

Israel, Danilo C.

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Philippine Institute for Development Studies
Surian sa mga Pag-aaral Pangkaunlaran ng Pilipinas

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Danilo C. Israel

DISCUSSION PAPER SERIES NO. 2009-38

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For comments, suggestions or further inquiries please contact:

The Research Information Staff, Philippine Institute for Development Studies
5th Floor, NEDA sa Makati Building, 106 Amorsolo Street, Legaspi Village, Makati City, Philippines
Tel Nos: (63-2) 8942584 and 8935705; Fax No: (63-2) 8939589; E-mail: publications@pids.gov.ph
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Local Service Delivery of Potable Water in the Philippines: National Review and Case Analysis

Danilo C. Israel

Abstract

This study reviewed the local service delivery of potable water nationally and analyzed the same in the case study areas of Dumaguete City and Agusan del Sur. Data and information for the national review were generated from the relevant literature while those for the case analysis were had through a survey done in late 2008 and early 2009. The national review found that although pertinent laws, institutions, strategies and programs on potable water service delivery were already in place, institutional problems remained. It further asserted that while the country may be heading towards meeting its national and MDG objectives related to the provision of potable water, more needs to be done with the limited time at hand.

Among the important conclusions of the case study was that Dumaguete City has met meet or is about to meet national and MDG objectives related to potable water delivery while Agusan del Sur and at least some of its municipalities still have to work harder to meet them. The study further found that the price, quality and accessibility of potable water were major factors influencing households in their choice of water source. Furthermore, it asserted that there were key issues and challenges facing local water service delivery most of which were institutional in nature.

Based on the results, findings and conclusions of the national review and case analysis, the study suggested some recommendations intended for the further development of local service delivery of potable water nationally, in the case study sites and in other local areas.

Local Service Delivery of Potable Water in the Philippines: National Review and Case Analysis

*Danilo C. Israel**

I Introduction

Potable or drinking water is a critical requirement of human life. Without it, our continued existence on earth would be immediately threatened. It is for this reason that the provision of potable water in adequate quantity and quality is a primary national and international concern of nations. In particular, the Millennium Development Goals (MDGs) target that 86.6 percent of the population of countries would have adequate access to safe drinking water by 2015 (NEDA 2007). For its part, the Philippine government aims that 92 to 96 percent of its citizens would have sufficient water supply at an even earlier date, by 2010 (NEDA 2004).

With 2015 in the not too distant future and 2010 only a year away, the performance of the Philippines in meeting national and international objectives related to potable water needs to be assessed. Evaluating at this time where we are in terms of our potable water targets will help determine whether our objectives are achievable or actually farfetched. Furthermore, an assessment will allow us to see whether we should finetune our methods and fastrack our efforts with the remaining time at hand.

In late 2008 and early 2009, the Philippine Institute for Development Studies (PIDS) and the United Nations Children's Fund (UNICEF) conducted a study on local service delivery (LSD) in the sectors of education, health and potable water in the Philippines. In the case of potable water, the study reviewed potable water service delivery nationally and analysed it in two case study sites: Dumaguete City in Negros Oriental and the Province of Agusan del Sur in Mindanao. In particular, the study looked into the current situation of water service delivery in the Philippines and the two sites, determined its performance relative to national targets and the MDGs, and identified the key issues and challenges it faces. The end purpose of the water service delivery study was to generate recommendations for its improvement.

This discussion paper presents the important results and findings of the study on local service delivery of potable water delivery in the Philippines. It is hoped that the paper will provide policy makers and other interested readers data and information on local potable water service delivery useful to their own works and activities. Corollarily, this paper recommends some actions that can be undertaken for the improvement of potable water service delivery in the case study sites as well as other similarly situated areas of the country. Another report of the study is contained in PIDS-UNICEF (2009).

The second section of the discussion paper discusses the methods used by the study while the next section provides a description of the two case study sites. The fourth section conducts a review of the literature while the following two sections present an institutional

* The author is Senior Research Fellow at the Philippine Institute for Development Studies (PIDS). Techni assistance was provided by Allan Layug and staff assistance was provided by Jeffrey Lintag and Leilani Bolong, also of PIDS.

review and background of local potable water service delivery at the national level. The seventh section provides the results and findings of the case analysis. The penultimate section lists the key issues and challenges while the last section provides the various conclusions and recommendations.

II Methods

The review at the national level used data and information from published literature related to potable water service delivery in the Philippines and from selected national key informants. The case analysis utilized data and information generated through a survey conducted in Dumaguete City and Agusan del Sur. The survey had three parts: a) household module, b) service provider module, and c) key informant module. The household module was done through personal interviews with the heads of selected households or their representatives. There were a total of 183 households in Dumaguete City and 158 households in Agusan del Sur covered. A questionnaire was prepared, pre-tested and administered in October and November 2008. The households included those which were participants and non-participants of the Sub-Regional-Multiple Indicator Cluster Survey (SR-MICS) of the national government and were selected at random. The questionnaire generated economic and other related data and information deemed useful to the study.

The household module of the survey also conducted focus group discussions in Dumaguete City and Agusan del Sur, particularly among households which were non-users of certain local potable water services in their areas. These households were also selected at random. In Dumaguete City, 11 household heads or their representatives participated in the focus group discussions while in Agusan del Sur 20 households joined. The activity was conducted in March 2009.

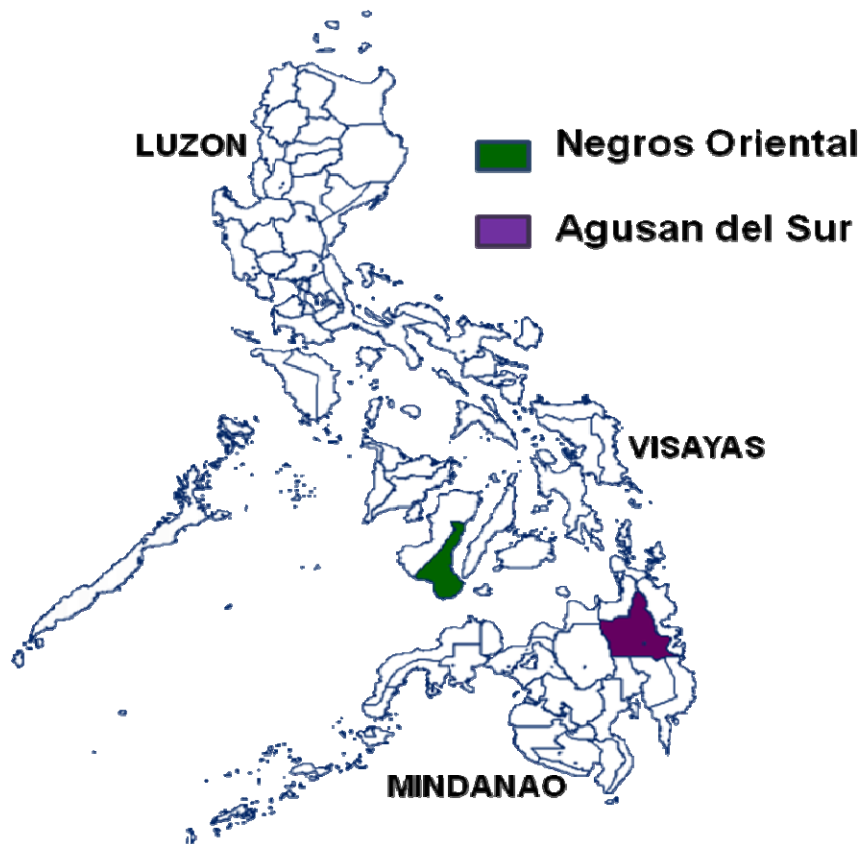
The service provider module of the survey consisted of personal interviews with the representatives of local water service providers in the case study sites, including those representing water districts, local government units and other water service providers. The key informant module consisted of personal interviews with selected public and private sector representatives in the study sites. These informants included a governor, mayors and barangay captains as well as members of the provincial, municipal and barangay finance committees in the study sites. The data and information generated centered on public planning, budgeting and overall management of local water service delivery in the study sites.

III Description of the Case Study Sites

3.1 Dumaguete City

Dumaguete City is located in the province of Negros Oriental which is in the Central Visayas Region or Region VII of the country (Figure 1). Negros Oriental was founded in 1917 and occupies the southeastern half of Negros Island with Negros Occidental in the northwestern half. The province is composed of 6 component cities, 19 municipalities, 557 barangays and 3 congressional districts. It has a total land area of 540,230 hectares. With a population of 1,126,061 people in 2007, Negros Oriental had a population density of 2.08 persons per hectare.

Figure 1 Map of the Philippines highlighting the provinces of Negros Oriental and Agusan del Sur



The main dialect of Negros Oriental is Cebuano which is spoken by 95 percent of the population. Roman Catholicism is the predominant religion. The major industry of Negros Oriental is agriculture with sugarcane, corn, coconut and rice as the primary crops. In the coastal areas, fishing is also a main source of income and livelihood. The population is also involved in cattle ranching, fishfarming and logging. Furthermore, the province has mineral deposits like gold silver and copper.

Dumaguete City is the capital city of Negros Oriental (Figure 2). It is a coastal city and located in the southwestern part of the province facing Siquijor and Cebu. It became a city in 1948 and is currently composed of 30 barangays. Dumaguete City has a total land area of 3,426 hectares. It had a population of 116,392 persons and 21,582 households in 2007. With its population and land area, it had a population density of 33.97 persons per hectare.

Dumaguete City is perhaps best known for hosting Silliman University, the first protestant university and the first American university in Asia. In addition, the city has other universities and colleges, 9 high schools and 12 elementary schools. It also has three major hospitals and medical centers. The economy of Dumaguete City is mainly business and tourism-based. The city has several shopping centers, food establishments and banks which cater to the population.

Figure 2 Map of Negros Oriental highlighting Dumaguete City



The barangays in Dumaguete City which were covered by the case study were Taclobo, Daro, Batinguel, Bunao, Calindagan, Barangay 1 and Barangay 8. Of the barangays, Batinguel has the largest area while Barangay 8 has the lowest (Table 1). Taclobo had the largest population in 2007 while Barangay 8 had the lowest. Barangay 8 had the highest population density in 2007 while Batinguel had the lowest.

3.2 Province of Agusan del Sur

The province of Agusan del Sur is in the CARAGA Region (Region XIII) which is located in the northeastern part of Mindanao (Figure 1). The province was founded in 1967 and is classified as a first class province. It is composed of 14 municipalities, 314 barangays and 2 congressional districts. It has a total land area of 896,600 hectares which is the fourth largest in the country. With a population of 559,294 persons in 2007, it had a population density of 0.62 persons per hectare.

The CBMS Survey (PPDO, Agusan del Sur 2005) reported that the province had 109,123 households and total household members of 549,946 in 2005 (Table 2). Of the municipalities, Bayugan had the largest number of households and household members. La Paz had the lowest number of households while Sta. Josefa had the lowest number of household members.

The main dialect spoken in Agusan del Sur is Cebuano brought in by the dominant migrant population from the Visayas. There are other ethnic languages used particularly by the tribal groups in the province including the Aeta, Mamanwa, Bagobo, Higaonon and Manobo. The dominant religion is Roman Catholicism which is practiced by 79 percent of the population.

Table 1 Area and population of Dumaguete City and barangays covered by the study, 2007

Barangay	Area (Hectares)	Population (Persons)	Population Density (Persons per Hectare)
Dumaguete City	3,426	116,392	33.97
Taclobo	129.3	10,598	81.96
Daro	130.3	6,721	51.58
Batinguel	216.9	7,664	35.33
Bunao	44.63	2,750	61.62
Calindagan	84.6	8,827	104.34
Barangay 1	8.01	2,569	320.72
Barangay 8	6.23	2,160	346.71

Source of Data: CPDO, Dumaguete City (2008)

Table 2 Number of households and household members in Agusan del Sur, 2005

Municipality	Number of Households	Number of Household Members
Agusan del Sur	109,123	549,946
La Paz	4,128	22,759
Loreto	5,836	30,041
San Luis	5,202	26,229
Veruela	6,455	31,836
Sibagat	5,540	28,998
Talacogon	5,690	28,915
Esperanza	8,568	44,669
Prosperidad	14,102	72,293
Bunawan	5,533	27,623
Sta. Josefa	4,178	20,508
Trento	8,289	40,472
Rosario	5,878	28,587
Bayugan	18,348	91,583
San Francisco	11,376	55,433

Source of Data: PPDO Agusan del Sur (2005)

Agusan del Sur is mainly an agricultural and forestry province with forestry products, rice, corn, coconuts and fruits among its major crops. The province has a palm oil plantation covering an area of 118 square kilometers which is a Malaysian-Filipino joint venture. Being landlocked, the province is highly dependent on nearby coastal provinces for the supply of fish and other marine products. However, it has an abundant supply of freshwater fish like mudfish, catfish and tilapia. Among the numerous natural attractions of the province is the Agusan Marsh.

The municipalities of Agusan del Sur which were covered by the case study were Bayugan, Prosperidad and Sibagat (Figure 3). These municipalities are contiguous and located along the national highway.

Figure 3 Map of the province of Agusan del Sur highlighting the municipalities of Bayugan, Prosperidad and Sibagat



3.2.1 Municipality of Bayugan

Bayugan is the most populated municipality of Agusan del Sur. It is a relatively new municipality being granted that status only in 1961 but is already a first class municipality. It has a total land area of 50,500 hectares. With a projected population of Bayugan in 2008 of 141,286 people, the population density was 2.8 persons per hectare. The CBMS Survey reported that Bayugan had 18,348 households in 2005 (Table 2).

Bayugan is composed of 43 barangays. It has two colleges, several public and private high schools and several elementary schools located in the poblacion and other barangays. Bayugan is mainly an agricultural municipality. As the commercial center of the province, commercial and trading activity in Bayugan is relatively higher compared to other municipalities.

The barangays in Bayugan covered by the case study are Poblacion, Taglatawan and Bucac. In 2008, Poblacion had a population of 16,913 persons while Taglatawan had a population of 12,259 persons. Barangay Bucac had a population of 3,010 persons in the same year.

3.2.2 Municipality of Prosperidad

Prosperidad is a first class municipality and the capital of Agusan del Sur. In 2000, it had a population of 70,816 persons and 13,064 households. With a total land area of 59,836 hectares, the population density was 1.18 persons per hectare. The municipality is composed of 32 barangays. The CBMS Survey reported that Prosperidad had 14,102 households in 2005 (Table 2).

Prosperidad is an agricultural community and farming is the main source of livelihood. Most of the households are engaged in crop production, gardening and raising of livestock and poultry. The municipality is endowed with rich natural resources which could transform it into a wood-based agri-industrial center.

The barangay in Prosperidad covered by the case study is Poblacion or Bahbah. This barangay has a total land area of 1,877.97 hectares. In 2007, it had a population of 11,681 persons and 2,213 households for a population density of 6.2 persons per hectare.

3.2.3 Municipality of Sibagat

Sibagat is a third class municipality of Agusan del Sur. It is the first municipality along the national highway to the south from Butuan City going to Davao City. In 2000, it had a population of 28,682 persons and 5,289 households. With a total land area of 56,000 hectares, it had a population density of 0.51 persons per hectare.

The CBMO Survey reported that the municipality had 5,540 households (Table 2). The economy of Sibagat is highly dependent on subsistence agriculture. It is composed of 24 barangays. The Municipal Profile of Sibagat indicated that only 54.68 percent of households in the municipality have access to potable water.

The barangay in Sibagat covered by the case study is Afga. It is located along the national highway going north from the Sibagat Poblacion to Butuan City. Barangay Afga had a population of 3,335 persons and 666 households in 2008. Farming was the main source of income of the population of the barangay.

IV Review of Related Literature

Some economic studies have already been done that reviewed or analysed the potable water situation in the Philippines. In a study of water demand and supply in Metro Manila, Ebarvia (1994) stated that most of the surface water resources in Metro Manila were already contaminated and that for these to be fit for drinking, tertiary water treatment was required. The World Bank Group (2003) further indicated that up to 58 percent of the groundwater supply in the country intended for drinking are contaminated with coliform and needed treatment. It further asserted that 31 percent of illnesses monitored during a five-year period were water-related diseases.

