Maynilad Water District, Philippines

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Type of tool: green jobs
Issue: cities
Location: the Philippines, Asia

Challenges and objectives

Currently, Maynilad has a service area of 540 square kilometres with a population of 9.5 million, 89.2% of whom are customers of Maynilad or a total of 937,578 water service connections. Of these customers, 82% have access to 24-hour piped water services and 92% receive water at a pressure of 7 pounds per square inch (psi). The company produces 2,149 million litres of water per day (MLD) through its three treatment plants, 17 pumping stations and 35 distribution lines. The company also has 12 Business Areas, 35 Hydraulic Areas and 761 District Metered Areas. The company is currently manned with 2,123 full time employees.

Institutional challenges

The corporate history of Maynilad began with the successful privatisation of the Metropolitan Waterworks and Sewerage System (MWSS) in 1997; the oldest water system in Asia. This former state-owned corporation was in charge of providing water supply and sewerage disposal services in the greater Metro Manila area. With privatisation, MWSS handed over the operation of the water utility to two concessionaires; *Maynilad Water Services, Inc. (MWSI),* which was awarded the right to operate the waterworks and sewerage system in the 17 cities and municipalities in the West Zone areas of Metro Manila, home to then 7.3 million people; and *Manila Water Company, Inc. (MWCI),* to serve the East Zone area comprised of eight cities and municipalities with a then population of 4 million people. In this highly anticipated bidding that drew the attention of the global water community, the partnership of Benpres Holdings Corporation (Benpres) and Ondeo Water Services, Inc. (formerly Suez Lyonnaise de Eaux), was awarded by the government a 25-year exclusive concession to run the water and wastewater operations of Maynilad.

After a decade with many financial, legal, and regulatory disputes and after being reclaimed by the government due to bankruptcy, Maynilad went through a change of ownership. The consortium DMCI-MPIC Water Company Inc., formed by Metro Pacific Investments Corporation (MPIC) and DMCI Holdings, Inc. (DMCI), acquired 83.96% of the water company's shares. Lyonnaise Asia Water Limited (LAWL) held a 16% share. The MPIC-DMCI consortium took over the reins of managing Maynilad on 24 January 2007 and immediately

started working on the financial and operational rehabilitation of the company. In August 2007, the consortium signed a prepayment and settlement agreement with Maynilad's creditors and MWSS. The new owners of Maynilad had paid off the company's outstanding debts, which would have reached 240 million by January 2008. An aggressive catch-up plan was also implemented to increase company revenue, improve water service operations, and drastically cut commercial losses.

The challenge of reducing non-revenue water

One of the top priority programmes of Maynilad is focused on ensuring business viability and sustainability by reducing chronic water losses or Non-Revenue Water (NRW). NRW is defined as the difference between the amount of water put into the distribution system and the amount of water billed to consumers. NRW, which is often defined in terms of percentages, is considered as the best over-all indicator of the quality of the water utility management; high levels of NRW lead to low levels of efficiency.

In 2007, the NRW of Maynilad reached 66% - a very high rate. This means that 1,500 million litres of water per day were wasted. To illustrate the enormity of this water loss; NRW at a volume of 1,500 MLD could flood a 16.95 KM road with 2.0 meters of water or could supply Ho Chi Minh City, Vietnam with water 1 ½ times. Furthermore, water of this quantity, if not lost, could supply an additional 1,250,000 households with potable water. When lost, this volume of treated water remains unaccounted for and does not translate to revenue for the company and adversely impacts water supply.

NRW may be categorised into physical or real loss; commercial or apparent loss and loss of water for operational purposes. High *physical losses or real losses* refer to the loss of actual water as a result of leakages in pipes, joints and fittings, overflow at the utility's reservoirs caused by poor operations and system maintenance. Significant *commercial losses or apparent losses*, on the other hand, refer to loss of revenue exemplified by unbilled water due to data or meter errors and system flushing and theft. Another cause of water loss is for *operational purposes*; for example due to the fact that the distribution lines of the company were inherited and date back to when the company was established and was poor maintenance of the network

The drivers of change and the barriers for addressing NRW

Management changes

Before the new management arrived, there was no programme that focused on combating the NRW problem, primarily because the threat and the impacts of NRW to the business were not

fully understood. The management also did not support the elimination of the NRW problem. Under the directive of the new management, Maynilad has been more aggressive in its efforts to combat NRW.

