

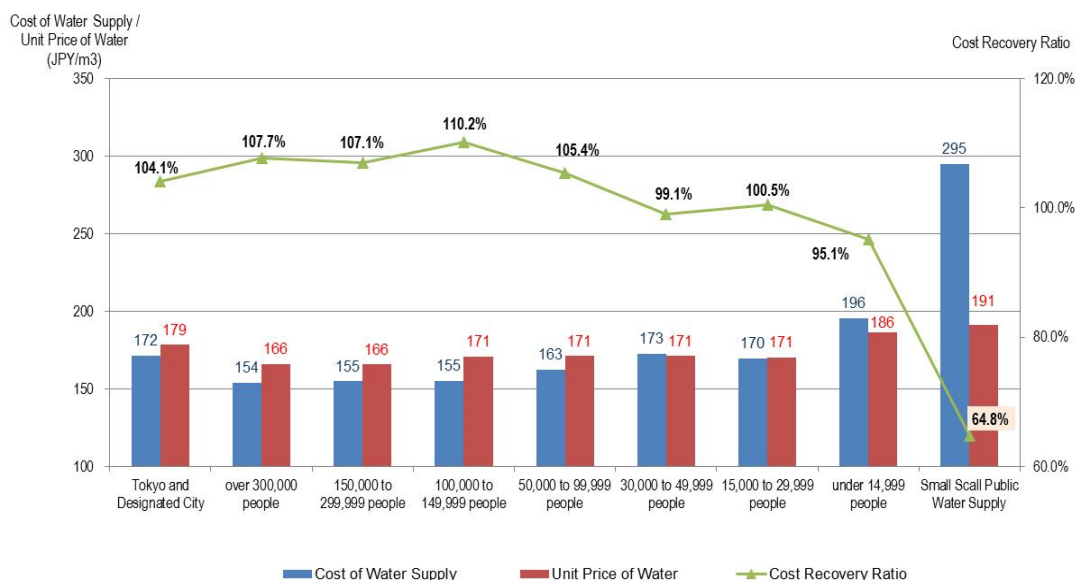
Case Study 5. Water Tariff Design with Understanding of Customers: Kyoto City

Contents

1. Introduction	C5-1
2. Water Tariff Revision Process	C5-3
(1) Preparation of Fiscal Plan (Financial Analysis/Management Analysis, Financial Projections)	C5-4
(2) Advisory Committee & Public Consultations	C5-5
(3) Preparation of the Revised Water Tariffs (Draft)	C5-6
(4) Approval by Local Assembly and Adoption of the Revised Water Tariffs	C5-9
(5) Public Notification of New Water Tariffs	C5-9
(6) Report to the Supervisory Authority	C5-10
3. Case: Kyoto City Water Tariff Revision in 2013	C5-11
(1) Background	C5-11
(2) Advisory Committee on Water and Sewage Tariff System	C5-12
(3) Public Survey	C5-12
(4) Advisory Committee Recommendations on Water and Sewage Tariff System	C5-13
(5) Preparation of the Draft Revision of Water Tariffs and Approval by the Local Assembly	C5-15
(6) Customer Notification of Water Tariff Revision	C5-17
4. Lessons Learned	C5-20

1. Introduction

The cost of providing water supply services in Japan for populations of 30,000 to 50,000 slightly exceeds the unit price charged to the customer, and the cost recovery declines to 95.1% for populations of less than 15,000 (see Figure 1). For larger populations (over 50,000) the cost recovery is better than 100%. Therefore on the whole, it can be said that large-scale utilities generate sufficient revenue to cover proper operation and maintenance, development and perpetuation of the system, while maintaining the utilities' financial integrity. Nevertheless, the ability to recover cost differs significantly with the size of the served population as shown in Figure 1.



Source: Created from the data of The Ministry of Internal Affairs and Communications, “*Survey of Financial Status of Local Public Enterprises, FY 2014*,” http://www.soumu.go.jp/main_sosiki/c-zaisei/kouei26/html/mokuji.html

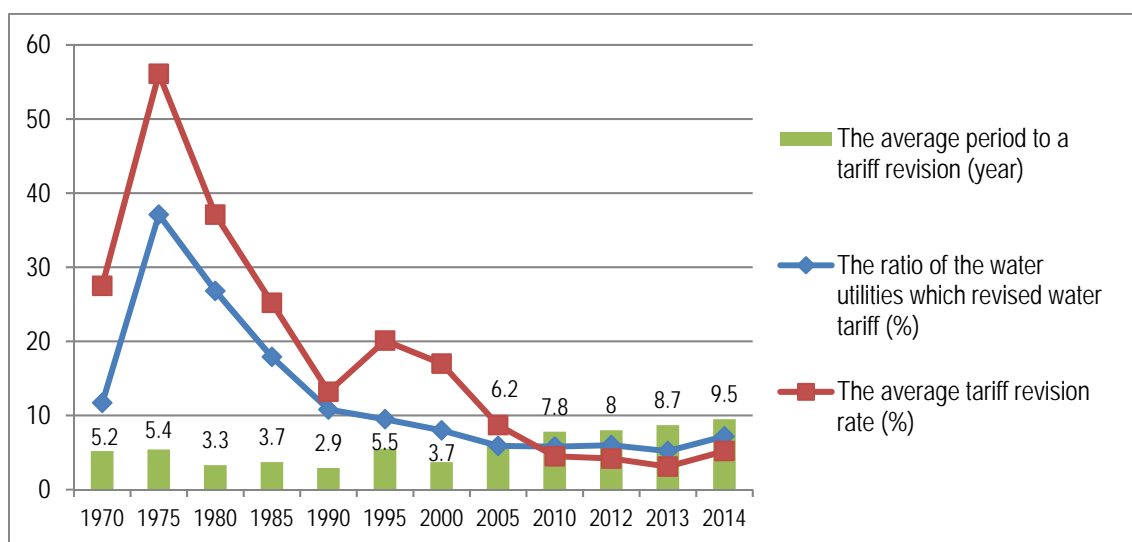
Figure 1. Cost Recovery Ratio by Waterworks of Different Service Capacities (FY2014)

Figure 2 shows that water utilities revised their water tariffs every 3~5 year in the 1970s when they were actively investing in water supply developments. They had to overcome various difficulties to do so.