In another study on demand and supply of water in Metro Manila, David and Inocencio (1996) indicated that 30 percent of the population was not reached by any public water service. Furthermore, it argued that the quality of water service was poor, reliability of service was inadequate and the progressive rate imposed by the service provider did not really benefit the poor. On the issue of water pricing, Largo et al. (1998) asserted that both the price of water and income of households significantly affected water demand by households in Metro Cebu. However, price had a greater impact than income on water demand. This suggested that the high price paid by the poor for water rather than their low income largely explains their low levels of water consumption. Also on water pricing in Metro Manila and Metro Cebu, David et al. (2000) suggested, among others, the adoption of a pricing policy that covers the full economic cost of urban water including its financial cost of water production and distribution, opportunity cost of water where there are competing users and cost of externalities or negative environmental impacts.

Arellano (1994) emphasized the severe strain on water resources that the growing population of Metro Manila has brought and explored options for privatization of the Metropolitan Waterworks and Sewerage System (MWSS) which served the water needs of the area. In another study on the effects of the privatization of the Metro Manila Water and Sewerage System (MWSS) on the price of water, the poor and the environment David (2000) indicated that unless some adjustments were made, the water shortage problem in Metro Manila will persist even with privatization. It also asserted that the poor will continue to pay a much higher price for water. Furthermore, the paper argued that even though the water pricing is progressive, it may end up having regressive effects as the poorer households have to rely on shared water connection or public faucets and thereby actually pay higher water prices.

In another study, Inocencio et al. (1999) studied the basic household water requirement to maintain good health and proper sanitation and computed the lifeline or minimum consumption block of about 10 cubic meters per month for a family of 6 members. Inocencio and David (2001) further indicated that the provision of water for the poor and poor communities can be a potent tool for alleviating poverty as it impacts on health, income and consumption and gender and social inclusion. They also argued that in this sense public-private-community Partnerships (PPCPs) which are delivering water to the poor in Metro Manila may be contributing to poverty alleviation.

On institutions, WSP (2004) suggested that rural water supply projects with significant investments in capacity and institution building produced the most sustainable rural water supply. It further argued that the involvement of the local government and communities aids the preparation, planning, implementation, and management of such systems. The study also suggested that the success of projects will require strengthening local capacity and building institutions to operate and maintain systems, developing mechanisms for cost recovery, explicitly targeting the needs of the poor, and providing more incentives for local investment. Another institutional study by Singh (2006) suggested that policy makers in the Philippines should give due attention to institutional transformation or the creation of appropriate and new institutions as the country moves towards decentralization.

On alternative potable water sources, Magtibay (2004) explained that a portion of the population of the Philippines has shifted their preference to alternative sources of drinking water and that the demand at the water refilling stations or water stores that sell purified water is now increasing. It asserted that the quality of purified water conforms to national

standards for drinking water and is even better than the quality of water produced by traditional water supply systems particularly in terms of removed impurities.

On the issue of accessibility of potable water, Greenpeace (2007) and World Bank (2005) stated that one out of five Filipinos did not get water from formal sources. Furthermore, it explained that only 77 percent of the rural population and 90 percent of those in urban areas have access to an improved water source and only 44 percent have direct house connections. Madrazo (2002) further mentioned that those without house connections only access water from wells, springs, communal faucets, and/or from small-scale informal providers.

On the issue of financing water projects in the Philippines, Johnson et al. (1996) explored innovative ways to finance water districts particularly in relation to its financial donors. Finally, on the issue of meeting development goals, ADB (2006) projected that the Philippines will have rural water supply for only 77 percent of the rural population by 2015 which is offtrack in attaining MDG targets. ADB (2007) further said that for the Philippines in 2004, overall water supply coverage achieved was only 85 percent (87% urban and 82% rural), with overall sanitation coverage of 72 percent (80% urban and 59% rural). It asserted therefore that progress on meeting MDG targets needs to be improved.

In summary, the above literature review highlighted the following interesting points: a) the potable water supply of the country is limited and a significant share of it is contaminated; b) water price and household income impacts on water demand with the former having a greater impact than the latter; c) water pricing may actually be regressive to the poor; d) in addition to price and income, water provision has health, gender and social considerations; e) institutional factors play an important role in water provision; f) there are new and alternative sources of water, such as refilling stations; and g) progress has to be hastened for the country to meet its national and MDG objectives related to potable water provision.

V Institutional Review Related to Potable Water

In this section, the major national laws, local and national government agencies and national strategies and programs which on potable water in the Philippines are reviewed based on PIDS-UNICEF (2009). The section also provides a summary of the important institutional problems faced by potable water service delivery at the national level.

5.1 National laws

An important law which affects local potable water service delivery in the Philippines is the 1991 Local Government Code (LGC) which devolves several public functions from the national government to the local governments. Among others, this law mandated the sharing of responsibility of providing local potable water service among local government units. Specifically, Sec. 17 of the law mandated the barangays to maintain water supply systems; the municipalities and cities to put up small water-impounding projects, artesian wells, spring development, rainwater collectors and other water supply systems; and the provinces to establish inter-municipal waterworks and related water supply systems using their own funds.

Other major national laws which are directly related to potable water in the Philippines are the following:

- a) RA 6234 of 1971 which abolished the National Waterworks and Sewerage Authority (NAWASA) and created the Manila Waterworks and Sewerage System (MWSS). The MWSS is the national agency which is responsible for providing water supply to Metro Manila;
- b) Presidential Decree (PD) 198 or the Provincial Water Utilities Act of 1973 which established water districts and created the Local Water Utilities Administration (LWUA) as a specialized lending institution responsible for resource, technical, and institutional development and financial assistance to water districts;
- c) PD 424 of 1974 which created the National Water Resources Council (NWRC), which is now National Water Resources Board (NWRB), which is responsible for coordinating, planning, and integrating water resources and agencies of the national government, water resource development and management in general;
- d) PD 1067 of 1976 or the Water Code of the Philippines which provided the implementation framework for the constitutional provisions on water resources development and water quality management;
- e) RA 9275 or the Philippine Clean Water Act of 2004 which provided for a comprehensive water quality management and consolidated the fragmented Philippine laws on water resources management, quality control, and sanitation;
- f) PD 856 (Sanitation Code of the Philippines of 1975), which codified and enforced the numerous sanitation policies of the government, including the standards for potable water supply;
- g) EO 123 of 2002 which strengthened the NWRB and mandated it to approve tariffs of local water districts;
- h) EO 279 of 2004 which instituted reforms in the financing policies for the water supply and sewerage sector and for water service providers. It also transferred the LWUA to the Office of the President and rationalized its organizational structure, among others;
- i) EO 387 of 2004 which transferred the LWUA from the Office of the President to the Department of Public Works and Highways (DPWH);
- i) EO 421 of 2005 which refocused the LWUA's mandates, functions, and organizational structure as envisioned in EO 279; and
- j) EO 738 of 2008 which transferred the LWUA to the Department of Health (DOH).

5.2 Government agencies

The local and national government agencies of the Philippines which are involved in local water service delivery and their respective roles and responsibilities are summarized in Table 3.

Table 3 Key water supply institutions in the Philippines and their roles and responsibilities

Agency	Roles and Responsibilities
Water Supply Providers (WSPs)	Management and operation of water supply systems
Local Government Units (LGUs)	Planning and implementation of water supply and sanitation programs <ul style="list-style-type: none"> • Preparation of water and sanitation master plans • Monitoring of local water and sanitation coverage and update of sector profile • Provision of support to WSPs
Local Water Utilities Administration (LWUA)	Capacity building support to WSPs <ul style="list-style-type: none"> • Provision of technical advisory services and financial assistance to water districts • Provision of technical and institutional support to LGUs and WSPs • Setting design standards for water supplies operated by WDs and other WSPs
Department of Interior and Local Governments (DILG)	Capacity-building support to LGUs <ul style="list-style-type: none"> • Provision of capacity-building training to LGUs • Coordination of LGU masterplan preparation • Provision of information to LGUs on available sector programs and financing
National Water Resources Board(NWRB)	Regulation of WSPs, including LGU-managed water utilities <ul style="list-style-type: none"> • Tariff regulation • Coverage and service regulation • Management of WSS sector database, including WSP performance data
National Economic and Development Authority (NEDA)	Coordination of preparation of national development plan and investment programs <ul style="list-style-type: none"> • Formulation of sector policies and strategies • Monitoring implementation of policies, programs, and projects
Department of Public Works and Highways (DPWH)	Provision of technical support to LGUs upon request including implementation of Level I and II projects

Department of Finance/Government Financing Institutions (DOF/GFIs)	Financing support for the water supply sector <ul style="list-style-type: none"> • DOF oversees performance of GFIs like Development Bank of the Philippines (DBP), Land Bank of the Philippines (LBP) and LWUA • GFIs (DBP, LBP, and LWUA) provide funding for the water supply sector
National Anti-Poverty Commission-Water Supply Coordinating Office (NAPC-WASCO)	Coordination of the President’s Priority Program for Water (P3W)

Source: PIDS-UNICEF (2009)

5.3 National strategies

The Medium-Term Philippine Development Plan (MTPDP) 2004–2010 (NEDA 2004) has identified the key strategies to attain its objectives related to potable water supply in the Philippines. These strategies are the following:

- a) *Make potable water available nationwide by 2010 through P3W;*
- b) *Ensure that the LGUs provided with water supply services will also have sanitation facilities;*
- c) *Continue to provide capacity building programs and technical assistance to WSPs on water and sanitation planning, management, and project implementation;*
- d) *Develop and manage technology options for water supply such as solar desalination for isolated islands, windmill technology, and others;*
- e) *Promote private–public partnerships for increased investment in water provision to waterless LGUs, especially remote barangays and municipalities;*
- f) *Conduct an assessment of the groundwater resources and vulnerability for the 310 priority LGUs;*
- g) *Monitor potable water supply of selected poor communities through Tap Watch Program; and*
- h) *complete the groundwater resource inventory/assessment in major urban areas and surface water in rural areas.*

5.4 National programs

Based on the 2007 Midterm Progress Report on the MDGs of the government (NEDA 2007), specific programs were prioritized to address the water issues and concerns of the country. These programs are the following:

- a) *Focusing on waterless areas.* The government is implementing the P3W in priority areas including 212 “waterless” areas in Metro Manila and 633 “waterless” municipalities outside Metro Manila.
- b) *Establishment of groundwater monitoring system.* The government aims to regulate pumping in areas where piezometric heads (which measure the level of the water table above sea level) are declining and to assess the state of existing wells;
- c) *Provision of safe drinking water.* The government installs low-cost water supply facilities such as hand-pumps, gravity-fed systems, rainwater collection, and shallow wells or deep artesian tube wells;
- d) *Conservation of water for sustainable water quality and supply.* The government undertakes activities that include: a) improving the system’s efficiency; b) improving the metering efficiency and monitoring the unauthorized use of water; c) encouraging the use of saving devices, application of new technologies, and recycling; and d) conducting intensive public information, education, and communication campaigns and programs on potable water conservation.
- e) *Development and construction of low-cost sanitation facilities.* The government adopts, develops and constructs low-cost sanitation facilities such as “engineered reed bed treatment system, ventilated improved pit privy (VIP) and other latrines.

5.5 Institutional problems

Although the Philippines have laws, agencies, strategies and programs in place for potable water, its system of institutional governance in this area is deemed weak and inadequate. Among the most important of the institutional problems being faced are the following:

- a) *Multiplicity of Institutions.* The water supply sector is highly fragmented due to institutions having unclear duties, overlapping functions, and poor coordination in planning and monitoring.
- b) *Uncertainty in law implementation.* There is a high degree of uncertainty on how to implement the laws, particularly EO 279. This is because the required institutional capacities of the corresponding institutions to carry out the functions mandated in the law were insufficient.
- c) *Weak Regulatory Framework.* The water supply sector lacks coherent and robust regulatory framework due to a) fragmented regulatory oversight by different line agencies; b) lack of capacities to perform regulatory functions, and c) lack of transparency in sector performance that impedes effective regulation.

6. National Background of Potable Water Service Delivery

6.1 Water service providers

The water service providers (WSPs) in the Philippines include water districts, LGU facilities, Rural Water Supply Associations (RWSAs), Barangay Water Supply Associations (BWSAs), Cooperatives and Private Firms. Water Districts are government-owned and controlled corporations (GOCCs). LGU utilities include water systems established by LGUs through their engineering departments and development and planning offices. The RWASAs, BWASAs and Cooperatives are community-based organizations which establish water systems in barangays and other localities. The private firms include large private service providers as well as small-scale independent providers (SSIPs) such as real estate developers, homeowners' associations, local entrepreneurs, and mobile water truckers and haulers. In addition to the above WSPs, there are household self-providers who put up their own water supply system and refilling stations and bottled water providers who sell processed water to the public.

As of 2005, there were an estimated total of 6,280 water service providers in the country (Table 4). This number included 580 water districts, 1,000 LGU Utilities, 500 RWSAs, 3,100 Barangay BWSAs, 200 cooperatives and 900 private firms. In addition to these, an unaccounted number of household self-providers, refilling stations and bottled water producers existed around the country.

Table 4 Water service providers in the Philippines, as of 2005

Type of Provider	Estimated Number
Water District	580*
LGU Utilities	1,000
RWSAs	500
BWSAs	3,100
Cooperatives	200
Private Firms	900
Total	6,280

*As of 2003-2004, 127 were considered non-operational without a board of denied financing by the LWUA due to non-viability.

Sources: World Bank (2005), NEDA (2009)

In 2007, there were about 9 million people served by WSPs outside of Metro Manila (Table 5). Of this number, approximately 6.9 million or 76 percent were serviced by water districts. The LGU utilities serviced approximately about 1.5 million people or about 17 percent of the total population. The rest of the service providers individually served less than 300,000 of the total population. Of the regions, WSPs served the most number of people in Region IV-A which totaled about 2.9 million or 32 percent of the total population. The Cordillera Autonomous Region (CAR) was the least served with the WSPs covering only 37,445 people or 0.4 percent.

Table 5 Population served by water service providers in the Philippines, by region, as of 2007

Region	Water District	LGU	Population Served				Total Population Served
			RWSA/ BWSA	Coops	MWSS*	Private/ NGO	
ARMM	123,455	35,740	0	0	0	0	159,195
CAR	18,607	2,914	9,900	0	0	6,024	37,445
CARAGA	166,076	40,368	1,671	0	0	0	208,115
Region I	556,479	36,169	24,165	4,794	0	644	622,251
Region II	140,180	51,908	2,334	0	0	0	194,422
Region III	635,905	1,458	923	0	0	0	638,286
Region IV-A	2,286,823	215,957	101,339	2,836	15,818	239,807	2,862,580
Region IV-B	78,501	14,330	24,820	0	0	35,649	153,300
Region V	756,738	83,166	35,551	0	0	2,770	878,225
Region VI	463,161	75,385	4,875	696	0	0	544,117
Region VII	433,489	520,664	15,368	64,229	0	1,113	1,034,863
Region VIII	432,040	113,327	0	0	0	0	545,367
Region IX	135,000	109,590	7,208	510	0	0	252,308
Region X	190,435	157,930	40,146	0	0	0	388,511
Region XI	285,596	47,932	28,586	27,151	0	0	389,265
Region XII	149,002	4,842	0	0	0	0	153,844
Total	6,851,487	1,511,680	296,886	100,216	15,818	286,007	9,062,094

*This apparently does not include updated data from the two private concessionaires, Manila Water Services Inc. (MWSI) and Manila Water Company Inc. (MWCI). As of June 2007, MWSI had 5.9 million customers in 696,805 water connections. MWCI, on the other hand, has coverage of 800,000 households in 550,000 water connections.

Sources: DILG, NEDA (2009)

In terms of number of people served, therefore, BWASAs were the largest WSPs in the Philippines followed by private firms, LGU utilities, water districts, RWASAs and cooperatives. In terms of people served, however, water districts were the largest providers followed by LGU utilities, RWSAs/BWASAs, private/NGOs, Cooperatives and the MWSS.

6.2 Access to safe drinking water

The available data on access to safe drinking water in the Philippines have been conflicting (World Bank 2005). As earlier mentioned, ADB (2007) stated that for the Philippines in 2004, overall water supply coverage achieved was 85 percent. On the other hand, surveys of the National Statistics Office (NSO) indicated only a slight improvement in access to safe drinking water from 80.0 percent in 2002 to 80.2 percent in 2004 while the Joint Monitoring Program for Water Supply and Sanitation of UNICEF and the World Health Organization (WHO) actually showed a declining trend from 87 percent in 1990 to 85 percent in 2004 (PIDS-UNICEF 2009).

