

Leveling the playing field for Metro Manila's impoverished households

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Abstract

Metro Manila's water privatization is one of the world's largest and longest-running privatization programs for a water utility. While traditional efficiency metrics show significantly improved service levels under this schema, local anti-privatization activists maintain that the program does not benefit the urban poor. Assessments from an equity lens offer a fresh perspective, using information from a consumer survey of 53,733 residential households, privatization reports, and field interviews. Results show that access and affordability remain critical concerns for impoverished urban households despite major service improvements. Philippine policy makers must address these twin concerns in order to ensure a level playing field for these vulnerable households.

Keywords: Efficiency; Equity; Metro Manila; Performance assessment; Urban poor; Water privatization

Introduction

Towards the end of the 20th century, the Philippines, like many emerging economies, embraced a development strategy promoting private sector participation in public infrastructure systems (see [Hutchcroft, 1998](#); [Fabella, 2011](#)). The country's initial foray into the privatization agenda focused on the power and water sectors, as a solution to the then prevailing energy and water crises. Such privatization decisions are in line with observations made by [Bakker \(2010\)](#) and [Harris \(2013\)](#) that crises, whether attributed to biophysical scarcity or poor governance, were often used as justification for enhanced private sector participation in the provision of these services. In preparation for privatized services, the Philippine government enacted several laws, such as the Electric Power Crisis Act, the Build-Operate-Transfer Law, and the National Water Crisis Act (see [Fabella, 2011](#)), to provide political and legal bases for these programs as well as frameworks to expedite their implementation.

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On February 21, 1997, after 6 months of international competitive bidding (Fabella, 2011: pp. 84–85), the Metro Manila Waterworks and Sewerage System (MWSS)¹ awarded to two private firms the operating concessions for Metro Manila's water supply and sewerage services (Dumol, 2000). Prior to privatization, only 67% of the 10.9 million residents in MWSS's service area were able to make use of these services. Moreover, water supply was available only for a period of 17 hours per day. Due to problems of leakage and pilferage, system losses were very high, and reached a level of 58% (ADB, 1997: p. 6). Compared to other water utilities in the region (as shown in Table 1), MWSS was performing below par, making it a good candidate for privatization.

Based on the lowest water tariffs offered, the east concession was awarded to Manila Water Corporation, Inc. (MWCI) whose shareholders included Ayala Corporation, Bechtel Corporation and United Utilities Ltd while the west concession was awarded to Maynilad Water Services, Inc. (MWSI), a consortium of two large infrastructure holding companies comprising Benpres Holdings Corporation and Lyonnaise des Eaux (Dumol, 2000: p. 84). Seven years into the program, the latter consortium decided to return its concession to the government after experiencing operational difficulties and suffering financial losses amounting to P8.3 billion (US\$147.5 million) (see SyCip Gorres Velayo & Co., 2005: p. 6). Under the government's re-privatization program for the west zone, local infrastructure conglomerates, DMCI Holdings, Inc. and Metro Pacific Investments, acquired majority ownership and control of MWSI in 2006 (ADB, 2008).

As has often been the case, Metro Manila's water privatization is assessed by the state, private concessionaires, and multilateral agencies in a manner similar to the performance scorecard shown in Table 2 (see MWSS Regulatory Office (MWSS RO), 2004: p. 15; International Finance Corporation (IFC), 2010: p. 2; Fabella, 2011; Rivera, 2014: p. 57). Performance assessments based on this scorecard alone tend to depict outstanding performance by the private concessionaires. Despite an increase in water supply of only 48%, the concessionaires have been able to serve twice as many consumers (14.3 million people) since 1997, through network expansion and operational improvements, particularly in the area of non-revenue water reduction. Likewise, a great majority of the population now

Table 1. MWSS pre-privatization: Comparative performance of Asian water utilities.

City	Coverage (%)	NRW ^a (%)	Water availability (hours)	Staff/1,000 connections ratio
Manila	67	58	17	9.8
Bangkok	82	38	24	4.6
Kuala Lumpur	100	36	24	1.1
Singapore	100	7	24	2.0
Seoul	100	35	24	2.3
Shanghai	100	14	24	6.1
Average (50 utilities)	81	35–40	19	11.8

Table developed by author (2015) using data from ADB (1997). Prior to privatization, MWSS was performing below par compared to other Asian water utilities.

^aNon-revenue water – system water loss due to leakage and pilferage.

¹ MWSS is the government agency responsible for providing 16 million Metro Manila consumers with water and sewerage services (MWSS, 2012: p. 25).

enjoys nearly 24 hours of good quality water at a pressure of 7 psi², considered as significant service improvements vis-à-vis the pre-privatization scenario. Benchmarked against operating statistics found in several studies on Asian water utilities (i.e., ADB, 2004: pp. 2–3; ADB & Southeast Asian Water Utilities Network, 2007: pp. 2–3; McIntosh, 2014: p. 28), these results have already exceeded the performance levels of most utilities included in such studies.

