NATIONAL ECONOMIC AND DEVELOPMENT AUTHORITY

Philippine Water Supply and Sanitation Master Plan

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Acronyms

ADB	Asian Development Bank
AIIB	Asian Infrastructure Investment Bank
AIS	Administrative and Institutional System
APIS	Annual Poverty Indicators Survey
ARMM	Autonomous Region of Muslim Mindanao
AWQMF	Area Water Quality Management Fund
BOD	Biochemical Oxygen Demand
BOT	Build-Operate-Transfer
BUB	Bottom-Up Budgeting
BWSA	Barangay Waterworks and Sanitation Associations
CAR	Cordillera Administrative Region
CBO	Community-Based Organization
CCC	Climate Change Commission
CDA	Cooperative Development Authority
CDC	Clark Development Corporation
CESCR	Committee on Economic, Social, and Cultural Rights
CHED	Commission on Higher Education
COA	Commission on Audit
CPC	Certificate of Public Convenience
CPI	Consumer Price Index
DA	Department of Agriculture
DBM	Department of Budget and Management
DBP	Development Bank of the Philippines
DED	Detailed Engineering Design
DENR	Department of Environment and Natural Resources
DepEd	Department of Education
DHSUD	Department of Human Settlements and Urban Development
DILG	Department of the Interior and Local Government
DMA	District Metered Area
DOE	Department of Energy
DOF	Department of Finance
DOH	Department of Health
DOST	Department of Science and Technology
DOT	Department of Tourism
DPWH	Department of Public Works and Highways
DSWD	Department of Social Welfare and Development
DTI	Department of Trade and Industry
DWR	Department of Water Resources
EIA	Environmental Impact Assessment
EMB	Environmental Management Bureau
ENSO	El Niño Southern Oscillation
EO	Executive Order
EOHO	Environmental and Occupation Health Office
ESC	Environmental Sanitation Clearance
FAO	Food and Agriculture Organization
FIES	Family Income and Expenditure Survey
FMB	Forest Management Bureau
FS	Feasibility Study

GFI	Government Financial Institution
GOCC	Government-Owned and Controlled Corporation
HB	House Bill
HLURB	Housing and Land Use Regulatory Board * (reconstituted to HSAC and DHSUD)
HSAC	Human Settlements Adjudication Commission
HUC	Highly Urbanized City
HUDCC	Housing and Urban Development Coordinating Council* (reconstituted to DHSUD)
IA	Implementing Agency
IEC	Information, Education, and Communication
INFRACOM	NEDA Board Committee on Infrastructure
INFRACOM - SCWR	NEDA Board Committee on Infrastructure — Sub-Committee on Water Resources
IRA	Internal Revenue Allotment
IRR	Implementing Rules and Regulations
iWASH	Integrated Safe Water, Sanitation and Hygiene
IWRM	Integrated Water Resources Management
JICA	Japan International Cooperation Agency
JV	Joint Venture
KPI	Key Performance Indicator
KRA	Key Reform Agenda
LBP	Land Bank of the Philippines
LGC	Local Government Code
LCP	League of Cities of the Philippines
LGU	Local Government Unit
LGSF - AM	Local Government Support Fund — Assistance to the Municipalities
LLDA	Laguna Lake Development Authority
LMP	League of Municipalities of the Philippines
LPP	League of Provinces of the Philippines
LSSP	Local Sustainable Sanitation Plan
LWD - MaCRO	Local Water District Manual on Categorization, Recategorization and Other Related Matters
LWUA	Local Water Utilities Administration
M&E	Monitoring and Evaluation
MDFO	Municipal Development Fund Office
MDG	Millennium Development Goals
MFI	Microfinance Institution
MIS	Management Information System
MMDA	Metro Manila Development Authority
MOA	Memorandum of Agreement
MWPV	Manila Water Philippine Ventures, Inc.
MWSS	Metropolitan Waterworks and Sewerage System
NAPC	National Anti-Poverty Commission
NAWASA	National Waterworks and Sewerage System Authority
NBC	National Building Code
NCR	National Capital Region
NDHS	National Demographic and Health Survey
NEDA	National Economic and Development Authority
NGA	National Government Agency
NGO	Non-Governmental Organization
NHA	National Housing Authority

NIA	National Irrigation Administration
NPC	National Power Cooperation
NRS	Natural Resources System
NRW	Non-Revenue Water
NSSMP	National Sewerage and Septage Management Program
NWMC	National Water Management Council
NWQMF	National Water Quality Management Fund
NWRB	National Water Resources Board
O&M	Operation and Maintenance
OBA	Output-Based Aid
OCD	Office of Civil Defense
ODA	Official Development Assistance
OGCC	Office of the Government Corporate Counsel
OP	Office of the President
OPDS	Office of Project Development Services
PAGASA	Philippine Atmospheric, Geophysical and Astronomical Services Administration
PAPs	Programs, Activities, and Projects
PAWD	Philippine Association of Water Districts
PD	Presidential Decree
PDP	Philippine Development Plan
PDRS	Project Development and Other Related Studies
PEZA	Philippine Economic Zone Authority
PFI	Private Financial Institution
PHO	Provincial Health Office
PIP	Public Investment Program
PMO	Project Management Office
PNSDW	Philippine National Standards for Drinking Water
PPP	Public - Private Partnership
PSA	Philippine Statistics Authority
PSC	Project Steering Committee
PSSR	Philippine Sustainable Sanitation Roadmap
PWSSIS	Philippine Water Supply and Sanitation Information System
PWSSMP	Philippine Water Supply and Sanitation Master Plan
PWSSR	Philippine Water Supply Sector Roadmap
RA	Republic Act
RBCO	River Basin Control Office
RBO	River Basin Organization
RDC	Regional Development Council
RO	Regulatory Office
ROI	Return on Investment
RORB	Return on Rate Base
RWH	Rainwater Harvesters
RWSA	Rural Waterworks and Sanitation Association
SALINTUBIG	Sagana at Ligtas na Tubig Para sa Lahat
SB	Sangguniang Bayan
SBMA	Subic Bay Metropolitan Authority
SDG	Sustainable Development Goal
SES	Socioeconomic System
TIEZA	Tourism Infrastructure and Enterprise Zone Authority
TOR	Terms of Reference
TWG	Technical Working Group
TWSIP	Tourism Water Supply Infrastructure Program
ULAP	Union of Local Authorities of the Philippines
UN	United Nations
UNICEF	United Nations Children's Fund
URAF	Unified Resource Allocation Framework

USAID	United States Agency for International Development
VGF	Viability Gap Funding
WDM	Water Demand Management
WRC	Water Regulatory Commission
WRR	Water Resources Region
WSP	Water Service Provider
WSS	Water Supply and Sanitation
WSSPMO	Water Supply and Sanitation Project Management Office

Currency Equivalents, Units, and Measures

%	percent
CMD	cubic meters per day
km	kilometer
km²/sq. km.	square kilometer
km³	cubic kilometer
L/s/ha	liters per second per hectare
lpcd	liters per capita per day
lps	liters per second
m	meter
m³	cubic meter
m^3/d/ha	cubic meters per day per hectare
m^3/mo	cubic meters per month
MCM/ year	million cubic meters per year
mg/L	milligrams per liter
mm	millimeter
PHP	Philippine Peso
PHP/m³	Philippine Peso per cubic meter
psi	pounds per square inch
T	ton

Part of the distribution line of the Water Supply System of the Municipality of Dalaguete, Cebu

Executive Summary

The Philippine Water Supply and Sanitation Master Plan (PWSSMP) serves as the national action plan to achieve universal access to safe, sufficient, affordable, and sustainable water supply, hygiene, and sanitation by 2030. Linked to the national water supply and sanitation (WSS) targets, the PWSSMP is grounded on the realities of every region, with insights from over 1,000 representatives across the country.

The PWSSMP defines the activities, responsible agencies, and budget necessary to support the WSS sector in addressing the needs of the country. The proposed policies as well as economic, environmental, and engineering solutions have all factored in different levels of development to match the specific realities and requirements on the ground. These solutions also recognize that situations, conditions, and challenges vary from one community to another.

Sector Overview

The gap between available water supply and demand continues to widen in the country. Some areas are already experiencing water stress and water scarcity. The water crisis is projected to worsen by 2040 if the sector remains business as usual.

About 12.40 million people are limited to getting water from unsafe sources. Some areas do not have water service providers (WSPs). Most WSPs are not financially and technically capable of delivering the required services to a growing population, let alone expanding their coverage. In addition, only 515 or 68.9 percent of the country's 748 water districts (WDs) are operational at varying levels of efficiency and coverage.

Because of inadequate improved sanitation facilities, more than four million people are constrained to practice open defecation. An additional two million are limited to using unprotected pit latrines or buckets. These conditions expose them to higher risks of contracting foodborne and waterborne diseases. These risks result in high incidences of water-related diseases, such as typhoid and acute bloody diarrhea. In addition, these illnesses have economic repercussions on our people and the country. Besides degrading the quality of life in affected localities, unhygienic circumstances also spawn poor living and working environments that exert downward pressure on economic productivity.

Climate change aggravates the sector's challenges, such as higher water demand with increasing global temperatures, rainfall variability, sea level rise, and extreme weather events, leaving the country more vulnerable to longer droughts and floods. WSS infrastructure, especially in coastal communities, is extremely susceptible to the disruptive and destructive impacts of these climate hazards.

The WSS sector remains fragmented, and the efforts of many government agencies remain uncoordinated. The lack of oversight makes the programs of the sector prone to exploitation from political factions at the expense of long-term goals and the communities' welfare.

The need for a unifying apex body for the water sector and the enforcement of its reforms are both urgent and imperative.

Vision and Development Outcomes

Every Filipino must have access to a sustainable and affordable safe water supply as well as adequate safely managed sanitation services.

With only 87.7 percent of the population having access to safe water and 73.8 percent to basic sanitation as of 2015, achieving the sectoral goals of 95.0 percent access to safe water and 97.0 percent access to basic sanitation by 2022, and universal access to WSS services by 2030, is a challenge. The national standards set for water quality, availability, and pressure must be met.

WSS providers must focus on customer-oriented business and financial models to sustain their operations. Local government units (LGUs) can enhance the well-being of their constituents with appropriate, reliable, and efficient WSS services.

Open defecation must be eliminated by 2022. Sewerage and septage management services

must be available, starting with highly urbanized cities (HUCs).

Furthermore, developing reliable WSS information systems supports the initiative to unite the sector.

Priority Reforms and Investment Program

The PDP 2017–2022 identifies the creation of an apex body as key to institutionalizing reform. The PWSSMP introduces the eight key reform agenda (KRA), each designed as a cluster-type solution to complement infrastructure investments.

The eight KRA focuses on the following:

- Establishing effective WSS sector institutions;
- Strengthening the regulatory environment;
- Creating and ensuring effective WSS services;
- Balancing water supply and demand;
- Building climate resiliency;
- Enabling access to funding and financing;
- Managing data and information; and
- Driving research and development.

The implementation of the reform programs and activities in the areas mentioned above will create the enabling environment that the sector needs to achieve its target goals. The said implementation will spur infrastructure development in the water sector through interventions backed by robust investments, which will benefit households that do not have access to safe water and improved sanitation.

Investment Program and Financing Plan

The total budget required to achieve WSS universal access is estimated at PHP 1.07 trillion over 11 years (2020–2030). Around PHP 0.73 trillion is required to achieve the PDP targets. Another PHP 0.34 trillion is needed to achieve universal access by 2030. These figures also include non-physical investments amounting to PHP 1.13 billion that would cover the implementation of the PWSSMP reform programs.

Implementation, Monitoring, and Evaluation Arrangements

The execution of the PWSSMP includes four phases. Phase 1 (2019), or the pre-investment phase, includes the approval and adoption of the PWSSMP and Investment Program, which will not require any investment costs. The Investment Program covers the projects in Phase 2 (2020 to 2023) and Phase 3 (2024 to 2030). Phase 4 (beyond 2030) will cover the remaining projects and activities that may be implemented beyond 2030 up to the culmination of AmBisyon Natin 2040. Implementing these projects require commitment and collaboration among agencies in the WSS sector, with a strong champion being key to coordinating all efforts. While the envisioned apex body is being considered, a project management office (PMO) can assume this role in the interim.

The Philippine WSS Information System (PWSSIS) and regional offices will monitor the progress of the infrastructure projects, while the National Economic and Development Authority (NEDA) and PMO will monitor the progress of the KRA.

Table of Contents

List of Tables

List of Figures

1 Introduction

1.1 Background

"The human right to water is indispensable for leading a life in human dignity. It is a prerequisite for the realization of other human rights."[1]

The **Philippine Water Supply and Sanitation Master Plan** (PWSSMP) is a national action plan to achieve universal access to WSS services by 2030.

The PWSSMP sets the direction towards achieving the water supply and sanitation (WSS)-related targets stipulated in the Clean Water Act of 2004, Philippine Development Plan (PDP) 2017-2022, and the United Nations (UN) Sustainable Development Goals (SDG). Figure 1 presents the sector targets and their prescribed period for target completion.

In setting the direction to achieving the WSS targets, the PWSSMP:

- Proposes strategies and policy reforms based on current and potential issues (see Chapter 4);
- Identifies priority short-, medium-, and long-term programs and projects (see Chapter 5);
- Combines the investment for the Philippine Water Supply Sector Roadmap (PWSSR) and the Philippine Sustainable Sanitation Roadmap (PSSR) into one comprehensive plan (see Chapter 5); and
- Formulates a monitoring and evaluation (M&E) system (see Chapter 6).

In addition to this document, the PWSSMP includes the following:

- Seventeen regional roadmaps: region-specific data, targets, and proposed projects;
- A PWSSMP data book: maps showing the existing major WSS infrastructure; and
- A WSS database management system (www.pwssmp.com/login).

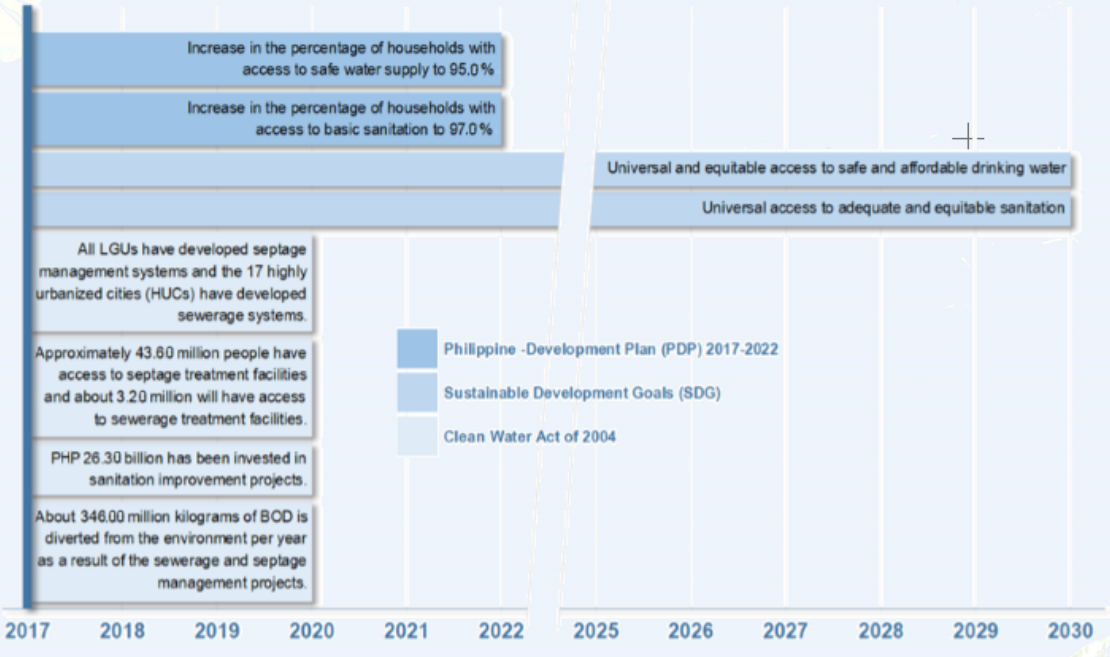
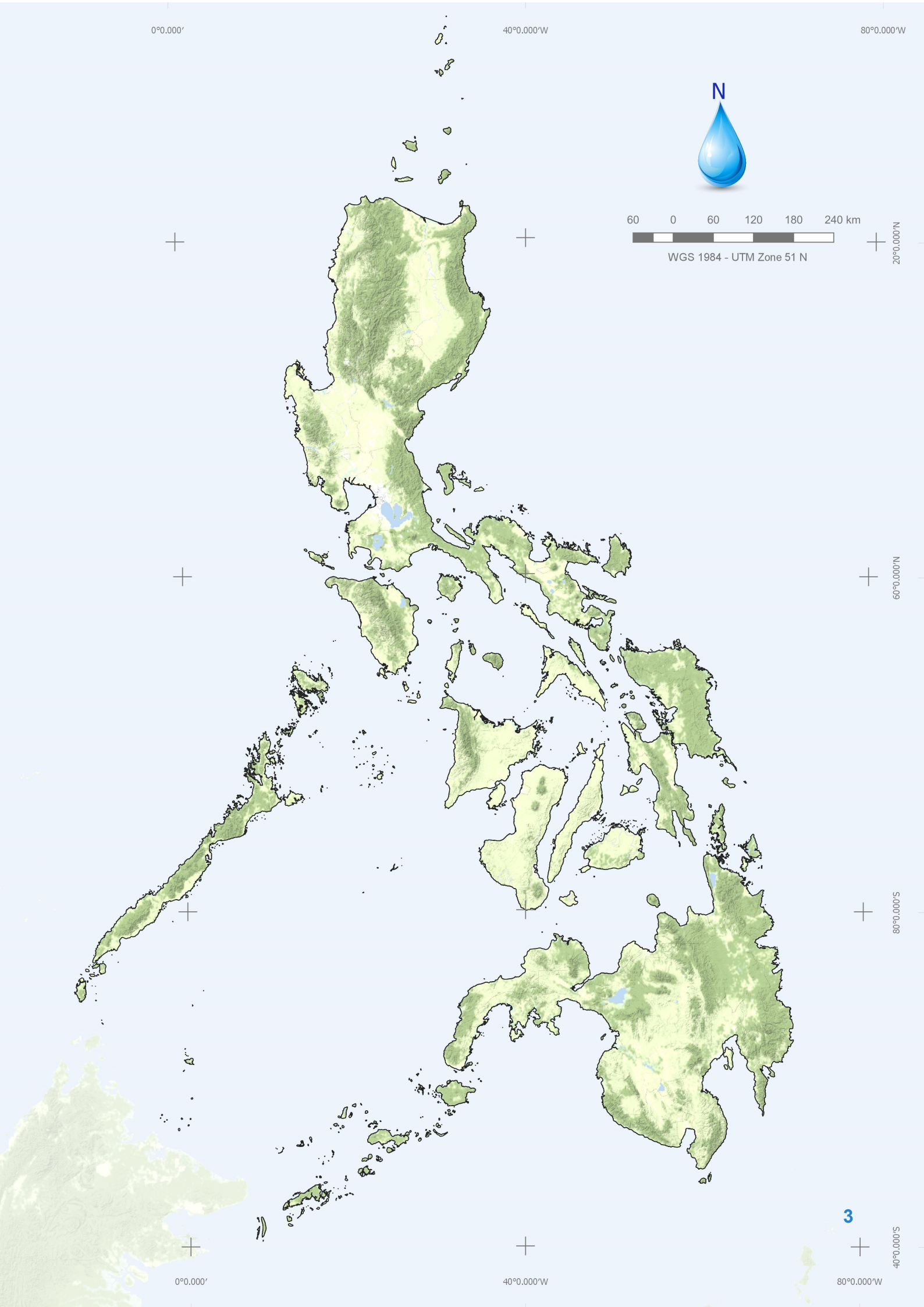


Figure 1: WSS Targets for 2020, 2022, and 2030

[1] *General Comment No. 15 on the Right to Water, 2002, United Nations Committee on Economic, Social, and Cultural Rights (UN CESCR)*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1.2 Strategy

1.1.1 Overall Strategy

The overall strategy of the PWSSMP is to establish a **living** plan that is **comprehensive**, **participatory**, and **operational**.

