Volume 45 (2021) | Number 2

Philippine Journal of Development

Perceived Effects of the Performance-Based Bonus on Government Employees' Productivity
Jose Ramon G. Albert, Ronald U. Mendoza, Janet S. Cuenca, Jana Flor V. Vizmanos, and Mika S. Muñoz

The Philippine Local Water Sector: Institutional Issues in Supply Governance
Lawrence G. Velasco, Charlotte Justine Diokno-Sicat, Angel Faye G. Castillo, and Ricxie B. Maddawin

An Assessment of the Financial Sustainability and Performance of Philippine Water Districts
Lawrence G. Velasco

Primary Health Care and Management of Noncommunicable Diseases in the Philippines
Valerie Gilbert T. Ulep, Jhanna Uy, and Lyle Daryll D. Casas

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

PHILIPPINE JOURNAL OF DEVELOPMENT

Editorial Board

Dante B. Canlas (chair)
University of the Philippines School of Economics

Gilberto M. Llanto (co-chair)
Philippine Institute for Development Studies

Ian Coxhead
University of Wisconsin-Madison

Paul Hutchcroft
Australian National University

Jesus C. Dumagan
De La Salle University

Emma E. Porio
Ateneo de Manila University

Shujiro Urata
Waseda University

Editorial and Production Team

Editor-in-Chief
Aniceto C. Orbeta Jr.
Philippine Institute for Development Studies

Managing Editor
Sheila V. Siar
Philippine Institute for Development Studies

Production Assistant
Gizelle G. Manuel
Philippine Institute for Development Studies

Editorial Assistant
Elshamae G. Robles
Philippine Institute for Development Studies

The *Philippine Journal of Development (PJD)* is a professional journal published by the Philippine Institute for Development Studies (PIDS). It accepts papers that examine key issues in development and have strong relevance to policy development. As a multidisciplinary social science journal, it accepts papers in the fields of economics, political science, public administration, sociology, and other related disciplines.

The views expressed in the PJD are exclusively those of the authors and do not necessarily reflect the views and policies of PIDS.

Any reader who is interested in submitting a manuscript or a book review may refer to the Guidelines in the Preparation of Articles available on the PJD section of the PIDS website (www.pids.gov.ph). Queries or comments may be sent to PJD@pids.gov.ph. Each manuscript is reviewed by two referees under a double-blind peer review process.

This journal is under the Creative Commons Attribution Noncommercial License. The use for commercial purposes of any article published in the journal is not allowed. Anyone can use, reuse, and distribute an article as long as proper attribution is made.

Annual subscription is PHP 900 or USD 60, which includes mailing cost. Electronic copies are available, free of charge, on the PIDS website.

Printed in the Philippines, 2021

ISSN 2508-0954
ISSN 2508-0849 (electronic)
RP 10-21-600

Philippine Journal of Development
Volume 45 (2021) Number 2

The Philippine Local Water Sector: Institutional Issues in Supply Governance

Lawrence G. Velasco, Charlotte Justine Diokno-Sicat, Angel Faye G. Castillo, and Ricxie B. Maddawin[1]

ABSTRACT

Aligned with the United Nations' Sustainable Development Goal 6 to "ensure availability and sustainable management of water and sanitation for all", the *Philippine Development Plan 2017–2022* recognizes the importance of water supply and sanitation (WSS) in accelerating the country's infrastructure development. The National Economic Development Authority's *Philippine Water Supply and Sanitation Master Plan 2019–2030* presents actions for universal access to safe WSS by 2030. Although national and international goals are already in place to attain water security, water service delivery remains devolved and dependent on local governments. The sector also receives uneven public investments through the national government.

With the implementation of the Mandanas ruling affirmed by the Supreme Court, which gives local governments increased grants, strengthened devolved functions, and reduced program assistance from the national government, water service delivery will continue to be the local governments' responsibility.

For decades, the literature has emphasized the need to address fragmentation among water institutions and in regulations that have resulted in uneven and inefficient investments. This study explains fragmentation by answering the question: "What institutional and regulatory factors affect the magnitude of investments in the local water sector?" It presents the current potable water access in the country and shows the resultant uneven public investments.

[1] The authors are consultant (assistant professor at the Department of Accounting and Finance, Cesar EA Virata School of Business, University of the Philippines, Diliman, Quezon City), research fellow, and research analysts, respectively, at PIDS. Email for correspondence: lgvelasco@up.edu.ph and csicat@mail.pids.gov.ph.

It reviews the current mandates of the two main regulating bodies for potable water access in local communities and identifies various overlaps and ambiguities in managing the sector. The results show the need to streamline and align the sector's unclear economic and technical regulations with its operating standards to avoid fragmentation. In addition, investment coordination must be improved to ensure strategic investments and efficient use of limited financing. There should be a consolidated and complete database of water service providers, as well as key performance indicators and other data, to better monitor the investments in the local water sector.

INTRODUCTION

Aligned with the United Nations' Sustainable Development Goal 6 to "ensure availability and sustainable management of water and sanitation for all", the *Philippine Development Plan 2017–2022* recognizes the importance of water supply and sanitation (WSS) in accelerating the country's infrastructure development (NEDA 2017, p. 256). The National Economic and Development Authority's (NEDA) *Philippine Water Supply and Sanitation Master Plan (PWSSMP) 2019–2030* also presents actions for universal access to safe WSS by 2030 (NEDA 2019a). Although national and international goals are already in place to attain water security, water service delivery, as a devolved public service in the country, depends heavily on local governments.

The literature identifies fragmentation as a major challenge in the provision of local water services (ADB 2013; World Bank 2015; NEDA 2019a). The national government offers assistance to local government units (LGUs) and local water districts (LWDs) through various programs and financing options. However, the sector receives uneven investments. This calls for a systematic review of the institutional mandates affecting local water services to ensure strategic investments among LGUs, which will receive increased intergovernmental fiscal grants by 2022, owing to the Supreme Court Mandanas ruling.[2]

Decentralized water services and evidence on water service providers

The Local Government Code (LGC) of 1991 devolves the delivery of local water services to LGUs. Water services operate under at least eight legal frameworks, with the Water Code of the Philippines as the basic law (Presidential Decree [PD] 1067, series of 1976). Several regulatory bodies are responsible for water service delivery in the country. The two main bodies are the (1) National Water Regulatory Board (NWRB), which is in charge of setting, administering, and enforcing all rules related to water, such as "control, conservation, and protection of waters, watershed, and related land resources" (Rola et al. 2015, p. 200); and the (2) Local Water Utilities Administration (LWUA), a "specialized lending institution for the promotion, development, and financing of local water utilities" (PD 768, Section 22).

The NWRB regulates 12 water resources regions in the country. Common sources are fewer and different from administrative regions. Thus, they are shared by different LGUs. This brings about the need for cooperation and comprehensive planning for water resources development across LGUs (Rola et al. 2015). Water service providers (WSPs) serve the population based on different management types (Table 1) and through different levels of water systems (Table 2).

2 The Supreme Court Mandanas ruling broadened the tax base on which intergovernmental fiscal transfers are computed (GR No. 199802 and GR No. 208488, April 10, 2019).

Table 1. Water supply service providers by management type

Major groups	Management type	Description
Water districts	Water districts	A quasi-public corporation formed by the LGU under the Provincial Water Utilities Act and recognized with a Certificate of Conditional Conformance by the LWUA.
LGU-run utilities	LGU-run utilities	A water supply system owned and operated by the LGU.
Community-based organizations	Barangay water and sanitation association	A nonstock and nonprofit organization that owns, operates, and maintains water supply facilities in a *barangay* (village) or defined area.
	Rural water supply association	
	Cooperative	A membership organization formed under the Cooperative Code of the Philippines and registered with the Cooperative Development Authority.
Private utilities	Homeowners' association	An organization that operates and maintains a water supply system and registered with the Securities and Exchange Commission or the Housing and Land Use Regulatory Board.
	Real estate developer	A real estate developer operating a water supply system for lot owners.
	Unnamed WSP	An unregistered water provider serving at least 15 households.
	Industrial locator	An industrial estate operating a water supply system in an economic special zone to provide water to locators.
	Peddler	A nonpipe WSP that extracts water and delivers it through containers.
	Ship chandler	A WSP for ships.
	Other private operators	Other private entities formed under the general business and corporation laws of the country for the operation and maintenance of WSS.