As of 2014, the two private water concessionaires have installed a total of 1.29 million additional connections³, probably the highest number of new household connections for a water privatization (see Hall & Lobina, 2006). Moreover, as of 2013, the concessionaires have invested nearly US\$2,300 million (MWCI, 2012; MWSI, 2015) since commencement of the program. While many water privatization programs have either been terminated at an early stage or not renewed upon contract expiry (Gleick *et al.*, 2002; Hall & Lobina, 2006; Castro, 2007), the Metro Manila program has been operating for the last 20 years, a remarkable feat in the global water privatization portfolio. Additionally, the private concessionaires have been expanding their operations in other Philippines areas as well as in neighboring Asian countries.

Although the scorecard and attendant physical accomplishments of the concessionaires present an encouraging picture of the water privatization, there are lingering concerns as to whether or not such progress has been equitably shared and experienced by all consumers. Insights on consumer welfare distribution may help Philippine policy-makers address contentions by non-governmental organizations (NGOs) and consumer groups regarding difficulties still experienced by urban poor consumers. These groups maintain that water is only available for those who can afford to pay, and as such, the program excludes the majority of the people who are poor, whom they emphasize should be the main beneficiaries of the program (Freedom from Debt Coalition, 2009; IBON Foundation, 2012; NGO officials, Personal Interviews, November 25, 2014, December 1, 2014). They are also critical of the high price of water, noting that water tariffs under the privatized set-up have respectively increased by 342% and 618%⁴ (in real terms) for the west and east zones of Metro Manila (see MWSS, 2014).

Given these two conflicting scenarios, there is a pressing need to investigate the realities on the ground to help inform policy necessary to address the water needs of the urban poor. Towards this end, I ask the question: *What is the state of water provision for impoverished Metro Manila households, relative to those experienced by the upper socio-economic classes?* The following section discusses the use of equity-based metrics to re-assess Metro Manila's water privatization, in an effort to address this question. The succeeding sections then present the results of the assessment and explore three existing scenarios of water provision for poor households in Metro Manila. The last section concludes the paper with general policy recommendations to address these scenarios.

Re-assessing metro manila's water privatization

Based on the performance scorecard shown in Table 2, reliance on operational and technical data alone results in an assessment program that gauges progress from purely an efficiency lens. While

² The original concession agreement called for water pressure of 16 psi, but this requirement was relaxed to 7 psi until 2016 (MWSI Officer, Personal Interview, August 1, 2014).

³ Based on data from IFC (1996: p. 1), MWCI (2014: p. 7), and MWSI (2014a: p. 1).

⁴ In nominal terms (with inflation), water tariffs for the west and east zones have increased by 552% and 829%, respectively, as of 2014.

Table 2. Privatization scorecard.

Service indicators	1997		2013		% Inc./ (Dec.)
	Pre-privatization	MWSI	MWCI	Combined ^a	
Population served (millions)	7.3	8.6	6.3	14.9	104%
Water supply (Million liters/day)	2,800	2,515	1,632	4,147	48%
Non-revenue water	58%	35%	12%	26%	(32%)
Water coverage ^b	67%	97%/90% ^c	99%/92% ^c	98%/91%	31%/24%
24-hour availability	67%	98%	100%	99%	32%
Water pressure (@ 7 psi)		100%	99%	100%	
Water quality		100%	100%	100%	

Source: Torio (2016). Typical performance scorecard shows generally improved service levels in terms of NRW reduction, water supply availability, water pressure, and water quality.

^aAuthor's estimates.

^bAs a % of population served.

^cMWSS RO's re-calculated estimates.

such information is vital to any assessment program on water provision, the research also utilized information on consumer experience and expectations, with analyses across the different socio-economic classes. Such analyses provide a good picture of how consumers from different socio-economic classes have fared in relation to Metro Manila's water privatization, thus allowing the program to be gauged from the standpoint of equity, generally described as the quality of being fair, reasonable, impartial, or just (see Syme *et al.*, 1999; Perrault, 2014; Wong & Srikantha, 2014). In doing so, the research examines the level of fairness related to this privatization program, with special focus on the urban poor who are the most vulnerable among all consumer groups.