- **Living.** The PWSSMP has been developed with short-, medium-, and long-term initiatives in mind. The plan includes an M&E system to check the progress in achieving WSS targets as well as to effectively improve in accomplishing planned objectives.
- **Comprehensive.** The PWSSMP integrates all WSS-related initiatives, plans, programs, and projects with short-, medium- and long-term investments.
- **Participatory.** The PWSSMP involves various stakeholders such that responsibilities for implementation and completion of targets are shared across all concerned agencies, local government units (LGUs), organizations, and institutions.
- **Operational.** The PWSSMP is practical. It defines clear targets and reform agenda using existing policies and laws while also proposing solutions in achieving WSS targets.

1.1.2 Scope, Limitations, and Assumptions

The following guidelines have been used in developing the PWSSMP:

Scope and Limitations

- Three potential water sources are considered: surface water, groundwater, and rainwater. However, the excessive use of groundwater (e.g., overextraction) is discouraged to avoid any further intrusion of saltwater into groundwater reserves and groundwater-related land subsidence.
- Despite the abundance of surface water and groundwater, the country's topology makes water resources unevenly distributed and, in some cases, not easily accessible. Rainwater can be optimized in such areas.
- Open defecation and unimproved sanitation facilities continue to contaminate surface water, groundwater, and coastal water. There is no data on the extent of contamination, but statistics reveal the high incidence of waterborne diseases in areas where open defecation and unimproved sanitation facilities are prevalent.
- Climate change and natural hazards (e.g., erosion and flooding) often damage WSS infrastructure, thus threatening the supply of clean and safe water.
- A strong institutional setup is an overarching prerequisite to setting the country's fragmented WSS sector in the right direction.
- The PWSSMP maximizes existing available data and recommends measures towards improving the availability and management of quality and timely data on the WSS sector.

Assumptions

- Service levels of water supply are classified based on how water supply is accessed by households (e.g., from source, communal faucets, or private faucets). However, it does not define nor guarantee the accessibility, quality, quantity, and reliability of water supply.
- Septage and sewage treatment facilities, especially in highly urbanized cities (HUCs), are preferred to safely manage excreta and wastewater. Basic sanitation (e.g., toilets with septic tanks) in rural areas will be prioritized as an initial step towards improving sanitation.
- WSS infrastructure investments that can contribute to achieving sector targets were determined with LGU representatives during the regional consultation workshops. Where gaps remain, required cost estimates for infrastructure development will be derived using unit costs per household. These investments include new or expansion of infrastructure to bridge these gaps, build water and sanitation infrastructure and upgrade existing systems and facilities.

1.3 Principles

Access to water and sanitation is a human right.

The PWSSMP affirms the UN declaration of the human right to water. In addition, the Philippine Constitution emphasizes that "the State values the dignity of every human person and guarantees full respect for human rights."[2] The three main actors in the human rights-based approach are the following:

- LGUs and water districts (WDs) as duty bearers (or as water service providers [WSPs] or regulators): Create conditions for the realization of all human rights for all, especially the most vulnerable, by providing goods, services, institutions and resources based on human rights standards, norms, and principles;
- Water users as claimholders: Exercise rights responsibly and claim entitlements to goods, services, institutions, and resources necessary for quality of life consistent with humanity and dignity; and
- Economic, social and political interest groups or power blocs as other actors: Influence claimholders and duty bearers.

The following shall guide the WSPs' operation and management:

1. The WSP operates in a transparent and accountable way, such that there are clearly defined systems and procedures covering all aspects of operations, including the accountabilities of each officer and staff. Management reports on the performance of the water utility shall be submitted and made public. **(transparency and accountability)**
2. The WSP shall conduct its operations in accordance with parameters of service delivery that were previously discussed and agreed upon by the WSP with the claimholder. These parameters must also be contained in a Localized Customer Service Code. **(participation, rule of law, and empowerment)**
3. The claimholder, as a consumer, participates actively in the operation of the water utility by providing timely feedback on its performance and by supporting its programs and activities. **(participation, empowerment, non-discrimination)**
4. The WSP is held accountable by the duty bearer (LGU) by complying with the service obligations through a system of regular monitoring and review. **(accountability, rule of law)**
5. The WSP's goal is to provide sustainable water and sanitation services in the most efficient and economical way. This is to ensure that the normative content of the right to water is being met. The WSP should also be managed as an economic enterprise without prejudice to the aforementioned human right principles, to continually protect the right to water and to assure sustainable operations. Lastly, the WSP must be financially viable, so that it will have enough funds to maintain the water system and expand its coverage to serve more people. **(efficiency and non-discrimination)**

The WSS sector must follow the Integrated Water Resources Management (IWRM) principle.

The PWSSMP uses the IWRM principle towards a comprehensive and integrated approach in describing the sector and addressing the gaps towards ultimately achieving the national targets and commitments. As such, the following interlinked systems have been considered:

- **Natural Resources System (NRS)** which is governed by the climatic and physical conditions of the Philippines affecting its water resources. The NRS also considers the country's water resources regions (WRR);
- **Socioeconomic System (SES)** which is defined by the demographic, social, and economic conditions that determine the demand for WSS; and
- **Administrative and Institutional Systems (AIS)** which are formed and bound by the constitutional, legal, and political systems governing WSS.

The interface and interaction of the three systems that define the multifaceted nature of the WSS sector have been considered:

- **Use of and impact on water:** Reflected by balancing the supply (NRS) and demand (SES) as well as the impact of the use and improper management of wastewater;

[2] *Article 2, Section 11 of the 1987 Philippine Constitution*

- **WSS infrastructure:** Reflected by the responses of the administrative and institutional systems to properly and sustainably address WSS sector gaps; and
- **Policies, Regulations, and Management:** Established and promulgated by administrative and institutional systems to promote the sustainable use of limited water resources

WSS Framework

The WSS Sector Assessment was undertaken and validated at the regional consultation workshops which led to the development of the PWSSMP Framework (as shown in Figure 2).

To achieve the WSS national targets and commitments, the vision statement underscores sustainable and affordable safe water supply as well as adequate safely managed sanitation services for all.

The objective statements of each system and interface relative to IWRM principles are presented in Table 1.

Table 1: IWRM of the WSS Sector

Components of the WSS Sector	Objective Statements
Natural Resources System	Efficient management of finite water resources and water ecosystems
Socioeconomic System	Promoting socioeconomic growth through WSS
Administrative and Institutional Systems	Enabling administrative and institutional arrangements
Use of and Impact on Water	Responsible use and balanced demand and supply
WSS Infrastructure	Sufficient, responsive, and sustainable WSS infrastructure and services
Policies, Regulation, and Management	Setting WSS-related policies, regulations, and management in place

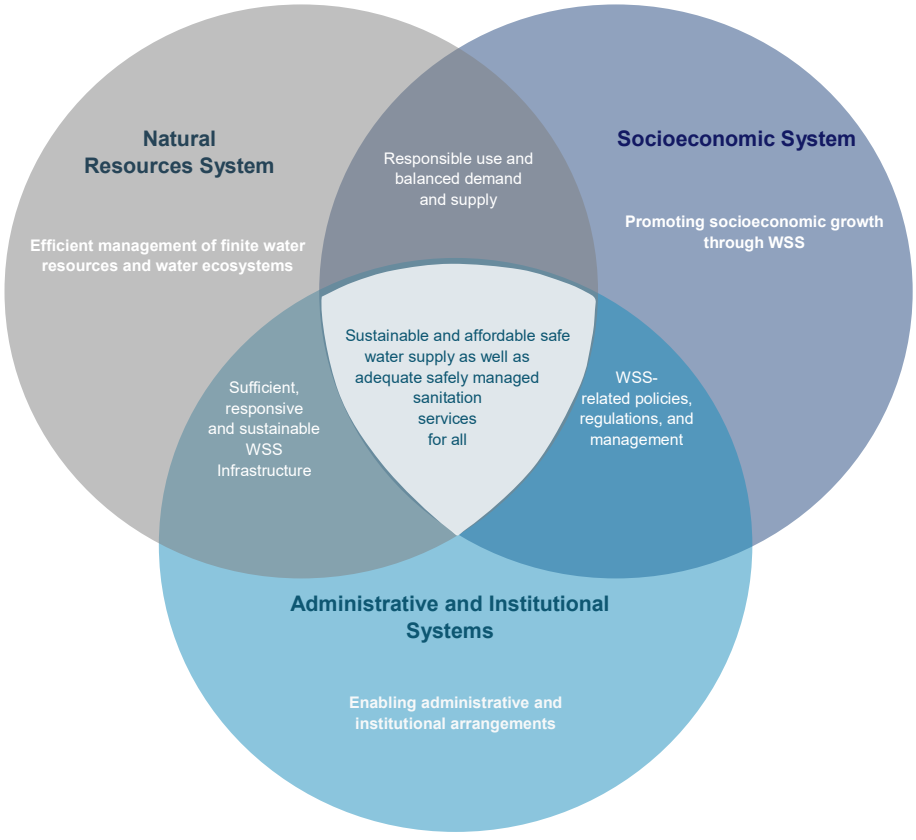


Figure 2: IWRM Principles Adopted in the PWSSMP Framework

1.4 Program Logic Model

Program Logic Model

The Program Logic Model (see Figure 3) sets the direction towards achieving its sectoral objectives by addressing the issues and challenges of each component of the WSS sector, ultimately contributing to AmBisyon Natin 2040.

Figure 3: Program Logic Model

2 Sector Overview

2.1 Background

The Philippine water sector has a myriad of challenges to overcome before it can fulfill its obligation to assure every Filipino of adequate and affordable WSS services.

As shown by official government data below, the sector is still a long way from achieving the level of development and efficiency necessary to bridge the existing gaps and address weaknesses within the provision of WSS services.

The following facts, as of 2015, are as revealing as they are instructive:

- Despite the country's abundant water resources, it has experienced water stress with overall water availability per capita per year of 1,446 cubic meters;[3]
- Approximately 87.7 percent of the national population have access to safe water supply, while 12.3 percent (12.40 million people do not;
- Less than 50.0 percent of the country's total number of households have piped water in their premises; with some still getting unsafe water from the tap;
- Approximately 332 municipalities are considered waterless, which means more than half of their residents do not have access to safe water;
- Approximately 73.8 percent of households have access to on-site or off -site treatment facilities; and
- More than four million people do not have access to toilet facilities and are constrained to resort to open defecation.

A realistic estimate of the currently available freshwater that can serve the growing population cannot be determined until an updated comprehensive assessment and inventory of the country's water resources is conducted.

Furthermore, water supply is unevenly distributed across the archipelago on account of rainfall variability, size, and features of each island. Available supply cannot cope with the demand for clean water of the country's rapidly increasing population, migration, and economic growth.

In addition to the challenge of providing safe and adequate water supply, surface water and groundwater in some areas are contaminated because of open defecation and improper management and disposal of human excreta and blackwater.

Weak or inadequate operation and maintenance (O&M) practices also expose piped systems to contamination through illegal tapping and pipe leaks. Unhealthy sanitation and hygiene practices expose communities to waterborne diseases.

The Philippine WSS sector is fragmented, owing mainly to the weak cooperation among different agencies and LGUs in regard to WSS programs, activities, and projects (PAPs). Investments in infrastructure and capacity building have not been comprehensively planned and coordinated.

The National Economic and Development Authority (NEDA) is creating a unifying framework for planning, implementation, and funding in the WSS sector.

[3] *United Nations Water considers an area is experiencing water stress when annual water supplies drop below 1,700 m^3 per person. The values for the water availability per capita per year cover domestic water supply and water uses for other sectors (e.g., agricultural, industrial, commercial, power).*

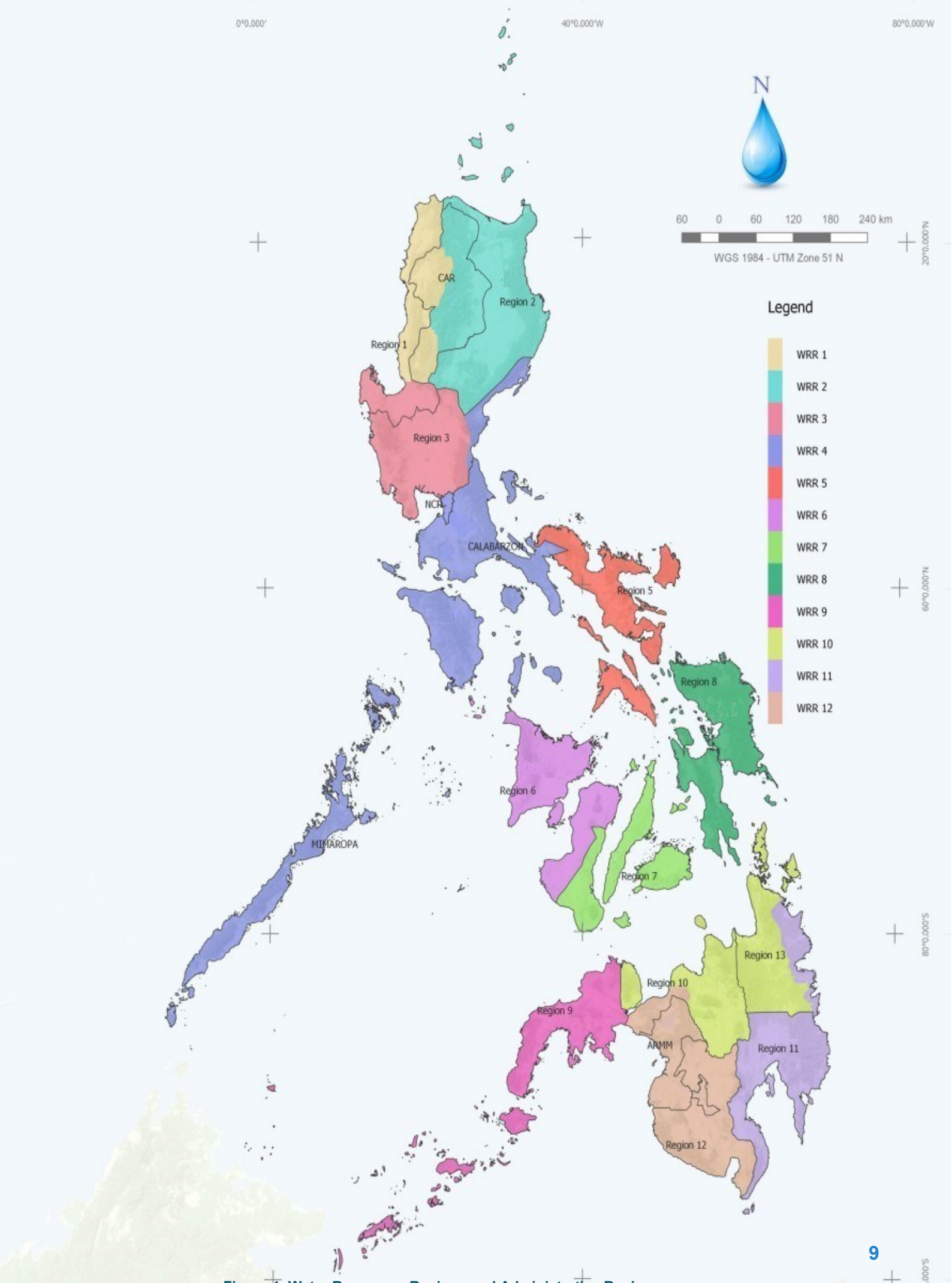


Figure 4: Water Resources Regions and Administrative Regions

2.2 Water Resources

2.2.1 Water Resources Regions

The country is divided into 12 WRR (see Figure 4) based on similarities in climate and physiographic features. These regions are as follows:

- Ilocos (WRR 1)
- Cagayan Valley (WRR 2)
- Central Luzon (WRR 3)
- Southern Tagalog (WRR 4)
- Bicol (WRR 5)
- Western Visayas (WRR 6)
- Central Visayas (WRR 7)
- Eastern Visayas (WRR 8)
- Southwestern Mindanao (WRR 9)
- Northern Mindanao (WRR 10)
- Southeastern Mindanao (WRR 11)
- Southern Mindanao (WRR 12)

2.2.2 Climate and Rainfall

The climate in the Philippines is tropical and monsoonal with an average temperature of 27°C throughout the year. The humidity is relatively high and is generally above 70.0 percent everywhere all year nationwide.

