

# WATER RESOURCES MANAGEMENT AND PRIVATIZATION: LESSONS FROM THE UNITED STATES FOR KOREA

Yeorn Hong Choi

Graduate School of Urban Administration, University of Seoul, Seoul, Korea

---

**Abstract:** Water quality is becoming a serious issue in South Korea, so that modernization of drinking water and sewer plants is sought after. "Contracting out" to the private sector from the local government bureaucracy is the order of the day. This paper introduces the semi-privatized water resources management systems in the Washington metropolitan area for South Korea's further privatization efforts.

---

**Key Words:** water quality, privatization, water rate, clean water act, safe drinking water act

---

## 1. INTRODUCTION

The current South Korean economic crisis is affecting all economic and political sectors including government enterprises. One way to mitigate the crisis effects is to privatize these sectors. The government-owned steel, electric power, telephone, telecommunication, tobacco and ginseng, and banking organizations are currently under the process of privatization under the leadership of the Office of Management and Planning. The old power and virtue of the government authority is being challenged. Koreans are learning from the experiences of the United States and England in restructuring and in re-engineering of their governments in the 1980s. President Ronald Reagan and Prime Minister Margaret Thatcher emulated their successful economic

reforms after the Thomas Jeffersonian idealism of "the smaller the government, the more beautiful." Jefferson never practiced privatization in his time, because the then government was small: diplomacy, war and currency management comprised all of the government functions. The 20<sup>th</sup> century, however, witnessed World War I, the Great Depression, World War II, the Korean War, the welfare state, the Vietnam War, and the collapse of the Soviet empire. In this century, the big government has been justified and beautified.

The 20<sup>th</sup> century is almost over. The big government has been violently challenged in the United States and Europe. The 1990s continuously point out the evils of the big government. President Bill Clinton and Prime Minister Tony Blair represent the

conservative liberalism, or moderate liberalismeconomic conservatism and political liberalism. Under their youthful leadership, the government has been cut, and privatization has been achieved. While the most important means to privatization is a competitive and productive government, it is also the goal for the end result. The Clinton administration is expecting surplus, ending the chronic budget deficits since the Vietnam War era.

The Reagan era beautified the private sector management. The key word of private sector management is competition. The survival of the fittest was beautifully justified, even though the concept itself is morally questionable. Therefore, the 1980s created new concepts such as strategic planning, results-oriented management, and evaluation research in the public administration field. New public policy has been targeted to reduce the number of the three-generation welfare recipients, and eliminate the dark and gray urban ghettos. But pouring the government money into the welfare state is not the solution.

Privatization has been discussed at the national and state government levels in the United States and at the national government level in Korea. However, the most successful privatization has been remarkably achieved at the local government: garbage collection and disposal, water and sewer plant operation, and age-old private school system.

Privatization was a result of the conservative cry of "no more government." Chronic deficits of the Big Government and the large portion of the government in the Gross National Product made the issue of privatization popular in the presidential, gubernatorial, and mayoral elections debates.

The conservatives successfully concluded that the government has failed, and advocated the market-oriented economy. Therefore, privatization has been recognized as the other side of the cutback management.

Savas, one of the first significant advocates of privatization in the 1970s, pointed out the monopolistic nature of the government service, and its resulting X-inefficiency (Savas, 1974, 1976). Ferris and Graddy advocated privatization from the cost reduction of the market economy's sense of competition. Competition in the market, not the government monopoly, can cut waste, inefficiency, manpower, nonsense. The market can beat the bureaucracy, because the market is basically competitive, innovative, changed-oriented, whereas the bureaucracy is rigid, legalistic and red tape-oriented. More than anything, privatization can bring the experts of managing the services flexibly (Ferris and Graddy, 1986). Since the 1970s, privatized water and sewer service, garbage collection, and city beautification services have overwhelmingly proved economic and efficient compared to the traditional government-run services.

This paper attempts to relate the U.S. experiences of privatizing the water and sewer services to those of Korea's, where the water and sewer services have traditionally been under the responsibility of the local government. South Korea's water and sewer service calls for urgent reform. The present management system is outdated. The water quality of the Paldang reservoir is deteriorating. The 20 million people's main drinking water resource is critically viewed by environmentalists and citizens. Privatization may be an alternative system to the existing traditional water management

system. In Korea, the Ministry of Environment advocates contracting out of the water and sewer service to private organizations. Therefore, privatization may not be a proper word because it means much more than just "contracting out." In this paper, it means "professional management of water and sewer under the local government-appointed board of directors". That is the American model of new water and sewer services. The water and sewer management system is run under professional managers, the system's fund is independent from the local government's general revenue fund, and the politically appointed board of directors respect the professional manager's daily operation and water and sewer rate setting. Therefore, privatization is not total privatization; it is semi- or quasi-privatization.

