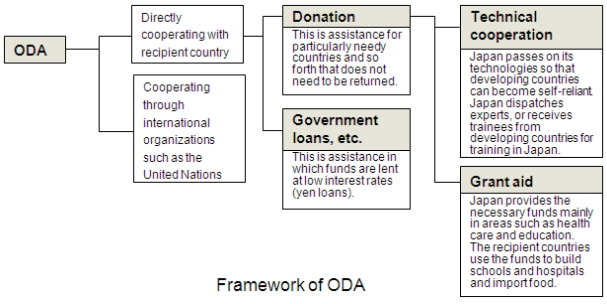
The Ministry of Health, Labour and Welfare compiled the guideline for introduction of WSP and the guideline was delivered to drinking water utilities in May 2008.

4. International Contributions

1. International cooperation in water supply sector

Japan emphasizes the importance of capacity development, such as the development of the organizations, policies, systems, information and data, and human resources of the governments of developing countries as well as water supply utilities, for proper operation and maintenance and management, under the “Water and sanitation broad partnership initiative (WASABI) (2006),” the Japanese policy of Official Development Assistance (ODA) on water and sanitation sector.

Technical cooperation including the dispatch of technical experts and trainings of staff is the measure to realize the above policy. Among bilateral ODA, the details of technical cooperation, grant aid, and government loan are explained hereafter. Most of the projects on international cooperation in water supply sector are conducted by Japan International Cooperation Agency (JICA).



Framework of ODA 1)

Technical Cooperation

[1] Dispatch of technical experts

To supply safe and high quality water continuously, both water supply facilities appropriate for each natural and social condition and human resources capable of operation and maintenance of their system, are highly important.

MHLW recommends staff of Japanese water supply utilities and related organizations as technical experts to JICA and

sends them to developing countries in order to contribute to enhance central and local human capacity for the better management and administration of water supply services.

●The Number of JICA Experts on Water Supply Sector Dispatched by the Recommendation of Ministry of Health, Labour and Welfare

Fiscal Year	Long Term	Short Term	Sum
2001	15	22	37
2002	17	24	41
2003	11	17	28
2004	8	19	27
2005	10	13	23
2006	6	14	20
2007	5	15	20
2008	6	20	26
2009	7	14	21
2010	5	27	32

・Total number of experts dispatched in each year

・Including lecturers of seminars and training programs

●Long Term Experts from Municipal Water Utilities in FY2010

*Project related to ODA loan

[2] Training of staff in the water supply sector

ODA supports self-help efforts of developing countries. Further, the contributions of human resource development help strengthen friendship between Japan and those countries.

MHLW cooperates with JICA for group training programs and individual training programs on water supply sector, together with water supply utilities and related organizations.

[3] Development Study

In development study, the validity of projects is examined. After the judgment of validity of projects based on the results of the study, projects are initiated with planning of water supply.

2) Grant Aid

The Government of Japan provides to developing countries a fund to be expended for procuring products and services necessary for the execution of specific projects related to safe drinking water.

●Grant Aid on Water Supply Sector

Fiscal Year	Number	Amount (Million Yen)
2002	20	13,644
2003	27	16,066
2004	26	18,909
2005	25	16,888
2006	22	16,131
2007	26	13,567
2008	30	14,693
2009	30	28,411
2010	18	21,796

3) Government Loan

Government loan, yen loan, is the funds loaned under moderate conditions for interest, repayment period, and others, through the Japan International Cooperation Agency (JICA), to contribute to the economic and social development of developing regions and economic stability.

●Government Loan on Water Supply Sector

Fiscal Year	Number	Amount (Million Yen)
2002	4	31,399
2003	17	83,548
2004	7	191,503
2005	4	60,105
2006	12	165,370
2007	6	114,130
2008	9	148,838
2009	5	75,464
2010	0	0