The national government's policy on price and cost control did not allow tariff increases to keep pace with rapid inflation after World War II (1945). At the same time, construction costs, operation and maintenance costs kept rising and many water utilities faced serious financial

difficulties. The push to increase water tariffs was building. Finally by 1964-1965, 208 water utilities implemented tariff increases of 30-50%.

Water tariffs of most utilities were revised again in 1975, to cope with financial deterioration associated with the 1973 oil crisis and to secure funds for expansion of the water supply facilities (see Figure 2). The average increase was 56.1%. As the Japanese economy stabilized after the 2000s, fewer tariff revisions were implemented and rate increases were kept at low levels. It can be observed that water utilities tended to refrain from revising the water tariff or maintained the revision rates at low levels during recessions. In recent years, only 5-7% of the water utilities made tariff revisions with the average increases at 10% or lower.



Source: Created from the data of Japan Water Works Association, "The Outline of Water Supply," 6th ed., 2015.

Figure 2. Water Tariff Revisions from 1970 to 2014

This module explains the water tariff revision process with a specific example of the experience of Kyoto City.

2. Water Tariff Revision Process

Municipalities manage water utilities in Japan under the provisions of the Water Supply Act and Local Public Enterprise Act. Rules for water tariffs are described in detail in the water supply ordinance established by the local assembly. It is necessary to revise the water supply ordinance in order to increase water tariffs. The application to revise water tariffs requires the approval of the municipal assembly and involves discussions on political ramifications, economic conditions, societal and industrial impacts, public welfare, and affordability for low-income households. The proponent (water utility) and the decision maker (local authority) are required to engage the public to inform them of the application for a rate increase and to obtain their input.

The main steps of the water tariff revision process are as follows:

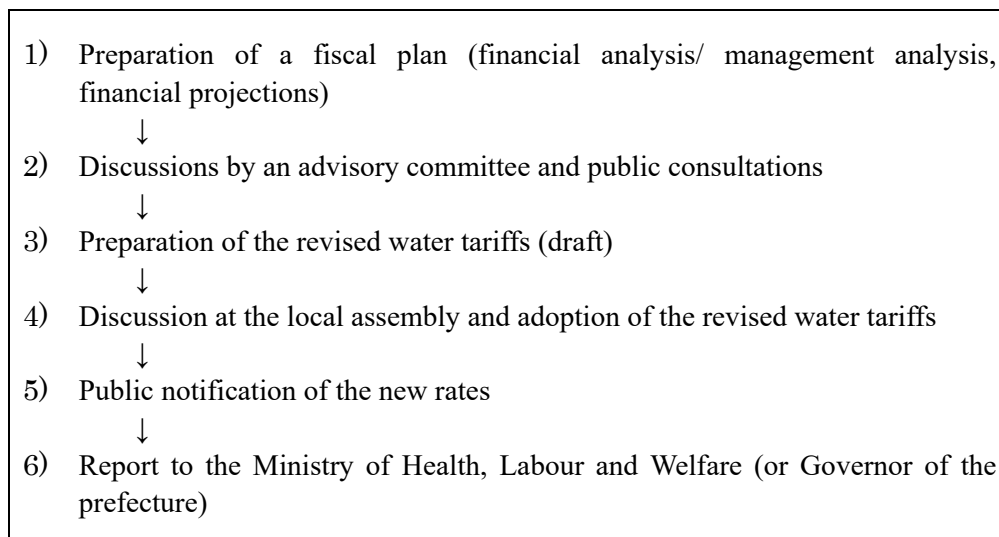


Figure 3. Steps of Water Tariff Revision Process

When conducting the revision of water tariffs in Japan, the following aspects are functioning effectively: (1) the Local Public Enterprise Act stipulates that public enterprises including water utilities must adopt the self-supporting accounting system and fully distributed cost method in their financial management; (2) appropriate levels for the revised tariffs are calculated following standardized procedures described in the *Water Tariff Setting Manual* prepared by Japan Water Works Association; and (3) public consultations and advisory committees are utilized in order to obtain customers and expert opinions.

(1) Preparation of Fiscal Plan (Financial Analysis/Management Analysis, Financial Projections)

The water utility formulates a fiscal plan, with the projected financial situation showing that revision of water tariffs would be required for sustainable management and provision of adequate water supply services.

The fiscal plan shows the business expenses over the period of time required to realize the targeted level of water supply service and the revenue that can be generated to cover the costs. The plan also includes the financial status to be achieved by the target date and the steps to be taken to do so. A financial plan is required for issuing municipal bonds to secure the financial resources for the construction of the facilities. It is also included in the master plan for water supply facilities to obtain the approval of relevant government authorities when water supply services are being developed. The financial plan is reviewed every 3 to 5 years in order to keep pace with inflation and changes in water demand. The main tasks of water utilities have shifted from construction of new facilities to maintenance and rehabilitation of existing ones. Therefore at the present time, a financial plan is generally prepared in accordance with the targets set in the business plan.

A financial plan is prepared in order to examine whether the current tariff level covers O&M and capital costs within the next 3 to 5 years. Therefore, it is formulated based on the details of other related plans shown in Table 1. Revenue and expenditures are estimated based on these plans and assumptions made on inflation rates.

