

Chapter 8 Proposed Solutions for Chirchik City Vodokanal

This chapter refers to the proposed solutions to the issues in water supply services in Chirchik City stated in chapter 4. However, basic aspects of the solutions follow the same way as Tashkent Vodokanal. Therefore, the details of the solutions are only mentioned in 8.2.

8.1 Overview of Proposed Solutions

8.1.1 Issues on Water Supply Services in Chirchik City

The current issues of water supply services in Chirchik City are roughly summarized as below.

- (1) A project of installation of water meters at public users' sites has not proceeded as planned, and the users in general public are charged water bills based on fixed rate system. Also, there is a large gap in charges between the general public and corporations.
- (2) As the result, large part of precious water resources have been wasted and Vodokanal has spent on the costs of wasted water treatment and supply.
- (3) A lag in water tariff policy creates that the financial foundation is weak because sufficient water charges can not be collected to offset these wasted costs and the facilities and equipment are not adequately maintained as required.

8.1.2 Step-by-Step Approach

The Study Team set up three stages so that each stage has an aim to be targeted in order to draft solutions to the above issues. Please refer to 7.1.2 and 7.1.3 for detailed content.

8.2 Solutions to Finance and Management

Solutions to following items are proposed. The contents of the solutions are the same as Tashkent Vodokanal, and the details are, thus, omitted.

- (1) Installation of meter
- (2) Conservation of water
- (3) Whole management
- (4) Facilities and equipment
- (5) Technology exchange meetings
- (6) External factors

8.3 Solutions to Tariff Collection

To achieve healthy management and to innovate appropriate technology by building a water conserving society, these proposed solutions are proposed for Chirchik City.

- (1) Solutions to Fixed Rate System
- (2) Solutions to Metered Rate System
- (3) Solutions to Tariff Collection
- (4) Introduction of active measures, i.e. a pilot procedure for a start

Chirchik Vodokanal is aware of not only financial but also technical aspects. Thus it can act as a main body to positively implement new measures as Chirchik is a middle sized core city.

8.4 Introduction of a Suitable Tariff Table

8.4.1. Solutions to Tariff Table

The following revised table is proposed. The middle- and long term tariff policy follow the same as the one for Tashkent, therefore the details (please refer to 7.4) are omitted but only proposed tariff table is presented here.

Table 8.1 Proposed Revised Tariff Table for Chirchik City (Applicable year : 2000-2002)

	Users		Charge
Norma	Population per person Unit cost: 9 sum/m ³ Volume of water consumption : 0.490 m ³ /day, A month : 30 days		132 sum/month
Metered	Population per household Basic charge: 0~10m ³ 11~20 m ³ 21~30 m ³ 31~40 m ³ 41~50 51 m ³ ~		70 Sum/month --- 8 Sum/ m ³ is added against an excess of 10 m ³ 9 Sum/ m ³ is added against an excess of 20 m ³ 12 Sum/ m ³ is added against an excess of 30 m ³ 17 Sum/ m ³ is added against an excess of 40 m ³ 23.4 Sum/ m ³ is added against an excess of 50 m ³
	Budget Organizations		9 Sum/m ³
	Self-accounting Organizations	Communal	23.4 Sum/m ³
	Production, Construction, etc.	Transportation,	23.4 Sum/m ³
Collection of costs of meter installation	For all users		85 sum/month
Measure for Social Safety Net	Users with Norm	Monthly living expense 0-5,000 sum	1) Free installation 2) The fixed charge is reduced to 55/sum/month.
		5,001-10,000	1)Free installation 2)The fixed charge is reduced to 106/sum/month.
	Users with Metered	Monthly living expense 0-5,000 sum	1)Free installation costs 2)The monthly fixed charge is free.
		5,001-10,000	Free installation

Value Added Tax (VAT) is charged on the above amounts.

8.4.2 Revenue and Expenditure under the Revised Tariff System

The revenue and expenditure for the period from year 2000 to 2002 under the revised tariff system is estimated and presented in Fig. 8.1. Level of the revenue earned from the charge paid by the residents in private houses and residents in apartment blocks is estimated and examined in the following two cases. As the result, in any of the three cases, the earned surplus can be reserved up to year 2002 and this means that the Vodokanal would not reach standstill for another three years without increasing the water charges for another three years. In other words, any losses that may occur in future can be covered by the revenue gained in the beginning.