LGU = local government unit; LWUA = Local Water Utilities Administration; WSS = water supply and sanitation; WSP = water supply provider
Source: NEDA (2019a)

Table 2. Definition of water systems

Level	Description
Level I (point source)[3]	This service level provides a protected well or a developed spring with an outlet but without a distribution system. Hence, users go to the source to fetch water. Level I sources are generally adaptable in rural areas where houses are thinly scattered. These sources serve an average of 15 households within a radius of 250 meters.

3 Derived from the Philippine Statistics Authority's (PSA) definition of water system levels based on the National Statistical Coordination Board Resolution 9, series of 2012 (PSA 2012). There are unsafe sources of water classified under level I, such as unprotected springs, rivers, streams, dug wells, lakes, rivers, rainwater, and peddlers, among others.

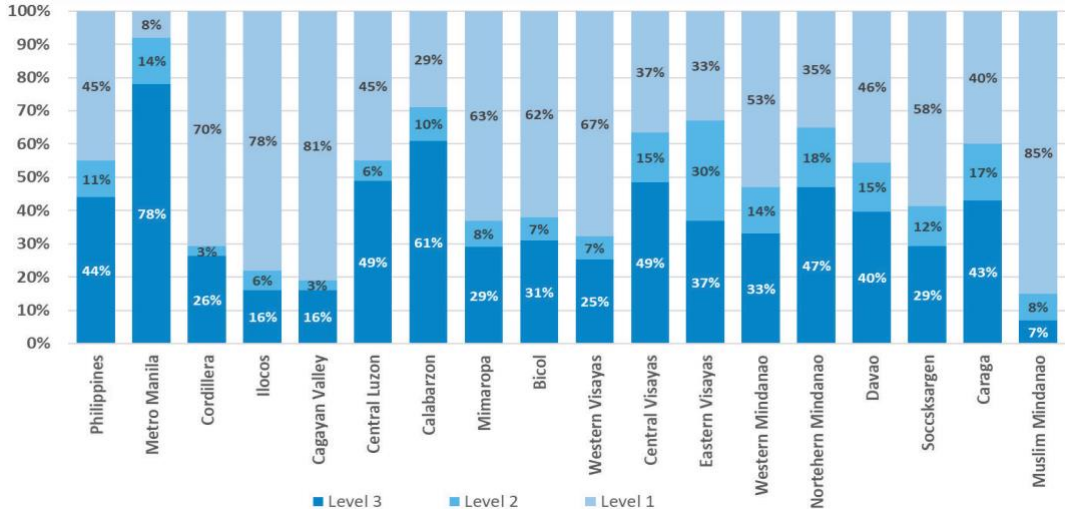
Table 2. (continuation)

Level	Description
Level II (communal faucet system or stand post)	A piped system is composed of a source, a reservoir, a piped distribution network, and communal faucets. Each communal or public faucet usually serves four to six households within a radius of 25 meters. Users go to the supply point (communal faucet) to fetch water. This system is "generally suitable for rural and urban fringe areas where houses are clustered densely to justify a simple piped system".
Level III (waterworks system)	This system includes a source, a reservoir, a piped distribution network, and individual household taps. It is "generally suited for densely populated urban areas where the population can afford individual connections".

Source: NEDA (2019a, p. 26)

According to estimates from the 2015 Family Income and Expenditure Survey (PSA 2016), 43.6 percent of the population access water through level III systems, 11.2 percent get their water from level II systems, and a large proportion of 45.2 percent have access to water through level I systems (Figure 1).

Figure 1. Regional access to water supply by level of water supply system

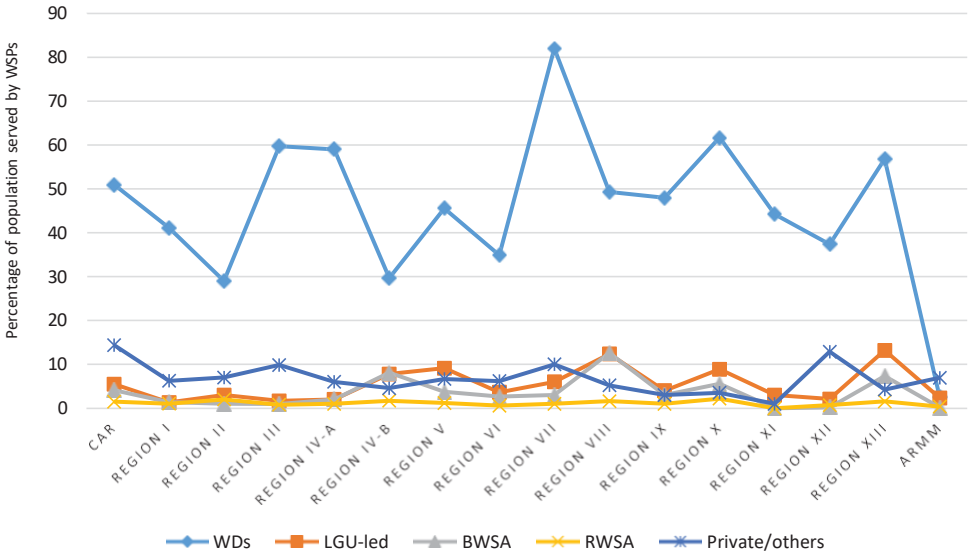


Calabarzon = Cavite, Laguna, Batangas, Rizal, and Quezon; Mimaropa = Mindoro, Marinduque, Romblon, and Palawan; Soccksargen = South Cotabato, Cotabato, Sultan Kudarat, Sarangani, and General Santos
Source: NEDA (2019b)

Based on the PWSSMP, about 12.32 percent of the population access water from unsafe sources. There are also some areas without WSPs. Meanwhile, 31 percent of established water districts in the country are nonoperational (NEDA 2019a).

In terms of the population served by the WSPs, water districts serve the largest proportion in all regions (Figure 2). The top three regions with the largest proportion of population served by water districts are Region VII (Central Visayas), Region 10 (Northern Mindanao), and Region III (Central Luzon).

Figure 2. Proportion of population served by type of WSPs, 2017



WSPs = water service providers; CAR = Cordillera Administrative Region; ARMM = Autonomous Region in Muslim Mindanao; WDs = water districts; LGU = local government unit; BWSA = barangay water and sanitation association; RWSA = rural water supply association
Source: NEDA (2019a)

Recent studies support examining and improving local water provision with considerable spillover effects. World Bank emphasized that national targets could be met only if (1) sector leadership is streamlined, (2) there is an integrated institutional framework, (3) there is political will to mobilize necessary investments, and (4) regulation is enhanced to encourage "expanding and improving service provision, particularly for the poor" (World Bank 2015, p. 33). However, these suggested reforms require capacity development. Another important recommendation from the study is to "improve coordination mechanism between actors at provincial and municipal levels", "establish a national capacity building program", harmonize data collection systems, and establish a collective platform for a multistakeholder review process (World Bank 2015, p. vi).

An assessment of the Philippine water supply and sanitation sector by the Asian Development Bank (2013) found similar results. Meanwhile, Rola et al. (2015) recommended reviewing the legal and institutional framework. The case study focused primarily on water sources like watersheds and highlighted law and institutional framework conflicts that have caused various challenges in the sector, ranging from water sources to delivery of water services. Another study examines "conflicts arising from the layered legal treatment, fragmentation, and multiplicity of institutions" involved in the Philippine water governance (Hall et al. 2015, p. 946). It claims that the legal changes in the water sector have seen greater openness to market solutions and "more competition from private businesses in water sourcing and distribution" (Hall et al. 2015, p. 959). The role of the state has shifted from intervention and provision to regulatory mode. However, the local water sector was said to be challenged, while LWDs gradually adopted market benchmarks to improve their performance. Some cases of water conflicts showed "varied contestations that came about, given ill-defined property rights to water and parallel questions of legitimacy to these awarded rights" (Hall et al. 2015, p. 960). In one case, competing assertions of the rights by LWDs

and the LGUs' claim of accountability to community members for service provision illustrate political tension between the two state actors.

Although some studies showed the challenges in potable water service delivery at the local level, their recommendations are general, such as reviewing institutional mandates. This study contributes to the literature by assessing the laws and legal mandates of oversight bodies involved in water services.

The following are the overall policy questions of this study: What institutional and regulatory factors affect the investments in the Philippine local water sector? How can these be improved to encourage and facilitate strategic investments? This study also examines water supply services among LGUs and how other sectors enable the delivery of this devolved basic service.

