PHILIPPINES: ANGAT WATER TRANSMISSION IMPROVEMENT PROJECT

POVERTY AND SOCIAL ANALYSIS REPORT
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*IPO Dam: Tunnels 1, 2 and 3 Stoplogs*  
*Bigte Settling Basin*
# ABBREVIATIONS

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>ADB</td>
<td>Asian Development Bank</td>
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<td>AP</td>
<td>Affected People</td>
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<td>AWTIP</td>
<td>Angat Water Treatment Improvement Project</td>
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<td>AWUAIP</td>
<td>Angat Water Utilization and Asset Improvement Project</td>
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<tr>
<td>CARD</td>
<td>Credit Assistance Rural Development</td>
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<td>CEST</td>
<td>Centre for Environmental Science and Technology</td>
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<tr>
<td>COBP</td>
<td>Country Operations Business Plan</td>
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<td>CPF</td>
<td>Common Purpose Facility</td>
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<td>CPS</td>
<td>Country Partnership Strategy</td>
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<td>DFR</td>
<td>Draft Final Report</td>
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<td>DMCI</td>
<td>DMCI Holds Inc.</td>
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<td>DMF</td>
<td>Design Monitoring Framework</td>
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<td>DPWH</td>
<td>Department of Public Works and Highways</td>
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<td>DTI</td>
<td>Department of Trade and Industry</td>
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<td>FGD</td>
<td>Focal Group Discussion</td>
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<td>FHH</td>
<td>Female Headed Households</td>
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<td>GAD</td>
<td>Gender and Development</td>
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<td>GAP</td>
<td>Gender Action Plan</td>
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<td>GI</td>
<td>General Intervention</td>
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<td>IEC</td>
<td>Information, Education and Communication</td>
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<td>IP</td>
<td>Indigenous People</td>
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<tr>
<td>LAWL</td>
<td>Lyonnaise Asia Water Limited</td>
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<td>LGU</td>
<td>Local Government Unit</td>
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<td>LWD</td>
<td>Local Water District</td>
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<td>LWUA</td>
<td>Local Water Utilities Administration</td>
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<td>MHH</td>
<td>Male Headed Household</td>
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<td>MPIC</td>
<td>Metro Pacific Investments Corporation</td>
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<td>MWSS</td>
<td>Metropolitan Waterworks and Sewerage System</td>
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<td>NGO</td>
<td>Non-Government Organisation</td>
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<td>NSCB</td>
<td>National Statistics Coordination Bureau</td>
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<td>OFW</td>
<td>Overseas Foreign Workers</td>
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<td>O&amp;M</td>
<td>Operations &amp; Maintenance</td>
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<td>OSP</td>
<td>Office of Special Projects</td>
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<td>PCR</td>
<td>Project Completion Report</td>
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<td>PSA</td>
<td>Poverty and Social Analysis</td>
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<td>PPP</td>
<td>Public Private Partnership</td>
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<td>ROI</td>
<td>Return on Investment</td>
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<td>ROW</td>
<td>Right of Way</td>
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<td>SOP</td>
<td>Standard Operating Procedure</td>
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<td>SPRSS</td>
<td>Summary Poverty Reduction and Social Strategy</td>
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<tr>
<td>Acronym</td>
<td>Description</td>
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<td>STM</td>
<td>Samahang Tubig Maynilad</td>
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<td>TPSB</td>
<td>Tubig Para Sa Barangay</td>
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<tr>
<td>WSRAMP</td>
<td>Water Safety, Risk and Asset Management Plan</td>
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1. **INTRODUCTION**

This report presents the Poverty and Social Analysis (PSA) of the local and beneficiary communities in the Bulacan and Metro Manila regions that will be impacted by the Angat Water Transmission Improvement Project (AWTIP). It seeks to review and complete the initial social and poverty due diligence assessment that was prepared by the national social development/safeguards consultant.

The PSA is intended to mitigate the project’s social risks and ensure the intended beneficiaries’ inclusion and enjoyment of project benefits and development, especially the poor and vulnerable groups. It will focus particularly on the assessment of their socio-economic conditions, access to water supply services including existing network and linkages, and risks that might increase vulnerability. It will also assess social processes and opportunities for stakeholder participation to contribute towards the project’s success and sustainability.

The report will cover the following topics: an examination of the ADB’s PSA policy and project documentation requirements; project background and links with national poverty reduction and inclusive growth strategies; project outputs and social, poverty and gender impacts; social development analysis; gender analysis; poverty and social risks analysis; institutional gender analysis; the project’s social inclusion, poverty and gender design measures and targets; and proposed implementation, monitoring and evaluation arrangements.

The report draws on: (i) the findings of the initial PPTA socio-economic survey of the source communities in Bigte and San Mateo Barangays in Bulacan; (ii) field inspection of the Ipo Dam, new tunnel route, Bigte Settling Basin and La Mesa Reservoir/treatment plants; (iii) available secondary data; and (iv), the findings from second round of interviews held with the project’s executing agency (EA)/implementing agency (IA), source community residents and local governments (refer to Appendix 1 for summary notes).

2. **ADB PSA POLICY AND DOCUMENTATION REQUIREMENTS**

The PSA is a policy requirement of ADB (A Handbook on Poverty and Social Analysis, 2012) and is usually carried out in the conceptual and design stages of ADB funded projects.

The purpose of assessing the poverty impact and social dimensions of project preparation is to provide information on the: (i) links of the project to the national poverty reduction strategy and the Country Partnership Strategy (CPS); (ii) the poverty targeting classification and its justification; (iii) key poverty and social issues (including gender) of the potential beneficiaries including the impact channels and expected systematic changes; (iv) opportunities and constraints for client/beneficiaries, particularly the poor and marginalised groups to benefit from the project activities and outputs; and (v) prepare design measures to achieve inclusive development outcomes during implementation. The preparation of the PSA should also address issues on gender, stakeholder participation, social safeguards and other social risks.
It is a policy requirement of ADB that all investment projects should seek to be socially inclusive, equitable and sustainable (ADB Handbook on Poverty and Social Analysis, 2012). These three objectives can or should be achieved in an urban water supply project by being: (i) equitable in the form of geographic location in poor and/or vulnerable hot spot areas (e.g. development of new water sources); (ii) inclusive in terms of access to water supply infrastructure (e.g. tariff structures and connection subsidies); and (iii) sustainable (e.g. local operation and management of facilities and inclusion of stakeholders in urban water sector development strategy and planning processes).

The scale and extent to which these three objectives could be achieved depends on the nature, technical design and purpose of the investment project, its scope and level of funding and the socio-economic situation and needs of the affected peoples (APs), indigenous peoples (IPs), source communities and beneficiaries (end users).

The findings of this PSA are reflected in the design and monitoring framework (DMF), summary poverty reduction strategy (SPRSS), and stakeholder communication strategy. Due to the nature and scope of the investment project, an assessment of opportunities for stakeholder participation and gender mainstreaming were deemed limited. Hence, preparation of a participation plan and gender action plan were not warranted.

3. PROJECT BACKGROUND AND LINKS TO NATIONAL POVERTY REDUCTION, INCLUSIVE GROWTH STRATEGY AND COUNTRY PARTNERSHIP STRATEGY

ADB’s Strategy 2020 lends support to the implementation of the Philippines National Development Plan 2011-2016 which gives high priority to the accelerated development of national infrastructure including the water sector to promote economic growth, equitable development and poverty reduction. This commitment is reflected in the Philippine Country Partnership Strategy (CPS) 2011-2016 and the Philippine Country Operations Business Plan (COBP) 2014-2016 which extend assistance to this key sector and project and is consistent with the key elements of ADB’s Water Operations Plan 2011-2020 which supports the expansion and improvement of water delivery services, conservation of water and increased system efficiencies. It also closely aligns with Metropolitan Waterworks and Sewerage System’s (MWSS) 2011 Water Security Legacy Plan. The project also reinforces the Philippine Government’s commitment to the MDG 7 goal of increasing the number of people with access to potable water supply to 86.6% of the total population by 2015 and halving the number of people without access to portable water.

The Metro Manila Water Supply system supplies potable water to the Metro Manila concession area’s 14 million residents and is owned and managed by MWSS, a government corporate entity. MWSS runs a transmission system from the Ipo Dam to the treatment plants downstream at La Mesa and Balara in Quezon City which supplies its two concessionaires that distribute water to Metro Manila (see Figure 8-1: Metro Manila water supply system below).

AWTIP supports the implementation of the Angat Water Utilisation and Asset Improvement Project (AWUAIP) Phase 2, which aims to improve the reliability, integrity and security of the raw water
transmission system through partial rehabilitation of the transmission line from Ipo Dam to La Mesa as well as the introduction of water safety, risk and asset management plans (WSRAMP).

Figure 8-1: Metro Manila Water Supply System

AWTIP will involve the construction of a new 6.3 km long concrete tunnel with internal diameter of 4 meters (Tunnel No. 4) between Ipo Dam and Bigte Settling Basin No. 3 at a cost of US$100 million. The tunnel will be constructed along the right of way (ROW)\(^1\) between Ipo Dam and Bigte Settling Basin, 50-180 meters below the surface. Tunnel 4 will enable the continuous raw water supply for the service of the two concessionaires in Metro Manila while old water transmission system (Tunnels 1, 2 or 3) is closed for quality checks and rehabilitation. The latter will be part of a separate project under AWUAIP, Phase 2.

Technically, AWTIP is an infrastructure rehabilitation and replacement project. It does not expand the Angat system’s infrastructure but will enable the rehabilitation project to take place which will improve its security, integrity, quality, flexibility and restore its designed capacity. The project will not provide additional water to the Angat system or increased access and connections for the end users. The project will also not increase the sales revenues of MWSS and the two concessionaires, Manila Water Company Inc. (Manila Water) and Maynilad Water Services Inc. (Maynilad).

The project directly supports the future security of water supply to the people of Metro Manila and lowers or eliminates the risk of a future system collapse. This will ensure that the current water and social, economic, poverty and gender benefits they receive from the Metro Manila water supply system is maintained and not eroded.

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\(^1\) The MWSS ROW is a 60 meter wide corridor approximately centred on Tunnel No.1 between Ipo Dam and Bigte Settling Basin.
MWSS is EA/IA for the project. It will set up the Office of Special Projects (OSP) to manage the project’s implementation. MWSS owns the entire Metro Manila raw water supply infrastructure ranging from the Angat/Ipo Dams and catchment, transmission system to the Bigte Settling Basins, La Mesa Reservoir, treatment plants and pumping stations called the Common Purpose Facility (CPF). The common facilities including the dams, transmission system, reservoir and treatment plants are managed by the CPF which is jointly operated by the two concessionaires.

4. PROJECT OUTPUTS AND SOCIAL, POVERTY AND GENDER IMPACTS

AWTIP’s potential social, poverty and gender impacts (positive or negative) are determined by the project’s outputs and how they might erode or enhance the current socio-economic condition and status of the people in the source area and Metro Manila.

The project’s main outputs are:

I. Construction of the 6.3km underground transmission tunnel from Ipo Dam to the Bigte Settling Basin.
II. Contract Supervision.

The project’s main impact groups are:

I. Source communities – locals living in the Bigte and San Mateo Barangays which includes IPs living in the Ipo/Angat catchment area.
II. Beneficiaries - Metro Manila concession area residents who are the end users serviced by the Metro Manila water supply system.