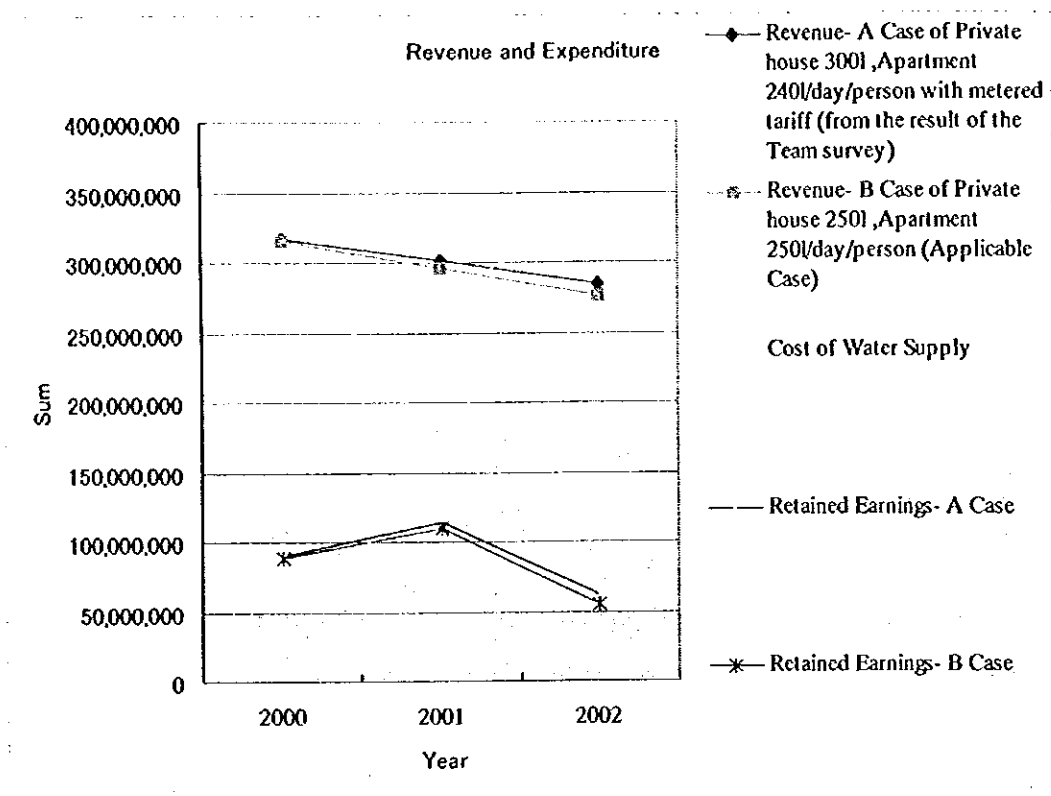
Revenue – Case A

360 liter among the residents in private houses and 240 liter among residents in apartment blocks (inferred from the result of the Study Team's survey on water consumption)

Revenue – Case B

250 liter among the residents in private houses and 250 liter among the residents in apartment blocks (considered as the possible level referred to the international standard)

Figure 8.1 Revenue and Expenditure - Chirchik Vodokanal



Also, the impact of revised water tariff on the livelihood of the general public is examined in terms of their cost of living as presented in Table 8.2. Also as for the level of water consumption, the case of B was employed. As for the percentage of the charge by fixed rate system to living costs, the reason why the rate of the private residents is higher than that of the residents apartment blocks may be because the number of family members in private houses is more than that of residents in apartment blocks.

Table 8.2 Impact of Revised Water Tariff on Livelihood

Monthly living costs	Ratio to the living costs		
	Fixed rate system		Metered rate system
	Residents in apartment blocks	Residents in apartment blocks	
0-5000	9%	16%	7%
5,001 – 10,000	6%	5%	3%
10 000 – 25 000	3%	2%	2%
25,000 – 35,000	2%	1%	1%
Above 35,000	2%	1%	1%

8.5 Computer Aided Tariff Collection System

8.5.1 Proposed Procedures of Tariff Collection

The proposed tariff collection procedures are the same as those of Tashkent City Vodokanal (refer to 7.5.1)

8.5.2 Proposed Computer Systems

(1) Development of Pilot System on Tariff Collection Chirchik City Vodokanal

The Study Team regards that other Vodokanals in the country encounter similar problems with their systems of tariff collection. We therefore propose that Chirchik City Vodokanal can be the pilot for the proposed system of tariff collection, which should subsequently be implemented in phases in other cities apart from Tashkent city. Therefore the design and development of the system should be effective to the implementation by other Vodokanals.

