

USING MARKET MECHANISM ESTABLISH SEWAGE TREATMENT SYSTEM

1, Introduction

Weihai is a fledging city, located at the east tip of Shandong Peninsula, it is surrounded by sea on three sides, facing Liaoning Peninsula, Korea Peninsula and Japan Archipelago to the north and east respectively. Under its jurisdiction, there are Rongcheng City, Wendeng City, Rushan City and Huancui District. Weihai covers a total area of 5,436 km², with a population of 2.47 million. The central urban area covers 44 km², with a population of 300,000.

Weihai government has attached great importance on environmental protection. We hold the sustainable development concept of "Never sacrifice the environment for economic development". We successfully achieved the "Win-Win" results concerning for both economic development and environment protection. In the last 15 years, the GDP of Weihai has taken an annual increase of 18.2% on average, and it reached 62.7 billion yuan in 2001 with averagely 3,069 USD per capita. Weihai was evaluated as one of the top 50 cities with comprehensive economic power, and one of the top 40 cities with best investment environment in China. The developed urban area of Weihai enlarged 2.4 times. Its urban population increased 5.6 times and economic inventory boosted 17.3 times, at the same time, its comprehensive indexes of urban environment quality have been kept the first class in China. Weihai became the first "State Sanitary City", the first group of "State Garden City", "China Excellent Tourist City", "China's Model City on Environmental Protection" and was twice appraised as the Best Practice for Improving Human Being's Settlement by UN. Now, all the three cities under its jurisdiction got the award of "China's Model City on Environmental Protection". Weihai is becoming the number one group of "China's Model City on Environmental Protection".

Shandong peninsula is a water shortage area, the annual precipitation in Weihai is 700mm, and no external water come from. The length of coastline in Weihai is 985km, aquatic farms is a core industry. The water quality along the coastline directly affects the quality and quantity of the aquatic products. How to preserve the rare water resources and protect the ocean water is always a tough task for Weihai government. From 1982, Weihai government realized that using the centre treatment method is the best way to deal with the water pollution, both from the environmental and economic aspect. Since then, Weihai has invested 262 million yuan RMB, established 6 sewage treatment plants, total capacity is 215,000 T/d, the sewage treatment rate is 60%. Except the house that the sewage collection pipe can not reach, most the sewage has been treated properly before discharge into the nature water body. Though the population, the GDP and the developed urban area in Weihai have developed very fast, but the water quality still can meet the national standard.

Name	Capacity (T/d)	Total investment (million yuan RMB)	Treatment method	Time begin operation
No.1 Sewage Treatment Plant	15,000	12	Secondly treatment method	1985
No.2 Sewage Treatment Plant	80,000	120	Ocean outfall	1997
No.3 Sewage Treatment Plant	10,000	40	OBAI oxidation channel	2000
Rongcheng Sewage treatment plant	50,000	20	Wetland	1997
Wendeng Sewage treatment plant	40,000	50	OBAL oxidation channel	1999
Rushan Sewage treatment plant	20,000	20	Oxidation channel	2001
Total	215,000	262		

The total investment for the sewage treatment system in Weihai is 262 million yuan RMB, that equal 0.46% of GDP of 2000; the running cost of the system is 50 million yuan RMB annually, that equal 1.3% of the local government revenue of 2000. It is a haven burden! Where this money comes from? How can the local government support the running cost?

2, The past steps of the sewage treatment system financing

The financing of the sewage treatment system in Weihai is just like the economic system reform in China, has experienced from planning economy to market economy, but a little bit earlier than the nationwide.

In 1982, when Weihai began to prepare the No. 1 sewage treatment plant, that also the No.1 sewage treatment plant in Shandong Province. In whole China, you also can use your figure to calculate the number of the sewage treatment plants existed. In that time, the nation just think about the centre planning economic system should be reformed, but has no concrete action. Almost all the enterprises were owned by the government, the enterprises just produce what the government let them to do, all the expense comes from the government revenue, include the salary, all the profit should hand over to the government if there was. In this case, of course the whole investment of the sewage treatment plant should come from the government revenue. In 1985, when the No. 1 sewage treatment plant began to operate, the running cost also allocated from the government revenue.

In 1992, Weihai government began to construct No.2 sewage treatment plant. During that time, the economic reform in China has got some achievement, many foreign investors came China, joint venture or foreigner owned company were every where, private company become an important part of the economy. In this case, Weihai government think we can not let the foreigners and private take all the profit away, left the environmental problem to the local government. They should pay for the environmental pollution they caused. And during that time, the population, the urban area and economy developed very fast, the infrastructure construction need a lot of money, the government can't support it. So the local government asked the provincial government to permit them to collect some sewage treatment plant construction fee from the enterprises. In 1995, the Shandong provincial government gave the permission to Weihai, according the daily wastewater discharge volume of the enterprises, collect 700 yuan per ton. This is the first permission in Shandong Province though the collected fee can only cover 40% of the really investment.

In 1994, Weihai government found the running cost of the sewage treatment system is a big burden and also not reasonable for the government to take whole responsibility, issued a regulation, collect some sewage treatment fee from the enterprises, not for the residents, 0.15 yuan per ton. That only covers 1/4 of the really cost, but it is a breakthrough.