The project’s potential social, poverty and gender impacts are:

I. Temporary employment and income generation opportunities generated by the tunnel construction civil works.
II. Experience and skills development for the local workforce from construction related employment.
III. Increased traffic movement and disruptions in the source communities posing risks for road safety and possibly business losses.
IV. Exposure of local residents including women to health risks such as STDs and HIV/AIDs from increased presence of male construction staff and opportunities for adult entertainment.
V. Capacity building for gender awareness and equality in the executing and implementing institutions (MWSS and CPF).

5. SOCIAL DEVELOPMENT ANALYSIS

The objective of the social development analysis is to assess the socio-economic conditions of the people that will be directly and indirectly impacted by the project and their prevailing access to water supply services including existing network, linkages and conditions that will make them more vulnerable and at risk. The analysis will focus, firstly, on the source communities in Bigte and San Mateo where the
tunnel will be constructed, and second, on the end user beneficiaries who are the residents of Metro Manila and the new expansion areas like Cavite and Rizal.

(1) SOURCE COMMUNITIES

The project’s source communities refer generally to the population of Bigte and San Mateo Barangays in the Municipality of Norzagaray in the Bulacan Province, Central Region, Luzon, where the new Tunnel 4 will be built (see Figure 8-2 below). They include and refer in particular to the residents and communities living along the 6.5km tunnel route and ROW between Ipo Dam in San Mateo Barangay and Bigte Settling Basin in the Bigte Barangay and the IPs living in the Ipo Dam water catchment. These people are the secondary project beneficiaries who may benefit from project related employment during construction and other small business and income generating activities such as operating Karienderia or mobile food stalls. They are not connected or served by the two Metro Manila water supply concessionaires.

Figure 8-2: Map of Province of Bulacan and Municipality of Norzagaray

Socio-demographic profile

Norzagaray is located 47 km north of Metro Manila and is one of the 21 municipalities in the province of Bulacan. It has three cities, the largest of which is San Jose del Monte. Bulacan has a total land area of 279,610 hectares with a population of 2,924,433 in 2010, the second most populated province in the Philippines after Cavite. Half the population of Bulacan are men and half are women. In 2010, the
The number of households was 659,158 with an average family size of 4.4. The urban population was 77.8% in 2013. The median age was 24.8 years which means that half the population is younger than 24.8 years. Moreover, 31.5% of the population were under 15 years old and there are more females in the age group 25-29 and older groups (50 years and over). The population growth in Bulacan was 3.3% in 2007 (NSCB, 2012). This population growth rate has continued in the past 15 years and is attributed to natural increase as well as the influx of migrants from other parts of the Philippines, especially the Northern Luzon provinces. The two main contributing factors to the growth in Bulacan’s population are its proximity to Metro Manila and it being a major urban centre.

Bulacan is one of the richest provinces in the Philippines. Its economy is dominated by the services sector which accounts for 60% of total employment. Its other main industries include marble and marbleized limestone, jewelry, pyrotechnics, leather, aquaculture, meat and meat products, garments, furniture, farming, and sweets and native delicacies, tourism and a wide variety of high-quality native products.

The Bulacan average annual family income in 2009 was PhP 253,279 while the average annual family expenditure was PhP 212,492. The average annual family savings was PhP 40,789. With an average household size of 4.4, the average annual per capita income of Bulacano’s was PhP 57,536 or PhP 4,796 a month. In 2009, Bulacan enjoyed the highest human development index (HDI) in the country at 0.760. The Province’s poverty incidence was 4.8% in 2009 (ranked third lowest at the national level) compared to national poverty incidence of 22.3% (NSCB, 2012). This means that less than half a person out of every 10 people is poor or living below the national poverty line of P 7,021 at the time.

Norzagaray has 13 barangays which includes San Mateo and Bigte. The municipality has a total land area of 28,852 hectares with a population of 103,295 in 2010 - around half are women. Norzagaray is the richest municipality in Bulacan. The backbone of its economy includes farming, marble production and cement manufacturing.

The new Tunnel 4 ROW will traverse two barangays; namely Bigte and San Mateo. In 2010, Bigte and San Mateo Barangays, each had a population of 11,032 and 9,089 and number of households of 2,206 and 1,818 respectively (see Table 8-1). Together, they account for 20% of Norzagayan’s population. The population of these two Barangays have grown significantly since 2003 when they had populations of 8,221 and 5,636, and number of households of 1,683 and 1,100 respectively. Around half their population are men and half are women if the Provincial gender ratio is applied. The average size per household is 5 members. Their main sources of income and livelihood are farming, small business, employment with local business and local government, tricycle drivers and remittance income from OFWs (NSCB, 2012).

<table>
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<tr>
<th>BIGTE</th>
<th>SAN MATEO</th>
<th>COMBINED TOTAL</th>
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<tr>
<td>Population</td>
<td>11,032</td>
<td>9,089</td>
</tr>
<tr>
<td>Households</td>
<td>2,206</td>
<td>1,818</td>
</tr>
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</table>

*Source: NSCB, 2013*
In relation to the project, the APs total around 5245 people that live along the ROW and the public road between Bigte and Ipo which runs parallel to the tunnel’s route. These people have been accounted for in the due diligence report on safeguards and Involuntary Resettlement (IR) Impact but are still included with the source communities for the purpose of this analysis. The APs include the 5,000 population of Air Force, Police and Army officers and their families that will live in the new NHA-AFP housing project which is located within the MWSS 60 meter ROW in Segment 3 (to be occupied in 6 months’ time) and the 49 other households living on the ROW in Segments 2 and 5. With the local area average family size of 5, the 49 households will comprise around 245 people. The other significant group is the IPs who live in the Ipo water catchment zone within the San Mateo Barangay with a population of 1152 people consisting of 361 households. Their needs and concerns are also being addressed separately in the safeguards due diligence report in accordance with ADB’s social safeguards policy but they are also included in this analysis as part of the source communities.

The population of Bigte and San Mateo consist of rural and urban dwellers. The rural people rely mostly on farming, employment in local government and businesses, small business operations (sari-sari stores) and other income generating activities, tricycle drivers and OFWs remittance for their livelihood. On the other hand, the urban population rely on wage employment in local governments, industries and service sector, small and micro business, tricycle drivers and OFWs remittance for their livelihoods.

Water Demand and Supply

The lack of piped clean water is a major development set-back for the people in the source communities as well as much of the Bulacan Province. Typically, they need water for their daily needs including drinking, washing, cleaning, sanitation, food preparation, bathing and farming, etc. While the Angat water transmission pipes traverse the Bigte and San Mateo Barangays, the locals expressed their frustration during consultation that they are not connected despite the raw water coming from their area. The source communities that live along the Ipo Road and tunnel ROW up to 6km from Ipo Dam commonly source their water supply from household and community wells and springs as well as potable water supplied through water tankers by a single contractor approved by the Local Water Districts (LWDs). The water from wells and springs are untreated and used mainly for domestic purpose but are also boiled for drinking while potable water sold be vendors is used mainly for drinking and food preparation.

The local residents are dependent on the local portable water vendors which operate as a private monopoly. Residents are limited to one supplier and there is no competition in terms of service quality, water quality and price. Potable water is delivered by water trucks 4-5 times a week and is sold for Php 35 for a 200 litres drum or Php 175 cu.m. The average family uses 3-4 drums a week or 3-4 cubic meters a month. They pay between Php 100 – Php 500 a month for their water. Bigger consumers with bigger households and businesses who belong above the poverty line pay between Php 800 – Php 1,000 a month. Clearly, potable water is expensive for the poor source communities compared to what the Metro Manila residents pay for their water which is charged by the two concessionaires at an average

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2 Poverty line consists of households with monthly income of Php 8,000.
lifeline rate of Php 79.40 for 10 cu.m. Comparatively, Metro Manila low income and low user residents pay Php 7.90 for 1 cu.m of water compared to the source communities who pay Php 175 for 1 cu.m which is 22 times more.

In San Mateo, small private piped water systems exist which draw untreated water from deep wells and connect up to five households. In the San Mateo Township, the local piped water system is operated by the barangay council. A new private piped water supply system owned by a local businessman is being developed in the informal settlement next to Ipo Dam. It draws water from a nearby spring, treats the water, and provides free metered connections to 28 households consisting of 140 members charging P110 per cubic meter which is 13.8 times more expensive than lifeline tariff in Metro Manila.

In Bigte, there are three existing piped water system (2 operated by the Bigte Barangay and 1 by an NGO) which traps untreated water from the Angat transmission blow outs and connects around 600 households. According to these figures, 27% (600 out of 2,206 households) of the people in Bigte have access to untreated piped water and 73% do not. For these services, consumers are required to pay a flat connection fee of Php 500 and a flat tariff rate of Php 100 a month for 10 cu.m (12.6 times more expensive than the lifeline tariff in Metro Manila). The Bigte Barangay also provides subsidised water hand pumps to the community and free maintenance and repairs; each pump can serve up to 80 households. There are 10 pumps currently in operation serving about 800 households or 4000 people. Households with piped water or connection to the barangay supplied community hand pumps represent 1,000 households (45.3% of Bigte’s total households) or 5,000 people (45.3% of Bigte’s population).

The residents of Bigte and San Mateo suffer from water shortage during the dry season (December to May), especially those that are dependent on wells, springs, rivers and trucked potable water. During this period, the demand for trucked potable water increases as wells, springs and rivers dry up or run low on water. Locals complain that the trucked potable water concessionaire does not adequately meet the demand which is inconvenient and forces people to face problems of shortage of water supply.

The two Metro Manila water concessionaires, Manila Water and Maynilad, are not responsible for supplying water to Bigte and San Mateo and the rest of the Province of Bulacan under their Charter. The immediate responsibility for water supply to the barangays in the Province of Bulacan, including Bigte and San Mateo, is with the Local Water Districts (LWDs) under the umbrella of Local Water Utilities Administration (LWUA). The LWDs water supply system include piped and truck delivery of potable and untreated raw water sourced from deep wells, springs and the Angat system blow outs. Since the 1920s, after the establishment of the Angat Water Supply System, Bulacan has supplied 97% of Metro Manila’s raw water supply from the Angat/Ipo Dam. Bulacan, however, has not benefitted from the water system and continues to extract water from depleting aquifers to the detriment of the environment.

The LWDs in the province face a number of obstacles that impinge on the ability to fully serve their service area. The major deficiencies include:

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Calculated based on the Bigte/San Mateo average household size of 5.
• Inadequate water supply.
• Low water pressure due to the undersized distribution system and inadequate supply.
• Saline water intrusion.
• Ageing and depilated pipelines.
• Inadequate storage volume.
• High Non-Revenue Water (NRW) averaging 30%.

MWSS has assumed the responsibility to supply bulk water to Bulacan from its Angat source after signing a Memorandum of Agreement (MOA) with the Provincial Government of Bulacan on 12 December 2007. MWSS has initiated the Bulacan Bulk Water Supply Project (BBWSP), estimated to cost Php 29.83 million (US$694 million), to address the need for bulk water supply though the construction of infrastructure and utilities for abstraction, treatment and conveyance of the treated water supply to the intended connectors of the LWDs. The project will cover 24 LWDs, spanning the whole of the Bulacan Province and will be implemented in 3 phases. The areas covered in Phase 1 include Malolos, Meycauyan, Sta. Maria, Obando, Baliuag, Bulacan, Pani, Guiguinto, and Bocaue. Norzagaray Municipality which includes Bigte and San Mateo Barangays will be covered in Phase 3 which will materialise in 2020.