(2) Replacement and Enhancement of Computer Equipment

It is proposed that Chirchik Vodokanal will introduce the same function of software which Tashkent Vodokanal employs for collection of charge, but the specifications of the hardware components should be suitable for scale of each operation.

(3) Assignment of Systems Administrators

We propose that Chirchik City Vodokanal assign a systems administrator among its existing staffs and train them.

8.5.3 Master Plans and Feasibility Analysis

We have come up with a master plan for the refurbishment of the tariff collection system at Chirchik City Vodokanal by 2005 (development of the Chirchik systems to be finished by 2004), and a long-term strategy for the implementation of the tariff collection system at all Vodokanals countrywide by 2010. We propose that this tariff collection system be implemented at some selected Vodokanals, and the system should be incrementally implemented in the rest of the Vodokanals countrywide by 2010. The timetable specified in the master plans is tentative and subject to various factors, namely, the progress in the installation of meters, the availability of funds, etc.

8.6 Users' Awareness of Water Conservation and User Participation

The objectives and proposals regarding users' awareness of water conservation and user participation are the same as those of Tashkent (refer to 7.6).

8.7 Water Supply System and Operation and Maintenance ("O&M")

8.7.1 Present and Future Problems and Countermeasures

Present and future problems and countermeasures for the Tashkent water supply work are presented in 4.5.4.

8.7.2 Proposed Improvement Plan

This improvement plan is proposed to achieve its goal by 2010 and with mid-term implementation by 2005. The concrete plan and the effect of the improvements are described below.

(1) Reduction of Water Supply Volume

1) Target

The average distribution volume in 2005 will decrease to 67% of the current volume in spite a population increase of 1.13 times that of 1999, and will decrease again to 88% in spite of the same percentage increase in population by 2010.

2) Countermeasures

The countermeasures are same as the case of Tashkent City (refer to 7.7.2 (1)).

(2) Estimation of Effect by Reducing Volume of Water Supply

- 1) If the volume of distribution decreases, it is thought that the WTP and Intake needed will be only Chirchik WTP and No.1 Intake by 2005.
- 2) Due to the abolition of the plants, O&M members will decrease but the staff for the repairs, improvement and construction department and the service and sales department will increase.
- 3) Total cost of chemicals and electricity will sharply decrease in 2010 as 326 million/860 million = 38% of the cost in 1999.
- 4) The repair and improvement costs in 2010 will decrease to 70% of the necessary budget for 1999, by a rearrangement of plants due to the reduction of the volume of distribution.

(3) Improvement of Water System, Facilities and Operation and Maintenance

- 1) Service reservoirs should be constructed for gravity distribution and the regulation of flow fluctuation.
- 2) The transmission pump for these reservoirs should be introduced for automatic operation by sensors. In terms of capacity, a volume of 8,000 cu.m should be constructed by 2005 and further 4,000 cu.m should be constructed by 2010.

3) Automatic operation by the use of sensors (such as flow meters, level meters and pressure gauges) and proper information should be introduced for these plans and the needed improvements should be conducted.

4) Pipelines should be renewed at certain intervals and the replacement plans should be drawn up for the whole city.

8.8 Summary of the Immediate Solutions

Summary of the solutions to Chirchik Vodokanal is similar to that, presented in 7.8, of Tashkent Vodokanal

Chapter 9 Proposed Solutions for Water Supply Services in Uzbekistan

One of the most important issues in operating water supply services is to eliminate the areas where has not been served with water supply services. Since its independence in 1991, various projects have been undertaken to promote water supply services at the level of the government, the local government and the people concerned with water supply services.

As mentioned in chapter 2, the people concerned with water supply services have been proceeded with reformation of the aspects in certain systems, such as clarifying the Vodokanals' managerial structure, increases in tariff, a transition towards metered rate system and promotion of meter installation and so forth.