The country's climate is classified into four types[4] (see Figure 5), which are based on rainfall variability, the influence of the country's topography, and air stream direction. The four types are enumerated below:

- Type I – Two pronounced seasons: dry from November to April, and wet the rest of the year;
- Type II – No dry season with very pronounced maximum rainfall from November to April and wet the rest of the year;
- Type III – Seasons not very pronounced: relatively dry from November to April and wet the rest of the year; and
- Type IV – Rainfall more or less evenly distributed throughout the year.

Rainfall in the country ranges from 1,000 to 4,000 mm per year with an average of 2,400 mm. Of this number, 1,000 to 2,000 mm are collected as runoff by more than 421 principal river basins, 59 natural lakes, and numerous small streams. (Figure 6 shows the average annual rainfall the country received in 2015.)

The country experiences climate variability called El Niño and La Niña. El Niño is the warm phase of the El Niño Southern Oscillation (ENSO), and La Niña is its cool phase. El Niño lasts from eight to twelve months, occurs every two to seven years, and has been observed to be strongest every 10 to 15 years. La Niña lasts for one to three years and occurs every three to four years.

[4] *per the Philippine Atmospheric, Geophysical, and Astronomical Services Administration (PAGASA)*

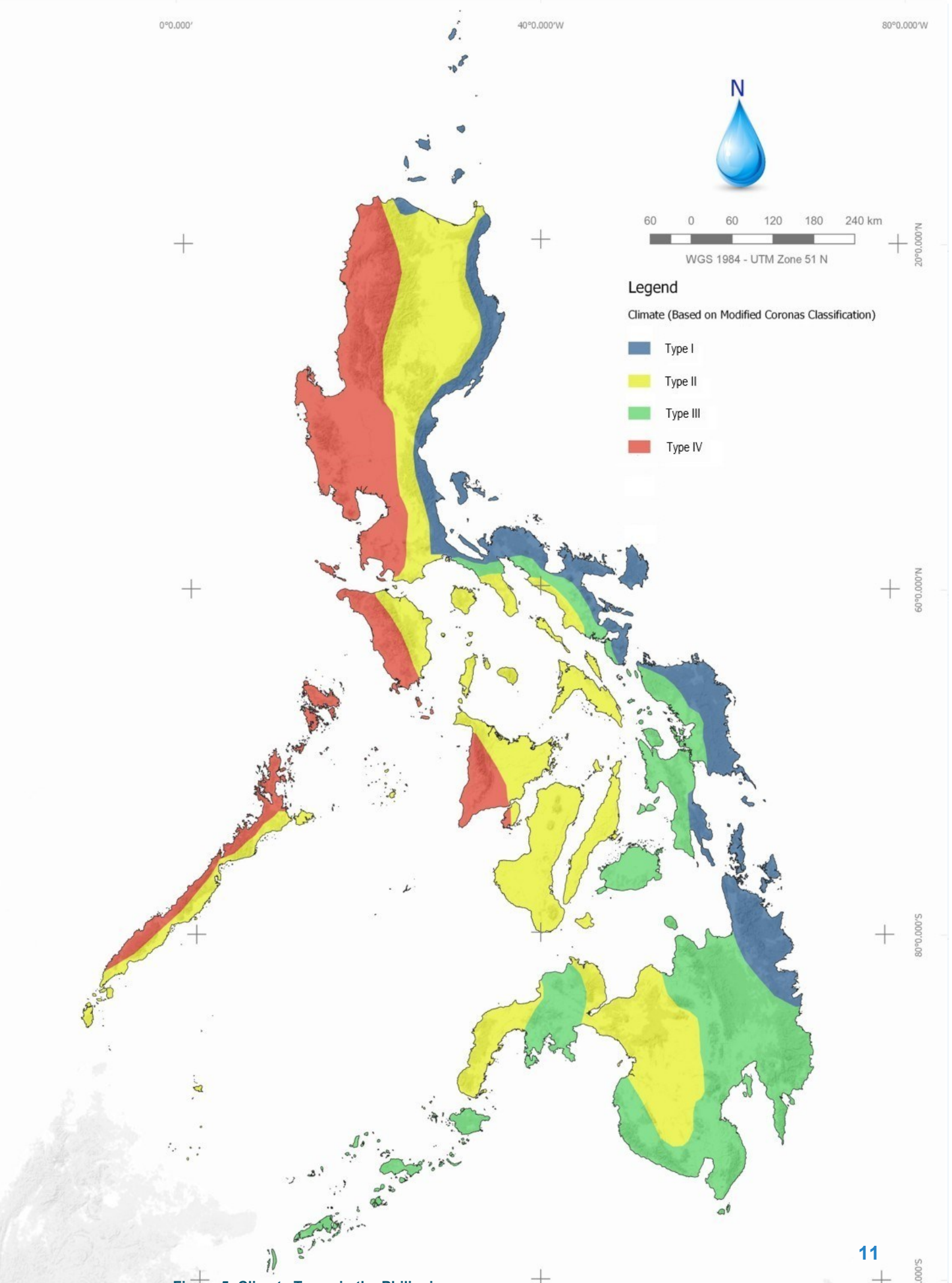


Figure 5: Climate Types in the Philippines

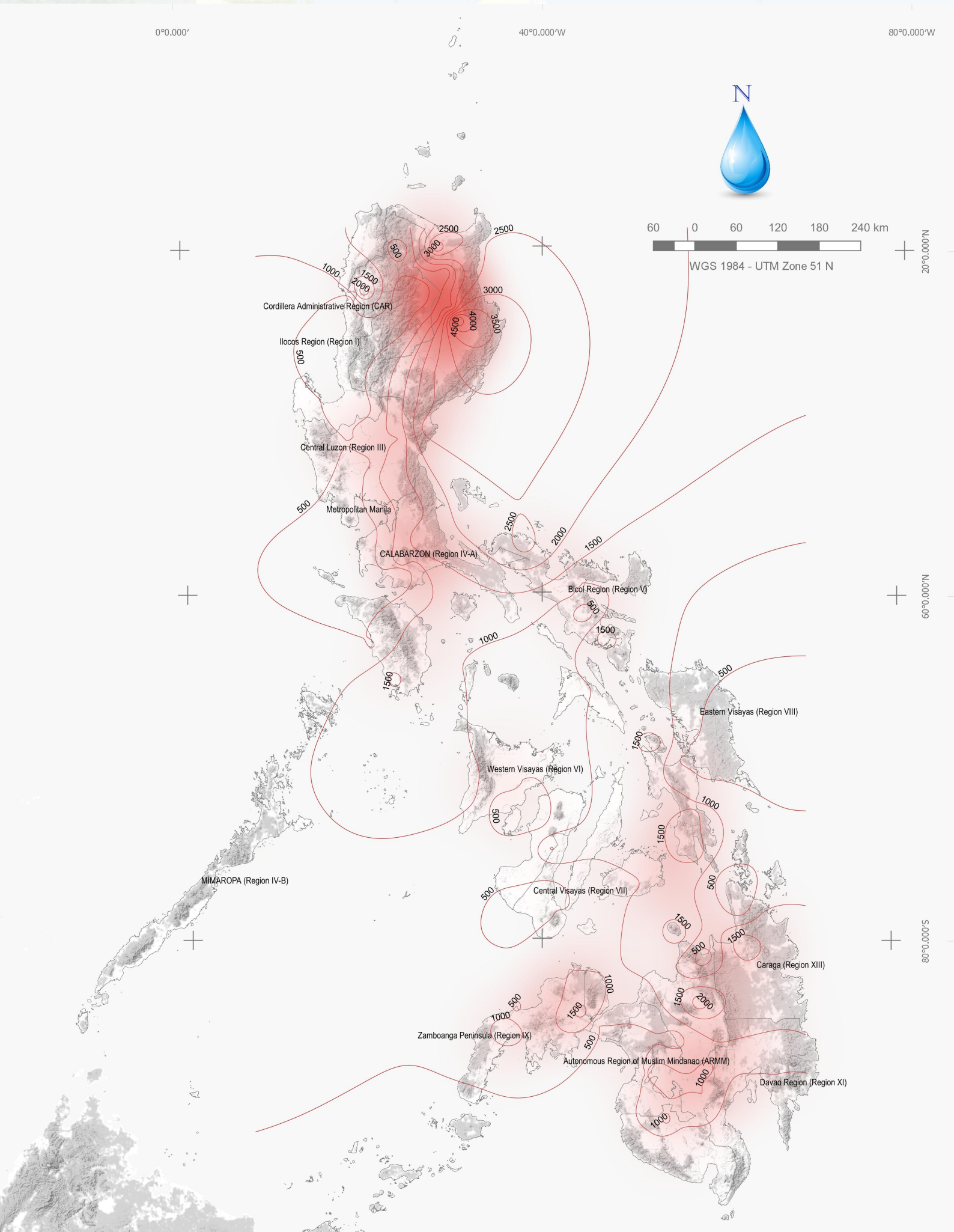


Figure 6: Average Rainfall in 2015 (in mm)

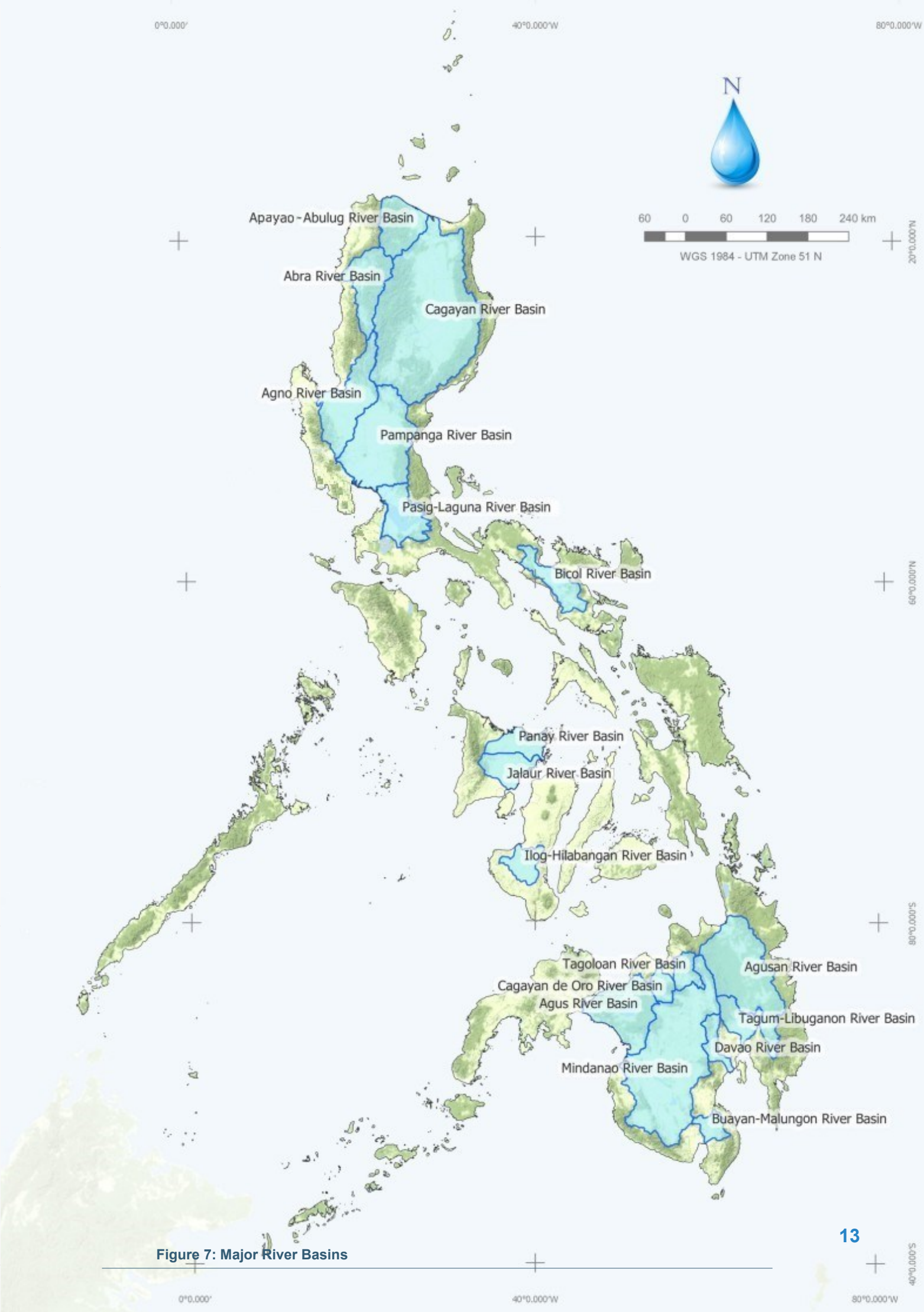


Figure 7: Major River Basins

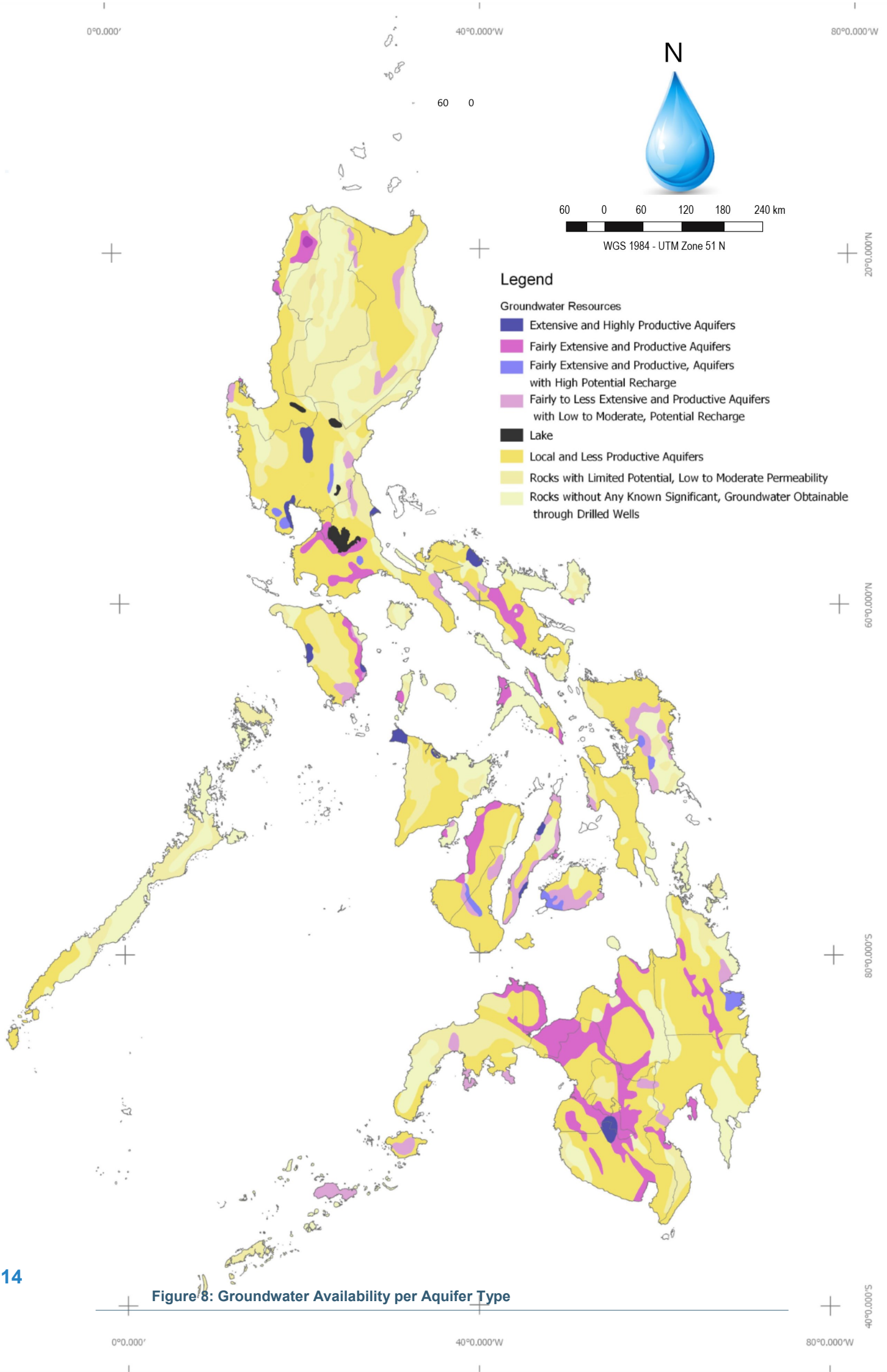


Figure 8: Groundwater Availability per Aquifer Type

2.2.3 Surface Water

The country's surface water potential is approximately 125,790 million cubic meters (MCM) per year considering 80.0 percent dependability. Surface water sources include approximately 421 river basins, 18 of which have a drainage area of more than 1,000 square kilometers (km^2) and are considered major basins.

Eight river basins are located in Mindanao, seven in Luzon, two in Panay and one in Negros island (see Figure 7). While the smallest river basins are only less than 50 km^2, five principal river basins cover more than 5,000 km^2 namely the Cagayan, Mindanao, Agusan, Pampanga, and Agno River Basins.