Consumer information was processed using raw data from a 2011 household survey conducted by the UP National Engineering Center (UP NEC)⁵, which covered 53,733 respondents from over 2,372 barangays (villages) throughout Metro Manila. This survey was part of the Metro Manila Water Demand Study (MMWDS) that was undertaken to determine the metropolis' water supply requirements for the next 25 years. Across the different socio-economic classes, select indicators, such as *access to water connections, water pressure, water quality, duration of water supply, affordability*, were examined to assess the conditions of water provision for all households (whether connected or not to the concessionaires' networks). For a more detailed discussion on the guidelines used for measuring these indicators as well as a complete summary of the results, please see Torio (2016: pp. 72–76).

Contextually, for this paper, conditions of equitable water provision are defined in a simple and pragmatic way, as scenarios where there is a uniform level of water service provided for all socio-economic classes and a level of affordability according to each socio-economic class's paying capacity. Thus, conditions of water inequity are deemed present when impoverished households experience lower levels of water services or are unable to access and afford such services compared to their more affluent counterparts.

⁵ UP NEC (a unit of the College of Engineering, University of the Philippines) undertakes continuing engineering education, research and development, technical consultancy, and publications related to the engineering field (UP NEC, 2010).

As is commonly used in market research in the Philippines, the paper uses the ABCDE socio-economic classification as a proxy for wealth or household income. With reference to Table 3, this socio-economic classification is based on the community where the household is located, the construction materials used, furnishings provided, and house/lot ownership. Socio-economic status is thus classified as follows: AB – extremely rich/rich, C – middle class, D – poor, and E – extremely poor. Focusing mainly on poor households, per capita income of the E socio-economic class lies below the international poverty line of \$1.25 per day while per capita income of the D socio-economic class is slightly above the moderate poverty line of \$2.00 per day.

Results and trends that were established from the consumer survey data were triangulated with operational results from regulatory and performance reports, as submitted by the private concessionaires to the Metropolitan Waterworks and Sewerage System. Other privatization-related documents, sourced from MWSS and the concessionaires during a 7-month field research in Metro Manila, augmented operational data requirements. Additional validation was performed using information obtained from non-structured interviews of 100 privatization participants and stakeholders, inclusive of officers and staff of MWSS and the private concessionaires; representatives of NGOs, civil society organizations, and urban poor groups; members of the academe; other government officials; and private sector representatives.

Results

Access to water service connections

Metro Manila has a ‘north to south’ water supply infrastructure system comprising three dams, nine large raw water conveyance systems, six water treatment plants, 35 pumping stations, 25 treated water reservoirs, and an underground distribution network covering more than 10,000 kilometers (see MWSS, 2012: p. 7). Interestingly, around 14.3 million people currently served by the two private concessionaires (MWSS, 2012: p.2) depend on water that is sourced from the mountains, 58 kilometers northeast of Metro Manila, which is then transmitted over 37 cities and municipalities until it eventually

Table 3. Guidelines used for the identification of socio-economic class.

Classification	Description		
	Dwellings	Location	Furnishing
AB (extremely rich/ rich class)	Heavy/high quality materials; very well constructed and maintained; well painted; with garden	Expensive neighborhood	Expensive
C (middle class)	Mixed heavy and light materials; well-constructed and painted; may or may not have garden	Mixed neighborhood of large and small houses	Adequate
D (poor)	Light and cheap materials; poorly constructed; no garden	Crowded and shabby surroundings	Scanty
E (extremely poor)	Shanty type of dwelling; small and dilapidated; poorly constructed	Informal settlements, slums	Bare

Adapted from UP NEC (2013). Used as proxy for wealth or household income, the ABCDE classification is based on the community where the household is located, the construction materials used, and available furnishings.

reaches the consumers in the southern peripheral areas. Considering that household water service connections track the development of the concessionaires' networks along this water supply corridor, many unconnected households are found at the southern periphery, accounting for the majority of the 1.7 million people still left unserved by the concessionaires (see Table 2).

These households obtain water supply from various means such as municipal water systems, other private suppliers, deep wells, water refilling stations, and rain collection. Unconnected households in the west zone use mostly deep wells as their source of water supply while those in the east zone obtain water largely from municipal water systems. For these households, which are outside the concessionaire's networks, water service connections top the list of preferred service improvements followed by better water quality, lower water tariffs, and high water pressure. The MMWDS residential household survey shows that about 81% and 90% of all households in unconnected neighborhoods of the west and east zones, respectively, are willing to connect to the main networks. Nonetheless, when asked if they were willing to pay connection fees, 44% to 65% of these respondents replied that they were not, stating the high amount to be paid as the major reason.

Although the majority of unconnected households are in the southern peri-urban areas, there are pockets of communities within the networked areas (informal settlements and residential subdivisions) that are not directly served by the concessionaires but by third parties acting as the former's sub-contractors for the last phase of water delivery. The research estimates that the number of people served by these organizations ranges from 6% to 8% of the total consumer base of 16 million people, with inner city squatters and slum dwellers accounting for the majority (see Torio, 2016: p. 192). Based on the current service coverage formula, these consumer groups, whose water requirements are supplied by a third party, are counted as part of the population served by the concessionaires.

