PPP Case Study on China's Urban Water Supply Industry- Factory B of Veolia Chengdu No.6 Waterworks

Disputable BOT Mode

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Abstract

This case report is prepared on the basis of the summary and analysis of investigations and interviews of parties concerned in BOT Project of Veolia Chengdu No.6 Waterworks. The interviewees include relevant personnel from Sichuan Water Supply and Drainage Association, Chengdu Municipal Waterworks Company (CMWC) and Factory B of Chengdu No. 6 Works.

This report is intended to provide an objective and unbiased assessment of BOT Project of Veolia Chengdu No.6 Waterworks, raise the consideration and discussion of relevant issues and propose relevant recommendations on the basis of objective reflection of the background, implementation, contract clauses and comments of all parties concerned of this project.

In general, the authors regard BOT Project of Factory B of Chengdu No. 6 Waterworks as a very successful case. Firstly, the operation procedure is quite well disciplined and the information disclosure procedure is comparatively open and transparent, and it therefore appears that the principle of fair procedures has been followed. Secondly, it can be seen from the result of public tendering that Chengdu Municipal People's Government has achieved the best possible result (mainly in regard to the price of water). Thirdly, from the outcome of the agreement, it can be seen that Chengdu Municipal People' Government deserves praise for its farsightedness in honoring credit and promises by granting some subsidies when CMWC cannot afford to pay for water.

However, the overall success of this project does not necessarily mean that existing problems can be neglected. According to the critics, there appeared three major problems

in this project: firstly, significant deviation occurred in the prediction of water demand; secondly, implementation of this project resulted in huge losses for CMWC; thirdly, there are some doubts about excessive concessions of government to foreign sides during negotiations, like the failure to enforce the Chinese parties' design and technical specifications and an acceptance of even water supply without regard to the peak or nadir. However, after an in-depth analysis it was found that these problems are caused by following reasons: Firstly, functions of the government and enterprises were seriously mixed up. CMWC failed to act as an entity independent of other interests; Secondly, the project company must recover its total investment and gain prospective earnings in 15.5 years from the project with an operation period of 35 years, thus resulting in a higher water price; Thirdly, the poor design of financial model resulted in distorted financial systems and difficulties in payment.

At the end, the following recommendations are given by the authors: Firstly, the liberalization of public services should be further strengthened to clearly separate government functions from enterprise management through a diversification of property rights and the formation of independent market entities, so that enterprises will become rational investors pursuing the maximization of their interests in the market instead of being extensions of government; secondly, a more open, transparent and fair decision-making procedure should be established to facilitate rational and scientific decision-making of the governments, which also include the establishment of a reasonable system for risk compensation to avoid adverse effect on the normal operation of the enterprises due to the decision-making behavior of the governments.

This case study report is made up of 7 parts, in which, Part 5 "Comments of Parties Concerned on This Project", Part 6 "Discussion of Several Key Issues" and Part 7 "Relevant Recommendations" will be the focus of this report.

Contents

1.1 Introduction of Chengdu

As an ancient city with a history of over 2300 years, Chengdu, the capital of Sichuan Province is one of the first 24 Famous Historical and Cultural Cities approved by the State Council. With a population of 10.29 million, it is the 4th largest city in China. Located at 30º05' to 31º26' North latitude and 102º54' to104º53' East longitude, Chengdu is situated in the middle of Sichuan Province and west of Sichuan Basin. Covering an area of 12390 square kilometers, it is 192 kilometer long from east to west and 166 kilometer wide from south to north. Up to the year 2001, the urban area of Chengdu encompassed 228 square kilometers. Adjacent to Deyang City in the northeast, Ziyang City in the southeast, Meishan City in the south, Ya'an City in southwest and Aba Tibetan and Qiang Autonomous Prefecture in the northwest, Chengdu belongs to China's inland zone, since it is 1,600 kilometer away from the East China Sea and 1,090 kilometer from the South China Sea.

With over 20 years' development after reform and opening to the outside world, Chengdu has made great improvement in city development, social development and people's living standard, playing an increasingly important role in Sichuan Province as well as other parts of Southwest China and the rest of the country. In January 1984, under the approval of the State Council, Chengdu was positioned as a "provincial capital, ancient historical and cultural city and important scientific and cultural center". In 1992, Chengdu ranked 11th among the "Top 50 Cities in terms of comprehensive city development" and became one of the "Top 40 cities in hard environment for investment". In 1993, the State Council further requested Chengdu to "make full use of its role as the center of science & technology, trade & commerce and finance, as well as the hub of transportation & telecommunication"; gave permission to the city to enjoy the policies for open coastal cities; and listed Chengdu as one of the pilot cities for the establishment of the socialist market economy system, one of financial opening-up cities and as a sub-provincial administrative city.

- The economic aggregate of Chengdu exceeded RMB 100 billion Yuan and city development was greatly improved. In 2002, the GDP of Chengdu reached RMB 166.7 billion Yuan and it ranked fourth among 15 sub-provincial administrative cities after Guangzhou, Shenzhen and Hangzhou. With an average annual growth rate of 11.5%, its GDP increased by 12.6 times since 1978. Its GDP in 1994 was 4 times as much as that in 1980. Measured by 14 indexes of the standard of a well-off society, urban residents and rural residents of Chengdu had reached the standard of well-off society in 1993 and 1997 respectively, realizing the strategic objective for the end of the 20th Century in advance. Three industries have realized coordinated development and tertiary industries represented by commodity circulation, traffic and transportation, posts and telecommunications, finance and insurance, real estate, technical services and tourism have experienced a rapid development with great achievements in industrial restructuring. In 2002, the first, second and tertiary sectors respectively accounted for 8.4%, 45.5% and 46.1% of GDP.

- Great achievements have been made in infrastructure construction and Chengdu is visibly changing day by day. By persisting in the policy of old city reconstruction and urban infrastructure construction guided by planning and driven by road construction, the First, Second and Third Ring Roads, the Inner Ring Road, the Funan River Comprehensive Improvement Project (Downtown Section) and the Phase 1 Project of Tianfu Square have been completed in succession, while the general appearance of the City and its natural environment has been greatly improved. Reconstruction of a number of urban roads like Shudu Avenue, the East and West Extensions of Yangshi Street, Dongchenggen Street and the South and North Extensions of Changshun Street, have been completed. The dimensional traffic of the city has experienced rapid development. Besides dozens of flyovers, Chengdu-Wenjiang-Qionglai Highway, Chengdu-Pengzhou Highway, Tangjiasi-Bazhong Highway, Chengdu-Renshou Highway,, Pujiang-Xinjin Highway, Chengjin Expressway, Chengdu-Chongqing Expressway, Chengdu-Leshan Expressway, Chengdu-Ya'an Expressway, Chengdu-Dujiangyan Expressway and Chengdu Outer Ring Expressway have been built and some key projects including Chengdu No.6 Waterworks, Western Suburb Natural Gas Storage Tank Station, Chengdu Sewage Disposal Plant and Chengdu Long-distance Call Key Projects have been completed. Urban power, gas and water supply, as well as telecommunication capacity, keeps on improving and the urban gasification rate reached 68.6% in 2002. Chengdu was honored as a "National Hygienic City" and as a "National Outstanding City in Comprehensive Environment Treatment" due to its remarkable improvements in city administration, urban landscaping, environmental protection and environmental sanitation.

- Income of urban and rural residents has experienced rapid growth and living standards keep on improving. In 2002, disposable income per capita of urban residents, net income of rural residents and the balance of deposits of urban and rural residents reached RMB 8972 Yuan, RMB 3377 Yuan and RMB 122.6 billion Yuan respectively and the living space per capita of urban and rural residents reached 26.2 and 37.1 square meters, indicating that the quality of life of urban and rural residents has been improved greatly.

1.2 Introduction of Water Resources

Map of Chengdu and surrounding area

Known as the “Province Blessed with a Thousand Rivers”, Sichuan takes a leading position in water resources in China. All its rivers except the Baihe River and Heihe River in Ruo’ergai belong to Yangtze River System. The area of Yangtze River System valley takes up 97% of the total area of Sichuan Province and accounts for 28% of that of Yangtze River valley. The assessed area of water resources in Sichuan totals 485,000 square kilometers, of which, the Yangtze River valley covers an area of 468,000 kilometers and the Yellow River Valley 17,000 square kilometers. The Yangtze River runs across Sichuan Province, of which the stretch upstream of Yibin City is called the Jinshajiang River and the stretch between Yibin City and Yichang City of Hubei Province is called the Chuanjiang River, leading to the total length of rivers of 1030 kilometers and a basin area of over 500,000 square kilometer. The Chuanjiang River has a number of long tributaries in its north bank, flowing across Qinghai, Tibet, Sichuan and Yunnan provinces, e.g.

Minjiang River, Tuojiang River and Jialingjiang River. The Jinshajiang River flows into Sichuan Province from Zhenda Temple of Shiqu County, with its mainstream in Sichuan Province totaling 1584 kilometers and its basin area in Sichuan Province covering 187,000 square kilometers. With a large number of rapids and torrential bends, the Jinshajiang River has rich and changing water flows; as a typical valley type river, the drop of height of its mainstream is as high as 3300 meters and maximum flow velocity reaches 7 meters/second. The Jinshajiang River's mainstream is 1120 kilometers long in total and its basin area totals 160,000 square meters. The Jialingjiang River, flowing into Sichuan Province from Yangpingguan of Sha'anxi Province, flows into the Bailongjiang River in GuangYuan City, then dividing into the Qujiang and Fujiang Rivers in Hechuan City (to the left and right respectively), and finally into Yangtze River in Chongqing after crossing through the "Little Three Gorges (Libi Gorge, Wentang Gorge and Guanyin Gorge)". The Minjiang River, originated from Gongmugong Mountain of Songpan, flows from north to south through Wenchuan, Dujiangyan and Leshan City into Yangtze River in Yibin City, with a total length of 711 kilometers and a basin area of 136,000 square kilometers.

Located in the coverage of the Minjiang System and the Tuojiang System, Chengdu has dense river systems, with the density of its river systems as high as 1.22 km/km^3; in addition, it also has the famous Dujiangyan Irrigation Project and a large number of reservoirs, ponds and channels. With over 40 large and small rivers and a water area of over 700 square kilometers, Chengdu is rich in water resources. Its annual gross amount of water resources totals 30.472 billion m^3 including 3.158 billion m^3 of ground water and 18.417 billion m^3 of water that passes through Sichuan, basically meeting the water demand for industrial and agricultural production, living and environmental protection in Chengdu for today and future.

Chengdu is located in the upper stretch of Yangtze River valley, so river water comes mainly from precipitation, underground undercurrent and snow melt; as these rivers flow between mountains and valleys before reaching the Chengdu Plain and are thus least affected by manmade pollution, the water quality is on a higher level and according to most indexes meet the requirements of Level II National Standard for surface water.

1.3 Introduction of CMWC

As a state-owned Grade II large-scale water supply enterprise, CMWC has over 50 years' experience in water supply since its establishment in 1946, and it is currently providing tap water for the downtown area, the High-tech Development Zone (Western) and neighboring districts and counties including Pitong Town and Xifu Town of Pixian County. From 1990 to 1996, the Phase 1, 2 and 3 projects of Factory A of No.6 Waterworks (current Factory A of No. 6 Waterworks), with a total water supply capacity of 600,000 m^3/day, were completed and put into operation one after another and the total water supply capacity of CMWC, after adding its No. 2 Waterworks and No. 5 Waterworks, skyrocketed to 1.053 million m^3 from 453,000 m^3. By the end of 2000, the length of its pipelines of over 75mm had increased to 1275 km from 487 km and the coverage of water supply had increased to

144 square kilometers from 72 square kilometers. Since the completion and operation of Factory B of No. 6 Waterworks (Phase 4 Project) in Feb. 2002, the daily production capacity of CMWC has risen to 1.38 million m^3, with the coverage of water supply reaching over 130 square kilometers increasing its reach to service a population of 2.46 million.

1.4 Introduction of Water Quality

Automatic chemical dosing, chlorination and 24-hour continuous online monitoring of quality of ex-works water, pipeline water and water pressure automatic monitoring points have been realized in all waterworks under CMWC, which includes No. 2 Waterworks, No. 5 Waterworks, Factory A of No. 6 Waterworks and Factory B of No. 6 Waterworks. CMWC currently has the capability to conduct 84 water quality standard tests and realized the tests on 67 standards on quality of raw water and ex-works water. Indexes of quality of ex-works water of No. 2 Waterworks, No. 5 Waterworks and Factory A of No. 6 Waterworks are on a much higher level than the requirements of 35 items included in National Hygienic Standard of Drinking Water (GB5749-85) and have reached or approached relevant EEC standards. In addition, all technical indicators of Factory B of No. 6 Waterworks have met the requirements of relevant EEC standards.