However, there are various problems to be solved for implementing these reformations and certain aspects of the reformation have not been proceeded as planned. The Study Team examined those problems and the solutions for operating water supply services in both Tashkent and Chirchik City. In order to deal with other Vodokanals' improvements, there will be further promotion on improvement of management. It would be grateful if the solutions proposed by the Study Team could contribute to the management of Vodokanals.

Here are the important points to be concerned in promoting managerial solutions nationwide.

9.1 Legal and Institutional Issues

9.1.1 Proposed Function of Rayon-Vodokanal in Tariff Collection

Presently, the Rayon-Vodokanals in Tashkent City operate only as workshops for the routine repair and maintenance of the pipelines under the roads. Their facilities and the equipment for their services are generally old and deficient. At present, Tashkent City and TCMA investigate to enforce the roles of Rayon-Vodokanals by expanding scope of their services. The Study Team recommend that roles of Rayon-Vodokanals should be expanded to provide high quality services to users such as efficient repair

services, information necessary for water conservation etc., in the manner similar to service stations in Japan.

9.1.2 Efficient Tariff Setting Process

In order to make the tariff setting process more efficient,

- (1) A certain designated department should be solely responsible for this work. Clarification and transfer of the relevant responsibilities as well as a reorganization of Vodokanal will be necessary for this purpose.
- (2) Plans to promote rationalization and efficiency in the management of waterworks system, both technical and organizational, should be taken into consideration in the process.

9.1.3 Transfer of the Financial Burden on Vodokanal from Reduced Tariffs

In developing future schemes to maintain the social safety net, the financial constraint faced by the Vodokanals should be given full consideration by the central and local governments. Because the policies and schemes for providing the social safety net have been decided by the central government, the financial burden from providing these allowances, currently born by the Vodokanals, should eventually be transferred to and carried by the central and local governments.

9.2 Multi-Support and Cooperation in the Water Sector in Uzbekistan

Mutual support and cooperation among the multiple water utilities as well as shared information and communication are indispensable in any country. Mutual support in the areas of water resources, potable water and the related facilities, and the dispatch of experts and engineers are two major means when contingent situations actually arise. Ironically, as equipment for the measurement of water quality develops, hazardous substances increase over the world. As a result, both the number of cases of water contamination and the types of pollutants have been increasing. Recent phenomena of strong earthquakes, drought, heavy rains and global atmospheric changes experienced in Japan and

worldwide have given a great impetus to promoting mutual support and cooperation in Japan.

In this section, the objectives, the ways and means, and the effects of mutual support and cooperation among the multiple water utilities as well as the present situation in Japan are described.

9.3 Improvements in Technical Skills

9.3.1 Present Situation

The present technology relating to water supply services in the ROU was basically introduced in the era of the FSU. However, this technology lags behind the world trends which have advanced for the last decade, whereas new technical problems have occurred since the collapse of the USSR.

The main problems are described below.

- (1) All criteria and standards for equipment and facilities are those of the FSU and many do not meet the actual conditions in a modern country.
- (2) Regulations for organic types of chlorine and agricultural chemicals, which have caused problems in water quality standards in recent years have not been adopted.

9.3.2 Countermeasures

A survey should first begin to come up with countermeasures which deal with the water sector in the whole country. Experts in each subdivision should gather and conduct the following investigations and evaluations.

- (1) To review the criteria and standards and eliminate the areas which do not fit the actual conditions.
- (2) To evaluate the present water quality standards by comparing these with the methods of measuring and international standards such as the WHO standards.

- (3) To gather information on new technology, particularly information technology, and apply this to the water supply system and the related facilities.

The following items are presented as the concrete plans for improvement:

- (1) Improvement of the plans for water supply facilities plan and design standards
- (2) Establishment of domestic factories for products which meet these improved standards
- (3) Improvement of criteria and standards for construction
- (4) Issue of standard books outlining improved water quality standards and methods for analysis
- (5) Issue of management standards for maintenance
- (6) Utilization of information technology

9.4 Environmental Issues

9.4.1 Present Status

The Vodokanal deeply affects both the natural environment and the social environment in that the users require a large volume of water generated in the natural world for their social life. The water resources in the country are limited to the mountainous areas where much rain falls, while in the central plains where there is little rain, a large amount of water is consumed for irrigation. Therefore the Vodokanal have faced problems of quantity and quality and these relate to the field water mainly in the central plains.

On the other hand, in the ROU, the leakage rate (including water leakage inside buildings) is high and they do not make efficient use of their insufficient water resources.