Rivers have been a valuable and primary source of water for irrigation. Rivers can also be a more viable and sustainable source for water supply. Water from rivers can supplement supply in urban areas where water demand continues to increase as groundwater may no longer suffice.

Other sources of surface water include 59 natural lakes and more than 100,000 hectares (ha) of freshwater swamps. Small mountain streams, which can swell up to three times their average size during rainy months, are not included.

2.2.4 Groundwater

Groundwater resources cover approximately 50,000 km^2. Major areas are in Cagayan (10,000 km^2), Central Luzon (9,000 km^2), Agusan (8,500 km^2), and Cotabato (6,000 km^2).

Groundwater recharge is approximately 20,200 MCM per year. Groundwater availability is tied to groundwater storage, which is estimated based on the type and class of groundwater aquifer that underlies a specific area (see Figure 8). Major aquifers (highly permeable) mostly yield about 3 to 100 liters per second (lps). These aquifers are "fairly extensive" to "highly productive" types of aquifers. Minor aquifers (variably permeable) yield mostly 2 to 20 lps. They are also "fairly to less extensive" and "less productive". Non-aquifers (negligibly permeable) mostly yield less than 1 lps and are made up of rocks with "limited or no groundwater" potential.

2.2.5 Total Water Resources Potential

The country has a total water resources potential of 145,990 MCM/year. This sum considers the total surface water potential of 125,790 MCM/year (taken at 80.0 percent dependability) and the total groundwater potential of 20,200 MCM/year (see Figure 9).

Figures 10 and 11 show the water resources potential of each administrative region.

Region XIII has the greatest water resources potential among the administrative regions, with 12.5 percent (around 18,000 MCM/year) of the country's total. As the most urbanized region, National Capital Region (NCR) has the lowest potential with less than 0.5 percent of the total (98 MCM/year).

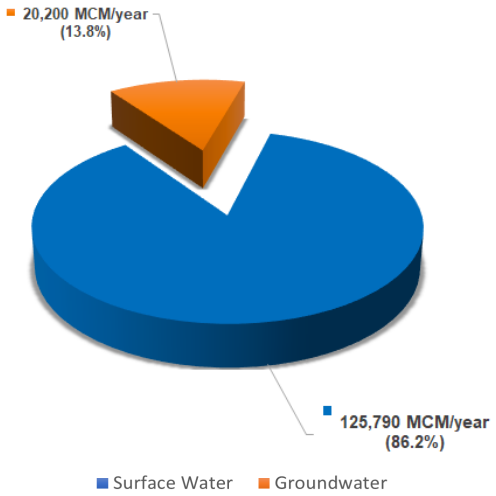


Figure 9: Water Resource and Total Water Resources Potential[5]

[5] *Computed based on groundwater estimates plus surface water estimates at 80.0 percent dependability*

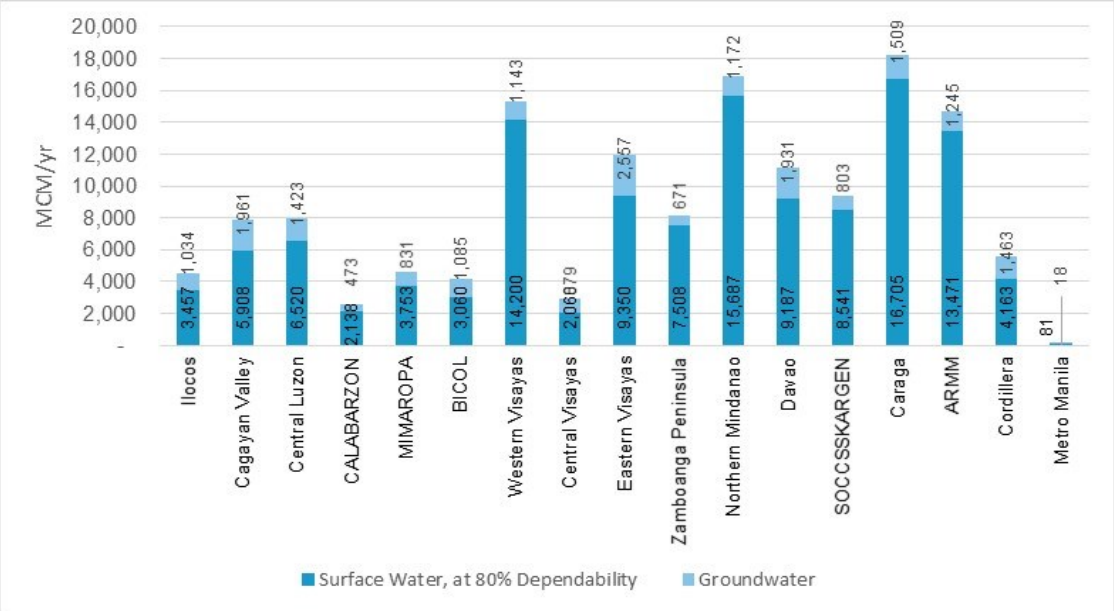


Figure 10: Total Water Resources Potential per Administrative Region

Source: Japan International Cooperation Agency (JICA) Master Plan on Water Resources Management in the Philippines, 1998; NWRB; PAGASA Rainfall Data; Food and Agriculture Organization (FAO) of the United Nations Aquastat Data; Department of Environment and Natural Resources (DENR) River Basin Control Office (RBCO) Major River Basin Master Plans

2.2.6 Water Use

Based on awarded water permits by the National Water Resources Board (NWRB), water use was recorded at approximately 212,800 MCM annually as of 2017. Approximately 130,500 MCM (61.3 percent of the total) are allocated for power generation and are categorized as non-consumptive use, along with approximately 350 MCM allocation for recreational use. The remaining 82,000 MCM are reserved for consumptive use.

The irrigation sector is the greatest consumer of water among the sectors (at 76.0 percent allocation). The domestic or municipal sector consumes only 8.0 percent (see Figure 12).

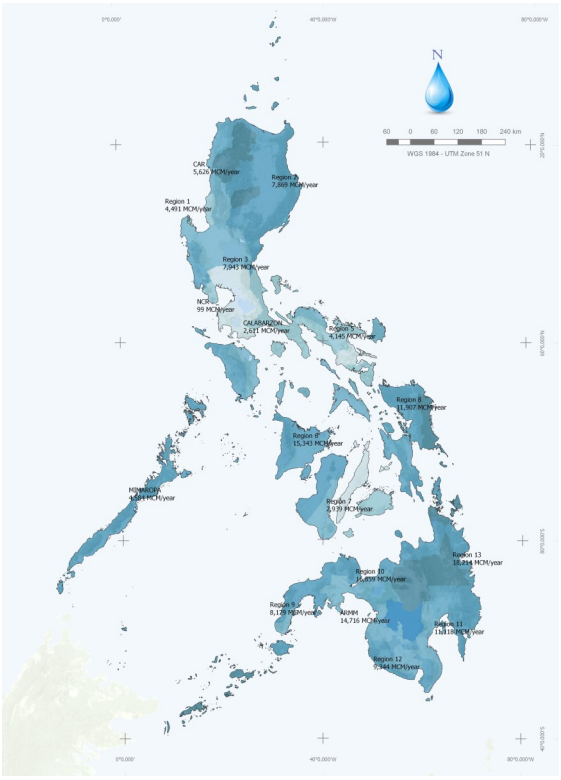


Figure 11: Map of Water Resources Potential per Administrative Region

2.2.7 Water Availability, Water Stress, and Water Scarcity

Hydrologists typically assess scarcity by looking at the population-water equation. Per UN Water, “An area is experiencing water stress when annual water supplies drop below 1,700 cubic meters (m^3) per person. When annual water supplies drop below 1,000 m^3 per person, the population faces water scarcity, and below 500 m^3 ‘absolute scarcity.”[6]

[6] *Managing Water Report under Uncertainty and Risk, UN World Water Development Report 4 (Volume 1)*

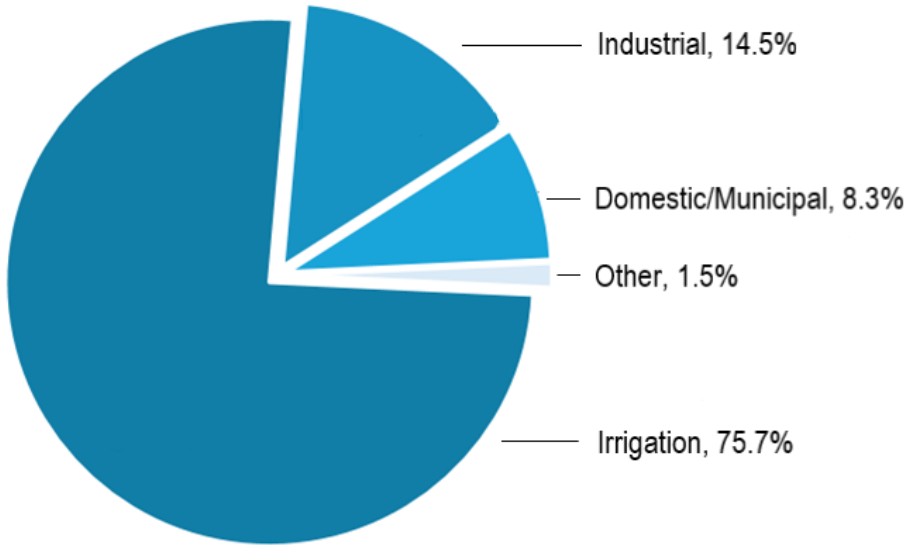


Figure 12: Consumptive Water Use by Sector (NWRB Water Rights, as of 2017)

A 2001 study[7] reports that the Philippines has the second lowest water availability per capita per year among Southeast Asian countries. It has been estimated that only 1,907 m^3 of water is available per person — a figure lower than the Asian and global averages.

While the national value is higher than the threshold for areas considered experiencing water stress or water scarcity, the same cannot be said for each WRR or administrative region.

Figure 13 shows the water availability per capita per year by region and highlights the level of water availability, stress, and scarcity. Based on 2015 population, water availability in the Philippines is only 1,446 m^3 per capita per year nationwide—this indicates that the country is experiencing water stress.

The facts are clear: MIMAROPA experiences water stress. Regions I, III, and V are facing water scarcity, while NCR, CALABARZON, and Region VII are facing absolute scarcity. The values for the water availability per capita per year cover domestic water supply and water uses for other sectors (e.g., agricultural, industrial, commercial, power).

In addition, NWRB has identified nine water-critical urban areas where water is consumed intensively. These areas are Metro Manila, Metro Cebu, Davao, Baguio City, Angeles City, Bacolod City, Iloilo City, Cagayan de Oro City, and Zamboanga City.

Future water availability in the country will be affected by climate change, economic development, urbanization, and population growth. A study by the World Resources Institute has predicted that the Philippines will experience a high degree of water shortage by 2040 under a "business-as-usual" scenario (Luo, Young, and Reig, 2015) .

The Philippines is 57th out of 167 countries that are likely to undergo water stress by 2040. The study also evaluated projected water withdrawals by the industrial, domestic, and agricultural sectors from available renewable resources. The three sectors scored high in the projected water stress index, with the agricultural sector as the highest.

2.2.8 Climate Risks and Geological Hazards

The Philippines ranks third among the countries with the highest disaster risks based on exposure to natural hazards, vulnerability, coping capacity, and adaptive capacity (World Risk Index, 2015). The human cost of climate hazards is astounding, with more than 130.00 million people affected by recurring weather-related disasters in the Philippines from 1995–2015. This situation makes the Philippines the fourth country with the highest number of people affected by weather-related disasters.[8]

[7] World Resources Institute 2000–2001
[8] Source: UN Office for Risk Disaster Reduction and Center for Research on the Epidemiology of Disasters, 2015

The country is often battered by various climate hazards (induced by rainfall variability, increasing temperature, and sea level rise). In recent decades, it has experienced extreme weather conditions, such as temperatures above 35°C, with more intense rainfalls, and frequent and typhoons stronger than the 30-year average of an area. The Philippines experiences an average of 20 typhoons a year, five of which are destructive.

PAGASA has predicted that there will generally be an increase in rainfall from 2020 until 2050. The projections also show an increased peak rainfall during the wet season and longer dry conditions during the dry season. However, some parts of the country also show decreasing total rainfall. This rainfall variability translates directly to changes in water supply dynamics.

In addition to climate hazards, the country is at risk of geologic hazards. These extreme natural events that take place in the crust of the Earth can be sudden (e.g., earthquakes, volcanic eruptions, tsunamis, and landslides) or gradual (e.g., land subsidence). The country has 24 active volcanoes and experiences an average of five earthquakes, a few of them destructive, in a day.

Water supply is also vulnerable to changes in river flows and the recharge rate of groundwater.

Changing rainfall patterns could mean lower flows, resulting in water shortages. Intense rainfall may not replenish the groundwater as much as when rainfall is spread evenly across the year. A lower than average number or prolonged season of dry days during the dry months may affect soil porosity and vegetation, which then leads to reduced soil infiltration and lower groundwater recharge. Higher temperatures will increase evapotranspiration and cause longer and more intense droughts. Extreme rainfall enhances surface runoffs that could trigger landslides.

There is no conclusive trend, however, that tropical cyclones are becoming more intense. However, there were three typhoons in the last 20 years that recorded the highest values ever recorded for maximum gustiness. These are Typhoons Reming, Loleng, and Yolanda which devastated the Bicol, Northern Luzon and Eastern Visayas regions, respectively. These typhoons have caused substantial damage to infrastructure and major disruptions to water service.

The World Meteorological Organization (WMO) recorded the highest sea level rise (three times the global average) over the last century in the Philippines in 2015. The rising sea levels can contaminate freshwater sources and damage water-related infrastructure in the coastal areas.

Climate and geologic hazards endanger human health and economic development.

Increasing temperatures increase the risk of waterborne diseases and transmission of malaria.

Economic development in rural and urban areas increases the competition among various uses of water. These include the agricultural, domestic, industrial, and commercial sectors, as well as for recreational purposes. These factors likewise add stress to freshwater sources.

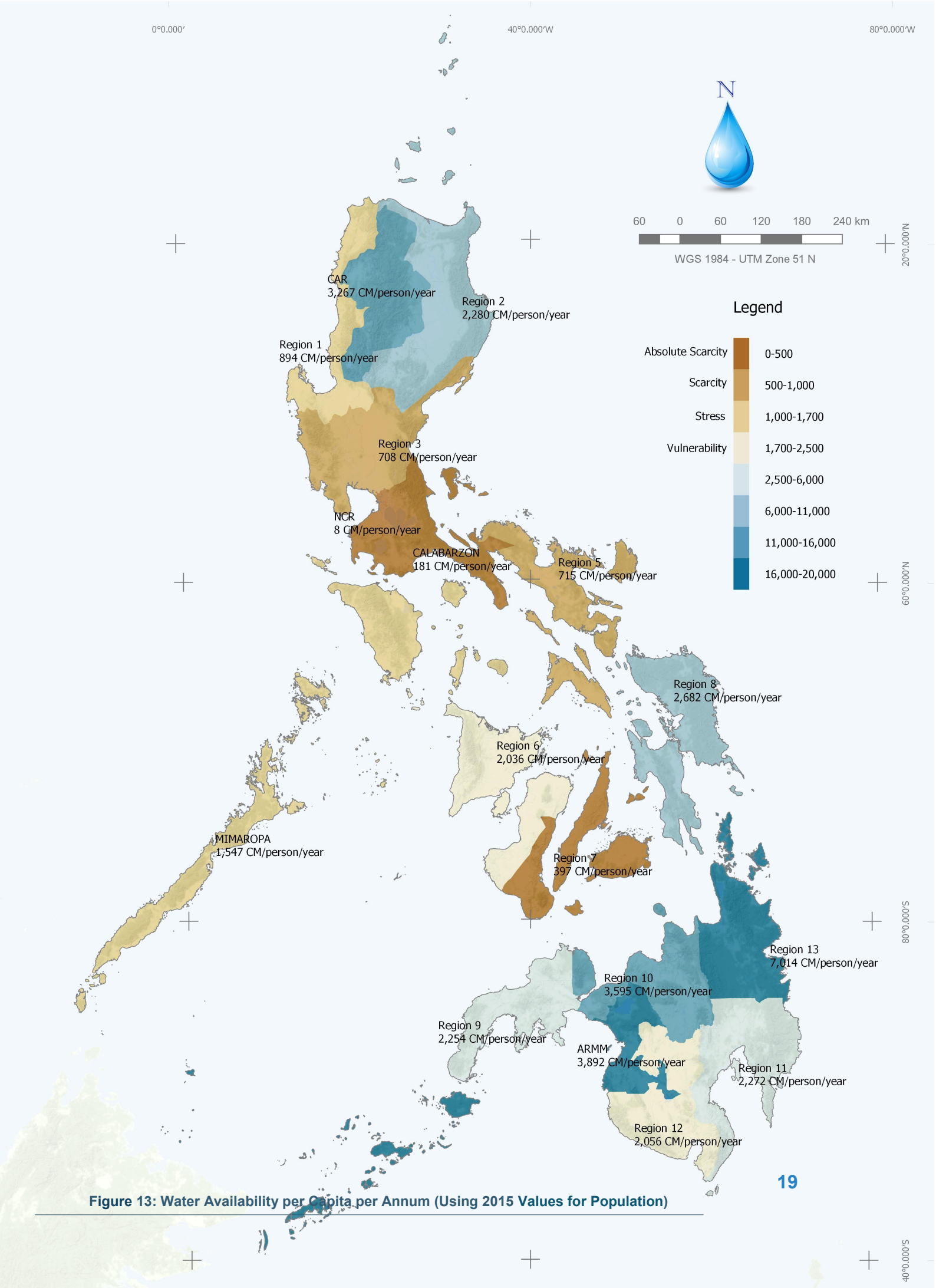


Figure 13: Water Availability per Capita per Annum (Using 2015 Values for Population)

2.3 Institutional Governance

The WSS sector is characterized by the absence of a lead agency that will spearhead efforts in addressing the lack of a cohesive policy framework, insufficient public financing, inadequacies in sector data upon which policy and investment decisions will be made, and a severely fragmented and poorly enforced regulatory regime.