The Chengdu Monitoring Station of the National Urban Water Quality Monitoring Network conducted the monitoring work on the quality of urban pipeline water supplied by CMWC from May 15 to 28, 2004. 121 water samples were taken for water quality test in accordance with the National Hygienic Standard of Drinking Water (GB5749-85) and the mean value of test results of 4 major water quality indicators and up-to-standard rate of mandatory tests are shown as below:

Table 4 Test Results of the Quality of Urban Pipeline Water of CMWC

Water quality index	Unit	Standard value		Mean value (Number of monitoring points are shown in the brackets)					
		GB5749-85	EEC (98)	Jinjiang District (22)	Wuhou District (17)	Chenghua District (22)	Qingyang District (22)	Jinniu District (28)	High-tech Development Zone (10)
Turbidity	NTU	≤3,	≤1.0	0.22	0.23	0.29	0.26	0.32	0.30

		Under special circumstances＜5							
Residual chlorine	mg/L	≥0.05	----	0.21	0.25	0.23	0.21	0.22	0.25
Total number of bacteria colonies	Piece /mL	≤100	≤100	5	8	9	6	8	5
Total coliform group	Piece /L	≤3	0	0	0	0	0	0	0
Up-to-standard rate of 35 items of national standards（%） (Null value is shown in the bulletin published in the middle of each month, test results are shown in the bulletin published in the last ten-day period of each month)				100	100	100	100	100	100
Assessment of water quality				A	A	A	A	A	A

1.5 Decision-making Background of BOT Project of Factory B

During the late 80's and early 90s, Chengdu underwent rapid economic development at an increasingly expanding rate. In 1992, Chengdu ranked 11th among the Top 50 Cities in terms of comprehensive city strengthening. Rapid economic development resulted in a sharp rise of water demand, however, water supply capacity failed to keep up with water demand and became the bottleneck of economic development. CMWC constructed Phase 1, 2 and 3 projects of Factory A of No.6 Waterworks during the "Eighth Five-Year Plan" period, raising the water supply capacity from 0.453 million m^3/day to 1.053 million m^3/day. Though the water shortage was alleviated to certain extent, the increasing demand for water still failed to be met. In 1996, less than one year after Phase 3 project of Factory A

of No.6 Waterworks with a capacity of 200,000 m^3/day was put into operation, it reached its full load without any reserve.

In 1993, the State Council further requested Chengdu to “make full use of its role as the center of science & technology, trade & commerce and finance, as well as the hub of transportation & telecommunication”, and gave permission to the city to enjoy the policies for open coastal cities; and listed Chengdu as one of the pilot cities for the establishment of the socialist market economy, one of the “financial opening-up cities” and as a sub-provincial administrative city. According to the estimates at that time, Chengdu’s economy would develop by leaps and bounds, which would generate a dramatic increase in water demand - around 1.5 million m^3/day and 2 million m^3/day at the peak periods in 2005 and 2010 respectively.

Under this background, Chengdu made its decision to start the Phase 4 Project of No.6 Waterworks with a capacity of 800,000 m^3/day, half of which would come from Factory B and the other half from Factory C. According to the plan, A, B and C Factories of No.6 Waterworks, with the estimated investment of RMB 1.2 billion Yuan, would operate independently, but since they located in close proximity to one another, they could form a gravity flow driven evenly-distributed water supply base with a daily capacity of 1.4 million m^3.

However, as channels for investment in urban public facilities were not open at that time (only government investments or bank loans were permitted in water supply pipeline networks, foreign investment and private capitals were excluded), this project was put aside due to insufficient government funds. Having failed to obtain credit from domestic banks and OECF from Japan, Chengdu Municipal People’s Government applied to list the Factory B of No.6 Waterworks project as a BOT pilot project in 1996, immediately after it was informed of the decision to allow the establishment of BOT pilot projects in the country.

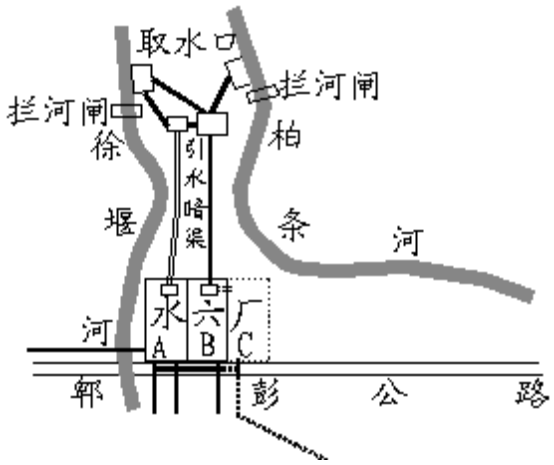
BOT (Build-Operate-Transfer) is a pattern for investing in, building and operating the infrastructures under the precondition of an agreement between the government and private agencies, in which, a concession is given to private agencies by the government, allowing them to raise funds to build and operate an infrastructure and provide relevant products and services within a given period of time. Though the government may impose some restrictions on the quantity and price of public products and services provided by private agencies in BOT ventures, private capital is given the opportunity to make profits. The government and private investors shall share the risks over the whole period. When the concession period expires, the private investors transfer the infrastructure to the government, and then, the project is run and managed by a department designated by Chinese government as previously arranged. The BOT Mode has been widely applied in the field of urban infrastructure construction in both developed countries and developing countries for over tens of years.

Factory B Project of No. 6 Factory of CMWC was of great significance at the time, because it was the first BOT project with foreign investment in the urban public service sector, which is essential for national welfare and people's livelihoods. Since the process of reform and opening to the outside world began, various preferential policies have been granted by the Chinese government to attract foreign investment. Up to the early 1990's, foreign investment in China reached several hundred billion US dollars, making great contributions to China's economic development. However, most of foreign capital was invested in labor-intensive industries such as textiles and electronic component assembly or the real estate sector, and foreign investors had shown little interest in urban infrastructure which has a longer investment recovery period and lower profit rate. At the time, the development of the public service sector were lagging behind as result of insufficient investment, and therefore, it was unable to provide adequate services in relation to China's level of economic development, and it even became a bottleneck for economic development, especially in the mid-western parts of the country. On one hand, the opening up of the public service sector to foreign investment made up for the shortage of funds of local governments, accelerating the rate of construction of urban public utilities in China, and especially in mid-western China, within a short period of time. On the other hand, as China has already had a large volume of foreign investment at the time, the BOT Mode contributed to adjustments in the structure of foreign investment, an extension of the fields of investment and the creation of new points of growth for foreign investment.

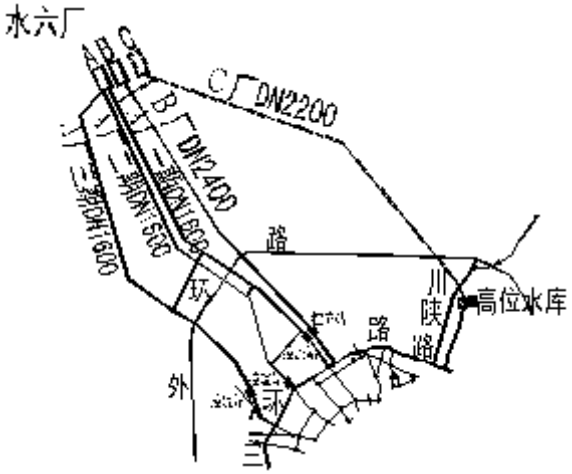
2 Introduction of Factory B Project of Chengdu No. 6 Waterworks

The total investment from Factory B of Chengdu No.6 Waterworks for the project is $106.5 million, including $32 million of equity capital, 60% of which is contributed by Veolia and 40% by Marubeni, and $74.5 million of loans jointly provided by Asian Development Bank and European Investment Bank. During the 18 years of the concession period, the Consortium of CGE and Marubeni, as the owner of the projects, is solely responsible for the projects' financing, design, construction and operation. Factory B of Chengdu No.6 Waterworks project consists of 4 sub-projects: the water-intaking project with a daily capacity of 800,000 m3 (two water intakes, interconnected conduit and hidden diversion canal); the water purifying factory with a capacity of 400,000 m3; the drainage trunk canal of the water purifying factory with a capacity of 1.4 million m3; and the 27-kilometer water supply pipelines. During the implementation of this project, almost half of the hidden diversion canals, drainage trunk canals and water supply pipelines were changed to BT (Build-transfer) projects due to legal reasons, while other parts of this project remained under the BOT scheme. Two and a half years later after Factory B, with a capacity of 400,000 m^3/day was completed, it had passed all tests and was put into commercial operation on Feb. 11, 2002. The BT projects were also transferred to Chengdu Municipal People's Government and taken over by CMWC on May 26, 2003. After the expiration of the concession period, the Consortium should transfer the waterworks to Chengdu Municipal People's Government free and in sound condition. During the concession period, the operating revenues of the consortium are regarded as the investment income.

Distribution Diagram of Water Intake Facilities of Chengdu No. 6 Waterworks



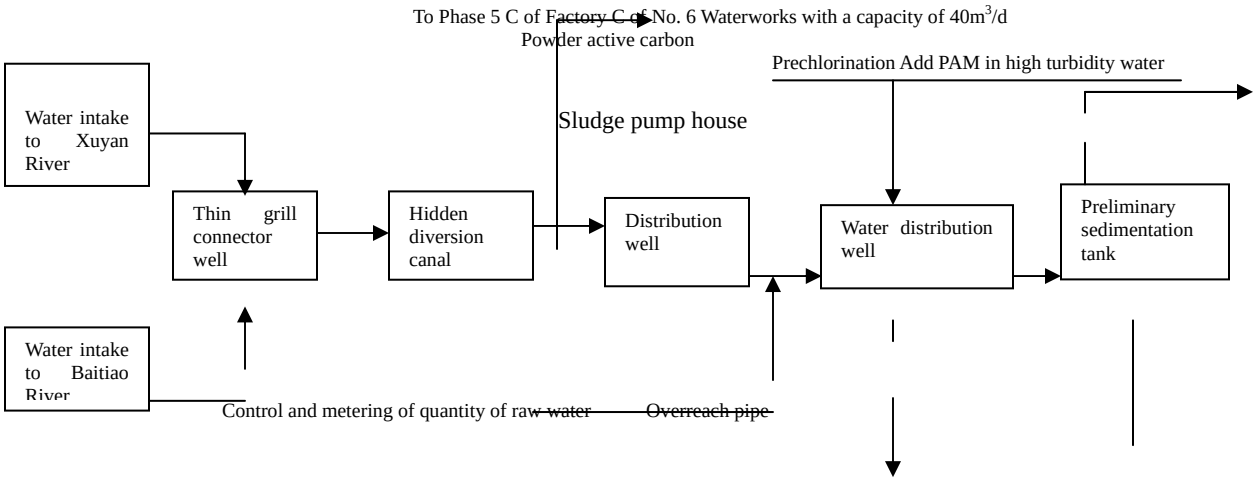
引水暗渠 Hidden diversion canal
拦河闸 Barrage
取水口 Water intake
徐堰河 Xuyan River
柏条河 Baitiao River
水六厂 Chengdu No. 6 Waterworks
郫彭公路 Pixian-Pengzhou Highway

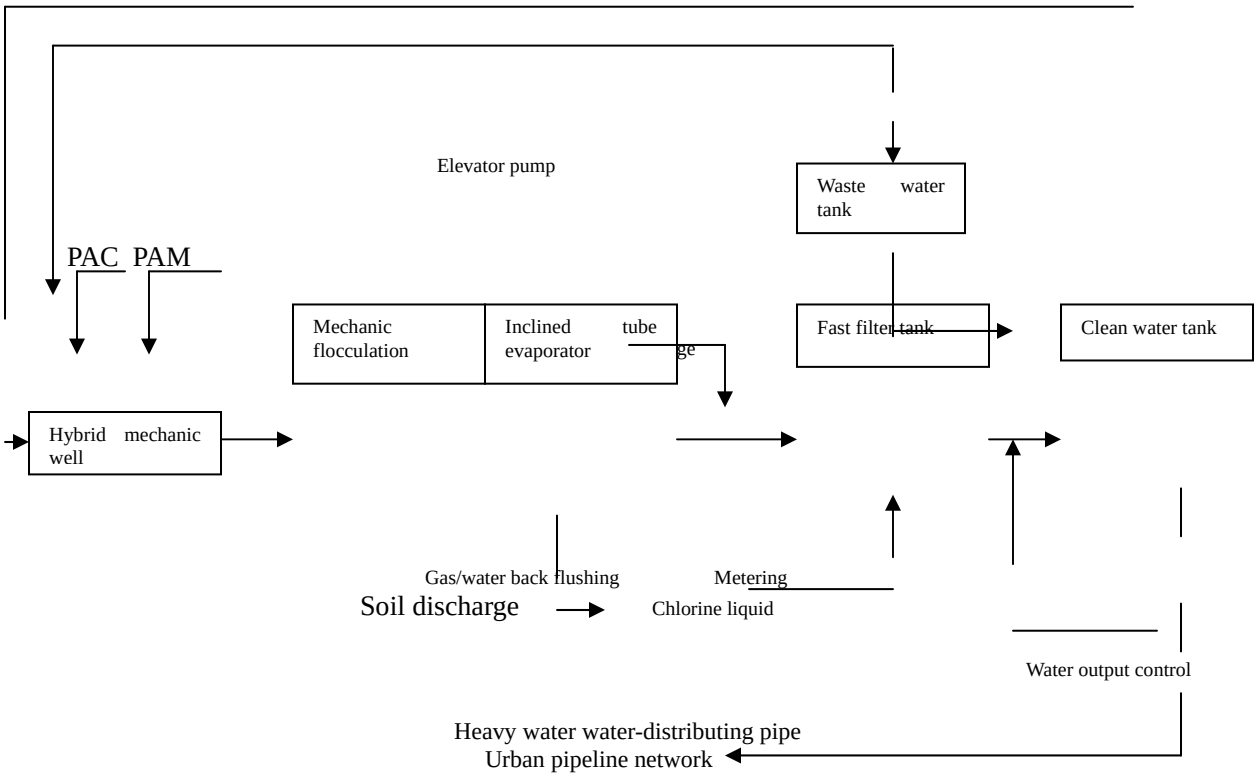


水六厂输水管道分布图 Distribution diagram of water supply pipeline of No. 6 Waterworks
水六厂 No. 6 Waterworks
C厂 DN2200 Factory C DN2200
B厂 DN2400 Factory B DN2400
A厂一期 DN1600 Phase 1 of Factory A DN1600

A 厂二期 DN1600 Phase 2 of Factory A DN1600
A 厂三期 DN1600 Phase 3 of Factory A DN1600
外环路 Outer Ring Road
川陕路 Sichuan-Sha'anxi Highway
高位水库 Elevated reservoir
三环路 Third Ring Road

Technical Flow Chart of Chengdu No. 6 Waterworks





3. Implementation of BOT Project of Factory B of Chengdu No. 6 Waterworks

Factory B Project of Chengdu No.6 Waterworks (Phase 4 Project of Chengdu No.6 Waterworks) is the first state-approved BOT pilot project of city water supply infrastructure. This project has triggered the rapid application of the BOT Mode in the country's city water supply industry.