Customer dissatisfaction

Customer dissatisfaction is another repercussion of intermittent water supply. If the customer demands are not satisfied, their willingness to pay for improved service decreases. The customers also suffer because of unnecessarily high tariffs to cover the cost of the NRW. In Maynilad's case, because it inherited 66% NRW, NRW is factored into the fixing of the tariff. The reduction in NRW benefits the customers. The tariff is computed based on targeted volumes which assume a certain NRW. If actual NRW is lower than the target, then volume is higher than forecasted. This means in the next rebasing the tariff should be adjusted downwards. The regulator, Metropolitan Waterworks and Sewerage System-Regulatory Office (MWSS-RO) can choose to only partly adjust the tariff.

How the barriers were overcome through a green jobs approach: Maynilad's approach to addressing NRW

Institutional will and new recruitment

The new owners of the management of Maynilad were determined to combat the high level of NRW in order to provide quality service to the customers, to increase the revenue and to comply with the MWSS-Regulatory Office requisite of reducing NRW to 40% by the year 2012. To achieve these goals, the company devised, implemented and invested in various measures, including the acquisition of modern equipment and technology to localise and detect leaks.

At the onset of 2008, a Central Non-Revenue Water (CNRW) Division was created to show the management's full support and commitment in managing the NRW. To ensure the proper implementation of the projects, manpower resources were also reinforced; new young engineers were hired and placed in this newly created division.

Investments

Another drastic measure taken by the new management was the massive investment in capital expenditure (CAPEX) projects to address NRW. The MPIC-DMCI management has earmarked 38 billion pesos for CAPEX for the years 2008 through 2012, primarily for the rehabilitation and/or replacement of old and deteriorated network and lines. In fact, 51% of the CAPEX budget is allotted for the management of NRW.

Establishment of network management improvements: District Metered Areas

The establishment of District Metered Areas (DMAs) is another measure implemented to manage NRW. Since Maynilad has a very vast distribution network with poor pipe conditions, the system could not easily be managed as a whole. Therefore, the system was broken down into smaller sub-systems. DMAs are small hydraulically discrete zones where water flowing can be precisely measured and compared with metered water use. This step localises and diagnoses the specific problems in each area and helps to determine the most efficient solutions.

Restructuring of departments

To further actualise an efficient management of NRW, the Metering Department was restructured and incorporated as one of the core departments of the CNRW Division. This reorganised department aims to re-evaluate meter performance, focus on correct sizing of meters, and meter replacement programmes with a quality service benchmarked on others. The department was staffed with new young engineers who will use new technologies and will be guided by meter experts.

Investments in new technologies to increase effectiveness and efficiency of management

The Central NRW Division is engaged in active leak control activities to detect and repair leaks, since they are the primary causes of physical losses. The company invested in modern and sophisticated technologies for *aggressive leak detection*. It called in the services of Pressure Pipe Inspection Company (PPIC) to train Maynilad engineers in the use of Sahara®- a state-of-the-art technology, which accurately detects leaks, pockets of trapped gas, and structural defects in water main lines.

With the help of these technologies, *pipe inspection* can be undertaken without water service interruptions and the company can intensify its leak detection efforts without affecting water delivery services to its customers. Furthermore, accurate detection of leaks using the latest technologies allowed for an efficient execution of repair works, especially in main thoroughfares. This reduces traffic jams that contribute to already high carbon emissions in Metro Manila.

Pipe replacement is another step taken by Maynilad to reduce NRW. Maynilad's network is 80 years old and most of the pipes are fractured, corroded and too deep in the ground, so they already need to be replaced. However, total pipe replacement would be a very costly way of solving leakage problems. Therefore, the company has resorted to selective pipe replacement rather than total pipe replacement.

Furthermore, Maynilad also invested in equipment known as *pressure-reducing valves (PRVs)* which reduce and maintain pressure at a set level. With these PRVs, NRW personnel are able to manage leaks more efficiently.