The problems which are side effects of the Vodokanal include the destruction of nature by water source development, waste of the water resources by leakage, and waste of piped water and water pollution by insufficiently processed sewer water. The problems on the Vodokanal side include the reduction of water resources by the high volume of water use for irrigation, pollution by agricultural chemicals, and damage from salt water caused by the decrease in the flow rate and the groundwater.

9.4.2 Countermeasures

The countermeasures fall into two categories: one is the problems that the Vodokanal cause, and the other is the problems that affect the Vodokanal.

(1) The Problems that the Vodokanal Cause

The problems relate mostly to water leakage and waste which should be prevented, and drainage which the WTPs should process.

(2) The Problems that Affect the Vodokanal

- 1) A thorough country-wide investigation of the water resources and water utilization should be conducted. The plans for the use of water resources should be made in order to allocate the available costs to the relevant sectors, such as agriculture, industry, and city water.
- 2) The major Vodokanal should be equipped with equipment for water analysis so that they will be able to measure agricultural chemicals and the types of organic chlorine. If there is a problem with water quality, the water sources should be changed or the water should be processed.
- 3) Drainage quality standards should be reviewed for every category of business such as factories, in compliance with the acceptable level of pollution of the discharge basin.

9.5 Technical Cooperation by Dispatching Specialists

9.5.1 The Significance of Dispatching Specialists

The best way to build up a strong foundation for the management of water supply services is to raise the level of knowledge and the techniques of the staff engaged in water supply services. As one measure to raise the level of knowledge and techniques of the staff, we propose that a Japanese specialist be dispatched to the Vodokanals in the ROU. Japanese specialists who have experience in the water

supply business in Japan can provide advice and practical guidance, and can give seminars based on their broad range of techniques and experience to the staff working at the Vodokanals in the ROU in connection with the implementation of the resolutions proposed by the Study Team.

9.5.2 Areas for Improvement by the Specialists

In implementing technical transfer by dispatching Japanese specialists to the ROU, the following areas for improving the level of efficiency of water supply services in the organizations are provided as examples;

- (1) Implementing a budget system, cost calculation, design and construction of information systems supporting decision-making processes among executive officers in order to follow international standards (including financial accounting);
- (2) Designing a model for tariff policies considering the long-term maintenance of the facilities;
- (3) Standardizing of procedures including the techniques for installing water meters and methods of inspection;
- (4) Achieving efficiency in the tariff collection system;
- (5) Making improvements in the level of efficiency in running the water purification facilities and introducing automation, and the effective use of gravitation for water supply;
- (6) Introducing techniques to maintain and renew the water pipes, and long-term maintenance for the water pipeline network; and
- (7) Initiating a public relations program to satisfy users' requirements, particularly in the case of an increase in the utility charges.

9.5.3 Period

The period for sending Japanese specialists to the ROU depends on the content and extent of the services expected from the specialists, but, in principle, the period is two years or less than one year.

9.5.4 Inviting Counterpart Personnel to Japan for Training

Technical transfer to support the Vodokanals in the ROU does not only take the form of delegating specialists to go to the ROU; it also involves inviting key personnel from the Vodokanals in the ROU to Japan for training.

9.6 Countermeasures for Domestic Water Leakage

9.6.1 Present Status

People had been indifference about water wasting and leakage in house in ROU because piped water had been free charge and meter were not installed as the characteristic of communist bloc, for example the leak of water percentage exceeded 50 % in Tashkent and Chirchik City. Therefore, the prevention of these leaks of water in the building is a very big problem at whole country

The causes of these leakage are mainly as 1) the ball-tap of low tank of toilet cannot stop water, and 2) leakage by corroded pipes which were buried in housing land. The leakage of 1) is almost occurred at apartment buildings and 2) is occurred at detached house having buried pipes.

9.6.2 Countermeasures

The occupants cannot get merit by repairing pipes and watering equipment. Therefore, switching over to the meter-rate system and introduction the disciplinary tariff system is the most effective.

The concrete countermeasures are described below:

(1) In the Case of the Water Supply Meter Establishment Is a Presupposition

- 1) The loan system of the repair should be established and it forwards the repair of the individual
- 2) The standard about repairing (for example, repairing work and material) should be created, and the repair work should follow this standard.
- 3) Vodokanal should sell the part of watering equipment as it fits a part at existing restroom at the production cost, doing consignment production.