Research objectives

This study primarily aims to identify areas of improvement in water supply provision among LGUs and determine the practices that have led to successful local water delivery by mapping out the agencies involved in local water systems and assessing their mandates, scopes, and functions. The specific objectives are to:

1. review the current institutional and regulatory framework for devolved basic water service by answering the question: What are the mandates of the different government agencies in the water sector? How do they lead the provision of water services based on their mandates, scopes, and functions? and
2. analyze overlaps in the mandates, scopes, and functions of government agencies involved in local water service delivery.

CONCEPTUAL FRAMEWORK AND METHODOLOGY

Water as an economic good

Water is a complex good. The different stages of provision change the type of good it is perceived, and, therefore, the way it is provided, managed, and regulated. In the first stage, water at the source is a common resource. Unregulated access to a water source imposes negative externalities on users.

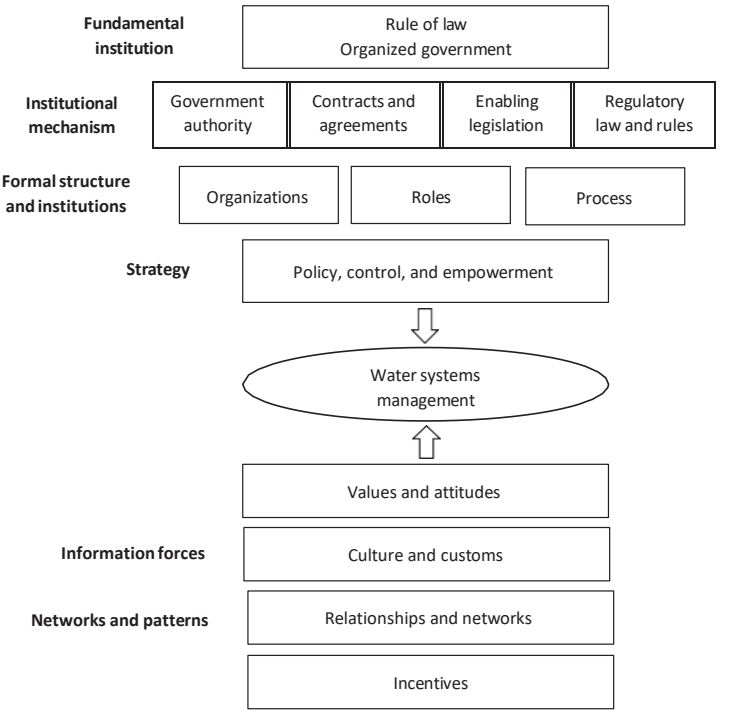
The second stage involves establishing water service distribution and ensuring potability of water, which may also involve alternative delivery providers such as water haulers whose relevant cost considerations can influence their pricing decisions. Water provision in the country is a natural monopoly, i.e., the large sunk costs needed to establish a water system make it more acceptable and efficient to have fewer providers take advantage of the economies of scale. Economic theory prescribes a different kind of regulation to ensure water quality and non-exploitative pricing (Zetland 2014; Stiglitz and Rosengard 2015). Furthermore, the nature of water provision and its associated costs depends on who provides the service and how it is delivered, as water haulers may face Opportunity Costs when allocating available resources among competing water-delivery activities. If water is provided by independent service providers such as water haulers, their pricing decisions may depend on the costs incurred in obtaining and delivering water, including Incremental Cost and Opportunity Cost, which may influence the prices charged to customers. Pricing also depends on the level of water system and is determined in the realm of political economy (Zetland 2014). If the private sector or a hybrid of public and private entities provides water, regulators treat water service as a natural monopoly and manage the price (Stiglitz and Rosengard 2015).

For the second stage of potable water service provision, the LWUA is responsible for regulating local WSPs, especially LWDs, for which it serves as a lending institution.

Institutional framework for water service delivery

Water service provision and regulation happens within an institutional framework. Figure 3 shows Griggs' (2011b) framework for institutional arrangements in water governance. This "involves a broad set of enabling and regulating functions that support and oversee the organizations that use resources to manage water for human and environmental needs" (Griggs 2011b, p. 800). Fundamental institutions (laws, mandates, and organized government) work through institutional mechanisms (government authorities and legal instruments) to create formal structures (organizations, roles, and processes), which design policies. Unique characteristics, values, and the political economy also affect water systems management.

Figure 3. Institutional arrangements for water governance



Source: Griggs (2011a)

Methodology

This study focuses on fundamental institutions affecting local water service delivery in the Philippines, such as the NWRB and the LWUA. A mixed-method approach was employed using sequential parallel analysis and process evaluation. The research questions were answered in three parts. A public expenditure review of recent national government programs assisting LGUs in water service delivery was conducted. This was followed by an institutional review of the different modes of local water services. A process evaluation and explanatory sequential methods determined the institutional issues. Lessons from the first two parts were integrated into a cohesive policy recommendation.

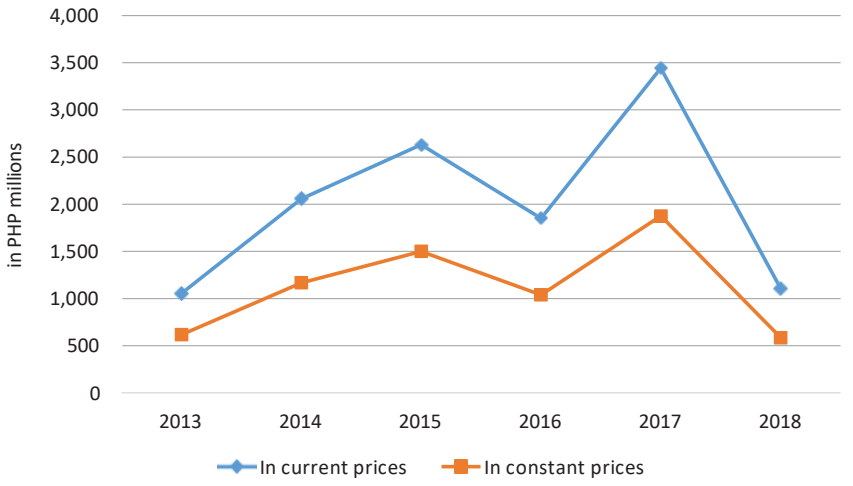
Key informant interviews with the LWUA, the Philippine Association of Water Districts, and the Department of the Interior and Local Government (DILG), provided the needed on-the-ground regulatory and industry context on these issues.

The study shows how the national government has supported investments in the fragmented local water sector, which resulted in uneven or irregular spending. It details the institutional landscape of local water service provision and reviews regulatory and implementation issues among the main water regulatory bodies.

UNEVEN PUBLIC INVESTMENTS DUE TO FRAGMENTATION

The national government recognizes the challenges in providing local water services and supports LGUs through various programs, such as the DILG's *Sagana at Ligtas na Tubig Para sa Lahat* (SALINTUBIG)[4] and the Local Government Support Fund Assistance to Municipalities (LGSF-AM).[5] The government finances local water service delivery through the LWUA, which receives budgetary support and gives loans to LWDs. However, these programs have received irregular funding through the years (Figures 4, 5, and 6). Other ways of providing local water services include LGUs, water districts, private or public-private sector arrangements, and alternative providers such as water haulers, whose delivery activities may incur Incremental Costs when additional services are undertaken. These uneven investments could also be due to fragmentation in the local water sector, which may affect the availability and delivery of water services and increase the importance of understanding how water haulers consider additional and alternative resource costs when determining their prices.