Based on the conflicting data on access to safe drinking water in the Philippines, it appears that nationally the MDG of 86.6 percent of the population with adequate access to safe drinking water by 2015 may be achievable. On the other hand, based on the same data,

the Philippine government target of 92 to 96 percent of its citizens having adequate water supply by 2010 may be much harder to attain especially given the very limited remaining time.

Furthermore, available data on access to safe drinking water in the Philippines indicate a large urban-rural disparity. For instance, in 1990, the percentage of the population in urban areas with access to safe drinking water was 92 percent while that for rural areas was only 75 percent (PIDS-UNICEF 2009). In 2004, the percentage of the population with access to safe drinking water increased to 96 percent in the urban areas while those in the rural areas rose to 88 percent. Thus, although the access to safe drinking water in both urban and rural areas increased, the disparity in the access between the two areas has been generally maintained.

The data shown earlier (Table 5) further indicate that there is disparity in the access of safe drinking water between regions in the Philippines. For instance, Region IV-A and Region VII had more than a million of their population served by WSPs. On the other hand, only 37,445 of the people in CAR and 153,300 of the population in Region IV-B had similar services. The other regions likewise had widely varying numbers of their population having access to safe drinking water.

In addition to the abovementioned issues, it is also clear that while nationally the MDG targets for achieving sufficiency in access to safe drinking water may be achievable, there remains waterless areas at the local level that need to be taken into account. As earlier mentioned, the government is now implementing P3W. A review, however, indicates that the gains of the P3W have been modest so far and that more needs to be done in order to solve the problem of waterless communities (PIDS-UNICEF 2009).

VII Case Studies of Dumaguete and Agusan del Sur: Results and Findings

7.1 Water programs, activities and projects

7.1.1 Dumaguete City

There are three types of potable water systems in the Philippines and all exist in Dumaguete City. The first is the Level 1 water system which includes stand alone water points such as handpumps, shallow wells, and rainwater collectors. The second is the Level 2 water system which covers piped water with a communal water point such as borewell and spring system. The third is the Level 3 water system which includes piped water supply with a private water point such as a house connection.

In Dumaguete City, service delivery of Level I water is currently provided by both the public and private sectors. Level II water is supplied by the public sector while Level III water is sourced from the water district. These providers and their programs, activities and projects are described below.

Dumaguete City Water District (DCWD)

The program of providing Level III water in Dumaguete City started in 1977 with the establishment of the DCWD. This water district has jurisdiction over the entire city. Its stated corporate mission is the satisfaction of its concessionaires through efficient and effective quality water supply and service, assured reasonable water rates and enhanced financial viability, and adherence with technological advances and innovations.

Currently, the DCWD already has distribution lines in the entire city. It supplies water to about 95 percent of households, with the rest getting water from Level I and Level II water systems. The district has a staff of 171 employees, of which 93 are permanent and 78 are casual. Of the permanent employees, 11 are in management, 40 are in operations, and 42 are in maintenance and support. Of the total employees, 19 are women of which one is in management and 18 are in operations.

For its source of water, the DCWD operates 15 pumping stations which produce about 25,000 cubic meters of groundwater per day. The DCWD management states that the quality of water from its pumping stations is good and the water is safe for drinking. However, to ensure quality, the district treats water with chlorine. It also periodically collects water sample for analysis at the Silliman University laboratory, the results of which are then submitted to the DOH. In general, the results of analysis indicate that the quality of water is good. For instance, in 2006, only 7 out of 209 water samples failed the bacteriological tests.

In 2006, the DCWD had estimated annual operations and maintenance costs of P96.8 million, annual collections of P108.9 million, total capital expenditures in the previous five years of P42.6 million, and average capital expenditure per connection per year of P438.35. Of the annual operating and maintenance costs of the DCWD, an estimated 60 percent went to personnel, 22 percent went to power consumption, and 18 percent went to repair and maintenance.

The sources of investment funds of the DCWD were government loans and externally generated sources. The former comprised 60% of the loans while the later contributed 40%. Among the funding generated by the water district over the years were the loan assistance from the LWUA for its Interim Improvement Project (IIP) in 1983 and the loan assistance from the Asian Development Bank (ADB) for its Comprehensive Improvement Project (CIP) in 1994. Currently, the water district pays a monthly amortization of P1.6 million for its outstanding loan from the LWUA through the DBP.

In 2006, the DCWD had 29,419 service connections including 17,591 households, 256 public taps, 1,571 commercial establishments, and 1 consumer classified as others. Households, therefore, formed 59.8 percent of the customers of the water district. Together with those using public taps, these households consumed approximately 55 percent of the 9,098,084 cubic meters of chlorinated water produced by DCWD in 2006. Five percent of the water produced by the water district was for commercial use while about 40 percent was unaccounted for (UFW).

In 2008, the DCWD had fixed assets with an estimated value of P120 million, annual gross revenue of P98 million, annual total cost of P89 million, and annual net profit of P9 million. It pays a franchise tax to the Bureau of Internal Revenue (BIR) of 2 percent of its gross revenue. The water district, therefore, is a positively earning GOCC. Of the price of

water that the water district gets from the consuming public, approximately 60 percent goes to operating costs, 20 percent to maintenance costs, 10 percent to expansion costs, and 10 percent to profits.

Since 2005, the tariff structure for DCWD has been as follows (Table 6): a minimum charge of P220 for the first 10 cubic meters or less of water consumption for residential/government users, and from P210 to P240 for various types of semi-commercial and commercial users. A commodity charge is imposed for higher levels of consumption. In particular, P13.50 per cubic meter is charged for residential/government consumption of 11–20 cubic meters. For commercial consumption, the commodity charge is from P23.60 to P27 per cubic meter for consumption of 11-20 cubic meters, depending on the type of commercial establishment. As the volume of consumption increases, the commodity charge imposed also rises. This tariff structure of the DCWD is initially determined by the LWUA but a public hearing is also done to get the consensus of the public before it is eventually implemented.

Table 6 Tariff structure of Dumaguete City Water District, 2005

Category	Residential/ Government	Semi- Commercial A	Semi- Commercial B	Semi- Commercial C	Commercial
Minimum charge (First 10 cubic meter or less)	P 120.00	P 210.00	P 160.00	P 150.00	P 240.00
Commodity charge (Consumption in cubic meter)	Pesos/cubic meter	Pesos/cubic meter	Pesos/cubic meter	Pesos/cubic meter	Pesos/cubic meter
11-20	13.50	23.60	20.25	16.85	27.00
21-30	16.50	28.85	24.75	20.60	33.00
31-50	20.00	35.00	30.00	25.00	40.00
51-up	24.00	42.00	36.00	30.00	48.00

Source of Data: DCWD

Notes: Minimum charge is for one-half inch diameter pipe connection and increases up to two-inch connection. Commodity charge is the same regardless of connection size.

The commodity charges indicate that semi-commercial and commercial users pay more than residential and government users at the same consumption levels. The tariff structure, therefore, is a pricing scheme where large commercial users pay more per unit compared to the less consuming but numerous households. In addition to the minimum and commodity charges, the price for new connection is P2,870 payable prior to connection although the urban poor are allowed to pay in instalment.

Presently, there have been reported efforts to transfer wastewater management in Dumaguete City from the city government to the DCWD. If this plan materializes, the DCWD will likely add the cost of wastewater management to the price of water that the consumer currently pays. To some city residents, this is a welcome development since wastewater management will be given attention when it becomes a function of the water district. They argue that at present wastewater management is not adequately addressed under the city government. Some district water users, on the other hand, are apprehensive of the potentially higher charges under the transfer.

As of 2005, the planned activities and projects of the DCWD up to 2010 included the following: a) construction of a new administrative building; b) professional advance and physical and spiritual development of its employees; c) replacement of old and dilapidated equipment; d) acquisition of refilling equipment; e) bringing down of non-revenue water by 30 percent; f) increase in connection by 4,000; g) optimization of water production and minimization of downtime; h) increase in number of four-wheeled vehicles; i) protection of the watershed; j) enhancement of water quality analysis, and k) shortened distances of service lines to concessionaires. Total cost of all these activities and projects was projected at P54.8 million, 32 percent of which was funded by a loan from LWUA and 68 percent was financed by water district funds.

Pumpwell Section, City Engineer's Office, Dumaguete City

Providing Level I and Level II potable water to Dumaguete City, particularly to the poor who cannot afford Level III water, has been one of the programs of the city government. Specifically, the City Engineer's Office is tasked to construct and maintain Level I and Level II public water systems in the city. As of 2007, the city had 89 Level I public water systems servicing 515 households and only 2 Level II public water systems serving 80 households.

Organizationally, the City Engineer's Office is headed by the City Engineer who supervises several sections, including the Pumpwell Section which is in-charge of the public water systems. The Pumpwell Section is composed of the maintenance engineer and 5 plumbers. All these personnel are males. The section has jurisdiction over the entire city except the Poblacion which already has 100 percent water district connection. The Pumpwell Section is tasked to concentrate only on areas with no capability of getting water connection.

The budget of the Pumpwell Section from the city government for its operations is limited and comes from different sources. In 2008, the section got P11,000 quarterly or P44,000 annually from the general funds of the city government for the repair and maintenance of existing public water systems. It also received P25,000 from the City Planning and Development Office (CPDO) as counterpart funding for the purchase of casings and other materials for the replacement of water pump parts. Because the city is now generally covered by the water district, the city government no longer gives high priority to the installation of public water systems. Therefore, the activities and projects of the Pumpwell Section usually deal only on the repair and maintenance of existing public pumps.

City Planning and Development Office

The overall function of the CPDO of Dumaguete City is to plan the socioeconomic development of the city. Aside from the counterpart funds it gives to the Pumpwell Section, it plays some functions related to potable water management. Specifically, it monitors and

regulates large-scale underground water extraction in the city. For this type of water extraction, the proponent is required by the CPDO, among others, to get a permit from the city government through it. Another function of the CPDO is to maintain a database on water extraction in the city.

Household self-providers

In Dumaguete City as in many other local areas in the country, some households self-provide water. The installation of Level I water systems in the household residences is usually done by private business establishments, individual contractors or the household members themselves. In 2007, there were 140 private Level I water systems serving 148 self-providing households in the city.

Bottled water and refilled water producers

In addition to Levels I, II, and III water, processed water in the forms of bottled water and refilled water are available in Dumaguete City. The current number of bottled-water producers in the city is unknown but it is expected to be gradually increasing in recent years. In 2007, there were 20 water refilling stations in Dumaguete City. In some cases, bottled water producers also operate refilling stations and vice versa. Retailing of bottled water in Dumaguete City is conducted by numerous commercial, entertainment, and similar establishments.

The sale of bottled water and refilled water is expected to be relatively greater in Dumaguete City than in other areas of the province of Negros Oriental. The reason behind this is the large tourist and educated population in the city compared to other areas in the province. These consumers prefer bottled and refilled water because they are unsure of the quality of potable water from other sources. The tourists in particular also have a higher ability to pay for processed water compared to other population groups in the city and province.

Programs, activities, and projects of producers of bottled and refilled waters in Dumaguete City are expected to vary. Because of increasing competition, some producers may actively develop a distinctive brand name for their product in order to capture a niche market. Others may invest in business expansion to get a larger share of the market. Still others may develop tie-ups with restaurants, hotels, and similar large water consumers for exclusive delivery of processed water.

7.1.2 Agusan del Sur

As in Dumaguete City, Levels I, II, and III water systems exist in Agusan del Sur. The WSPs are also similar in both areas. The service delivery of Level I water is done by both the public and private sectors. Level II water is provided by the public sector while Level III water is delivered by the water districts and other similar types of public water service providers.

Water and Sanitation (Watsan) Center, Agusan del Sur

At present, the task of providing Level I and Level II public water systems at the provincial level in Agusan del Sur falls on the Watsan Center which is, an office under the

provincial government. The Watsan Center was created in 1998 first under the Provincial Planning and Development Office (PPDO) and then later under the Office of the Provincial Engineer. Its stated functions include the following: a) prioritization and implementation of water and sanitation projects in the province; b) maintenance of a databank on water and sanitation; c) identification of funding sources for water supply and sanitation projects; d) setting up of the institutional development component of water supply projects through trainings and seminars; and e) sustained monitoring of the BWASAs.

The Watsan Center is headed by the chief engineer. The office currently has 16 employees (6 regulars and 10 casuals) of which 1 is in management, 6 are in operations, and 9 are in maintenance and support. There are three women in the staff who work as administrative support. The center's budget was P1.5 million in 2007 and P2 million in 2008.

The activities and projects of the Watsan Center in 2007 and 2008 included the construction, installation, and rehabilitation of water facilities in some of the municipalities (Table 7). Most of these were shallow wells, 4 of which were constructed in 2007 and 22 in 2008.

Table 7 Construction, installation, and rehabilitation of water facilities by the Watsan Center, Agusan del Sur, by municipality, 2007-2008

Municipality	Improved Dug Well		Shallow Well		Deep Well		Deep Well Rehab		Spring Dev't		Spring Dev't Rehab		Iron Manganese Removal Facility	
	'07	'08	'07	'08	'07	'08	'07	'08	'07	'08	'07	'08	'07	'08
Sibagat	0	0	0	1	0	0	0	1	0	1	0	0	0	0
Bayugan	0	0	0	7	0	0	0	0	0	0	0	0	0	0
Prosperidad	3	0	0	7	0	0	0	0	0	0	0	0	1	0
Sta. Josefa	0	0	0	5	0	0	0	0	0	0	0	0	0	0
Veruela	0	0	0	0	0	0	0	0	0	0	0	1	0	0
Talacogon	0	0	0	1	0	0	0	0	0	0	0	0	0	0
San Luis	0	0	1	0	0	0	0	0	0	1	0	0	0	0
Esperanza	2	0	2	1	1	0	0	0	0	0	0	0	0	0
San Francisco	2	0	1	0	0	0	2	0	0	0	0	0	0	0
Total	7	0	4	22	1	0	2	1	0	2	0	1	1	0

Source of Data: Watsan Center, Agusan del Sur

At least one NGO has been involved in the provision of potable water in Agusan del Sur. With funding from the Philippine-Canada Local Government Program (LGSP), the Philippine Center for Water and Sanitation (PCWS) helped the Watsan Center, the other LGUs, and the local communities build their institutional capacity in potable water

management and provision. In one particular project, the PCWS helped provide a potable water system to each household in Barangay Dona Flavia in San Luis municipality by helping organize the Dona Flavia Water Supply and Sanitation Organization and by providing seminars and trainings among the members of the community.

In 2008, the provincial government of Agusan del Sur also started the Tubig Imnonon Natong Agusanon (TINA) Project which produced portable bio-sand filters for the purpose of providing safe water to households. These bio-sand filters were sold to the public at subsidized prices to attract wide usage, particularly among the poor who have no access to safe water. In 2008, the provincial government spent P2.4 million for project implementation. The project is now ongoing and has already provided 50 portable bio-sand filters to individual households.

There have been efforts to establish Watsan units at the municipal level in Agusan del Sur. So far however, only two municipal Watsan units are operating, one each in the municipalities of San Luis and Esperanza. Lack of funding and low prioritization by the municipal governments was said to be among the main reasons for the non-establishment of Watsan units in many of the municipalities.

Barangay Water and Sanitation Associations

The formation of BWASAs in the Philippines was mandated by R.A. 6176 in 1989. The law was mainly intended for the construction of water facilities (including water wells and rainwater collectors), development of springs, and rehabilitation of existing water wells in all barangays in the country. The BWASAs were created for administering, operating, and maintaining the water facilities.

A typical BWASA in Agusan del Sur is headed by a Board of Directors with a chairman, a vice-chairman, and six members. Under them are the secretary, treasurer, and auditor. A BWASA also has a bookkeeper and a caretaker as support staff. Its primary sources of funds are the membership fee, cash contributions, penalties, and water user fees. The secondary fund sources are the barangay, municipal, and provincial governments, and the NGOs.