Another function involved in NRW reduction is *Hydraulic Modelling*. Hydraulic Modelling is implemented in partnership with the Water Network. Hydraulic modelling enables the company to correctly predict how the system will function under certain conditions, without affecting the supply of water to customers. After a hydraulic model of Maynilad's network was built, actual flow and pressure data were checked in the field to calibrate the model and ensure its accuracy.

The reduction of NRW is a very data-driven project, so the company also focused on *data management*. To correctly manage NRW, data on DMA flow and pressure, leakage complaints, leak repair, and Geographic Information System (GIS) data of pipes and laterals were regularly collected. For this, Maynilad maintains a netbase programme, which is an automatic system integrating network data from different sources and also allows for multiple function analysis. The netbase programme plays a very important role in NRW management.

Training and new jobs

To reinforce the implementation of leak detection strategies, the company trained competent leak finders for leaks that are hardly visible and require special equipment to be detected. These leak finders use sensitive microphones to detect leak noises and pinpoint their locations. This is usually done at night when it is quieter. It is a race against time for the leak detection team, because the longer the leak duration; the higher the water losses. Due to the improvements in the leak detection strategies, the number of resolved leak-related issues has increased up to 99% by the last quarter of 2010. Furthermore, the resolution time was also reduced by more than half. In 2009, reported leaks were repaired in 15-39 days and now they are repaired in 10 days.

NRW reduction programme would not be successful without *continuous comprehensive trainings,* undertaken in partnership with the Corporate Human Capital and Organization Development (CHCOD) Division of the company.

Social Dialogue and partnering with the unions

There are two labour unions which co-existed when privatisation took place. These unions are recognised by the management and encouraged to take up any issue affecting the rights and welfare of their members. The management has consistently respected the employees' right to organise and to collectively bargain, among others. On the other hand, the unions, while remaining vigilant in protecting the rights and welfare of its members, have shown vital support

for the management in delivering its commitment to the government, its customers and stakeholders.

The Maynilad Water and Sewerage Union-Philippine Transport and General Workers Union (MWSU-PTGWO) is the sole and exclusive bargaining agent of all rank-and-file employees in the agreed bargaining unit. Meanwhile, the Maynilad Water Supervisors' Association (MWSA) is the sole and exclusive bargaining agent of supervisory employees in the agreed bargaining unit.

Since 2007, when DMCI-MPIC Water Company, Inc. took over the reins of Maynilad, the management has effectively partnered with the unions in accomplishing its mission and goals while at the same time taking care of the welfare of the employees. A number of significant issues have been amicably settled between Maynilad and the unions through the responsible utilisation of the grievance machinery and labour management committee provisions of the CBA. Furthermore, the management, MWSU-PGTWO and MWSA are very active partners of the United Nations' International Labour Organization (ILO) in espousing social dialogue in the work place.

In compliance with statutes, our collective bargaining agreements contained two provisions that formalised social dialogue in Maynilad. The first one pertains to the Labour-Management Committee (LMC) and the second one covers Grievance Machinery. The former convenes to discuss and resolve work-related matters and problems affecting operations and the latter provides the procedure for adjusting grievances and disputes between the management and the unions. In practice, however, most the work-related problems, grievances and disputes are settled outside of these formal mechanisms. The leadership of the unions and Management's Labour Relations officials have adopted an open-door and informal attitude in addressing the concerns of employees. Management can at any time visit the union office and vice-versa. They have open and candid discussions on pressing daily issues as well as future concerns. Solutions are made by consensus and both sides trust each other to deliver on commitments. Only when both sides are determined that reaching an acceptable solution is not possible, the formal mechanism of LMC or the Grievance Machinery is set in motion. They document the disagreement and report this to the proper government agency, either for mediation or arbitration. In our experience, this process has abolished confrontation and animosity and contributed to respect and trust between the parties involved.

Examples of issues resolved by the management and the unions are:

1. Most of the leak detection work is executed during night-time when noise from vehicles is minimal. In this regard, the management and unions have partnered to ensure the safety and well-being of the employees. Maynilad coordinates through its Security Department with authorities in areas where leak detection operations are being conducted.
2. Maynilad also provided marked service vehicles and medical and legal services to employees in the event of accidents.
3. Employees are provided with the proper personal protective equipments.
4. Issues on compensation and benefits.