If the financial outlook is grim, water utilities would review the investment plan and personnel costs, and revise the financial projections. Increasing the water tariffs would be considered after the review. The proposed revision would show how an increase in tariffs would be needed to cover all of the costs.

Prior to the revision of water tariffs, it is necessary to review the historical and future financial status of the water utility. By analyzing the past financial statements and management reports (required to be submitted every year under the Local Public Enterprise Act), changes in management status are evaluated, and compared with the national average and other water utilities of similar scale (benchmarking). Improvements to the management of the utility are also proposed, if necessary.

Table 1. Related Plans to be Considered for Preparation of a Financial Plan

Name of plan	Contents	Criteria for Financial Plan
Demand & Supply Plan	Securing a water source, water demand analysis, etc.	Water service coverage rate, population served, number of connections, etc.
Facility Plan	New construction, expansion, rehabilitation, etc.	Annual amount of water distributed (day maximum & day average) and amount of revenue water.
Funding Plan	Capital income including bond issues, national subsidies and grants, transfers from the general account, contributions for construction, etc.	Amount of bond issued and repayment, amount of grant and subsidy, other income, etc.
Operation Plan	Operation & maintenance of facilities, staff allocation, outsourcing, etc.	Operation & maintenance cost including outsourcing cost, etc.

Source: Created from information of Japan Bank for International Cooperation (JBIC), “*Survey Report on Policy and Case for Water and Sewerage Rates*,” 2004., Japan Water Works Association (JWWA), “*Water Tariff Setting Manual*,” 2015, http://www.jwwa.or.jp/houkokusyo/pdf/suidou_santei/suidou_santei_02.pdf, etc.

Column: Business Planning

The water supply business in Japan has gone through a period of facility expansion. Now the management environment is becoming increasingly challenging due to revenue and population decline combined with the need for massive rehabilitation and renewal of aging and deteriorating assets. A medium to long-term business plan is required to restore local government financial integrity. In 2016, the Ministry of Internal Affairs and Communications issued guidelines for the formulation of a business strategy and decided to provide subsidies to local governments for three years to carry out this task. Thus, it is essential for all water utilities, especially small ones, to revise the financial plan and business strategy, based on which water tariff revisions can be carried out.

(2) Advisory Committee & Public Consultations

The local government sets up advisory committees to gather advice on various management matters including tariff revisions. Public consultations are also necessary to engage residents and seek their input.

The Local Autonomy Act sets the rules for the establishment of advisory committees. The constitution and the number of members are decided by the ordinance. In general, committees comprise of academic experts, intellectuals, representatives of citizen groups, bulk users and

citizens appointed by the mayor or the executive managing director of the water utility. They review, deliberate, investigate and provide advice on the initiatives and management of the water utility, including policy decisions, financial issues.

The advantages of having an advisory committee are as follows: (1) ensuring accountability and information disclosure by requiring the utility to explain the details of its business; (2) ensuring objectivity in the decision-making process; (3) ensuring access to experts advice; and (4) ensuring customers to have input through the participation of representatives of user groups.

The committee discusses water tariff revision based on the information provided by the water utility and submits its report to the local assembly for the latter's final deliberation. The members of the committee bring forward diverse perspectives to the decision-making process and their recommendations are usually seriously considered.

The Local Public Enterprise Act stipulates the use of the fully distributed cost method to determine the water tariff schedule. This has the disadvantage that there may not be enough incentive to improve management efficiency because the water tariff schedule is calculated based only on total costs. To promote management efficiency, the advisory committee also discusses personnel assignment, cost reduction through outsourcing, measures for unpaid water tariffs, asset management, etc. In addition, in order for the committee to fully understand all aspects involved in the revision of water tariffs, it is important that the water utility presents the current and projected financial status including expected renewal expenses, required to provide sustainable services in the medium to long term.

Public consultations and information sessions are held to engage customers and obtain their input on the proposed tariff revision. It is important that the public understand the need for the revision and appreciate the transparency of the process. A draft revision of the water tariffs is then prepared taking their comments into consideration. Information disclosure and public engagement are important at all times and not only when tariffs are being revised. Customers who are engaged would have a good understanding of the water supply business and would readily lend their support to reasonable and necessary initiatives proposed by the water utility.

(3) Preparation of the Revised Water Tariffs (Draft)

The water utility calculates the total cost necessary for the operation using the fully distributed cost method and determines the required water tariff structure according to the *Water Tariff Setting Manual*.

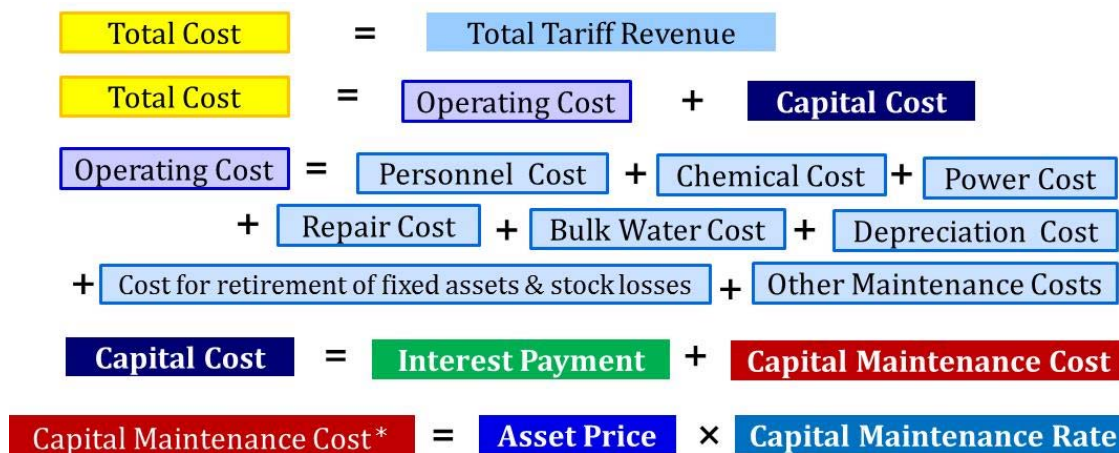
If the advisory committee supports the water tariff revision, a draft revised water tariffs is prepared under the authority of the executive managing director of the water utility. The revised tariffs are calculated based on the Water Tariff Setting Manual and the actual financial conditions of the water utility.