Water Operator Partnerships of Japanese Water Utilities

Water Utilities	Contents of WOPs Activities 【Recipients, Participants or Partners】	Start
Sapporo City Waterworks	JICA/ Group Training Program in Japan on Waterworks Engineering 【Brazil/ Iraq/ Jamaica/ Laos/ Peru/ East Timor/ Zimbabwe】	1992
	JICA/ Region Focused Training Program in Japan on the Cold District Waterworks Engineering 【Armenia/ Azerbaijan Republic/ Mongolia/ Uzbekstan】	2005
	Friendship City Program/ Training in Japan on Waterworks Technology 【Shenyang City, China】	1990
Tokyo Metropolitan Waterworks	JICA/ Country Focused Training Program in Japan on Water Utilities 【South African】	
	The Asia Human Resource Development Network Conference 【Participants: Korea/ Taiwan/ Thailand/ Vietnam】	2008
Yokohama City Waterworks	JICA/ Technical Cooperation by dispatching 2 experts to Vietnam for investigation and making seminar 【Hue City/ Ho Chi Minh City/ Ministry of Construction】	2003
	JICA/ Training in Japan for Socialist Republic of Vietnam on Water Supply 【Vietnam】	2002
	JICA/ Group Training Program in Japan on Urban Waterworks Engineering 【Egypt/ Ethiopia/ Kenya/ Malawi/ Sudan/ Zimbabwe】	2008
	JICA/ Region Focused Training Program in Japan on Water Supply in Small and Medium Scale Cities in Central Asia 【Kazakhustan/ Kyrugyztan/ Tajikistan/ Uzbekistan】	2006
	Friendship City Program/ Training in Japan on Waterworks Technology 【Shanghai, China】	2008
	Partnership with CITYNET/ Training in Japan on Waterworks Engineering 【Indonesia/ Bangladesh/ Philippines】	1999
Saitama City	JICA/ Technical Cooperation by dispatching a expert to Vientiane for Technical Cooperation 【Laos】	1992
Nagoya City Waterworks	JICA/ Technical Cooperation by dispatching a expert to Mexico City on Water Technical 【Mexico】	2005
	JICA/ Technical Training in Japan for Mexico City Waterworks 【Mexico】	1998
	JICA/ Group Training Program in Japan on Non-Revenue Water Management 【Ethiopia/ Philippines/ Sri Lanka/ Tanzania/ Turkey/ Jordan/ Vietnam/ Bolivia/ Bangladesh/ Egypt/ Kenya】	1994
	JICA/ Country Focused Training Program in Japan on Water Facilities Improvement 【Jamaica】	
Osaka City Waterworks	JICA/ Group Training Program in Japan on Operation and Maintenance of Urban Water Supply Systems 【Bangladesh/ Cambodia/ Fiji/ Philippines/ Turkey/ Zambia/ DR of Congo】	1994
	Exchange Program by its own/ Water Supply Technology 【Partner: Ho Chi Minh, Vietnam】	2009
Hiroshima City	JICA/ Region Focused Training Program in Japan on Maintenance of Pipeline and Leakage Prevention 【Egypt/ Syria/ Jordan】	2003
Shimonoseki City	Sister City Program/ Exchanging two staff members each other on Waterworks Technology 【Partner: Qingdao City, China】	2000
Kitakyushu City Waterworks	JICA/ Technical Cooperation on Dispatching of 6 experts to Cambodia Providing Cambodia with Technical Cooperation 【Cambodia】	2003
	JICA/ Technical Training Cooperation in Japan on Water Engineering for Cambodia 【Cambodia】	1999
	Friendship City Program/ Water Engineering Training in Japan 【Dalian City, China】	2001
Nagasaki City	Friendship City Program/ Waterworks Technology Exchange 【Fuzhou City ,China】	1991

5. Waterworks technologies in Japan

●Leakage Control

Since the production of drinking water requires high costs, a large amount of water leakage affects the management of the water utilities.

Although the effective water ratio, the proportion of water used effectively without leaking, recorded less than 80% in the 1970s, the ratio at present is as high as 92%, through the water utilities' efforts for the reduction of leakage.

Water leakage is not detected immediately in many cases because water pipes are laid underground.

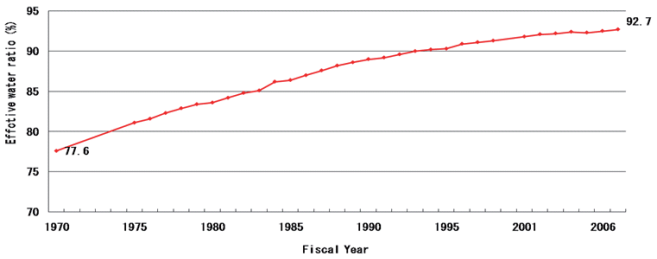
It is therefore necessary to inspect pipes, based on a plan, for the detection of leakage and for the repair of leakage points, as well as to systematically make rehabilitation of aged pipes for leakage prevention.