The BWASAs in Agusan del Sur only collect water-user fees generally for system construction, operation, maintenance and repair, and improvement and expansion and not for profit. Generally, a single formula is followed in the computation of the monthly water tariff of BWASAs. However, the final monthly water tariff arrived at is approved by the officers and membership of the BWASAs before it can be actually implemented. The formula is as follows:

$$\text{Average Water Tariff (AWT)} = \text{Operation and Maintenance Cost (OMC)} + \text{Annual Depreciation Cost (ADC)} / \text{Number of Households Served}$$

$$\text{where ADC} = \text{Total Project Cost (TPC)} / \text{Design Life (Years)}.$$

The monthly water tariff for individual member households is then computed as:

$$\text{Monthly Water Tariff (MWT)} = \text{AWT} + 35\% (\text{AWT})$$

The 35 percent in the formula is the allotment for improvement and expansion of facilities and equipment.

Since 1999, 179 BWASAs have been organized by the Watsan Center in 14 municipalities in Agusan del Sur (Table 8). Prosperidad, Bayugan, and San Francisco have the most number of BWASAs while Esperanza and Talacogon have the least. At present, however, only a limited number of BWASAs are fully functioning in these municipalities. The main reasons given for this include a) organizational conflicts among and between officers and members; b) lack of repair and maintenance resulting in dilapidated facilities and equipment; c) non-payment or low payment of dues and water charges by members; and d) poor leadership and management skills of officers.

Table 8 Number and percentage of BWASAs in Agusan del Sur since 1999, by municipality

Municipality	Number	%
Sibagat	17	9
Bayugan	21	12
Prosperidad	34	19
San Francisco	21	12
Rosario	11	6
Bunawan	10	6
Trento	14	8
Sta. Josefa	10	6
Veruela	10	6
Loreto	7	4
La Paz	8	4
Talacogon	6	3
San Luis	7	4
Esperanza	3	2
Total	179	100

Source of Data: Watsan Center, Agusan del Sur

One of the fully functioning BWASAs in Agusan del Sur is in Barangay Awa in Prosperidad. This organization has 14 officers and 106 members. More than half of the members are women. The coverage of the BWASA comprises Puroks 1, 4 and 5 of Barangay Awa which have a total population of 120 households. Not all the households in the three puroks are members of BWASA however as some households have other options for sourcing their potable water.

Key informants say that the functioning BWASAs have clearly contributed a lot in providing potable water in places where they fully exist. They say that BWASAs should be strongly supported by the government since they may be the only viable organized means of providing water in some local and rural areas.

Patin-ay Waterworks System (PWS)

The provincial government of Agusan del Sur operates a Level III waterworks system in Barangay Patin-ay, municipality of Prosperidad. The PWS is an income-generating enterprise. Aside from the households in Patin-ay, it also provides potable water to the provincial government complex located in the same barangay. While the PWS mostly provides Level III it also operates Level I and Level II water systems. Its facilities include a reservoir, artesian wells, and pumping stations. In 2007, the PWS generated an income of P1.89 million.

The PWS imposes a minimum charge of P43.60 for residential and government consumers, and higher rates for commercial and industrial users for the first 10 cubic meters or less of water (Table 9). A commodity charge is imposed every 10 cubic meters after that with the commercial consumers and industrial consumers paying higher than the residential and government users. The water tariff structure of the PWS, therefore, shows that the residential and government users pay less per unit than the commercial and industrial consumers.

Table 9 Tariff structure of the Patin-ay Waterworks System, 2009

Category	Residential and Government	Commercial	Industrial
Minimum charge (First 10 cubic meters)	P43.60	P87.15	P139.40
Commodity charge (consumption in cubic meters)	Pesos/cubic meter	Pesos/cubic meter	Pesos/cubic meter
11–20	7.25	7.50	7.50
21–25	7.55	9.65	9.55
26 & up	7.85	10.90	10.90

Source of Data: PWS

Household self-providers

There are an undetermined number of households in Agusan del Sur that have their own supply of potable water. Generally, these households have Level I water systems, particularly shallow wells. Some households in the upland areas do not have formal water system at all. They source their potable water from dug wells, rivers and other natural water bodies, rainwater, and similar sources.

Bottled-water and refilled-water producers

Although their exact number in Agusan del Sur is not known, bottled-water and refilled-water producers are few and exist only in selected municipalities. Furthermore, the

proportion of the population that drinks bottled water or refilled water it expected to be low. However, usage may be increasing gradually, particularly among the higher income groups.

Due to the limited market at present, the activities and projects of bottled-water and refilled-water producers in Agusan del Sur may be constrained. Some of the producers may have tried to expand their operation with limited success. Others may simply operate at their present rate in the hope of keeping their markets. Those who try to develop new markets may be hard pressed because of the dominance of the poor in the province who cannot afford to buy bottled and refilled waters.

7.1.3 Municipality of Bayugan

Bayugan Water District (BWD)

The BWD provides Level III water to Bayugan. This water district started operating in 2001. Its jurisdiction is the entire municipality. Presently, it has 24 employees, of which 4 are in the office of the general manager, 7 are in the administrative/ finance division, 3 are in the commercial division and 10 are in the engineering division. Seven of the staff are women.

Although it covers the entire municipality, the BWD services only 9 out of the 43 barangays in Bayugan. Most of the serviced barangays are along the national highway. As of 2008, the water district provided water to 2,325 households, which formed 13.6 percent of the total households in the municipality. In terms of financing, the BWD received a loan of P63 million from the LWUA for its establishment and operations. In 2008, the water district has fixed assets amounting to P78 million. It had an estimated annual total revenue of P15 million, annual total cost of P18 million, and annual net loss of P3 million. So far, therefore, the BWD is a losing water district.

The sources of water of the BWD are the natural springs located in a 3,201-hectare watershed in Barangay Pinagalaan, about 6 kilometers from the poblacion. During the dry season when spring water is at a low level, the BWD pumps water through its pumping station in Barangay Noli, which is about the same distance from the poblacion as Pinagalaan but on the other side of the municipality. For treatment, the BWD applies chlorination. It also undertakes on-field testing twice a year for quality of the spring water from the watershed.

Households comprise an estimated 80 percent of the consumers of the BWD. The rest are commercial and industrial establishments, the municipal government, and the barangays. The estimated average monthly consumption of water is 16 cubic meters for each household, 20 to 45 cubic meters for each commercial or industrial establishment, 145 cubic meters for the municipal government, and 19 cubic meters for each barangay. An estimated 20 percent of water produced by the BWD is non-revenue water.

The tariff structure of the BWD for 2009 shows a minimum charge of P204.80 for residential and government consumers and higher rates for different types of commercial and industrial consumers for the first 10 cubic meters or less of water (Table 10). After that, all types of consumers pay more as their use of water increases every 10 cubic meters, with commercial consumers paying less than twice, and the commercial (industrial) consumers about twice, that paid by residential and government consumers. The tariff structure, therefore, shows that residential and government users pay less per unit than commercial and industrial users.

Table 10 Tariff structure of the Bayugan Water District, 2009

Category	Residential/ Government	Commercial A	Commercial B	Commercial C	Commercial (Industrial)
Minimum Charge (First 10 cubic meter or less)	P204.80	P358.40	P307.20	P256.00	P409.60
Commodity Charge (Consumption in cubic meter)	Pesos/cubic meter	Pesos/cubic meter	Pesos/cubic meter	Pesos/cubic meter	Pesos/cubic meter
11-20	22.40	39.20	33.60	28.00	44.80
21-30	24.95	43.65	37.40	31.15	49.90
31-40	28.15	49.25	42.20	35.15	56.30
41-up	32.00	56.00	48.00	40.00	64.00

Source of Data: BWD

The determination of the tariff structure of the BWD is different from that of other water districts like the DCWD. Specifically, the LWUA directly sets the tariff structure of the BWD without consulting the consuming public. This is intended for the water district to be able to pay its loan. In addition to the tariff structure, consumers pay a one-time connection fee of P2,500. Furthermore, consumers are also made to pay a penalty fee of 10% of the water bill in the event of unreasonable delay in payment. It is worth noting that the tariff rates of the BWD are significantly higher than those of the DCWD even though the general population of the municipality of Bayugan is considerably less economically well-off compared to the capital city of Dumaguete.

Municipal Mayor's Office of Bayugan

The Municipal Mayor's Office of Bayugan is the LGU providing Level I and Level II water systems to the town at present. In this set-up, a sitio may petition the barangay government for a particular water system such as a shallow well. The barangay will then in turn request the Mayor's Office for the provision of the water system. Once the Mayor's Office approves the request, it purchases the equipment for the shallow well and directly gives it to the barangay which, together with the sitio officials, sets up the well. On the other hand, there are cases when the equipment for a water system, after purchase by the Mayor's Office, is given to the Watsan Center of Agusan del Sur which provides it to the barangay. In 2008, the Mayor's Office of Bayugan provided 15 shallow wells to puroks of barangay Taglatawan.

7.1.4 Municipality of Prosperidad

Prosperidad Water District (PWD)

The PWD supplies Level III water to Prosperidad. This water district was founded in 1977 and is a GOCC like the others cited earlier. It covers the entire municipality. Currently, it has 12 personnel with 1 in management, 3 in operations, and 8 in maintenance and support. Of the staff, 4 are women -3 in operations and 1 in maintenance and support. At present, the PWD operates only in 7 of the 32 barangays of the municipality, including the poblacion and its nearby barangays. It has connection to only about 17 percent of households in the municipality.

A loan from the LWUA financed the overall establishment and the purchase of equipment of the PWD. In recent years, the PWD also received short and soft loans from the municipal government as equity for the loan from the LWUA. The sources of water of the PWD are the springs in watershed areas around the municipality. The PWD uses chlorination for water treatment. About 48 percent of the water produced by the PWD is non-revenue water.

On average, household consumers of the PWD use 19 cubic meters of water monthly. The municipal government consumes an average of 100 cubic meters monthly while the barangay government uses 10 cubic meters per month. The PWD services an estimated 81 percent of all the households in its area of operation.

In recent years, total income of the PWD amounted to P6 million per year. Of this, 45 percent was used for operations, 45 percent for repair and maintenance, 7 percent for expansion, 11 percent for other costs, and 10 percent for profits. The water district also pays a corporate franchise tax of 2 percent of gross income, or P120,000 per year to the BIR.

The current tariff structure of the PWD has a minimum charge of P171 for residential and government consumers and P342 for commercial consumers for the first 10 cubic meters or less of water (Table 11). Thereafter, consumers pay more as their rate of water use increases every 10 cubic meters, with the commercial consumers paying about twice that paid by residential and government consumers. The tariff structure, therefore, is like those in other water districts where residential and government users pay more than commercial and industrial users. The process of determining the tariff structure is similar to the DCWD in Dumaguete City where public hearing is done. It is also worth noting that the tariff rates of the PWD are lower than those of the BWD. However, it is still higher than those of the DCWD even though the general population of Prosperidad is significantly less well-off compared to that in Dumaguete City.

Municipal Government of Prosperidad

Currently, the municipal government of Prosperidad does not have a program for the provision of potable water in the municipality. Instead it provides short and soft loans to the PWD, as earlier mentioned, which provides water to the town. In 2008, it contributed P300,000 as counterpart fund to the PWS for the establishment of Level I water systems in Barangay Patin-ay.

Table 11 Tariff structure of the Prosperidad Water District, 2009

Category	Residential/ Government (½" Pipe)	Commercial (½" Pipe)
Minimum Charge (First 10 cubic meter or less)	P 171.00	P 342.00
Commodity Charge (Consumption in cubic meter)	Peso/cubic meter	Peso/cubic meter
11–20	18.25	36.50
21–30	21.75	43.50
31–40	25.90	51.80
41–up	30.40	60.80

Source of Data: PWD

7.1.5 Municipality of Sibagat

Waterworks System of Sibagat

The municipality of Sibagat does not have a water district for water service delivery. Instead it has a Waterworks System which is under the Economic Enterprises of the municipal government. The Economic Enterprises is an office in charge of the maintenance and construction of projects that generate income for the municipal government, one of which is the Waterworks System.

The function of the Waterworks System of Sibagat is the operation, maintenance, and overall management of the income-earning water services provided by the municipal government. Its other tasks are assisting the BWASAs in the repair and maintenance of their water facilities, addressing their organizational problems and other related concerns, and ensuring the overall sustainability of these organizations. At the provincial level, the Waterworks System is supervised by the Watsan Center.

The Waterworks System of Sibagat has 5 employees including a supervisor, a plumber, a meter reader, an administrative support staff, and the head of the Economic Enterprises who also serves as the general manager of the Waterworks System. One of the staff is a woman who is in administrative support. The primary sources of funding of the Waterworks System are the municipal government and the revenues from its water services operations.

At present, the facilities of the Waterworks System include shallow wells, deep wells, and spring boxes. Some of the spring boxes are connected to pipes that channel faucet water to households, hence making them Level III water systems. The Waterworks System operates 4 Level III water system units serving 1,205 households. The current pricing scheme for households using water meter is P80 for the first 10 cubic meters and P7 per cubic meter thereafter.

The Statement of Income and Expenditures of the Waterworks System of Sibagat shows that it has an increasing proceeds from water bill collection from 2003 to 2007 (Table 12). It also received government subsidy in 2003 and 2004 but none thereafter. Total income increased from 2003 to 2004, decreased in 2005, and rose again in 2007. Total income in 2007 was significantly higher than those in previous years. Total expenditures rose from 2003 to 2004, fell in 2005, and increased again in 2006 and 2007. Expenditures in 2007 included an item for capital outlay. Net income fell from 2003 to 2005 and was zero in 2006 and 2007.

Table 12 Statement of income and expenditures, Waterworks System of Sibagat, 2003-2007

Particulars	2003	2004	2005	2006	2007
Proceeds from Water Bill Collection	43,000.00	65,000.00	158,156.29	180,000.00	565,000.00
Government Subsidy	130,000.00	135,000.00			
Total Income	173,000.00	200,000.00	158,156.29	180,000.00	565,000
Operating Expenditures:					
Personal Services	26,665.76		47,000.00	55,000	165,720.52
Maintenance & Other Operating Expenses	38,680.91	135,000.00	61,944.00	116,000.00	217,029.48
Capital Outlay	-	-	-	-	154,000.00
5% Calamity Reserve	-		7,500.00	9,000.00	28,250.00
Total Operating Expenditures	65,346.67	135,000.00	116,444.00	180,000.00	565,000.00
Net Income	107,653.33	65,000.00	41,712.29	0	0

Source of Data: Municipal Government, Sibagat (various years)

7.2 Performance of local water service delivery

7.2.1 Dumaguete City

In 2007, of the Level I water systems in Dumaguete City, 89 were public jetmatics/pitchers, 140 were private jetmatics/pitchers, and 3 were improved springs (Jetmatics are shallow wells about 10-25 feet deep while pitchers are shallow wells up to 10 feet deep.) These comprised 38 percent, 60 percent, and 2 percent, respectively, of the total 232 Level I water systems (Table 13). There were only 2 Level II water systems in the city while the Level III water system was the DCWD. In addition to the three levels of water systems, there were 20 water refilling stations in Dumaguete city, as already mentioned.