In January 1997, the National Development and Reform Commission (NDRC) (then known as the State Development Planning Commission) formally approved the establishment of Factory B of No.6 Waterworks project. Under the direct leadership of NDRC, the Ministry of Construction and provincial and city governments, the international bidding for this project was held with the principle of "the lowest price" wins. A bidding Consortium composed of France General Water Company (now known as Veolia) and Japan Marubeni Corporation won the bid. On July 12th, 1998, the project's concession agreement and its annexes were initially signed between this Consortium and Chengdu Municipal People's Government. Following that, the Consortium worked on various approval and registration formalities preceding international financing and the formal signing of the agreement. On August 11th, 1999, the Concession Agreement and Water Purchase Agreement were formally signed between two parties.

3.1 Establishment of this Project

The Main purpose of this phase is to work out the overall proposal of this Project, which includes the contents and scale of this Project. The Main tasks include listing the projects for construction, the preparation of proposals, a pre-feasibility study by eligible design and consultancy agencies, a definition of technical parameters and a comparison of implementation proposals, recommendations on whether the BOT Mode should be adopted, preparation and submission of a pre-feasibility study report, and the completion of the project establishment and its review.

At the beginning of 1996, when Chengdu Municipal People's Government was informed that the National Development and Reform Commission was starting to establish BOT pilot projects in China and decided to choose pilot projects in water supply industry, it immediately did the following works:

3.1.1 Chengdu Municipal People's Government officially submitted an application to the National Development and Reform Commission for adoption of the BOT Mode in Phase 4 Project of Chengdu No. 6 Waterworks.

3.1.2 Prepared and submitted engineering and financial pre-feasibility study reports to the National Development and Reform Commission and the Ministry of Construction after obtaining the approval from the National Development and Reform Commission.

The Engineering pre-feasibility study report, prepared by South-west Municipal Engineering Design and Research Institute of China, mainly included forecasts of water supply capacity, the size of project, the selection of water sources and the sites of waterworks, the design of the engineering proposal, investment budget and finance proposal. The details of this report were required to be in line with pre-feasibility reports of similar projects in China. The Financial pre-feasibility report, prepared by Beijing Dadiqiao Infrastructure Investment and Consultancy Co., Ltd, mainly included an introduction of this project, the BOT Mode and risk sharing, the design of engineering proposals for Phase 4 Project of Chengdu No. 6 Waterworks under the BOT Mode as well as a comparison and selection of recommended proposals. Economic assessments on two proposals with concession periods of 15 and 18 years respectively were conducted in this report, in which, the finance index, including the water price, total investment, internal rate of return, investment recovery period, term of loan repayment and average debt refunding coefficients were measured and calculated. After compared assessment results, the proposal with the concession period of 18 years was confirmed and recommended.

After the completion of the engineering and financial pre-feasibility study report, Chengdu Municipal People's Government immediately conducted initial examinations and officially submitted this report for approval in August 1996.

3.1.3 Project Approval and Initialization, Finalization of Overall Proposal for This Project

The Ministry of Construction attached great importance to this Project and submitted its opinions to the National Development and Reform Commission in a timely manner. On Jan. 7, 1997, the National Development and Reform Commission approved the BOT Mode for water-intake project with a daily capacity of 800,000 m^3, water-purifying factory with a daily capacity of 400,000 m^3 and 27-kilometer main water supply pipelines of DN2400mm included in this Project by Document No. 9 (1997) Ji Wai Zi. It was also stipulated in this document that, besides other 79-kilometer water supply and distribution pipelines of DN2400-1000mm, an elevated reservoir of 60,000 m^3 would be built by Chengdu Municipal People's Government as supporting facilities, and Phase 4 Project of No. 6 Waterworks was renamed as BOT Project of Factory B of No. 6 Waterworks, making it the first pilot BOT project in urban water supply industry approved by the state in China.

3.2 Preparations for Bid Invitation

The purpose of this phase is to make preparations for bid invitation, which include the establishment of a bid invitation organization, the appointment of a bid invitation agency, the preparation of pre-qualification documents, the finalization of technical parameters and the preparation of bid invitation documents including standards for bid evaluation.

The Full support of local government is essential for the development and completion of BOT projects, and local governments must therefore set up a capable, highly efficient and authoritative organization with strong coordination capability for preliminary works of the project. In addition, the complexity of technical, economic and legal issues requires the participation of professional personnel with profound knowledge in technology, economics and law. However, due to the local government lack of familiarity with international practices and BOT-related laws, it was necessary to use the services of a consulting agency with rich experiences in international bidding. This was essential as it gave the local government and adequate level of control over the initial stages of the BOT plan, and the participation of these consultants would greatly contribute to the improvement of negotiation skills of local government. In addition, these consultants would work out innovative solutions when problems occur during the course of negotiation. Although high costs are incurred through the use of such consulting agencies, the eventual benefits make it worthwhile for such a large BOT projects.

Other important work during the preparation of bid invitation documents is the preparation of pre-qualification documents and bid invitation documents. Pre-qualification documents mainly include an introduction of the project background, details of contents and format of materials describing the technical strength, experiences and financial status of a bidder and an introduction of the evaluation criteria for pre-qualification as well as the detailed schedules of pre-qualification work. The purpose of preparing bid invitation documents is to establish a basic framework for the bidding of all bidders. A study of the technical

parameters of a project is required for the preparation of a bid invitation document, which should include a detailed and explicit description of the nature and scale of problems to be solved, and bid invitation documents should be prepared on the basis of these studies. A bid invitation documents should be composed of a draft of the concession agreement, technical parameters, type of bidding, the content of the bidding documents, the standards for bid evaluation, arrangements and stipulations for bid invitations. In the formulation of standards for bid evaluation, the objective of a project should be taken into account, and the evaluation should give due weight to the price level of products, the reliability and comprehensiveness of technologies, the responsiveness of the legal proposal to the bid invitation documents and the reliability of the financial proposal so that project units can make a corresponding design to meet the requirements of local government.

Upon the approval of the National Development and Reform Commission, Chengdu Municipal People's Government immediately started the preparations for the international tendering of this project:

3.2.1 Establishment of a Competent Organization for Coordinating This Project

Shortly after the approval of this project by the National Development and Reform Commission, the Chengdu Municipal People's Government established the leading group for the construction of the BOT Project of Factory B of Chengdu No. 6 Waterworks Company, in which, Mayor Wang Rongxuan served as team leader, Vice Mayor Sun JiaYuan served as deputy team leader and leaders of competent departments and relevant districts and counties served as team members. In addition, the Office of the Leading Group comprising of personnel from Chengdu Municipal Commission of Development and Reform, Chengdu Municipal Utility Bureau and CMWC was set up for the organization and implementation of this project. Under this Office, the Integrated Coordination Group, Expert Panel and Preparation Team responsible for land requisition and rental, preparations for the construction were also established and the Preparation Team was set up on the basis of the Office of Leading Group of the existing Chengdu No. 6 Waterworks.

3.2.2 Appointment of a Bid Invitation Agency and Organization of Bid Invitation Team

While selecting experts from water supply industry with extensive practical experience in technology, law and finance to form a bid invitation team, Chengdu Municipal People's Government entrusted Beijing Dadiqiao Infrastructure Investment and Consultancy Co., Ltd, which had considerable experience in international tendering and had previously participated in the BOT projects of Factory B of Guangxi Laibin Power Plant and Hunan Changsha Power Plant, as a bid invitation agency, the responsibility for the preparation of the financial pre-feasibility study report, the overall design and the organization for the construction of this project under the BOT Mode, which included necessary public relations activities, liaison and coordination with state departments concerned, and the

organization of the bid invitation in accordance with international practices.

In addition, legal experts from the United Nations Industrial Development Organization and legal and financial experts with rich experience in international tendering from the Asian Development Bank designated by the National Development and Reform Commission also participated in the bid invitation process. Participation of a bid invitation agent and foreign experts ensured the compliance with international practices in the bid invitation. In addition, the agent and experts, with their rich experiences in international tendering, have made a large number of helpful suggestions, which contributed greatly to the settlement of complicated problems which arose during the bid invitation.

3.2.3 Preparation of Pre-qualification Documents and Bid Invitation Documents

Pre-qualification documents usually include the introduction of a project, notices for prequalification, evaluation criteria for prequalification, an introduction of bid invitation procedures and an anticipated time schedule, the desired format for letter of application and application forms for prequalification.

Bid invitation documents include notices for bidders (including standard for the evaluation of bidding documents), draft concession agreement of a project, Appendix 1 to Appendix 15 of the concession agreement (of which, in this project, Appendix 1 is the Water Purchase Agreement) and reference materials on technologies, economics and law provided for bidders.

3.3 The Process of Bid Invitation and Bidding

3.3.1 Pre-qualification

The purpose of pre-qualification is to prepare a name list of several bidders permitted to submit bidding documents through analysis and comparison of technical strength, experiences in engineering and the financial status of potential bidders. It is designed to ensure that only qualified bidders with adequate technical capability and sound financial status are permitted to submit bidding documents. In addition, as the preparation of bidding documents requires lot of time and energy, pre-qualification can limit the quantity of qualified bidders, increase the winning probability of qualified bidders and encourage them to work out a creditable bidding document with their best endeavors.

Pre-qualification phase mainly includes a notification of pre-qualification, the selling of pre-qualification documents, assessments of qualifications and the announcements of the results of the qualification assessment.

3.3.1.1 Notice of Pre-qualification

On April 21, 1997, Beijing Dadiqiao Infrastructure Investment and Consultancy Co., Ltd. gave out the notice of pre-qualification on behalf of Chengdu Municipal People's Government in news media, like the People's Daily and the Overseas Edition of the People's Daily to invite overseas companies with strength and experience to participate in the pre-qualification for BOT Project of Factory B of Chengdu No. 6 Waterworks.

3.3.1.2 Selling of Pre-qualification Documents

From Apr. 28 to May 28 1997, 29 world renowned water supply service and engineering companies purchased prequalification documents, and 10 companies and consortiums submitted the applications for pre-qualification to Chengdu Municipal People's Government before July 8.

3.3.1.3 Qualification Assessment

The Bid Evaluation Committee for the BOT Project of Factory B of Chengdu No. 6 Waterworks comprising of 9 representatives from the National Development and Reform Commission, the Ministry of Construction, the Sichuan Provincial Commission of Development and Reform and Chengdu Municipal People's Government conducted a comprehensive evaluation on each applicant's experiences in BOT projects, experiences in the construction and operation of urban water supply projects, their technical capability, management capability, financial status and the conformity to legal requirements in accordance with the standards of pre-qualification. As a result, 7 companies and consortiums were listed in Group A as qualified companies or Consortiums for bidding, indicating these companies or Consortiums were qualified for independent bidding. The other 3 companies were listed in Group B and they were required to form a Consortium with one or more of the companies listed in Group A to participate in tendering. That is to say, they could only obtain the bidding qualification in this way.

3.3.1.4 Announcement of Qualification Assessment Results

On Jul. 28, Beijing Dadiqiao Infrastructure Investment and Consultancy Co., Ltd announced the results of prequalification on behalf of Chengdu Municipal People's Government.

3.3.2 Bidding

The Bidding phase includes invitations for bidding, the selling of bid invitation documents,

organizing bidders for on-site observations, pre-bid-opening conferences, the release of memoranda of pre-bid-opening conferences, the submission of bidding documents and the bid opening.

3.3.2.1 Invitation for Bidding

Inviting bidders who have passed prequalification to participate in bidding in written form while announcing the results of prequalification.

3.3.2.2 Selling of Bid Invitation Documents

On Sept. 18, 1997, bid invitation documents were put on sale by Beijing Dadiqiao Infrastructure Investment and Consultancy Co., Ltd on behalf of Chengdu Municipal People's Government. At last, 7 potential bidders that passed prequalification purchased bid invitation documents.

3.3.2.3 Organizing Bidders for On-site Observations

From Oct. 20 to Oct. 23, Chengdu Municipal People's Government made arrangements for on-site observations to enable potential bidders to have further understanding of conditions of BOT Project of Factory B of Chengdu No. 6 Waterworks and social and economic development of Chengdu City.

3.3.2.4 Pre-bid-opening Conference and Release of Memorandum of Pre-bid-opening Conference

On Oct. 25, 1997, the pre-bid-opening meeting conference was held in Chengdu by Chengdu Municipal People's Government for the explanation and classification of some comprehensive and technical issues concerning potential bidders and the memorandum of pre-bid-opening meeting was released after the conference. Beijing Dadiqiao Infrastructure Investment and Consultancy Co., Ltd also gave some clarifications in the form of supplementary notices and gave further replies to questions of potential bidders after the conference.