Additionally, as a direct result of the trust and confidence developed between the parties, our recent collective bargaining agreement with the rank and file union was forged in just one month after four formal negotiations. And our collective bargaining agreement with the supervisory union, while we needed the mediation of the government, was forged in just two months.

Our collective bargaining agreement with the rank and file union embodied the management and the unions' commitment to protect the environment. The pertinent provisions of our CBA read as follows:

Article XIV

Environment, Safety and Health Care

Section. 1 The Company as a whole the Company will create and maintain a work culture that will encourage all employees, contractors, suppliers and shareholders to support this commitment. Both the management and the union agree to:

a) Protect the environment by minimising and managing the impact of company operations on the environment, optimising the use of resources and increasing operation efficiencies;
b) Establish an environment management system to ensure that protection and sustainability is an integral part of the Company's business management;
c) Design and execute systematic programs that eliminate all hazardous acts and conditions to prevent work-related injuries, illness and accidents at the workplace. Both the management and the union shall pursue the establishment of high standard of safety and occupational health awareness, practice and discipline.

In keeping with this policy, the Company and the Union will comply with all the regulatory requirements and international standards on environment, health, and safety. This will be

achieved through the use of appropriate technology and the best practice in the pursuit in the pursuit of growth and viability

The investment in water technology for resolving NRW is one of the fruits of the partnership and commitment of the management and the unions to protect the environment. Moreover, this commitment for the protection of the environment and occupational health safety led to the IMS (Quality Management (ISO 9001:2000),Environmental Management (ISO 14001:2004) Occupational Safety and Health Management (OHSAS 18001:2007)) certification of the following Maynilad facilities:

1. Dagatan-Dagatan Sewage and Septic Treatment Plant
2. Tondo Sewerage Treatment Plants
3. La Mesa Treatment Plant 1 – a conventional-type plant with a maximum design capacity of 1500 MLD
4. La Mesa Treatment Plant 2 – a plant of the pulsator-type that has a design capacity of 900 MLD with an allowable overload of 990 MLD.

Additionally, Maynilad is ISO 14064:2006 certified for the verification of its greenhouse gas or carbon footprint quantification and reporting initiative.

Lessons learnt from implementation

Since the new management started a head-on approach to addressing NRW, the level of NRW has been reduced from 66% in 2007 to 47.8% at present. These considerable efforts resulted in 33% more billed volume and 29% more total revenue. Maynilad's total revenues increased from P8.1 billion to P10.6 billion. The company's success is also attributed to strong support from the management, sufficient funding, manpower, equipment and world class advisors.

The existence of unions is not incompatible with the success of an enterprise. A strong partnership between the management, the unions and the employees through active and effective social dialogue contributed immensely to the success of the business. The respect and transparency between the management and the unions and the willingness to negotiate, discuss, and even compromise on many issues has resulted in industrial peace within the company. Therefore, energy and resources could be directed to attaining the company's mission: providing excellent services to its customers and value to the shareholders, and improving the employment conditions of the workers. Truly it can be said that "*Sa bagong Maynilad, gumadaloy ang ginhawa*!" (In the new Maynilad, comfort/good life is flowing-freely.).

The management and the unions are now teaching the unions of local water utilities about the success of their partnership and showcasing that successful privatisation, one that strongly respect the rights and welfare of the employees, is achievable.

Scaling up and relevance for developing and transition countries

CHCOD and CNRW have started a standardised NRW management training programme that aims to produce competitive and world-class NRW experts from Maynilad. In fact, the company has recently amended the primary purpose of its Article of Incorporation to allow it to be able to offer NRW expertise to other water utilities both in the Philippines and overseas. Furthermore, we expect that new green jobs will be created as a result of the expansion of our sewage treatment services.

Evaluation: economic, environmental and social benefits

Impact of NRW and management changes on employment and business productivity and efficiency

The CNRW started with just five personnel but at present, Central NRW is already manned with more than 258 full time employees. In general, since DMCI-MPIC Water Company, Inc. took over the ownership of Maynilad in 2007, the company has already generated and employed 87,000 people, including those hired by contractors and suppliers that rely on Maynilad as their major client.

