

CLEAN WATER FOR ALL – OVERCOMING ADVERSITY TO SATISFY CUSTOMERS AND RETURN A PROFIT

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ABSTRACT

Is it possible for a third-world country with few resources to provide a clean, timely and affordable supply of drinking water to an entire city, and still make a profit? This is what has been achieved by the Phnom Penh Water Supply Authority (PPWSA). They are the financially independent public enterprise responsible for providing citizens of the Kingdom of Cambodia's capital city with potable drinking water.

Decades of conflict under the Khmer Rouge left the Phnom Penh infrastructure, including its blueprints, completely destroyed. Some areas suffered from up to 75% Non-Revenue Water (NRW). This left the PPWSA facing one of the most challenging situations in modern history of water supply.

Fast-forward to 2016 - their water loss is 5.9% and they are aiming to reach <5% by the year 2020 – a rate comparable with Tokyo and Singapore. They have achieved 100% metered connections, 91% coverage and are compliant with 100% of the World Health Organisations (WHO) drinking water standards. This has all been achieved in a country classified as more corrupt than the Democratic Republic of the Congo and poorer than Bangladesh.

This paper shares the reform process undertaken by PPSWA that has catapulted a war-torn dilapidated water utility into an efficient and profit making one.

KEYWORDS

Political backing; Donor funding; Organisational structure; Financial reform; Human resources; Infrastructure operation and maintenance management; Community support.

1 INTRODUCTION

A clean, affordable supply of drinking water is a priority in any community. The responsibility of this supply is usually that of a municipal water company, such as a city council. Historically these municipal water companies have under-performed, especially in developing countries. This has led to dissatisfaction with the companies, which has provided the political will to attempt a reform of many of them. Different countries have approached this reform process in a variety of ways. This includes privatisation, independent regulators, public-private partnerships (PPPs) and a number of other initiatives.

There have been cases of success and failure, and certainly there is no single solution that works for every situation. However, it can be seen that in a number of cases the underperforming company can be turned around from within and that a complete dismantling of the organisation is not necessary.

This paper focusses on the case of the Phnom Penh Water Supply Authority (PPWSA) and their reforms. PPWSA transformed a water supply network destroyed by war and neglect to a profitable company, meeting all the WHO drinking water standards, subsidising water supply for the poorest and reducing water loss to levels seen only in the most developed countries.

2 DISCUSSION

Phnom Penh is the capital of the Kingdom of Cambodia. It is situated on the confluence of the Tonle Sap and Mekong Rivers. All the city's fresh water is supplied from this source. The city's population is around 1.3 million but is expected to continue to increase.

Decades of conflict under the Khmer Rouge had left Phnom Penh with virtually no water supply. What was available was often being lost to leakage and non-authorized connections. It was suspected that a large amount of the bills that were actually being paid were being kept by the collectors.

After a significant period of upheaval and change, the outlook is very different. This paper has identified seven factors in achieving this change. These are:

- Political backing;
- Donor funding;
- Organisational structure;
- Financial reform;
- Human resources;
- Infrastructure operation and maintenance management; and
- Community support.

2.1 POLITICAL BACKING

In 1996 a socio-economic development plan was introduced. This initiative was brought about by the Government of Cambodia. The plan placed great importance on water and sanitation. The vision was for the municipal companies to become self-sustaining. Through the introduction of this plan, the first steps were taken to allow significant reform within the companies. This would make it possible to achieve the levels of reform that were necessary.

At that time in the Kingdom of Cambodia the law prevented government institutions from operating independently. The socio-economic development plan put in action the legal changes that were necessary to allow the water utility companies to operate as independent commercial enterprises. This led to the creation of the PPWSA as an independent institution, with a vision to provide clean, reliable and affordable drinking water the population of Phnom Penh.

At current funding levels, the finances of this newly created utility company were such that it would be completely ineffectual. The government then showed their support by providing \$95M USD for water and sanitation development within the capital. In 1997 the PPWSA then became completely financially and legally independent.

Although independent, the company was still supervised by the Government Ministry in much the same way regulators work in many developed countries. It gave the government security over the results the business was achieving, but did not allow senior government officials to have a say in the day to day operations. Previously this had been a source of corruption with the company. It also prevented the utilities providers from having long-term plans as political interference often changed priorities mid-way through investment cycles.

Until their independence, the municipal companies in Cambodia were unable to set their own salaries. They could not hire or dismiss members of staff without acceptance from government officials. This made it extremely difficult to get the best staff into their most suited positions. Independence meant they were now able to operate in exactly the same way as any major company.