3.3.2.5 Submission of Bidding Documents

After preparations of 5 months, 5 bidders submitted bidding documents to Chengdu Municipal People's Government before Feb. 25, 1998, the deadline for the submission of bidding documents as stipulated in the bid invitation document. The Names of these

bidders are shown as below in accordance with the order of their submissions:

1) Consortium of France Suez Water Group and New World TMT Limited

2) Consortium of Malaysia Gkent/Johan/Hohup/Dali Holding Company

3) Consortium of France General Water Company and Japan Marubeni Corporation

4) Consortium of Norway Kvaerner/PURAC - Anglian Water Treatment/Enron International

5) Mitsubishi Corporation from Japan

The Bid invitation documents presented by the bidders included the completed bidding document, a legal proposal, a financial proposal, a technical proposal and a feasibility study report of this project.

3.3.2.6 Bid Opening

In accordance with relevant stipulations of bid invitation documents, the bid opening ceremony of the BOT Project of Factory B of Chengdu No. 6 Waterworks was held on Feb. 26, 1998 in Beijing. Hao Ju, Director of the Foreign Investment Department of the National Development and Reform Commission, Sun JiaYuan, Vice Mayor of Chengdu Municipal People's Government and leaders of concerned departments of the National Development and Reform Commission, the Ministry of Construction, the Sichuan Provincial Commission of Development and Reform and Chengdu Municipal People's Government were present at the ceremony. Under the presence of representatives of Chengdu Municipal People's Government and the bidders, the working personnel designated by Chengdu Municipal People's Government unsealed 5 bidding documents in accordance with the sequence of submission and a representative of Chengdu Municipal People's Government read out the following information in accordance with the stipulations of bid invitation document:

Name of bidders

Name of member of Consortiums

Whether the sealing of bidding documents meets the requirements

Date of submission of bidding documents

Availability of letter of guarantee

Availability of alternative bidding document

The whole process of accepting the bidding document and the bid opening was made under the supervision of public notaries of Beijing Notary Office and a survey report was issued by Beijing Notary Office.

3.3.3 Bid Evaluation and Awarding

The Main task of this phase is the evaluation of the bidding documents submitted by the bidders for their accordance to the standards of bid evaluation specified in the bid invitation documents as well as the setting of sequence of the bidders to reach the conclusion in the final bid evaluation.

The Bid evaluation of BOT Project of Factory B of Chengdu No. 6 Waterworks, started on Feb 27, 1998, and was divided into 2 phases: the First phase was a preliminary evaluation, in which, an expert panel for bid evaluation designated by Chengdu Municipal People's Government and headed by Chengdu Municipal BOT Office completed the following works: an examination of the conformity of bidding documents, an evaluation of the technical proposal, financing proposal, legal proposal and the water price of qualified bidders and the submission of an evaluation report by the expert panel to the bid evaluation commission; the second phase was the bid evaluation, in which, the Bid Evaluation Commission of BOT Project of Factory B of Chengdu No. 6 Waterworks examined the evaluation report of the expert panel and set the sequence of bidders to reach the final conclusion of the bid evaluation on the basis of evaluation report and bidding documents.

A comprehensive evaluation method was adopted in the bid evaluation, in which water price level accounted for 70% weight, technical solutions 15%, and legal issues 5% and financing plans 10%. Bidders were ranked from high to low in accordance with this comprehensive evaluation. Through comparison and detailed discussion, the Bid Evaluation Commission concluded that the Consortium of France General Water Company and Japan Marubeni Corporation, the Consortium of Malaysia Gkent/Johan/Hohup/Dali Holding Company and the Mitsubishi Corporation were listed as the top 3 competitive bidders and notices of the results of the bid evaluation were sent to all bidders on March 26, 1998. The background and conditions of the Consortium of France General Water Company and Japan Marubeni Corporation were as follows: the Consortium was

comprised of General Water Company (60%) and Marubeni Corporation (40%) and its bidding document had many advantages: 1) it was all-inclusive and detailed, highly responsive to the bid invitation documents; 2) its financing proposal was fully supported by banks and the conditions for the required loans had been basically approved by Credit Commission of heading bank; 3) some new technologies had been included in its technical proposal; 4) the total construction cost and the water price were comparatively low. It offered a price for specified quantity of water for the first year of operation at RMB 0.96 Yuan/m^3 and RMB 1.56 Yuan/ m^3 for the last year of operation. Disadvantages of this bidding document included: 1) the technical proposal was insufficient in assessing potential risks; 2) and there were a large number of proposed modifications on legal issues.

3.3.4 Negotiation and Finalization Phase

Tasks of this phase include: modification of the bidding document of a bidder without affecting the conformity review of the bid invitation documents on the bidding document, negotiation and finalization of issues requiring further confirmation to enter into consensus and initial project agreement.

In accordance with the stipulations of bid invitation documents, Chengdu Municipal People's Government had three rounds of finalization negations in Beijing and Chengdu with General Water Company since April 27, 1998. Both parties showed flexible and practical attitudes in these positive and cooperative negotiations. Through joint efforts, both parties reached a consensus on all major issues and initialed a project agreement in Chengdu on Jul. 12, 1998. What is remarkable is that the negotiations and finalization only took two and half months to complete, which is very rare for projects of this type anywhere in the world.

3.3.5 Completion of Various Formalities for Approval and Registration as well as the Execution of the Project Agreement

According to existing Chinese laws and stipulations on project agreements, a bid winner must complete all formalities for approval and registration before the execution of the agreement, which included approvals required for the establishment and operation of project company, approval and registration of fund raising for the project, and other approvals required before commencing with the construction of the project, otherwise, the project agreement will not become effective. After completing all formalities for approval and registration before the execution of the agreement, the bid winner and Chengdu Municipal People's Government executed the project agreement, marking the commencement and implementation of this project.

3.4 Concession and Concession Agreement

A concession is the exclusive right of the contractor of a BOT project granted by government in the form of a concession agreement to design, built, own, operate and maintain the facilities of the project during a concession period in accordance with the requirements of government.

The concession agreement is the core of any BOT project, explicitly specifying the rights and obligations of the government and contractor during a concession period and reflecting the risks and returns of both parties.

General speaking, rights and obligations of both parties mainly include:

3.4.1 Rights of Concession Contractor

3.4.1.1 Collection of charges. The contractor may collect charges during the operation of project in accordance with prices stipulated in the agreement.

3.4.1.2 Right of foreign exchange. Foreign investors may convert the investment returns into original investment currency and remit abroad; investors are entitled to similar rights in the repayment of principals and interest on loans provided by creditors.

3.4.1.3 Tax breaks. Contractors usually apply for various tax breaks during the construction and operation period. Government may decide whether tax breaks can be granted by taking factors like the positive influences of tax breaks for investors and the impact of tax breaks on the water price level and financial revenues into account.

3.4.1.4 In order to obtain revenue during the operation of project, contractors may apply for the government’s support to ensure the stability of the market for its products.

3.4.1.5 Contractors are entitled to request economic compensations from the government in case changes in the law result in an increase of expenses in excess of certain limits for the project company.

3.4.1.6 Unless for the sake of public interests, performance of lawful duties or monitoring and inspection in accordance with clauses of agreement, Government may not interfere in the business of the project company, nor confiscate the project assets, nor nationalize the project assets.

3.4.1.7 Other concessions, like permits of entry for foreign workers, loosening of restrictions on import and export and concessions on utilization of public utilities.

3.4.2 Obligations of Concession Contractors

3.4.2.1 Prepare design proposals for the project in accordance with relevant specifications and submit the same to the government for approval.

3.4.2.2 Ensure that construction of the project is in accordance with the agreement and relevant specifications.

3.4.2.3 Raise funds in accordance with relevant stipulations.

3.4.2.4 Comply with charging standards specified in the concession agreement and ensure the sound condition of the project at the time of transfer through regular maintenance and inspection.

3.4.2.5 Indemnity of loss: the Project company should compensate for losses incurred in case of breach of contract like delay of the construction period, failure to completion, failure to fulfill the obligation of supply of products and non-fulfillment of contract. The project company should produce and maintain a performance bond during construction period and produce and maintain a maintenance bond during the operation period.

3.4.3 Rights of the Government

3.4.3.1 Design phase: Government is entitled to examine the proposal submitted by Project Company; reserves the right to the amendment of design proposal. Government is entitled to request for the amendment in case the design proposal does not comply with relevant standards and cancel a design proposal in case the design proposal is still unacceptable after amendment.

3.4.3.2 Construction phase: Government is entitled to supervise the quality in accordance with the stipulations of the agreement and reject the projects, materials or equipment that fails to meet the requirements of the agreement; government may reserve the right of examination and approval of variation of project.

3.4.3.3 Completion phase: Government has the right of test, acceptance and final confirmation of a project and is entitled to specify the time limit for the improvement of the quality of construction.

3.4.3.4 Operation phase: Government is entitled to enter into sites of project at any time for inspection of fulfillment of maintenance plan, coverage of insurance of assets, compliance with relevant laws and yearly financial report of project company.

3.4.3.5 Project transfer phase: Government is entitled to conduct performance tests in accordance relevant standards for transfer and draw on performance bond for the repair of project facilities that fail to meet the standards for transfer.

3.4.3.6 Where revenues of Project Company exceed a certain limit as result of change of laws, the Project Company should reduce the price of products or pay the excess revenues to the government by other means.

3.4.4 Obligations of the Government

3.4.4.1 Provide all conditions required for the construction by the Project Company during the construction phase, including permits for the utilization of the construction field and temporary land requisitions, roads, water supply, power supply and telecommunication facilities.

3.4.4.2 Government should ensure the supply of materials and power, etc. during the operation phase of a project.

3.4.4.3 Ensure the materialization of the value of the product. Government should purchase the products of Project Company at a fixed price to ensure the revenues of project.

3.4.4.4 In case of breach of contract on part of the government, the government should compensate the Project Company for the any losses thereby incurred.

3.4.5 Components of Concession Agreements of the BOT Project

The drafted “Concession Agreement of BOT Project of Factory B, Chengdu No.6 Waterworks, Sichuan Province” consists of the main Concession Agreement and 16 annexes including the “Water Purchase Agreement” and the “Arbitration Agreement”. The body of the Concession Agreement stipulated the basic principles of the project agreement. The annexes were added as a supplement to the main body of the agreement and provide a detailed description of the clauses. In case of dispute, the main body of the agreement should prevail.

The body of the Concession Agreement covered the awarding of the concession right, the

rights and obligations over the construction, operation, maintenance and transfer as well as the explanations of the agreement, disputes settlements, the termination of agreement and remediation of breaches of the agreement and etc. The body of the Concession Agreement was signed by both the legal representatives and designated agents of the Project Company and Chengdu Municipal People's Government.

Annex 1. The "Water Purchase Agreement" stipulated the project company's rights and obligations over its water production, supply activities as well as that of the CMWC over its water purchase, obligations in case of breach of agreement, disputes settlements, the termination of the agreement, etc. The agreement was signed by both the legal representatives or designated agents of CMWC and Project Company.

Annex 2. "Technical Specification and Requirements" which constitute the technical requirements regarding to the whole project, covering the technical standards and requirements, specified construction, the principals of the design and its inspection, changes, approval procedures, performance tests as well as checks and acceptance standards upon completion, the contents for transfer and corresponding checks and acceptance standards.

Annex 3. "Services and Facilities provided by the Government" covers in full length the scope, size of lands that can be used and leased in the project and requirements for water, power, telecommunication and road that can be used for the construction.

Annex 4. "Quality Assurance and Quality Control Program for Construction, Operation and Maintenance" stipulates the quality control program and quality control system that should be adopted by the project company during the proposing, operating and servicing period.

Annex 5. "Surcharges": According to the concession agreement, when additional costs are incurred due to delays in the commercial operation, discrepancy in the quality of the raw water, law alternations caused by Chengdu Municipal People's Government or damages of the facilities of the Waterworks caused by force majeure exceed the accepted scope, Chengdu Municipal People's Government shall grant the project company some compensation. The Annex defines the conditions and modes of the compensation, the definition and payment of surcharges, the right of termination that the project company enjoys in case it fails to receive any compensation, etc.

Annex 6. "Serving Program" defines the contents, schedule and requirements that the project company shall provide for the maintenance of the facilities of Factory B.

Annex 7. "Initial Shareholder List of the Project Company", which lists the names of initial

shareholders and their corresponding percentage of shares.

Annex 8. “Insurance” defines the insurances that the project company shall buy at its own expenses over the construction, operation and other specified requirements.

Annex 9. “Approval, License, Permit and Registration List”, which detail the approval procedures and registration needed by the project company for its establishment, project financing, project construction and operation of Factory B.

Annex 10. “Format of Performance Bond”, which defines the format that can be accepted by both parties and shall submit to Chengdu Municipal People’s Government by the bank guarantee entrusted by the project company.

Annex 11. “Format of Maintenance Bond”, which defines the format that can be accepted by both parties and shall be submitted to Chengdu Municipal People’s Government by the bank guarantee entrusted by the project company.

Annex 12. “Compensation for the Termination of the Project”, which specified the amount of the compensation that Chengdu Municipal People’s Government shall pay under different project termination conditions in the agreement.

Annex 13. “Format of the Legal Opinions of the Project Company’s Counsel’s”, which defines the format of the legal opinions that the counsel of the project company shall, on the effective date of the agreement, submit to the Chengdu Municipal People’s Government to prove the existence, signature and legality of the execution of agreements of the project company.

Annex 14. “Format of the Legal Opinions of Chengdu Municipal People’s Government’s Counsel’s”, which defines the format of the legal opinions that the counsel of Chengdu Municipal People’s Government shall, on the effective date of the agreement, submit to the project company to prove the existence, signature and legality of the execution of agreements of Chengdu Municipal People’s Government.