High levels of NRW translate to high inefficiency of a water utility. The loss of treated water – in which the company has invested considerable amount of money – increases the treatment and distribution costs and decreases revenue. Also, more investment in capital expenditure programme is needed to meet the increasing demand. Furthermore, poor financial performance of a water utility company makes it difficult to invest more in expansion of its distribution network as financing institutions review the financial performance of its borrowers to determine the latter's ability to repay its loans.

In Maynilad's case, due to the effective reduction of NRW and determination to grow the business, financing institutions have shown confidence in Maynilad's ability to repay its obligations. In the first quarter of this year the company has secured a Php7B loan to partly fund its capital expenditure programmes for 2011 and 2012 to improve operational and network efficiency, to meet the company's service obligations and support growth. Moreover, in June of this year Maynilad has secured US$137.5 million loan from the World Bank which will be used to fund its wastewater treatment projects.

Social impact of NRW

When a water utility company experiences a high level of water losses, it cannot achieve its primary goal of satisfying the needs and demands of its customers. NRW caused by physical losses often lead to intermittent water supply and reduced supply hours and volume for the customers. Intermittent water supply also causes health risks as contaminated groundwater, or even sewage enters leaking pipes when there are supply interruptions or very low pressure periods.

Customer dissatisfaction is another repercussion of intermittent water supply. If the customer demands are not satisfied, their willingness to pay for improved service also decreases. The customers also suffer from unnecessarily high tariffs, because they have to bear the costs of the NRW.

Moreover, the amount of lost water lost could have supplied additional unserved customers or customers who do not have access to piped, clean and potable water yet. The reduction of physical losses of treated water can make more piped water available and increase the coverage of water utilities, especially in poor communities[1].

Participation is a basic principle in the policies of the management and the unions. The Preamble of our collective bargaining agreement states that:

> *"Maynilad's goals (including reduction of NRW) can be attained only through our (Management and Union) partnership, unity and discipline, recognising each other's right and responsibilities and the role each plays in increasing Maynilad's productivity, level of efficiency, and committing ourselves to service excellence, ... in improving the quality of life of the Filipino..."*

A participatory approach has hastened the reduction of NRW as it has fostered a stronger relationship between the management and the employees by creating a sense of ownership. In fact, one of the anchors for determining the performance rewards for employees in 2011 is the reduction of NRW. Mid-year results showed that we are well on our way to achieving, if not surpassing, the target of 48% NRW.

Additionally, the company acknowledges the importance of a participatory approach in delivering its services and reducing NRW. In this regard, as part of Maynilad's corporate social responsibility, Maynilad has set up the Samahang Tubig Maynilad and Bayanihan Bayan Tubig

[1] Asian Development Bank (2010) The Issues and Challenges of Reducing Non-Revenue Water

programmes/projects. These programmes are designed to address the problems of water inaccessibility and irresponsible water use in Maynilad's concession. In the Samahang Tubig Maynilad project, residents of urban poor communities are organised and trained to enhance their capability of sustaining the water management programmes in their communities. On the other hand, in the Bayanihan Bayan Tubig project beneficiaries help themselves and one another by contributing time and physical labour to the programme. Under supervision of Maynilad engineers, the beneficiaries install the pipes that will bring water to their communities. This not only cuts the cost of the pipe installation project, but also fosters a stronger relationship within the community, while creating a sense of ownership of the project among the recipients.

Environmental impact of NRW

Addressing NRW does not only concern the company's stakeholders and its customers; it also avoids that water, a scarce and precious resource, from being wasted. The high level of NRW adversely affects climate change mitigation efforts. Climate change impacts were felt in 2010, when El Nino occurred in the Philippines. A high rate of NRW also implies a high consumption of energy by the company used in the treatment and distribution of water.

At 66% NRW in 2007, we had to produce 4,500 litres per day for each individual service connection. Now at 48% NRW, we only have to produce 2,500 litres per day. This represents a reduction of 44% in Maynilad's water demand. Additionally, every 1% reduction in NRW is equivalent to more than 20 million litres of water saved. Hence a reduction of 28% in NRW (from 66% in 2007 to 48% in 2011) is equivalent to 560 million litres of treated water saved and redistributed.