The effects of the reduction of water leakage include not only reduction in the distributed amount, but also making new development of water sources unnecessary and contributing to cost reduction, which leads to improvement in management.

In addition, reduction in water leakage results in constant appropriate water pressure, which is essential for the supply of safe water.

Japan waterworks technology "Leakage Control" is highly adaptable to a variety of waterworks worldwide.

■ National average of effective water ratio* is 92.7%. (Leakage is 7.3%).



*) effective water ratio = (amount of supply – amount of leakage) / amount of supply

■ The national goals of this ratio are set to be 98% for large utilities and 95% for small utilities.

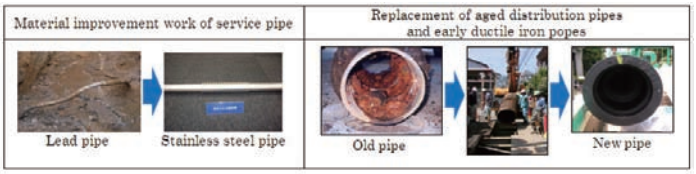
■ Leakage Prevention in Tokyo

System of leakage prevention measures

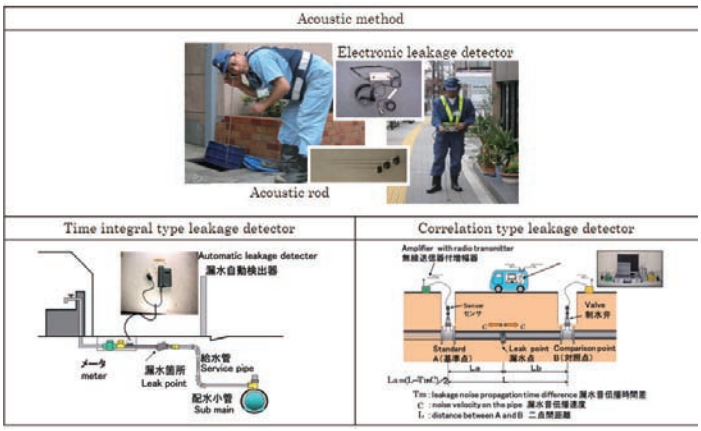
- Countermeasure of leakage prevention
  - Planned replacement of water pipes and improvement of materials for pipes
    - Replacement of aged distribution pipes and early ductile iron pipes
    - Integration of service pipes under the private road and replacement with sub mains
    - Reinforcement of seismic resistance of large-diameter service pipes
    - Material improvement work of service pipes
  - Leak detection technology and early repairs
    - Planned work
      - Patrol work
      - Leakage volume measurement work
    - Mobile work
  - Securing high technical level
    - Leakage prevention technology
    - Training and Technical Development Center
    - Accreditation of Tokyo waterworks technology experts and super plumbers

Reference: Leakage Prevention Guidebook 2009

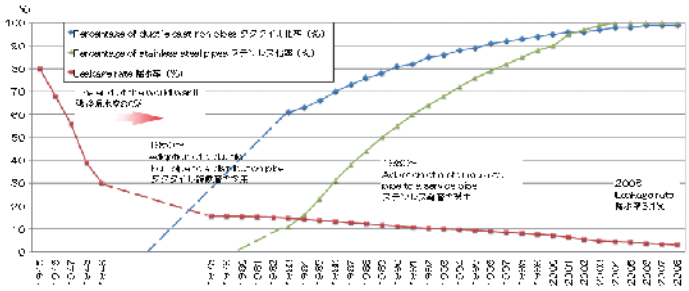
Planned replacement of water pipes and improvement of materials for pipes



Leak detection technology and early repairs



Relationship between material of pipes and leakage rate



Water leakage improvement in other countries through Japanese technology.

Effect of water leakage prevention measure

Country	Vietnam	Cambodia	Egypt	Jordan
Leak %	13. 3%→6. 5%	16%→11%	29. 2%→14. 5%	46%→30% (Target)
Main Measure	-Leakage prevention technology -human resource development - public awareness rising - old pipe exchange	• Leakage prevention technology •human resource development • awareness rising of user/client • old pipe exchange	-Leakage prevention technology -human resource development - public awareness rising	-Leakage prevention technology -human resource development - public awareness rising

source : JICA

●Proposal for water distribution control system

Advantages of pipe network management technologies such as network planning, water distribution control and water leakage minimization are reductions of energy consumption and leakage water caused by overloaded pumping pressure.