1) Setting the period of water tariff assessment

The *Water Tariff Setting Manual* recommends that the new water tariffs should be set for a period of 3 to 5 years.

2) Assessment of the total cost

The total cost for the period in which the rates are to be effective is the sum of operating expenses and capital costs for the period. This amount should be equal to the total revenue generated from water tariffs. The composition of the operating expenses and capital costs is shown in Figure 4.



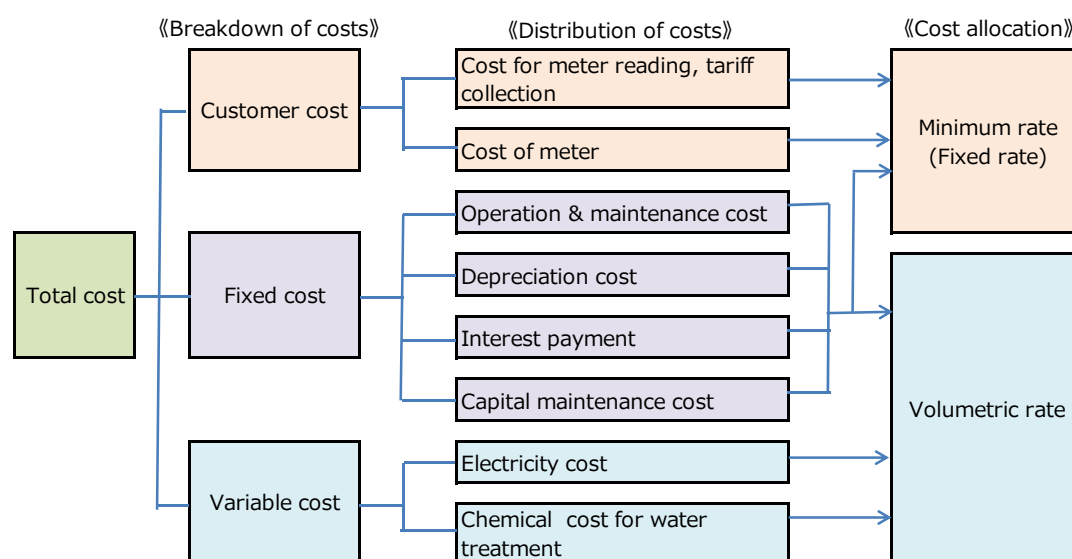
*If the same facility could be constructed again at the same cost as when it was built, the replacement cost could be covered by the retained revenue through depreciation. However, the rising costs of materials and labor makes this approach unattainable. Capital Maintenance Cost will be required to maintain the actual capital required.

Source: Created from information of JBIC, "Survey Report on Policy and Case for Water and Sewerage Rates," 2004, JWWA, "Water Tariff Setting Manual," 2015, etc.

Figure 4. Details of the Fully Distributed Cost

3) Calculation for setting water tariffs

Water tariffs are normally designed to fit average conditions for groups of customers having similar service requirements and then the cost of serving each customer group is determined. It is common practice to provide a two-part rate schedule consisting of a minimum rate and a volumetric rate (See Figure 5).



Source: Created from information of JWWA, “*Water Tariff Setting Manual*,” 2015, etc.

Figure 5. Breakdown of the Cost and Allocation to the Tariffs

There are two ways to categorize customer groups: purpose-based and pipe size-based. The typical purpose-based categories are residential (domestic), commercial, and industrial (public bath, factory, etc.). The categories differentiate the groups’ payment capability, and the nature/type and volume of water consumption, which produces added value. The tariff structure normally assigns a lower rate for domestic use and higher rates for uses beyond basic needs. Water utilities are shifting to classifications based on the size of service pipes or water meter pipe for each customer, or the amount of water used. This method of classification has the advantage of being objective, nondiscriminatory and not perceived to be arbitrary.

Minimum “fixed” rate for each customer group is calculated based on the expense necessary for providing 24/7 water supply services regardless of the amount of water used. The cost allocated per unit of water supply, which is to be collected depending on the actual amount of water used by each customer, is calculated as the volumetric rate.

The minimum rate generally includes a minimum volume of water consumption. To satisfy public health requirements, the minimum volume of 5 - 10 m³ per month is usually applied to domestic water users. The allocation of capital cost to the minimum volume is reduced to make it more affordable.

The volumetric rate is charged based on the water consumed (per m³). The rate is the same for all customer groups in principle. However, increasing-block or decreasing-block rates can be adopted to discourage or promote high volume use. Many water utilities adopted decreasing-block rates for industrial developments during the early stages of modern water supply development in Japan. The increasing-block system was introduced by many utilities to counter rapidly increasing water demand during the period of high economic growth.

The unit price decided through the above-mentioned process multiplied by the estimated number of customers and water volume should be the total revenue from water tariffs (and should be equal to the total cost).

(4) Approval by Local Assembly and Adoption of the Revised Water Tariffs

The draft water tariff revision is submitted to the local assembly for discussion and approval.