Connected households: water supply availability, pressure, and quality

Data on water supply availability, water pressure, and water quality for connected households included in the consumer survey showed uniform levels of service for all socio-economic classes. As may be inferred from Table 4, *all connected households, regardless of socio-economic class, experience almost 24 hours' supply of water that is of adequate pressure and of very good quality*⁶. These results conform to the general conclusion established from the privatization scorecard, normally used by privatization proponents as a notional measure of success for Metro Manila's water privatization.

Looking at Table 4, Manila Water Co., Inc. (east concessionaire) appears to have registered better performance than Maynilad Water Services, Inc. (west concessionaire). At the time of the survey, MWSI's new management had been operating the west concession for only 5 years, after taking over the concession in 2006. The company has since shown tangible operational improvements several years after re-privatization.

The accomplishments reported by the concessionaires in their Key Performance Indicators and Business Efficiency reports for the years 2011 to 2014, as well as the findings of performance assessments conducted by the MWSS Regulatory Office and the UP NEC on the concessionaires' operations for 2011, align with the consumer survey results shown in Table 4, echoing the same conclusion established from the privatization scorecard. However, as previously pointed out, these results provide only a

⁶ Overall water quality was determined based on odor, taste, color, and presence of particulates.

Table 4. Connected households: privatization experience on water supply availability, pressure, and quality.

	AB	C	D	E	Ave
Water supply availability (# of hours)					
West zone	21.4	22.3	22.6	22.1	22.5
East zone	24.0	24.0	24.0	23.9	24.0
Water pressure (@ 7 psi)					
West zone	Good	Good	Good	Good	Good
East zone	Very good	Very good	Very good	Very good	Very good
Water quality (odor, taste, color, foreign bodies)					
West zone	Very good	Very good	Very good	Very good	Very good
East zone	Very good	Very good	Very good	Very good	Very good

Source: Author's calculations based on the MMWDS residential consumer survey data. Regardless of socio-economic class, all connected households experience almost 24 hours' supply of water that is of adequate pressure and of very good quality.

partial narrative of Metro Manila's water privatization; thereby, requiring further investigation of access and affordability conditions, with special attention to impoverished households.

Connected and unconnected households: conditions of access and affordability

The design of Metro Manila's water supply infrastructure has greatly influenced the ability of households to get connected to the concessionaires' networks, with such a connection symbolizing the conveniences of improved water services. While network access is vital for the attainment of urban water equity, affordability of water services is likewise essential to this effort. This section examines key parameters of access and affordability to better understand the factors that promote current conditions of water inequity for poor households in Metro Manila.

Per capita consumption. Across all socio-economic classes, all connected households consume twice as much as unconnected households (Figure 1). In-house access to continuous supply of adequate pressure and good quality water brings about increased consumption of households able to get direct connections to the concessionaires' networks. Per capita consumption studies made by MWSI

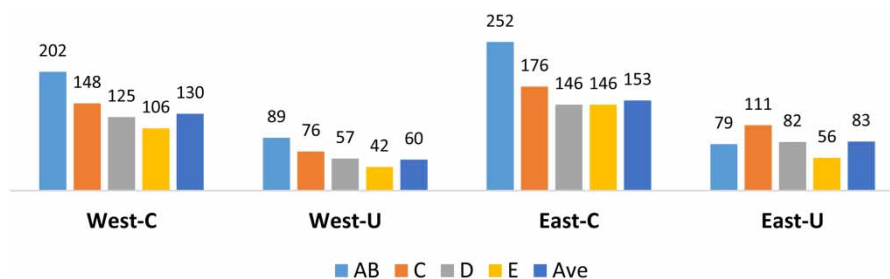


Fig. 1. Per capita consumption (liters/day). *Source:* Author's calculations based on the MMWDS residential consumer survey data. Connected households consume twice as much as their counterparts in unconnected areas as a result of in-house access to continuous supply of adequate pressure and good quality water. *Note:* For all graphs in this section: west zone concessionaire – MWSI; east zone concessionaire – MWCI; C – connected areas; U – unconnected areas.

(Concessionaire's Staff, Personal Interview, December 10, 2014) have confirmed this two-fold consumption increase for newly connected households. In contrast, unconnected households have to rely on water supply options that are difficult to access, are available only for certain hours of the day, and at times, of poor water quality. Note that earlier operational improvements and investments by MWCI (vis-à-vis MWSI) had resulted in longer hours of supply availability and higher water pressure in the east zone, as may be seen from Table 2. As a result, connected households in the east zone have higher water consumption compared to those in the west zone. Likewise, relatively lower east zone water tariffs may have contributed in some measure to higher per capita consumption of its customers.