The Korean government employees are accepting the privatization as a dangerous thing to their job and career. To them, it means future uncertainty and job insecurity. The government has been a safe haven to them. Their pay may be less than what they may receive in a private sector job, but the benefit packages are better with life-long job security. Privatization may offer better working conditions, better salaries, and better benefit packages depending upon the design of the privatization, but at the present time, they are scared of the new concept of privatization. They have nothing to fear. Only those who are incompetent should fear, because in the privatized competitive organization, they cannot survive. Many government workers in the present water and sewer systems are not professional managers, professional technocrats, professional engineers, nor are they professional environmental scientists. Future water and

sewer organizations need professional people.

The Korean government employees are basically amateur generalists. That outlook should be changed in the new era. The 21st century government will be run by professionals. Their job security is not guaranteed. Life-long employment may be gone. Professional managers move from one office to another easily. New management culture in the private and public sectors will be nurtured. The old government system cannot be found anywhere. New professional organizations will be established, and it will offer many good things to the workers. This paper will use the Washington metropolitan area's water and sewer management systems for proving the case. The Washington metropolitan area has a diversity of water and sewer management systems. But all have adopted the new professional management system from the old traditional system.

## **2. THE WASHINGTON AREA WATER AND SEWER SYSTEMS**

The Washington metropolitan area is mainly composed of the District of Columbia, Maryland suburbMontgomery County and Prince George's County, and Virginia suburbFairfax County. All used to have the traditional management system, which was part of the local government management system under the local government chief executives. The District of Columbia changed its old system in 1996 due to the mounting problems. The two Maryland counties created a bi-county water and sewer system in 1918. Fairfax County has a privatized drinking water management system, but has a traditional public work department managing sewer system.

The most important factor which

contributed to the change from the traditional management system to the modern professional management system in the District of Columbia was the city's bankruptcy situation. The mayor took \$28 million of the water and sewer fund in 1992 and \$80 million in 1994 in order to rescue the city financially, although \$108 million did not have a significant effect on the city. That situation prompted Councilman John Ray's introduction of "District of Columbia Water and Utility Act of 1995" which proposed to create a water and sewer authority to operate, regulate, finance, repair, modernize and improve the delivery of water and sewer collection, disposal and treatment systems and services and to encourage conservation. This Act passed in Congress, and the president signed the bill in August 1996.

The District of Columbia, the two Maryland counties, and Fairfax County have been maintaining the Blue Plains wastewater plant jointly. Therefore, the District of Columbia was not totally independent in running the sewer system. The Clean Water Act supported the regional wastewater treatment system, and the three participants above regionally managed the Blue Plains plant. When the District of Columbia mismanaged the fund, it became the mismanagement of the regional wastewater system.

The Washington Suburban Sanitary Commission (WSSC) which has been run by professional managers under six commissioners appointed by the two county chief executives and approved by the two county councilmen and women. The Fairfax County Water Authority (FCWA) is administered by a board of 10 citizens who

were appointed by the Fairfax County Board of Supervisors. In addition, there are two non-voting members from the City of Alexandria and the County of Prince William representing the Fairfax County Water Authority's two largest wholesale service areas. The FCWA manages the total process of drinking water and collects the sewer bills for the Fairfax County.

Except for the Fairfax County's traditional sewer management, all local governments in the drinking water and sewer service in the Washington metropolitan area created independent bodies to run the program.

The new governing body of the District of Columbia's water and sewer system is composed of 11 members, six members from the District and five from suburban jurisdictions, two from Montgomery County and Prince George's County each, and one from Fairfax County. The Authority's important decision-making requires eight votes. Hiring or firing the general manager requires 8 votes. The mode of operation of the Authority is like WSSC or FCWA. Professional managers run daily operations outside the political domain. However, this Authority is silent on the drinking water, because it is regional in terms of managing the Blue Plains wastewater plant.

The Blue Plains Wastewater Treatment Plant is the largest of its kind in the United States and is the Washington area's most significant environmental facility. The facility is responsible for treating raw sewage from the District of Columbia, WSSC and FCWA. It also provides sewer service for almost all major federal facilities in the Washington region and for more than two million residential users.