Annex 15. “The Arbitration Agreement”. According to the concession agreement, disputes shall be settled through arbitration when an amicable settlement of the Operation Coordination Commission and the medication of the Expert Panel cannot be reached. The agreement defines the selection of the arbitration institutes, constitution of the arbitration court, the place of arbitration, the expenses for arbitration, etc. The arbitration agreement

shall be signed among the legal representatives or agents of Chengdu Municipal People's Government, CMWC and the project company.

Annex 16. "Temporary Land Leasing Contract", which specifies both parties' rights and liabilities for the land leasing during the pipe construction. It covers the scope, the time limit and right for the land leasing, land use rights, fess for the temporary land leasing, requirement for the land consignment, extension of land use period, the restoration and inspection of the land that has been used, liability for breach of the agreement, settlement of disputes, etc.

3.4.6 Main Contents of the Concession Agreement of the BOT Project of Factory B of Chengdu No. 6 Waterworks

3.4.6.1 Awarding of the Concession Right

The organizers for the investment of the BOT project are General Water Company and Marubeni Corporation, who shall provide as much as 30% of capital as the capital stock and set up a project company. Chengdu Municipal People's Government shall, within the concession period, shall award the project company exclusive rights to design, construct, own, operate and maintain the project in compliance with the requirements of Chengdu Municipal People's Government and sell the purified water to Chengdu Municipal People's Government.

3.4.6.2 The Concession Period

The concession period shall last 18 years beginning from the officially effective date of the concession agreement, including a construction period of 2 years and 6 months and an operation period of 15 years and 6 months. The project shall be transferred to Chengdu Municipal People's Government or a designated institution after the expiration of the agreement, without any compensation to the project company.

3.4.6.3 Performance Bond and Maintenance Bond

The project company shall, during the construction and operation phase within the concession period, provide Chengdu Municipal People's Government with a performance bond of USD 12 million and a maintenance bond of USD 5 million for the efficient execution of the obligations of the project company under the concession agreement.

3.4.6.4 Land Use

Chengdu Municipal People's Government shall be responsible for the first-phase preparation of the project (including the confiscation and lease of lands) and it shall transfer the allocated right to use of the land for waterworks and water intake sites and other rights for the use of sites to the Project Company before or on the date on which this agreement becomes effective. The project company shall pay nothing for the allocated right to the use of the land except the development fee after the Concession Agreement becomes effective.

Where the project company decides in the concession period to change the allocated right to the use of the land to the right of transferring the right to the use of the land, the Chengdu Municipal People's Government commits to grant the project company the right to the use of the lands and ensures that the project company can legally use the right as a mortgage or warranty for other purposes. However the Project Company shall bear all the costs and expenses occurring thereof and comply with related regulations.

For the lands used for water pipelines and part of the lands for the construction of water intake facilities project of the waterworks that shall be transferred to the Chengdu Municipal People's Government, the Government commits to provide the project company with the right to the use and entry of the lands from the construction period to the final completion date upon the payment of the rents of lands by the project company.

3.4.6.5 Construction of Project Facilities

The project company shall, in compliance with the technical specifications, requirements and governing laws, design the facilities of the project. The initial design shall be submitted to Chengdu Municipal People's Government for approval and the detailed design shall be submitted to Chengdu Municipal People's Government for examination.

The project company shall, according to the agreement, be responsible for the construction of the project and bear all the expenses and risks. Chengdu Municipal People's Government shall, in compliance with the agreement, provide services and facilities. The determination and replacement of the construction contractor shall be approved by Chengdu Municipal People's Government. The project company shall work out and carry out quality assurance program to ensure the quality of the project while Chengdu Municipal People's Government has the right to supervise the quality of the project and refuse to accept any construction, materials and facilities that have serious non-conformities with the agreement. And the government has the right to require the project company to make certain amendments at its own expenses or to replace the defective materials with proper materials or facilities within a reasonable period. The project company is obliged to complete the construction within the construction period of 30 months, put the project into commercial operation after the initial performance test is up to standard and pass the final performance test within 105 days from its commence of commercial operation. Where the commencement of commercial operation is delayed by

Chengdu Municipal People's Government, the Chengdu Municipal People's Government shall agree to extend the construction period and grant certain economic compensation. Where the project company causes the delay, Chengdu Municipal People's Government shall fine the project company from the performance bond on a daily basis until no bond remains.

3.4.6.6 Operation and Maintenance of the Project

During the whole operation period, the project company shall, according to the agreement, bear the expenses and risks to manage, run and maintain the facilities of the waterworks. In case the project company fails to fulfill its obligations, Chengdu Municipal People's Government has the right to notify the project company for corrective maintenance. Where any disputes occur, Chengdu Municipal People's Government may make corrective maintenance, but is not committed to do so, and has the right to use the performance bond as the maintenance fee.

3.4.6.7 Capacity and Supply Obligation of the Project Company

The project company shall be provided with the capacity of supplying, during the operation period, specified amount of qualified purifies water (400,000M^3/day) each operation day and comply with each dispatch order from CMWC. Where the project company fails to supply the proper amount of purified water or to declare the amount of the water supply available due to its own reasons, it shall, in compliance with the agreement, pay the penalty of the preset amount of water to Chengdu Municipal People's Government; where the project company fails to fulfill its obligations of supplying purified water with a qualified or basic qualify due to its own reasons, it shall pay the penalty for the preset water quality according to the stipulations of the agreement.

3.4.6.8 Purchase of Purified Water

After the waterworks is put into commercial operation, Chengdu Municipal People's Government shall be obliged to purchase qualified purified water as much as 400,000m^3/day and pay the corresponding water fee under the normal operation of the waterworks. CMWC was appointed by the government to bear the rights and obligations for the purchase of the water. "The Purchase Agreement" shall be signed between CMWC and the Project Company.

3.4.6.9 Supply of Raw Water

Chengdu Municipal People's Government shall provide the raw water required for the production of purified water by the project company, which shall come from the

Dujiangyan System, Sichuan province. The project company shall pay for the raw water intake fee to CMWC designated by Chengdu Municipal People's Government. The water intake fee shall be calculated based on the unit price and the actual intake quantity of the raw water.

3.4.6.10 Water Fee

CMWC shall, as the agent of Chengdu Municipal People's Government, pay water fees to the project company, which includes operational water fee and raw water fee. Representing all the costs except the raw water fees, the operational water fee shall be made up of the normal operation fee (for the amount of water stipulated in the agreement- 400,000m^3 /day) and an additional operation fee (for the amount of water that goes beyond 400,000m^3 /day, which shall not exceed 20,000m^3 /day). The normal operation fee includes fees collected at the fixed and floating price respectively. The amount of the fixed part of operational water that is calculated at the fixed price shall remain unchanged each year during the concession period, which can not be adjusted with the changes of factors like inflation while the amount calculated at floating price shall also remain unchanged each year during the concession period, but can be adjusted with the changes of exchange rate between RMB and the U.S. dollar under certain conditions, i.e., the amount shall not be adjusted when the exchange rate changes within the scope of ±5% and it shall be adjusted when the exchange rate exceeds ±5%.

The price of the additional operation water shall only be calculated at the fixed price, which shall be about one quarter of normal water fee.

The raw water fee represents the costs of raw water, which can be adjusted according to the price of the raw water.

In addition, for the payment of the water fee within the concession period, extra water fee of the project company caused by the extra expenses resulting from changes in law, force majeure and the delay by the government shall be taken into consideration.

The water fee to be paid shall, during the entire concession period, be calculated and adjusted based on the principles stipulated in the Concession Agreement and the related formula in the annexes of the Water Purchase Agreement. Upon the approval of the Concession Agreement, the calculation and adjustment of the water price shall abide by the rules and formula in the approved project agreements and competent departments for the price control shall examine the calculation and adjustment for any discrepancy with the approved rules and formulas.

3.4.6.11 Foreign Exchange

The Project Company shall be allowed, within the concession period, to exchange the water fee income into US dollar and remit it outside of China for the payment of the costs of the project, interests and the profits.

3.4.6.12 Transfer of the Project

The project transfer includes transfer of Waterworks Company's pipelines constructed by the project company, including water intake facilities with a capacity of 400,000m^3/day, water supply pipelines and drainage culverts and that of the facilities of the waterworks.

The project company shall transfer all the rights, ownership and interests of the pipelines of Waterworks Company at the completion date of the project to Chengdu Municipal People's Government or the agent designated by the Chengdu Municipal People's Government. The transferred pipelines shall comply with all the related governing law and all the standards and specifications related with safety, operation and performance. Meanwhile, the project company shall be liable for reparation of any defects and damages occurred within 12 months after the final completion of the project.

The project company shall, at the date of transfer after the concession period, transfer all the rights, ownership and interests of the facilities of the waterworks (excluding any liabilities and any environmental pollution) to Chengdu Municipal People's Government or institution designated by Chengdu Municipal People's Government free of expense. The transferred facilities shall be subject to the environmental and safety standards and shall be well repaired and in a good condition. The project company shall guarantee that it shall be reliable to the preparation of any defects caused by materials, techniques and design as well as any defects and damages occurred in any part of the waterworks' facilities for any act or omission within 12 months after the transfer. The USD 5 million of Maintenance Bond shall be effective for another 12 months after such transfer.

3.4.6.13 Disputes Settlement

Any disputes, conflicts or claims for compensation occurring due to any problems during the implementation of the project shall be settled on the basis of friendly negotiation by the Operation Coordination Commission at first. In case of failure, either party may submit it to an expert panel unanimously determined by all members of the Operation Coordination Commission. If the expert panels still cannot resolve it, the case shall be submitted for arbitration.

Once the arbitration is required, the case shall be submitted to China International

Economic & Trade Arbitration Commission at Beijing, China. As the creditor's rights have been given special definition in the Concession Agreement, each party agrees that disputes concerning the Concession Agreement and Water Purchase Agreement shall be regulated by a separate arbitration agreement. The loaner shall be a member of the agreement signing and the arbitration agreement shall be included as one of the annexes of the Concession Agreement.

Whereas the Concession Contract belongs to foreign-related economic contract of Chengdu Municipal People's Government, Chengdu Municipal People's Government agrees to waive its sovereign immunity right in any legal action.

3.4.6.14 Risks Sharing

3.4.6.14.1.Risks of Construction and Commercial Operation

The project company shall be liable to the defects related with designs, construction quality and delay of the project. In addition, the project company shall take the solely responsibility for the operation, maintenance and management of the water project.

3.4.6.14.2. Changes in Existing Laws

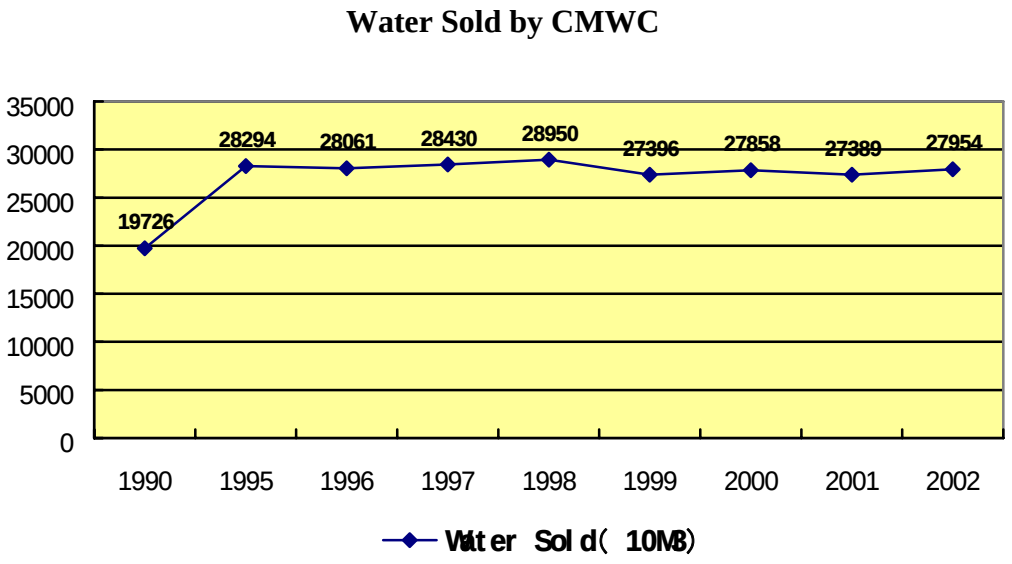
Risks caused by the changes in law by the government shall be borne by both the project company and Chengdu Municipal People's Government. The risks shall be liable to project company in case the increment of capital investment or current expenses caused by the changes of the existing laws is limited to an acceptable scope (i.e. non-substantial influence) while the risks shall be borne by Chengdu Municipal People's Government, in case the incremental part goes beyond the above-mentioned scope (i.e. substantial influence). Accordingly, both parties shall share the benefits brought about by the changes in law.

3.4.6.14.3. Force Majeure

The project company shall, at its own expenses, purchase all the force majeure insurances that are available at the insurance market. For the force majeure risks that fall outside of the insurance business, including those caused by changes of government policies or Government behavior, etc., Chengdu Municipal People's Government shall cover the said risks. The force majeures risks that fall outside of the insurance business, but are not caused by changes of government policies or Government behaviors shall be jointly shared by the project company and Chengdu Municipal People's Government.