The succeeding sections discuss the institutional governance for the WSS sector.

2.3.1 Water Supply

The key national agencies involved in the water supply subsector are NEDA, NWRB, Department of Health (DOH), Department of the Interior and Local Government (DILG), DENR, Department of Public Works and Highways (DPWH), and Local Water Utilities Administration (LWUA). The Metropolitan Waterworks and Sewerage System (MWSS) is also a key agency mandated to ensure delivery of reliable water supply and sewerage services in the NCR, as well as Regions III and IV-A, through private water utilities.

Sectoral involvement is part of the overall mandates of these agencies, except for LWUA and NWRB whose specific mandates directly impact the water sector. The succeeding sections discuss the roles and responsibilities of key government agencies in the water supply sector.

In addition, Figure 14 shows the functional chart of government agencies with water resources-related responsibilities, particularly on water supply. Annex A, on the other hand, presents the functions and responsibilities of these government agencies and their particular units.

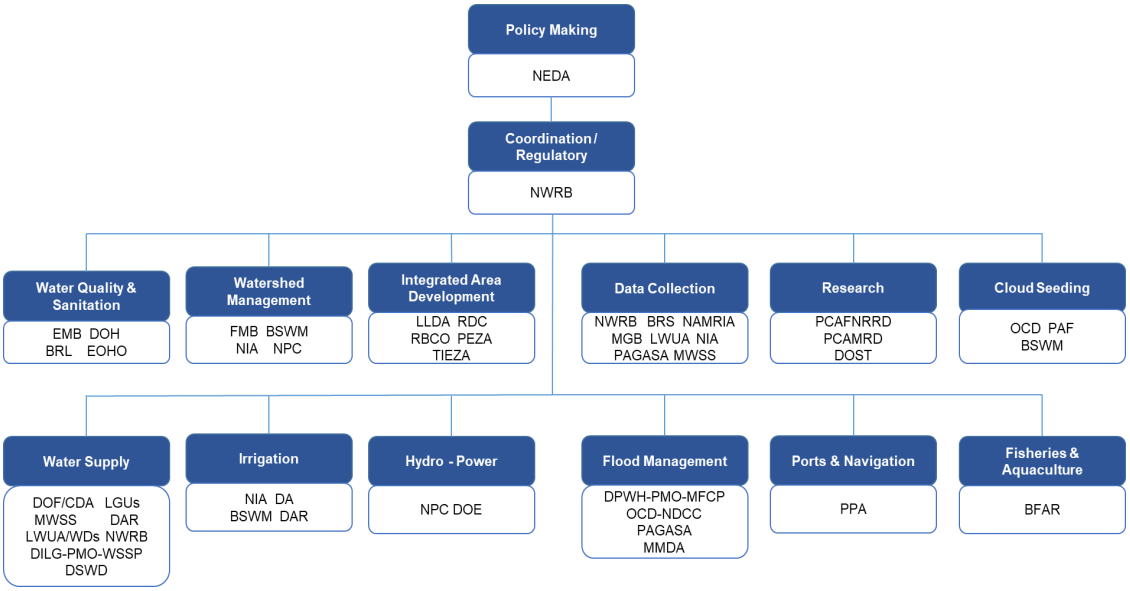


Figure 14: Functional Chart of Water-Related Agencies in the Philippines[9]

[9] *Source: Philippine Water Supply Sector Roadmap. The full names of water agencies are presented in the list of acronyms.*

National Economic and Development Authority

NEDA is the country's leading socioeconomic planning body. It is responsible for developing policies and targets for the WSS sector. In particular, the NEDA Board Committee on Infrastructure – Sub-Committee on Water Resources (INFRACOM-SCWR) has led major efforts to develop the PWSSR. NEDA has adopted the following strategies:

- Strengthen water supply and wastewater management institutions;
- Develop capacities of key agencies, WSPs, and other major stakeholders; and
- Build strategic alliances between legislative and executive champions in the government, public and private sectors, as well as communities.

National Water Resources Board

The National Water Resources Council was renamed and reorganized as the NWRB through Executive Order (EO) 124-A in 1987.[10] The NWRB acts as the policy-making body for the Philippine water sector as resource regulator and economic regulator for waterworks systems.

As the **policy-making body for the Philippine water sector**, NWRB is tasked, among others, to:

- Coordinate and integrate water resource development activities of the country;
- Formulate criteria, methods, and standards for data collection, project investigation, formulation, planning design and feasibility evaluation, as well as rules and regulations for the exploitation and optimum utilization of water resources;
- Review and approve water resource development plans and programs of other agencies; and
- Conduct and promote special studies and researches with other agencies or governments about aspects of water resources development.

As **water resource regulator**, NWRB is tasked to regulate and control the utilization, exploitation, development, conservation, and protection of all water resources. The agency's functions include issuing water permits for the appropriation and use of waters and adjudicating disputes relating to appropriation, utilization, exploitation, development, control, conservation, and protection of waters.

As **economic regulator for waterworks systems**, NWRB regulates water tariffs for private waterworks systems, particularly community-based organizations (CBO), Barangay Waterworks and Sanitation Association (BWSA), Rural Waterworks and Sanitation Associations (RWSA), private operators, and some LGU-run utilities. EO 123 in 2002[11] transferred the tariff setting of WDs from LWUA to NWRB but EO 860 in 2010[12] transferred the same function back to LWUA.

Department of Health

The DOH is the national health policy-maker and regulatory institution. It has three major roles in the health sector: provide leadership in health, build capacity, and conduct specific services related to public health.

In addition, the DOH is mandated to provide special tertiary healthcare services and technical assistance to health providers and stakeholders. Its WSS-specific responsibilities include the following:

- Review, update, and promote the Philippine National Standards for Drinking Water (PNSDW);
- Develop and implement programs related to drinking water quality, such as water safety plans;
- Undertake the promotion of and raising health standards of individuals and communities relating to WSS in accordance with the Code of Sanitation;
- Monitor and respond to water-related and waterborne outbreaks and other disasters;
- Develop and promote sanitation programs and standards, such as zero open defecation, septage management systems, and septic tank construction;

[10] *EO No. 124, s. 1987: Reorganizing the Ministry of Public Works and Highways, and Redefining its Powers and Functions, and for Other Purposes*
[11] *EO No. 123, s. 2002: Reconstituting the National Water Resources Board*
[12] *EO No. 860, s. 2010: Redefining the Composition and Powers of the National Water Resources Board*

- Review and provide environmental sanitation clearance (ESC) for stationary and mobile septage services, and help LGUs undergo compliance training with respect to the National Sewerage and Septage Management Program (NSSMP);
- Develop promotional campaign programs on WSS; and
- Assess the health impact of WSS programs and projects.

Department of Environment and Natural Resources

The DENR is the "primary government agency responsible for the conservation, management, development, and proper use of the country's environment and natural resources, as well as the licensing and regulation of all natural resources as may be provided for by law in order to ensure equitable sharing of the benefits derived therefrom for the welfare of the present and future generations of Filipinos."[13]

DENR's responsibilities include the following:

- Assure the availability and sustainability of the country's natural resources through judicious use and systematic restoration or replacement;
- Increase the productivity of natural resources to meet the demands for forest, mineral, and land resources of a growing population;
- Enhance the contribution of natural resources for achieving national economic and social development;
- Promote equitable access to natural resources by different sectors of the population; and
- Conserve specific terrestrial and marine areas representative of the Philippine natural and cultural heritage for present and future generations.

The DENR, and the agencies under it, promote and implement the IWRM framework.

River Basin Control Office

The RBCO is the lead government agency in the integrated planning, management, rehabilitation, and development of the country's river basins. It is under the DENR.

RBCO has led the formulation of the master plans for the country's 18 major river basins and for three principal rivers. As part of its efforts to roll out the master plans, RBCO's responsibilities include the following:

- Popularize the master plans through various fora with stakeholders and by disseminating information materials;
- Build the capacity of RBCO and river basin organizations (RBO);
- Conduct strategic and action planning through workshops and summits; and
- Gather data and develop the River Basin Integrated Information Management System as part of its M&E.

Department of the Interior and Local Government

The DILG is mandated to promote peace and order, ensure public safety, and strengthen local government capability to deliver basic services, including water and sanitation services (Republic Act [RA] 6975[14]. Under the DILG, the Office of Project Development Services (OPDS) has the Water Supply and Sanitation Program Management Office (WSSPMO).

The WSSPMO is a project office designed to manage specific foreign-assisted water and sanitation projects. In addition, it develops and strengthens the capacity of LGUs in planning, financing, implementing, and managing WSS programs and projects within the IWRM framework. Its responsibilities include the following:

- Advocate WSS policy updates, strategies and approaches, best practices and lessons learned, and various technology options;
- Provide LGU WSS projects with access to financing, promote technical assistance cooperation, and match capability requirements with financing institutions;
- Strengthen DILG's WSS partners in provinces and municipalities by conducting WSS-related activities;
- Maintain a national data management system related to plans, programs, and activities, and establish benchmarking systems to improve LGU-run utilities; and
- Monitor the progress and results of WSS activities and document lessons learned

[13] *Source: Chapter 1, Section 4, EO No. 192, series of 1987. Purposes.*
[14] *RA No. 6975: An Act Establishing the National Police Under a Reorganized Department of Interior and Local Government, and for Other Purposes.*

as a basis for future programs and projects.

Department of Public Works and Highways

The DPWH is in charge of the planning, design, construction, and maintenance of engineering structures (e.g., national roads and bridges), as well as oversees flood control and water resources projects. Its WSS-specific responsibilities include the following:

- Conduct hydrologic surveys, as well as establish, operate, and maintain observation station networks and centralized water resources data center;
- Implement, regulate, monitor, assist, and fund WD activities and projects through LWUA;
- Manage financing and technical support for water supply improvement in tourism areas and hubs through its Regional and District Engineering Offices;
- Manage and promote the NSSMP, and provide related training sessions for LGUs; and
- Provide financial and technical support for developing and carrying out flood control projects and activities related to stormwater and drainage management.

Local Water Utilities Administration

The LWUA is a government-owned and -controlled corporation (GOCC) created under the Provincial Water Utilities Act of 1973.[12] LWUA is a specialized lending institution that creates and develops WDs outside the NCR. Its responsibilities include the following:

- Establish minimum standards and regulations to assure acceptable standards of construction materials and supplies, maintenance, operation, personnel, training, accounting, and fiscal practices for WDs;
- Furnish technical assistance and personnel training programs for WDs;
- Monitor and evaluate WDs;
- Affect system integration, joint investment and operations, as well as district annexation and deannexation whenever economically warranted; and
- Provide a specialized lending institution with expertise in the financing of WDs.

Metropolitan Waterworks and Sewerage System

The MWSS is a GOCC once known as the National Waterworks and Sewerage System Authority (NAWASA).

It focuses on water provision in NCR, the province of Rizal, and some towns in the province of Cavite and Bulacan. The Water Crisis Act (RA 8041) established the legal basis of entering into a concession agreement with private operators after MWSS failed to provide adequate services to the region.

MWSS became an oversight body through the creation of the Regulatory Office (RO). The MWSS RO regulates the activities of the two water concessionaires: Manila Water Company, Inc. and Maynilad Water Services, Inc. Their concession contracts have been extended to 2037.

Other Sector Agencies

Other agencies with functions and responsibilities in the water sector are provided in Annex A.

Water Service Providers

Specific government agencies are tasked to oversee planning and policy-making with regard to the water and sanitation sector as well as the delivery of services by WSPs. Table 2 lists WSPs by management type.[15]

Table 2: Water Supply Service Providers by Management Type

Major Groups	Management Type	Description
WDs	Water District	A quasi-public corporation formed by the LGU under the Provincial Water Utilities Act for the O&M of water supply and wastewater management system, which has been issued a Certificate of Conditional Conformance by LWUA
LGU-Run Utilities	LGU-Run Utilities	A water supply system owned and operated by the provincial, city, or municipal government
Community-Based Organizations	BWSA	A non-stock and nonprofit organization that owns, operates, and maintains a water system and sanitation facilities in the barangay
	RWSA	A non-stock and nonprofit organization formed by a group of persons in a defined area, such as a street, a group of houses, a sitio, or a purok to establish and maintain WSS
	Cooperative	A membership organization formed under the Cooperative Code of the Philippines to operate and maintain water supply systems and registered with the Cooperative Development Authority (CDA)
Private Utilities	Homeowners' Association	An organization that operates and maintains a water supply system and is registered with the Securities and Exchange Commission (SEC) or Housing and Land Use Regulatory Board (HLURB) , now Human Settlements Adjudication Commission (HSAC)
	Real Estate Developer	A real estate developer operating a water supply system that provides potable water to lot owners within its boundaries
	Unnamed WSPs	A service provider of at least 15 households, and which is not registered formally with any government agency
	Industrial Locator	An industrial estate operating a water supply system for its locators in a special economic zone
	Peddler	A non-pipe WSP operator that extracts water and supplies and delivers water by the container
	Ship Chandler	A water supply operator providing water to ships
	Private Operator	A sole proprietorship, corporation or private entity formed under the general business and corporation laws of the country for the O&M of water supply systems

[15] *Listahang Tubig, NWRB (http://listahangtubig.cloudapp.net/)*

2.3.2 Sanitation

LGUs have also been given legal mandates over water and sanitation services as stipulated under the Local Government Code (LGC) of 1991.

At the provincial, city, and municipal level, the LGUs' responsibilities include WSS planning, financing, and implementation. These may include preparing WSS sector plans; monitoring local WSS coverage and updating the sector profile; and providing support to WSPs (e.g., RWSAs and BWSAs, cooperatives, and water users' groups) including funding from their internal revenue allotment (IRA). Barangay units can propose local ordinances and coordinate closely with the municipal government in addressing the needs of their constituents.

The national government, despite the devolution of the health services with the passage of the Local Government Code, continues to play a major role in the development of the water sector (i.e., creating policies, facilitating investments, and building the capacity of LGUs).

Several government agencies are mandated to manage sanitation services, including the development of sewerage and sanitation infrastructure. Figure 15 presents a matrix of national agencies with sanitation-related mandates and other support agencies. The functions of these agencies are provided in Annex A.

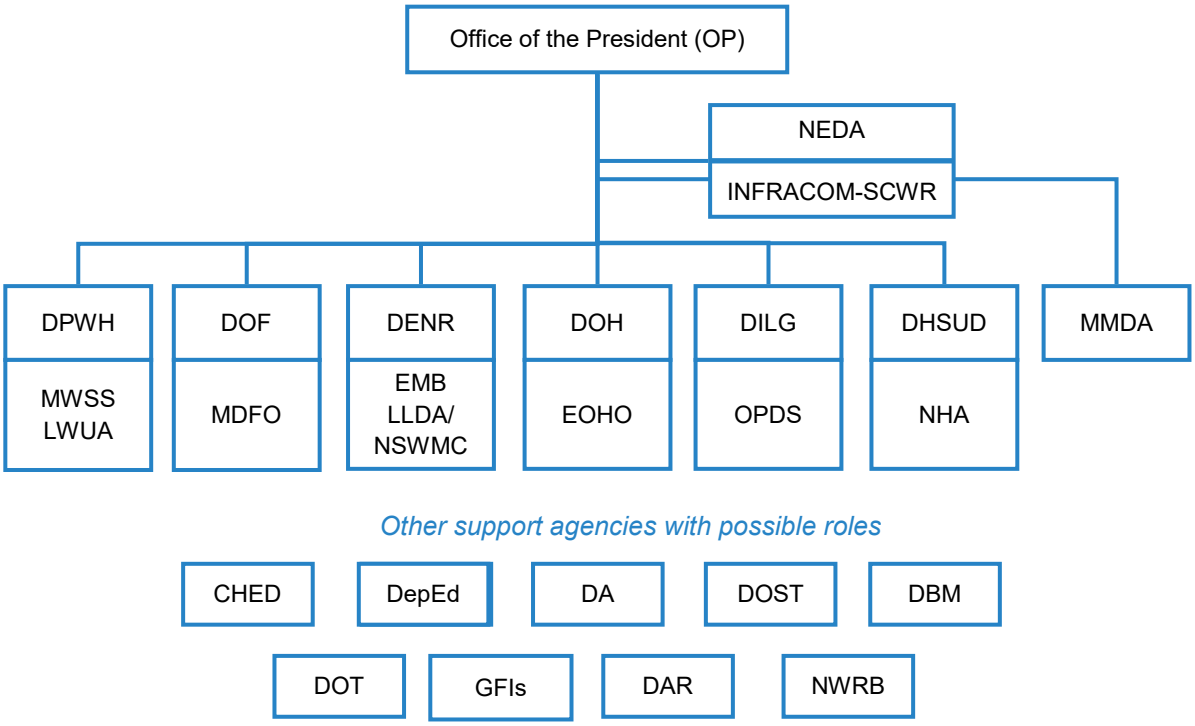


Figure 15: Functional Chart of Sanitation-Related Agencies in the Philippines[16]

[16] *updated from the PSSR (as of 2020)*

2.4 Access and Coverage

2.4.1 Water Supply

The Philippine Statistics Authority (PSA) covers two main key performance indicators (KPIs) with regards access to water: access to safe water supply (by source) and access to drinking water.

Access by Source

The Family Income and Expenditure Survey (FIES) conducted by the PSA in 2015 reported that only 87.7 percent of the Philippine population[17] had access to water sources classified as *safe*. The sources of water for the rest of the population (12.3 percent) are classified as *unsafe* (i.e., dug wells, lakes, water sold by peddlers, rain, and unprotected springs, rivers, and streams). Figure 16 illustrates the distribution of the main sources of water by population percentage.

The PSA data on access to safe water sources from 2004 to 2015 show, however, a significant positive trend (see Figure 17).