BBWSP will be implemented under a public private partnership (PPP) scheme by outsourcing the services and infrastructure responsibilities to a private concessionaire as a Built Operate Transfer (BOT) Agreement for a 30 year concession period. The project will be underpinned by contractual agreement through concession/BOT agreement between MWSS and the Proponent; multiple Water Purchase Agreements (WPAs) between the Proponent and the LWDs; and a guarantee mechanism potentially between LGUGC and LWDs in need of credit enhancement. The bid parameter for the tender will be the lowest bulk water charge that can meet the output specifications. The issue of pre-invitation to tender will made in the first quarter of 2014 (IMC Worldwide, 2013). The financially weak LWDS in Bulacan will be able to benefit from the soon to be implemented PHI Water District Development Sector Project (WDDSP) where they can access sector loans for their capex through the Local Water Utilities Administration (LWUA).

According to MWSS and CPF engineers, the truck delivery of portable water seems the only feasible option for areas like Bigte and San Mateo at this stage. The areas hilly terrains and rugged landscape and sparse population will make piped water supply a very expensive proposition because it will need multiple water pumps and reservoirs to be installed and continuously operated.

**Socio-economic Study (Bigte and San Mateo)**

**Approach and methodology**

Data collection was undertaken through the PPTA socio-economic survey targeting the source communities of Bigte and San Mateo Barangays using random sampling in the selection of the respondents. The source communities are confined to the combined land areas of the Bigte and San Mateo Barangays which cover the Angat/Ipo Dam and the 6.5km tunnel ROW between Ipo Dam and Bigte Settling Basin. They include the IPs in the Angat/Ipo Dam Catchment area, the affected peoples
living as informal settlers along the ROW and the two barangays overall population. The labelling of this geographical area as the source community is self-defined by its resident’s direct emotional, economic and physical association with the Angat/Ipo Dams and water transmission system and will be impacted by the project. A total of 68 households were interviewed covering the project area in Barangay San Mateo and Upper Bigte in Norzagaray, Bulacan (see Figures 8-3 and 8-4 with maps of Tunnel 4 ROW and settlements below). There are about 248 family members or an average of 5 members per household.

**Figure 8-3: Maps of Tunnel 4 Route & Settlements: Ipo Dam/San Mateo – Bigte**

![Map of Tunnel 4 Route & Settlements: Ipo Dam/San Mateo – Bigte](image1)

**Figure 8-4: Map of Informal Settlers and Settlements along Tunnel 4 ROW**

![Map of Informal Settlers and Settlements along Tunnel 4 ROW](image2)

Source: (MWSS, 2014)
Socio-demographic profile

Gender, Age and Educational Attainment

The respondents comprised about 18 males and 50 females, representing 73% of the total respondents. Respondents composed of mostly household heads equivalent to 73% of the respondents. The respondents’ age varied from a youngest of 18 years old to oldest of 65 years old.

The household heads are mostly males (83.3% or 57) while the female household heads composed only about 16% or 11. Most household heads are married (67%) while about 10.2% are separated and the rest are widowed (14.7%). Most of the female household heads are separated (36.6%), widow (36.6%) and living-in (14.75%).

In terms of the household member’s age profile, ages 14 and below comprised 12% while ages 15-64 represent 63.71%. The rest, 65 and above, represent 2.81%. Among the productive age group (15-64 years), more males are working (42 or 70%) than females (18 or 30%).

Highest educational attainment of household heads is represented by 34% achieving elementary education; 41% reaching high school education and 8.82% having college education. The spouses, who are 85.2% females, have 29.4% reaching elementary education; 39.24%, high school education and 17.64%, college education. Comparing the educational attainment of the household heads and their spouses, there are more female spouses reaching college compared to the male household heads.

Occupation of Household Heads

In terms of occupation, the household heads are engaged in various occupations, comprising of government and private employees (14.7%), owning business (8.8%), vending and trading (10.41%) and farming and fishing (10.2%), driving (16.8%), labour and construction (10.29%) and OFWs (17.65%). Most of the household heads do not have regular employment but do self-employment, entrepreneurial activities and seasonal economic activities.

In particular, the male household heads (57) are into driving and construction (31.5%), farming and fishing (12.2%), OFWs (21.05%), employment (14%) and own business (5.26%). Most of the female household heads are engaged mostly in business, sales and vending (54.5%) and employment (18%).

Household Monthly Income, Expenses and Savings

The respondent’s monthly household income distribution is in Table 8-2 below. Household monthly income, Php 8,000 and below represent about 30% while those between Php 8,001 to Php 25,000, represent 57.4%. The rest, Php 25,000 and above composed only 13.2%. Income from OFWs (Php20,000-Php 50,000) are larger compared to the regular employment from government and private (Php 12,000-20,000). The lowest amounts of income are those coming from pension, farming, labour, and small business (Php 2,000-4,000).
In regards to the monthly income of male-headed households, a smaller proportion (24.6%) account for the income group (Php 8,000 and below) while majority (61.4%) belongs to the income group Php 8001-25,000. Only 15.8% represent the income bracket above Php 25,000.

For the female-headed household, there is almost an equal proportion between those belonging to the Php 8,000 below bracket and Php 8,001-25,000 bracket, 54.5% and 45.5 %, respectively. No female headed household reached the income bracket, Php 25,000 and above.

Table 8-2: Monthly Income by Gender

<table>
<thead>
<tr>
<th>Monthly Income Group by Gender</th>
<th>Male HH</th>
<th>Female HH</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
</tr>
<tr>
<td>Php 8,000 and below</td>
<td>14</td>
<td>24.6</td>
<td>6</td>
</tr>
<tr>
<td>Php 8,000 – 25,000</td>
<td>35</td>
<td>61.4</td>
<td>5</td>
</tr>
<tr>
<td>Php 25,000 and above</td>
<td>9</td>
<td>15.8</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>57</td>
<td>100</td>
<td>11</td>
</tr>
</tbody>
</table>

Monthly household expenses Php 8,000 and below is represented by 36.7% of the households while Php 8,001-Php 19,000 is composed of 50.27%. Above Php 20,000 monthly expense is attributed to only a few (7.35%).

A look at the average expense on each line item for the survey respondents show food has the biggest chunk of the household expenses amounting to Php 6,377.08 per month. This is followed by (i) educational allowance of students (Php 991.04), (ii) tuition fee (Php 805.79), (iii) transportation (Php 763), (iv) electricity (Php 803.00); (v) water (Php 480.94), (vi) housing repair/amortization (Php 326.), (vii) cell phone load (Php 265.00) and fuel for cooking Php 192.00 (LPG) and Php 157.05 (fuel wood). Medical bills only cost an average of Php 176.05. Expenses on entertainment; betting and cigarette/alcohol reached an average of Php 288 monthly. However, the expenses for food and other items would be proportionately higher for poor households with monthly income of Php 8,000 or less which represent 30% of the respondents. Generally these are families with inadequate income to meet their basic food and non-food needs.

About 41.8 % expressed after deducting their monthly expense, they do not any savings left. Only 16% declared less than a thousand net incomes while about 10.29 % between Php 1,000-8,000. Among the households, 75% expressed they do not have savings. The amount saved by 20% is not much falling between less than Php 1,000 – Php 3,000 per month.

Water Services

Water Needs and Supply

The respondents use water for domestic purpose, drinking, bathing, food preparation, cleaning, washing sanitation and economic activities including gardening and farming. There is no potable piped water supply in the area. Water sources come from deep well/shallow well (39.7%), public faucet (1.47%) and
spring/river (35.2%). Purchases from potable water vendors (bottled water, 200 litre containers, and peddlers) also represent a significant proportion at 35.29%. Some families and communities have developed piped water systems sourcing from wells and springs benefitting between 5-30 families. A business venture has started near Ipo Dam where a local businessman is now supplying the informal settlers around him with filtered piped spring water. He now has 28 connections serving 80 households who are billed monthly for P 110 per cubic meter. Similarly, a barangay owned and operated deep well piped water system exists in the San Mateo township. All families have access to well and spring water but not all families buy potable trucked water.

In regard to gender, both male and female headed households of lower income bracket use a combination of three sources: (i) shallow and deep wells, (ii) spring/pond/river and (iii) water vendors. A large number of households use water vendor as one source in combination with the deep well and spring/river/pond/stream sources.

Affordability

Most of the respondents and participants of the FGDs expressed the need for a clean water supply. Table 8-3 below shows the expenditure on water by income group. An assessment of the water expense of the male and female-headed households and across all income categories reveal that 24 out of 68 (35.29%) of households do not spend on water because either they have constructed their own system (shallow well or deep well) or that others share with the shallow/deep wells of their neighbours. For these people, the common practice is to boil their drinking water. On the other hand, 44 or 64.71% of households purchase potable trucked water and water from other sources such as local piped water systems. About 45.54% of all households spend from less than Php 100 - 500 per month on water. Around 8.82% of households spend Php 501 – 1000 per month while 10.29% households spend between Php 1,001 – 3,000 a month, 2 of which are poor households belonging to the income bracket of Php 8,000 or less per month. Among the poor households with monthly incomes ofPhp 8,000 or less, 7 out of the 9 households that spend on water spend between below Php 100 – 500. Water fees constitute 4.1% of average monthly expense of the households that purchase water.

Table 8-3: Expenditure on water by income group

<table>
<thead>
<tr>
<th>Monthly Water Expense</th>
<th>Php 8,000 below (n=20)</th>
<th>Php 8,000-25,000 (n=39)</th>
<th>Php 25,000 and above (n=9)</th>
<th>Total</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
<td>Male</td>
<td>Female</td>
<td>Male</td>
</tr>
<tr>
<td>None</td>
<td>8</td>
<td>3</td>
<td>10</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Below 100</td>
<td>2</td>
<td></td>
<td>2</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>100-200</td>
<td>2</td>
<td>1</td>
<td>6</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>201-300</td>
<td>1</td>
<td>1</td>
<td>5</td>
<td></td>
<td>7</td>
</tr>
<tr>
<td>301-400</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>401-500</td>
<td>1</td>
<td></td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>501-1,000</td>
<td>4</td>
<td></td>
<td>2</td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>1,001-2,000</td>
<td>2</td>
<td></td>
<td>2</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>2,001-3,000</td>
<td>2</td>
<td></td>
<td>3</td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>Total</td>
<td>14</td>
<td>6</td>
<td>34</td>
<td>5</td>
<td>5</td>
</tr>
</tbody>
</table>
Assuming an average monthly water bill of Php 500 with the establishment of a water system, the lower income groups with income bracket Php 8,000 and below may have difficulty in paying or accessing the service.

Asset ownership and access to resources

Asset Ownership

Most of the equipment owned by the households including those with low incomes are TV sets, refrigerator, telephone/ and cellular phone, motor cycle and tricycle, washing machine, among others. Only a few households have a car and similarly, a few own a computer.

Basic Utilities

In terms of household basic utilities, most have water sealed toilets (95.58%).