Table 13 Water systems and households served in Dumaguete City, 2007

Barangay	HH	Level I								Level II		Level III		Refilling Station	
		Jetmatic/Pitcher				Artesian Wells		Improved Spring		No.	HH	No.	HH	No.	HH
		Public		Private		No.	HH	No.	HH						
No.	HH	No.	HH	No.	HH	No.	HH	No.	HH	No.	HH	No.	HH		
Bagacay	994	10	70	5	5	0	0	0	0	0	0	0	919	2	0
Bajumpandan	743	15	60	10	10	0	0	0	0	0	0	0	673	0	0
Balugo	505	2	10	0	0	0	0	1	10	0	0	0	485	0	0
Banilad	1,240	10	50	50	50	0	0	2	20	1	50	0	1,070	0	0
Bantayan	916	3	15	11	11	0	0	0	0	0	0	0	890	0	0
Batinguel	1,005	4	30	9	9	0	0	0	0	0	0	0	966	0	0
Buñao	449	10	50	10	10	0	0	0	0	0	0	0	389	0	0
Cadawinonan	595	0	0	5	5	0	0	0	0	0	0	0	590	0	0
Calindagan	1,697	5	30	10	10	0	0	0	0	0	0	0	1,657	2	0
Camanjac	521	4	40	0	0	0	0	0	0	0	0	0	481	1	0
Candau-ay	824	0	0	2	10	0	0	0	0	1	30	0	784	0	0
Cantil-e	432	0	0	0	0	0	0	0	0	0	0	0	432	0	0
Daro	923	0	0	1	1	0	0	0	0	0	0	0	922	4	0
Junob	826	10	80	5	5	0	0	0	0	0	0	0	741	0	0
Lo-oc	1,019	4	20	7	7	0	0	0	0	0	0	0	992	1	0
Mangnao	677	3	15	4	4	0	0	0	0	0	0	0	658	2	0
Motong	364	4	20	4	4	0	0	0	0	0	0	0	340	0	0
Piapi	1,239	4	20	7	7	0	0	0	0	0	0	0	1,212	2	0
Poblacion	1,833	0	0	0	0	0	0	0	0	0	0	0	1,833	3	0
Pulantubig	500	0	0	0	0	0	0	0	0	0	0	0	500	2	0
Tabuc-tubig	373	0	0	0	0	0	0	0	0	0	0	0	373	0	0
Taclobo	1,641	1	5	0	0	0	0	0	0	0	0	0	1,636	1	0
Talay	696	0	0	0	0	0	0	0	0	0	0	0	696	0	0
T O T A L	20,012	89	515	140	148	0	0	3	30	2	80	0	19,239	20	0

In terms of number, Level I water systems comprised about 99 percent of the water systems in Dumaguete City. However, in terms of households served, the DCWD Level III water system dominated, serving 19,239 households, which are approximately 96 percent of the total households served by water systems in the city. Level I water systems served about 3 percent of the households while Level II water systems served about 1 percent.

In 2007, Dumaguete City had a total of 21,582 households, of which 20,012 households were serviced by Level I, Level II and Level III water systems (Table 13). Therefore, the rate of access to safe drinking water in the city was 92.73 percent. This figure is way above the target of the MDGs of 86.6 percent and within the range of the Philippine government target of 92 to 96 percent. This may, therefore, means that Dumaguete city has already or about to meet national and MDG targets related to local potable water service delivery.

7.2.2 Agusan del Sur

As of 1997, there were 747 Level I water systems, 281 Level II water systems, and 105 Level III water systems serving a total of 83,194 households out of the 107,905 households in Agusan del Sur (Table 14). Based on these figures, the rate of access to safe water in Agusan del Sur is 77.10 percent in 2007.

By municipality, Sibagat had the most number of Level I and Level II water systems while Trento had the most number of Level III water systems (Table 14). In addition to the three types of water systems, the province had 1,144 doubtful water systems, such as dug wells and rainwater, serving 27,706 households or 25 percent of the total provincial population (Provincial Health Office, Agusan del Sur 2008).

Table 14 Water systems and households served in Agusan del Sur, 2007

Municipality	No. of HHs	Level I			Level II			Level III		
		No.	HHs Served	%	No.	HHs Served	%	No.	HHs Served	%
Sibagat	5,289	182	2,370	45	87	1,219	23	4	1,205	4
Bayugan	17,012	-	9,945	58	-	3,818	22	-	2,323	14
Prosperidad	13,064	78	3,329	25	23	4,312	33	2	1,042	8
San Francisco	11,781	-	1,646	5	-	4,014	34	-	4,493	38
Rosario	5,255	3	288	5	6	1,328	25	5	2,431	46
Bunawan	6,030	42	1,289	21	26	2,291	38	3	1,705	28
Trento	8,648	115	4,336	50	13	1,252	14	74	1,117	13
Sta. Josefa	4,311	110	2,131	49	9	797	18	9	961	15
Veruela	6,113	4	271	4	9	2,370	39	-	-	0
Loreto	7,280	41	1,720	24	7	852	12	-	-	0
La Paz	4,128	6	516	13	7	1,371	33	-	-	0
Talacogon	5,531	107	2,792	50	10	1,364	7	3	1,105	2
Esperanza	8,424	-	4,626	55	-	2,184	26	-	865	10
San Luis	5,039	59	1,722	34	84	1,276	25	5	518	10
Total	107,905	747	36,981		281	28,448		105	17,765	

Note: There are no data on the number of some levels of water systems for some municipalities particularly Bayugan, San Francisco, and Esperanza.

Source: Provincial Health Office, Agusan del Sur (2008)

The CBMS survey done in indicated that 32.04 percent of the number of households in the province had no access to safe water (Table 15). By municipality, the percentage was highest in La Paz (59.54%) and lowest in Rosario (14.37%). Two of the municipalities in the province had more than 50 percent of their households without access to safe water while the rest had less than 50 percent without access to safe water.

The rate of access to safe water of 67.97 percent (the reverse of 32.04% of households with no access to safe water) in 2005 and 77.10 percent in 2007 in Agusan del Sur is way below the Philippine government target of 92 to 96 percent and the MDG target of 86.8 percent. This may, therefore, mean that the province is far from achieving national and MDG

targets related to local potable water service delivery. It also implies that much remains to be conducted by the government and other relevant stakeholders related to the delivery of safe drinking water in Agusan del Sur.

Table 15 Households in Agusan del Sur with no access to safe water, 2005

Municipality	Number of Households	Number of Households Without Access to Safe Water	Percent of Number of Households Without Access to Safe Water
La Paz	4,128	2,458	59.54
Loreto	5,836	2,892	49.55
San Luis	5,202	1,931	37.12
Veruela	6,455	3,046	47.19
Sibagat	5,540	2,520	45.49
Talacogon	5,690	2,880	50.62
Esperanza	8,568	1,762	20.56
Prosperidad	14,102	5,354	37.97
Bunawan	5,533	2,179	39.38
Sta. Josefa	4,178	1,502	35.95
Trento	8,289	2,562	30.91
Rosario	5,878	839	14.27
Bayugan	18,348	3,085	16.81
San Francisco	11,376	1,949	17.13
Total	109,123	34,959	32.04

Note: Safe water includes those coming from Level III and Level II water systems as well as those coming from level 1 water systems particularly community water systems, deep wells and artesian wells whether own use or shared with other households. Safe water also includes bottled water.

Source: PPDO, Agusan del Sur (2005)

7.2.3 Municipality of Bayugan

In 2007, Bayugan had 17,012 households of which 16,086 households were serviced by Levels I, II and III water systems (Table 14). The rate of access to safe water therefore was 94.6 percent. According to the CBMS survey, 16.81 percent of the households in Bayugan had no access to safe water in 2005 (Table 15). The rate of access to safe water of 83.19 percent (the reverse of 16.81% with no access to safe water) percent in Bayugan in 2005 is better than the 67.97 percent in Agusan del Sur and is closer but still below the government target of 92 to 96 percent and the MDG target of 86.8 percent. However, the rate of access to safe drinking water of 94.6 percent in 2007 has met both the national and MDG targets. Based on the available data, therefore, this may mean that Bayugan has already met or is close to meeting national and MDG targets related to local potable water service delivery.

7.2.4 Municipality of Prosperidad

In 2007, Prosperidad had 13,064 households of which 8,683 households were serviced by Levels I, II and III water systems (Table 14). Therefore, 66.5 percent of the households in the municipality had access to safe drinking water. According to the CBMS, of the households in Prosperidad, 37.97% had no access to safe drinking water in 2005 (Table 15). The rate of access to safe water of 62.03 percent (the reverse of 37.97 percent) in 2005 and 66.5 percent in 2007 in Prosperidad is lower than the 67.97% in Agusan del Sur and way below the national government and MDG targets. This may mean, then, that the municipality is far from attaining national and MDG objectives. Thus, compared to the province as a whole, even more efforts in water service delivery may need to be undertaken in the municipality.

7.2.5 Municipality of Sibagat

In 2007, Sibagat had 5,289 households, of which 4,794 households were serviced by Levels I, II and III water systems. Therefore the access to safe water was 90.6 percent. According to the CBMS, however, of the households in Sibagat, 45.49 percent had no access to safe drinking water in 2005 (Table 15). The very significant difference between the numbers between 2005 and 2007 appears to suggest data problems or that some water systems in Sibagat actually do not produce water that is safe to drink.

The 54.51 percent rate of access to safe water in Sibagat in 2005 is the lowest compared to Bayugan and Prosperidad, and in Agusan del Sur as a whole. Therefore, based on this figure, maximum effort must be exerted in the municipality to improve its potable water service delivery. The rate of access of safe drinking water in Sibagat in 2007 of 90.6 percent has met MDG targets and is close to meeting national targets. This seems to show that the municipality is on track towards meeting its potable water needs. Whichever the case, there is clearly room for improvement in the municipality related to potable water service delivery in the area.

7.3 Household use of potable water

The survey of households in Dumaguete City and in Agusan del Sur generated some interesting results and findings about the performance of local water service delivery in the two case study sites, presented as follow:

The great majority of the surveyed households in Dumaguete City had public taps as their primary source of potable water (Table 16). Other important sources were bottled water and neighbors that sell or give water away. In Agusan del Sur, the most significant sources of drinking water were public taps, private water connection, bottled water, public wells, private wells not owned by household and others. In the two case study sites, therefore, public taps were the most important sources of drinking water among the households surveyed. It is worth noting that bottled water was used by a good number of households in both case study sites.

Of the three municipalities in Agusan del Sur, percentage-wise, public taps were used my more households in Sibagat followed by Prosperidad and Bayugan. Private water connection was used by more households in Bayugan followed by Sibagat and Prosperidad. Bottled water was used by more households in Prosperidad followed by Bayugan and

Sibagat. It is apparent then that there were significant differences between the municipalities of Agusan del Sur in terms of the sources of drinking water of households living in these areas.

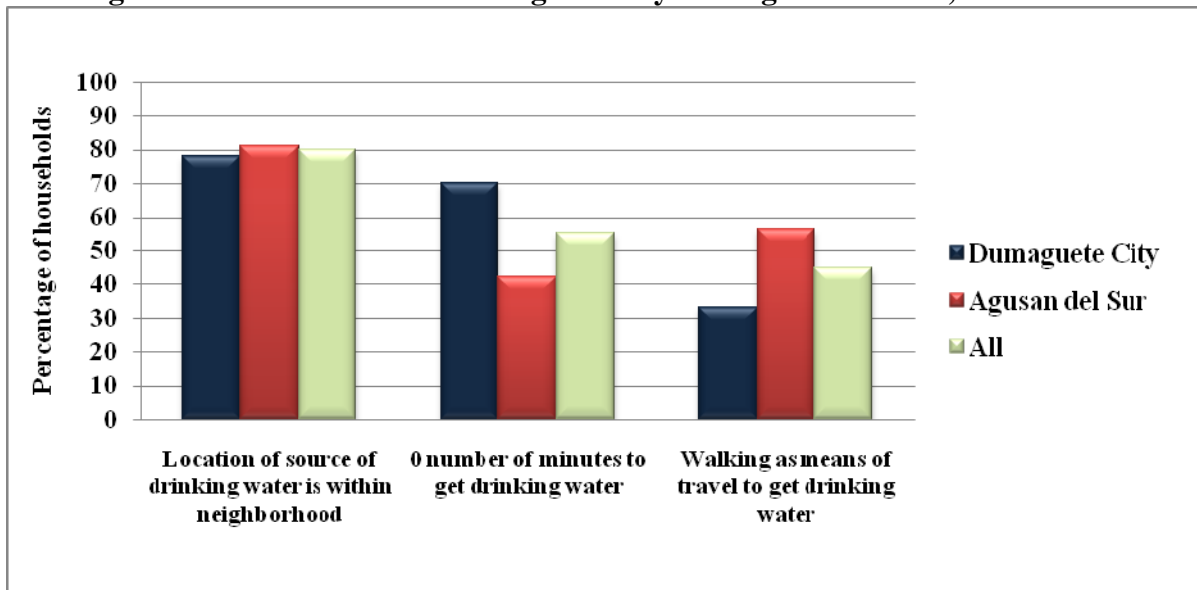
Table 16. Primary source of drinking water of households in selected barangays in Dumaguete City and Agusan del Sur, 2008

Source of Drinking Water	Negros Oriental		Agusan del Sur								Overall Total	
	Dumaguete City		Bayugan		Prosperidad		Sibagat		Subtotal		Overall Total	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
Private Water Connection	2	1	27	24	2	5	2	6	31	17	33	9
Public Taps	109	69	9	8	8	20	17	55	34	19	143	41
Private Well (owned by household)	1	1	6	5	3	7	0	0	9	5	10	3
Private Well (not owned by household)	2	1	14	13	5	12	0	0	19	10	21	6
Public Well	6	4	16	14	8	20	0	0	24	13	30	10
Neighbors that sell or give water away	16	10	1	1	0	0	0	0	1	1	17	5
Tanker-truck vendors	1	1	0	0	0	0	0	0	0	0	1	1
Springs (developed)	0	0	1	1	4	10	0	0	4	2	4	2
Springs (undeveloped)	0	0	1	1	1	2	6	19	8	4	8	2
Other surface water resources	0	0	0	0	0	0	0	0	0	0	0	0
Rainwater	0	0	0	0	0	0	0	0	0	0	0	0
Bottled Water	19	12	17	15	9	22	4	13	30	16	49	14
Others	0	0	18	16	0	0	0	0	18	10	18	5
No reply	3	2	1	1	1	2	2	6	4	2	7	2
Total Respondents	159	100	111	100	41	100	31	100	182	100	341	100

Note: Others included wells not classified as private or public.
Source: Local Service Delivery Household Survey, 2009

The majority of the households in Dumaguete City and Agusan del Sur had their primary source of drinking water located within their neighborhood (Figure 4). The majority of the households also took no time to get drinking water. Furthermore, many of those in charge of getting water in the households just walked to do so. More households in Agusan del Sur than in Dumaguete City had their source of water located within their neighborhood and just walked to fetch drinking water. On the other hand, more households in Dumaguete than in Agusan del Sur took no time in getting their drinking water.

Figure 4 Location of source of, minutes to get and means of transportation to get drinking water of households in Dumaguete City and Agusan del Sur, 2008



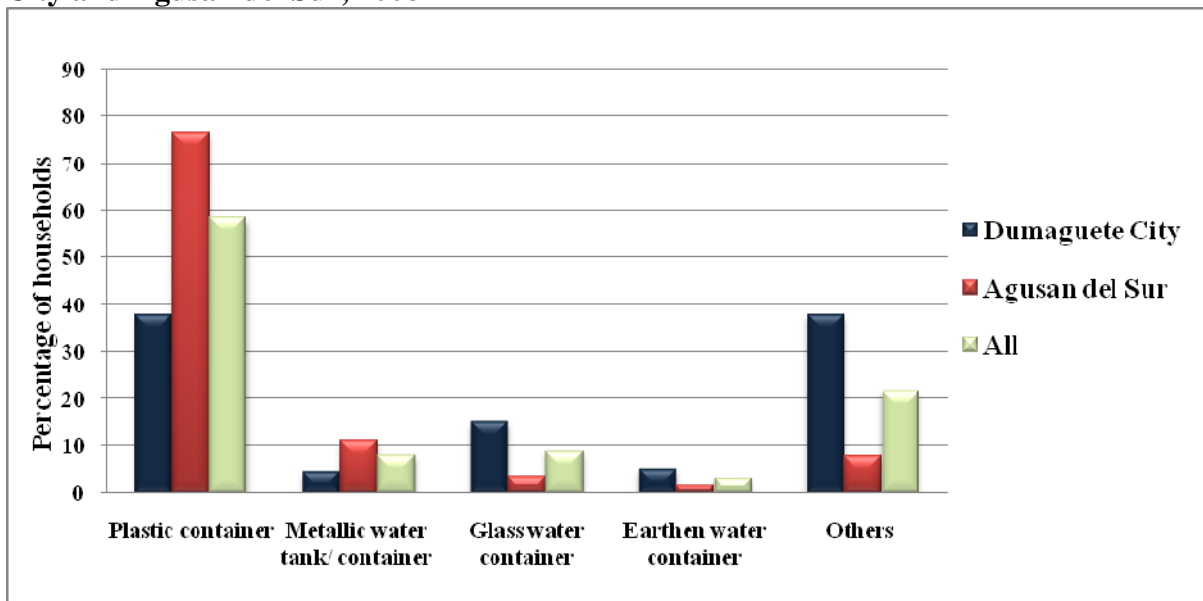
Source: Local Service Delivery Household Survey, 2009

The majority of the households in Dumaguete City and Agusan del Sur used plastic container as water storage facility compared to other facilities (Figure 5). More households in Agusan del Sur than in Dumaguete City used plastic container as a water storage facility. Other forms of storage facility used were metallic containers, glass containers, earthen containers and other containers.