The water tariff revision proposal is submitted to the local assembly as a draft amendment of the water supply ordinance. The assembly reviews the reasons for the water tariff revision and discusses changes to be made in the original draft. Approval requires a detailed and convincing explanation of the necessity for facility development and renewal to provide sustainable and reliable supply of safe water. In addition, it is important for the utility to explain its efforts in sound management and convince the approval authority of the need for revision even though these efforts are successful. The draft proposal for water tariff revisions may be approved, or approved with additional requirements and amendments, or denied.

(5) Public Notification of New Water Tariffs

When the proposed water tariff revision is approved by the local assembly, the water utility notifies the citizens of the impending rate increases.

The notice of water tariff increases is published in the media, municipal publications and websites or sent out with water bills.

(6) Report to the Supervisory Authority

The water utility reports the revised water tariffs to the supervisory authority.

Based on Paragraph 5, Article 14 of the Water Supply Act, the supervisory authority should be notified of the revised water tariffs; this is usually the Minister of Health, Labour and Welfare or a prefectural governor if the utility is under the jurisdiction of the prefecture (serving design populations is less than 50,000).

3. Case: Kyoto City Water Tariff Revision in 2013

(1) Background

Kyoto City's Water Vision and Medium-Term Management Plan prepared in 2007 forecasted a financial deficit for 2010 and a cumulative deficit reaching 6.4 billion yen by the end of 2012. Kyoto City managed without raising the water and sewerage tariffs until 2012. An advisory committee began a series of meetings in November 2011 to deliberate on the proposal to revise the water tariffs in FY 2013.

Kyoto City is Japan's ancient city and the background information on Kyoto City Waterworks as of the end of FY 2012 is shown in Table 2.

The water tariffs in Kyoto City had stayed the same for 12 years since 2001. During this period, water demand continued to drop due to economic stagnation and the promotion of water conservation. The amount of water used per household decreased while the number of users increased, resulting in decreasing revenue from water tariffs. "Kyoto City's

Water Vision (2008 - 2017)" recognized that the tariff system for water and sewerage services would need to be revised to reflect the new reality. The "Medium-Term Management Plan (2008 - 2012)" projected a cumulative deficit to begin in fiscal 2010, which would increase yearly reaching 6.4 billion yen by the end of FY 2012 (See Table 3).

Table 2. Background Information on Kyoto City Waterworks

(As of the end of FY 2012)

Population served	1,455,904 persons
Water service coverage rate	99.90%
Number of connections	750,822
Facility capacity	771,000m ³ /day
Length of distribution pipeline	3,890km
Maximum daily supply	587,840m ³
Average daily supply	539,272m ³

Source: Kyoto City Waterworks Bureau's website

<http://www.city.kyoto.lg.jp/suido/page/0000008776.html>

Table 3. Projected Future Income and Expenditure of the Kyoto Waterworks (As of 2007)

(Million JPY)

Fiscal Year	2007	2008	2009	2010	2011	2012
Net profit or loss	-709	-1,575	-1,830	-2,116	-2,360	-2,502
Accumulated profit or loss	4,018	2,443	613	-1,503	-3,863	-6,365

Source: Kyoto City Waterworks Bureau, *Kyoto City Waterworks' Medium-Term Management Plan (2008 - 2012)*, 2007.

(2) Advisory Committee on Water and Sewerage Tariff System

The Kyoto City Waterworks Bureau decided to maintain the existing water and sewerage tariff level until FY 2012, while managing its finances through other measures. In November 2011, the Advisory Committee on Water and Sewerage tariff System of Kyoto City was established. The eight member advisory committee was comprised of academic experts, a tax accountant, representatives from a women's group, chamber of commerce, social welfare workers' group, and the Japan Water Works Association, and a citizen selected through public recruiting.

(3) Public Survey

A survey of the public showed that while more than half of the citizens were satisfied with the water tariff system, some felt that it should be reviewed in terms of fairness.

The Advisory Committee on Water and Sewerage tariff System carried out a survey of residents, companies and industries to obtain their opinions on the water and sewerage tariff system. The survey was conducted over a one month period from April to May 2012.

Of the 1200 responses more than half indicated that they were satisfied with the existing water tariff system. 20% thought that "it is better to reduce the gap of fixed rate among users' categories," "it is better to reduce or eliminate the volume of minimum water," and "it is better to narrow the gap in unit prices in the increasing block rates." 25% demanded a new bill payment method. 50% of citizens would like measures taken on groundwater use. (As Kyoto City has abundant groundwater resources; there are no regulations on groundwater use. Land owners can freely use groundwater at their premises. Although they are connected to the water supply system, they use groundwater as the main water source; and do not contribute to the costs for maintaining the water supply facilities and do not share equitably the financial burden of water supply system.)

The city had conducted public outreach to improve the citizens' understanding of water supply services previously. Therefore customers were cooperative in responding to the survey.

(4) Advisory Committee Recommendations on Water and Sewerage Tariff System

The Advisory Committee met seven times in one year. They discussed the issues of the existing water and sewerage tariff system and submitted a set of recommendations.

Table 4 summarizes the issues the Advisory Committee discussed and the recommendations for their resolution. The records of the committee meetings and all related information are available on the website of the Kyoto City Waterworks Bureau. The Advisory Committee played a role in demonstrating transparency and achieving accountability to the citizens.

The Kyoto City Waterworks Bureau explained the situation and issues of water and sewage services before the draft water tariff revision was presented to the local assembly. Public outreach was carried out to promote the understanding of citizens, through media outlets such as TV and city bulletins. These activities generated an atmosphere of acceptance among citizens, and contributed to the approval of the proposed revision by the assembly.