Most households are lighted or use electricity (82%) while majority used fuel/wood for cooking (63.2%). Wood is abundant in nearby forest but may cause deforestation if not controlled or sustainable.

Incidence of Illness / Death

The incidence of water and sanitation related diseases such as diarrhoea, malaria, dengue and skin infections were reported as low and insignificant despite the lack of piped potable water supply. The common causes of household illness are cough, colds and fever (75.93%). Other respiratory disease includes bronchitis, pneumonia, and asthma (9.2%). Incidence of diarrhoea is not many (3%). Chronic diseases include hypertension, heart disease and cancer (4%). The causes of death among community members are hypertension, pneumonia/bronchitis and asthma, heart and kidney disease. Old age appeared to be one of the causes of death among the community residents (35.19%).

Access to Basic Social Services

In terms of access to basic social services, the barangay health centre is mostly visited by the household for their check-up and medical consultation. Government hospitals and private hospitals are used during
emergency cases. Both male and female households use the barangay health centre for consultation and check-up because it is free.

The elementary and high school students go to the elementary and high school located in the two barangays.

**Access to Credit Facilities**

Available credit facilities identified in the area include cooperatives (51.4%), private money lenders (35%), banks (10.3%) and relatives and friends (29.4%).

In terms of access to credit among the households, some borrow money from cooperatives (16.6%) while others from friends/relatives (17.6%). Most of the credit purpose is for business capital while others used it to buy food (5%) and pay debts (9.4%).

Among the female household heads who borrowed money, it was sourced from private money lenders (33.3%) and 16.7% from cooperatives. All use it for business purposes.

The male headed households who borrowed capital for business got it from a private money lender. Private money lenders charged exorbitant rates of 10%-20% per month and for a small business owner, this may render his/her business unprofitable. Majority did not access credit.

**Network and Linkages/Community Organizations**

Interview with barangay officers revealed a number of active community organizations in the two barangays that undertake socio-economic and development activities (Table 8-4). Of particular interest are the women associations and cooperatives (KABALINGAY, Bigte Women’s Power Association, Home Builders Alkansya Multi-purpose Coop and Credit Assistance Rural Development (CARD) which have been operating for at least 3-15 years. These groups offer credit and training/livelihood assistance to women who are unemployed.

Among the respondents, less than half (40%) noted membership in these community organizations. The female household heads reported being a member of a cooperative (33.3%) and religious/savings group organization (66.57%). The longest existing organization (KABALINGAY) has been operating for 17 years and the newest (Bigte Women’s Power Association), for 2 years. A brief profile of the community organizations are described below:

**Table 8-4: Community organisations**

<table>
<thead>
<tr>
<th>Community Organisations</th>
<th>Objectives/Programs and Services</th>
<th>Sources of Funds</th>
<th>Status of Membership</th>
</tr>
</thead>
<tbody>
<tr>
<td>Senior Citizens Association (San Mateo)</td>
<td>-Provide assistance to its members -Death benefits to members (Php 5,000 to beneficiaries) -Socialization during x mas parties</td>
<td>-Membership fees/donations</td>
<td>-200 members of which 120 active members -organized in 2001</td>
</tr>
<tr>
<td>Senior Citizens (Bigte)</td>
<td>-Provide assistance to poor senior</td>
<td>-Membership fees</td>
<td>-500 members of</td>
</tr>
<tr>
<td>Organization</td>
<td>Description</td>
<td>Funding/Support</td>
<td>Membership</td>
</tr>
<tr>
<td>-----------------------------------</td>
<td>------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------</td>
<td>------------</td>
</tr>
<tr>
<td>Bigte Women’s Power Association</td>
<td>Assist mothers/wives who are unemployed/don’t work - Livelihood/skills training - Rag making/sewing uniform project for kinder students - Training on food processing/perfume and candle making/recycled paper making</td>
<td>Donation of PHP 30,000 from brgy captain - Membership Fees - Donation from Congressman Mendoza Php 30,000</td>
<td>300 members</td>
</tr>
<tr>
<td>KABALINGAY (Women)</td>
<td>Assist mothers/housewives - Skills training and livelihood - Food processing (products sold by members every Friday of the month) - Medical mission</td>
<td>Membership fee of Php 20.00 collected from every member during meetings. Interest from membership fees given in the form of groceries every December</td>
<td>200 members</td>
</tr>
<tr>
<td>Home builders Alkansya Multi- purpose Coop</td>
<td>Strengthen families socially and financially - Provides loan to its members - Medical missions (for members and non-members) - Training on Candle making/Noodles making</td>
<td>Membership fees/Grants - 200 members with 100+ active members - organized in 2005</td>
<td>200 members</td>
</tr>
<tr>
<td>Credit Assistance for Rural Development (CARD)</td>
<td>Assist members through loan assistance</td>
<td>Capital build-up from members - organized in 1990 (50 members)</td>
<td>50 members</td>
</tr>
<tr>
<td>Sangguniang Kabataan (SK) youth (San Mateo)</td>
<td>Assist youth members in various projects - Cleanliness programs - Home/vegetable gardening - Sport Facilities improvement/movable court - Books/materials for library</td>
<td>Regular SK budget Php 400,000 - 500 members of which 250 active members - organized in 2010</td>
<td>750 members</td>
</tr>
<tr>
<td>Sangguniang Kabataan (SK) youth (Bigte)</td>
<td>Assist youth away from drugs thru sports - Medical mission - Sport fest every summer - Provides school supplies to students - Provide electric fan to schools</td>
<td>Regular SK budget Php 900,000</td>
<td>700 Members</td>
</tr>
</tbody>
</table>
Overall, these organizations including youth (SKs), Senior Citizen’s Group and the spiritual association have been contributing to the socio-economic development of the two barangays.

(2) BENEFICIARIES

The project’s ultimate beneficiaries would be the end water users who are the residents of Metro-Manila’s and the new expansion areas. While the project will not contribute directly to increasing water supply to Metro Manila or deal with any consumer connections, it will, however, enable the rehabilitation work on Angat’s old tunnels and aqueducts transmission system to take place while ensuring the continuity of water supply. The end users will directly benefit from the continuation of the socio-economic benefits they receive from the Metro Manila water supply system.

Potable water supply (piped and trucked) for Metro Manila is supplied by the two concessionaires of MWSS, with Maynilad covering the west zone and Manila Water covering the east zone. As of December 2012, the east zone covers an area of 1,400 sq. km, with 858,672 water connections benefitting 6.8 million people (99% coverage). The west zone covers an area of 540 sq.km, with 988,503 water connections benefitting 8.2 million people (94.6% coverage).

Since the beneficiaries will not directly benefit from the project through additional gains in access and consumption, they will not be subjected to the same detailed socio-economic study that was done for Bigte and San Mateo. Instead, this analysis will describe their socio-demographic profile and basic socio-economic conditions, and assess the extent of the two concessionaires social and livelihood programs which targets the poor and low income people of Metro Manila.

Socio-demographic Profile

Based on the 2010 national census, Metro Manila has a total population of 11.7 million people (14 million is the total population for the concession areas), comprising 2,743,459 households/families at 4.3 members per household (Table 8-5 below). The female population which comprise about 6,015,066 or 50.9% is slightly higher than the male population which comprised about 5,781,807 or 49.1%. About 67.5% of the total population are in the labour force (15-64 years old). The total dependency ratio is 48% (48 persons out of every 100 who are productive) (NSCB, 2013).

According to July 2013 Labour Force survey, the total labour force representing ages 15-64 (both employed and unemployed) is about 8,124,000 persons while labour force participation rate is 64.3%. Unemployment rate is 10.9%. In regards to gender employment, based on LFS October 2011, of the total 4,567,000 employed persons, 55.1% are males and 44.9% are females. The females, however, dominated the serves sector (89.1%). Majority of these women were employed in the wholesale and
retail trade industry (33.2%), private households with employed persons (16.4%) and real estate, renting and business activities (10.3%) (NSCB, 2013).

NSCB 2009 data also revealed 64% of household incomes are obtained from wages and salaries, 13% from entrepreneurial activities and 22.9% from other sources. About two-thirds of families with average over Php 100,000 obtain their incomes from wages and salaries while 28.5% of those whose income was below Php 60,000 obtained their income from entrepreneurial activities.

Table 8-5: Metro Manila Population Demography

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of cities/municipalities</td>
<td>16 cities/l municipality</td>
</tr>
<tr>
<td>Total population (2010 Census)</td>
<td>11,796,873</td>
</tr>
<tr>
<td>Male population</td>
<td>5,781,807 (49.1%)</td>
</tr>
<tr>
<td>Female population</td>
<td>6,015,066 (51.9%)</td>
</tr>
<tr>
<td>Number of households/families</td>
<td>2,743,548 (@4.3 per household)</td>
</tr>
<tr>
<td>0-14 years</td>
<td>3,432,903 (29.1%)</td>
</tr>
<tr>
<td>15-64 years</td>
<td>7,964,646 (67.5%)</td>
</tr>
<tr>
<td>65 years and over</td>
<td>399,324 (3.4%)</td>
</tr>
<tr>
<td>Density (persons per sq.km)</td>
<td>19,137</td>
</tr>
<tr>
<td>Population growth rate (2010)</td>
<td>2.02</td>
</tr>
<tr>
<td>Project population</td>
<td>2013: 11,953,140; 2025: 20.8 million</td>
</tr>
</tbody>
</table>

Source: National Census Survey (NSO 2012)

Among all regions in the Philippines, Metro Manila has the highest average annual household income of Php 380,000, which is higher than the national income average of Php 234,000 (2012 FIES Survey). It also has the highest average savings of Php 40,000 (at current prices).

A household of 5 members has to have a monthly income of Php 8,403.33 to stay out of poverty or for it to meet basic food and non-food needs. In terms of expenditure, households spend mostly on food, equivalent to 36.2% of total household expenses. House rental comprised about 18.5% while fuel, light and water accounted for about 8%. Transport and communication accounted for 9% while education fees at 4% and medical care, 1.9% (NSCB 2012).

In terms of water expenses, a study conducted by the Centre for Environmental Science and Technology (CEST) and NJS for Manila Water entitled “Pasig River Catchment Project” in 2010 with 600 sample households in Mandaluyong, Pasig and Makati showed that on average, households spend Php 478 to as high as Php 903 per month. Water expense is about 4.2% of household income for the low income group (Php 9,000 below) and 1% for those with an average income of more or less Php 50,000 per month.

Those with annual income of Php 69,000 (or Php 5,750 monthly) had negative net incomes while those with annual Php 108,000 (Php 9,000 monthly) had savings of about Php 6,000 annually or Php 500 monthly.
The registered annual poverty incidence among families is 3.8%, considered lowest among all the regions and compared with the national poverty incidence of 22.3%. In 2009, Metro Manila has about 64,404 poor families comprising 1.67% of the 3,855,730 poor families registered nationwide (NSCB, 2012).

**Gender Roles and Relations**

The traditional separation of gender roles in the Filipino culture between men and women also prevails in Metro Manila. Men have historically been the breadwinner in the family and women undertake household management including child and elderly care, food preparation, water fetching and management, washing, cleaning, children’s schooling, care for the sick and sanitation. However, women are increasingly joining the workforce either because of their progressive education and careers or to help supplement their household incomes to meet the pressures of increased cost of living in the urban areas. In modern and middle to upper income households, men are increasingly sharing in the domestic labour because of their education and changing values in favour of gender equality.

