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P.P.W.S.A:

Getting Riel on Water

(Full Cost Recovery: Phnom Penh's Case)

By

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The views expressed in this paper are those of the author and do not necessarily reflect the views and policies of the Asian Development Bank.

1. GENERAL INFORMATION

1.1 Phnom Penh, the Capital of the Kingdom of Cambodia

Phnom Penh, the capital of the Kingdom of Cambodia, lies at the confluence of 3 rivers; namely the mighty Mekong, Sap and the Bassac Rivers. The level and the quality of water in these rivers change with the changing of seasons.

1.2 Urbanization of Phnom Penh

The 7 districts of Phnom Penh cover a total land area of 375 km². The down town, with its 4 small districts, covers only 7.5% of the total land area, but resident by 55% of the total Phnom Penh population of over one million.

2. BACKGROUND OF PHNOM PENH WATER SUPPLY AUTHORITY

2.1 Creation

The Company of Water and Electricity, created by the French Colonizers in 1895, was the first water supply utility in Cambodia. After the independence in 1954, the Régie des Eaux was dissociated from the Company of Electricity in March 1960. After 1993, with the new government elected from the general election assisted by UNTAC (United Nation Transitory Authority in Cambodia), the Régie des Eaux still remain valid but better well known with the name of Phnom Penh Water Supply Authority (PPWSA).

2.2 The Years ...

Through the years, the Régie des Eaux expanded with the growth of the city. In 1975, the production capacity was 150,000m³/day. With a supply network of 282 km, it supplied to about 40,000 house holds. However, during the Khmer Rouge regime, from 1975 to 1979, it was out of operation. Many of its production, distribution facilities and equipment were destroyed. Most of the personnel especially qualified staffs were killed.

The water supply utility has been taken in operation again in 1979 when the evacuated people returned to the City. It was the hardest time to operate and to supply water to the consumers. It was manageable to produce only 50% of their initial capacity. The lack of funds and qualified personnel, restricted the utility to carry out its service to only a few hours a day and with a very low service pressure (0.2 bar in average). The problem was further compounded when the public took matters into their own hands and made thousands of unauthorized and illegal connections with illegal underground tanks.

3. SITUATION OF P.P.W.S.A in 1993

3.1 Existing Water Supply Facilities

PPWSA was supplying to the city **63,000m³** of water a day, secure by two-treatment plan, **Phum Prek** and **Chamkar Morn**. The distribution network consisted of about **282 km** of gray cast iron pipes ranging from **60mm** diameter to **800mm** diameter. This distribution network covered **40%** of the down town area and serving only **20%** of the total down town inhabitants. **30%** of those pipes had been laid for more then 100 years with the newest of more than **40 years**. The determination of pipes and lack of maintenance gave rise to high physical loss in the system.

3.2 Existing Institution

There was more than **500 staffs** (about **20 staffs** per **1000 connections**) working in very bad environment. The average monthly salary was about **50,000 Riel** (approx **20 USD**). Basically, the staff was under-qualified, under paid and has low motivation and work with low efficiency. Nepotism was widely practice and the morale and discipline among the workers were low. The higher management was working for self interest rather than the interest of PPWSA. They were abusing the property of PPWSA for their own interest. The **Regie des Eaux** was a very bad image for the public. The superiors did consider it as a place for punishment the bad government employees.

3.3 Commercial Situation

The number of connections was **26,881**, out of which, only **13%** were metered. This give rise to inaccurate and improper billing and actual volume of water sold was only **28%** of production, out of which, the collection ratio was only about **48%**.

There were **1,945** underground public water tanks in the down town, which filled non-stop by the water from the network for free use of community. This caused high water losses and low supply pressure (**0.2 bars in average**) as well worse of the water quality.

In 1993 alone, the number of illegal connection discovered was over **300**. Staff of PPWSA did most of these illegal connections for their own benefits. Formal application for water connections were difficult and most of the time, impossible. The going market price for illegal connection was around **1,000 USD** each.

*With all the above, it was no surprise that the **NRW in 1993** was more than **70%**. The collection of water fee was permitted in 1986. The water tariff was however much lower than the operation cost. The water rates for household and commercial were only **300 riels/m³** and **550 riels/m³** respectively. PPWSA was then operated under high financial difficulty, unable to pay electricity cost, and some time even chemical for the treatment process.*

3.4 Financial Situation

The utility was operating under heavy subsidy from the Government. The total annual income generated then only 30% of the operating expenditure. There was no financial statement, balance sheet, income statement etc... The entire assets have never been depreciated. The financial indicators were unknown, nor heard by staffs, including the top management. The utility was very poor, but certain tricky staffs were very rich.