Table 4. Water Tariff Issues and Recommendations of the Advisory Committee

Issues		Recommendation
Minimum volume of water	More than 1/3 of households use less than 10 m ³ /month (monthly water volume covered by the fixed rates).	Reduce the minimal volume by half. Abolish the minimal volume for customers with small diameter of service pipe in future.
Block tariff system	The number of blocks and the range of water volume in each block do not correspond to the water consumption patterns.	Sub-divide small volumetric blocks into more narrow bands and consolidate large volumetric blocks into larger bands.
Fixed cost	Along with the reduced water demand, the revenue from volumetric rate is expected to continue to decline, and it would be difficult to recover the fixed cost in future.	Increase the amount of fixed costs allocated to the fixed rate.
Rate increment	Difference between the highest and the lowest unit price of the volumetric rate is bigger than other major cities, while the rate difference in sewerage tariff is extremely small compared to other cities.	Reduce the rate difference within the water tariff structure and widen it in the sewerage tariff structure, bringing the rate levels closer to those of other cities.
Groundwater use	Groundwater users, who connect to large diameter pipes, pay much less for piped water and are not sharing the financial burden fairly with other users.	Raise the fixed rate and increase the amount of fixed water for customers with large pipe diameter and reduce unit price of volumetric rate. Introduce user fee and/or discount system for customers with large diameter pipe in the future.
Credit card payment	Customers are interested in using credit card to make payments. The commission charge to the utility for credit card payment is more expensive than bank transfer fees.	Introduce credit card payment. Split the difference with the customers by giving them a discount as an incentive for payment using bank transfer.
Connection charge (Membership Fee)	Income generated by the connection charge could decrease in the future because it is influenced by a decline in the number of new customers.	Continue the connection charge system and introduce capital maintenance costs.
Capital maintenance costs	Capital maintenance costs, which are required to renew, replace, or rehabilitate assets, are not included in the calculation of water tariffs. They shall be included in the operating costs according to the <i>Water Tariff Setting Manual</i> .	Include capital maintenance costs when setting water tariffs. Propose acceptable portion of the costs based on the necessity for facilities renewal and the calculation formulas. It is necessary to be accepted by citizens.

Source: Created from information of Kyoto City Advisory Committee on Water and Sewerage tariff System "Recommendations on Kyoto City Water and Sewerage tariff System," 2012.

(5) Preparation of the Draft Revision of Water Tariffs and Approval by the Local Assembly

Kyoto City Waterworks Bureau proposed a 9.6% increase in water tariffs, a 3% reduction in sewerage tariffs, with the combined tariff increase of 3.7%. The tariff revision was approved by the assembly.

The proposed water tariff revision submitted by Kyoto City Waterworks Bureau in February 2013 based on the opinions of the Advisory Committee on Water and Sewerage Tariff System and input from public consultation, was approved by the local assembly. Water tariffs were raised by 9.6% and the sewage surcharge was reduced by 3%, resulting in a combined increase of 3.7% in water and sewerage rates.

Table 5 shows the old and revised water tariffs. The minimum volume of water included in the fixed rate was reduced to 5 m³ per month from 10 m³ for small pipe sizes (13 and 20 mm) and no change for medium pipe sizes (25 and 40 mm). For large pipe sizes (50 - 200 mm) the minimum volume was decided in accordance with each pipe size (from 50 m³ to 1000 m³). With this revision, the percentage of general households using less than minimum water decreased from 37% to 11%.

Small consumption volumetric rate blocks (11 - 30 m³) were sub-divided into smaller bands (11-20 m³ and 21-30 m³) and large consumption volumetric rate blocks (more than 5,001 m³) were consolidated to promote water saving (See “volumetric rate” in Table 5).

By increasing the fixed rate significantly, setting minimum volume based on the pipe size, and decreasing the maximum unit price of volumetric rate, the utility tried to promote the use of supplied water and to control the increasing use of groundwater. Setting fixed rates based on the minimum water by pipe size resulted in an increase in the percentage of fixed rate water tariff revenue from 35.8% to 36.3%.

The difference between highest and lowest unit price (per m³) was reduced from 3.9 to 3.36 as shown in Table 5. (Before $339/87=3.90$: The highest unit price was 339 JPY when more than 10,001 m³ was used and the lowest was 87 JPY for 13/20 mm pipe when 10m³ was used. After $326/97=3.36$: The highest is 326 JPY when more than 5,001 m³ was used and the lowest is 97 JPY for 13/20 mm pipe when 10m³ is used: $920\text{JPY}+50\text{JPY}/10\text{ m}^3$.)

Table 5. Water Tariffs Before and After the Revision

(Unit: JPY)

	Diameter /Block	Old Tariffs		Revised Tariffs	
		Price (JPY)	(Minimum volume)	Price (JPY)	(Minimum volume)
Fixed Rate	13/20 mm	870	10 m³	920	5 m³
	25 mm	1,690		1,900	10 m³
				2,780	
	40 mm	2,470		18,300	50 m³
	50 mm	9,250		35,910	100 m³
	75 mm	15,470		71,600	250 m³
	100 mm				
	150 mm			134,260	500 m³
200 mm	281,520		1000 m³		
Volumetric Rate (/m³)	6 m³	0	10		
	11 m³~20 m³	162	177		
	21 m³~30 m³		180		
	31 m³~100 m³	189	208		
	101 m³~200 m³	206	226		
	201 m³~500 m³	223	243		
	501 m³~5,000 m³	262	284		
	5,001 m³~10,000 m³	301	326		
	10,000 m³~	339			

Source: Kyoto City Waterworks Bureau, "Reference material for Revision of the Water and Sewerage tariffs," 2013.