The above CEST Pasig River Catchment Project socio-economic survey in 2010 supported this observation. It showed that more low income male headed households (MHHs) are formally employed (43.2%) compared to FHHs (16.5%) and more FHHs are OFWs than MHHs. More FHHs (16%) have college education than MHHs (14%) and more FHHs own microenterprises (24.1%) than MHHs (11.7%) but more MHHs own formal businesses compared to FHHs. Across all income groups, the income of MHHs is higher than FHHs.

The connection to treated piped water makes a big difference to the convenience and status of women in the family and community. Not only is piped water cheaper, safe and convenient compared to other sources like wells and water supplied by vendors, its availability helps women effectively and efficiently carry out their domestic tasks, and spend less time fetching water and attending to the sick. This time saving helps reduce their time poverty and enables them to engage in other productive activities such as income generation and small businesses which is not only empowering but more importantly improves their living standards and that of their families.

**Water Demand and Supply**

**Metro Manila Water Concessionaires**

The 14 million population of Metro Manila currently depend on the Metro Manila water supply system for all of its potable water supply (piped and trucked). The supply of sufficient raw water from the Umiray-Angat-Ipo system (95%) is critical to the well-being of the Metro Manila population. Naturally, it is the desire of every person and household to have the convenience of 24/7 piped potable water connection. However, the two concessionaires in 2011 have only managed to reach an average of 96.8% of the population in terms of coverage while 3.2% remain unconnected (MWSS, 2014). The unconnected population are mainly people that reside in sparsely populated areas possibly with difficult terrains where its uneconomic to provide and operate piped water infrastructure but they still get serviced with trucked portable water.
latter are people that live mainly in the poor areas and most of whom are informal settlers or squatters but they are still served with potable water supply delivered by water tankers and vendors.

Potable water is supplied in Metro Manila by the two concessionaires under 25 year contracts since 1997. Their contracts were recently extended by another 15 years up to 2037. Metro Manila has been carved up in two areas between Manila Water and Maynilad which supply the east zone and west zone respectively (Figure 8-5 below). As of December 2012, the east zone has covered 181,369 households (6.8 million people) while the west zone covered 315,770 households (8.2 million people).

Since water is a basic need, it is sold at an affordable rate by the concessionaires to benefit the low income and poor households – also an obligation under the concessions. Both concessionaires apply a lifeline or socialised tariff. For a minimum consumption of 10 cu.m, Manila Water and Maynilad charge a rate of Php 80.61 and Php 78.19 respectively in 2012. The average lifeline tariff for the two concessionaires is Php 79.40 which is equivalent to Php 7.94 for 1 cu.m. Customers that consume higher than 10 cu.m are charged a higher rate for every next 10 cu.m. Businesses and other high users are charged a separate and higher rate than households. Despite having 24/7 treated piped water supply, Metro Manila residents generally buy their drinking water from private potable water vendors that do door to door delivery at the price of P75 a 10 litre gallon, equivalent to P 7,500 a cubic meter which is very expensive. For the areas that remain unconnected, the concessionaires are required to provide them with trucked potable water.

Figure 8-5: Map of Metro Manila Water Concession Areas
As of August, 2011

<table>
<thead>
<tr>
<th></th>
<th>West Zone - Maynilad</th>
<th>East Zone – Manila Water</th>
</tr>
</thead>
<tbody>
<tr>
<td>Land Areas (sq.km.)</td>
<td>540</td>
<td>1,400</td>
</tr>
<tr>
<td>Service Area</td>
<td>17 cities/municipalities</td>
<td>23 cities/municipalities</td>
</tr>
<tr>
<td>Total population</td>
<td>8.2 M</td>
<td>6.8 M</td>
</tr>
<tr>
<td>Raw Water Allocation</td>
<td>2,400 mld</td>
<td>1,600 mld</td>
</tr>
<tr>
<td>Water # Water Connections</td>
<td>1,073,508</td>
<td>858,672</td>
</tr>
<tr>
<td>% Water Supply Coverage</td>
<td>94.6%</td>
<td>99%</td>
</tr>
<tr>
<td>Total Population</td>
<td>8.2 M</td>
<td>6.8 M</td>
</tr>
<tr>
<td>Sewerage # Sewer Connections</td>
<td>45,166</td>
<td>90,292</td>
</tr>
<tr>
<td>% Water Supply Coverage</td>
<td>9%</td>
<td>12%</td>
</tr>
<tr>
<td>Total Population</td>
<td>334,228</td>
<td>731,365</td>
</tr>
</tbody>
</table>

Source: MWSS, 2014

The introduction of the private sector under the PPP into Metro Manila’s water distribution concessions has achieved fairly good results since 1997. It has resulted in significant improvements in operational efficiency, improved the quality of infrastructure investments, increased new connections and coverage, improved the level of customer service and quality of water, lowered non-revenue water (NRW) by up to 50% and lowered water rates by 60% (ADB, 2008). Initially, Manila Water outperformed Maynilad, the latter eventually encountered financial problems and a change of ownership in 2007. To date, both companies are operating profitably and have increased their coverage to over 94% of their respective areas.

**Manila Water**

Manila Water is a joint venture between three companies with the Ayala Corporation holding majority control of the partnership. The other two are foreign companies namely International Water and Mitsubishi Corporation. Manila water won the bid in 1997 to operate the concession in the eastern half of Manila and nearby Rizal Province which consists of 23 cities and municipalities. It is tasked to supply water, manage the distribution system and improve and expand the east zone concession area up to 2037. The east concession area includes Mandaluyong, Marikina, Pasig, Pateros, San Juan, Taguig, Makati and parts of Quezon City and Manila. It also serves Antipolo City and the Rizal towns of Angono, Baras, Binangonan, Cainta, Cardona, Jala-Jala, Marong, Pilipia, Rodriguez Tanay, Taytay and San Mateo.

Manila Water is now providing 24 hour availability of water (99%) and compliance with water quality standards (100%) (MWSS, 2014). Part of Manila Water’s mission is to improve the health and sanitation conditions of the low income communities. In addition to charging inexpensive rates and accepting flexible payment methods, it runs livelihood programs which are specifically designed to improve the lives of low income households and communities. Manila Water’s Tubig Para Sa Barangay (TPSB) or “Water for the Poor” program, provides 24 hour supply of safe, affordable drinking water to low income consumers in greater Manila. To date, over 700 TPSB projects have been implemented serving 1.7 million people. It has also lowered the incidence of water borne diseases and improved the overall
health and sanitation conditions. Part of the program is giving livelihood for community based cooperatives and engaging them as suppliers and service providers for some company requirements which so far as generated more than 17,000 jobs. Manila Water has also helped marginalised communities by installing washing facilities and drinking fountains in schools, hospitals, jails, markets and orphanages.

**Maynilad**

Maynilad is the water and wastewater services provider for the 17 cities and municipalities that comprise the West Zone of the greater Metro Manila area. In 1997, the company was granted a 25-year exclusive concession by the Philippine Government, through MWSS, to operate, maintain and invest in the water and sewerage system in Caloocan, Las Piñas, Malabon, Manila, Muntinlupa, Navotas, Pasay, Parañaque, Valenzuela, parts of Quezon City, a part of Makati; the cities of Bacoor, Cavite and Imus, and the municipalities of Kawit, Noveleta and Rosario all in the Cavite Province.

Maynilad went through a change of ownership on January 24, 2007, with the consortium of DMCI Holdings, Inc. (DMCI) and Metro Pacific Investments Corporation (MPIC) winning 84% of the water company’s shares in a public bidding. Lyonnaise Asia Water Limited (LAWL) held a 16% share. The MPIC-DMCI consortium immediately worked on the financial and operational rehabilitation of Maynilad. In August of the same year, the consortium signed a prepayment and settlement agreement with Maynilad’s creditors and MWSS. By January 2008, the new owners of Maynilad had already paid off the company’s outstanding debts, which had then reached $240 million. An aggressive catch-up plan was also implemented to increase company revenue, improve water service operations, and drastically cut commercial losses.

Similar to Manila Water, Maynilad has its own social and livelihood program. It launched the *Samahang Tubig Maynilad* (STM) in May 2009 to address the problems of water inaccessibility and irresponsible water use in Maynilad's concession area. Under the project, residents of urban poor communities are organized and given training to manage the water supply delivery system in their areas. Initially implemented in year 2009 at Tondo, Manila, STM has since been extended to other areas of the West concession. As of 2012, there are now 12 STMs servicing 2,683 low-income families. Maynilad is also experimenting livelihood projects with the STM’s such as the manufacture of *Kapwa* product line which includes hand soaps and sanitisers. Maynilad also runs the *Lingkod Eskuwela* project intended for West Zone public schools that have no access to clean and portable water and involves the construction of drinking fountains, clean-up of water reservoirs or tanks and regular sampling of drinking water to check its quality. The project also conducts regular desludging of the school’s septic tanks to ensure proper sanitation. In 2012 alone, drink-wash stations in 40 public schools were built, each with an upgraded design featuring child-friendly facts on water and the environment. Maynilad is also building rotary homes for the poor in Paranaque with a target of 1,500 units (Maynilad, 2013).

In terms of future supply and demand, there are plans to develop another significant water source for Metro Manila through the New Centennial Development Project currently being studied by MWSS. The new source will supply Metro Manila’s future needs as well as expand into new areas including Cavite.
and Bulacan. However, this will only be operational from 2020. Until then, the Angat system will be critical to Metro Manila’s water needs.

6. GENDER ANALYSIS

The gender analysis presented here is focused only on the source communities in Bigte and San Mateo. The intention is to analyse and understand the gender disparities between men and women, the causes and needs in order to help formulate relevant project interventions to address the disparities and promote equitable gender benefits. It uses the same sex disaggregated data from the Bigte/San Mateo socio-economic survey to extrapolate and analyse the differences in the situation of men and women in the community and existing gender inequalities and risks.

In terms of gender roles, the Filipino society traditionally assigned men to be the breadwinner and to women the role of the housekeeper and house maker although these gender roles and relations are changing especially where women are becoming an increasing contributor to family income. Women are increasingly joining the workforce because they are educated or are forced to work to make family ends meet because of the high cost of living.

Traditional gender roles mostly prevail in the rural areas where men cultivate the land and the rest of the family including women are involved in planting and harvesting crops. Women work in gardens and perform most of the domestic work including cleaning the house, preparing food, caring for the children, elderly and the sick, supervising school work, fetching water, washing clothes, family hygiene and sanitation. The burden of women’s domestic role increases their time poverty denying them the opportunity to engage in other productive activities such as employment and microbusiness.

In urban areas, men work in construction and other heavy duty jobs and as drivers of passenger vehicles. Apart from being housekeepers, women also work as teachers, clerks, sales staff, owners of sari-sari stores, and marketer of produce and health care givers. However, they are not engaged in construction or any heavy duty jobs. In the urban areas, women are also marginalised by their time poverty. In professional work, gender lines are less important. Women attorneys, doctors and lawyers are found in the provinces as well as in urban areas.

The general lack of piped potable water for the residents of Bigte and San Mateo has only reinforced the burden of women’s traditional role in the community. Women continue to spend a lot of their time and energy on water fetching which is inconvenient for the efficient and effective discharge of their domestic chores adding considerably to their time poverty and lack of economic empowerment.