4. REMEDAL ACTIONS

4.1 Utility Development

After the Paris Agreement in 1993, the utility received more international assistances and grant aids, namely from the Government of France, the Government of Japan, the World Bank, and the Asian Development Bank. This enabled the water utility to begin the rehabilitation of its production and distribution facilities and the training of its manpower.

a. Production System Development

Part by part, **Phum Prek** Treatment Plant, the biggest of the three water treatment plants, was rehabilitated under the assistances of France and Japan. It today capacity is **150,000 m³/day**.

Chamcar Morn Treatment Plant, the smallest, was rehabilitated and extended from 1996 to 1998 under the grant aid of the Government of France to double its initial capacity of **20,000 m³/day**.

Chhrouy Changwar Treatment Plant was rehabilitated and extended under the World Bank loan from 1999 to 2002 to a production capacity of **65,000 m³/day**.

After the rehabilitation of the two water treatment plans, **Phum Prek** and **Chamcar Morn**, and the new construction of **Chhrouy Changwar**, PPWSA has, at present, a total capacity of **235,000 m³/day**.

b. Distribution System Development

A comprehensive program to rehabilitate the distribution system was carried out from **1993 to 2001** under the assistance from World Bank, Asian Development Bank, and the Government of Japan. District by district, new pipes, ranging from **60 to 800mm** diameter have been put in place to replace the old pipes in the distribution network. This has cut down the real losses tremendously. In the same time, new distribution network is extended to cover the new area with higher water demand. In **2001**, the distribution network has covered 100% the down town.

The extension of the supply network to the sub-urban area comes then in to embankment. Now, PPWSA has a distribution network of **1,400km** of pipes ranging from **60 to 1,800 mm** diameter and is still expanding at the rate of approximately **500m** every day. This network has now covered entirely the inner city and more than **60%** of the sub-urban area.

4.2 Institutional Reforms

To counter all the negative elements and inefficiencies, the **Changing of Culture** based on **Educating, Motivating and Disciplining** among the staff has been taken place.

The first step was the restructuring of the whole organization within PPWSA. Higher managements were given more direct responsibility. More dynamic younger generations with better qualifications were promoted to higher level with more responsibilities. Inefficient 'old timers' in high position kept their position but moved into more dormant roles.

This younger generation of managers was given much training in the various skills required to run PPWSA effectively. Incentives such as higher salary (**10 times** more than before) and bonuses for good performance were introduced together with penalty for bad intentions. Managers were also taught to be responsible and the spirit of teamwork is stressed. The work responsibility of the staff was more streamlined and the number was reduced to around **550 (4 staffs per 1000 connections)**.

4.3 Commercial and Financial Development

Our ambitious target was to ensure a higher generation of revenue to cover all cost. To achieve this, 4-pronged approach were taken.

Firstly, the consumer files were revised and up dated. A consumer survey was carried out to identify the actual number of connections. It was found in **1993** that there was **12,980** documented connections were not receiving water from PPWSA while **13,901** others were receiving water but not documented. The consumer files were corrected and updated. In **1995**, the computerized billing system was introduced under the granted of the Government of France. It was completed in **1996** and helps tremendously in billing and customers management. Simultaneously, PPWSA started to install water meters on all connections. In **1996**, **85%** of

32,404 connections were with water meters. Today, all the **143,000** connections are **100%** metered. With the improvement of the water quality, the more accurate water meter Class C have replaced the less accurate Class B.