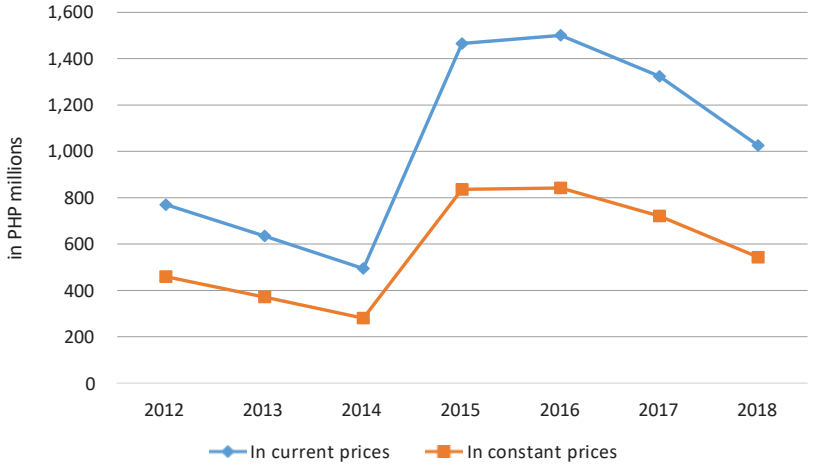
Figure 4. LGSF-AM expenditures, 2013-2018



LGSF-AM = Local Government Support Fund Assistance to Municipalities; PHP = Philippine peso
Source: Authors' computation using data from the DILG (various years)

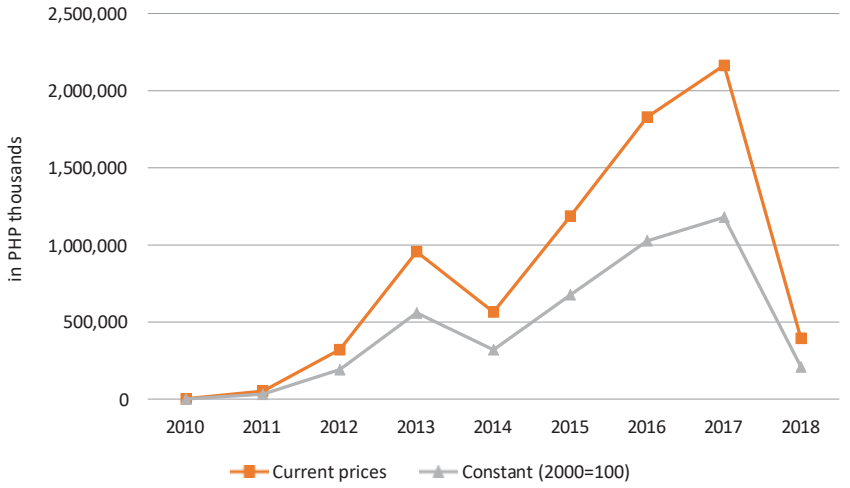
4 Originally of the National Anti-Poverty Commission (NAPC 2010).
5 The LGSF-AM is a performance- and equity-based program that started as the Bottom-up Budgeting (BUB) program. Other programs for water supply projects are the Performance Challenge Fund in 2015 and the water supply and sanitation for poverty areas and priority tourism sites led by the Department of Public Works and Highways in 2016.

Figure 5. SALINTUBIG expenditures, 2012-2018



SALINTUBIG = *Sagana at Ligtas na Tubig Para sa Lahat*; PHP = Philippine peso
Source: Authors' computation using data from the DILG (various years)

Figure 6. Budgetary support from LWUA, 2010-2018



LWUA = Local Water Utilities Administration; PHP = Philippine peso
Source: Authors' computation using data from the DBM (various years)

An exercise was conducted to see if the implementation of the programs served their purpose to bridge the gap in water access, particularly for poorer LGUs (as was the original intent of the SALINTUBIG and the LGSF-AM programs). Using correlation analysis, it was hypothesized that there should be (1) higher expenditures on water service provision in regions that have higher poverty incidence, i.e., positive correlation, and (2) lower expenditures for regions with a higher proportion of households with water access.

The results showed that poverty incidence was moderately correlated with SALINTUBIG expenditures and weakly correlated with LGSF-AM expenditures (Appendix D). This was expected more with SALINTUBIG program because it focuses on water service provision,

compared with the LGSF-AM program, which can be used for several priority infrastructures. The correlation coefficients suggest that the regional poverty incidence accounts for 16 percent of the variation in SALINTUBIG expenditures, while the same does for only 15 percent of the LGSF-AM expenditure variations.

Looking at the association between the proportion of households with water service by region, it is hypothesized that areas with larger proportions of households with water access should receive less expenditures. The current access to water services is weakly correlated with the SALINTUBIG program, explaining only 3 percent of the variation. The sign was negative as expected. The results seem to suggest that there are other factors affecting national government program expenditures on local water services.

The budget for national government programs was almost fully utilized, compared with inadequate utilization of the LGUs' local development funds,[6] or the source of funding of their infrastructure investments (Appendices A and B). This has major implications on whether LGUs will take on spending for water services in the event that the national government discontinues its programs supporting local infrastructures when the Mandanas ruling is implemented in 2022.[7] This shows that while water service delivery is a devolved function, LGUs still receive support from the national government. However, public investment in the local water sector has been uneven, with factors such as poverty incidence or low access to water services weakly related to public expenditures, which are supposed to bridge the gap in water access. With strengthened devolution in 2022, LGUs will have to step up if the national government decides to discontinue its assistance for localized programs. Fragmentation in the local water can be one of the reasons for the uneven public investment and justifies the need for institutional and regulatory reforms.

ISSUES IN INSTITUTIONAL FRAMEWORK FOR LOCAL WATER SUPPLY

Although fragmentation in the local water sector has often been mentioned in the literature, studies have either discussed it generally or focused on other specific case studies. This section shows a survey among formal institutions and instruments (mandates, rules, and regulations) of entities primarily involved in local water service provision. It identifies specific mandates and rules that have caused weaknesses and ambiguities in the local water governance framework. The said weaknesses are the basis of recommendations to strengthen the sector.

Overview of implementing entities

There are several entities involved in the provision of local water supply in the Philippines. The two major implementers are LGUs and LWDs. The private sector may also participate in implementing water supply projects. A brief overview of water sector entities is provided to show the extent of fragmentation and how it impacts investments coordination.

LGUs

Section 17 of Republic Act (RA) 7160 devolved basic services to LGUs, transferring to them critical services, such as WSS, flood control, and enforcement of sanitation laws, among others (Table 3).

6 Philippine municipalities utilized 73 percent (20% of internal revenue allotment) in 2016, which suggests that "they did not spend the minimum mandated amount on development projects" (Diokno-Sicat et al. 2020, p. 32).
7 Executive Order (EO) 138, series of 2021.

Table 3. Water supply-related services by specific LGUs

Unit	Section (RA 7160)	Water supply-related services and facilities
Barangay	Section 17b.1v	Maintenance of barangay roads and bridges and water supply systems.
Municipality	Section 17b.2viii	Infrastructure facilities intended primarily to service the needs of the residents of the municipality and which are funded out of municipal funds including, but not limited to, communal irrigation, small water impounding projects and other similar projects, artesian wells, spring development, rainwater collectors, and water supply systems.
Province	Section 17b.3vii	Infrastructure facilities intended to serve the needs of the residents in a province, and which are funded out of provincial funds including, but not limited to, intermunicipal waterworks, drainage, and sewerage.
City	Section 17b.4	All services and facilities of the municipality and province.

LGUs = local government units; RA = Republic Act
Source: RA 7160

LGUs establish water systems through their respective legislative councils, which enact ordinances to provide for the establishment, operation, maintenance, and repair of water systems in their influence areas. In addition, they have an oversight function and may determine and fix water rates, according to Sections 391g, 447a, 458a, and 468a of RA 7160, for the *Sangguniang Barangay, Sangguniang Bayan, Sangguniang Panlunsod and Saungguniang Panlalawigan*, respectively. LGU water systems can be funded through capital investments in their annual budget, which can be independent of other WSPs. While water infrastructure is included in the local development plans, it is not necessarily consolidated and monitored collectively.

LWDs

LWDs are government-owned or controlled corporations (GOCCs) authorized to operate, manage, and maintain water systems in cities, municipalities, and provinces in the Philippines. They were created through PD 198 or the Provincial Water Utility Act of 1973. Section 5 of PD 198 outlines that LWDs are formed to (a) acquire, install, improve, maintain and operate "water supply and distribution systems for domestic, industrial, municipal, and agricultural uses for residents and lands within the boundaries of such districts"; (b) provide, maintain, and operate "wastewater collection, treatment, and disposal facilities"; and (c) conduct such other functions and "operations incidental to water resource development, utilization, and disposal within such districts, as are necessary or incidental to said purpose".

The board of directors of the water district oversees the operations of LWDs. It should be composed of representatives from civic organizations, professional associations, business and commercial or financial organizations, educational institutions, and women's organizations. Aside from the board of directors, the LWUA exercises oversight functions over water districts. Investment plans are also submitted to the LWUA for monitoring purposes.