This was a big step in a country whose political system is largely built around control of all services. The Prime Minister was making a large statement that he backed the reforms that were planned. Without this backing, none of the other reforms would have been possible.

2.2 DONOR FUNDING

The PPWSA also had significant backing from international donors. Now they were able to clearly see the financial independence of the PPWSA, there were fewer concerns in the international donor community about money being used inefficiently or lost to corruption.

The Japanese International Cooperation Agency (JICA) supported the venture with \$5M USD. As an international aid agency they had been supporting PPWSA since 1991. This initial large payment helped to recommission the water treatment plants and install new pipelines. Water that met WHO regulations could then be provided to a large number of customers that were able to pay their bills. This was vital to the other financial reform strategies of increasing tariffs and improving collection ratios. Without a reliable, clean water supply, it would have been extremely difficult to get customers and the community to buy into PPWSA's vision.

The World Bank also made significant and regular contributions. This investment was focused on capacity building and training with the PPWSA. This was a significant part of the infrastructure operation and maintenance management. Their funding enabled existing and new plant operators to be trained in using new computer systems. It trained meter installers with new technologies. It also provided insight into the organisation on how well staff were being managed. For more information of this section please see the 'Organisational Structure' section.

Through successfully achieving goals of increased collection ratios and increasing tariffs (see 'Financial Reform' section), the PPWSA slowly began to move into an operating profit. Large investment was still needed as the company strived to grow their network and provide clean water to a greater percentage of the population. The donor organisations then stopped issuing grants and instead issued loans, realising the government's aim of turning PPWSA into a self-sustaining enterprise.

The grants and loans allowed greater political independence as it was not as reliant on government funding.

Following this success, the World Bank then reviewed the independence of the PPWSA and made recommendations for even greater autonomy from the government. This was granted by the Prime Minister. It is believed the Prime Minister saw the success of PPWSA and the funding levels it was achieving as a direct result of his actions. By granting further autonomy in line with the World Bank recommendations, he hoped to show the international community he was open to independent enterprise without corruption and show the Cambodian public his ideas and diplomacy were the reasons for the funding and success.

The World Bank also funded the writing of a master plan which set out a strategic framework for the future of PPWSA. Donor funded projects were only taken on board if they fit within this strategic framework. This was vital to prevent the PPWSA taking on donor loans that were not efficient in delivering its goals.

2.3 ORGANISATIONAL STRUCTURE

Previously, revenues earned by PPWSA were consolidated with the general municipal revenues. This meant there were no incentives for managers or staff as there could be no tracking of their expenditure versus income. This allowed corruption to flourish. Examples include meter readers and bill collectors keeping money for themselves. Organisational reform was needed, if only to allow effective tracking of company resources.

As part of the reform process, PPWSA split the organisational structure into six line departments and a separate training department. There is also a separate inspection department. These departments can be seen in Figure 1.