Access to Drinking Water

Access to safe and affordable drinking water is one of the indicators emphasized in the SDGs. Currently, the country has no instrument by which data on access to safe drinking water nationwide can be generated. The closest equivalent of such data is the PSA's National Demographic and Health Survey (NDHS).

The 2013 NDHS classifies sources of drinking water as improved and unimproved. However, this classification

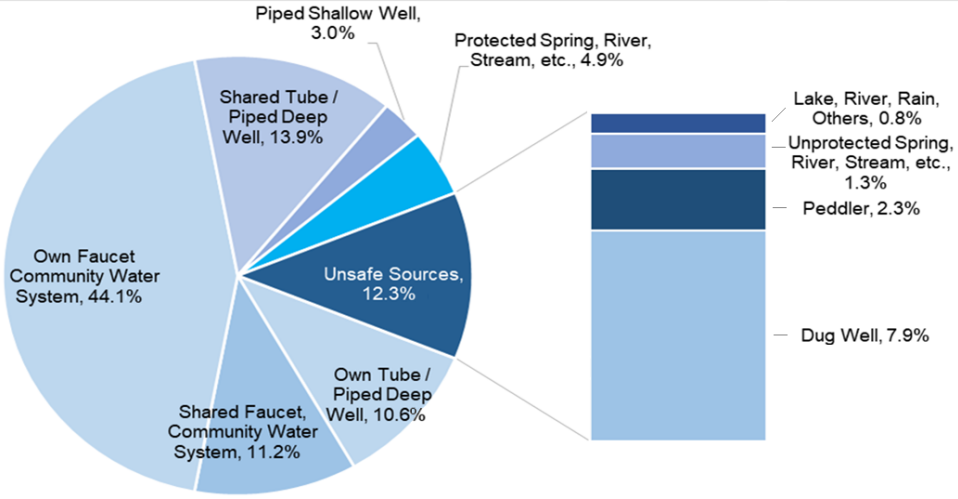


Figure 16: Main Sources of Water Supply of the Population (PSA FIES, 2015)

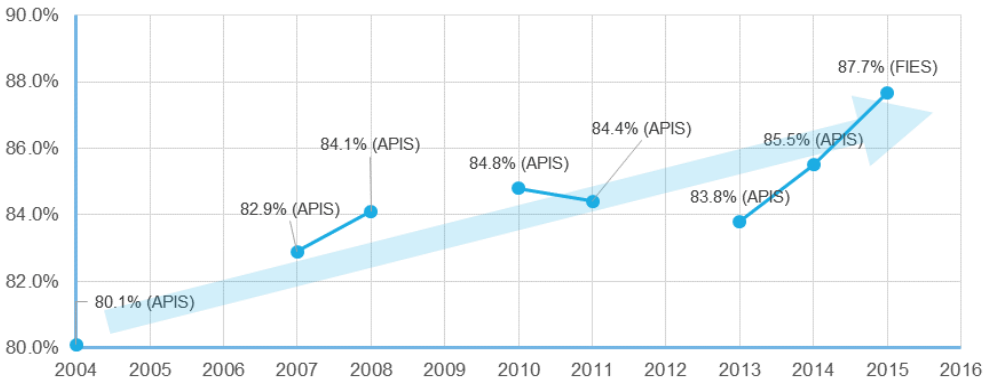


Figure 17: Access to Safe Water Sources Trend

[17] *n=22,730 households*

does not measure water quality, noting that water from improved sources may be contaminated while in transit and being stored. The report also indicated the percentage of the sample using an appropriate treatment method (e.g., boiling, bleaching, filtering, and solar disinfection).

The NDHS measures the time spent to obtain water, but there are no available data on the affordability of drinking water. The time spent to obtain water, however, may be related to the accessibility of water users to the source. Per the data sets in the NDHS, a proxy value for safe and accessible drinking water may be derived using the following assumptions (see Figure 18):

- Bottled water is considered safe and does not need any treatment.
- Respondents whose water source is bottled water need not treat their drinking water.
- An appropriate treatment method is sufficient to make water safe for drinking.
- The percentage of respondents using appropriate treatment methods includes those whose drinking water does not include bottled water.
- It is considered "affordable" when water is drawn from a source available in the premises or if fetching water takes less than 30 minutes.

Figure 19 plots the data on safe and accessible drinking water as gathered from the NDHS.

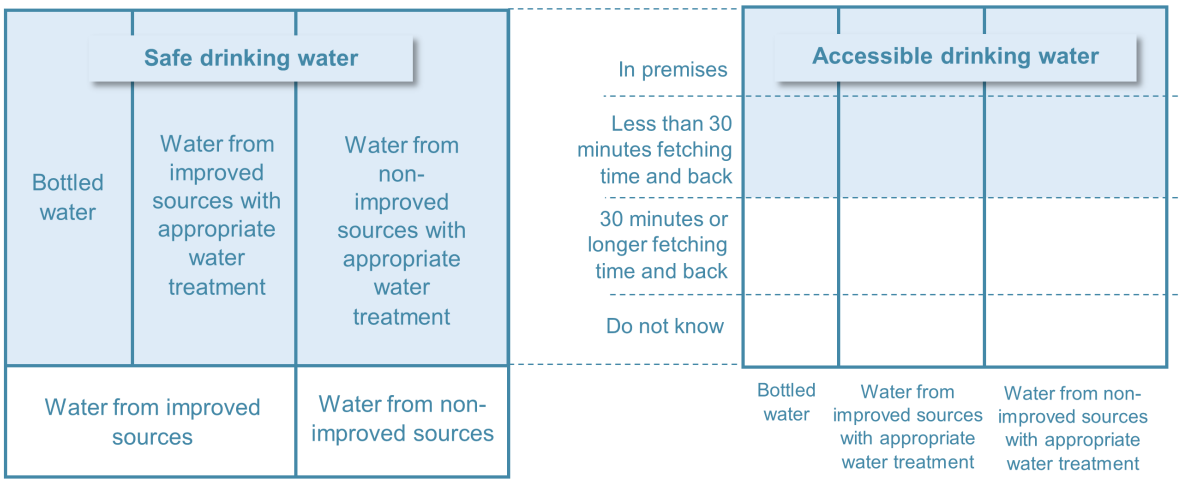
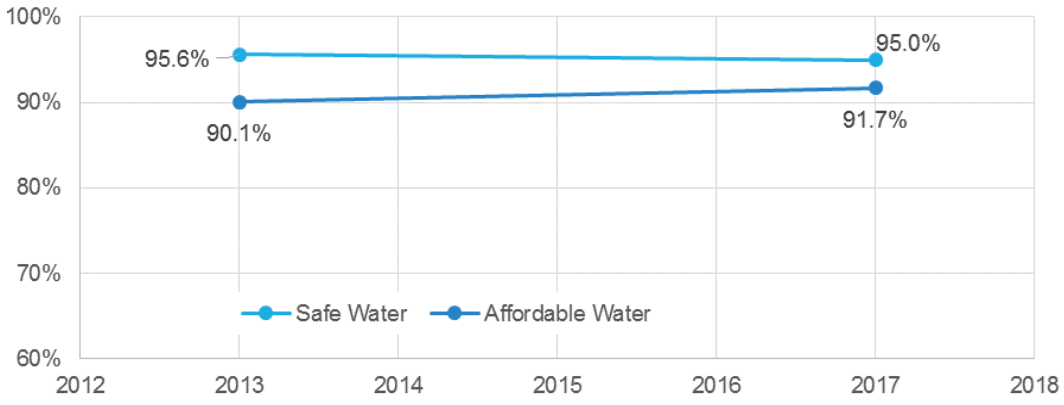


Figure 18: Proxy Value of Data for Safe and Affordable Drinking Water Using Available Secondary Data



[18] Safe water percentage is based on access to improved sources. Accessible water is based on percentage of households with water in premises and those who spend less than 30 minutes (round trip) to obtain water.

Figure 19: Access to Safe and Affordable Drinking Water per NDHS[18]

By Type of Service Providers

The NWRB created a national water survey of all WSPs called Listahang Tubig.[19] The survey provides data on the levels of service by management type. As of December 2018, a total of 24,821 WSPs have registered in the database (see Table 3).

By Level of Service

Water supply is usually provided by WSPs. Main sources of water among some households, however, are not shared with other households or the community. These sources are considered private, such as private deep wells and rainwater collectors.

NEDA defines the service levels of water supply as follows:[20]

- **Level I (point source):** 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. Rural areas (where houses are thinly scattered) are generally adaptable to Level I sources. These sources serve an average of 15 households within a radius of 250 meters.
- **Level II (communal faucet system or standpost):** This refers to a piped system whose components include 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 still go to the supply point (communal faucet) to fetch water. This simple piped system is generally suitable for rural and urban fringe areas where houses are densely clustered.
- **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.

Community-level piped water systems are categorized as either Level II or Level III water systems. Those with individual house connections have Level III service, and those with communal faucets, Level II service.

Point sources without water distribution piping are categorized under Level I. Level I also includes small-scale water sources within the vicinity of households with piping or plumbing installations.

Table 4 provides a matrix of the service level compared with the classification of sources of water (i.e., whether safe or unsafe sources) according to the PSA.

Approximately 43.6 percent of the population is provided with water service from Level III systems, 11.2 percent from Level II systems, and 45.2 percent from Level I systems. Figure 20 shows the population served according to the levels of service by region in 2015.

Table 3: Water Service Providers Registered Under Listahang Tubig (2018)

Management Type	No.	Percentage	Level I	Level II	Level III
Barangay Waterworks and Sanitation Association (BWSA)	6,620	26.7%	2,980	2,498	1,142
Rural Waterworks and Sanitation Association (RWSA)	1,418	5.7%	62	619	737
Cooperative	403	1.6%	46	90	267
Unnamed WSP	7,878	31.7%	7,486	303	89
LGU-Run Utility	4,184	16.9%	1,147	1,608	1,429
Water District	634	2.6%	19	4	611
Homeowners' Association	377	1.5%	168	77	132
Real Estate Developer	107	0.4%	8	8	91
Industrial Locator	45	0.2%	3	3	39
Peddler	211	0.9%	108	80	23
Ship Chandler	4	0.0%	1	2	1
Private Operator	1,779	7.2%	711	268	800
Refilling Station	1,161	4.6%	1,122	24	15
Grand Total	24,821	100.0%	13,861	5,584	5,376

[19] *http://listahangtubig.cloudapp.net/*

[20] *National Economic and Development Authority Board Resolution No. 12, Series of 1995*

Table 4: Service Level against Classification of Source of Water

Service Level	Source of Water	Classification (Safe/Unsafe)
Level III	Own faucet community water system	Safe source
	Own tube/piped deep well	
Level II	Shared faucet community water system	Safe source
	Shared tube/piped deep well	
	Piped shallow well	
Level I	Protected spring, river, stream, etc.	Unsafe source
	Unprotected spring, river, stream, etc.	
	Dug well	
	Lake, river, rain, and others	
	Peddler	
	Other sources	

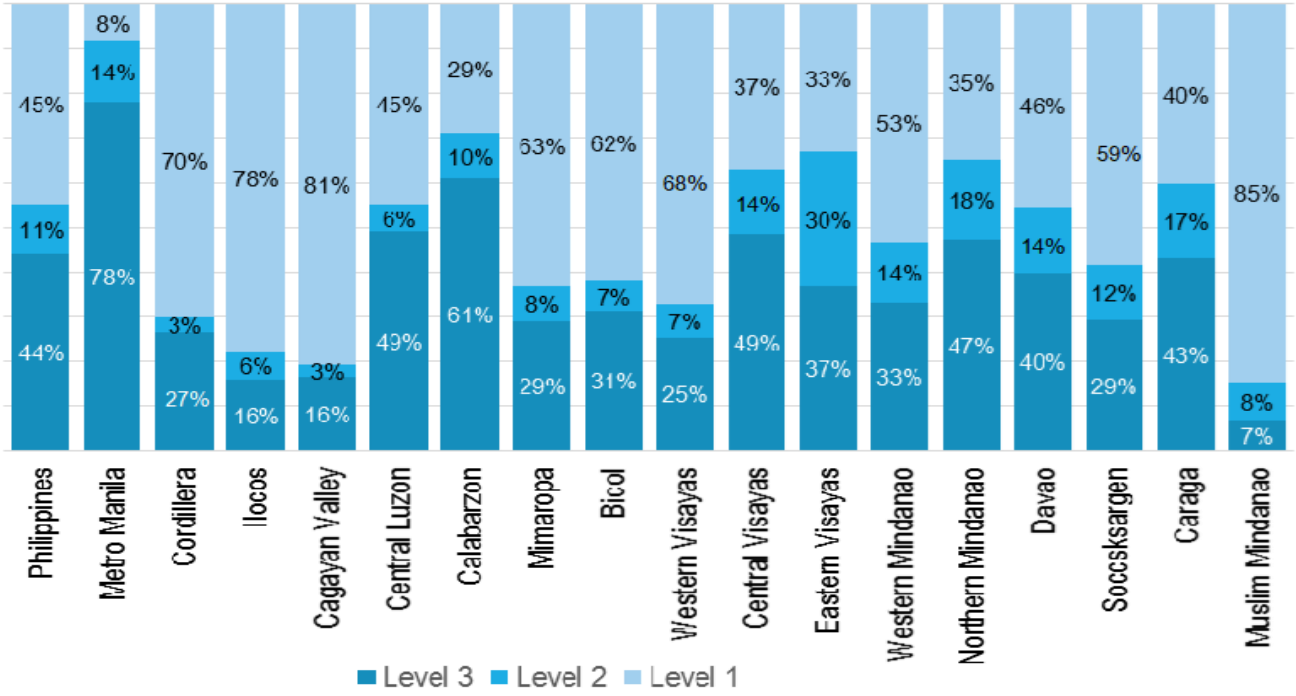


Figure 20: Levels of Service in Percentages by Region (FIES, 2015)

2.4.2 Sanitation

The SDGs which have evolved from the Millennium Development Goals (MDGs) have expanded the definition of the term *access to sanitation.*

MDGs simply involved access to basic sanitation or the availability of sanitary toilets. On the other hand, SDGs have qualified "access" by designating sanitary toilets as either *safely managed*, *limited*, or *unimproved*.

Figure 21 illustrates the components of sanitation infrastructure. The SDGs define adequate and equitable sanitation to include collection, treatment, and disposal or reuse.

Sanitation service has three data attributes:

- *Facility* refers to the structure or infrastructure for the sanitation service;
- *Usage* refers to the availability of the facility for households; and
- *Management* refers to the proper disposal of excreta (i.e., on-site or transported and treated in an off-site facility).

Basic sanitation refers to a level of service where the sanitation facility is private (not shared with other households) and where the excreta is separated from human contact (e.g., using a toilet fixture). However, the excreta may or may not be safely managed (e.g., with or without a septic tank). Table 5 tabulates the service ladder of sanitation against its three data attributes.

PSA provides data on basic sanitation in the following surveys and reports:

- Annual Poverty Incidence Survey (APIS): A part of the survey is determining the type of toilet facility the family is using (e.g., own toilet, shared toilet, close pit, open pit);
- FIES: the 2015 FIES includes the number of households with electricity, main sources of water supply, and toilet facilities by income decile;
- NDHS; and
- Philippine Census.

The availability, values, and trend of access to basic sanitation data over the past 14 years are shown in Figure 22.

