Promoting the Management Integration of Waterworks in Japan

Bureau of Waterworks
Tokyo Metropolitan Government

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1. Background

Change of surrounding waterworks administration
- Declining population
- Weak financial power
- More refurbishment
1. Background

Declining population

The estimated population of Japan

Overall population (1000 people)

Coverage of the water supply system (%)

Peak in 2006
1. Background

More retirement

The total number of employees by age group in water utilities in Japan

- Total number of water suppliers: 1,579
- Total number of employees: 57,609

**Over 50 years is 42%**
**Large amount of retirement within 10 years**

Source: Water service statistics (2005 fiscal year)
1. Background

Promoting the integration of water utilities

- To establish a robust business environment
- Efficient and stable water supply
- To strengthen the maintenance system
2. In Japan

The Situation of Municipalities’ Integration in Japan

<table>
<thead>
<tr>
<th>The number of</th>
<th>2000</th>
<th>2006</th>
<th>The rate of decreasing numbers of municipalities by integration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Municipalities (city, town, village)</td>
<td>3,232</td>
<td>1,821</td>
<td>-43.7%</td>
</tr>
<tr>
<td>Waterworks Utilities</td>
<td>1,958</td>
<td>1,602</td>
<td>-18.2%</td>
</tr>
<tr>
<td>Small-scale Waterworks Utilities</td>
<td>8,979</td>
<td>7,794</td>
<td>-13.2%</td>
</tr>
</tbody>
</table>
2. In Japan

Policy of National level

- “Waterworks Vision”
  - national strategy on waterworks
  - formulated in 2004
  - the promotion of a water system for wider area supply as one of the principal provisions

- “The Guideline for extending water system plan” will be established by next March.
2. In Japan

Strengthening the Basis of the Water Supply System

**Situations**
- Population decrease
- Declining investment in the development of water supply facilities
- Aging facilities and demand for their replacement
- Management Vulnerability
- Crisis in technical basis

**Policy Issues**
- Providing a wide area water supply based on a new concept
- Adopting the most suitable management system to respond to new social trends
- Systematic development and renewal of facilities based on the medium- and long-term financial programs
- Water supply service based on a fair and appropriate financial burden

**Main Actions**
- Construct a water supply system that provides a wide area water supply based on a new concept and combines the best of centralization and decentralization
- Adopt the most suitable management style and construct various patterns of cooperation best suited to the water supply system in Japan
- Systematically develop and renew facilities through cost reduction as well as adequate cost sharing
Tokyo’s Trial

- Tokyo Waterworks (TMWA) already launched a major project for promoting the expansion of water utilities in 2012.

“the Integration of water utilities in Tama district” in 2012 will be completed.
### Outline of the Waterworks in Tokyo

#### FY2006

<table>
<thead>
<tr>
<th></th>
<th>Tama-Area</th>
<th>Metropolitan area</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Municipal Government</strong></td>
<td>23 cities, 2 towns</td>
<td>23 cities</td>
<td>46 cities, 2 towns</td>
</tr>
<tr>
<td><strong>Supply Population</strong></td>
<td>3,771,000</td>
<td>8,603,000</td>
<td>12,374,000</td>
</tr>
<tr>
<td><strong>Supply Area</strong></td>
<td>600.8 km²</td>
<td>621.8 km²</td>
<td>1,222.6 km²</td>
</tr>
<tr>
<td><strong>Yearly Supply</strong></td>
<td>428.3 Mm³</td>
<td>1172.3 Mm³</td>
<td>1,600.6 m³</td>
</tr>
<tr>
<td><strong>Distribution Network</strong></td>
<td>9,554 Km</td>
<td>15,919 Km</td>
<td>25,473 Km</td>
</tr>
</tbody>
</table>
3. In Tokyo

Waterworks of Tokyo Prior to 1973

Each local government managed each city waterworks utility responsibly.