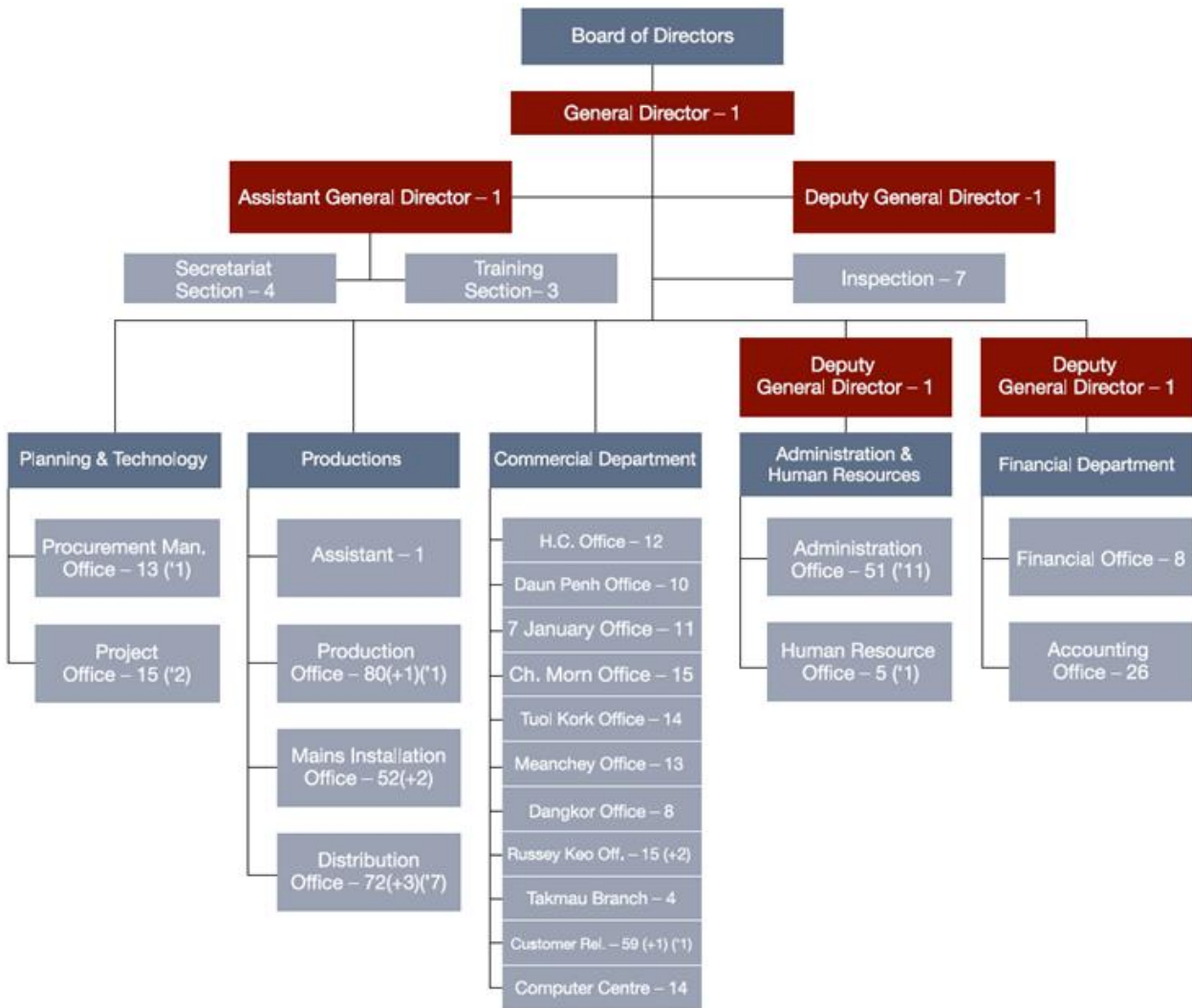
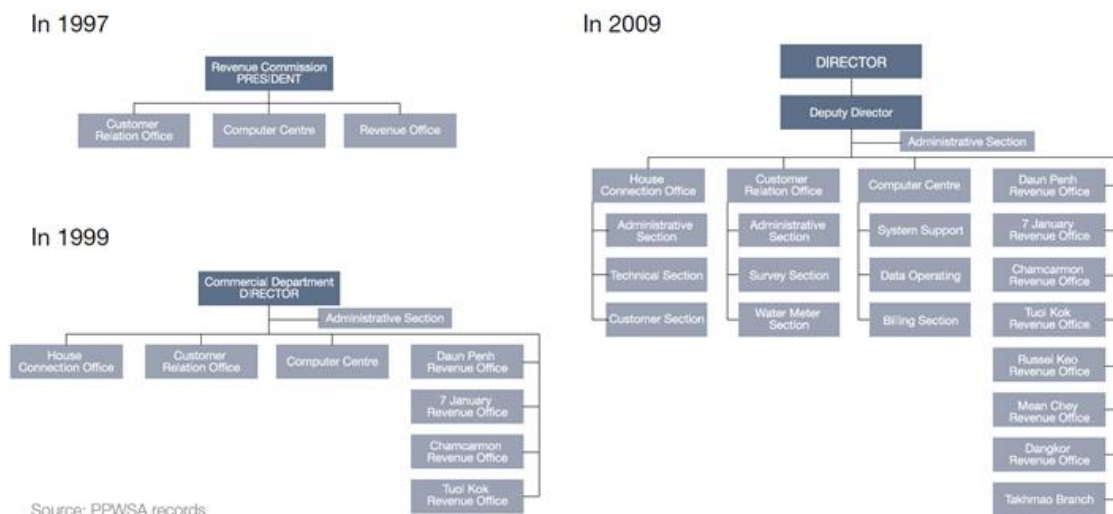


Figure 1: PPWSA Organisational Structure

The organogram represents a complete change. There were divisions closed, some expanded and some new ones opened. This structure represents a number of evolutions as the company changed and expanded over the years. For example, the commercial department went through two changes, one in 1997 and another in 1999. Figure 2 shows the evolution of the organisational structure for the commercial department.



Source: PPWSA records

Figure 2: Commercial department evolution

Through new reporting lines, it was possible to introduce much more accountability into the system. Each department is responsible for its results and meeting targets. This accountability can be tracked through the lines of management.