(2) It Is in the Case before Establishment in the Water Supply Meter

- 1) When Vodokanal or JEK checks every house about plumbing part at the apartment and they find leaking out, they recommend a repair.
- 2) As for detached house, Vodokanal staff conduct sonic detection in the plumbing part at the home and confirms the existence or non-existence of the leak of water.

(3) If a Leak of Water Is Confirmed, They Recommend a Repair

The loan system of the repair shall be established and it forwards the repair of the individual.

9.7 Utilization of Computer for Water Supply System

9.7.1 Present Status

The water supply work needs to expect a management in future from the trend in the past and to do it, because the indissoluble management is necessary. Therefore, it is necessary to monitor and to analyze operation information such as the quantity of water and the water quality.

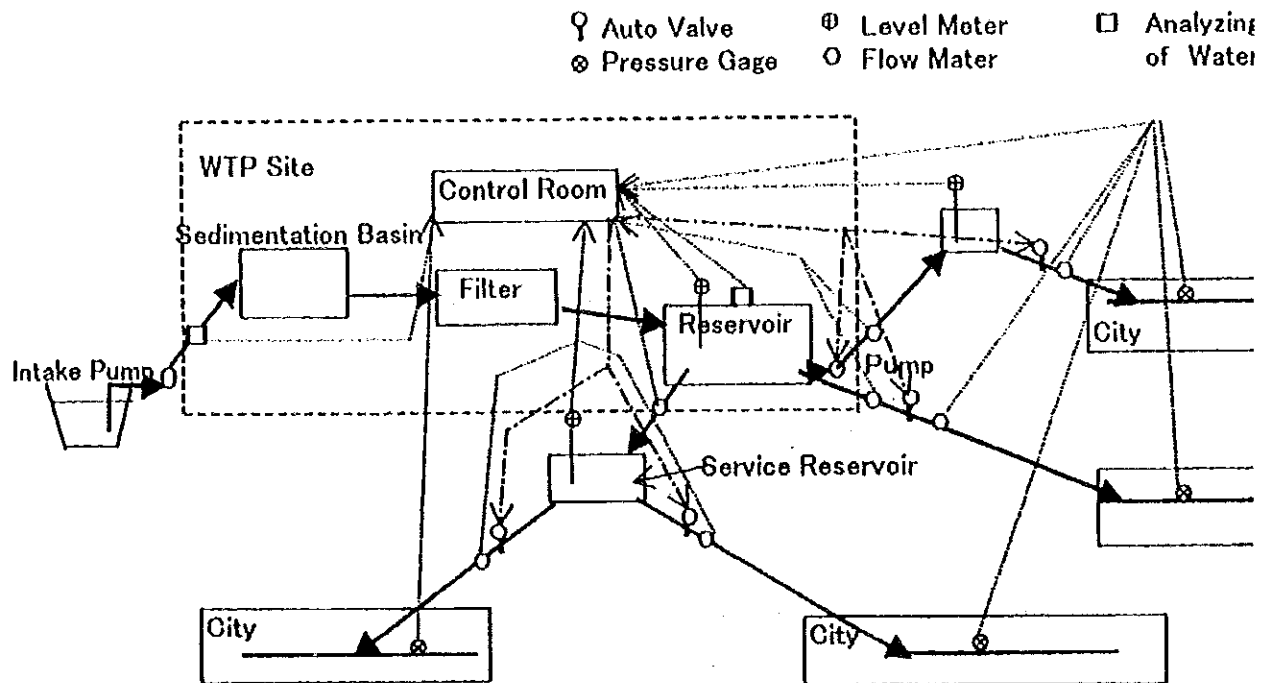
It is in the step to measure with the hand of the person about the quantity of water and the water quality and only to accumulate, after using for a report, and it is not in the step to monitors by the equipment and to do analysis and the operation which used a computer in the country.

9.7.2 Improvement Plan in the Future

Figure 9.1 is the model system of the monitoring and the use which is substantially improved one to the present situation of ROU, but it shows as the final figure which should be. In addition to monitoring by this system as shown in the figure, it uses gotten data for the operation effectively. A point of view is shown below.