In 2000, Weihai government revised the regulation for sewage treatment fee collection, raised the fee to 0.40 yuan per ton for enterprises, and expended it to residents, 0.20 yuan per ton. This is also the first case in Shandong Province. Now in Weihai, the running cost of sewage treatment is around 0.70 yuan, the government still should subsidize a lot of money to keep the sewage treatment system running.

3, What we are doing now

In recent years, the economic reform in China goes very fast, market mechanism is not only spread in industry section, but also be used in urban infrastructure construction.

In 2000, the Shandong provincial government issued a regulation, let all cities to increase the water supply fee properly, make the public treasuring the water, using the water efficiently, in the same time, accumulate some money for further development. Let all cities levy sewage treatment fee, at beginning, the level can be 1/3 of the water supply fee, gradually raise it to make the sewage treatment plants can support themselves. The government should take the sewage treatment plant as an enterprise, using market mechanism to administrate them.

In September 2002, The National Planning Ministry, The National Construction Ministry, The National Environmental Protection Administration, jointly issued a regulation, open all the environmental infrastructure to the market, any private company, foreigners can invest in the sewage treatment plant and the solid waste treatment facilities' construction, to meet the fast increased demand of the environmental protection.

From 2000, Weihai government was searching using the market mechanism to develop the environmental infrastructure system. My mayor said publicly, welcome all the private and foreign company to invest in this field, the new project can use BOT method, the existed project can use TOT method, you can monopoly own it, or you can jointly own it, you can choose whatever you like. In this case, many foreign and private company come to Weihai, try to catch this opportunity, some made progress.

The first breakthrough is a medical solid waste incinerator project in the end of 2001. Before that time, the medical solid waste was incinerated by the hospital individually, because the outdated technique, close to the residents, the air pollution cause a lot of complains. After a series of discussion, the government decided to allocate a piece of land, invest 0.5million yuan RMB for the equipment, issued a regulation to

collect treatment fee from hospitals, 2 yuan per bed per day, let a stock company run. The medical solid waste problem was solved, the government do not need to invest any more, just let the stock company to develop by themselves to meet the more demand. According my knowledge, that is the No.1 in China.

There is an undergoing project, the second phase of Wendeng sewage treatment plant. Wendeng city is under the administration of Weihai municipal government. The population in urban area is 200 thousands. In 2000, they constructed a sewage treatment plant, using the secondary treatment method. Its capacity is 40,000 tons per day. Total investment is 50 m yuan. Along with the rapid development of urban and industry, the volume of the discharged wastewater increased very fast these years, now the treatment plant is full, some time is over loaded, the treated water is hard to meet the national discharge standard. The people lived along the down stream of the river jointly protest the pollution for their drinking water and farming. The plant needs to construct the second phase. There is a tannery in the urban area. It is a limited company, has 1000 workers, the processing capacity is more than 3 m pieces of pig's hide annually. Its financial benefit is good. In 2001, the profit and tax reached 40 m yuan, No 1 in Chinese hide industry. But it is a big water pollution resource, discharge 4000 tons wastewater per day. The concentration of pollutants is high, COD 2500mg/L, BOD 1000mg/L, SS 1500mg/L. In 1998, the company invested 10 m yuan constructed a secondary treatment plant, but because it too close to the nearby residents, they claim the heavy odor and noise strongly. The treatment plant can't run properly. The tannery needs to construct a treatment plant in another place. Trough negotiation, the local government, the sewage treatment plant and the tannery reached a general agreement: (1).The sewage treatment plant and the tannery establish a joint venture to construct the second phase of the sewage treatment plant. (2).The total investment of the second phase of the sewage treatment plant is about 40 m yuan. The sewage treatment plant takes the land as investment. The tannery is responsible for the construction and equipment investment. (3). According the cost, plus a reasonable profit, the government, the joint venture, the public and other stake holders jointly establish a treatment fee collection method and level. (4). After 15 years, the joint venture transfer the second phase of the sewage treatment plant to the sewage treatment plant.

Now UN ESCAP, IGES approved to take Weihai sewage treatment system as a pilot project, the second phase of Wendeng sewage treatment plant is the starting point, to help Weihai establish a new public-private partnership for urban wastewater treatment.

4, The challenges we are facing

Using the market mechanism, establish a new public-private partnership for urban wastewater treatment, we are still facing some challenge:

(1), The conception change. In China, usually we say, the economy depends on the market, the environmental protection depends on the government. Now, the government realized that they can't cover everything for environmental protection, in some area also must use the market mechanism. This change takes more than ten years after China transfer to the market economy. It will be more difficult for the public and private to change the conception. Because this change can save some money for the government, but will cost more money for the public and private. So we need to increase the environmental awareness, let them know every body should pay for its pollution.

(2), The law establishment. For normal economic activities, China has the law to protect the investors' rights and interests. But for the BOT and TOT, China has no proper law to protect them. And for BOT and TOT, though the contractor signed is a company or a plant, but the really boss is the local government. If there is any conflict, it is not equal for a private or foreign investor to face a government. That is why many investors are interested in this field, but very few of them have real action.

(3), Some technique problem. Because using the market mechanism to establish the sewage treatment system is a new subject, has no much success experience, there are many technique problems need to be solve. Like how much percentage of registered capital the investors should have, what is the proper time to operate then transfer, how high the profit the investors could got, how to supervision the operation, etc. We need to study, to learn, to exchange the information and experience.