To ensure there are benchmarks to be evaluated against, each department has to produce an annual plan. These annual plans are signed off by the board of directors. They set out the aims for each department, including recruitment, revenue and key performance indicators.

The divisions are then responsible for delivering quarterly and annual progress reports. There is a set structure for evaluation of achievement against the plans.

There is a completely separate inspection unit reporting to the director. This tracks all the departments to ensure compliance. It works separately to the annual plans and performance reports. This operates in a similar way to a company's internal auditor.

2.4 FINANCIAL REFORM

Previously there was no financial auditing outside of central government. All municipal organisations put their money into one pot. Only once it reached the pot was it audited, and even then only internally. The finances are now independently audited annually by international accountants. This provides more transparency and confidence to investors and donors. There is little transparency within the Cambodian government. Being independent has allowed PPWSA to have this international audit and so has increased donors likelihood to fund development work through the PPWSA.

The initial audit in 1996 showed that PPWSA has no control on over half its operating costs; 45% was made up of electricity and 10% chemicals for water treatment. Even through infrastructure management reforms, these would be difficult to change. The other large proportion of operating costs was salaries and staff allowances at 32%. This percentage was only going to increase in line with changes to staff payment to remove corruption and incentivize the workforce (please see 'Human Resource' section).

With outgoings largely fixed, PPWSA needed to increase income. Collection ratios needed to be increased (please see 'Organisational Structure' section). The other method was to increase the unit price of water. It was then signed off by the Prime Minister that the PPWSA would have the power to increase the tariff. This would be overseen by the Government Ministry.

The increases were planned to be introduced in stages over 7 years. In fact only two stages were eventually required because of other reforms to the business increasing income such as higher collection ratios and leakage reductions. A campaign was also launched putting pressure on government officials to set an example by paying their water bill. In the past employees of the utility companies had seen a 'perk' of the job as not having the pay for that particular service.

A large socio-economic survey was carried out to ensure tariffs were set at correct rates. This was funded by the World Bank and overseen by the Government Ministry. The tariffs were based on total expenses by the business. This included the operation and maintenance costs, but also depreciation of assets. Since the second rate increase, there has been no need for the planned third tariff increase.

PPWSA is now consistently making profit. In 2008, PPWSA made a \$7M USD profit on an operating revenue of \$22M USD. Profits have increased in line with revenue since 1993 (when all of the reforms to the organisation and system began to be implemented). At this moment in time a tariff decrease is being considered, although further subsidies for the poorest residents are more likely.

As PPWSA operates the same way as any independent business, it also pays income tax in the same way. This means the company is now paying into the Government, allowing funding into other areas in the country that desperately need help.

2.5 HUMAN RESOURCES

PPWSA now hire for specific positions within the company. The employees must reach certain levels set in the recruitment process. There is no exception allowed to the requirements. Previously there was recruitment

dictated by senior managers of friends and relatives. All technical and managerial staff must now be recruited from universities. In some cases administration and non-technical staff are supported through education to allow them to progress in the business.

A vital part of the recruitment process is the use of volunteers. They are used for six months without a salary but given training to upgrade their skills. This means that at the end of the six months, volunteers have received transferable skills and PPWSA has exposed itself to very little risk. If volunteers perform well they are recommended for permanent employment.

Uniforms for all staff, related to their positions, gives pride to their position. It also allows easy identification and fosters a professional and aspirational culture within the company.

Wages were vital to reducing corruption within the organisation. Previously, people were not paid enough to live so became forced to find other means of making up their earnings. Wages were significantly increased to prevent this corruption. For example, senior managers that were previously paid \$20 USD/day are now paid \$200 USD.

Incentives and bonus payments were introduced for meeting targets. This meant people could increase their earnings through hard work to the benefit of PPWSA. Because they were incentivized to meet the targets, it reduced the resistance to the large amounts of reporting and tracking that was new to the employees.

Interest free loans for poorer workers were an extremely popular introduction within the workforce. They were funded through a 'solidarity fund' by the entire PPWSA workforce. This helped make a sense of family within the employees. People were invested into each other's success.

PPWSA became the first company in Cambodia to have a retirement system. A small proportion of workers' salaries are put into a separate pot. This is as important for a sense of shared goals as retirement funding. It also encourages workers to stay with the company, reducing the risk of knowledge loss and associated turnover costs.

All finances and targets are published publically. This includes all staff salaries. This is part of a concerted effort to achieve complete transparency through the business. It also motivates workers to invest in their future through having aspirations to move up through the business.