TMWB managed entire 23-city.
3. In Tokyo

Integration Phase I  1973-2003

Tama-Area  

25 cities run under the commission by TMWB

Metropolitan area

TMWB managed entire 23-city
3. In Tokyo

Integration Phase II 2003-2012

Tama-Area

TMWB took over the management of 15 cities (at present)

Metropolitan area

TMWB runs directly in entire 23-city
3. In Tokyo

Waterworks of Tokyo after 2012

Tama-Area Metropolitan area

TMWB runs directly entire Metropolitan area & 25 cities in Tama

<table>
<thead>
<tr>
<th></th>
<th>Tokyo</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supply Population</td>
<td>12,134,000</td>
</tr>
<tr>
<td>Supply Area</td>
<td>1,222.3 km²</td>
</tr>
<tr>
<td>Yearly Supply</td>
<td>1,624.6 m³</td>
</tr>
<tr>
<td>Distribution Network</td>
<td>25,021 Km</td>
</tr>
</tbody>
</table>
3. In Tokyo

The Management Improvement Plan for Tama Waterworks

AIM1: To improve management governing system

AIM2: To Improve customer service

AIM3: To improve water supply system
In Tokyo

AIM 1:

To improve management governing system

Tokyo waterworks started a new governing system utilizing a public-private partnership

- To deal with additional tasks returned to Tokyo waterworks, we divided them into three categories
  - **core**: conducted by TMWB
  - **sub-core**: relatively essential part by organized-sectors supervised by TMWB
  - **periphery**: peripheral tasks by private company
In Tokyo
AIM 2:
New governing system

<table>
<thead>
<tr>
<th>Core</th>
<th>TMWB</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sub-core</td>
<td>Organized-Sector Supervised by TMWB</td>
</tr>
<tr>
<td></td>
<td>TSS</td>
</tr>
<tr>
<td></td>
<td>PUC</td>
</tr>
</tbody>
</table>

| Periphery | contractors |

Network

- Construction
- Repair

Plant

- Customer service
- Operational works
- Maintenance

Sub-core

- Customer center, 12 Service stations
- Meter-reading

Periphery
In Tokyo

AIM 2: To improve of Customer Service

- A brand-new computerized network was built in 2005
- “Tama Customer Service Center” was established in 2006, as the call center to centralize applications & inquires from 25 cities
- 12 water service stations are established
In Tokyo
AIM2:

Tama Customer Service Center

open: 8:30am-8:00pm
(Mon.-Sat.)
- emergency calls of water leaks in 24 hours all year
- accept: 1500-4000 calls a day
- operator: maxim 150 persons
In Tokyo

AIM3:

To improve water supply system

- There are 216 water facilities in Tama
  - 66 purification plants
  - 85 water supply stations
  - 65 pumping places
    Including 17 manned plants

- Each city has constructed and operated within its own small-scale area
In Tokyo
AIM3:

Wide-area perspective

<table>
<thead>
<tr>
<th>S</th>
<th>Supply station</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐P</td>
<td>Pumping station</td>
</tr>
<tr>
<td>←</td>
<td>Non-boosting</td>
</tr>
<tr>
<td>→</td>
<td>Boosting distribution</td>
</tr>
</tbody>
</table>
In Tokyo
AIM3:

Reorganization of existing facilities

Control center
Manned plant
plant
In Tokyo
AIM3:

Monitor and control from 4 control centers
In Tokyo
AIM3:
The Main Water Supplying Network in Tokyo

Tama area

Metropolitan area

Higashi-Murayama

Ozaku

Tama Kyuryo main line

- Purification plants
- Water supplying stations
- Transmission mains station
- Pipes requiring construction
In Tokyo
AIM3:
“Tama Kyuryou main line”

- Now building the main waterline

<table>
<thead>
<tr>
<th></th>
<th>1st Construction</th>
<th>2nd Construction</th>
</tr>
</thead>
<tbody>
<tr>
<td>length</td>
<td>12.0km</td>
<td>19.2km</td>
</tr>
<tr>
<td>inside diameter</td>
<td>1500mm</td>
<td>1500mm</td>
</tr>
<tr>
<td>Construction Period</td>
<td>1997-2005</td>
<td>2002-2010</td>
</tr>
<tr>
<td>Construction Method</td>
<td>Shield tunneling</td>
<td>Shield tunneling</td>
</tr>
<tr>
<td>New facility</td>
<td>2 water supply stations</td>
<td></td>
</tr>
</tbody>
</table>
3. In Tokyo

Effect

- This bold outsourcing will contribute to reduce
  - the number of staffs: 1,400 → 1,100
  - cost down: 4 billion yen each year (about 35 million dollars)

This Tama’s example will have an influence for the management of Tokyo Metropolitan area
4. Conclusions

Some proposals for Integration

- Tokyo’s case: good example for Urban districts
- Support the integration of smaller waterworks
- Make a concrete indicator for integration