In addition, maintenance cost for electricity, water leakage measures and workforce can be also reduced.

As a result, water volume, pressure and quality are stabilized, contributing to safe and sustainable water supply operation.

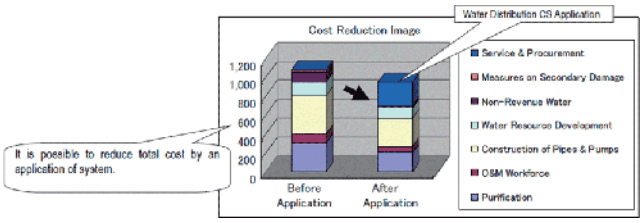
■ Effect of Water Distribution Control System Application

➢ Increase of water volume and revenue

Applications of the system increase the distribution water volume by decreasing water leakage.

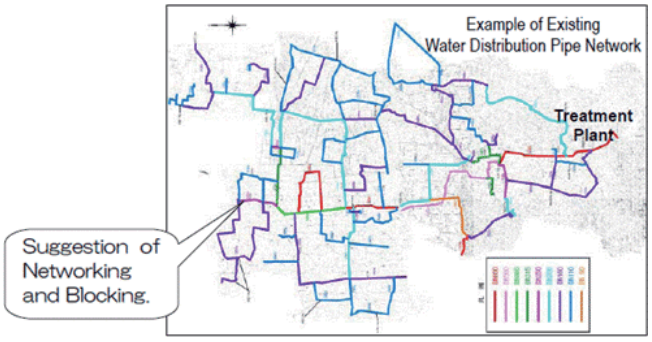
➢ Reduction of Total Cost

An application of the system reduces total cost hence operational efficiency



Reduction of Running Cost

Distribution control matching demand reduces electricity charges.
On-line system reduces workforce for O&M.
Reduction of water leakage amount results in purification costs such as machinery engine and chemicals.



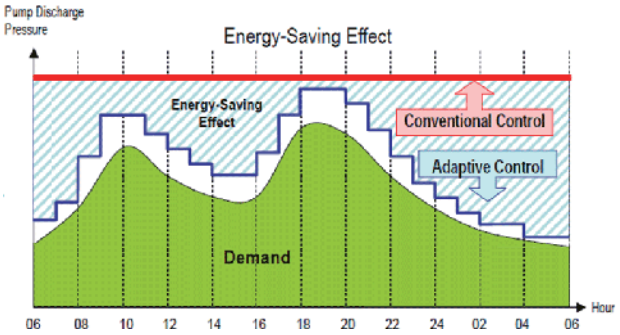
Reduction of Initial Cost

Proper network planning reduces pipe installation and pump equipment costs.

➢ Environmental Effect

○ An extra energy consumption by overloaded pumping pressure is reduced.

○ Water resource is reserved by reduction of leakage.

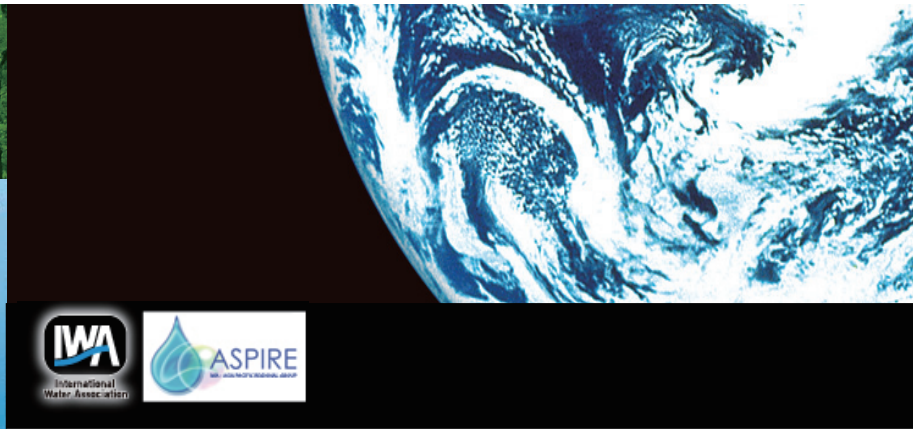


➢ *Services*

○ Improvement of water supply service

High quality of service such as stable water pressure and quality is provided to customer in all service area.

All Contents of "Water Supply in Japan" are quoted from the Website of "Ministry of Health Labour and Welfare."



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