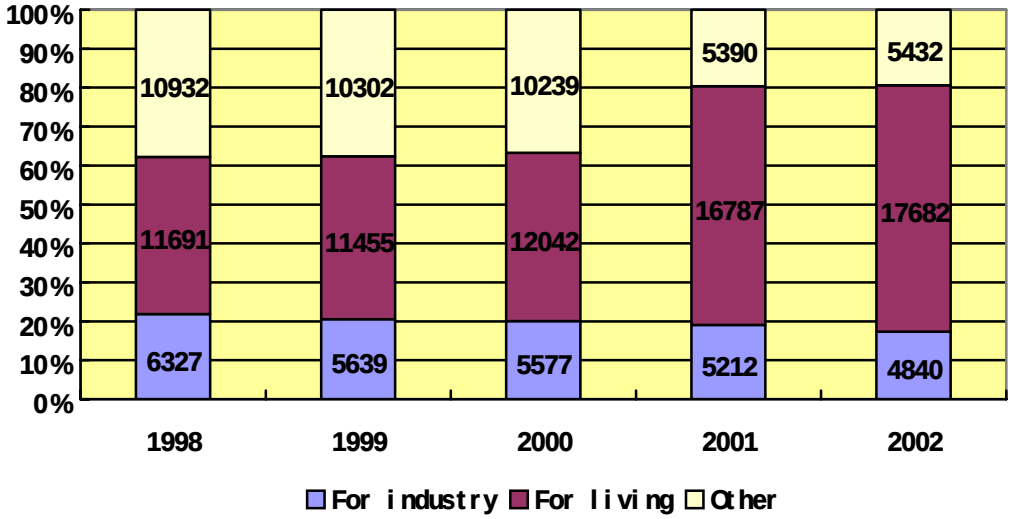
4. Results of the Project Implementation

Upon the completion of Factory B (4th phase project) in February 2002, the daily water production of CMWC surged to as high as 1.38 million m^3. However, since the initial stage, the market had experienced a considerable shift, and was now a buyer's market, which made the sales of CMWC drop tremendously.



According to the above chart, the water sold during 1990~1998 skyrocketed. The increment in the water supply soon lost its weight in face of the formidable market changes. The water market was described as "supply falling short of demand". The 1999 saw the beginning of significant drop in water sales as much as 15,560,000$m^3$with a percentage of 5.37% compared to the previous year. There were some slight increases over 2000~2002, but these did not reach the levels seen during the best stage in 1998.

Comparison of the Sales of Water for Different Use during 1998-2002



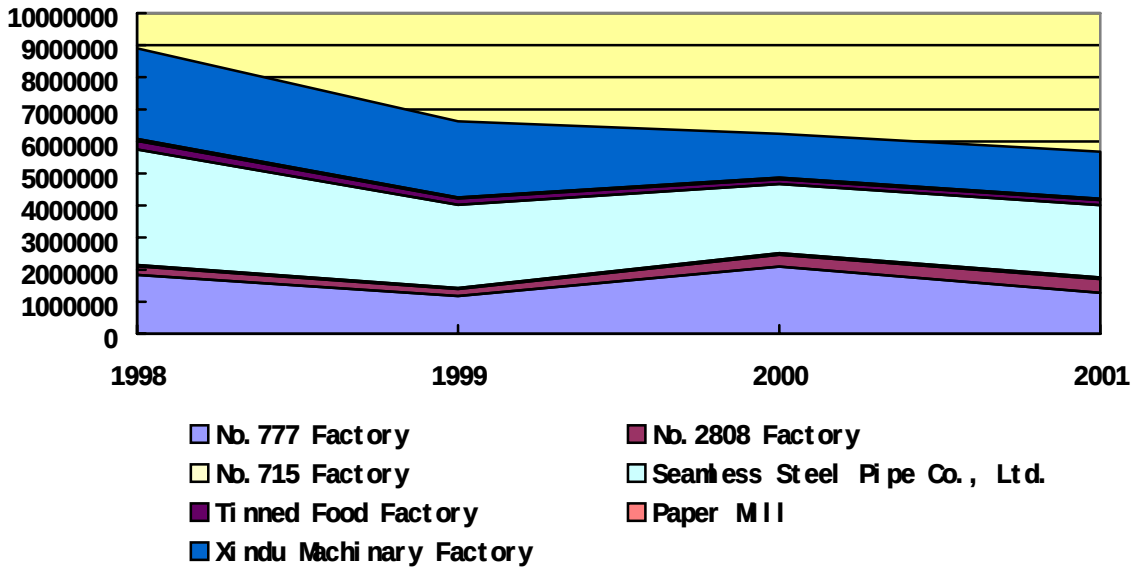
From the comparison among the sales of water in different sectors from 1998 to 2002, as shown in the above chart, we can see: 1) the percentage of the water for residential use increased from 40.38% to 63.25%, with its overall amount increasing from 116,910,000 m^3 to 176,820,000$m^{3,}$ showing an increase of 59,910,000m^3. 2) Years of 1998~2000 saw the biggest percentage drop in water for industrial use, from 21.85% in 1998 to 20.02% in 2000, with the absolute number from 63,270,000m^3 to 55,770,000m^3, showing a drop of 7,500,000m^3. The water for industrial use dropped again over 2000~2002, but with a moderate scale compared with the water for other uses. 3) During 2000~2002, the water used for other purposes suffered a bigger drop than the water for industrial and residential use. The water used for business and service, administrative and other purposes experienced a sharp drop from 36.75% in 2000 to 19.43%, with a 48,070,000m^3 drop from 2000 to 2002.

According to the above analysis, we can see that the direct reason of the drop in the water sold is due to a tremendous drop in water demand for the industrial use and business and service use, while the underlying explanation for this lies in the adjustment of the industrial structure and economic restructuring following the Asian financial crisis, which resulted in serious losses for enterprises.

The year of 1999 saw an unprecedented drop in water sold by CMWC, all because the local enterprises' overall development nearly dropped to the bottom. With the adjustment of the industrial structure and the market-oriented transformation of industrial enterprises, quite a few enterprises didn't receive enough orders and some of them even had to cut their production or suspend their operations, and losses remained high because the obstacles that limited the

development of industries, such as irrational systems and structures were not yet wiped out completely. According to the Industrial Statistics Yearbook of Chengdu in 1999 published by Chengdu Statistics Bureau, among all the state-owned enterprises and enterprises whose sales hit RMB5 million Yuan (enterprises with the sales above the quota), 33.3% suffered losses, 2.8% lower compared with 1998, but the absolute number of losses reached RMB 2.634 billion Yuan, 40.7% higher than 1998. According to the comparison of the water quantity used by 7 major industrial water users including the No. 773 Factory, as shown in the chart below, we can see a continuous drop in water consumption. 1999, in particular, witnessed an average drop of 25.54%, 2,270,000 m^3 less than the same period of 1998. The water consumption reduction by the 7 companies accounted for 23.54% of the overall reduction of water quantity of 9.86 million m^3.

Water Consumption by Some Major Industrial Water Users during 1998~2001(Q1&Q2)



Chengdu Municipal People's Government stepped up its efforts in the restructuring of enterprises and in providing assistance to the money-losing enterprises and quickened its pace to optimize the industrial structure. In 1999, the polar industries including food stuff (including tobacco), medicine, electronic information, machinery (including motor industry) of Chengdu saw a smooth development with a total revenue of RMB 32 billion Yuan, accounting for 56.3% of all state-owned enterprises (SOE) with sales exceeding the quota, and in 2000, these enterprises reached sales of RMB 38 billion, accounting for 61.4% of SOE revenue. However the said polar industries, with high technical contents and high added value, had a comparably lower demand for water, and the various industries, in particular the traditional industries, therefore consumed less and less water. Meanwhile, business and service industries and some other industries also restructured themselves

providing more and more finance, insurance and technical services, thus also having less demand for water. Hence, during 2000~2002, the water used for purposes other than for industry and other purposes saw the proportionally highest drop. Against the dramatic drop in industrial use of water, private water consumption increased rapidly, due to the improvement of the Chinese people's income, living standards and living quality. However, the increment could not offset the reduction of water used by industries and for other purposes. Therefore, the water sold by CMWC never regained the record level of 1998.

Factory B was completed and put into operation right at this moment, which rendered the water market from worse to worst. In order to find a solution for the 400,000-ton water, CMWC had to slash the production of Factory 2 and Factory 5, which had a daily production of 230,000 m^3 and 150,000 m^3 respectively. Their production was cut so much that they had to suspend their production for most of the time and only supplied water for 1~2 hours at peak hours as a relief (Factory B gave an even supply and was not liable to water adjustment). As much as three thirds of the water fee collected by CMWC was used for the payment of the purified water, which suddenly changed the moderately profitable CMWC into a money-losing enterprise state in the first year after Factory B was put into production. The loss was as high as RMB150 million Yuan. Even when it was subsidized as much as more than RMB 100 million Yuan by Chengdu Municipal People's Government, CMWC still could not effectively alleviate this pressure and reduce the losses incurred. In other words, the implementation of the BOT project brought two direct results: a serious oversupply of water and huge losses for CMWC.

5. Appraisals on the Project from Parties Concerned

The successful bid invitation and bidding of the BOT Project of Factory B justified that the final BOT agreement represented the interests of all parties and was a proper balance of all parties' interests (However, the interests of some interest parties including CMWC were not represented in their full extent, and, as a matter of fact, as an annex of Government it was very difficult for a waterworks company, make an independent claim of its own interest). As time brought great changes to the world, CMWC changed from an undersupply to an oversupply of water. Now, that private capital is allowed to flow into the public facility industry, what comments will the parties concerned give to the project?

Successful Exploration of Reform - Appraisal from the Governments

It is the first pilot BOT project approved by the Government in terms of the city water supply infrastructure, which is a significant breakthrough in the diversification reform of the investment subjects of China's large-scale water supply enterprises. Meanwhile, it plays an important role for the adjustment of the foreign capital utilization structure and the absorption of foreign capital for the construction of city infrastructures.

At that moment, we had not built a consensus concerning marketization reform of the water supply industry. Most of the investment came from local revenues, loans and administrative fees collected, which barely sufficed. The public administrative fees became more and more difficult to meet in face of the increasing demand for investment in the tap water industry. Chengdu suffered from a serious water shortage at that time and was in a sore need of funds for the 4th phase work of No.6 Waterworks due to the following reasons: 1) funds from Overseas Economic Cooperation Facility (OECF) were not granted; 2) no loans were approved by banks; 3) the water supply networks were still totally closed to private investment. Under such a context, in 1996, when Chengdu Municipal People's Government was informed that the country was starting to establish BOT pilot projects, it immediately applied to list the Factory B of No.6 Waterworks project as one of them. It was likely a necessary choice in those days (As a matter of fact, there were only very limited alternatives left for Chengdu Municipal People's Government).

After the pilot run of BOT financing and franchise operation in Chengdu, BOT became one of the main investment and financing methods used among the water industry in provinces of west China. More than 20 cities from the west followed suit and introduced foreign funds in form of BOT for their city water supply and sewage disposal. The BOT mode has helped to bring advanced technology, management and service concept to China and meanwhile, has improved the water quality and services as well as alleviating the pressure on water supply.

Typical Political Achievement Project - Appraisal from CMWC

The project is utterly a "political achievement project", which is only successful in respect of financing. It is very harmful to the existing, and even future development of the water supply industry of Chengdu.

Chengdu No.6 Waterworks is the largest gravity flow water company in Chengdu. By making use of the natural slope of the Chengdu Plain and the nature of Dujiangyan reach of Yangtze River, the water is drawn by gravity method from Xuyan River and Baitiao River, whose upper reaches are less than 2 km far away from the project. The project uses the water from Xuyan River generally and shifts to water from the Baitiao River when the former is not available (the Dujiangyan project was built as early as 2000 years ago, yet it has to been repaired every year. It takes one month to repair one single river way. But the Chengdu No.6 Waterworks is located in the central part of the rivers, and it can switch to Baitiao River with very little costs when Xuyan River is in preparation). The purified water, without using any power, was sent to the city water supply pipelines by leveraging the drop height of 60 meters, so the costs are dramatically reduced.

Under such conditions, Chengdu Municipal People's Government made quite a few concessions during its negotiations with Vivendi. Though the Bureau of Public Utilities, local Water Company and some other units organized an Office of the Leading Group,

which together with an expert panel took part in the negotiations. The Chinese party's eagerness to utilize foreign funds and launch the first BOT project for their own political achievements gave Vivendi every reason to stand firmly on their ground. Vivendi resisted the Chinese party's requirements, even when they were specified by the state policies. For example, in China the thickness of water piping is generally 18mm , but the French company insisted it be 16mm. With a total length of 27 km, the reduced thickness amounted to a reduction of dozens of millions in costs. But the local government still accepted it in defiance of objections from CMWC and the Expert Panel. In addition, the local government even agreed that the water resource fee be paid by CMWC instead of Factory B of No. 6 Waterworks. Factory B was only required to pay the income tax and all the other expenses were paid by CMWC. As such it is rather a preferential contract for Vivendi.

According to the relevant persons from CMWC, the biggest problem of the BOT Project of Factory B is the local government's commitment in the concession agreement stating that the water produced by Factory B should be purchased by CMWC directly at the specified price, rather than paid by users at market price, which guaranteed profits to the foreign partner and left the difficulties and risks to CMWC. When the Factory B was put into production, the situation had changed and a buyer's market has taken shape. Under this situation, Factory B still had a fixed output of 400,000 tons every day in despite of peak hours and slack hours. The water output adjustment was done by CMWC, which changed the water allocation of CMWC significantly. In order to find a solution for the 400,000-ton water input, CMWC had to slash the production of Factory 2 and Factory 5, which had a daily production of 230,000 m^3 and 150,000 m^3 respectively. Their production was cut so much that they had to suspend their production for most of the time and only supplied water for 1~2 hours at peak hours as a relief. As much as three thirds of the water fee collected by CMWC was used for the payment of the purified water, which suddenly changed the moderately profitable CMWC into a money-losing state enterprise during the first year after Factory B was put into production. The loss was as high as RMB150 million Yuan (at present, it was subsidized as much as more than RMB 100 million Yuan by Chengdu Municipal People's Government), laying a heavy burden on CMWC.