Average daily consumption of extremely poor households (Class E) in connected areas are almost three times as much as that of their unconnected counterparts. Of particular concern are unconnected Class E households in the west zone that are consuming below the 50 liters per capita per day standard prescribed by the World Health Organization for low levels of health concern, for situations where water is delivered through one tap on-plot or within 100 meters from the household (see Howard & Bartram, 2003: p. 3). Their continued low consumption of 42 liters per capita per day may pose health risks for individuals and communities alike.

Average water prices. As seen in Figure 2, water prices tend to be higher in unconnected areas, where water is supplied by a mix of service providers. With various service providers trying to fill in the void related to water provision, the regulatory environment in these areas may be described as one of complexity or even confusion. While the MWSS Regulatory Office can exercise regulatory authority over the concessionaires on water pricing, it is unable to do so for community-based operators, subdivision associations, local government units, and parastatal entities as each of these providers is regulated by a separate government agency.

In the west zone, the average water price for connected households is about 50% lower than that of unconnected households. Unconnected E households in this zone are able to access only small amounts of water, yet, pay a relatively high price for this water. For the east zone, although water prices for unconnected households are also higher than those for connected households, the difference between the average prices is only about 26% (see Figure 2). These unconnected households are able to source more water supply from municipal water systems, which oftentimes do not charge the full cost of water provision.

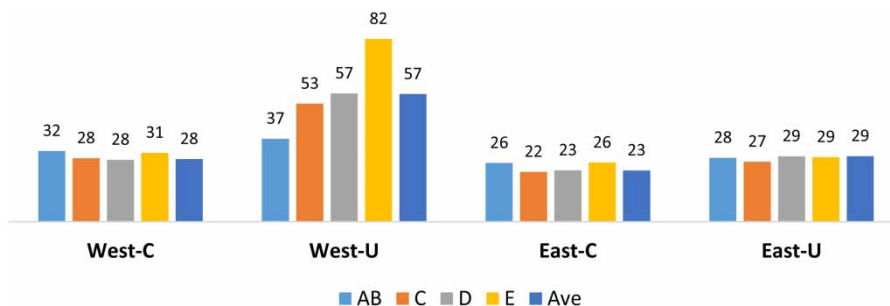


Fig. 2. Average water price (P/cubic metre). Source: Author's calculations based on the MMWDS residential consumer survey data. Water prices are higher in unconnected areas where water is supplied by a mix of service providers which includes local government units, water districts, and alternative private suppliers.

When respondents were asked if they were amenable to a price increase in order to maintain or improve services, only 21% and 15% of connected households in the west and east zones, respectively, answered positively to the query. For want of better water provision, unconnected households in the west and east zones registered higher percentages of 37% and 44%, respectively, on the issue of higher prices for better services.

As regards acceptable price increases for improved levels of water service, connected households were amenable only to a ₱2.00/m³ (US\$0.04/m³) increase while unconnected households were agreeable to a ₱10.00/m³–₱14.00/m³ (US\$0.22/m³–US\$0.31/m³) price increase. The acceptance of a higher price by unconnected households should not be misconstrued as a license to increase prices in return for water service connections. The propensity of newly connected households to double their water consumption makes these households reconsider the price increase levels they had initially accepted. After some time, higher water consumption levels force these households to aspire for lower water tariffs, those within the range accepted by households already connected to the system.

Average monthly water expenditures. Across all socio-economic classes, average water expenditures of connected households are 1.5 to 2.2 times higher than their unconnected counterparts (Figure 3), primarily due to the large disparity in consumption levels between these two household groups. The twin effects of high water prices and difficulty of access have suppressed the demand of unconnected households. Water service connections to the centralized networks basically unleash this suppressed demand, and continued water use by these households creates a situation where they can no longer revert back to previous water supply modes and consumption levels. This increased consumption phenomenon associated with connected households offers insights on affordability concerns of impoverished households, necessitating a review of the existing water tariff structure, most especially the lifeline rate⁷.