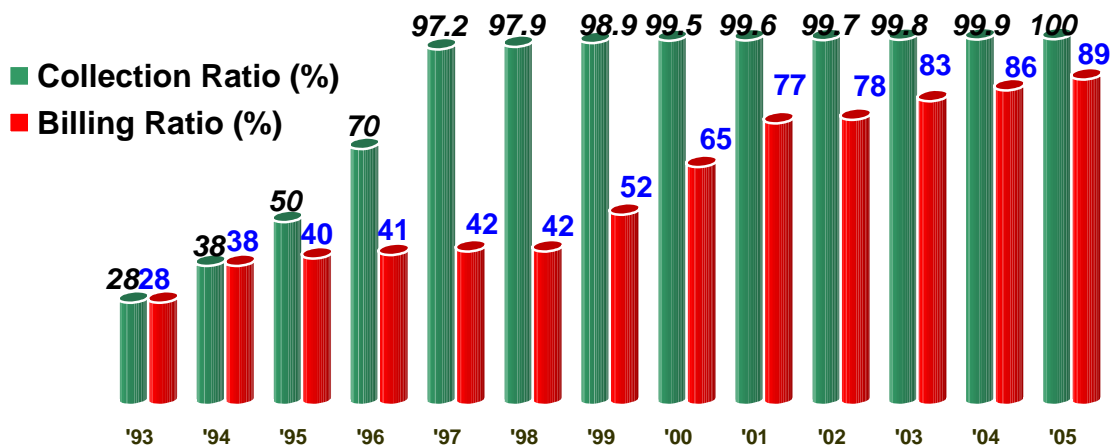
Secondly, the lower Non Revenue Water (NRW) was committed by strongly engaged to various measures.

1- Set up an inspection team to stop all illegal connections. The public was encouraged to stop the illegal activity. Incentives were given to anyone who can provide information on illegal connections. Heavy penalty was slapped on those found to be with illegal connections. Any staff of PPWSA found to be associated with the activity of illegal connections was removed immediately. As a result, the number of illegal connections dropped from **1** in a day to less than **10** in a year.

2- We also put our great concern on reducing the **Real Losses**. A repair team was organized to standby 24 hours to make proper repair immediately all leaks. PPWSA staffs and the public were encouraged to call to inform on the leakages within the system.

3- In order to better control the distribution network, a telemetric system, for better monitoring and control of water flow and pressure in the network, has been set up. As of today, PPWSA maintains a service pressure of **2.5bars** in its supply network and reaching a NRW of **10%** (February 2006).

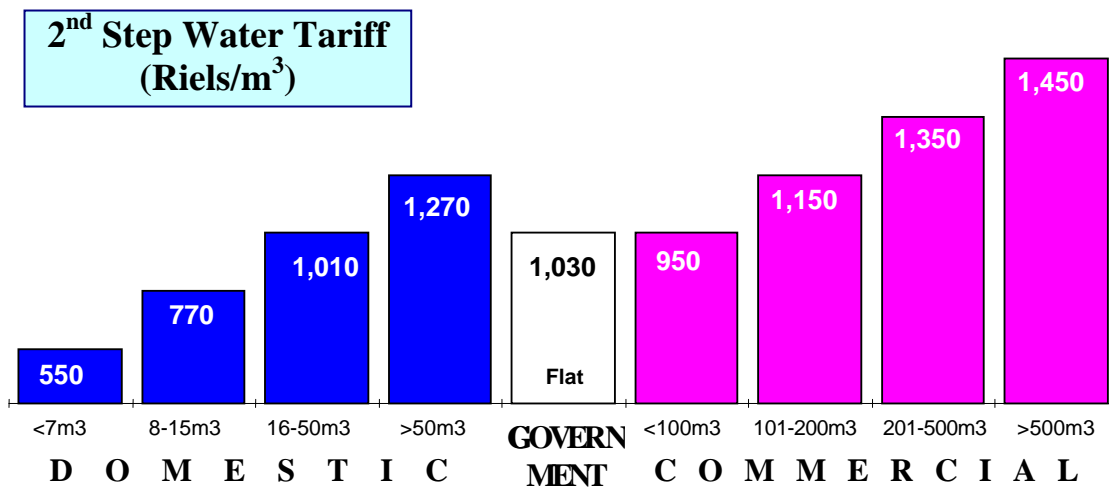
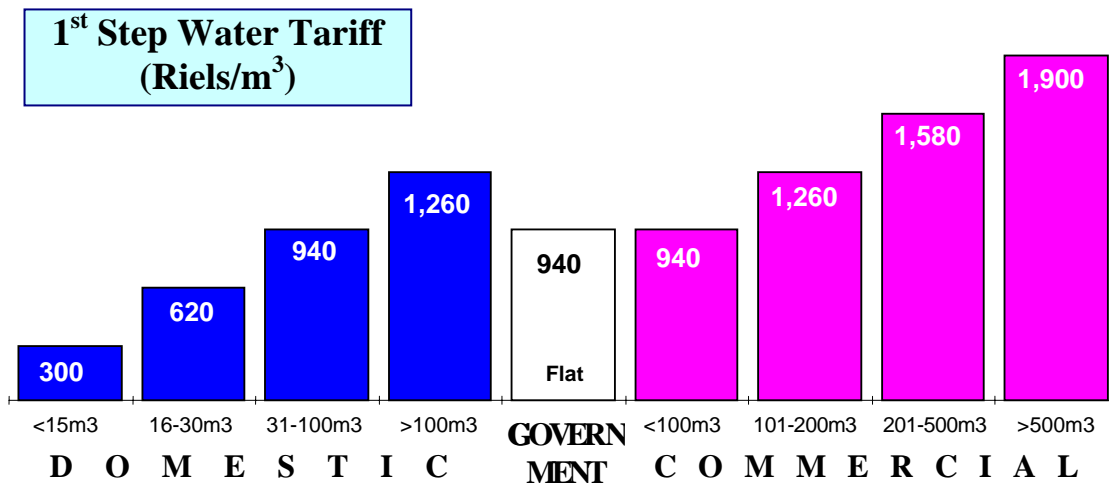
Increasing Collection Ratio and Billing Ratio, by Year