In the surveyed areas, more males are working than females and income was higher for males than females. In terms of savings, no female households reported any savings compared to some male households that reported between Php 1,000 – 3,000 monthly savings. In this regard, it appears that there is a slight disparity between income of male and female headed households.

In terms of educational attainment, there were more female spouse who reached high school and college compared to men. Even as the male household head is the bread winner, the wife is consulted
in major family decisions, particularly in the following: (i) who is to buy equipment (47%); (ii) when to renovate the house (50%); (iii) whether to give assistance to a relative or friend (52%); and (iv) who to join and involve in community projects (50%).

However, when it came to the management of the households, the wife was involved in: (i) monitoring of the activities of the children (75%); (ii) cleaning the house (65%); (iii) water collection and management (60%); garbage disposal (60.29%); and (iv) preparing food and meals (76.5%). In the conduct of household activities, both female and male children assist in the cooking, collecting water, washing clothes and other domestic chores.

Women are involved in entrepreneurial activities such as food vending, trading as well as managing sari-sari stores. These activities are often done concurrently with the household activities and women’s free time in the afternoons before children return from school.

Some women are members of the women organisation in their barangay. The women are organised at the site level then federated at the barangay level. The association is involved in credit program usually accessed by women members (51.74%). Another cooperative called CARD is also available for the capital needs of the women in San Mateo. Access to credit is not difficult as the women organisation (KABALINGAY) and CARD are available as credit facilities for their members.

In community activities, the women attend the meetings as their husbands are at work. In San Mateo, majority of the more than 50 attendees during the public consultation were women. Some women are members of the barangay council as well as barangay officials. During consultation the women are happy to see potential livelihood activities during construction activities such as food vending, merienda as well as other economic activities. Construction labour employment is also seen to provide work for their husbands.

Issues that may affect women with regard to the project include the following: (a) The potential exclusion of the low income group/unskilled/women headed household from economic opportunities during construction and post project O&M; (b) The lack of access to clean piped water supply in San Mateo and Bigte especially among the low income communities/female headed households; and (c) Women and men may also be exposed to the threat of STD/HIV infection through the influx of external male construction workers and proliferation of adult entertainment venues.

7. **POVERTY AND SOCIAL RISK ANALYSIS**

ADB’s Strategy 2020 lends support to the implementation of the Philippines National Development Plan 2011-2016 which gives high priority to the accelerated development of national infrastructure including the water sector to promote economic growth, equitable development and poverty reduction. This commitment is reflected in the Philippines Country Partnership Strategy 2011-2016 which extends assistance to this key sector and is consistent with the key elements of ADB’s Water Operations Plan 2011-2020 which supports the expansion and improvement of water delivery services, conservation of water and increased system efficiencies.
The project’s targeting classification is general intervention (GI). AWTIP will ensure the continuity of water supply to Metro Manila’s water concession areas benefiting its 14 million population including poor people and women. It will support social inclusion and poverty reduction measures indirectly for the source communities through employment and income generating opportunities during construction. Poverty was observed as prevalent in the surveyed source community areas in terms poor quality houses and peoples poor living standards (includes hygiene and sanitation) especially along the public road corridor between Ipo Dam and Bigte Settling Basin which is parallel to the route of the new Tunnel 4. The sample socio-economic survey reported a poverty incidence of 30% which is reflective of the underdeveloped state of Bigte and san Mateo where economic opportunities and farming are limited constrained by the lack of water and the rugged hilly terrain and poor quality soil. The project also carries some social risks which could potentially marginalise and threaten the safety of source communities including the poor, women and children. The main poverty and social issues and risks that will need to be addressed during the project design are the traffic hazard during construction, health risks and the lack of employment and lack of economic opportunities in the area.

Low Household Incomes and Poverty Threshold

Bigte and San Mateo Barangays are part of the Bulacan Province which has a low poverty incidence of 4.8% in 2009 – the third lowest in the country. Annual per capita threshold for the Bulacan Province is Php 19,756 (NCB, 2012). For an average family of 5 household members, it should have an income of Php 7,705 per month to meet food and non-food requirements. The average annual per capita income of Bulacanyo’s is Php 57,536 or Php 4,796 a month. This is well above the annual per capita threshold. However, based on the survey findings, Bigte and San Mateo have a much higher level of poverty due to the lack of economic opportunities in the area and peoples low income levels. The survey households with incomes of Php 8,000 or below a month represent about 30% of the total respondents. Out of the households living below the poverty line, 9% receiving the lowest monthly income of about Php 2000 – 4000 are represented by pensioners and self-employed such as micro-entrepreneurs, labourers, garbage scrap collectors. Given that per capita threshold for an average household is Php 7,705 a month, up to 40% of the people in Bigte and San Mateo have difficulty making ends meet. This group is the most vulnerable to negative socio-economic changes and shocks. There are a relatively higher proportion of households having an income of between Php 8,000 – 20,000 represented by 38.2% than those having Php 20,000 and above comprising only 8.8%. Income of OFWs (Php 20,000 – 50,000) is larger compared to the regular employment from government and private sector (Php 12,000-20,000

Poor Households

According to the survey, the proportion of poor families in the source communities is around 30% based on household incomes of Php 8,000 or less per month. The poor mostly live as informal settlers on public land along the tunnel ROW and public roads without any piped water supply, wastewater and solid waste collection and treatment services and proper sanitation. They either rent homes in squatter areas or have their own but without titles to the land they live. They typically dwell in makeshift and poorly constructed homes and some have been there since the 1930s while others have been around for 10-30 years. Their houses are typically small and overcrowded but most have electricity.
connections. The project does not require the informal settlers on the ROW to be relocated. In Bigte and San Mateo, the number of poor households is growing as a result of natural growth and the increase in new migrants from other parts of the country. The project is likely to attract more people to move into the area in search of work and economic opportunities. The poor often experience poor quality water supply and water shortages. They face poor hygiene problems and high exposure to water borne diseases and infections.

**Employment and Income Generation**

Although the project will not address the clean piped water supply needs of the source communities in Bigte and San Mateo, it will however, bring significant economic spin-offs through employment in construction jobs for men and entrepreneurial activities for women. Since employment is scarce in the area, the competition for jobs both skilled and unskilled will be stiff among the locals and migrants from other parts of Bulacan and Philippines. The exclusion of low income households from employment and entrepreneurial activities for women and female heads is, however, possible. The project will include socially inclusive measures in the DMF for their equal participation such as targeted preferential employment for unskilled jobs during construction for locals and IPs as well as IEC campaigns on business opportunities for men and women.

**Water Access and Affordability**

The lack of access to clean piped water and the high water expense of the source communities is an important development constraint that contributes to the local poverty. The lack of clean water directly exposes people to water-borne diseases, lack of hygiene and sanitation problems. This reduces people’s living standards and will add to their medical costs which they already cannot afford. In regards to supply, there was a strong demand from surveyed households for an improvement in the trucked

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5 The IEC campaign will be coordinated by MWSS-OSP/PICs in collaboration with other partners including the civil works contractor, LGUs, DPWH, barangay councils, NGOs and local health authorities to inform locals and construction workers of the project’s grievance redress mechanism, health and traffic risks and mitigation, employment and business/livelihood opportunities.
potable water supply especially during the dry season. Although the potable water trucks visit 4-5 times a week, they wanted an increase in frequency and availability and a reduction in price. The increase in traffic could disrupt the regular delivery and reliability of potable water supply and the presence of hundreds of construction workers⁶ at the base camp at Ipo Dam will place additional burden on the water contractor’s resources and obligations.

In terms of affordability, the source communities’ water expense is much higher compared to Metro Manila residents who pay Php 175 (@ Php 35 per 200 litre drum) and Php 7.94 respectively for one 1 cu.m – a significant difference of P 167.06 (in other words, the people of Bigte and San Mateo are paying 22 times more for portable water). The high cost of water crowds out other essential family expenses such as basic food and non-food items and limits households’ ability to save.

Traffic Disruptions and Safety Risk

The project will not physically displace people in the ROW but there will be major disturbance because of a significant increase in traffic in the area during the three years of construction, especially the movement of big trucks, machines and plants. The increased traffic during construction, although temporary, has been expressed as a concern by most of the stakeholders. Since the local public road is very narrow, winding and barely has two normal sized lanes, construction traffic is likely to cause traffic jams, delays and inconvenience to the general public undertaking their daily activities such as accessing basic social and health services, going to work, children going to school, marketing and pedestrian safety. The traffic nuisance can also drive customers away and cause losses to local businesses. Road safety risk will be heightened putting the safety of the travelling public and motorists in danger. Proper road signage, public awareness and safety driving training among the contracting companies and local residents will be required.

Other Social Risks

While there are no incidence of HIV/AIDS and human trafficking confirmed by the local health authorities and barangay tanods, there may be potential social risks involved during construction activities. Project construction will lead to significant labour migration into the Ipo-Bigte area by mostly men who will be involved in building the tunnel. The base camp will be at the Ipo Dam and at the peak of construction; up to 300 men will be employed. This situation presents the opportunity for the operation of beer houses and videoke bars in the area which can increase the consumption of alcohol and cause social problems for the workers and local people. Local people can be exposed to the contraction of STDs including HIV/AIDS through sexual contacts with workers. Other possible social risks for locals include gambling and drugs which may undermine the enjoyment of project benefits by the households. This may reduce take-home pay for workers compromising the financial needs of families.

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⁶ During the peak of construction, up to 300 construction workers will be employed (MWSS)
Beneficiaries (Metro Manila End Users)

The project beneficiaries or water end users in Metro Manila water concession areas stand to directly benefit from the continuity of the raw water supply to Metro Manila and the improvement in the integrity and security of the Angat transmission system once the rehabilitation to the old tunnels and aqueducts are completed. The protection of the integrity of the system is an insurance against the risk of a future collapse which will be catastrophic for Metro Manila residents. It will also restore the old transmission system to its full capacity hence augmenting additional water supply for the new expansion areas and for Metro Manila’s future needs. For the people of Metro Manila, this means that the current benefits/utilities they receive from the Metro Manila water supply system will be maintained and not eroded. The continuation of portable water supply is beneficial to women and poor households. For the poor, the benefits include lower costs (lifeline water tariffs), cost savings and improved services and connections. Manila still has 3.4% of its population that live in areas that are difficult and expensive to connect. It also has poor people (64,404 households) with special needs in terms of piped water access and affordability but they are being taken care of by the two concessionaires social and livelihood programs.

8. INSTITUTIONAL GENDER ANALYSIS

The institutional assessment is covered in Section 10.0 of the DFR. It identifies the main institutions involved in the project’s planning and implementation, and assesses their capacity to carry out their mandates and responsibilities under the project. The intention here, however, is to specifically assess the gender awareness and gender equality policies and practices of the concerned institutions and how they could contribute to addressing any perceived and reported gender disparities and risks. This analysis supplements section 10.0 of the DFR.