Affordability levels. Affordability levels for water services, measured as a percentage of water expenditure to household income, were generated from Africa's (2011: p. 37) household income estimates for the different socio-economic classes as well as from income figures provided by the MMWDS survey

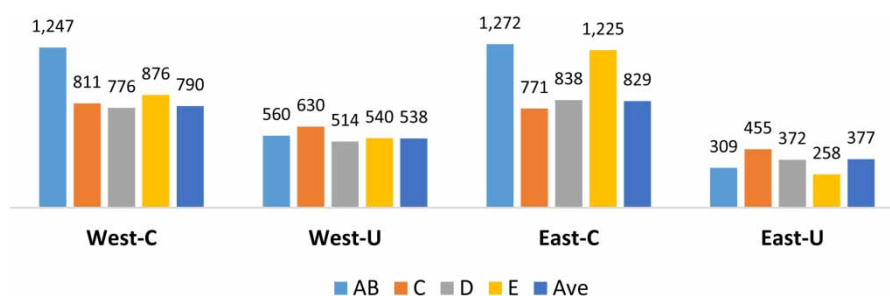


Fig. 3. Average monthly water expenditures (₱). Source: Author's calculations based on the MMWDS consumer survey. Across all socio-economic classes of connected households, average monthly water expenditures are about 1.5 to 2.2 times higher than unconnected households.

⁷ The lifeline rate is the lowest water tariff, and is provided for residential households that consume less than 10 cubic meters per month.

respondents (see Table 5). For all barangays, whether or not connected to the concessionaires' networks, Class E households spend the most for water services as seen from Table 6. Except for unconnected extremely poor households in the east zone, Class E households spend from 6% to 11% of their income for their water bills, exceeding the maximum prescribed limit of 5% (see Fankhauser & Tepic, 2007: p. 1040). Although roughly all connected and unconnected Class E households have to contend with the problem of affordability, the dynamics of water provision are distinct for each group; thereby requiring different approaches to address the problem.

Based on affordability level, Class AB (extremely rich/rich) households pay the least for water provision, as a percentage of their income. Benefitting the most from improved services provided by the private water concessionaires, connected AB households consume high volumes of water at prices very affordable to them. Despite the inability of unconnected AB households to make use of water from the main networks, these households are able to tap other supply options (as compared to the low-income households), thus allowing them to meet their daily water needs. Under existing supply conditions, middle class (C) households in all areas are able to meet their water needs at rates that are affordable to them. While Class D (poor) households generally still meet their daily water requirements, their affordability level is near the maximum limit, and any additional water tariff increase may prove difficult for them.

Community water systems

In locations where the concessionaires' water networks are already in place, there are informal settlements that are still not directly connected to these networks. Throughout Metro Manila, there are around

Table 5. Estimated monthly household income levels (₱).

	Modified Africa estimates					Metro Manila water demand study				
	AB	C	D	E	Ave	AB	C	D	E	Ave
West-C	194,961	70,483	26,063	10,536	27,140	41,488	26,879	18,768	12,188	20,977
West-U	165,804	65,215	28,192	11,711	28,361	76,946	31,241	19,154	12,073	22,479
East-C	197,553	60,409	18,868	6,020	20,400	28,284	20,856	13,242	8,362	14,518
East-U	154,750	50,250	15,917	5,167	17,167	18,333	21,537	12,887	7,414	13,369

Table developed by author (2015) using data from Africa (2011) and UP NEC (2011). Differences between income estimates for Classes AB and C households from these sources may be due to the hesitancy of these households to divulge their true income during actual interviews.

Table 6. Affordability levels measured as a percentage of household income.

	AB (extremely rich/rich)	C (middle class)	D (poor)	E (extremely poor)	Ave
West-C	1–3%	1–3%	3–4%	7–9%	3–4%
West-U	0.3–2%	1–3%	3–4%	6–11%	3–4%
East-C	1–2%	1–2%	3–4%	10–11%	3–4%
East-U	0.2–2%	1–2%	2–3%	3–5%	2–3%

Source: Author's calculations based on data from Figure 3 and Table 5. In general, E households, whether connected or unconnected to the concessionaires' networks, spend more than the maximum limit of 5% for monthly water expenditures, as a percentage of household income.

560,000 families living in these low income communities (MWSI, 2014b: p. 1) who have to contend with poor socio-economic conditions and legal issues related to their tenancy. Aside from the financial difficulty of paying connection fees, these households have to present proof of property ownership when applying for water service connection. While the concessionaires extend amortized payment schemes to make connection fees more affordable, the requirement regarding property ownership is oftentimes strictly enforced, making it very difficult for these informal settlers to obtain a water service connection.

Realizing the threat of pilferage and potential leaks from indiscriminate puncturing of water lines to steal water, the two concessionaires have developed programs to supply water to informal settlements by partnering with community-based organizations to operate community water systems⁸. Known as *Samahang Tubig Maynilad* (translated as Maynilad Water Association) and *Tubig para sa Barangay* (translated as Water for the Village) for the west and east zones, respectively, these programs are designed to allow community-based organizations to handle the operation and management of water systems for informal settlements (Concessionaires' Managers, Personal Interviews, August 13, 2014, December 2, 2014). As illustrated in Figure 4, the typical arrangement involves the provision of bulk water supply by the concessionaires to these communities through pipelines that are installed with bulk meters. From these metering points, the concessionaires allow these organizations (usually headed by local political or community leaders) to install connections directly to the households, read household meters to determine consumption, send water bills, and collect payments (Concessionaires' Managers, Personal Interviews, August 13, 2014, December 2, 2014).