- (1) The monitoring of the whole information at the control room at WTP is possible, and moreover receives a result from the control room and adjusts in the operation.
- (2) It grasps the volume of the inflow of WTP and the outflow.
- (3) The automatic quality measurement machines which can analyze turbidity at the inflow part and remaining chlorine at the outflow part continuously.
- (4) The pressure of the distribution pipes in the city is measured and the outflow to the area is adjusted while confirming a flow rate with the automatic valve.
- (5) The water level of Reservoir is measured and storage volume is always grasped.
- (6) By the gotten data, it does the accumulation, analysis and operation instruction with the computer at the control room.

Figure 9.1 Model of Monitoring System



9.8 Implementation of Computer Systems for Water Works

In this section, we propose computerized water works management system in ROU.

First, we propose Chirchik City Vodokanal should be a pilot organization of tariff collection system and other related administration systems, which should be expanded to other Vodokanals by 2010.

On the other hand, we propose Tashkent City Vodokanal be a pilot organization of management system, which should be expanded to other Vodokanals. The objective of the management system is that top management can make various decisions in terms of water works management by transferring requests through the computerized system. And all administration systems should be connected with management system, because many kinds of information are kept by the administration systems.

Finally we propose all Vodokanals be connected to the network systems across the country. We propose this project will become a country project which donor countries may be involved in.

9.9 Exchanges on Technical Issues between Uzbekistan and Japan

At present, about 2,000 of the water supply utilities in Japan (with more than 5,000 people served per utility) are aggressively implementing international exchanges with water utilities in other countries. Japan has established a water-conserving society, and continues to make an effort to ensure stable business management and to make innovations in water supply technology.

Many cities in Japan have established links with foreign countries as sister cities. Officers of such countries visit each other at intervals of one or two years for the purpose of exchanging opinions on various issues related to the water supply services.

As well as successful international exchanges with other countries, mutual coordination between the ROU and Japan should be implemented.

Chapter 10 Proposed ODA Projects

In this chapter, we mention the proposed ODA project based on the proposals outlined in Chapter 7 and Chapter 8.

10.1 Necessity of the ODA Projects

We presented an overview of our proposed solutions for Tashkent City Vodokanal in 7.8 and these proposed solutions are similar to those for Chirchik City Vodokanal. Our proposed solutions indicate directions the GOU and the Vodokanals should take. As a next step, it is very important for the GOU and the Vodokanals to implement improvement programs based on the proposals. However the GOU and Vodokanals are not familiar with a market economy and also their financial resources are not sufficient to implement these projects. In this case, we believe that ODA (Official Development Assistance) projects launched by foreign countries would be useful and effective for Uzbekistan.

10.2 Explanation of Proposed ODA Projects

We examined applicable ODA projects and also made a preliminary implementation plan for the applicable ODA projects which is presented in Tables 10.1 and 10.2.

We consider technical advice is necessary and useful in implementing the improvement programs mainly regarding the management portion. On the other hand, the improvement and replacement of certain water supply facilities is necessary for the technical portion and this requires an initial concrete study such as a feasibility study.

Technical Advice from Experts

(1) Improvement of the Tariff Policy and Rate Tables and Business Operating Activities

We proposed a revised tariff policy and rate tables. It is necessary for the GOU and the Vodokanals to understand the proposals thoroughly order to reflect them in the present tariff policy of the GOU because the GOU is not familiar with a the market economy, and the proposals are aimed at creating a self-supporting system under a market economy. In this case, technical advice from experts is useful and can be reflected the tariff policy of the GOU.

We proposed a flow chart for the future revision of the tariff tables. However, the Vodokanals are now installing the water meters and a period of 5 years will be necessary to complete the installation of the meters. When the GOU and the Vodokanals revise the tariff table, they should consider how the installation of meters is proceeding. There is also anxiety concerning unexpected future economic crises. In these cases, the technical advice of an expert would be useful and the period for technical advice would extend for more than a few years.

We propose an improvement program for efficient management and business operations. However, it will be difficult for only the GOU and the Vodokanals to implement these proposals. In this case, the technical advice of experts is useful and will be necessary.

(2) Study of How to Install Meters and Establishing Guidelines

We propose a analysis of the recent breakage of the water meters and a study of how to install these and then establishing guidelines. However, it will be difficult for only the GOU and the Vodokanals to implement these proposals. In this case, technical advice from experts is useful and will be necessary.