This makes for a culture that people want to work in and a company the people are proud to work for: Good pay, retirement contributions, constant training, support with interest free loans and much more. This has led to the almost eradication of corruption, from the bill collectors' right to the senior managers.

A lot of these initiatives may seem obvious and common place to people working for large companies in the developed world. However, in Cambodia 20 years ago they were very new. There was a lot of resistance initially, but through education of the workforce and a culture to succeed it was possible to implement them in a way that people bought into the ideas.

2.6 INFRASTRUCTURE OPERATION AND MAINTENANCE MANAGEMENT

PPWSA now runs a full SCADA system. There are live readings of flowmeters and pressure meters. This means they are able to identify leaks and solve them with a 24 hour maintenance team. This maintenance team is incentivized as to their response times. Through using this live system PPWSA are ahead of most developed cities' SCADA systems, who only get their data in large blocks. The introduction of distinct metered zones played a big part in making this live data possible.

All leaks are recorded and plotted. This allows interrogation of the network to assess areas where the pipe needs replacing. It also gives a basis for evaluation of the maintenance crews.

The leak detection teams compete against each other for the most leaks found and repaired. Published league tables of leakage targets met use pride between the teams to over achieve on their targets. These are used in conjunction with financial incentives. This is one of the key factors that has led to the unbelievable results of less than 5% unaccounted for water.

PPWSA are also currently going through a pressure reduction process. Using the live results from the SCADA system combined with advanced modelling software, they are able to identify areas of unnecessarily high pressure, install Pressure Reducing Valves (PRVs) and thus reduce leakage.

The entire billing system is now fully digitised. Everything is stored in an online system. Stored information includes customer's water use, payment history, pressure, number of visits and other general information. This allows bill collectors to carry out more regular water meter visits to properties that have previously been suspected of fraud. It also makes corrupt payment much more difficult as everything must go through the online system.

Finally, probably the most important infrastructure change was the replacement of old pipe with new Polyethylene (PE) mains. This is still being carried out over a complete replacement programme. This programme was drawn up following monitoring of the network, such to allow high burst and leak areas to be targeted with higher priority. New pipes increase water quality and the capacity of the network. The sight of new pipes being laid also gives the public sight of the money they are paying in. This makes them more likely to continue to pay in and to encourage their peers to pay in.

2.7 COMMUNITY SUPPORT

There are subsidies for the poorest users. This ensures that some money is paid in and reduces the amount of illegal connections that often occur when people cannot afford their connection or water. These subsidies consist of a reduced tariff and reduced connection costs. They can also pay for their connection costs in monthly instalments as part of their water bill as it is unlikely they can afford the one off connection cost.

There are warnings sent out for non-payment of the monthly bill. When a payment is missed an officer is sent round to the property. This allows a discussion to take place over the best way forward. The customer can be educated about the subsidy system if they can prove a low income. An affordable repayment plan is also discussed. The aim is to prevent disconnection from the network at all costs.

Education of water supply is a very large part of the process. PPWSA invests a large amount of money into ensuring people are aware of their rights and their eligibility for reduced tariffs. Many still do not trust the water and have to be educated that it is safe to drink from the pipe. Others need to be educated on how to reduce water usage to enable a reduction in their monthly bill. Through education, the customer can see the benefits of a municipal water company much more clearly and is more likely to pay their bill.

3 CONCLUSIONS

The situation of PPWSA shows that a government utility company can introduce a reform process that works in the same way as a private company. There are several factors that have led to the success of PPWSA. One of the most important is having the vision and leadership to push through a culture of change, as well as the political will to change and enough independence to be allowed to implement the change.

The change was aimed at employees. It educated and motivated them. Transparency gave the employees sight of what was happening in the rest of the business and let them know where they stood. Through incentives there were large improvements in operational efficiency, brought about by the employees striving to achieve.

The government committed to financing from JICA and the World Bank. The role of donors was very important in terms of technical assistance and access to finance. The availability of finance from donors actually strengthened the independence of the PPWSA by making it less reliant on the Cambodian government.

Lack of income was addressed through increasing tariffs, although this turned out to not be completely necessary. Billing percentage targets and collection rates meant that less importance needed to be placed on increasing the unit price of the water. Ideologically it makes more sense to clamp down on illegal connections and unpaid bills, rather than increasing the tariffs for the people paying their bill. Increased bill rates allowed price obstacles for the poor to reduce to manageable proportions.

Finally, it is important to note that developing countries are not all the same. They are all at different points politically, socially, economically and environmentally. Although this package of reforms has worked well for PPWSA, it may not work well elsewhere. However, some of the reforms are applicable to any country in the world.

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