Other implementing entities

Private entities through Certificate of Public Convenience (CPC). Private companies or associations may apply for a CPC from the NWRB. They may incorporate companies and operate water systems in a predefined area through the CPCs. Numerous corporations have obtained CPCs, such as homeowners' associations and industrial locators. Their investment plans are submitted to the NWRB as part of the reportorial requirements of the CPC.

Private entities through public-private partnerships (PPPs) or joint ventures. Using their corporate powers, water districts or the LGUs may enter into PPPs or joint venture arrangements with the private sector to expand, operate, maintain, and manage their respective service areas. While these operators are privately run, they derive their authority to operate from their water district or LGU partners who may use the provisions of RA 6957, as amended by RA 7718, known as the Philippine Build-Operate-Transfer Law. Water districts may also form joint ventures with the private sector by invoking the 2013 NEDA joint venture guidelines for GOCCs. Investment requirements are usually submitted by the private sector to the public sector partner. On the other hand, LGUs may form joint ventures with private sector partners through ordinances. Under these arrangements, the private sector coordinates its investment plans with an LGU or water district partner.

Other public sector entities as mandated by special laws. Some special laws may create powers for government agencies to partner with the private sector and develop concessions for water system operations. This was the case when the Metropolitan Waterworks and Sewerage System (MWSS) created two concessions through the Water Crisis Act. The Bases Conversion and Development Authority developed its own joint venture guidelines and bid out a joint venture project for the construction, operation, and maintenance of the New Clark City's water supply and sewerage system.

FINDINGS

Lack of investment planning and coordination

Table 4 summarizes the findings for the preceding discussion. It shows that the approval and monitoring of water system investments are scattered across different government entities and result in the lack of investment coordination.

Table 4. Investment coordination summary

Implementing entity	Investment coordination
LGUs	No explicit inter-LGU coordination required. Investment plans are subsumed in the LGUs' local development plans but may be aligned with higher level LGUs and/or regional plans.
Water districts	Investment plans are submitted to the LWUA.
Private entities with CPCs	Investment plans are submitted to the NWRB as part of the rate-setting process.
Private entities with PPP or joint venture contracts	Investment plans are submitted to the respective government counterparty to the PPP contract (water district, MWSS, and BCDA, among others).
Other public entities (BCDA, TIEZA, etc.)	No explicit coordination required.

LGUs = local government units; LWUA = Local Water Utilities Administration; CPCs = Certificates of Public Convenience; NWRB = National Water Resources Board; PPP = public-private partnership; MWSS = Metropolitan Waterworks and Sewerage System; BCDA = Bases Conversion and Development Authority; TIEZA = Tourism Infrastructure and Enterprise Zone Authority
Source: Authors' summary

Several agencies are involved in water supply delivery in the country, but there is no single agency responsible for the water delivery nationwide. As a devolved function, water supply delivery

is a responsibility of the LGUs and other local entities. However, the national coverage for piped water was only at 50 percent of households (NEDA 2019a). Some regions are also lagging, while poor LGUs are trapped due to the lack of funding. Thus, local and regional planning on water supply infrastructure must be strengthened.

The lack of investment coordination has resulted in multiple water supply utilities operating in the same areas. An example is Taytay municipality in Palawan, where both LWD and LGU-run water utilities are operating. Along with a water district, the LGU provides water through the Taytay, Palawan Water System Management Operating Office. The overlap in the coverage area shows duplication in investments and inefficient use of funds.[8] Table 5 shows the examples of other cities and municipalities with multiple operators.

Table 5. Sample municipalities with more than one water service providers

Municipality	Water district	LGU-run	Others
Urbiztondo, Pangasinan	Urbiztondo Water District	Malayo Urbiztondo Water Utility	None
Alcala, Cagayan	None	Alcala Municipal Water System	Pinopoc, Alcala (BWSA)
Baler, Aurora	Baler Water District	Multiple barangay water systems	Multiple BWSAs
Liliw, Laguna	None	Liliw Waterworks System	Laguna AAA Water Corporation (private, province-wide) and multiple BWSAs

LGU = local government unit; BWSAs = barangay water and sanitation associations
Source: NWRB (2020)

Noncoordination also stresses water resource sustainability. The ability of LGUs to supply municipalities and cities with groundwater or aquifers is already at risk. This has made surface water a more sustainable source of water for domestic use. Most surface water sources like lakes, rivers, or springs are shared by adjacent municipalities or provinces. Municipalities and provinces can synchronize their investments to tap shared water source jointly and benefit from economies of scale. There is currently no concrete venue for such investment coordination and regional planning, specifically for the water sector.

Overlap in regulatory scope

There are two major oversight agencies for water supply provision whose mandates and coverage are discussed below.

1. ***LWUA***. The LWUA "shall primarily be a specialized lending institution for the promotion, development, and financing of local water utilities" (PD 768, Section 22).

   In the implementation of its functions, the LWUA shall:

   a. "prescribe minimum standards and regulations to assure acceptable standards of construction materials and supplies, maintenance, operation, personnel training, accounting, and fiscal practices for local water utilities;

[8] Carlos Santos Jr. (general manager, Santa Maria Water District, Santa Maria, Bulacan), in discussion with the authors, October 19, 2020, via Webex conference call.

b. furnish technical assistance and personnel training programs for local water utilities;
c. monitor and evaluate local water standards; and
d. effect system integration, joint investment and operation, district annexation, and de-annexation whenever economically warranted" (PD 768, Section 22).

The primary activity of the LWUA is to lend to water districts, which influences the nature of their regulatory functions and actions. Sections 59–66 of PD 198 define the powers of the LWUA (Table 6).

Table 6. Powers of the LWUA

Specific powers	Description
General corporate powers	General corporate powers (Section 59).
Borrowing and security	Allowed to borrow funds and pledge all securities, covenants, and obligations of water districts it holds (Section 60).
Loans	Lend to LWDs out of its revolving fund (Section 61).
Regulations	Establish standards and adopt rules and regulations for water districts (Section 62).
Rate review	Review the rates of water districts according to the provisions of PD 198 and the rules promulgated by the LWUA. A rate review shall be conducted by the LWUA after a public hearing is completed (Section 37).
Technical assistance	Provide technical assistance to LWDs (Section 64).
Training and programs	Establish training programs to assist LWDs and their personnel (Section 65).
Other powers	a. Charge LWDs for services it renders to them to the extent that the services are beneficial to LWDs (Section 70). b. Control and supervise over national government releases for the account of LWDs (Section 75).

LWUA = Local Water Utilities Administration; LWDs = local water districts; PD = presidential decree
Source: PD 198

Supervision over rural waterworks and sanitation associations (RWSAs). EO 124, dated January 30, 1987, abolished the Rural Waterworks Development Corporation (RWDC) and transferred its functions to the LWUA. The latter effectively acquired supervision over RWSAs, which are nonstock, nonprofit cooperative associations organized under and registered with the LWUA. Key informant interviews confirmed LWUA's lack of specific technical standards nor water rate-setting regulations for RWSAs. LWUA had not received any application from RWSAs to increase water rates, which emphasizes its ineffective oversight.

Lending function. The LWUA serves as a specialized lending institution to support investments in the water sector. All other powers of supervision are in the context of its lending mandate. Sources of funds are internally generated funds or from the national government through the General Appropriations Act, and foreign funding from loans with development and multilateral agencies. Funds are relent to water districts as loans or grants. Relending rates are reviewed by its board of trustees to reflect current market conditions. All water districts in good standing are eligible to apply for loans from the LWUA.

2. *NWRB*. PD 424, series of 1974, established the National Water Resources Council (NWRC), the NWRB's predecessor. Several EOs have shaped the mandate, scope, and function of the NWRB. It has three primary mandates, including "(1) policy formulation and coordination within the framework of Integrated Water Resources Management, (2) water resource regulation through the issuance of water permits and resolution of water use conflicts, and (3) regulation of WSPs through the issuance of CPCs or Certificate of Public Convenience and Necessity and setting of water tariffs for water utilities". Section 4 of EO 860, series of 2010, excluded LWDs from the NWRB's tariff regulation mandate.