Table 6 shows the revenue and expenditures of the utility after the revision. Reduction of expenses through the streamlining of operations and strengthening of financial practices reduced the total cumulative deficits from 8,391 million JPY to 2,528 million JPY. After the tariff revision, the city balanced the revenue with expenditures and the capital maintenance cost by eliminating the cumulative deficits.

The city introduced the credit card payment system as requested by the customers. Credit card payment adds another expense to the water supply service because of the commission charges. Therefore, a discount of 40 yen (excluding consumption tax) per month was granted for those who do not use credit card and pay by bank transfer.

Table 6. Projected Fiscal Revenue and Expenditures of Kyoto City Waterworks Bureau (FY2013 -- FY2017)

(Unit: Million JPY)

	Before cost-saving	After cost-saving		After water tariff revision	
			Effect		Effect
Revenue	142,043	142,165	122	152,982	10,817
Water tariff	129,594	129,594	0	140,804	11,210
Others	12,449	12,571	122	12,178	-393
Expenditure	150,136	144,395	-5,741	144,550	155
Personnel cost	33,991	30,191	-3,800	30,191	0
Salary	28,656	26,501	-2,155	26,501	0
Retirement allowance	5,335	3,690	-1,645	3,690	0
Maintenance costs	38,788	36,600	-2,188	36,587	-13
Depreciation	55,725	55,725	0	55,725	0
Interest payment, etc.	16,703	16,703	0	16,335	-368
Consumption tax, etc.	4,929	5,176	247	5,712	536
Net profit or loss	-8,093	-2,230	5,863	8,432	10,662
Appropriation of earned surplus*	0	0	0	-8,134	-8,134
Accumulated profit or loss in the end of FY2017	-8,391	-2,528	5,863	0	2,528

* The amount, which can be utilized or reserved for a specific use, such as capital maintenance, etc.

Source: Kyoto City Waterworks Bureau, "Reference material for Revision of the Water and Sewerage tariffs," 2013.

(6) Customer Notification of Water Tariff Revision

Following the approval of the water tariff revision, the Kyoto City Waterworks Bureau used city bulletins, posts on website, and posters, to inform the public of the revised rates.

The details of the water tariff changes were published in newspapers, on city bulletins, brochures and flyers. Announcements were made on television, radio, and social media, and websites. Posters were put up in public places (See "Photo 1"). In addition, the city held individual meetings with various affected groups and businesses.

“Revised Water and Sewerage Tariffs
to Start in October, 2013.”



Source: Kyoto City Waterworks Bureau, *Concerning Revision of Water and Sewerage tariff System*, the 4th Regional Meeting for Promotion of the New Water Supply Vision (Kansai Region) by the Ministry of Health, Labour and Welfare

http://www.mhlw.go.jp/seisakunitsuite/bunya/topics/bukyoku/kenkou/suido/newvision/chiikikondan/04/suishin_kondan_04-4.pdf


Photo 1. Sticker Announcing the Revision of Water Tariffs

Kyoto City Waterworks Bureau also circulated advance notices of the new tariff schedule shown in Table 7.

Table 8 shows the public engagement activities conducted along the tariff revision process, from the preparation of the Medium-Term Management Plan, the decision to seek tariff revision, to the work of the advisory committee. Securing public understanding and support along every step of the process ensured that the revised water tariffs were acceptable to the customers.

The Kyoto City example shows how water utilities in Japan revised water tariffs by effectively using the advisory committee made up of external experts and representatives of citizens. In the process they also reduced expenses by streamlining the system through management efforts, improved affordability for low income groups and met customer demands for a fairer tariff structure. A wide range of opinions were gathered during the public hearings and these were duly reflected in the revised tariff schedule. The process promoted the citizens' understanding of the need for tariff revision and proved that regular public engagement is necessary to gain their continued understanding and support.

Table 7. New Tariff Schedule (13 mm and 20 mm) for Circulation



京都市上下水道局 料金早見表 (2ヵ月料金・税込)

WATERWORKS BUREAU, CITY OF KYOTO

Water and Sewage Service Charges

per 2 months, 8% consumption tax incl.