A Clear Case of Sound Cooperation -Appraisals from the Foreign Partners

In the early 90s, the overall water supply and drainage as well as wastewater disposal infrastructure in cities of China was rather weak featuring low technical characteristics, which were far from meeting the demands of development. Meanwhile, the financial revenue of local governments, loans and administrative charges collected by these governments were not enough to satisfy the investment demands in these industries. As the state's first-approved BOT pilot project of city water supply, Factory B of Chengdu No.6 Waterworks project is successful from the perspectives of project financing and project operation, because it contributes to the reform of Chinese water supply enterprises towards a diversification of main investment bodies.

After Vivendi became the successful bidder with their convincing price, it completed the construction of Factory B on schedule. During the construction, the budgets were well controlled even with high human costs and insured fixed assets. After Factory B was put into operation, it quickly gained a position as one of the leading state-of-the-art water companies in world with distinct advantages over its peers. Its basic quality standard was also higher than the Europe standard, the prevailing standard in the world. According to Vivendi, the project, in terms of the contract, is successful. The BOT contract defined the amount, prices and other terms and conditions that serve as the contents of the co-operation and fell outside the fixed return proposed in the policy of the State of Council. There were some problems in the forecasts made by the Government about the demand for water so the local government and CMWC met with some difficulties. However, some commendation should be given to Chinese party's sincerity to their foreign partner in the project.

Successful with Some Minor Flaws- Authors' Opinions

Generally speaking, the BOT project is quite successful in the opinion of the authors. The reasons are as follows: Firstly, in terms of operation processes, all the procedures including the initialization, approval, bid invitation, bidding, engagement, construction, check and acceptance, transfer and official commercial operation are well regulated. As the first pilot BOT water project approved by the State Planning Commission, (compared with the "one buyer and one seller negotiation" in China) the information is relatively open and transparent, representing a fairness of procedures. A fair process is, to some extent, more important than a fair result, as the fairness of result is hard to define, and there is no a result that is entirely fair. So that is why we often judge a fair result by its process. Secondly, in terms of the results of the public bid invitation, Chengdu Municipal People's Government got the best result of that time. The main term of the contract is the water price and the offer from the Consortium of France General Water Company and Japan Marubeni Corporation was RMB 0.96 Yuan/ton (excluding water resource fee and taxes). It is understood that the offer was RMB 0.8378 Yuan lower than that of the bidder with the third lowest price and RMB 1.10 Yuan lower than the bidder with the second lowest price. Thirdly, as far as the implementation of the contract, Chengdu Municipal People's Government adhered to the contract by subsidizing CMWC when the latter was not financially competent. Among the frequent breach of contracts by other local governments, Chengdu Municipal People's Government is due for credit because of its efforts to honor contracts, keep its promises and stick up for the government's basic credibility (whether the contract is flawless is another topic).

Certainly, the overall success does not suggest the project is flawless. According to the critics, the predominant problems that surfaced are as follows: 1) there are some deviations over water supply forecasts; 2) the implementation of the project led to huge losses for CMWC; 3) too many concessions were made by the government to the foreign investor, e.g., non-compliance with China's technical criterion, agreement with the foreign partner's requirement of an even water supply.

However, we can view these problems in different angles. To begin with, the forecast of water demand could only be made based on the prevailing facts and an accurate prediction of today's situation was quite unfeasible. The decision-maker decided to construct Factory B and Factory C one by one (The water supply pipes can support the production of future Factory C in consideration of cost saving), which represented some sense of rationalization and caution. In addition, the decision-making risks are two-way. As to the infrastructure project that might stunt economic development, decision failure is most risky as the bottlenecks of the infrastructure may restrict the development of local economy, leading to several years' delay of development. The national power shortage which begun from last year is a good example of this.

Secondly, reasons for the huge loss of CMWC are very complicated and should not be attributed only to the project itself. It involves the system of the whole industry and its financial system, which will be further discussed later.

Thirdly, at the time, the promotion of reforms in the purification industry by introducing foreign funds was a rational strategy. Although, many managerial personnel voiced their opinions that, if granted the same policies, Chinese management would run the project as efficiently as their foreign counterparts, there was no getting away from the facts that without the entry of foreign funds there was insufficient motivation to stage reforms, and that waterworks companies are unable to shake off the strict control and intervention from local government. This explains why the strategy adopted was a foreign-fund-driven strategy.

As for the foreign investor is not liable for the production adjustment in peak hours by even water supply, on the side of foreign investors, if not officially specified in the contract, it is given no cause for more criticism because it is an enterprises' nature to maximize its profits; on the side of Chengdu Municipal People's Government, the discussion is two-way communication and it is commonplace and is within its authority to make certain concessions. But there is something that deserves our attention, if it imposes a material influence on the cost, it should be included in the terms and conditions of the bidding invitation. Otherwise, it should be regarded as a careless mistake during the formulation of bid invitation documents (which is connected with the design maturity of the bid invitation documents and leave much space for further negotiation).

Last but not least, whether the China's technical specifications are mandatory (the disputes concerning the thickness of 27 km-long water pipes). If we have specific design or technical specifications in China, which are accumulations of expertise and experiences of relevant fields and have been confirmed by China's competent authorities, they are critical to guarantee the projects' quality. However there are discussions questioning whether the existing specifications are too conservative and whether the enforcement will lead to wasted investment (especially in the field of sewage disposal). The discussion is undoubtedly necessary, but the existing specifications shall still be obeyed before they are modified or updated officially. All projects are liable to these specifications, otherwise the

supervision and management on the safety of projects may have no criterion to follow.

6. Discussion about Several Key Issues

Now we will conduct a further discussion about some key issues, which appear frequently in the marketization of city water supply and sewage disposal industries and some of their commonalities:

6.1 Matching of Financial Model and Cash Flow

The implementation of No.6 Waterworks project resulted in a huge loss for CMWC, which is the main reason why the BOT project is subject to criticism. In view of this, it is necessary to give a detailed analysis of its model and its problems.

The losses of Factory B of No.6 Waterworks pose two issues. Firstly, whether Factory B of No.6 Waterworks should have been built (which has been analysed in the above paragraphs); secondly, whether BOT was the right model for Factory B. Thereinafter, we compare and analyze the mode of construction with CMWC' own loans with the BOT mode. (This information is partly from the *Introduction and Enlightenment of Construction of Factory B of Chengdu No.6 Waterworks by BOT* by He Weihua, a senior chief engineer from CMWC).

6.1.1 If Factory B of Chengdu No.6 Waterworks is constructed by BOT, CMWC shall pay the project company for water and water resource.

Appraisal of the water price payable (providing the water is paid according to the agreed prevailing price of the current year in the contract and no adjustment factors are considered): RMB 3.16547 billion Yuan

Purchase Costs for Purified Water by CMWC in Concession Period

(Unit price: 10 thousand)

Year	3rd	4th	5th	6th	7th	8th	9th	10th	11th	12th	13th	14th	15th	16th	17th	18th
Price	0. 96	1. 01	1. 12	1. 2	1. 28	1. 37	1. 4	1. 48	1. 51	1. 53	1. 54	1. 54	1. 55	1. 55	1. 56	1. 56
Fee paid	7027	14746	16352	17520	18688	20002	20440	21608	22046	22338	22484	22484	22630	22630	22776	22776

Appraisal of the water resource price payable (calculated by 0.2 Yuan/m^3): 0.2×40×365×15.5= RMB 452000000 Yuan

6.1.2 Supposing that the Factory is built by their own loans, the waterworks shall pay the interest and normal operation costs as well as the principal.

Appraisal of principal and its interest: in January 1997, when the State Planning Commission approved the project, the exchange rate of USD was 827.00 and the loan interest was 8.0%, so the total repayment sum for a 18-year loan, would be (106.5+106.47) million×8.27=RMB1.761 billion. (See details hereinafter)

Interest Trial Balance

Unit price: RMB10 thousand Yuan

Principal balance	10650	10650	10650	10650	10650	10650	10650	9762	8874	7986	7098	6210	5322	4434	3546	2658	1770	882	10650
Interest payable	852	852	852	852	852	852	852	781	709.9	638.9	567.8	496.8	425.8	354.7	283.7	212.6	141.6	70.56	10647

Appraisal of operation costs (refer to Factory A of Chengdu No.6 Waterworks): the comprehensive unit costs including the depreciation of water supply pipes and water resource fee is 0.46 Yuan/m^3. In order to make an equivalent comparison with that of BOT, the comprehensive unit costs of Factory A is 0.30 Yuan/m^3 if the depreciation is neglected. According to its appraisals over the 15.5 years, its total costs are 0.30×40×15.5×=RMB 678.9 million.

6.1.3 According to the said calculations, the total expenses for BOT mode, under a static comparison, are RMB3.618 billion (3.16547+4.526) Yuan while total expenses for the loan method are RMB 2.44 billion (1.761+6.789) billion. That is to say, more expenses are required under the BOT mode, to a total of RMB1.178 billion.

6.1.4 In case of dynamic comparison (cash discount is assumed as 6%,), the total sum of water fee and water resource fee are RMB 2.06 billion.

Cash Discount of Water Fee Payable, Water Resource Fee Payable

Unit price: 10 thousand

Year	3rd	4th	5th	6th	7th	8th	9th	10th	11th	12th	13th	14th	15th	16th	17th	18th
Water fee	7027	14746	16352	17520	18688	20002	20440	21608	22046	22338	22484	22484	22630	22630	22776	22776
Water resource fe	1464	2920	2920	2920	2920	2920	2920	2920	2920	2920	2920	2920	2920	2920	2920	2920
Total	8491	17666	19272	20440	21608	22922	23360	24528	24966	25258	25404	25404	25550	25550	25696	25696
Cash disount rate	1.124	1. 191	1. 262	1. 338	1. 419	1. 504	1. 594	1. 689	1. 791	1. 898	2. 012	2. 133	2. 261	2. 397	2. 54	2. 693
Cash disount	7557	14833	15265	15274	15233	15244	14656	14518	13941	13306	12625	11910	11301	10661	10115	9543

The total amount of principal, interest, costs and expenses under the loan method is RMB1.357 billion Yuan.

Cash Discount of the Principal, Interest and Costs and Expenses Payable

Unit price: 10 thousand

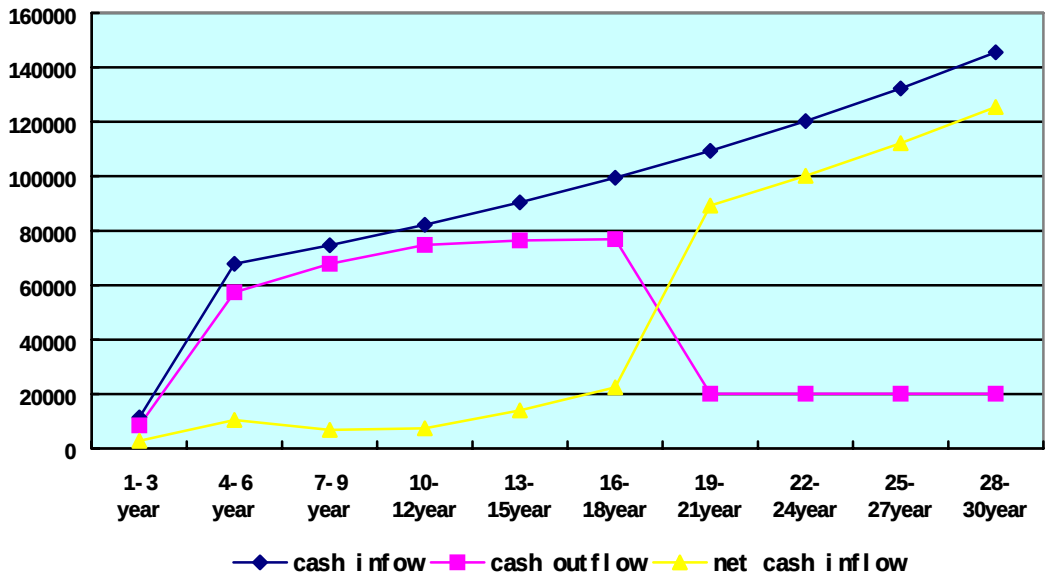
Year	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	11th	12th	13th	14th	15th	16th	17th	18th
Principal	0	0	0	0	0	0	7344	7344	7344	7344	7344	7344	7344	7344	7344	7344	7344	7294
Interest	7046	7046	7046	7046	7046	7046	7046	6459	5871	5284	4696	4109	3521	2934	2346	1759	1171	583. 5
Costs			1464	2920	2920	2920	2920	2920	2920	2920	2920	2920	2920	2920	2920	2920	2920	2920
Total	7046	7046	8510	9966	9966	9966	17310	16722	16135	15547	14960	14372	13785	13197	12610	12022	11435	10798
Cash discount rate	1	1. 06	1. 124	1. 191	1. 262	1. 338	1. 419	1. 504	1. 594	1. 689	1. 791	1. 898	2. 012	2. 133	2. 261	2. 397	2. 54	2. 693
Cash disount	7046	6647. 2	7574	8368	7894	7447	12203	11121	10123	9202	8353	7571	6851	6187	5577	5016	4501	4010

More expenses are required under the BOT mode (dynamic comparison), which equals to RMB 700 million (RMB 2.06-1.357 billion Yuan).