Powers of the NWRB. Following PD 424, Section 2, the original NWRC has the following powers:

a. Regulatory and executory
   - Coordinate and integrate water resources development activities of the country within the context of national plans
   - Determine, adjudicate, and grant water rights
   - Formulate and promulgate:
     - Standards on primary data collection, project investigation, formulation, planning and design, and feasibility evaluation
     - Rules and regulations for optimum utilization of water resources
   - Review and approve water resources development plans and programs
   - Undertake river basin survey, inventory, and appraisal of water and related resources, and develop comprehensive basin-wide plans of storage and control
   - Undertake hydrologic surveys and establish, operate, and maintain observation station networks, and a centralized water resources data center
   - Conduct and promote special studies and research with other government or private agencies

b. Advisory and recommendatory
   - Advise NEDA on water resources development projects and programs
   - Recommend to NEDA the adoption of general policies and guidelines and short or long-range plans and water resources development programs

Resource regulation powers. The Water Code of the Philippines (PD 1067) enacted the establishment of governance over the "ownership, appropriation, utilization, development, and protection of water resources" (PD 1067, Article 2). Article 13 of the Water Code of the Philippines provides that "no person, including government instrumentalities or GOCCS, shall appropriate water without a water right, which shall be evidenced by a document known as a water permit." Water sources owned by the state can be used "for domestic, municipal, irrigation, power generation, fisheries, livestock raising, industrial, recreational, and other purposes" (PD 1067, Article 10).

According to PD 1067, authorization from the NWRB is required for the following acts:

1. Appropriation of water for any purpose through the water permit application (Article 16)
2. Lease, lending, or transfer of water rights (Article 19)
3. Change in the purpose of the appropriation (Article 12)
4. Development of a stream, lake, or spring for recreational purposes (Article 42)
5. Manner, location, depth, and spacing in which borings for subterranean or groundwater may be made (Article 64)
6. Transfer of water from one river basin to another (Article 67)

Utility regulation powers. Pursuant to PD 1206, the NWRB became the successor agency of the Public Services Commission for the issuance of CPCs for WSPs. The NWRB has issued guidelines on its framework for economic regulation (NWRB Memorandum Circular [MC] 2019-001, series of 2019) and grouped water utilities into three categories:

1. Category A – Water utilities operating for profit, such as privately owned or run water utilities.
2. Category B – Government-owned or run water utilities. This category applies only to those that voluntarily opt for the NWRB regulation.
3. Category C – Community-based water utilities, such as BWSAs and RWSAs, among others.

MC 2019-001 allows water utilities under categories B and C to be classified as category A, which can operate at a profit and versus non-profit operations for categories B and C.

A review of the regulations of the LWUA and the NWRB revealed conflicts between the two agencies in terms of technical and economic regulations. Technical regulation refers to the minimum performance standards and specifications that water utilities should attain or maintain. Key performance indicators define good performance and the measures of satisfactory service for the public. Meanwhile, economic regulation refers to water-rate setting, including the necessary procedures, operations review, and business plans that will be the basis of water rates. These findings are summarized in Table 7.

Table 7. Summary of the regulatory involvement of water-related agencies

Water utility	Technical/operations regulation	Economic regulation
Water districts	LWUA Optional: NWRB (category B)	LWUA Optional: NWRB (category B)
Private water utilities with CPCs	NWRB	NWRB
LGU-run utilities	LGU Optional: NWRB (category B)	LGU Optional: NWRB (category B)
Rural waterworks and sanitation associations	NWRB (category C) and LWUA	NWRB (category C) and LWUA (if with loans with LWUA)
Other community-based utilities	NWRB (category C)	
Maynilad Water Services and Manila Water Company	MWSS Regulatory Office	MWSS Regulatory Office

LWUA = Local Water Utilities Administration; CPC = Certificate of Public Convenience; NWRB = National Water Resources Board; LGU = local government unit; MWSS = Metropolitan Waterworks and Sewerage System

Source: Authors' summary based on the guidelines and enabling laws of the LWUA, NWRB, LGUs, and MWSS

MC 2019-001 allowed government-run utilities (water districts, LGUs, and other government entities) to voluntarily subject themselves to the NWRB's economic regulation.

This voluntary option poses the following problems:

1. The LWUA and the NWRB are currently using different technical standards. The MC is unclear whether water districts or the LGUs will be subjected to the NWRB's technical regulations. Economic and technical or operational standards are intertwined and the attainment of technical standards determines the investment priorities of utilities. Thus, disconnecting the two may be problematic.

2. It is likewise unclear if the LWUA and the local legislative councils may legally provide consent to water districts and LGUs to opt-in to the NWRB's economic regulation. There is a conflict in the mandates of the LWUA or LGUs and the NWRB, since each has its own powers, pursuant to respective laws. The LWUA providing any consent may violate PD 198.

Another clear overlap is the regulation of RWSAs. The LWUA claims that it inherited oversight powers over RWSAs when the RWDC was abolished. However, the LWUA has been remiss in its oversight functions over RWSAs. Key informant interviews confirmed that LWUA has no specific technical standards nor water rate-setting regulations for RWSAs. The LWUA has not received any recent applications for water rates increases. A conflict arises since MC 2019-001 includes RWSAs in category C, which is subjected to the LWUA's economic regulation. In MC 008-18, dated April 2, 2018, the LWUA reiterated its directive over RWSAs to submit critical documents in furtherance of the mandate. This is clearly an area of unresolved regulatory overlap.

Non-uniform technical operating standards

Technical and operating standards define the desired performance of a water utility that will direct its investment priorities to overperform these standards. There are no unified minimum technical key performance indicators for water utilities across different implementing agencies (Table 8).

Table 8. Misaligned technical operating standards between the LWUA and the NWRB

Technical standard	LWUA	NWRB
Nonrevenue water	Less than or equal to 30%	Less than or equal to 25%
Collection efficiency	Must be greater than 90%	N/A
Capital expenditure	Actual implementation of scheduled CAPEX	N/A
Reserves	Actual amount of reserves compared with approved budget	N/A
Current ratio	At least 1.50:1	N/A
Net income	Positive net income	N/A
Staff productivity index	Ratio of water district employees to active connections	N/A
Water availability	Percentage of households enjoying 24/7 water service	Greater than or equal to 12 hours per day
Operating ratio	N/A	Less than or equal to 80%
Customer feedback	N/A	Satisfied customers should be greater than 80%
Water pressure	N/A	Gradual increase per plan

LWUA = Local Water Utilities Administration; NWRB = National Water Resources Board; CAPEX = capital expenditure; N/A = not applicable

Source: MC 011-18; MC 2019-001

In addition, the following conflicts arise:

1. The LWUA does not consider customer feedback and water pressure as key performance indicators for water districts. It also allows a higher nonrevenue water threshold (30%) versus the 25-percent requirement of the NWRB.
2. The NWRB technical regulations for water utilities under categories A and B are simplistic and do not cover many of the LWUA metrics, such as collection efficiency, capital expenditures, and staff productivity index. Efficiency metrics are all lumped into the operating ratio metric, which may not be the best way to capture the efficiency of operations.
3. While both the NWRB and the LWUA assert that RWSAs are under their respective regulatory ambits, neither of them has specific technical or operational metrics for RWSAs. Thus, there is no governing standard for community-based or RWSAs even for water services lower than level III.

The comparison does not include LGU-run utilities because they may enact their service standards through their respective local legislative councils. The services standards that LGUs may implement could deviate from that of the LWUA and the NWRB. Monitoring operational efficiency and spending prudence is vital, as relevant cost considerations may influence the pricing decisions of water service providers. For water haulers, such considerations may include Incremental Cost and Opportunity Cost, which may affect the determination of water delivery prices and the recovery of operating expenditures. Thus, technical standards should be more stringent and nationally aligned to ensure fairness and greater transparency in water rate charging.

Ensuring uniform standards will facilitate the allocation of funding to various regions of the country. With a common yardstick and developmental objective, performing and nonperforming water utilities can be identified, and resources can be deployed to areas where they are needed.

RECOMMENDATIONS

Given the current regulatory and implementation framework of the local water service sector, attaining the goal of 100-percent access to potable water by 2030 will be challenging. The inability to assess the impact or success of water service provision efforts in the country has caused inefficient government programs and interventions and failure to address shortcomings in the sector.