(3) Improvement of Maintenance of the Buildings and Prevention of Water Leakage

We propose an improvement of maintenance of the buildings and the prevention of water leakage mainly caused by the old toilet facilities in apartments. In this case, the introduction of the skills and experience of foreign countries will be useful and necessary.

(4) Improvement of the Tariff Collection System by Computerization

We propose improving the tariff collection system by further computerization. However, it will be necessary to draft a detailed design plan before implementing such new computer systems. In this case, the introduction of the skills and experience of foreign countries will be useful and necessary.

(5) Improvement of Operating Facilities (including Pumping Operations)

We propose the improvement of operating facilities, including pumping operations in order to reduce costs. However, it will be difficult for these proposals to be implemented successfully only by the GOU and the Vodokanals. In this case, technical advice from experts is useful and will be necessary.

(6) Introduction of a Public Relations Program for Enlightenment and Education to Save Water and to Establish Good Relationships with the Users

We propose the introduction of a public relations program for the enlightenment and education of the users. These public relations activities will promote the conservation of water and will establish a good relationship with the users. However, it will be difficult for only the GOU and the Vodokanals to implement these proposals. In this case, technical advice from experts will be necessary.

Improvement and Replacement of Facilities

(7) Replacement of Pipelines

We propose the replacement of old pipelines. However, a feasibility study is necessary before implement. In this case, technical support from foreign countries and the introduction of expertise from them would be useful and necessary for the GOU and the Vodokanals.

(8) Construction of Reservoirs

We propose the construction of reservoirs after the population has begun to conserve water and the volume of the water supply has decreased. However, a feasibility study is necessary before implementation. In this case, technical support from foreign countries and the introduction of expertise from them would be useful and necessary for the GOU and the Vodokanals.

(9) Improvement and Replacement of Water Treatment Plants and Pumping Stations

We propose the improvement and replacement of water treatment plants and pumping stations. However, a feasibility study is necessary before implementation. In this case, technical support from foreign countries and the introduction of expertise from them would be useful and necessary for the GOU and the Vodokanals.

Table 10.1 Implementation Plan by Uzbekistan Side

	2000	2001	2002	2003	2004	2005
Technical Advice by Expert						
(1) Improvement of the Tariff Policy & Tables and Business Operating Activity		↔	↔	↔	↔	↔
(2) Study of How to Install Meters and Establishing the Guideline		↔				
(3) Improvement of Maintenance for the Buildings and Prevention of Water Leakage		↔				
(4) Improvement of the Tariff Collection System by Using EDP		↔				
(5) Improvement of Operating Facilities (including Pump Operation)		↔				
(6) Introduction of the Public Relation Program for Enlightenment and Education to Save Water and to Establish Good Relationship with Users		↔				
Improvement and Replacement of Facilities						
(7) Replacement of Pipelines		↔	↔	↔	↔	↔
			Study		Implementation	
(8) Construction of Reservoirs		↔	↔	↔	↔	↔
			Study		Implementation	
(9) Improvement and Replacement of WTPs and PS		↔	↔	↔	↔	↔
			Study		Implementation	

Note 1 EDP: Electric Data Processing
 Note 2 WTP: Water Treatment Plant
 Note 3 PS: Pump Station

Table 10.2 Implementation Plan by Uzbekistan Side

	2000	2001	2002	2003	2004	2005
Technical Advice by Expert						
(1) Improvement of the Tariff Policy & Tables and Business Operating Activity		↔	↔	↔	↔	↔
(2) Study of How to Install Meters and Establishing the Guideline		↔				
(3) Improvement of Maintenance for the Buildings and Prevention of Water Leakage		↔				
(4) Improvement of the Tariff Collection System by Using EDP		↔	↔	↔	↔	↔
(5) Improvement of Operating Facilities (including Pump Operation)		↔				
(6) Introduction of the Public Relation Program for Enlightenment and Education to Save Water and to Establish Good Relationship with Users		↔				
Improvement and Replacement of Facilities						
(7) Replacement of Pipelines		↔	↔	↔	↔	↔
		Study				Implementation
(8) Construction of Reservoirs		↔	↔	↔	↔	↔
		Study				Implementation
(9) Improvement and Replacement of WTPs and PSs		↔	↔	↔	↔	↔
		Study				Implementation

Note 1 EDP: Electric Data Processing
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