Although adult males in the of households were mainly in charge of getting drinking water from the primary source in Dumaguete City and Agusan del Sur, adult females and children were also involved (Figure 6). There were more adult males in Dumaguete City than in Agusan who got drinking water from the primary source. On the other hand, there were more females in Agusan del Sur than in Dumaguete City who got drinking water from the primary source. More male children in Dumaguete City than in Agusan del Sur got drinking water from the primary source while more female children in Agusan del Sur than in Dumaguete City got drinking water from the primary source.

The majority of the households in Dumaguete City and Agusan del Sur used between 1 to 5 liters of water for actual drinking daily (Figure 7). Less than a third consumed between 6 to 10 liters of water for actual drinking daily. Less than a tenth used between 11 to 15 liters while about a tenth consumed above 15 liters. There were more households in Agusan del Sur than in Dumaguete City who used between 1 to 5 liters of water for actual drinking daily.

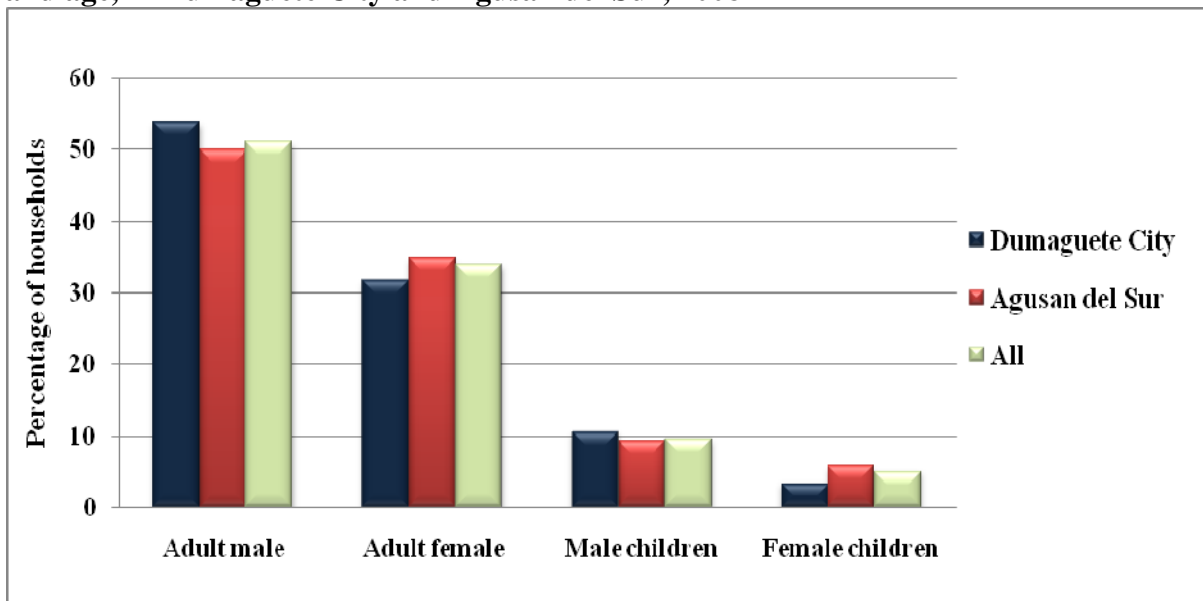
Figure 5 Water storage facility used by households in selected barangays in Dumaguete City and Agusan del Sur, 2008



Note: Others include concrete water tank, jar, basin, bottle and gallon which were not classified as metallic, earthen, glass or plastic.

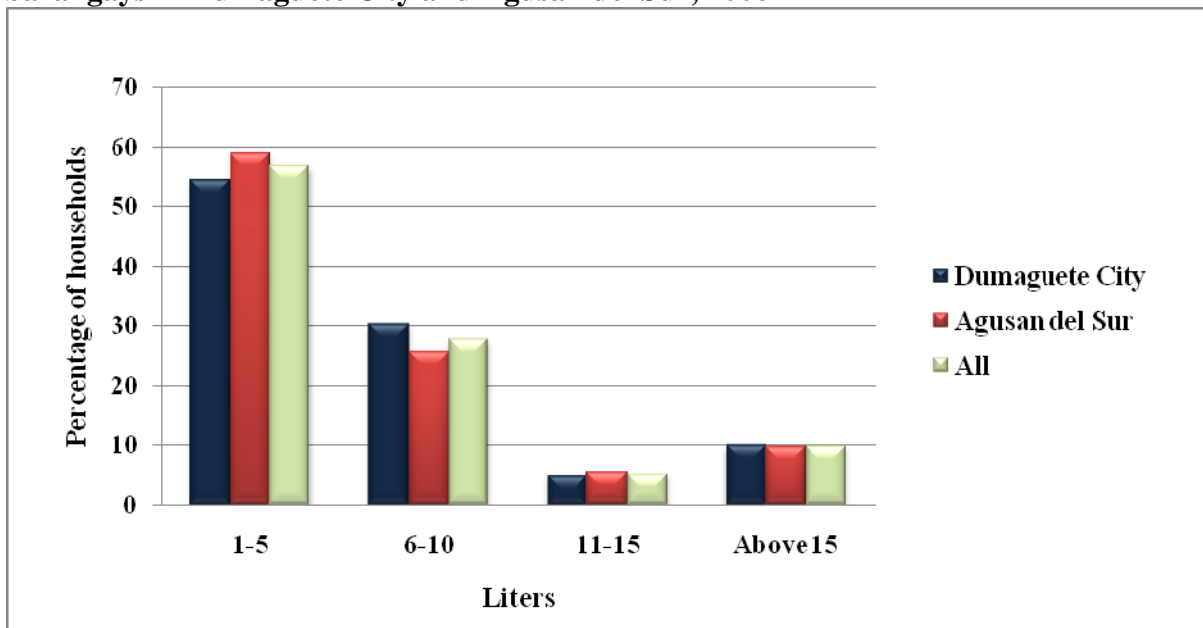
Source: Local Service Delivery Household Survey, 2009

Figure 6 Households members who got drinking water from primary source, by gender and age, in Dumaguete City and Agusan del Sur, 2008



Source: Local Service Delivery Household Survey, 2009

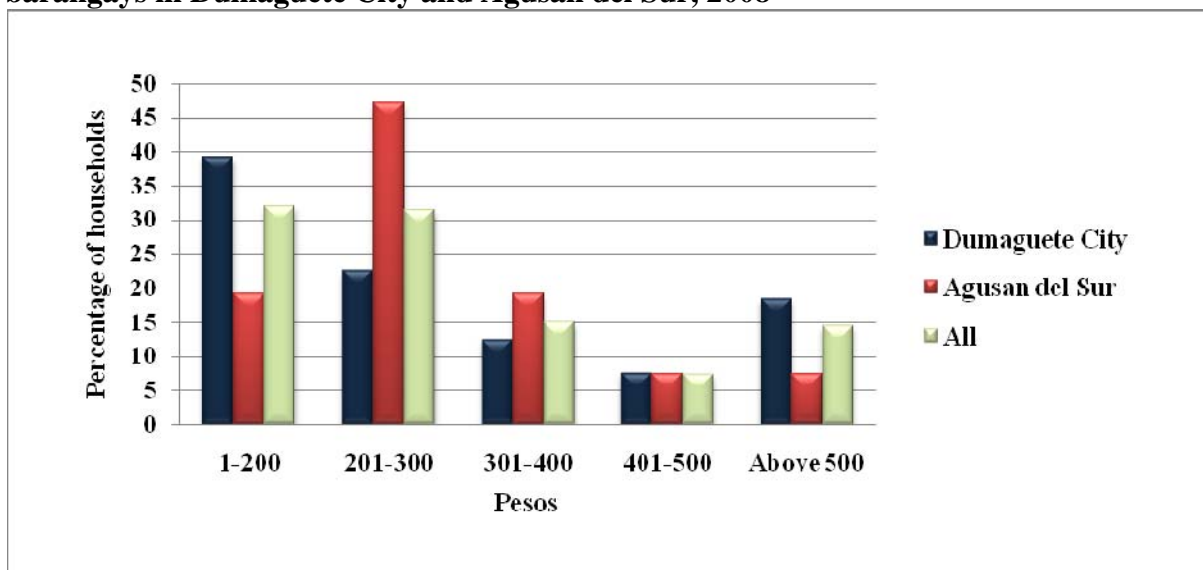
Figure 7 Volume of water actually used for drinking daily by households in selected barangays in Dumaguete City and Agusan del Sur, 2008



Source: Local Service Delivery Household Survey, 2009

During the dry season, the majority of the households in Dumaguete City and Agusan del Sur had a water bill between P1 to P200 and between P201 to P300 per month (Table 8). There were more households in Dumaguete City than in Agusan del Sur who had a water bill between P1 to P200 per month while there were more households in Agusan del Sur than in Dumaguete City who had a water bill between P201-P300 per month. Above these water bill ranges, more households in Agusan del Sur than in Dumaguete City had a water bill between P301-P400 per month, the same percentage of households in both sites had a water bill between P401 to P500 per month while more households in Dumaguete City than in Agusan del Sur had a water bill of more than P500 per month.

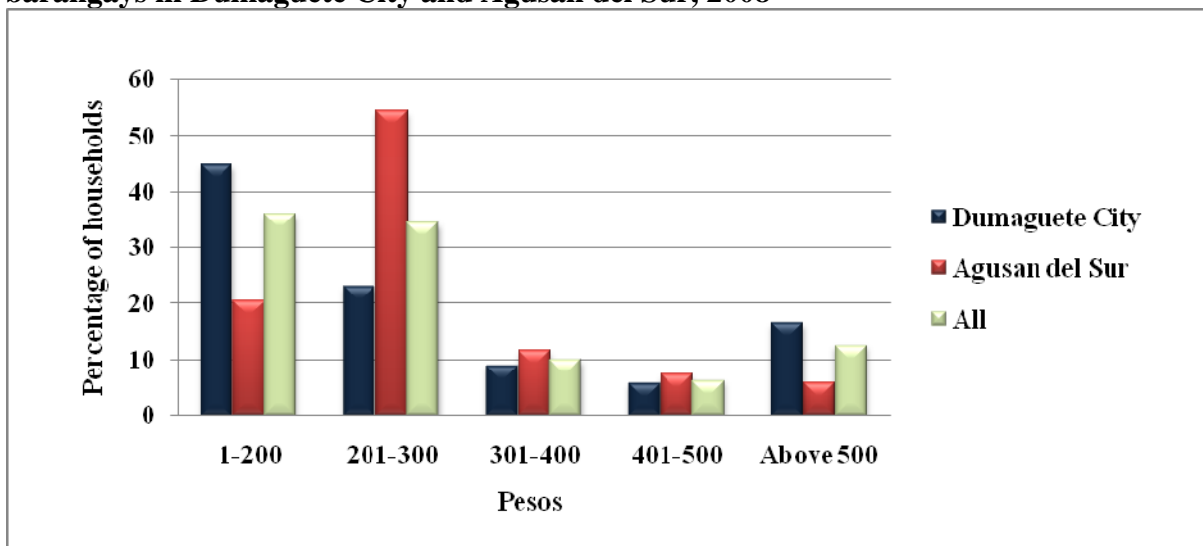
Figure 8 Average water bill per month during the dry season of households in selected barangays in Dumaguete City and Agusan del Sur, 2008



Source: Local Service Delivery Household Survey, 2009

As in the case of the dry season, the majority of households in Dumaguete City and Agusan del Sur had a water bill between P1 to P200 and between P201 to P300 per month. There were also more households in Dumaguete City than in Agusan del Sur who had a water bill between P1 to P200 per month while there were more households in Agusan del Sur than in Dumaguete City who had a water bill between P201 to P300 per month. Likewise, more households in Agusan del Sur than in Dumaguete City had a water bill between P301 to P400 per month, about the same percentage of households in both sites had a water bill between P401-P500 per month while more households in Dumaguete City than in Agusan del Sur had a water bill of more than P500 per month.

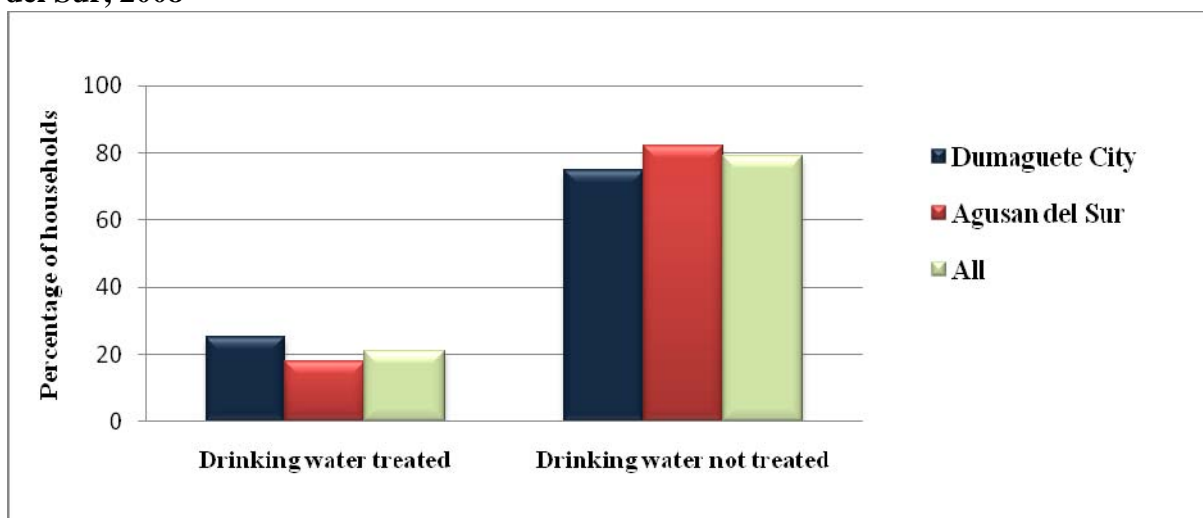
Figure 9 Average water bill per month during the wet season of households in selected barangays in Dumaguete City and Agusan del Sur, 2008



Source: Local Service Delivery Household Survey, 2009

Only a minority of households in both Dumaguete City and Agusan del Sur treated their drinking water (Figure 10). More households in Dumaguete City than in Agusan del Sur treated their drinking water.

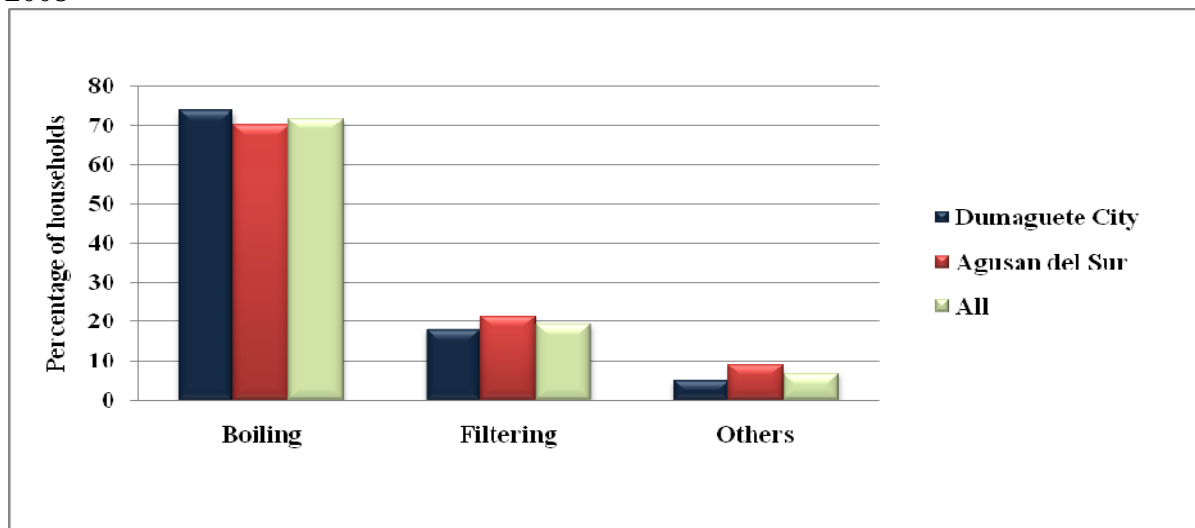
Figure 10 Households that treated their drinking water in Dumaguete City and Agusan del Sur, 2008



Source: Local Service Delivery Household Survey, 2009

Of the households who treated their drinking water, a majority in Dumaguete City and Agusan del Sur used boiling as a form of treatment (Figure 11). There were more households who used boiling in Dumaguete City than in Agusan del Sur. Other forms of water treatment used by the households in both Dumaguete City and Agusan del Sur were filtering and others.