Thirdly, an effective bill collection system has been established. The water meter readers and collectors have been encouraged with incentive for good collection, but penalty for bad result. Public education, including government institutions and the top management of PPWSA, has been embarked on paying of their water bills. This was not an easy task. However,

a lot of hard work, with the strong support of the Prime Minister and the concept of **"leadership by example"**, it is able to manage to convince all the consumers to pay their bills. The collection ratio, the ratio between issued and collected bills, has improved therefore to **99%** from just **48%** in **1993**.

Fourthly, probably the most difficult task of all, we have to increase the water tariff to cover all cost. To avoid having a huge jump in the water tariff, we proposed to have a **3-step** increase in the water tariff over a period of **7 years** in parallel with service improvement. With the strong support of the banks and the commitment from the Government of Cambodia, particularly the Governor of Phnom Penh City and the Prime Minister as well of the **non-supplied residences**, a cross-subsidized tariff has been approved by the Council of Ministers in **June 1st, 1997**. The second step was adopted in **2001**. However, the third step of tariff adjustment has not been considered anymore, even the electricity tariff has been increased about **30%** since last year. The revenue can cover fully the cost due to the higher collection ratio and the drop in **NRW**.



As of today, PPWSA has the total capacity of **235,000m³/d**. The distribution network had been rehabilitated and expanded to about **1,400 km** serving 24hours a day of **143,000** house holds, **100%** of down town inhabitants and **60%** of the sub-urban residents, with supply pressure of **2.5 bars**.

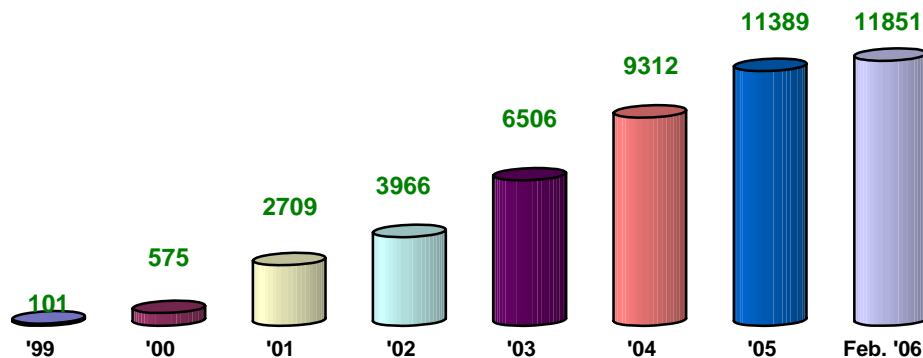
Besides, PPWSA has started to contribute to reduce the poverty in Phnom Penh by carrying out the policy "Clean Water for the Poor" since 1998. Workforces have been appointed to investigate locations of the poor, broadcast the policy and facilitate application forms on-sites and connect water to the poor. The poor can pay their connection fee in installment by 10, 15 and 20 months which can be selected by the poor, based on their financial accessibility. There is also a discount of 20% of connection fees for the poor who live in suburban communities.