MWSS and CPF are the main institutions involved in the execution and implementation of AWTIP and will be assessed here. MWSS is the project EA/IA and owner of the new tunnel while CPF will manage, operate, maintain and renew it as part of the Angat transmission system under its CPF mandate. Under the Concession Agreements, MWSS and the two concessionaires have entered into a joint venture agreement for the latter to jointly share in the responsibilities and liabilities with regard to the operation, maintenance and renewal of the common purpose facilities which includes the Angat/Ipo Dams, transmission tunnels, aqueducts, Bigte settling basins, La Mesa reservoir and the La Mesa and Balara treatment plants and related facilities. Maynilad and Manila Water are excluded from the analysis because they are not involved the AWTIP implementation and management, albeit they are indirectly linked to the project as joint venture partners under CPF.

MWSS

MWSS is a government owned and controlled corporation, established in 1971 through the Republic Act 6234, responsible for water and sewerage in Metro Manila. In 1997, operational services were awarded to the two concessionaires under a 25 year concession which have been extended for another 15 years to 2037. The two concessionaires are responsible for the operation, maintenance and investments in water and sewerage systems while MWSS remains the owner of all assets.
Following the privatisation, MWSS was reorganised into a regulatory arm led by the Chief Regulator and a corporate arm led by the Administrator. The MWSS Regulatory Office monitors the concessionaires and sets tariffs. The MWSS Corporate Office is the legal owner of the water and sewerage assets and plans and implements water projects and loans. A gender review of MWSS confirmed the following information about the entity:

I. It has a total of 123 staff.
II. Gender ratio is close to equal with 66 men (53%) and 57 women (47%).
III. In a board of 6 people, 5 are men (83%) and 1 woman (17%).
IV. In a management team of 18 people, 9 are men (50%) and 9 are women (50%).
V. In the finance, professional, technical/engineering and O&M divisions, there is gender balance of 50%/50%.
VI. MWSS does not have any internal formalised gender policies but it is compliant with Civil Service Commission Laws and Regulations gender equity and equal opportunities.
VII. Gender activities and practices are coordinated by a Gender and Development (GAD) Committee. It partially applies the Philippine Government’s policy to dedicate 5% of its annual organisational budget for GAD activities.
VIII. Gender awareness is not formally promoted within the organisation.

Based on the above statistics, MWSS has an exceptional gender profile that has been accomplished without a formal gender policy framework. MWSS is strong on giving women and men equal opportunities. Perhaps the only areas that need improvement are for MWSS to: (i) formally adopt a company gender policy; (ii) promote gender awareness across the company; and (iii) build capacity and train staff on gender analysis and gender mainstreaming.

MWSS will set up internally the OSP to manage AWTIP similar to what it did for AWUAIP, Phase 2 completed in 2012. However, it will need to assign a staff member with social development/gender expertise to strategize, plan, implement, monitor, evaluate and report on the project’s social development, poverty and gender measures and targets, results and impacts. The person will have to work in partnership with NGOs, LGUs, Project Consultants and other stakeholders and will be monitored by an external expert to be hired on an intermittent basis.

**Common Purpose Facility**

The CPF is responsible for the operation and maintenance of the common purpose facilities which includes the Angat/Ipo Dams, Angat transmission system, Bigte Settling Basin, pumping stations, La Mesa Reservoir and water treatment plants in La Mesa and Balara. It is a non-incorporated joint venture between the two concessionaires, Manila Water and Maynilad and draws its personnel equally from these two companies.

A gender review of CPF confirmed the following information about the entity:

I. Total staff = 29
II. Gender ratio: male 26 (90%) and females 3 (10%)
III. Executive Committee of 4 members: 3 men (75%) and 1 women (25%)
IV. Management is entirely male (100%)
V. The occupations cadres are predominantly O&M (22) with 10% women.
VI. It has no official gender policy and zero gender awareness.

The above information clearly shows that gender inequality exists in CPF and is not helped by the absence of an official gender organisational policy and management commitment. Only 10% of the staff are women. The organisation has the potential to increase the number of women employed in management and the professional cadres but since it is a private entity, the opportunity for such intervention is limited.

Other Concerns

In connection with the institutional gender concerns and the implementation of WSRAMP, some related but pertinent questions need to be raised about MWSS and CPF’s technical capability to ensure the effective asset inventory management and systematic maintenance. This issue was not fully addressed in Section 10.0. The institutional analysis had stated, (para 10.3.3) based on MWSS’s experience with the construction of Aqueduct 6, that MWSS has limited capacity for handling the procurement process in compliance with ADB requirements, international bidding and evaluation of tenders and implementing design and construct contracts. It had to rely on a hired consultant for this expertise. MWSS has again relied on a similar consultant for AWTIP’s project preparation, procurement and implementation.

The interview with the MWSS management confirmed that the organisation has weak capacity in asset inventory management and monitoring the asset maintenance obligations of CPF in relation to the Angat water transmission system and treatment plants and the two concessionaires in relation to the Metro Manila water supply distribution system. MWSS management revealed that its multimillion dollar water supply infrastructure assets have not been well maintained before and after privatisation in 1997 which is attributed to its inability to effectively monitor CPF and the two concessionaires.

Upon reflection, this point raises the important question whether MWSS has the capacity to implement the WSRAMP in collaboration with CPF and the two concessionaires. MWSS indicated that CPF was responsible for the implementation of WSRAMP and its common facilities O&M obligations but MWSS has limited capability to play this role effectively.

Given the criticality of the Angat water transmission system to the vitality of more than 14 million people in Metro Manila, it is clear that O&M for the transmission system must be improved and prioritised. This is a well justified and an important focal area to target for improving and strengthening MWSS’s future operation in asset maintenance and management. It is consistent with MWSS’s 2011 Water Security Legacy Plan which aims to promote infrastructure management, protection and efficiency and lists Angat-Umiray raw water transmission improvement as a key project.

Similarly, CPF has been neglectful in carrying out O&M of the Angat transmission system in the past 16 years which now needs significant rehabilitation to ensure the future security and integrity of the Metro
Manila water supply. For example, questions have been raised as to why CPF has not addressed the problems of illegal usage, damaged appurtenances and general lack of maintenance and there are no standard operating and maintenance procedures (SOP). The lag is attributed to several factors including CPF’s lack of capacity for O&M and the lack of clear demarcation of roles and responsibilities for O&M between MWSS and CPF. There is no reason why improved O&M cannot be carried out by the CPF joint undertaking. The two concessionaires that make up CPF have the capability, as evidenced by the improvement of their respective water treatment and distribution system and the reduction in NRW from 60% to below 40%.

The high risk associated with the lack of O&M does make a very strong business case to broaden AWTIP’s scope and design to include capacity building for the effective implementation of WSRAMP as a separate project output. From an investment and asset management perspective, it would be imperative for MWSS to go down this path at this stage to ensure a turnaround in the maintenance and protection of its current stock of expensive water infrastructure assets and the hundreds of millions of dollars in planned future water sector investments.

9. PROJECT DESIGN MEASURES & RISK MITIGATION

A project design measures matrix is presented below (Table 8-6). It lists the beneficiary enhancement design measures and targets to address the social, poverty reduction and gender issues that were identified in the source and beneficiary communities.

Table 8-6: Project Design Measures

<table>
<thead>
<tr>
<th>Project Impact, Issues and Risks</th>
<th>Proposed Design Measures</th>
<th>Responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poverty Reduction and Social Inclusion</td>
<td>Potential exclusion and marginalisation of people in the source communities from fully benefitting in the project’s construction employment.</td>
<td>Prioritise locals including IPs in temporary construction employment, targeting 50% of unskilled jobs.</td>
</tr>
<tr>
<td>Institutional Capacity Building and Gender</td>
<td>MWSS demonstrates gender sensitive practices. However, it needs institutional gender strengthening and capacity building through the promotion of gender awareness and the formalisation and implementation of a company gender policy.</td>
<td>Promote gender awareness and training across the company targeting the OSP and other project planning and implementation functional departments and adopt and implement a company gender policy</td>
</tr>
</tbody>
</table>

Based on Table 8-6 above, Table 8-7 below presents the risks and risk mitigation measures proposed to be included in the Risk and Mitigation Management Plan.
Table 8-7: Risk and Risk Mitigation Measures

<table>
<thead>
<tr>
<th>Risks</th>
<th>Mitigation Measures</th>
<th>Responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traffic increase in the source communities during construction will cause traffic jams, delays and inconvenience to the general public undertaking their daily activities and posing serious road safety risks for the travelling public and local motorists.</td>
<td>Ensure proper traffic route planning and management, and proper road signage, public awareness and safety driving training among the contracting companies and local residents will be required.</td>
<td>MWSS-OSP/DPWH/Contractor</td>
</tr>
<tr>
<td>The increase in traffic could disrupt the regular delivery and reliability of trucked potable water supply and the presence of hundreds of construction workers at the base camp at Ipo Dam will place additional burden on the water contractor’s resources, operations and supply capacity.</td>
<td>Implement plans with future demand projections and procurement/supply strategies to ensure that the trucked potable water contractor can capably manage the consistent supply of adequate and reliable water for the source community during project construction and the annual dry season.</td>
<td>MWSS-OSP/DPWH/Contractor</td>
</tr>
<tr>
<td>Need to raise awareness for local men and women on the potential business/livelihood opportunities that will be generated during project construction and how they can be meaningfully involved.</td>
<td>Include in the communication strategy (in partnership with local women’s NGOs and financial credit agencies) an awareness program targeting men and women in Bigte and San Mateo to inform them of the business/livelihood opportunities that will be generated during project construction and how they could participate and benefit from it.</td>
<td>MWSS-OSP/Women’s NGOs, local micro-credit schemes/Credit Cooperatives, KABALINGAY and CARD</td>
</tr>
<tr>
<td>Women and children are at high risk from the increased traffic hazard during project construction.</td>
<td>Ensure that road traffic plans and management initiatives take into account the needs and concerns of women and children to ensure their safety and protection.</td>
<td>MWSS-OSP /DPWH/LGUs/Contractor/ Barangay Councils</td>
</tr>
<tr>
<td>Risk exposure of source community residents, particularly women, to STDs/HIV/AIDS, drugs, gambling and alcohol abuse through the influx of external construction workers and the proliferation of adult entertainment venues.</td>
<td>Include in the communication strategy and the Project Implementation Consultant’s (PICs) contract the implementation of public awareness and training for the source communities and contract workers on the risks of STDs and HIV/AIDS and responsible sexual behaviour.</td>
<td>MWSS-OSP/LGU/Barangay Councils/Contractors/ Rural health Unit and Barangay Health Stations</td>
</tr>
</tbody>
</table>
10. IMPLEMENTATION, MONITORING AND EVALUATION
The OSP within MWSS (EA/IA) will coordinate and manage the implementation of AWTIP. It will be responsible for the implementation of the social inclusion, poverty reduction and gender equality measures and targets that are listed in Section F of the RRP on Risks and Mitigation Measures. OSP will have experts nominated from within MWSS to manage different components of the project. The OSP will assign a social/gender expert to coordinate the social development and gender strategizing, planning, implementation, monitoring and reporting under the supervision of an international social/gender specialist (intermittent). Internal monitoring will be undertaken by the EAs/IA and the OSP social development and gender specialist. They will develop sex disaggregated data to feed into the project’s monitoring and regular progress reports, mid-term review and PCR.
REFERENCES