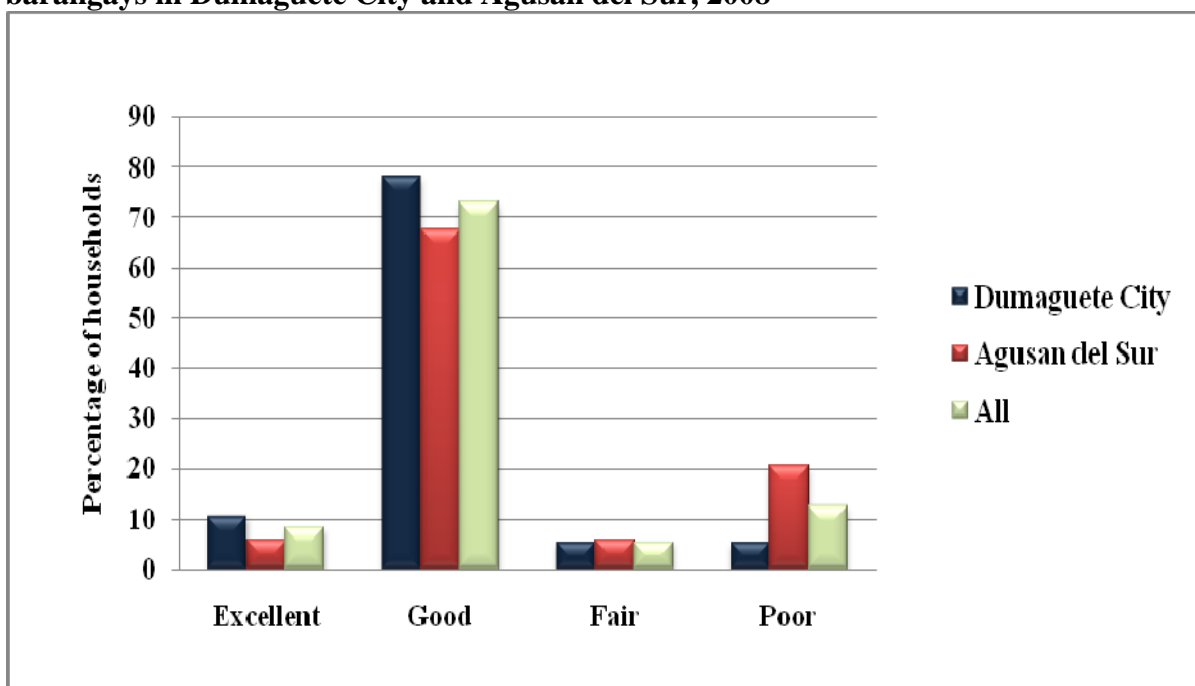
Figure 11 Type of treatment households used in Dumaguete City and Agusan del Sur, 2008



Note: Others include mineralizing, purifying by water dispenser/purifiers and water ozonizers.
 Source: Local Service Delivery Household Survey, 2009

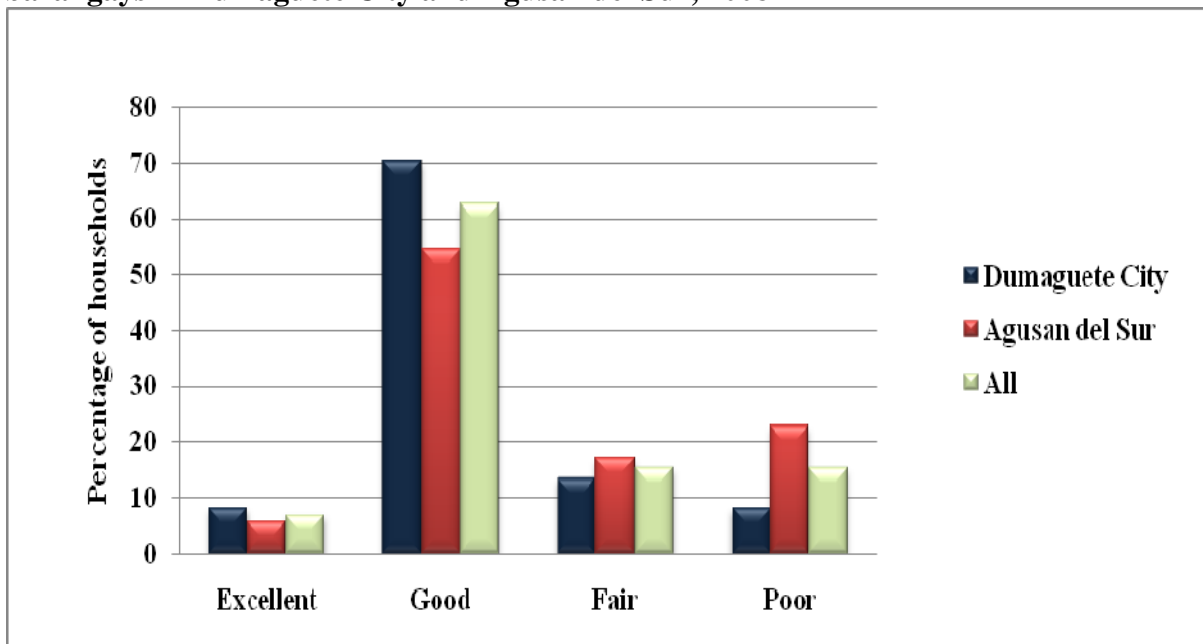
The majority of the households in Dumaguete and Agusan del Sur considered the quality of their drinking water as good while a minority considered it as excellent, fair or poor for both the dry and wet season (Figures 12 and 13).

Figure 12 Quality of drinking water before treatment during the Dry Season in selected barangays in Dumaguete City and Agusan del Sur, 2008



Source: Local Service Delivery Household Survey, 2009

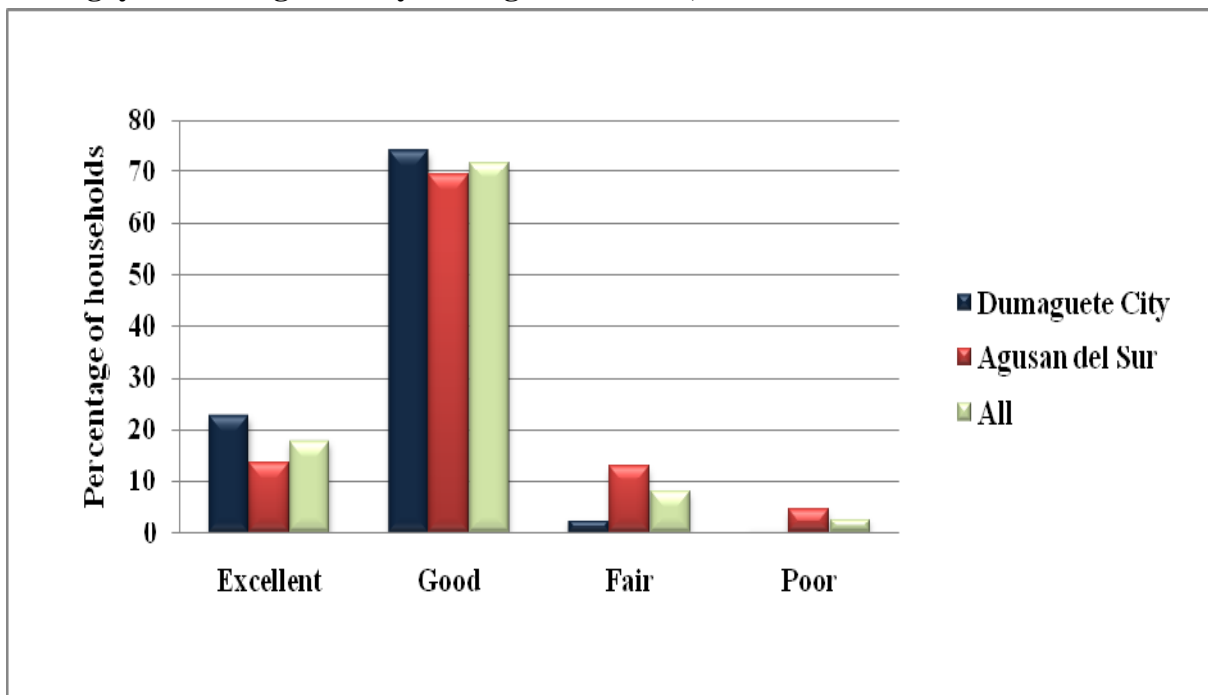
Figure 13 Quality of drinking water before treatment during the wet season in selected barangays in Dumaguete City and Agusan del Sur, 2008



Source: Local Service Delivery Household Survey, 2009

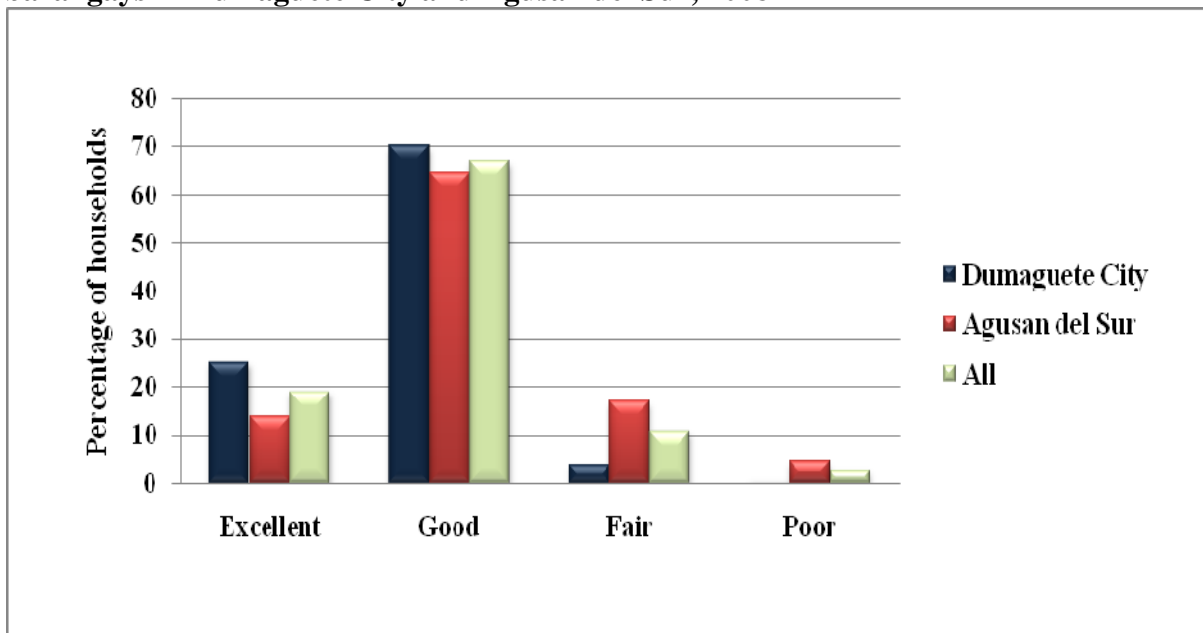
The majority of the households in Dumaguete City and Agusan del Sur likewise considered their access to their drinking water as good while a relatively good number considered it as excellent for both the dry and wet season (Figures 14 and 15). Only a few of the households considered the access to their drinking water as fair or poor.

Figure 14 Reliability of access of drinking water during the dry season in selected barangays in Dumaguete City and Agusan del Sur, 2008



Source: Local Service Delivery Household Survey, 2009

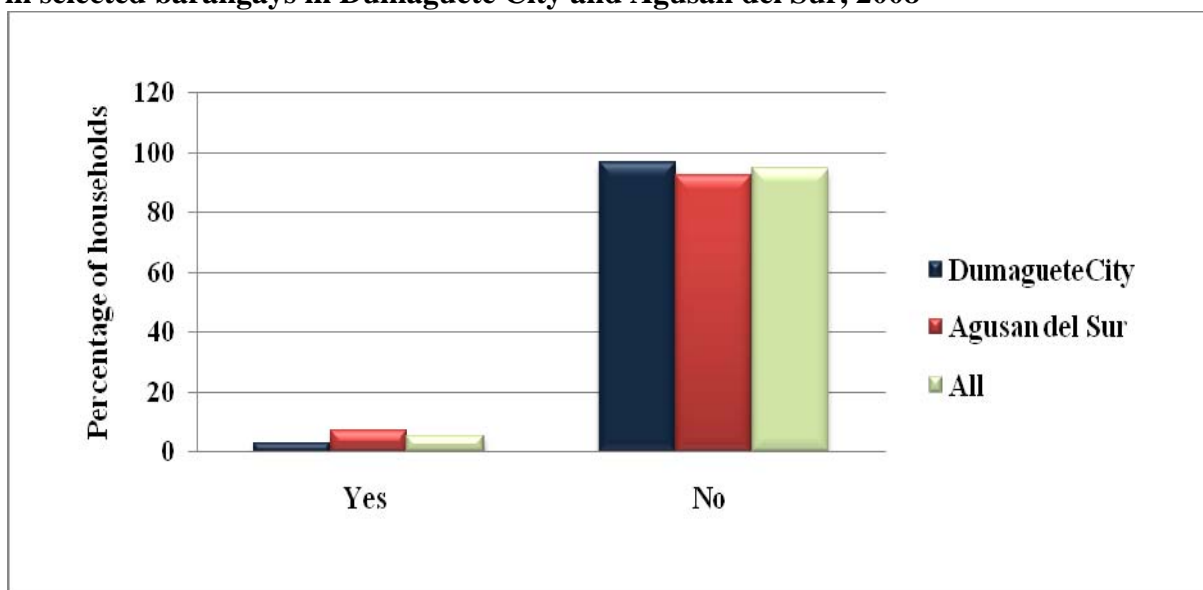
Figure 15 Reliability of access of drinking water during the wet season in selected barangays in Dumaguete City and Agusan del Sur, 2008



Source: Local Service Delivery Household Survey, 2009

A few of the households in Dumaguete City and Agusan del Sur experienced sickness as a result of consuming their drinking water (Figure 16). Relatively more households in Agusan del Sur than in Dumaguete City experienced sickness as a result of consuming their drinking water. The diseases reported by the households that experiences sickness as a result of consuming their drinking water in Dumaguete City were amoebiasis and diarrhea. The more common diseases experienced by the households in Agusan del Sur were low bowel movement and stomach ache while the other diseases experienced were amoebiasis and dehydration.