### 3. WATER/SEWER RATE AND ENVIRONMENTAL REPUTATION

The privatized water and sewer companies may maintain higher water/sewer rates than the traditional water and sewer department. It is commonly accepted in the United States and Korea. It is a false assumption. The traditional District water/sewer management used to maintain higher rates compared to the professional management before 1994. The traditional management is less sensitive to the cost of living adjustment and new rate setting over the years. For example, the District of Columbia maintained the same rate from 1987 to 1994.

The Washington Suburban Sanitary Commission's water and sewer and combined rate during the same period are as follows:

The WSSC changed the water and sewer rates every year in a marginal way. It did contrast with the District of Columbia which did not show any rate changes over the years, 1987-1994. The local politicians in the District were careless about the rate structure, because the water and sewer collections were small part of their general revenue.

Fairfax County's water rate was the lowest, but the sewer rate was the highest among the three local water and sewer operations in the Washington metropolitan area.

Judging from the three different operations of water and sewer, no one can make a generalization of the water and sewer rates. Fairfax County's traditional operation of

sewer was highest among the three local operations, but the semi-privatized drinking water operation was lowest.

Setting water and sewer rates is a kind of art in the United States. Usually, setting water rates is more tedious than setting wastewater rates because there are more variables to consider. Water utility managers establishing or changing rates must develop pricing structures that will cover operating costs and future expansions, provide stable and predictable revenues year to year, and be equitable to all customers. The rate structure should be easy to understand and implement, promote water conservation, and meet local, state and federal regulations, according to the Raftelis Environmental Consulting Group survey (1996 Water and Wastewater Rate Survey). Privatized water and sewer services are not necessarily more expensive than the traditional local governments' service.

The District of Columbia repeatedly failed

**Table 2. The WSSC Water/Sewer Rate**

	Water	Sewer	Combined
1987	1.00	1.32	2.32
1988	0.98	1.45	2.43
1989	1.10	1.48	2.58
1990	1.20	1.45	2.65
1991	1.28	1.55	2.83
1992	1.40	1.69	3.09
1993	1.40	2.03	3.43
1994	1.52	2.19	3.71

Source: Choi, Institutional and Financial Management of the District's Water Resources: Trend Analysis 1980-1994.

**Table 1. The District Water/Sewer Rate**

	Water Rate	Sewer Rate	Combined Rate
1987-1994	1.0041	1.864	2.868

Cents/cubic feet of water/sewer, Source: Choi, Institutional and Financial Management of the District's Water Resources: Trend Analysis 1980-1994.

**Table 3. Fairfax County Water/Sewer Rate**

	Water	Sewer	Combined
1987	0.60	2.35	2.95
1991	0.80	2.55	3.35

Source: Choi, Institutional and Financial Management of the District's Water Resources: Trend Analysis 1980-1994

**Table 4. The District Delinquent Accounts**

	Total Delinquent Accounts	Percentage
1987	15,132	12.9
1988	12,741	10.9
1989	13,360	11.4
1990	13,773	11.8
1991	12,806	10.9

in managing water in coping with the Federal Safe Drinking Water Act and the Clean Water Act, two major water-related acts in the United States. The Anacostia River, flowing from Maryland to the District of Columbia and into the Potomac River, is known as a polluted river. The poorest water quality in the Chesapeake Bay system is found in the tidal Anacostia River. Anacostia waters are generally at their worse during high flows: in most cases, pollutant levels are 3 to 20 times higher during storms. The most serious problems are excessively high sediment and bacteria levels, and low dissolved oxygen. Nutrients are plentiful throughout the basin. Several heavy metals have been found to be in excess of water quality standards (Choi, 1996).

A malfunction of the Reno pumping station near Alice Deal Junior High School in May 1993 was not a good sign in the District water management (The Washington Post, May 5, 1993, p.c9). The US Environmental Protection Agency tested a water sample from a Northwest area in

September 1993 that tested positive for harmful bacteria (The Washington Post, October 2, 1993, p.b5). The US General Accounting Office and the District of Columbia water department officials predicted a bleak future in 1980. They pointed out three major problems from the general deterioration of the system, which prompted them to reduce funding for rehabilitation and upkeep. The General Accounting Office observed that both funding and personnel requirements were at the root of the problem. Staffing reductions since 1986 had generally reduced all maintenance activities due to budget cuts (General Accounting Office, 1980, 1993).

The water supply system's efficiency has been challenged by the aging of its pipes, some of them laid in the 19th century; by the quality of the initial installations; and by the materials originally used. As water seeps through faulty valves or joints, an unacceptable level of water loss can occur. The condition of the pipes is determined by careful monitoring of water and progress is being made on eliminating leaks. 222 water main breaks were reported and repaired in 1991.