We can see from the said dynamic comparison, compared with the use of internal loans, the costs by BOT financing is about 50% higher. In addition, the following factors should be taken into consideration: 1) the huge pre-operating expenses of BOT; 2) BOT project is liable for the full amount of insurance expenses (which is not covered in the Factory A); 3) the water supply facilities and pipes of Factory B of No.6 Waterworks are designed for a daily capacity of 800 thousand tons (i.e., part of expenses is for a future Factory C of No. 6 Waterworks); 4) the overseas financing costs are relatively expensive, including the operation costs concerning interest lockup, swaps, hedging, which helps to avoid interest risks; 5) Factory B should, except for recovering its principals and interests, consider foreign investor’s rational earnings. If all the said factors are being considered, the costs shall be still acceptable.

To get the record straight, the said measure and calculation are based on the operation period of 11.5 years. As a matter of fact, the life for a city's water supply project should be 35 years or above. In other words, since the transfer of the project when the operation period is due, the CMWC (or Chengdu Municipal People's Government) can still profit from the project for nearly 20 years. (Herein of, the operation period of the project company is only 15.5 years, namely, the project company is committed to recover its investments and secure expected earnings, which makes up the key part of the higher price). According to the price for end users nowadays, the water fee paid by the users undoubtedly can't offset the procurement fee for the purified water. However, after the project transfer is concluded, the costs pressure are expected to drop substantially and in addition, it is assumed that the water fee will climb over time. In case Chengdu Municipal People's Government takes further measures, i.e. imposing restrictions on the water supply by prohibiting citizens from using their own wells, water sales can be promoted. In my opinion, the project enjoys a promising future and it is advisable on the whole. See the following graph:

Cashflow Chart of Waterworks BOT Project over 30 Years



Notes:

Cash inflow refers to the water fee received by CMWC (the water sold is calculated by 400,000 ton/day at the prevailing comprehensive final price of RMB 1.55Yuan/ton, which is expected to increase by 10% every 3 years from the 7th year until the price of 3.32 Yuan/ton in the 28th year. This estimate is relatively conservative in view of the general trend for the whole nation, excluding sewage disposal fee);

Cash outflow indicates the fee paid for purified water and water resource, excluding taxes and sales

expenses during the BOT period and refers to the water production costs after the project's transfer calculated by the costs of Factory A of No.6 Waterworks (including the depreciation).

According to the said analysis, if the necessary sales expenses, taxes, etc. are taken into consideration, the cash flow can't balance itself out (the net cash inflow is negative) over the 15.5-year BOT period, but the later stage can see a sound cash flow. So the financial model in this case is not flawless because of the imbalance of the designed cash flow over the whole project and ill match of cash inflow and outflow, which result in a payment problem. As for a company, this is commonplace when it comes to deficit spending. But there are some problems when it comes to conservative spending. In view of this, we suggest that we may adopt some funding strategy, namely loans, bonds, etc. to transfer the later cash flow to current stage and erase the cash flow problems.

6.2 Inconsistence in Marketization of CMWC and Project Company

The negative comments come mainly from CMWC. This is simply because the CMWC, as a exclusive purchase agent designated by the local government to buy the water from Factory B (including paying water resource fee and all the taxes excluding income tax), bears all the costs and risks for the project. As said thereinbefore, Chengdu Municipal People's Government, the local government, which is committed to promoting their economy and multiplying their local interests, has the right to adopt the BOT method for Factory B project after balanced consideration of profits and risks. But the problem lies in that the resultant risks should be borne by Chengdu Municipal People's Government rather than the CMWC. The underlined reason is in the lack of functional independence of the Government and enterprises. CMWC is, in fact, an attachment of the government, rather than a separated economic entity. Under such circumstances, the level of marketization of CMWC and the project company is totally different. Similar problems are common in many water markets in China. However, if CMWC itself were a joint venture enterprise or private company, the company itself would not like to, and the government would not allow the company to bear such risks alone.

The true reasons of the problems now come up to the surface: there is no clear line separating the functions of the government and the enterprises and CMWC had not become an independently accountable body; secondly, the project company has to recover all the investments made for the 35-year project within 15.5 years and expected to obtain profits; thirdly, twists and payment problems resulted from the poorly-designed financial model.

6.3 Fixed Return

In recent years, further reforms and the opening up of the water industry have posed some problems during the marketization, including exorbitant fixed returns offered to foreign investors. The usual pattern is that the successive government (or its designated enterprise)

fails to comply with the agreed contract because of the serious financial pressure, thus triggering some disputes, which seriously harm the local government's credit status. A reconsideration of the problems reveals anticipation discrepancy and incompetent negotiation ability among others, as well as the problematic of local officers pursuing prestige projects for political gains. Generally this kind of the problems is settled by project repurchase. Some of them have appealed to legal action. Some projects are still suspended for settlement even until now. The repurchase arrangements are made in compliance with the policies issued by the State of the Council: *Circular on Strengthening the Management of Foreign Exchange and Foreign Loans and Launching Foreign Exchange and Foreign Loans Inspection (Guo Fa [1998] No. 31), Circular on Further Strengthening and Improving Foreign Exchange Management (Guo Fa [2001] No. 10)* and *Circular on Proper Settlement of Existing Guarantees on Foreign Investors' Fixed Return Projects (Guo Ban Fa* [2002] *No.43)*. Hence, it is necessary to give a further discussion on fixed return.

To begin with, what is fixed return? A clear definition can't be found in the said documents. There are some indirect descriptions: (1) According to Guo Fa [1998] No.31 document, "strictly regulate the foreign investment introductions and rectify and avoid borrowing foreign loans in any forms, including infringing the principle of "risk sharing" by offering foreign investors a fixed return. The introduction of foreign capital should comply with the principle of "risk, earning and loss sharing". The Chinese party neglects the profitability and market conditions and offers their partners a high price for their products or charging level, or other income to guarantee fixed return for the foreign party, which is borrowing funds legally, and this should be strictly prevented and rectified." "Fixed return" therein of contains three aspects: it infringes the principle as benefits and risks sharing in terms of its way of cooperation. Secondly, the source of the return goes beyond the earnings scope of the project itself. Thirdly, Chinese parties make commitments on the price or charging level of the products in the way of return.(2)According to Guo Fa [2001] No.10 document, "new approval of the projects which guarantee foreign investors with fixed return is strictly prohibited. Offering foreign investors a fixed return is prohibited as a violation against state laws. The return should not be defined according to the funds invested when it comes to the Sino-foreign joint venture & joint cooperation enterprises contract. The recently made offers which infringe the "The newly-approved projects that infringe the said policy should be rectified and persons in charge involved in the said activity shall be liable to legal action and leaders involved shall also be punished in compliance with the law. As for the existing over-offered projects, the State Planning Commission shall play a leading role and work out implementing opinions with the Minister of Foreign Trade and Economic Cooperation and Foreign Exchange Bureau and submit them to the State Council." According to the policy, definition of the return according to funds invested is defined as fixed return and the existing fixed return projects shall be "liquidated". (3) Guo Ban Fa [2002] No.43 document concludes that there are three kinds of fixed return projects and different solution are given to different projects. Firstly, as for "the project that pays the fixed return on the foreign investment with the project's own profits, both parties shall rectify the agreement based on mutual discussion, replace the fixed return with legitimate

profit distribution including recovering investment before the maturity date of the existing agreement." Secondly, as for "the project that suffers loss or profit deficiency and has paid part of investment return or major part of return to its foreign partner with other funds and the project that has not paid the offered return to the foreign investor, Chinese partner may, in view of their own situations, adopt 'rectification', 'purchase', 'transfer', 'cancellation'." Thirdly, "the projects that enable foreign partner to realize expected return through power purchase agreement are not included and they shall be handled step by step with the help of the overall solution of electricity system reform and related supporting policy". From the said documents, we can see that the State Council's definition about the fixed return is inconsistent, which confused the local government. As to a specific water project, it is difficult to reach consensus concerning whether the purchasing price of the purified water and water amount should fall into the scope of fixed return.

Secondly, is fixed return necessarily bad? In our opinion, as a financing mode, the fixed return cannot be defined as good or bad. According to general principles, the return is relatively low because of its risk-free or lower risk nature. For example, the bank deposits, treasure bonds, etc., all bear a fixed return. On the contrary, some risky non-fixed return may likely bear a higher profit accordingly. As for water projects, the fixed return should not be banned without giving further thought to the matter. Instead, we should try to avoid exorbitant fixed returns. The key to restrain the surging return is transparent, fair procedures, which can be achieved by choosing investors and operators through public bid invitation and bidding. In addition, the whole process should undergo supervision from society.

Thirdly, if the price and amounts are not allowed to be defined in the contract, what alternative solution is there? Prior to 2002, overseas funds and private funds couldn't find any access to city water supply networks (even today, there are some restrictions imposed on the water supply network investment, the equities of foreign investors and private investors are not permitted to exceed 50%). The capital can only be used for waterworks and in addition, they have only one customer (namely local waterworks company), however, the water dispatch is exclusively excised by waterworks company. If the water price and the amount of water are not defined in the contract, the foreign investors' right can't be guaranteed. Taking Factory B of Chengdu No. 6 Waterworks for example, if the water price and water quantity are not defined in the contract, the water company is in a position to refuse to purchase water from Factory B. In our opinion, rather than fixed return to define the water price and quantity in the contract, this should be purely a commercial activity.

Fourth, is the State Council entitled to dispose of fixed return projects? The key point is whether the existing fixed return projects are legal? If they were legally concluded, the contract law should protect them and the document from the State Council is not in a position to deter it. The fact that contracts were required to be modified by random policy may be suspected to infringe the contract law.

In a word, the disposal of fixed return project can't weed out the root of the problem and can't generate a fair result. Furthermore, it may do harm to the credit of the government at all levels. What matters most are as follows: 1) the government should become a rational decision maker and water companies should become rational market players (It will be discussed further); 2) we should attach great importance to a transparent and fair process over marketization.

6.4 Decision-making Capability and Capability of Handling a Risky Decision

A water supply construction surplus has occurred in quite a few cities. Too optimistic estimates of water demand have naturally invited criticisms concerning the incompetence of local government or their cravings for greatness and success. As a matter of fact, there are some underlying systemic reasons for this due to the transition from a planned economy to a market economy. Firstly, there are uncertainties due to the radical changes of the economy and even quite a few economists can't understand the economic performance. As a result, it is quite natural that there are some mistakes on economic estimates. Secondly, the existing policies encourage the local governments to compete for resources. Competition for projects and loans in defiance of the maximized profits that the project can bring about, to some extent helps in increasing the local benefits. So it is more than the incompetence of local governments.

Let's move on to the topic of decision-making risks. As for a specific project, the government has the right to decide whether to launch it or not. Both decisions may generate risks if we choose to launch the project or not because of volatile market condition. Both may lead to the failure of expected profits or loss of profitable opportunities. So the decision-making involves a two-way risk. When it comes to the project of fundamental importance, which may restrict the development of the economy, the losses can be rather huge because several years' development opportunities may be lost if a project is not launched. The nation-wide electricity shortage, which happened this year, is a good example. So in this respect, the losses of CMWC in this case are small compared with the extent of losses suffered from deficiencies of fundamental facilities. Hence, the problems which exist here are the rationality in decision-making and whether the waterworks company is solely liable for the losses and further, how much the losses are. The two questions have been analyzed hereinbefore.

7. Relevant Suggestions

According to the analysis and discussion hereinbefore, our suggestion is as follows: we should further promote the marketization with an eye to the market and foster main market bodies and rational investors; for Government decision, a more open, transparent and fair system should be formed to facilitate the rational and scientific decision making. Meanwhile, Government should set up relevant systems that ensure risk compensation.

7.1 Further Pushing forward the Marketization, Fostering market main bodies and Rational Investors

According to the said analysis, many problems of the projects result from deficiencies in marketization alone, rather than from the marketization itself, and because most market bodies do not necessarily act as rational investors. In this case (including some cases from other provinces, autonomous regions and municipal cities), the water supply companies' failure to express or find no access to express their claim of interest is one of the reasons. There is another point: whether both foreign investment and private investment are rational. So far, there have also been some irrational investments from the foreign investors and private investors, who take advantage of their competence and information to seek exorbitant returns. The unfair contract fuels local government's incentive to breach the contracts. Concerning the Government's credit, investors raise their prices once more, thus a vicious cycle takes its shape. In a long term, nobody can obtain any yields from the contorted investment method. Some international giants have a clear understanding of the situation, they chose to retreat from the market and wait for a comeback at a right time or reconstruct their strategy and advocate a shift from the transfer of technology and management to the pursuit of rational return.

Therefore, it is suggested that we should further accelerate the industrial reform and separate the government from enterprise through ownership diversification so as to foster independent market main bodies and turn enterprises into rational investors who seek to maximize their own benefits. Apart from that, the state should consider to break the regional barriers at an appropriate time so that public utility enterprises can participate in competition at the national level, which will bring about a unified national market.

7.2 Making Decision-making Procedures More Public, More Transparent and More Fair and Promoting the Government to Make Rational and Scientific Decisions

As discussed above, it is difficult to judge whether a decision is good or bad, right or wrong, so, an open, transparent and fair decision-making process which is open to the supervision from the public really makes senses in terms of promoting a rational, scientific decision making.

A scientific decision-making mechanism should include rational risk assessment and a competition system to avoid any negative influence on enterprises' business.

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