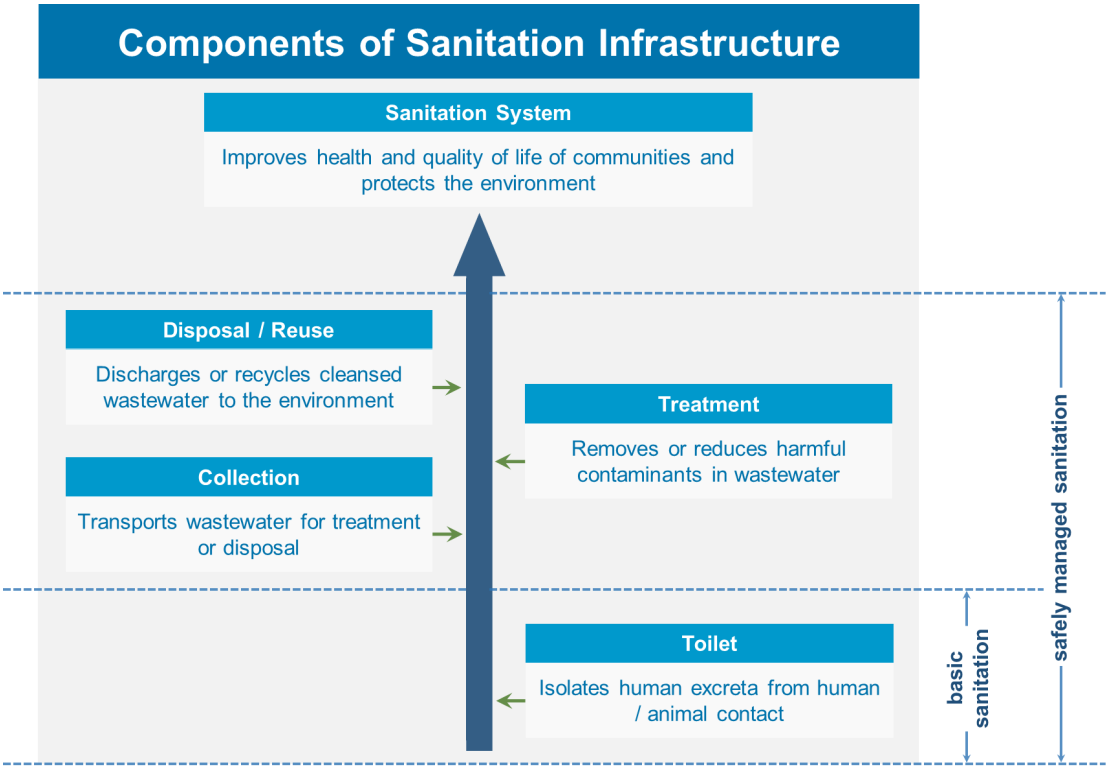


Figure 21: Components of Sanitation Infrastructure[21]

[21] *Base diagram is from the Philippine Sanitation Sourcebook and Decision Aid.*

Table 5: Sanitation Service Ladder

		Service Ladder				
		No Service	Unimproved Sanitation	Limited Sanitation	Basic Sanitation	Safely Managed Sanitation
Description/Definition		Open Defecation*	Use of pit latrines without slabs or platforms, hanging latrines or bucket latrines	Use of improved facilities** shared between two or more households	Use of improved facilities which are not shared with other households .	Use of improved facilities which are not shared with other households and where excreta are safely disposed of on-site or transported and treated off-site
Attributes	With toilet/ latrine facility	No	Yes	Yes	Yes	Yes
	Usage (private/ shared)	N/A	Maybe private or shared	Shared	Private (not shared)	Private (not shared)
	Management ***	N/A	No	Maybe	Maybe	Yes

**Open defecation refers to the disposal of human feces in fields, forests, bushes, open bodies of water, beaches, and other open spaces or with solid waste.*

*** Improved facilities include flush or pour-flush to piped sewer systems, septic tanks or pit latrines, ventilated improved pit latrines, composting toilets, and pit latrines with slabs.*

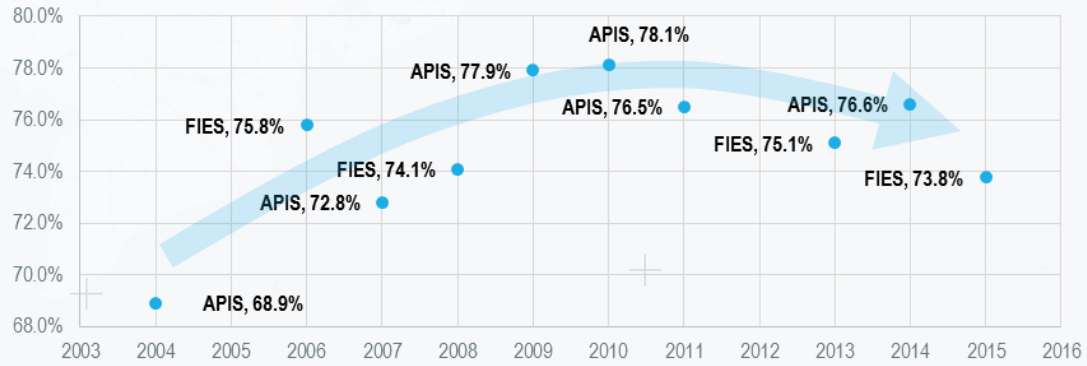


Figure 22: Access to Basic Sanitation Data from Available Sources

The presentation of data obtained by the PSA needs to be aligned with the SDGs. Before the SDGs were adopted, accessible data on the use of sanitation facilities were presented as follows:

- Water-sealed sewer septic tank used exclusively by household;
- Water-sealed sewer septic tank shared with another household;
- Water-sealed other depository used exclusively by household;
- Water-sealed other depository shared with another household;
- Closed pit;
- Open pit; and
- Others.

Rearranging the 2015 data from the PSA in accordance with the format under the SDGs shows that 73.8 percent of the population had access to safely managed sanitary toilets, about 20.0 percent of the population had access to basic or limited sanitation, 2.0 percent had unimproved sanitation, and 4.0 percent had no access to toilets (i.e., open defecation was the norm).

The highest access to improved sanitation was recorded in Region IV-A (88.0 percent), followed by the NCR (85.0 percent), Region III (82.0 percent), Region X (80.0 percent), and Region XIII (77.0 percent). These figures are above the national average of 73.8 percent, while the rest are below the national average. Figure 23 presents a visual representation of the regions' access to sanitation per service level.

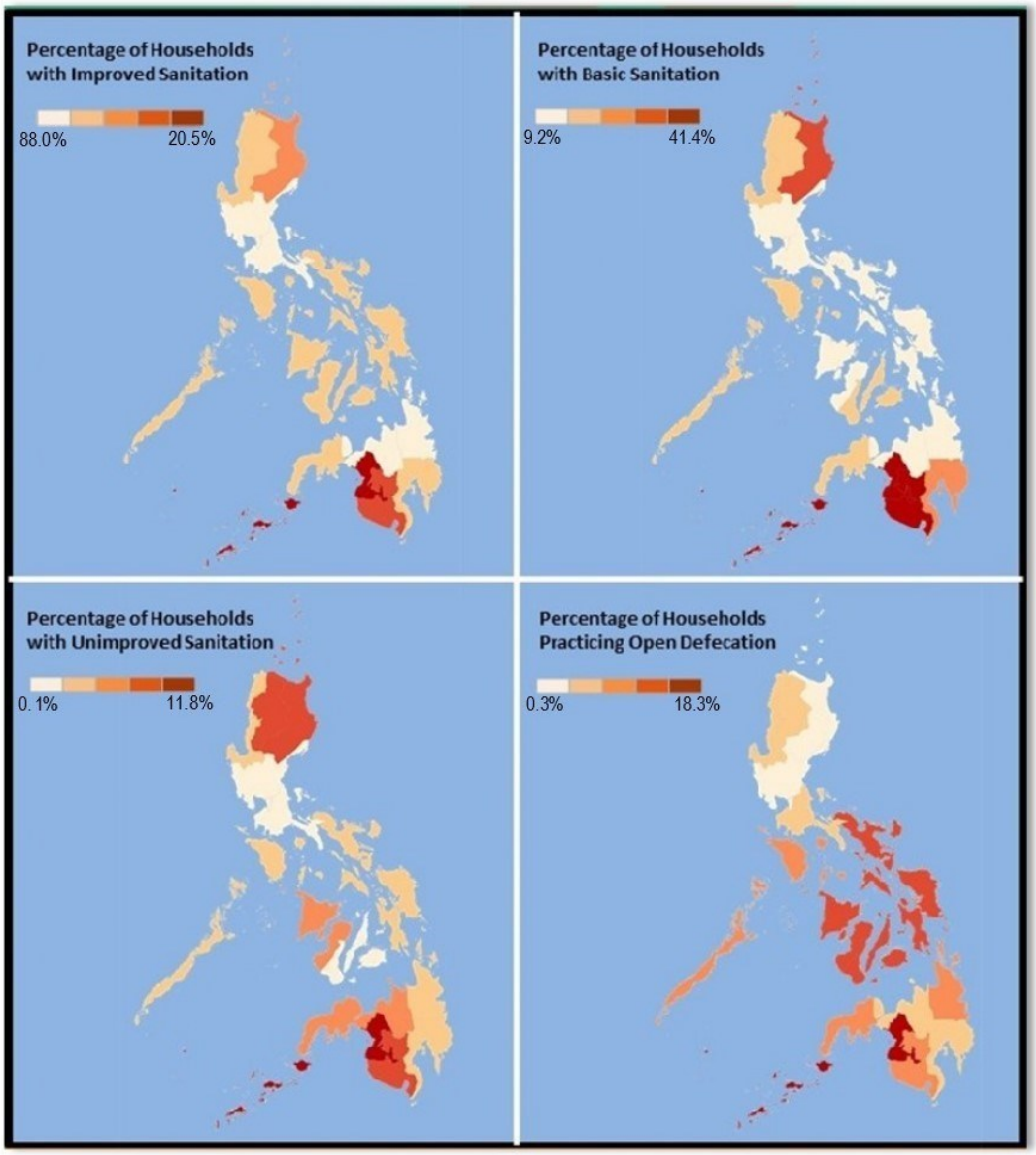


Figure 23: 2015 Philippine Sanitation Coverage (PSA)

2.5 Technical and Operating Performance

2.5.1 Water Supply

Key Performance Indicators

The Listahang Tubig of NWRB has employed 15 KPIs on which the performance of WSPs is based.

Table 6: Key Performance Indicators (KPIs) of WSPs, National Average

Areas	KPI	Description	National Average
Service Indicators	Service coverage	This measures the percentage of the population in a service area covered by a WSP. It also indicates a service area's possible expansion or saturation.	27.0 percent
	Consumption per capita	This measures the average consumption per person per day. It indicates if a WSP is able to meet the water needs of a user.	98 lpcd
	Average consumption per month	This refers to the national average water consumption per month of a household.	14.00 m^3 / month
	Average tariff	This is the resulting average tariff computed by the WSP and total water sales divided by total billed volume.	PHP 18.00/m^3
	Service hours per day	This is the average number of hours a WSP operates per day.	19 hours/ day
Efficiency Indicators	Non-revenue water (NRW)	The NWRB mandates that the percentage of NRW should not exceed 25.0 percent.	22.0 percent
	Average production cost	This refers to the per cubic meter production cost of water.	PHP 13.00/m^3
	Operating ratio, before depreciation and interest	This measures the proportion of expenses to revenues. The ideal values are less than 0.70.	1.00
	Staff employees per 1,000 connections	This measures efficiency in utilization of personnel and if WSPs are appropriately staffed as compared to other WSPs of comparable size.	40
	Collection period	This measures the number of days within which to collect receivables. The benchmarking average is 1.7 months.	2 months
	Connections per staff ratio	This measures the average number of customers served per employee.	80
Financial Indicators	Current ratio	This measures the capacity to pay current liabilities from current assets. The NWRB's acceptable value is 2.00.	9.19
	Return on assets or return on investments	This measures the capacity of each peso to generate profits. The NWRB's threshold is 12.0 percent.	6.0 percent
	Return on equity	This measures the amount of profits generated by each peso invested by owners. The threshold provided by private financial institutions (PFIs) is 8.0 percent.	20.0 percent
	Debt service ratio	This determines a WSP's ability to generate enough income in its operations to cover payment of its debt. This ratio also indicates its ability to pay its loans. The threshold given by PFIs is 1.20.	2.66

Some WSPs do not upload their data annually, and not all information is uploaded or provided. Only data for 2013 are nearly complete (Table 7). The collated data provide benchmarks for service, efficiency, and financial indicators. Some data, such as those in Autonomous Region of Muslim Mindanao (ARMM), are not available.

Table 7: KPIs per Region for WSPs Registered under Listahang Tubig

Year 2013	ARMM	CAR	NCR	Region I	Region II	Region III	Region IV-A	Region IV-B	Region V
Service Indicators									
Service coverage, in percent	5.0	21.0	92.0	7.0	11.0	24.0	23.0	6.0	16.0
Consumption per capita, in lpcd	112	104	122	95	97	122	128	86	120
Average consumption per month, in m^3/mo.	19	15	23	15	15	19	18	13	19
Average tariff, in PHP/m^3.	22.00	37.00	33.00	29.00	23.00	24.00	16.00	11.00	23.00
Service hours per day, in hours/day	24.00	14.00	19.00	20.00	22.00	21.00	19.00	19.00	19.00
Efficiency Indicators									
NRW, in percent	No Data	27.0	27.0	23.0	22.0	22.0	24.0	37.0	26.0
Average production cost, PHP/m^3	No Data	22.00	16.00	12.00	22.00	10.00	14.00	17.00	10.00
Operating ratio, before depreciation and interest	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Staff employees per 1,000 connections	11	44	2	46	43	21	30	45	24
Collection period, in months	1	2	1	2	3	2	3	3	3
Connections per staff ratio	108	41	615	186	78	124	83	62	144
Financial Indicators									
Current ratio	4.15	11.45	0.88	13.21	5.80	4.44	6.59	1.66	4.45
Return on assets	0.05	0.09	0.06	0.06	0.11	0.07	0.07	0.05	0.06
Return on equity	0.08	0.39	0.19	0.14	0.16	0.12	0.18	0.05	0.22
Debt service ratio	2.07	1.38	1.08	2.24	1.68	2.50	3.37	2.18	3.62

Table 7 (continued): KPIs per Region for WSPs Registered under Listahang Tubig

Year 2013	Region VI	Region VII	Region VIII	Region IX	Region X	Region XI	Region XII	Region XIII	National
Service Indicators									
Service coverage, in percent	17.0	17.0	9.0	4.0	32.0	30.0	12.0	8.0	27.0
Consumption per capita, in lpcd	111	94	81	82	80	107	99	83	98
Average consumption per month, in m^3/month	16	14	11	12	12	17	15	12	14
Average tariff, in PHP/m^3	28.00	13.00	27.00	10.00	14.00	18.00	19.00	22.00	18.00
Service hours per day, in hours/day	19.00	19.00	21.00	17.00	18.00	18.00	21.00	21.00	19.00
Efficiency Indicators									
NRW, in percent	25.0	19.0	20.0	21.0	23.0	20.0	22.0	28.0	22.0
Average production cost, PHP/m^3	15.00	11.00	28.00	10.00	11.00	10.00	11.00	12.00	13.00
Operating ratio, before depreciation and interest	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Staff employees per 1,000 connections	34	49	33	57	63	26	23	50	40
Collection period, in months	2	2	2	3	2	2	2	1	2
Connections per staff ratio	92	64	69	39	59	74	88	52	80
Financial Indicators									
Current ratio	7.66	14.75	15.99	10.35	9.34	9.76	13.48	11.85	9.19
Return on assets	0.03	0.05	0.06	0.02	0.03	0.04	0.06	0.08	0.06
Return on equity	0.15	0.21	0.62	0.36	0.22	0.12	0.15	0.18	0.20
Debt service ratio	1.54	4.00	1.30	1.09	2.20	7.26	2.33	2.89	2.66

Table 8: KPIs per WSP Management Type for Those Registered under Listahang Tubig

Year 2013	National	BWSA	RWSA	Cooperative	Unnamed WSP	LGU-Run
Service Indicators						
Service coverage, in percent	27.0	1.0	0.0	0.0	0.0	2.0
Consumption per capita, lpcd	98	82	82	101	-	100
Average consumption per Month, m^3/mo.	14	12	11	16	-	14
Average tariff, PHP/m^3	18.00	12.00	13.00	16.00	-	12.00
Service hours per day, hrs/day	19.30	18.50	18.65	20.48	11.43	19.19
Efficiency Indicators						
NRW, in percent	22.0	22.0	14.0	23.0	-	23.0
Average production cost, PHP/m^3	19.00	11.00	11.00	14.00	-	15.00
Operating ratio, before depreciation and interest	0.83	0.85	0.86	0.84	-	0.94
Staff employees per 1,000 connections	41	62	55	30	44	34
Collection period, months	2.11	2.30	2.01	2.79	-	1.72
Connections per staff ratio	81	37	41	83	32	88
Financial Indicators						
Current ratio	9.08	10.01	9.64	9.29	-	15.14
Return on assets	0.06	0.11	0.05	0.04	-	0.06
Return on equity	0.20	0.25	0.12	0.14	-	0.39
Debt service ratio	2.65	2.46	3.08	4.12	-	1.70

Water Districts

Operational and Non-Operational WDs

Based on 2016 data, the country has 748 active WDs classified as follows:

- 515 (68.9 percent) are operational.
- 233 (31.1 percent) are reported non-operational.

Figure 25 shows the location of these WDs across the country.

WD Categories and Creditworthiness

Under the Revised Local Water District Manual on Categorization, Re-categorization and Other Related Matters, WDs are categorized as A, B, C, or D based on active service connections[22]. WDs are also scored based on assets, financial position, and staff productivity.

Following the financial reforms of EO 279, s. 2004, WDs are categorized as non-creditworthy (NCW), pre-creditworthy (PCW), semi-creditworthy (SCW), and creditworthy (CW) to determine the allocation of financing.

The 2016 Credit Classification[23] has reviewed 461 WDs (see Table 9) and revealed that creditworthiness was highest among Category D WDs at 54.6 percent of the sample. Most Categories A and B WDs have been classified as CW and SCW, while Categories C and D account for most of SCW WDs (see Figure 24).

The 2016 Credit Classification also shows that 98 WDs have graduated to a higher classification of credit ratings based on LWUA's review in 2013. The credit classification of 270 WDs have remained the same.

[22] Category A WDs have more than 30,000 connections; Category B has 10,000 to 29,999 connections; Category C has 3,000 to 9,999 connections; Category D has less than 3,000 connections.