The private concessionaires charge a special water rate, which is based on average consumption of all households in the community, for water they supply in bulk to community-based operators (Concessionaires' Managers, Personal Interviews, August 13, 2014, December 2, 2014). While these prices range from ₱10–₱12/cubic meter (US\$0.22–0.27/cubic meter), at the consumers' end, community-based operators bill each household using a unitary tariff of ₱100/cubic meter (US\$2.22/cubic meter). The difference in water pricing provides cash flow to cover salaries of operating personnel, fund livelihood projects, and payout dividends to its members (Community-Based Operators, Personal Interviews,



Fig. 4. Typical community-based water reticulation system. *Source*: Photograph taken by author.

⁸ A few community water systems are funded and operated by NGOs, which charge lower water rates (NGO Officials, Personal Interview, November 17, 2014).

August 13, 2014, December 2, 2014). Notwithstanding the fact that the water rate charged by community water systems is about ten times the rate charged by the concessionaires, the former is still 50% lower than the price of water that is delivered manually by carts and tankers. Furthermore, households serviced by community-based water operators are generally able to enjoy continuous water supply, albeit, water pressure and quality may be affected at times because of the relatively crude design and construction of these operators' reticulation systems.

Conditions of water provision for the urban poor

Although results show that Metro Manila's water privatization has brought about significantly improved services, extremely poor (Class E) households have not fared well vis-à-vis those of other socio-economic classes. To inform policy necessary to address their water needs, there is a need to understand the different scenarios of water provision for these vulnerable households.

Directly connected Class E households

Regardless of socio-economic class, all connected households enjoy continuous supply of high pressure, high quality water. These conveniences bring about a two-fold increase in water consumption of households that are able to connect to the concessionaires' networks. The continuous use of piped water creates a comfort zone, pushing these households to a point where they can no longer revert back to previous consumption levels.

With the present tariff structure, water service is still within affordability limits for all connected households, except for Class E households whose average water expenditure ranges from 6% to 11% of their household income, higher than the 5% ceiling prescribed by the World Bank and the Asian Development Bank (see [Fankhauser & Tepic, 2007](#): p. 1040). A closer look at the existing tariff structure, with special focus on the lifeline rate, provides valuable insights on the affordability concerns of connected Class E households, and may help set policy directions for MWSS towards this end. Like many developing countries, MWSS uses an increasing block rate tariff structure that is intended to promote equity, efficiency, and conservation. Metro Manila's water tariff structure has a lifeline rate for monthly consumption levels of less than 10 cubic meters, which is intended to make water affordable for low-income communities. Additionally, high volume users subsidize low volume users within each customer category (i.e., residential, commercial, industrial) as well as between these categories, with commercial and industrial customers subsidizing residential users ([MWSS, 2014](#)). What may seem trivial but fundamentally important in addressing the affordability issue is the fact that the current lifeline rate was developed at a time when water supply was available for only 16 hours a day, water pressure was erratic (very low for the most part), and systems losses were at the level of 61% (see [Table 2](#)).

In a developing country such as the Philippines, a water service connection is not merely a physical connection to the water mains, but a symbol of connectivity to the conveniences enjoyed by more affluent members of society. In particular, for members of impoverished communities, a water service connection accords them a notion of 'citizenship', which is beyond the basic legal rights and responsibilities, but one that takes on a moral dimension of acceptability and belongingness to society (see [Morales et al., 2014](#)). Considered as a precious asset by impoverished households, the conveniences that accompany it also unleash the suppressed demands of consumers previously suffering from poor

service, effectively ushering these households towards a one-way path of increased water consumption. Unfortunately, Class E households bear the heaviest burden under the existing water tariff regime, requiring state intervention to make such conveniences more affordable for them. Towards this end, MWSS may need to review the existing tariff structure to determine whether or not pricing policy changes need to be made, particularly the lifeline rate/volume policy, to ensure that water provision is affordable to the poorest households in the metropolis.