Because of the fragmented water sector and the overlapping mandates of oversight agencies, there has been a lack of coordination, which has resulted in uneven and duplicative public sector investments. While various studies recommend reviewing the water sector's regulatory landscape, this study shows how regulatory uncertainty may impact implementation. As such, it recommends the following:

- **Streamline and delineate the regulations for the water sector.** Delineate or consolidate the regulations to ensure uniformity of rules, principles, and standards in governing the sector. Conflicts in the mandates of agencies have caused divergence in rules and applications or implementations of water rates. By streamlining and unifying the regulations, the government can further hone its regulatory knowledge and apply uniform rules nationwide. This may harmonize water rate-setting formulas and ensure that consumers benefit from the same principles of prudence and operating efficiency. In particular, the government needs to reconcile PD 198, RA 7160, and NWRB MC 2019-001 to identify the proper

technical and economic regulators and various economic actors. A quick fix is to amend the MC 2019-001 and clarify overlaps in RWSAs and government-run utilities.

- **Align technical regulations with operating standards.** Harmonizing the technical regulations and operating standards is needed for a unified view of the level of efficiency that consumers nationwide should expect. Uniform key performance indicators will contribute to the alignment in the developmental plans and objectives of WSPs. Moreover, aligned key performance indicators can better guide investments planning nationwide. With uniform objectives, funding allocation can easily be implemented, since it is clear whether an area is strong in one key performance indicator or weak in another, where interventions in funding support can be helpful. A technical working group composed of the LWUA, NWRB, MWSS, and LGUs, among others, may be formed to unify key performance indicators and jointly implement them. Executive actions, such as the issuance of an EO or an administrative order, may harmonize key performance indicators among all entities.
- **Empower a central coordinating body to keep track of the targets, investments, and funding needs regardless of the implementing entity.** It is critical to start tracking performance and investments nationwide. Coordination is necessary to avoid potential duplication of investments in the same city or municipality. However, not all duplications are inefficient. There could be multiple WSPs in a municipality, but if they serve different barangays, then there is no investment duplication. However, this conclusion cannot be confirmed without ample monitoring by a coordinating body.
- **Oversight should be tightened in the post-Mandanas ruling scenario:**
    a. By ensuring that LGUs spend on water supply services sector if national government support programs are discontinued. This requires strengthening investment planning, identifying bottlenecks, and finding solutions to delayed local development fund utilization; and
    b. If the national government maintains a local water supply support program, it should be better targeted.

REFERENCES

Asian Development Bank (ADB). 2013. *Asian water development outlook 2013: Measuring water security in Asia and the Pacific*. Mandaluyong City, Philippines: ADB.

Department of Budget and Management (DBM). Various years. Budget of expenditures and sources of financing. Manila, Philippines: DBM. https://dbm.gov.ph/index.php/dbm-publications/budget-of-expenditures-and-sources-of-financing-besf (accessed on February 3, 2020).

Department of the Interior and Local Government (DILG). Various years. Project expenditure national summary. Shared by the DILG with the research team on August 10, 2020.

Diokno-Sicat, C.J., C. Adaro, R. Maddawin, A.F. Castillo, and M.A. Mariano. 2020. Baseline study on policy and governance gaps for the Local Government Support Fund Assistance to Municipalities (LGSF-AM) Program. PIDS Discussion Paper 2020-03. Quezon City, Philippines: Philippine Institute for Development Studies. https://pidswebs.pids.gov.ph/CDN/PUBLICATIONS/pidsdps2003.pdf (accessed on August 15, 2020).

Executive Order 124. 1987. Reorganizing the Ministry of Public Works and Highways, redefining its powers and functions, and for other purposes. Manila, Philippines: Office of the President of the Republic of the Philippines.

Executive Order 860. 2010. Redefining the composition and powers of the National Water Resources Board. Manila, Philippines: Office of the President of the Republic of the Philippines.

Executive Order 138. 2021. Full devolution of certain functions of the executive branch to local governments, creation of a committee on devolution, and for other purposes. Manila, Philippines: Office of the President of the Republic of the Philippines.

Grigg, N.S. 2011a. *Governance and management for sustainable water systems*. London, UK: IWA Publishing.

———. 2011b. Water governance: From ideals to effective strategies. *Water International* 36(7):799–811.

Hall, R., J. Lizada, M.H. Dayo, C. Abansi, M. David, and A. Rola. 2015. To the last drop: The political economy of Philippine water policy. *Water Policy* 17(5):946–962.

Local Water Utilities Administration (LWUA). 2018. Memorandum Circular 008-18. Submission of registration documents to LWUA. Quezon City, Philippines: LWUA.

———. 2018. Memorandum Circular 011-18. Key performance indicators (KPIs) to monitor water district performance. Quezon City, Philippines: LWUA.

National Anti-Poverty Commission (NAPC). n.d. *Sagana at ligtas na tubig para sa lahat (Salintubig).* https://napc.gov.ph/projects/sagana-ligtas-na-tubig-para-sa-lahat-salintubig (accessed on February 10, 2020).

National Economic and Development Authority (NEDA). 2017. *Philippine Development Plan 2017–2022*. Pasig City, Philippines: NEDA.

———. 2019a. *Philippine Water Supply and Sanitation Master Plan 2019–2030*. Pasig City, Philippines: NEDA.

———. 2019b. *Philippine Water Supply and Sanitation Master Plan 2019–2030. Abridged version*. Pasig City, Philippines: NEDA.

National Water Regulatory Board (NWRB). 2019 Memorandum Circular 2019-001. Economic regulatory framework (light-handed regulation). Quezon City, Philippines: NWRB.

———. 2020. *Listahang Tubig*. Quezon City, Philippines: NWRB. http://listahangtubig.cloudapp.net/ (accessed on June 20, 2020).

Philippine Statistics Authority (PSA). 2012. National Statistical Coordination Board (NSCB) Resolution 9, series of 2012. Approving and adopting the official concepts and definitions for statistical purposes for the environment and natural resources sector - Batch 3 (land/soil and water resources subsectors). Quezon City, Philippines: PSA. https://psa.gov.ph/article/nscb-executive-board-resolution-no-9-2012 (accessed on January 15, 2020).

———. 2016. 2015 Family Income and Expenditure Survey. Quezon City, Philippines: PSA. https://psa.gov.ph/content/statistical-tables-2015-family-income-and-expenditure-survey (accessed on June 21, 2020).

Presidential Decree 1206. 1967. Creating the Department of Energy. Manila, Philippines: Office of the President of the Republic of the Philippines.

Presidential Decree 198. 1973. Provincial water utilities act of 1973. Manila, Philippines: Office of the President of the Republic of the Philippines.

Presidential Decree 424. 1974. Creating a National Water Resources Council, reconstituting its membership, vesting the same with powers to coordinate and integrate water resources development, and providing funds therefor. Manila, Philippines: Office of the President of the Republic of the Philippines.

Presidential Decree 768. 1975. Amending Presidential Decree No. 198 entitled "Declaring a national policy favoring local operation and control of water systems; authorizing the formation of local water districts and providing for the government the administration of such district; chartering a national administration to facilitate improvement of local water facilities; granting said administration such powers as are necessary to optimize public service from water utility operations, and for other purposes". Manila, Philippines: Office of the President of the Republic of the Philippines.

Presidential Decree 1067. 1976. The water code of the Philippines. Manila, Philippines: Office of the President of the Republic of the Philippines.

Republic Act 6957. 1990. An act authorizing the financing, construction, operation and maintenance of infrastructure projects by the private sector, and for other purposes. Manila, Philippines: Congress of the Philippines.

Republic Act 7160. 1991. Local government code of 1991. Manila, Philippines: Congress of the Philippines.

Republic Act 7718. 1994. An act amending certain sections of Republic Act No. 6957, entitled "An act authorizing the financing, construction, operation and maintenance of infrastructure projects by the private sector, and for other purposes". Manila, Philippines: Congress of the Philippines.

Rola, A.C., J.M. Pulhin, G. Tabios III, J. Lizada, and M.H. Dayo. 2015. Challenges of water governance in the Philippines. *Philippine Journal of Science* 144(2):197–208.

Stiglitz, J. and J. Rosengard. 2015. *Economics of the Public Sector*. 4th ed. New York City, NY: WW Norton & Company Inc.

Supreme Court of the Philippines. 2018. Mandanas versus Ochoa. GR No. 199802.73. Manila, Philippines: Supreme Court of the Philippines.

———. 2019. Mandanas versus Ochoa. GR No. 208488. Manila, Philippines: Supreme Court of the Philippines.