呼び径
diameter
of water supply
pipe
13&20
mm

2014年6月1日概算分から適用
Effective from 1st June 2014

水量 amount of water used (m³)	水道料金 water charge (yen)	下水道使用料 sewage charge (yen)	合計 total (yen)
0-10	1,987	1,404	3,391
11	1,998	1,414	3,412
12	2,008	1,425	3,433
13	2,019	1,436	3,455
14	2,030	1,447	3,477
15	2,041	1,458	3,499
16	2,052	1,468	3,520
17	2,062	1,479	3,541
18	2,073	1,490	3,563
19	2,084	1,501	3,585
20	2,095	1,512	3,607
21	2,286	1,634	3,920
22	2,477	1,756	4,233
23	2,668	1,878	4,546
24	2,859	2,000	4,859
25	3,051	2,122	5,173
26	3,242	2,244	5,486
27	3,433	2,366	5,799
28	3,624	2,488	6,112
29	3,815	2,610	6,425
30	4,006	2,732	6,738
31	4,197	2,854	7,051
32	4,389	2,976	7,365
33	4,580	3,098	7,678
34	4,771	3,220	7,991
35	4,962	3,342	8,304
36	5,153	3,464	8,617
37	5,344	3,586	8,930
38	5,536	3,708	9,244
39	5,727	3,830	9,557
40	5,918	3,952	9,870
41	6,112	4,078	10,190
42	6,307	4,203	10,510
43	6,501	4,328	10,829
44	6,696	4,453	11,149
45	6,890	4,578	11,469
46	7,084	4,704	11,788
47	7,279	4,829	12,108
48	7,473	4,955	12,428
49	7,668	5,080	12,748
50	7,862	5,205	13,067
51	8,056	5,330	13,386
52	8,251	5,456	13,707
53	8,445	5,581	14,026
54	8,640	5,706	14,346
55	8,834	5,832	14,666
56	9,028	5,957	14,985
57	9,223	6,082	15,305
58	9,417	6,207	15,624
59	9,612	6,333	15,945
60	9,806	6,458	16,264
61	10,031	6,633	16,664
62	10,255	6,808	17,063
63	10,480	6,983	17,463
64	10,704	7,158	17,862
65	10,929	7,333	18,262
66	11,154	7,508	18,662
67	11,378	7,683	19,061
68	11,603	7,858	19,461
69	11,828	8,033	19,861
70	12,052	8,208	20,260
71	12,277	8,382	20,659
72	12,502	8,557	21,059
73	12,726	8,732	21,458
74	12,951	8,907	21,858
75	13,176	9,082	22,258
76	13,400	9,257	22,657
77	13,625	9,432	23,057
78	13,849	9,607	23,456
79	14,074	9,782	23,856
80	14,299	9,957	24,256
81	14,523	10,132	24,655
82	14,748	10,307	25,055
83	14,973	10,482	25,455
84	15,197	10,657	25,854
85	15,422	10,832	26,254
86	15,647	11,007	26,654
87	15,871	11,182	27,053
88	16,096	11,357	27,453
89	16,320	11,532	27,852
90	16,545	11,707	28,252
91	16,770	11,882	28,652
92	16,994	12,057	29,051
93	17,219	12,232	29,451
94	17,444	12,407	29,851
95	17,668	12,582	30,250
96	17,893	12,756	30,649
97	18,118	12,931	31,049
98	18,342	13,106	31,448
99	18,567	13,281	31,848
100	18,792	13,456	32,248

水量101m³以上の料金については、営業所までお問い合わせください。(裏面をご覧ください)。
If you want to know about the charge of 101m³ or more, please inquire our service office. (See reverse side).

Source: Website of Kyoto City Waterworks Bureau,

http://www.city.kyoto.lg.jp/suido/cmsfiles/contents/0000006/6745/8percent_water_and_sewage_service_charges_chart_13and20mm_2016Apr.pdf

Table 8. Water Tariff Revision Process in Kyoto City Waterworks Bureau

2007.12	Kyoto's Water Vision and Medium-term Business Plan was prepared. It showed a deficit situation beginning in FY 2010, and the amount of the deficit reaching 6,400 million yen at the end of FY 2012. The Kyoto City Waterworks Bureau decided to maintain existing water and sewerage tariff rates till FY 2012 and manage the deficit using other financial options.				
	City Assembly and Revision	Advisory Committee on Water and Sewerage Tariff System	TV·Radio/ Explanatory meeting	City bulletin	Leaflets, etc.
2011.9		Establishing the Advisory Committee			
2011.11		First meeting			
2012.1		Second meeting			
2012.3		Third meeting			
2012.4		Public survey			
2012.5		Public survey			
2012.6		Fourth meeting			
2012.7		Fifth meeting	Staff of Kyoto City Waterworks Bureau explained the status and issues facing the water utility, described the tariff system on KBS (Kyoto Broadcasting System) Kyoto Television.		
2012.8		Sixth meeting			
2012.10					Distributed leaflets on "reduction of water demand, aging facilities, and details on the tariff system review.
2012.11		Seventh meeting ⇒ Submission of the written opinion	A radio personality, an expert, the mayor and a staff of Kyoto City Waterworks Bureau delivered the message on status and issues facing the water utility, and future vision on KBS Kyoto radio. (Total 13 times)	Explained issues related to Kyoto City Waterworks Bureau	
2012.12					
2013.1				Presented the report by the Advisory Committee on Water and Sewerage Tariff System	
2013.2	Submission of the application for water and sewerage tariff revision		Conducted explanatory meetings with various stakeholders.	Presented the outline of the Medium-term Business Plan	Distributed leaflets on "reduction of water demand, aged facilities, and examination of the tariff system" to every house, making them available at ward offices, branch offices of Waterworks Bureau, subway stations, etc.
2013.3	Approval of the application				
2013.4				Explained water and sewerage tariff revision	Distributed leaflets on the tariff revision at meetings, events and at the facilities of Waterworks Bureau. The notice of the tariff revision was included in Waterworks Bureau publications. Posters were also put up in public places.
2013.5					
2013.6					
2013.7					
2013.8				Introduced new discount for bank account transfer users	
2013.9					
2013.10	Application of revised tariff				

Source: Created from information of web sites of Kyoto City Waterworks Bureau, Kyoto City, Kyoto City Assembly, etc.

4. Lessons Learned

The following Japanese experience could be useful for other countries.

- **(Cost Recovery)** Water tariffs are set based on the principle of the fully distributed cost method as stipulated by acts in Japan. The *Water Tariff Setting Manual* provides guidance on the standardized method for the calculation of water tariffs based on cost recovery.
- **(Bases of Tariff Revision)** The water utility releases financial and operational information, showing the facilities replacement costs and funding sources. This is necessary if it were to continue to provide sustainable, reliable, and safe water supply in the medium and long term.
- **(Utility's Efforts)** It is also necessary to explain the utility's management efforts (control on staff size, cost savings with outsourcing, measures for unpaid water tariffs, asset management, etc.).
- **(Understanding of Customers)** Tariff revision must have the support of the local government and residents. It is important to forecast the financial conditions in a credible manner and explain the need for the rate increase convincingly. The discussions by the advisory committee and public consultations are useful opportunities to engage the public and gather customer input. The utility's business and fiscal plans must be well understood and supported by the customers. It is desirable that tariffs are revised for customers' benefit (improved service and fairness).