The Blue Plains has also been accused of polluting the Chesapeake Bay. The Chesapeake Bay Foundation reported that the plant had dumped more pollutants into the river and the Bay than the environmental law permitted in 1991. The WSSC and Fairfax County always discontented to the District's management of the Blue Plains, simply because the plant was inside the District territory (Choi, 1996).

The Washington Post reported in 1981 about the District of Columbia government's water billing and collection problem. Broken

meters and improperly programmed computer billing system showed 17,900 problem accounts, this equal 15 percent of the district's 112,000 commercial and residential water customers. Delinquent water and sewer accounts in the District have been notoriously well known.

The District's delinquent accounts still reflected the local government's poor management of the water and sewer systems that meant the loss of \$34 million in 1993 (The District of Columbia Bureau of Water Measurement and Billing, 1995).

The Fairfax County and WSSC's delinquent rate is negligible from 0.13 percent to 0.15 percent. They do not have compliance problems of the Clean Water Act and the Safe Drinking Water Act. However, the Chesapeake Bay Foundation, applying a stricter rule than the US Environmental Protection Agency, listed the Western Branch of Prince George's County and Little Hunting Crook of Fairfax County as the occasional problem facilities, and Upper Occoquan of Fairfax County as a serious violator (Choi, 1996).

The traditional District of Columbia did maintain the most inefficient water and sewer management systems over the years, whereas the WSSC and FCWA did maintain the most efficient water and sewer management systems with high reputations. The District of Columbia adopted a professional management independent from the city government operation in 1996. So it expects a better management system with a better reputation.

#### **4. CONCLUSION**

Water and sewer management has been under the domain of local government in the United States, in European nations, and in

Asian nations. In the United States and European nations, privatization of water and sewer service has picked up steam. Consumers pay sufficiently for their water and sewer services. Water and sewer services are economic goods, even though it has long been recognized as a non-economic good, comparable to police services and fireworks. Water is a basic necessity and commodity of human life. However, water is now an economic good, even though it is managed by the monopolistic regime. Its monopolistic nature of price should be regulated by the government regulatory commission. The economic goods should be managed by professional managers. Water has nothing to do with local politics, and should not be.

Capital financing in constructing the appropriate facilities and operation of the plants require professional manager's care which not only address the environmental regulations but also provides these services at the most affordable prices. It is a major goal of an effective financial plan to effectively match economic costs on customers with benefits received by the customers. User charges generate the major source of utility revenues and define the customer's obligation to participate in the costs of operating and maintaining the utility. At the same time, the utility must see that it complies with government standards and regulations and that adequate funds are raised to maintain the utility at a financially self-sufficient basis. In addition, the utility must be sensitive to the cost of providing service, and allocate this burden equitably to users based on the cost of providing these services to the users.

Financial resource management of water and wastewater can be political. Adequate pricing can be political. Except for the

regulation of monopolistic price mechanism, nothing has to be political. Drinking water quality and wastewater treatment do not require political intervention. Political partisanship has no relation with water and sewer management. Scientific and technological analyses of the water quality and the best available technology, and environmental knowledge are necessary factors, rather than those of political decision-making. Regulating the monopolistic nature of price is and should be in the hand of political leaders and citizen representatives. However, the price that the consumers pay for their water quality should provide comfortable living for the workers of water and sewer services, and should provide adequate capital investments for improving the plant operation and adopting the most updated technology, ultimately for the consumer's drinking water quality. The board of directors appointed by the political leaders are the rate setting body. The board members should be able to compute the marginal cost-based rate.

Traditional management of water and sewer service has shown many defects in the District of Columbia, and in South Korea. The integrity of the water and sewer funds could not be protected from the deteriorating economic condition of the District of Columbia. In South Korea, adequate pricing of water and sewer has not been established. The government pricing of water and sewer services is much less than the production and treatment costs: 70 percent and 60 percent in water and sewer. There is no conservation effort on the part of the consumers. There cannot be professional management of water and sewer systems and adequate pay for the employees. There is no financial resource

management nor strategic planning for the future from the inadequate pricing. The District's deteriorating economic condition negatively affected the bond rating of the water and sewer. Under those circumstances, the citizens and consumers became victimized. Their financial burden is heavier under an unprofessional management system. They cannot expect quality drinking water from the traditional political management system.

Water and wastewater treatment pricing is the regulatory means of utility companies or departments. Rates generate the major source of utility revenues and define the customer's obligation to participate in the costs of operating and maintaining the utility when rates become excessive, the customer complaint will mount. When they are low, the water and sewer fund cannot survive. Customers should pay adequately, and receive the good quality drinking water and maintain healthy water environment. There is no political game in price setting. Let the market decide the price. Supply and demand will decide the price of the commodity. There should not be any subsidy to the water and sewer funds from the general revenue, nor the transfer of the water and sewer fund to the general revenue. That is a fair deal. That is the market-oriented economy.