World Bank. 2015. Water supply and sanitation in the Philippines: Turning finance into services for the future. https://www.wsp.org/sites/wsp/files/publications/WSP-Philippines-WSS-Turning-Finance-into-Service-for-the-Future.pdf (accessed on April 20, 2020).

Zetland, D. 2014. *Living with water scarcity.* Kindle ed. Amsterdam, Netherlands: Aguanomics Press.

APPENDICES

Appendix A. SALINTUBIG expenditures

Appendix A1. Summary of SALINTUBIG expenditures, 2012–2018

	2012	2013	2014	2015	2016	2017	2018
Total expenditures (in nominal PHP millions)	770	635	495	1,465	1,501	1,324	1,025
Total expenditures (in real [2000=100] PHP millions)	460	371	281	836	842	721	543
As % of GDP	0.01	0.01	0.00	0.01	0.01	0.01	0.01
As % of national government expenditure	0.04	0.03	0.02	0.06	0.06	0.04	0.03
As % of total LGU expenditures	0.19	0.15	0.10	0.26	0.24	0.19	0.13
Percentage change		-17.57%	-22.07%	196.23%	2.42%	-11.77%	-22.58%
Memo items:							
IPIN deflator (2000=100)	167.5	170.92	176.32	175.29	178.19	183.54	188.60
Nominal GDP (in PHP millions)	10,561,089	11,538,410	12,634,187	13,322,041	14,480,349	15,807,596	17,426,202
National government budget (in PHP millions)	1,816,000	2,006,000	2,268,000	2,606,000	3,001,800	3,550,000	3,767,000
National government expenditures (in PHP million)	1,828,981	1,998,376	2,019,062	2,414,641	2,682,815	3,315,325	3,531,765
Total LGU expenditures	415,489	415,489	492,003	569,273	621,020	684,242	766,404

SALINTUBIG = *Sagana at Ligtas na Tubig Para sa Lahat*; PHP = Philippine peso; GDP = gross domestic product; LGU = local government unit; IPIN = implicit price index

Source: Authors' computation using data from the DILG (various years)

Appendix A2. SALINTUBIG expenditures to obligations ratios, 2012–2018

Region	2012	2013	2014	2015	2016	2017	2018
CAR	100	100	100	100	100	91.67	60.87
I	100	100	100	99.92	99.98	97.25	100
II	100	100	100	100	95.00	90.00	65.63
III	100	100	100	100	100	87.28	73.68
IV-A	100	100	100	99.38	96.04	74.62	82.09

Appendix A2. (continuation)

Region	2012	2013	2014	2015	2016	2017	2018
IV-B	100	100	100	100	93.02	85.15	25.61
V	100	98.15	100	99.06	78.94	92.56	71.11
VI	100	99.39	100	97.14	86.38	80.11	63.27
VII	100	97.10	100	100	98.13	100.00	98.52
VIII	100	96.83	90.00	100	95.47	76.81	82.65
IX	100	100	100	100	99.99	92.13	100.00
X	100	98.19	98.67	100	97.21	90.53	40.70
XI	100	100	100	100	96.93	85.46	69.15
XII	100		100	100	100	97.89	100
XIII	100	100	100	100	100	100	98.29
TOTAL	100	99.13	99.57	99.69	92.81	89.05	77.36

Note: DO is disbursement to obligations defined as disbursements divided by obligations showing the amount of public funds actually spent, compared with what was promised through obligations.
SALINTUBIG = *Sagana at Ligtas na Tubig Para sa Lahat;* CAR = Cordillera Administrative Region
Source: Authors' computation using data from the DILG (various years)

Appendix B. BUB/LGSF-ADM/LGSF-AM expenditures

Appendix B1. Summary of BUB/ADM/AM expenditures (disbursements) for water supply systems, 2013-2018

	2013	2014	2015	2016	2017	2018
Total expenditures (in nominal PHP millions)	2,058	2,631	1,851	3,443	1,104	407
Total expenditures (in real [2000=100] PHP millions)	617	1,167	1,501	1,039	1,876	585
As % of GDP	0.01	0.02	0.02	0.01	0.02	0.01
As % of national government expenditure	0.05	0.10	0.11	0.07	0.10	0.03
As % of total LGU expenditures	0.25	0.42	0.46	0.30	0.50	0.14
Percentage changes of BUB/ADM/AM water expenditures		95.26%	27.83%	-29.62%	85.95%	-67.93%
Memo items:						
IPIN deflator (2000=100)	170.92	176.32	175.29	178.19	183.54	188.60
Nominal GDP (in PHP million)	11,538,410	12,634,187	13,322,041	14,480,349	15,807,596	17,426,202

Appendix B1. (continuation)

	2013	2014	2015	2016	2017	2018
National government budget	2,006,000	2,268,000	2,606,000	3,001,800	3,550,000	3,767,000
National government expenditures (in PHP million)	1,998,376	2,019,062	2,414,641	2,682,815	3,315,325	3,531,765
Total LGU expenditures	415,489	492,003	569,273	621,020	684,242	766,404

BUB = bottom-up budgeting; ADM = assistance to disadvantaged municipalities; AM = assistance to municipalities; PHP = Philippine peso; LGU = local government unit; IPIN = implicit price index
Source: Authors' computation using data from the DILG (various years)

Appendix B2. BUB/LGSF-ADM/LGSF-AM expenditure (disbursement) to obligation ratio

Region	2013	2014	2015	2016	2017	2018
CAR	100	100	100	100	100	90
I	100	100	100	100	100	100
II	-	100	100	94	100	97
III	-	100	100	99	100	100
IV-A	100	100	97	99	93	69
IV-B	100	100	99	94	91	61
V	100	99	98	92	94	86
VI	100	97	95	88	90	82
VII	100	100	99	94	96	80
VIII	100	97	94	91	96	87
IX	100	100	100	100	100	100
X	100	99	100	89	96	75
XI	100	99	99	89	100	72
XII	100	96	100	100	99	100
XIII	100	100	100	100	100	94
TOTAL	100	99	99	94	96	84

BUB = bottom-up budgeting; LGSF = local government support fund; ADM = assistance to disadvantaged municipalities; AM = assistance to municipalities
Note: DO is disbursement to obligations defined as disbursements divided by obligations showing the amount of public funds actually spent, compared with what was promised through obligations.
Source: Authors' computation using data from the DILG (various years)

Appendix C. National government budgetary support to LWUA (in PHP millions)

	2010	2011	2012	2013	2014	2015	2016	2017	2018
Current prices	2,702	52,800	320,873	956,137	565,000	1,187,075	1,829,170	2,164,745	394,502
Constant (2000=100)	1,711	32,144	191,566	559,406	320,440	677,206	1,026,528	1,179,440	209,174
Memo items:									
IPIN	157.91	164.26	167.50	170.92	176.32	175.29	178.19	183.54	188.60

LWUA = Local Water Utilities Administration; PHP = Philippine peso; IPIN = implicit price index
Source: Authors' computation using data from the DBM (various years)

Appendix D. Pairwise correlations

Appendix D1. Regional poverty incidence, proportion of households with water service, and SALINTUBIG expenditures, 2012–2015

	Poverty incidence	SALINTUBIG
Poverty incidence	1	
SALINTUBIG	0.4017*	1
	0.0278	

	Proportion of households with water service	SALINTUBIG
Proportion of households with water service	1	
SALINTUBIG	-0.1840*	1
	0.3305	

Note: Small correlation 0.1 < | r | < .3; medium/moderate correlation 0.3 < | r | < .5; large/strong correlation | r | > .5 (Cohen 1988)
SALINTUBIG = Sagana at Ligtas na Tubig Para sa Lahat
Source: Authors' estimates

Appendix D2. Regional poverty incidence, proportion of regional population with water access, and BUB/ADM/AM (water expenditures only), 2012–2015

	Poverty incidence	BUB/ADM/AM (water expenditures only)
Poverty incidence	1	
BUB/ADM/AM (water expenditures only)	0.3932*	1
	0.0316	

	Proportion of households with access to water	BUB/ADM/AM (water expenditures only)
Proportion of households with access to water	1	
BUB/ADM/AM (water expenditures only)	-0.0904	1
	0.6349	

Note: Small correlation 0.1 < | r | < .3; medium/moderate correlation 0.3 < | r | < .5; large/strong correlation | r | > .5 (Cohen 1988)
BUB = bottom-up budgeting; ADM = assistance to disadvantaged municipalities; AM = assistance to municipalities
Source: Authors' estimates