UN-HABITAT

Working Toward “Building a Water-Conserving City”

Fukuoka City Waterworks Bureau
Water Supply Department, Water Conservation Promotion Section

Treasure our water
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Sights to see in Fukuoka

Waterfront district

Hakata Dontaku festival

Nakasu

Hakata Gion Yamakasa festival
Fukuoka’s weather

Temperature and annual rainfall trend over the past 20 years (1989-2008)

Average temp. 17℃
Average annual rainfall 1,588mm

Temp.  Rainfall
The Drought of 1978

Dried up reservoir

Water supply restriction: 287 days
Average water supply cut-off: 14 hours /day

Dispatch of water trucks

Households with complete water supply cut-off: Approx. 45,000 (13%)
Occurrence of “red water” (TNT waste water) and polluted water
Water tap valve adjustment (tightening) required assistance of non-Waterworks Bureau staff
The Drought of 1994

Zuibaiji Dam (11.4%)

- Water supply restriction: 295 days
- Average water supply cut-off: 8 hours/day

Sefuri Dam (32.7%)

- No households with complete water supply cut-off
- No occurrence of “red water” (TNT waste water) and polluted water
- Water tap valve adjustment (tightening) handled fully by Waterworks Bureau staff
Water supply development
Water supply development

Trends in Water demand and supply capacity growth

- Umi-no-nakamichi-Nata Seawater Desalination Plant
- Nagatani Dam
- Tatara Purification Plant
- Start Chikugo River Water Use
- Zuibaiji Dam, Zuibaiji Purification Plant
- Sefuri Dam, Me-otoiwa Purification Plant
- Egawa Dam, Otohana Purification Plant
- Kubara Dam
- Minami-hata Dam
- Takamiya Purification Plant
- Matsuzaki Purification Plant
- Muromi Purification Plant, Shiobaru Purification Plant
- Magaribuchi Dam, Hirao Purification Plant

Major Droughts

[Diagram showing water supply development over time with key events and facilities noted.]
Nagatani Dam (Pump-based dam)
Nagatani Dam (Purely for waterworks)
- Water collection area: 1.8 km² (93.2 km²)
- Effective water storage: 4.859 million m³
- Pump capacity: 100,000 m³/day

Kubara Dam (Purely for waterworks)
- Water collection area: 0.9 km² (16.0 km²)
- Effective water storage: 1.460 million m³

Critical in droughts
Seawater desalination plant
Building a Water-Conserving City
Building a Water-Conserving City

**Policies for Effective Water Use**
- Building of the Water Management Center for water supply control
- Water pipe maintenance project (Repair and re-installation of old and decaying pipes, etc.)
- Leakage prevention project
- Reuse of treated sewage for misc. use
- Rainwater harvesting (Fukuoka Dome and others)

**Policies for Water Conservation Promotion**
- Raise water conservation consciousness
- Promote diffusion of water conservation equipment (water-saving tap valve, water-saving toilet, etc.)
- Water conservation fee structure (progressive)
Policies for the effective use of water
Water Management Center （Water Supply Control”）

System installation: 1981
Construction cost: JPY 5 billion (~USD 50 million)
Water supply blockage diagram
Water Pressure Regulation Time-series Graph

- **Pre-Control System** (July 10, 1981)
- **Post-Control System** (October 13, 1995)
- **Supply Restriction in Force** (October 28, 1994)
- **Period of Supply Restriction**

Water Pressure: (kgf/cm²)

Time:

- City Center (P334)
Water pipe maintenance project

Replacing old and decaying pipes

New pipe (Ductile cast iron)

Corrosion prevention (Polyethylene sleeve)
Leakage prevention inspections

Leakage inspection zones: 1,638 (Approx. 1.7 km / zone)

Inspection method

● House-by-house listening inspection:
  Mainly focusing on water supply pipes (2,594 km)
  Depending on danger level (1 – 4), one inspection is done annually

● Measuring Inspections
  Water supply pipes below 300 mm
  259 km of pipes are inspected in each 4 years

● “Hotspot” Leakage Inspections
  Pipes which across roads & rail crossings that have possibility to cause major incidents/accidents (inspect annually)
House-by-house listening inspection

Listening rod
("Sound bar")
Changes in leakage rate

Leakage rate

Year

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<th>Leakage rate</th>
<th>Effectiveness</th>
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<td>1955</td>
<td>38.0%</td>
<td>61.0%</td>
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<tr>
<td>2008</td>
<td>2.3%</td>
<td>97.6%</td>
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Treated sewage for misc. use:

**Current conditions and overview**

Approx. 13,500 m³ / Day (Estimated)

Treated sewage for misc. use is relatively lower quality water (compared to tap water) from rain or treated sewage that can be used in daily activities such as flushing toilets and watering plants.

**Singular water recycling**
- 290 Sites, Approx. 48,000 m³ / Day (Estimated)

**Regional Recycling**
- 1 Region, Approx. 425 m³ / Day

**Broad Area Recycling - Water Reclamation Sewage Program**
- 1,304 ha
- 349 Sites, 6,583 m³ / Day (Daily avg.)

**Rainwater Harvesting**
- 126 Sites, Approx. 1,700 m³ / Day (Estimated)
Singular Water Recycling Diagram

Clean water

High-mounted water tank

Re-use as toilet flushing water

To sewage system

Treatment facility

Facilities in-use: 290
Broad Area Water Recycling Area Map

Sewage Program for Utilization of Reclaimed Water

Facilities in-use: 349
Rainwater harvesting

Fukuoka Dome
Water Conservation Policies
Treasuring limited water resources

- Raising water conservation awareness

- June 1: Water Conservation Day (Established only by Fukuoka City)

- June 1-7: Waterworks Week (National Week)

- August 1: Water Day (National day)

- August 1-7: Water Week (National week)

“Let’s Treasure Our Water” Campaign
June 1 – August 31

Treasure our water
Calling for the Importance of Water Conservation: Street Campaign
Primary School Curriculum Materials
(3 – 4 Grades)

‘Water and Us’

水とわたしたち

その一滴が…
水を大切に！

福岡市

平成21年度版
Promoting Diffusion of Water Conservation Equipment

Diffusion of the water-saving tap valve

Water emission (L/minute)

Faucet Handle Opening (degrees)

Normal tap valve

Water-saving tap valve

Water-saving impact

Fully open

Normal tap valve
Water-saving equipment

Water-saving toilet
Other water conservation equipment

Tools for water conservation

- **Water stoppage tool**: Once a pre-set amount of water flows through, the flow is stopped automatically.

- **Mini-pump**: Easy for pumping used bathwater.

- **Bath buzzer**: Once bath water reaches the programmed limit, a buzzer rings.

- **Hand-held valve**: When washing cars or watering plants, one can stop water flow with one’s hand.
Examples of Great Water Conservation Techniques

- Bath water
- Dish washing
- Laundry
- Car wash
- Rain harvesting
- Brushing teeth
Water conservation fee structure (progressive)

Example: Domestic Use Fee (20mm)

- 208 JPY/m³
- 183 JPY/m³
- 153 JPY/m³
- 150 JPY/m³

Water use (m³ / 2 months) vs. Japanese Yen

Water use (m³ / 2 months):
- 2,660
- 3,000
- 6,100
- 10,960
- 16,640
Simple water leakage monitoring

<table>
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<th>Dial status</th>
<th>Water leakage presence</th>
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<tr>
<td>Revolving</td>
<td>Yes</td>
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<tr>
<td></td>
<td>No</td>
</tr>
<tr>
<td>Not revolving</td>
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Water Conservation

Logo

Treasure our water