Utility company's employees should be hired on the basis of merit. Professional administrators, technicians, scientists, engineers, computer programmers, and budget and program analysts should enjoy their jobs in the plants and offices. They should be paid fairly. That is not the case in South Korea because the Korean bureaucracy has not been modernized. It has been in



doldrums, corrupt, and dreadful. Like the general Korean bureaucracy, water and sewer management has been in doldrums and dreadful. Many Seoul citizens do not trust the quality of the drinking water the Seoul city government provides, so bottled water is popular among the middle class people. Water discriminates the rich from the poor. Bottled water may be a social class factor. Only the poor and underclass people drink the public water, which has been known to be undrinkable. Untreated raw sewages have been discharged into the river during the rainy season. Non-point source has not been seriously discussed yet, because point source of pollutants are not yet controlled.

South Korea is a member of the Organization of Economic Cooperation and Development. Korea should privatize water and sewer services to make them productive and competitive. Privatization means:

(1) an independence and integrity of the water and sewer fund from the local government's general revenue;

(2) professional and technical management of water and sewer plants;

(3) consumers pay for the water and sewer services adequately;

(4) the company's ability to issue the long term municipal bond for the capital projects and strategic investments to the plant facilities;

(5) the fair rate-setting by the politically appointed board of directors; and

(6) the board of directors should be composed of knowledgeable citizens on the water and sewer service and environmental affairs.

Water and sewer services are the basic necessity of human life and civilization. Aqueduct is the product of Roman

civilization.' Paris is known for its modern sewer line. South Korea deserves professional care and management of water and sewer service now. The local governments which traditionally managed the water and sewer services are not well equipped to provide quality drinking water and to treat the waste water well scientifically. Korea should meet the higher standard of drinking water quality, preservation and conservation of rivers. The local governments should appoint their representatives to the board of directors which can oversee the operation of the water and sewer systems and decide the rate-setting. Daily operation and strategic plan should be made by professional managers and water environmentalists and engineers.

There should not be fear of the privatization. The U.S. experiences prove it. This is a process of modernization and innovation of local enterprises. The Korean bureaucrats should welcome the privatization rather than fear and reject its coming. Fortunately, the Korean ministry of environment has set a general policy for privatizing water and sewer services at the level of "government by contract." That can be the first step toward the privatization. Ultimately, the purpose of privatization is to make the water and sewer services competitive and productive. Expected results of the privatization such as "contracting out" will bring the improvement of environmental quality, reducing the government burden and budget deficit, reducing the government employees, nurturing the professional and technological staffs, rigorous period evaluations of the programs and services, and the turn key operation of the water and sewer plants (Byun, 1998).

## REFERENCES

- Byun, J.D. (1998). "Direction of Privatization of Wastewater Treatment Service," *The Cases of Optimum Operation and Government by Contracts*, University of Seoul Urban Science Research Institute, Environmental Science Center, pp. 1-14.
- Choi, Y.H. (1995). *Institutional and Financial Management of the District's Water Resources: Trend Analysis 1980-1994*, WRRC Report No. 153.
- Choi, Y.H. (1996). "The District of Columbia Water Resources Management: Relevance to Korea." *The Korea Public Administration Journal*. pp. 1171-190.
- Ferris, J. and Graddy, E. (1986). *Contracting Out: For What? With Whom?* Public Administration Review No. 4.
- General Accounting Office (1980). *Additional Federal Air for Urban Water Distribution Systems Should Wait Until Needs are Clearly Established*. ED-81-17.
- General Accounting Office (1993). *GAO Report to the Chairman, Subcommittee on Health and the Environment, Committee on Energy and Commerce, House of Representatives, Drinking Water*, April.
- Raftelis Environmental Consulting Group (1996). *Water and Wastewater Rate Survey*, Charlotte, NC.
- Savas, E.S. (1974). *Municipal Monopolies vs. Competition in Delivery Urban Services*, in W.D. Hawley and D. Rogers (eds), *Improving the Quality of Urban Management*, Beverly Hills, Sage Publications.

---

Yeom Hong Choi, Graduate School of Urban Administration, University of Seoul, San 90, Chonnong-Dong, Tongdaemun-Gu, Seoul, 130-743, Korea.  
(e-mail: jchoi@uoscc.uos.ac.kr)

(Received September 1, 1999; revised October 4, 1999; accepted November 2, 1999.)