Indirectly connected Class E households

Most informal settlers, commonly squatters and slum dwellers, are not served directly by the concessionaires even though these communities are located in areas where their water networks are already in place. As these communities occupy land on a rent-free basis, without the consent of the landowner, the concessionaires are somewhat constrained from providing them with direct network connections, and serve them indirectly through community water systems. By default, the operators of community water systems fulfill the functions of the concessionaires over the last phase of water provision to informal settlements. Where the concessionaires' pipes end and the communities' pipes begin is a function of the boundaries surrounding the areas where these communities are found. With both private and public ownership of the properties involved, resolution of cases concerning squatting on another party's land takes many years to resolve. Until the land dispute case is finally settled, it is as if time has been suspended as a stalemate ensues, with the owners unable to evict the informal settlers and the latter unable to get water connections and services directly from the concessionaires. Within the bounds of these contested properties, community-based organizations operating the water systems become the face of the concessionaires, the entity for which the functions of government were entrusted as regards the provision of this essential basic service.

Mimicking the concessionaires, the community-based operators try to provide the conveniences of direct household connections, although water pressure and quality may at times be at sub-par levels. While community water systems are indeed a better alternative than water supply by carts and tankers, the presence of intermediaries between the concessionaires and the households have made this alternative form of water provision ten times more expensive than water supplied directly by the concessionaires. Admittedly, the problems related to property rights are very difficult to resolve and status quo conditions may endure a lifetime. However, informal settlers are also entitled to enjoy the full benefits of improved services at a price that is affordable to them. Thus, it is imperative that innovative policies and programs be implemented to achieve this objective, whether or not the problems of property rights still persist.

Unconnected Class E households

The existing water supply infrastructure system has left a great majority of households in the southern urban fringes unconnected to the concessionaires' distribution networks. Although unable to experience the conveniences of concessionaire-serviced households, most of the unconnected households, with the exception of Class E households, are able to make use of different water supply options to meet their basic water needs. As unconnected E households have low purchasing power and limited ability to negotiate for better water provision, they bear the twin problems of low water supply and high water prices. Hence, these households suffer the worst form of water inequity among all households.

Difficulty of access and low water quality plus the added burden of high prices have suppressed demand, reducing the average consumption of unconnected E households to a level that is below the minimum required to ensure the well-being of individuals and communities alike.

Plans and policies on major infrastructure projects must take into consideration that their benefits or effects on the populace will vary according to their socio-economic circumstances. At present, these households are outside the physical boundaries of the centralized urban waterscape, able to view only from a distance the conveniences enjoyed by their connected counterparts.

In Metro Manila's southern fringes, the presence of different service providers have made regulation difficult, with so many government institutions taking part, inclusive of national regulatory agencies, municipal governments, and special water regulatory bodies. It is only when the concessionaires are able to extend their networks and deliver the requisite water service that the MWSS Regulatory Office is able to fully regulate the provision of water. The absence of a centralized water system together with a difficult and complex regulatory environment in these areas has made it problematic for the lowest income group in these areas to meet their daily water requirements.

Conclusion

While efficiency-based performance assessments offer a general sense of the program's achievements related to improved water services, assessments based on equity metrics, as presented in this paper, provide a fuller appreciation of the degree to which all consumers benefit from such improved services. Analyses of consumer experience across the different socio-economic classes have identified certain scenarios where the water needs of the poorest households are essentially unmet or inadequately addressed.

Along the 'north to south' water supply corridor, varying conditions of access and affordability have spawned these different scenarios. For directly connected households, water inequity may be attributed to an outdated lifeline rate/volume policy amidst increased water consumption levels brought about by the conveniences of water access. For informal settlers served by community water systems, water inequity arises from the absence of property rights, a major requirement for direct household connections. For unconnected areas, water inequity arises from the absence of the concessionaires' networks coupled with a complex environment for regulating different alternative water providers.

State intervention policies that properly address the many faces of urban water inequity require policy-makers to identify and focus on factors and circumstances that propagate these scenarios. For informal settlements within the networked areas, the MWSS RO must pursue its existing policy of direct household connections for these communities and develop implementing guidelines for the purpose, including the use of innovative, semi-permanent reticulation systems that address the community's unique housing conditions. For unconnected communities in Metro Manila's southern peripheral areas, MWSS must develop a southern water supply system to facilitate connection of these communities to the main water networks, and explore possible grants, similar to that provided by the Global Program on Output Based Aid, to subsidize connection fees. For all connected households, both previously and newly connected, the MWSS RO must reform the residential tariff structure, particularly as regards the lifeline rate/volume, to make water tariffs more affordable for impoverished households. Moreover, for effective monitoring and oversight of concessionaire performance, the MWSS RO must review its current service coverage formula to ensure proper accounting of households served by the

concessionaires. In addition, they must revive the previous assessment program conducted by the UP NEC known as the Public Assessment of Water Services, but with modifications to include surveys of Metro Manila's unconnected households.

The research suggests that a more focused lens on the plight of extremely poor households may have brought about a speedier implementation of the aforementioned programs. In turn, such speedier implementation may have addressed at an earlier stage, the conditions that propagate difficult water provision for poor households across the Metro Manila waterscape.

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