APPENDIX 1

SUMMARY NOTES: AWTIP FIELD INSPECTION AND STAKEHOLDER INTERVIEWS (SAN MATEO & BIGTE)
FRIDAY 24 JANUARY 2014

SAKIUSA TUISOLIA

Location

- Ipo Dam is in San Mateo Barangay
- Bigte in Bigte Barangay
- San Mateo and Bigte are part of Norzagaray Municipality
- Norzagaray is a municipality in Bulacan Region
- Bulacan has 22 Barangays and one of the richest province in Philippines
- Bulacan population = 2.7 million
- Local communities scattered along Ipo road between Bigte and Ipo in ribbon development fashion

Project Outputs

- $143 million for the construction of 6.3km underground tunnel from Ipo Dam to Bigte settling Basin 50-180km below the surface
- Tunnel needed to transfer raw water supply from Ipo Dam to Aqueducts 5 and 6.
- To enable checks and repairs to Aqueducts 1, 2, 3 and 4 to be carried out and repairs to Tunnels 1, 2, 3.
- Transmission old and first aqueducts built in 1936
- Project will not increase raw water supply or connections to end users.
- An infrastructure rehab and replacement project
- Outputs are tunnel construction and water safety, risk and asset management plan
- Tunnel route has 60 meters ROW on public land with most of title with MWSS
- Proposed tunnel has 4 meters ROW and distance of 6km

Affect Persons

- Households/families settling on ROW – informal settlers and squatters with no legal land title
- Average family size is 5
- Mainly migrants from Visayas and other regions
- Some have lived there since 1930s and others between 10-30 years
- Own residential and business structures
- Segment 1: clear
- Segment 2: 4 structures
- Segment 3: has big residential subdivision build by NHA
- Segment 4: clear
- Segment 5: 3 structures
- Segment 6: Clear
- Segment 7: Clear
- Consulted twice on Angat project.
• IPs live in Angat/IPO catchment area 3 km from the Ipo Dam and tunnel intake construction site

San Mateo/Bigte Socio-economic profile

• 40% of people are poor
• Average income is P4000 – P6000 a month – people don’t have enough to meet their basic needs
• Livelihood earned through employment in local government, farming, tricycle drivers, owners of sari-sari stores, FOWs.
• Locals mainly rely on cash for a living, they practice little subsistence farming and home gardening
• Farming and economic opportunities are limited by the lack of reliable and quality water supply
• People are mostly informal settlers with no land titles.
• APs living on ROW know there are illegal settlers – some have been around since the 1930’s, other 10-30 years, rest are new settlers from other parts of Luzon and Philippines.
• More men work than women and men earn more than women.
• Traditional gender roles exist – men are breadwinners and women are housekeepers.
• Women responsible for fetching water
• Women also operate small businesses on the side like sari-sari stores and other economic activities to supplement family incomes.
• Some families also supported directly by OFWs

Source Community (San Mateo Barangay) Water Needs and Supply

• Local community in Ipo and San Mateo source water from wells, springs and portable water vendor (54%)
• Some families don’t but water and use only water from wells and springs – their drinking water is usually boiled.
• Potable water sold at P35 a 200 litre drum supplied by water tankers
• Families use 3-4 drums a week.
• Paid P110 per cubic meter
• Family pays P100-500 for portable water among low income families and high users pay P500-P1000.
• Tankers visit around 3-4 times a week.
• Lack of water limits economic opportunities like crop, cattle, poultry and piggery
• A private treated water supply system is run by a local businessman near Ipo Dam sourcing water from a local spring exists. Has 28 connections and serves 80 households. Investment cost is 0.5 million. Additional new connections will be made. Payment made through monthly billings.
• A Barangay/LUUA sponsored water supply exists for San Mateo. Water drawn from deep well and pumped into a reservoir concrete tank on a hill.
• San Mateo heights residential subdivision sits on ROW. Will house 1000 servicemen and 5000 families. Has a local water supply system sourced from a deep well and pumped into a mounted reservoir. Water is treated.
• Locals complained about not being served by the Metro Manila water supply although the raw water comes from their area.
• Potable water supply made by a single contractor approved by LWD – water supplied by water trucks
• 20 litre gallons cost P3
**Bigte Water Supply Need and Supply**

- 13,000 population
- Sources of water include wells, springs; potable water sold by vendors and contractor and piped untreated water.
- Has three raw water supply system, 2 owned by Bigte Barangay and 1 by NGO – all sourced from Angat transmission “blowouts”
- CRUSH water system, 144 connections; Bigte water supplies 389 connections
- 600 have untreated raw water supply with piped water connections
- Connection fee flat rate P500
- Tariffs = P10 a cubic meter, minimum charge of P100 for 10 cubic meters per household (use 4-5 cubic meters)
- Barangay subsidises and provides hand pumps for wells FOC as well as free maintenance and repairs – 10 pumps in operations, budget provided every year.
- 1 pump serves up to 50 households from a central facility
- Bulk of water supplied by portable water vendors

**Bulacan Water Supply**

- MWSS responsible for regional water supply.
- Aim is to address water supply requirements of Bulacan through most efficient and practical means which is portable water and reduce ground water usage because of its environmental impact.
- Provided under PPP framework
- A Northern Concessionaire for Bulacan Bulk Water supply to be awarded soon and issuance of prequalification to bid in Q 1 2014
- Concessionaire will: 1. Construct water transmission mains including line appurtenances from WTPs to municipalities; 2. Construct WTPs, 3. Construct pumping stations and 4 install metering devices
- Estimated cost: $693.72m
- Provincial population = 2.7 million; need 174.5 million litres of water a day and population growth project to grow to 10 million by 2040 and will require 1,120 million litres per day
- BBWP will supply 24 area of region including coastal and central towns.
- San Jose is covered in first phase with 5 other districts
- Separate entity to be formed to regulate concession
- BBW needs to address water quality, access, reliability and affordability

**ROW and Resettlement Issues**

- Area is 6.5km x 60 meters from Ipo Dam to Bigte
- Area not marked or demarcated and covered with grassland and bush.
- Most of ROW is owned by MWSS with legal title except 2 spots.
- Squatters on ROW have lived there since 1930s and some 10-30 years, rest are new migrants
- New state subdivision for servicemen and their families (1,000 households) built over ROW in Segment 3 – will have a population of around 5,000
- Water for subdivision will be supplied from deep well and pumped into elevated tank and treated portable water also supplied.
- CPFs will fence the ROW and have started work at Ipo Dam and Bigte settling basin.
• Encroachers/APs will not be displaced.

**Stakeholder Consultations**

• Squatter households on ROW were consulted individually x 2 and issued with leaflet in project info – signed confirmation of participation
• 8 Barangay consultations were held
• Locals have different perceptions – ROW senior citizens were accepting and understood ROW and aware of construction of old pipes
• Locals voiced need for piped water and improved portably water supply (frequency and quantity especially during dry season)
• Women interested in economic opportunities from project like food vendors

**Beneficiaries – Metro Manila End Users and Concessionaires Obligations**

• 14 million people in Metro Manila concession areas
• 2 concessionaires, Maynilad and Manila Water, contracted for 25 years since 1997 as distributors – also responsible for O&M and investment in new infrastructure
• Concessions extended another 15 years to 2037 – because of Asian financial crises
• Maynilad – west zone (60% customer base) = 95% coverage
• Manila Water – east zone (40% of customer base) = 99% coverage
• Both run pro poor water and livelihood programs
• Both profitable after initial problems with Maynilad and change of ownership in 2007
• Both jointly run CPF to manage and operate Angat source and transmission, treatment plants and La Mesa reservoir
• Regulator set up to regulate concessionaires
• Concession terms for pro poor – amortization of connection fees, low rates for first 10 cubic meters
• Been recent cuts in water rates by regulator
• Concessionaires investing in fixing leaks and non-revenue water conversion to augment water supply from existing system, reduced NRWC from 65% down to 10%

**MWSS**

• Office in Quezon City
• Metropolitan Waterworks Sewerage System (MWSS), owner of metro manila water supply system and assets, a government owned corporate entity set up in 1971
• MWSS runs and owns Metro Manila water supply system and assets
• Revenue comes from the concession fees
• 1997 – awarded water concessions to Maynilad and Manila Water
• Split into Regulatory Office and Corporate Office
• Introduced 2011 Water Legacy Plan
• Has 123 staff, nearly half men & half women
• Will set up Office of Special Projects (OSP) to be EA/IP and coordinate and implement AWTIP
• Also responsible for Bulacan Province water supply
• Weak capacity for monitoring asset maintenance
CPF

- Office in Balara
- JV between Manila Water and Maynilad to operate, maintain, renew and decommission when necessary the common purpose facilities
- CPF includes Angat water transmission system, Bigte settling basin, La Mesa reservoir, La Mesa and Balara water treatment plans and pumping stations.
- Allocates raw water between two concessionaires as per the concession agreement
- Equally staffed by the two concessionaires and run by Manager
- 29 staff; 10% are women
- 14 of the staff at Ipo Dam (all men)
- Been slack in ensuring proper maintenance of transmission system in last 16 years
- Demarcation of roles between CPF and MWSS on maintenance and control of assets including ROW still unclear
- Weak in assets inventorying and maintenance.
1. Name of organization/company
   CPF (comprises of MWCI/MWSI personnel)

2. Address/contact
   La Mesa Compound, Quezon City/ 929-7477

3. Total workforce (includes temporary)
   29

4. No of male employees/% of total
   25/ 86.3% of total

5. No of woman /% of total
   4/ 13.7%

6. No of men and woman in the Board
   Executive Committee: 4 (3 men; 1 woman (25%))

7. No of men and woman in management
   10 (9 men/ 1 woman (10%))

8. Male/ female distribution in skilled position: accounting/finance, project
   Management
   Accounting/finance administration – 2/2 women
   Engineering - 2
Project Management - 1
Technical – 2/1 woman
O&M – 22

9. There is no organizational and management gender awareness.

10. None. No gender policies

11. No gender mainstreaming.

12. No, does not apply and use the government instituted 5% budgeted activities for
gender and development.

ANGAT WATER TRANSMISSION AND IMPROVEMENT PROJECT
INSTITUTIONAL DUE DILIGENCE AND ANALYSIS

1. Name of Organization/Company

   Metropolitan Waterworks and Sewerage System (MWSS)

2. Address/Contact :

   # 489 Katipunan Road, Balara, Quezon City
   Tel. nos.: 928-5691 / 922-2568

3. Total workforce (includes temporary staff) :

   117 – Regular Personnel   6 – Personnel  Total workforce – 123

4. No. of Male Employees / % of total :

   66 / (53%)
5. No. of Women / % of total:
   57 / (47%)

6. No. of Men and Women in the Board / % of total:
   Men = 5 (90%)   Women = 1 (10%)

7. No. of Men and Women in Management / % of total:
   Men = 9   Women = 9 (50%)

8. Male/Female distribution in skilled positions: accounting / finance, project management, technical, engineering, O & M, etc.
   There is a balance distribution of Male and Female.

9. What is the status of organizational and management gender awareness?

10. Does the company have any gender policies, and if yes what has been the success of its implementation?
    Yes, pursuant to Civil Service Commission (CSC) Laws and Rules.

11. What is the status of gender mainstreaming of training of staff?
    On-going training, there is a Gender and Development (GAD) Committee and study are on-going.
12. Does the Organization apply and use the government instituted 5% budgeted activities for Gender and Development (GAD)?

Yes we have, but the program was not fully implemented