In addition, to enable the poorest, who cannot afford the payment even in installment, to get connection, PPWSA has applied since 2005 the donation policy 30%, 50%, 70% and 100% of the total connection fee based on the result of evaluation over the real poverty made by committee and local authority. The remaining fee can also paid in installment. At the end of February 2006, PPWSA has 11.851 house connections for the poor, distributed in over 100 poor communities. Among this number there are 1,664 of the poorest who got subsidy.

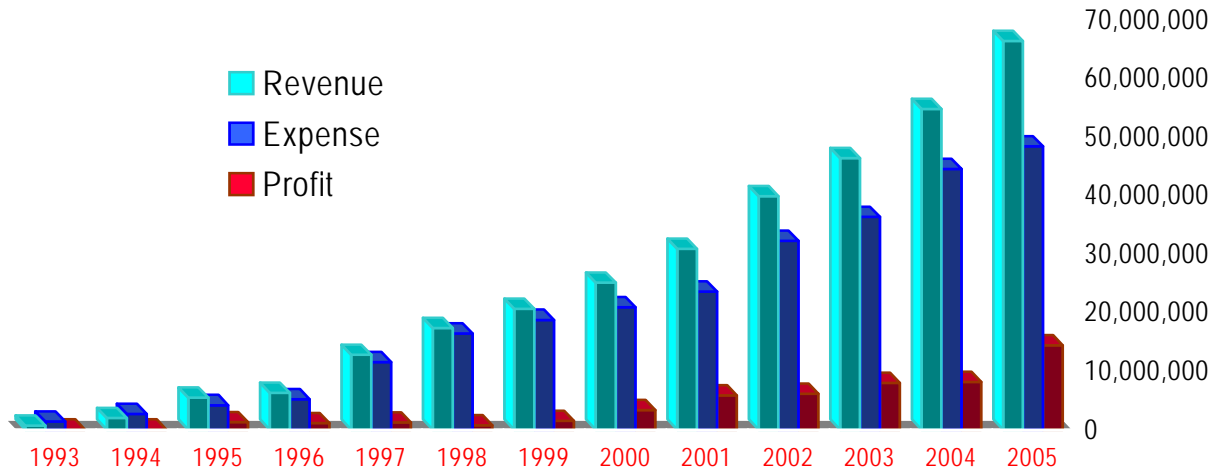
The expense of the poor for daily water consumption, previously high from 2,000 to 5,000 Riels/m³, is now much reduced, to 550 Riels/m³ only. Each household can save from 130,000 to 380,000 Riels per year. Additionally, children's transport burdens that were obligatorily undertaken everyday are totally eliminated since they have water tap in home. Time for their schools and play has been regained. The water quality is assured and diseases, cause by unclean water, now completely eliminated.

Their dream receiving clean water from the network becomes true.

Number of House Connections for the Poor, by Year



Financial Situation



5. CONCLUSION

Provision of water is a social and economical good. Its sustainability can properly only realized by stable financial return. The Government has the tough task of setting a realistic water tariff that is viable for the water utility to be able to cover their cost. The strong commitment from the Royal Government of Cambodia is one of the vital factors in the sustainability of PPWSA operations.

Many internal factors within PPWSA have been contributing to the development of the utility to what it is today. The concept **Management by example**, self-responsibility, motivation, high morale, discipline, transparency and fairness in operation are keys of the achievement.

External assistance from Japan, France, World Bank, Asian Development Bank gave the much-needed funds and expertise to the reformation and development of PPWSA.

PPWSA has also enjoyed much support from the customers by fostering good relationship and provision of reliable service.

Today, the residents of Phnom Penh, including those in the city suburbs, can be assured of the relentless efforts of PPWSA for the sustainable supply of clean and safe water. With the continuing extension of production and supply network, the whole city of Phnom Penh will have 100% coverage by 2015. This includes the poorest of consumers in the remotest part of Phnom Penh.

IMPORTANT DATA

The Different between 1993 and 2005

	1993	2005
Staff/1,000 Connections	22	4
Capacity, m ³ /day	65,000	235,000
Coverage	25%	95%
Supply Network	280 km <i>Old</i>	1,230 km <i>New</i>
Supply Pressure	0.2 bar	2 bar
Supply Duration	10 hr/day	24 hr/day
Connections	26,881	138,000
Illegal Connections	>300/year	<10/year
Metered	12%	100%
Collection	50%	99%
NRW	72%	11%
Total Income	0.7 bill. R	67.2 bill. R
Operating Expenses	1.4 bill. R	20.4 bill. R
Total Expenses	N/A	52.1 bill. R