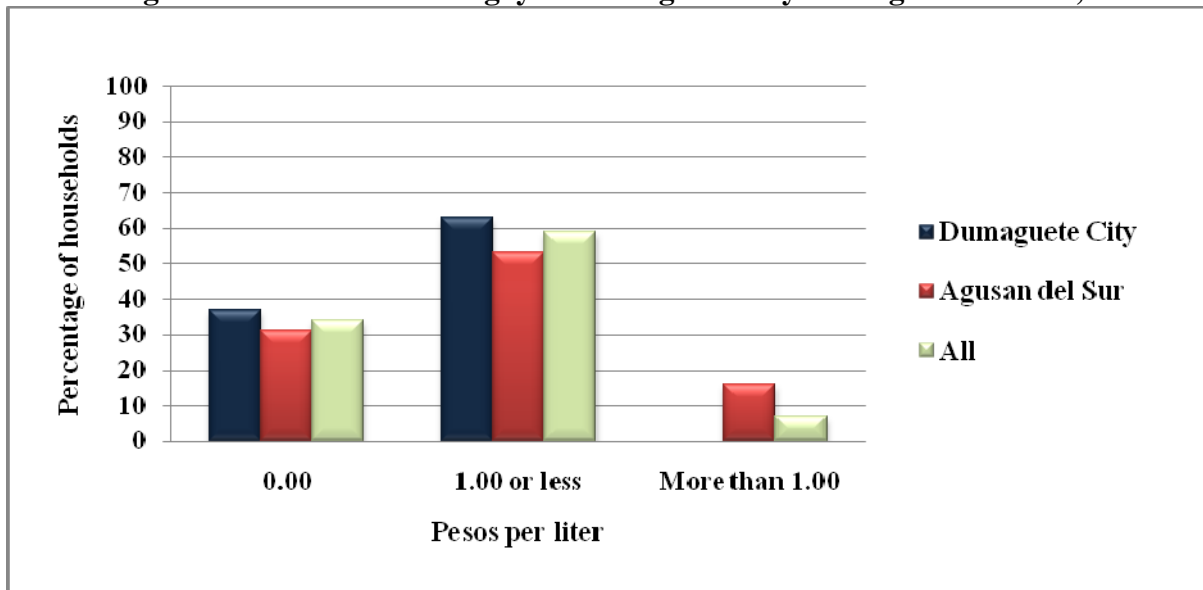
Figure 16 Sickness experienced by households as a result of consuming drinking water in selected barangays in Dumaguete City and Agusan del Sur, 2008



Source: Local Service Delivery Household Survey, 2009

The majority of households in Dumaguete City and Agusan del Sur were willing to pay a certain amount for the improvement of their drinking water but a substantial percentage were also not willing (Figure 17). Of those who were willing, most will pay a maximum amount of P1 or less for the improvement per liter of water while few were willing to pay more. The figures also show that more households in Dumaguete City than in Agusan del Sur were willing to pay a certain a maximum amount of P1 or less per liter for the improvement of their drinking water.

Figure 17 Maximum amounts that households were willing to pay for the improvement of drinking water in selected barangay in Dumaguete City and Agusan del Sur, 2008



Source: Local Service Delivery Household Survey, 2009

In summary, the potential implications of the abovementioned results and findings of the survey of households in Dumaguete City and Agusan del Sur to local water service delivery in these areas are the following:

- a) Since the majority of the households surveyed had their source of drinking water located within their neighborhood, took no time in getting it and just walked to get it, local water service delivery may have performed positively in making water readily available to users.
- b) With the households, in general, using plastic container for water storage, a potential environmental problem may arise in the long term as plastic is non-biodegradable. Other cost-effective but environmentally-friendly way of storing water may have to be developed.
- c) Given that adult females and children in the households also fetched water, there may be gender and age dimensions in the activity. It also means that water service delivery may have performed positively in making it physically possible for women and children to fetch water.
- d) Since the majority of the households actually consumed only 1 to 5 liters of water for drinking daily, this may mean that the households actually use a limited volume of water for drinking while the rest of it were used for cooking, bathing and other household activities.

e) With the water bill of the households being similar during the wet and dry seasons, its consumption may not differ significantly between seasons. Also, since the bill was relatively low instead of high, the households in generally may be consuming only low levels of water.

f) Given that only a minority of the households treated their drinking water, households may be contented with the quality of their drinking water, were unaware of the potential health risks of untreated drinking water and/or unwilling to spend for water treatment.

g) Since the common way of treating water used by the households was boiling, households who treated water may be willing to pay only a low amount for treatment. The use of filtering indicated that some households may not be willing to spend any amount for treatment at all.

h) With the majority of households taking the quality of their drinking water before treatment as at least good during both the dry and wet seasons, then their belief in the good quality of the water may be a major reason why the households did not treat their drinking water.

i) Given that the majority of households considered their access to their drinking water as at least good during both the dry and wet seasons, then good access may be an important reason why even women and children in the household can actively participate in fetching water.

j) Since the majority of households were willing to pay only a low maximum amount for the improvement of their drinking water, then they may be capable only to partially pay for the cost of any improvement. Other sectors may have to bear the rest of the cost of improvement.

The focus group discussions with selected households and interviews with key household informants in Dumaguete City and Agusan del Sur also generated interesting results and findings related to the performance of the local water service delivery as summarized follow:

a) Households with water district connection thought that (1) connection costs and tariff charges were affordable; (2) water from the district was of better quality compared to other sources; and (3) water from the district was more accessible compared to other sources.

b) Households without connection even though a water district operates in their area (1) cannot afford the cost of connection and tariff rates; (2) have water from a free or low cost source; or (3) thought that their water was similar to or better than that from the water district.

c) Households that do not use water from public wells even if it is accessible to them believed that (1) it is of poor quality, (2) the time and effort costs in accessing it are high; and (3) competition at most times is stiff especially in the morning and during rush hours of need.

d) Households that do not drink bottled water or refilled water even if these are sold in their area thought that (1) the price is high; (2) they can get free of cheaper water elsewhere; and 3) when immediately needed, bottled or refilled water are not always available in their area.

In brief, the aforementioned results and findings of the focus group discussion indicate that the high price of water, quality of the water, and accessibility of the water were important factors determining why households choose not to use a specific potable water source of water in their locality.

VIII Key Issues and Challenges Facing Local Potable Water Service Delivery

Based on the existing literature, interviews with key informants and informed opinion of the author, the following are the important issues and challenges facing local water service delivery in the case study sites:

8.1 Key issues facing potable water service delivery as a whole

- a) Denuded watersheds and water pollution that endanger both surface and underground water sources;
- b) Disparities in potable water service delivery between the different municipalities and barangays;
- c) Existence of waterless barangays and rural areas that have no or limited local water service delivery;
- d) Low levels of financial and other related investments in local water service delivery systems;
- e) Generally low levels of technical qualifications of the manpower involved in local water service delivery;
- f) Lack of integrated planning and ineffective implementation by local water service delivery institutions;
- g) Lack of government regulations particularly on small-scale groundwater extraction by the private sector; and
- h) Limited participation of public and private sector institutions in local water service delivery.

8.2 Key issues facing the water districts

- a) From the perspective of the poor households, high rates of water connection and water tariffs which discourage them from getting a connection;
- b) From the perspective of some water districts, low rates of water connection and water tariffs that do not allow them to recover costs and earn profits;
- c) Perceived poor quality of water from some water districts due to water turbidity due to natural and man-made factors;
- d) Low water pressure, high downtime, high percentage of non-revenue water, and related operational problems of some water districts;
- e) High exchange rate of the peso to the dollar, which prevents the water districts from purchasing imported equipment;

- f) Difficulty in paying outstanding loans by some water districts due to low or negative financial profitability;
- g) Limited coverage and expansion of water districts due to limited markets and lack of financial resources; and
- h) Poor coordination with LGUs, resulting in the latter becoming competitors instead of partners in local water service delivery.

8.3 Key Issues facing the LGUs

- a) Limited financial resources resulting in poor local water service delivery in many local areas;
- b) Graft and corruption, which significantly limits public resources allocated for local water service delivery;
- c) Low compensations and incentives in government resulting in low motivation of personnel to perform effectively;
- d) Lack of emphasis on sanitation as an important public function related to local water service delivery;
- e) Weak and fragmented organizational structures resulting in inefficient local water service delivery;
- f) Gender and age-insensitive planning and implementation of local potable water service delivery projects;
- g) Limited overall support for the BWASAs and other similar rural potable water providers; and
- h) Limited tie-ups and partnerships with the private sector, NGOs, and other stakeholders in local water service delivery.

8.4 Key challenges and issues facing potable water service delivery in general

- a) Promotion of the institutional capacity of local water service delivery providers through consistent capacity-building programs;
- b) Enhancement of the management and regulatory functions of local public institutions through appropriate legislation;
- c) Improvement of the financial performance of local water service delivery providers through development of cost-effective technologies and other approaches;
- d) Promotion of the integration and streamlining of activities among the institutions through strong cooperation and coordination;

- e) Exploration of other sources of financing and investment through involvement of the private sector, donors, and other fund sources; and
- f) Promotion of equity and fairness by considering gender and waterless communities in local water service delivery.

IX Conclusions and Recommendations

9.1 Conclusions

In retrospect, the national review of the local service delivery of potable water in the Philippines conducted beforehand by the current study generated the following important conclusions:

- a) The potable water sources and supply of the country are limited and a significant share of it is contaminated;
- b) Household income and price of water have significant impacts on water demand and the latter, although formally progressive may actually have regressive effects;
- c) In addition to price and households income, the provision of potable water has health, gender and social implications;
- d) Institutional factors are important as well and although pertinent laws, institutions, strategies and programs are in place, institutional problems remain;
- e) The primary institutional problems in local water service delivery are the multiplicity of institutions, uncertainty in law implementation and weak regulatory framework;
- f) Outside of the traditional sources of potable water, new sources have emerged particularly refilled water and bottled water providers; and
- g) While the country is heading towards meeting its national and MDG objectives related to potable water provision, much remains to be done and quickly.

Also in review, among the most important conclusions generated from the analysis of the local service delivery of potable water in the case study sites of Dumaguete City and Agusan del Sur are the following:

- a) Local service delivery of potable water, particularly Level I, II and III water, in the case study sites is done by both the public and private sectors;
- b) The public sector providers include the water districts and the LGUs while the private providers were the household self-providers, firms and other private entities;
- c) Refilled water and bottled water providers also exist but their exact numbers and coverage, although likely increasing, are not known at present;
- d) Dumaguete City has met or likely to meet national and MDG objectives in potable water sufficiency while Agusan del Sur and at least some of its municipalities may not meet targets;

- e) Water tariffs in the municipalities of Agusan del Sur are significantly higher than those in Dumaguete City even though the population of the former is relatively poorer;
- f) Water price, quality and accessibility are important factors influencing households to use or not to use particular sources of potable water;
- g) Households can easily access water in their neighborhood at little or no financial or time costs on their part;
- h) Plastic containers are widely used in storing potable water, a practice may have adverse long terms environmental effects;
- i) There are gender and age implications in the access of water as a significant number of women and children are involved in fetching water;
- j) Households use relatively low levels of potable water for actual drinking while the rest of the water is utilized for for other household chores;
- k) Water bill of households are relatively low and does not seem to be significantly influenced by the seasons;
- l) Households do not treat their drinking water and those who do may not be willing to spend much on the effort;
- m) Household perception of the quality of and accessibility to their potable water do not seem to be significantly affected by seasons;
- n) Households in general are willing to pay a low a maximum amount of improvement of their potable water; and
- o) There are key issues and challenges facing local service delivery of potable water the most important of which are institutional in nature.

9.2 Recommendations

The proposed reforms and recommendations mentioned below for the improvement of local water service delivery at both at the national and case levels are based on the existing literature, interviews with key informants and informed opinion of the author:

9.2.1 National reforms and recommendations

- a) As a general recommendation, the Philippine Water Supply Sector Roadmap (NEDA 2009) should be reviewed and finalized as soon as possible and then immediately implemented.
- b) The pricing schemes for potable water by all sources should be reviewed in order to reduce if not eliminate the hidden regressive effects of water tariff particularly between household and municipality classes.

- c) The responsibilities and functions of public and private institutions involved in local water service delivery should be streamlined to prevent duplication, overlapping and redundancy;
- d) The implementation of pertinent laws related to potable water, particularly EO 279 should be given focused attention by relevant institutions in order to reduce or eliminate uncertainty; and
- e) The national government must not only pay lip service and offer paper products on national and MDG objectives but actively exercise real actions in order to achieve them.

9.2.2 Case Study reforms and recommendations for the whole sector

- a) Monitoring and enforcement must be strengthened by local governments in the areas of illegal logging, water pollution and other related management concerns through deputization of the local population;
- b) Distribution of local resources for water services delivery must be based on equity and fairness to reduce the disparity between areas. This principle must be institutionalized through local legislation if necessary;
- c) Workable approaches in providing water services delivery to waterless barangays must be developed. The potential of SSIPs and BWASAs must be considered;
- d) The private sector must be considered as fund sources together with local governments and other local actors. Other financing sources must be explored including development lending institutions, donor agencies and NGOs;
- e) High standards must be established in the selection of personnel in water service delivery. These standards must be based on merits and qualifications and not on political connections to improve institutional capacity;
- f) Local institutions involved in water service delivery should conduct relevant trainings and seminars to improve the managerial, technical and other areas of competence of their staff;
- g) Local institutions must invest in database and overall knowledge management. Full computerization of their activities and networking with other institutions are needed to build up the knowledge base; and
- h) Local legislation is needed to regulate certain aspects in local water service delivery, particularly the small-scale extraction of groundwater.

9.2.3 Case study reforms and recommendations for the water districts

- a) Since socialized pricing appears to be practiced by the LWUA and water districts, they should consider lowering the tariff rates of low income households vis a vis other users. Another alternative is to set up more public taps;
- b) The LWUA and water districts should consider increasing the rates of higher income households and the commercial and industrial users who have higher abilities to pay. This will help improve cost recovery;

- c) Proper management of water sources and regular repair and maintenance of facilities should improve the quality of water produced by water districts. They should invest more in the repair and maintenance of distribution lines and other related facilities;
- d) The management and technical aspects of operations of water districts must be improved to increase water pressure, reduce downtime, lower non-revenue water and solve related problems;
- e) The water districts should develop cost-effective and indigenous technologies and innovations to reduce dependence on imported technology and lower the negative impacts of a high exchange rate;
- f) The water districts which have difficulty in paying their loans may request for loan restructuring from creditors or counterpart funding from LGUs. In the future they should seek sources of financing outside of government;
- g) The water districts can already increase coverage and expand by improving overall customer service. Community service activities to promote goodwill in the service areas will also help; and
- h) The water district should improved coordination with LGUs in local water service delivery. Regular consultations and meetings with relevant LGU units and personnel will help reduce the incidence of water service redundance.

9.2.3 Case study reforms and recommendations for the LGUs

- a) LGUs should provide more of its own funding to and prioritize public water service delivery. Since potable water is a basic public good, it should be a public function to provide it particularly in areas where it is lacking or absent;
- b) LGUs must develop a local moral recovery program and an effective local check and balance system that will penalize offending and corrupt public officials and employees;
- c) LGUs must develop forms of incentives so that its personnel will perform effectively in their respective functions. A fair and merit-based promotion system can also motivate lowly-paid employees to work better;
- d) Since sanitation is directly related to water provision, it should be given emphasis by LGUs. It should be an integral concern under the program of local water services delivery;
- e) The establishment and strengthening of provincial, municipal, and barangay Watsan units to integrate the function of water and sanitation under one roof will address the fragmentation in functions in local water service delivery;
- f) Gender and age issues must be considered in the planning and implementation of local water service delivery projects. Local public water systems must be user-friendly to women and children as well as men;

g) BWASAs and other water providers in rural areas must be strongly supported. LGUs can help organizationally by settling disputes among members and even providing moral support; and

h) Tie-ups and partnerships with other sectors must be established. Joint local water service delivery projects should be explored where individual costs to partners are lessened but overall benefits to users are increased.

The following are suggested areas for further research on local water service delivery in the country and particular sites within:

9.2.4 Areas for future research

a) *Analysis of the demand and supply for potable water services.* The analysis of the demand and supply for potable water services in local communities may be undertaken by PIDS or a similar research agency together with the local planning and development;

b) *Evaluation of the economic and social impact of water districts and other water service providers.* This evaluation may be conducted with the water districts, other service providers and the LGUs;

c) *Analysis of the environmental impacts of water districts and other water service providers.* This analysis can be undertaken together with (b) and done with the service providers and local environmental GLUs;

d) *Evaluation of the impacts of global warming and climate change on water services.* This evaluation can be conducted nationally or locally with the national and local environmental institutions;

e) *Analysis of the relationships between water and sanitation services.* This analysis may be done with the DOH, DepEd, and the health, education and economic planning LGUs;

f) *Evaluation of the impacts of waste disposal and drainage systems on the provision of water services.* This evaluation can be conducted with the DPWH, DOH, and local public works, health, and economic planning LGUs;

g) *Analysis of market-based mechanisms to enhance water services.* This analysis can be done with the financial institutions, service providers and the national and local finance and economic planning agencies; and

h) *Evaluation of sustainable financing mechanisms to enhance water services.* This study may be done with the financial institutions, service providers and the national and local finance and economic planning agencies at the national and local levels.

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