[23] www.lwua.gov.ph

Table 8 (continued): KPIs per WSP Management Type for WSPs Registered under Listahang Tubig

Year 2013	WD	Home-owners' Assoc.	Real Estate Developer	Industrial Locator	Peddler	Ship Chandler	Private Operator	Refilling Station
Service Indicators								
Service coverage, in percent	9.0	0.0	0.0	0.0	0.0	-	14.0	-
Consumption per capita, lpcd	109	104	111	-	-	-	131	-
Average consumption per month, m^3/mo.	17	16	12	-	-	-	17	-
Average tariff, PHP/m^3	26.00	14.00	19.00	-	36.00	-	23.00	-
Service hours per day, hrs/day	22.66	20.22	24.00	18.67	8.00	-	18.01	-
Efficiency Indicators								
NRW, in percent	25.0	19.0	0.0	0.0	-	-	24.0	-
Average production cost, PHP/m^3	44.00	14.00	13.00	14.00	-	-	12.00	-
Operating ratio, before depreciation and interest	0.72	0.79	0.78	0.61	0.55	-	0.73	-
Staff employees per 1,000 connections	13	37	4	0	0	-	18	-
Collection period, months	2.01	1.73	0	0.56	0.51	-	2.56	-
Connections per staff ratio	149	37	282	0	-	-	256	-
Financial Indicators								
Current ratio	7.88	-	-	2.79	-	-	4.54	-
Return on assets	0.05	-	-	0.07	-	-	0.07	-
Return on equity	0.15	0.15	-	0.10	0.36	-	0.15	-
Debt service ratio	2.75	-	-	0.00	1.18	-	0.82	-

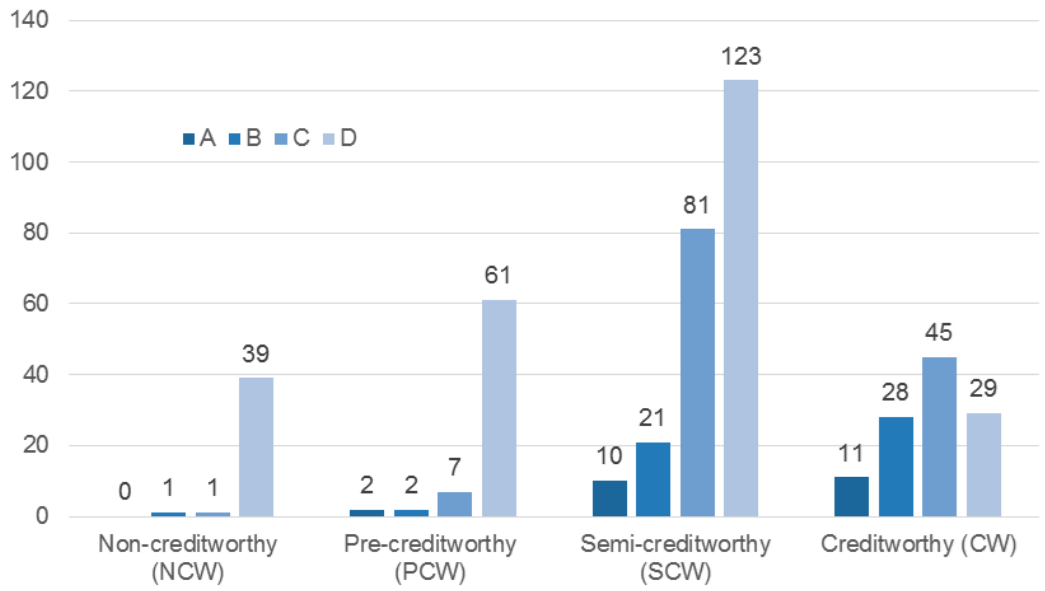


Figure 24: Creditworthiness of WD Samples in 2016 Credit Classification

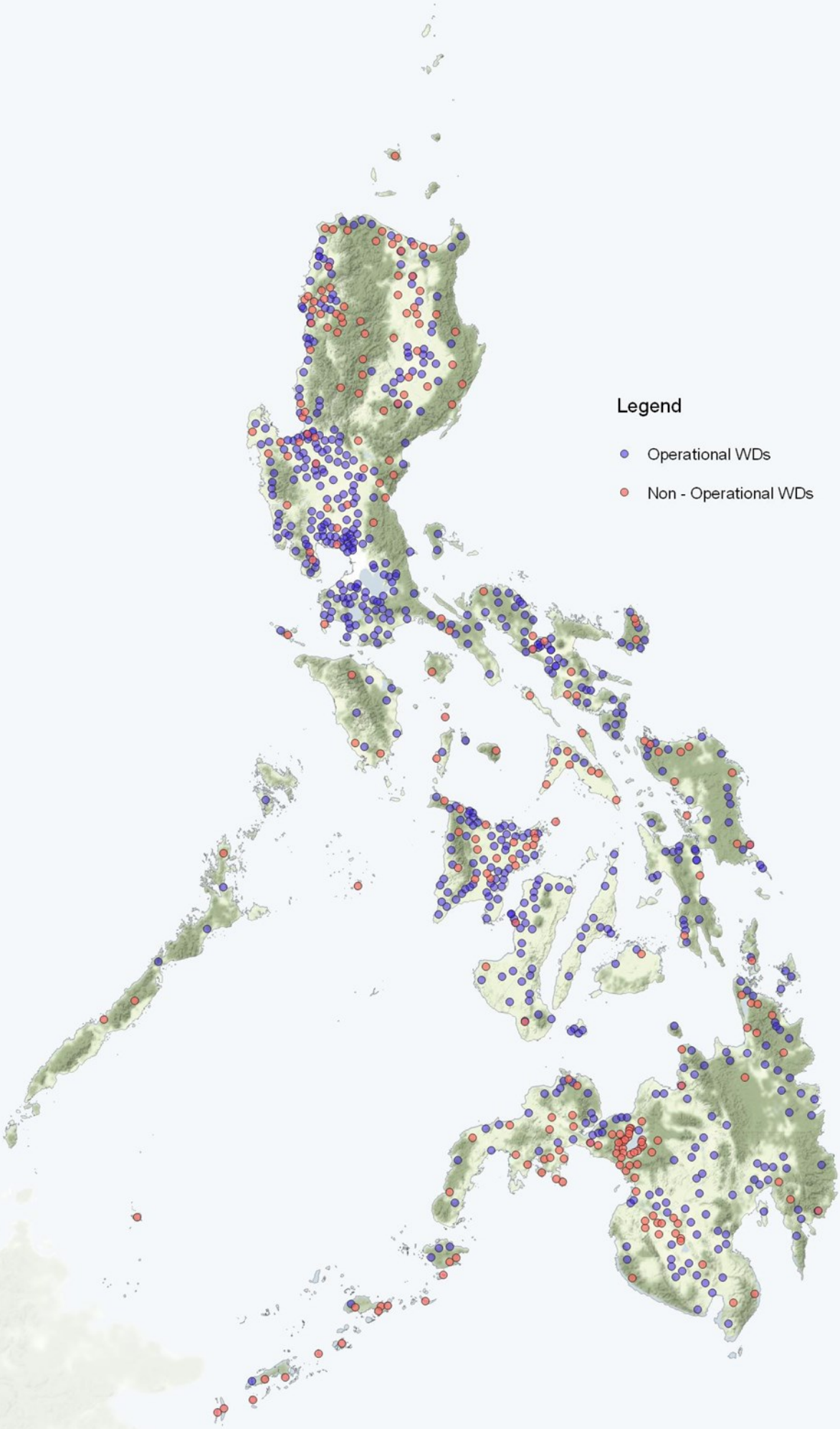


Figure 25: Operational and Non-Operational Water Districts

WDs' Operating Performance (World Bank, 2015)

WDs follow standard commercial and technical guidelines, including an accounting system. These guidelines were created by LWUA and improved by various institutions to suit changing conditions. WDs operate and maintain their water supply systems and submit financial reports and monthly data sheets to LWUA.

LWUA reviews tariffs based on these documents. In addition, the WDs' performance is measured by a set of KPIs in regard to marketing, efficiency, profitability, and cost-effectiveness. Their performance is monitored through the WD Industry Average. In 2015, the World Bank conducted a study to assess the operating and financial In 2015, the World Bank conducted a study to assess the operating and financial performance of 45 samples WDs.

Table 9: Water District Creditworthiness by Region

REGION	CW	SCW	PCW	NCW	TOTAL
CAR	1	5	0	1	7
I	14	20	4	3	41
II	4	10	2	6	22
III	35	36	9	2	82
IV-A	19	32	2	3	56
MIMAROPA	5	5	2	0	12
V	6	25	5	2	38
VI	5	29	14	14	62
VII	3	12	3	0	18
VIII	0	11	8	1	20
IX	3	4	3	2	12
X	3	16	4	0	23
XI	4	6	5	1	16
XII	3	14	4	3	24
XIII	8	6	6	2	22
ARMM	0	4	1	1	6
Total	113	235	72	41	461

Table 10: Performance of WDs in Terms of Operating Ratio

Category (Number of Connections)	Category A (> 30,000)	Category B (> 10,000)	Category C (> 3,000)	Category D (< 3,000)	All Categories A–D
No. of Samples	5	10	19	11	45
Percentage of Population Served	70.0%	62.0%	60.0%	30.0%	54.0%
Active Service Connections per Employee	218	204	286	197	238
Operating Ratio	81.0%	79.0%	78.0%	83.0%	80.0%
NRW	27.0%	24.0%	25.0%	24.0%	25.0%
Average Collection Period	42	35	38	44	39
Collection Efficiency	95.0%	93.0%	91.0%	89.0%	91.0%
Current Ratio	4	6	7	3	5
Debt Service Ratio	8.07	3.32	9.74	2.26	6.30
Debt-Equity Ratio	23.0%	18.0%	37.0%	73.0%	40.0%
Net Income Margin	22.0%	19.0%	19.0%	20.0%	19.0%

The sample WDs have shown similarities in performance in terms of operating ratio, NRW, and collection efficiency.

Because LWUA prescribes at least 90.0 percent collection efficiency, Category D WDs with an average of 89.0 percent fell just 1.0 percent short of the standard. Meanwhile, collection performance improved under the following: Category C WDs were at 91.0 percent, Category B WDs at 93.0 percent, and Category A WDs at 95.0 percent.

The NRW average, on the other hand, is at 25.0 percent. Category A WDs had the highest average at 27.0 percent.

The sample WDs performed well with a ratio of 238 active connections per employee compared to the last WD industry average (149 active connections per employee in 2009). Category D WDs with a 197:1 ratio performed well compared to the minimum required ratio of 120:1.

The sample WDs that reported profits had access to financing. The net income margin was around 20.0 percent across WD categories. Among Category B samples, the lowest income margin was 7.0 percent and the highest was 34.0 percent. Among Category C samples, one WD had a loss ratio of 27.0 percent, and another one had the highest ratio of 38.0 percent. One sample WD in Category D had 11.0 percent net loss ratio, and the highest net income ratio was 29.0 percent.

Most WDs operate profitably. The debt service ratio shows that most WDs have the capability to cover their loan obligations. These indicators allow for sustainable expansion. For example, Category D WDs served 30.0 percent of the population in 2015.

LGU-Run Utilities

LGU-run utilities have been assessed as "the least successful management model for providing water supply".[24] A NEDA report identified the following structural weaknesses in the model in 1973:[25]

- A lack of autonomy of the utility;
- Excessively responsive to short-term political considerations;
- A reliance on government appropriations for financial viability;
- A lack of staff trained in management techniques and technical matters;
- A lack of long-range planning;
- An inadequate enforcement of drinking water standards; and
- Tariff-setting approaches that do not allow for cost recovery.

A study in 2013 found that the same problems continue to exist in assessed sample LGU-run utilities.[26] Many rural providers are broadly structured as user-association types. The organizational typologies include CBOs, RWSAs, BWSAs, and cooperatives. The country has approximately 4,184 LGU-run utilities,[27] 1,429 of which operate Level III systems. These utilities typically encounter technical and management challenges in their operations.

LGU-run utilities report an average of 19 hours of water availability per day. Production is not measured, and the absence of commercial protocols is quite prevalent. For example, accounts are not ring-fenced, connections are not metered, collection efficiency is low, staff per 1,000 to connections ratio reaches 34. Only 21.0 percent of sample LGU-run utilities reported water potability tests.

The capacity-building system of LGU-run utilities is not established. DILG, along with NWRB to a limited extent, conducts capacity-building programs to address institutional development needs that are not covered by LWUA. LGU-run utilities often do not have staff members with the required skills set, and regular training for the trainers and participants is necessary.

Many capacity-building programs are continuously being provided to LGU-run utilities and similar WSPs. However, the effectivity of these programs is difficult to assess.

[24] *Castalia, Diagnostic Study of the Water Sector in the Philippines – Final Report to the World Bank, March 2009*

[25] *Wilson-Montgomery (A Joint Venture), Report on Proposed Institutional Development in Support of Improved Urban Water Systems, National Economic and Development Authority, 1973*

[26] *De Vera, Antonio et al, Developing the Institutional Framework for the Water Supply and Sanitation Sector and Identifying Investment Plans and Programs – Final Report, DPWH, 2013*

[27] *Registered under Listahang Tubig as of December 2018*

MWSS Concessionaires

MWSS concessionaires cover the WSS services in Mega Manila, which is composed of NCR and parts of Region IV-A. The Manila Water Company, Inc. handles the East Zone Concession, and Maynilad Water Services, Inc. handles the West Zone Concession (see Table 11).

The concessionaires reported a consolidated net income of PHP 9.60 billion in 2015, which represents a 15.6 percent growth from the previous year. This growth is attributed to the sustained positive performance of the concessionaires which reported 1.27 million billed service connections that generated a 481.53 MCM volume in 2015. The estimated growth rates are 5.8 percent and 4.2 percent for the past two years, respectively, since 2015.

The concessionaires are financially capable of carrying out their investment plans. Both concessionaires have ventured into partnerships with other WSPs in the country and explored areas for expansion in the Southeast Asian Region.

Privately Owned and Managed Water Utilities

Most water privatization contracts outside Mega Manila are between LGUs and large companies. However, some small-scale, often informal, local operators provide services to a city or a municipality. In addition to Manila Water and Maynilad, other big private operators include Prime Water and Balibago Waterworks. However, there is no accessible financial and technical information on the WSPs that they operate.

These private utilities generally operate more efficiently than most LGU-run water utilities, given their stronger capital base and ability to recover their operating costs from tariffs.

Table 11: Manila Water and Maynilad Coverage Areas in Mega Manila

Manila Water		Maynilad	
Metro Manila	Province of Rizal	Metro Manila	Province of Cavite
Makati	Angono	Caloocan	Bacoor
Mandaluyong	Antipolo City	Las Piñas	Cavite City*
Manila*	Baras	Makati*	Imus
Marikina	Binangonan	Malabon	Kawit
Pasig	Cainta	Manila*	Noveleta
Pateros	Cardona	Muntinlupa	Rosario
Quezon City*	Jala-Jala	Navotas	
San Juan	Morong	Parañaque	
Taguig	Pililla	Pasay	
	Rodriguez	Quezon City*	
	San Mateo	Valenzuela	
	Tanay		
	Taytay		

**Part of the area*

2.5.2 Sanitation

Septage and Sewerage Services

Households and communities are responsible for constructing toilets and septic tanks in compliance with the National Building Code (NBC). For sanitary toilets and on-site treatment systems to be considered safely managed, wastewater and septage (sludge content of the septic tanks) from these systems should be treated and disposed of properly.

These on-site systems must be maintained by a service provider. Sanitation service means desludging (i.e., emptying of septic tanks) and providing sewerage services. These services are sometimes collectively referred to as wastewater management or fecal sludge management service. They include collection or conveyance, on-site or off-site treatment, and final disposal of wastewater, fecal sludge, or septage.

Outside Mega Manila, sanitation service providers are principally comprised of WDs, LGU-run water utilities, private sector service providers, and cooperative-run service providers. Private service providers are known by their famous monikers—*Malabanan* and *Pozo Negro.* Their services are generally part of a private business enterprise. However, some of these private desludgers do not have their own treatment facilities or access to one. Worse, many of them indiscriminately dispose of the waste that they have collected.

New private players are emerging to provide sanitation services and are compliant with existing regulations from DOH, Environmental Management Bureau (EMB), and other local ordinances of the LGUs. Registered private service providers report their activities to the LGUs they serve and to the Regional Health Offices of DOH to get and renew their ESC. By law, service providers can operate only in the areas that are stated and approved in their registration.

As of writing, there has been no known survey of sanitation service providers outside Mega Manila. Unofficial data shows that there are about 36 septage treatment facilities constructed all over the country at various stages of operation. Some sanitation services are offered by LGUs, but most are by WDs. An estimation of the performance of service delivery for sanitation in the country as of 2015 is shown in Tables 12 and 13.

Table 12: Estimated Coverage of Septage Management Programs in the Philippines, 2015

Areas with a Septage Management Program	Total Population within Franchise Area (2015 Population)	Percentage of the Population (2015) within Areas with a Septage Management Program
Mega Manila	14,868,425	14.7%
Outside Mega Manila	3,063,088	3.0%
Total	17,931,513	17.8%

Table 13: Estimated Coverage of Sewerage System Services in the Philippines, 2015

Areas with a Septage Management Program	Total Population within Franchise Area (2015 Population)	Percentage of the of Population (2015) within Areas with a Sewerage System Services
Mega Manila	12,877,253	12.8%
Outside Mega Manila	101,883	0.1%
Total	12,979,136	12.9%

Considering the percentage of the population within the franchise areas, septage management services are made available to about 3.0 percent of the population outside Mega Manila; only 0.1 percent of the population outside Mega Manila is served by existing sewerage system/s.

MWSS Concessions

According to the concession contract, the concessionaires need to report on the extent of their sanitation service coverage of current water supply connections or customers. This clause considers 100.0 percent coverage for septage management services. Table 14 shows a summary of the concessionaires' performance in sewerage services in 2017.

MWSS concessionaires have served a population of approximately 2.20 million and 2.40 million in terms of septage and sewerage services, respectively. This translates to less than 3.0 percent of the national population for 2015.

The concessionaires are obligated to schedule or program at least 15.0 percent of the total projected service connections in a year, considering a seven-year cycle. However, only 30.0 percent to 40.0 percent of the scheduled customers are actually served. The rest have no service connections or have opted to sign a waiver. The waiver states that the customer is relinquishing his or her claim on the desludging service and releases the concessionaire from any responsibility to provide the service. Concessionaires typically do not provide wastewater collection and treatment service to noncustomers.

Table 14: Septage and Sewerage Services Coverage by Concessionaires in Mega Manila, 2017

Concessionaires	Total Population within Service Area	Septage Collection Service		Sewerage Service	
		Population Served	Percentage Coverage	Population Served	Percentage Coverage
Manila Water	6,707,859	1,188,258	17.7%	955,533	14.2%
Maynilad	9,395,040	1,001,674	10.7%	1,455,920	15.5%
Total	16,102,899	2,189,932	13.6%	2,411,453	15.0%

2.6 Government Interventions: Policy and Program Reforms

The Philippine government implemented reform programs to increase access to and improve water service delivery from 1973 to 2015. These programs have significantly increased access but not necessarily improved the quality of service.

The figure below captures the reforms that were introduced under different administrations since the introduction of Presidential Decree (PD) 198 in 1973. The diagram is partly based on the World Bank's Diagnostic Study of the Philippine Water Supply Sector to reflect the developments after 2010.

Many of these reform initiatives have been fully implemented. Some have been partially implemented, while others are pending approval and implementation. Under these reforms, four programs and their objectives can be considered extensive in scope (as shown in Table 15).

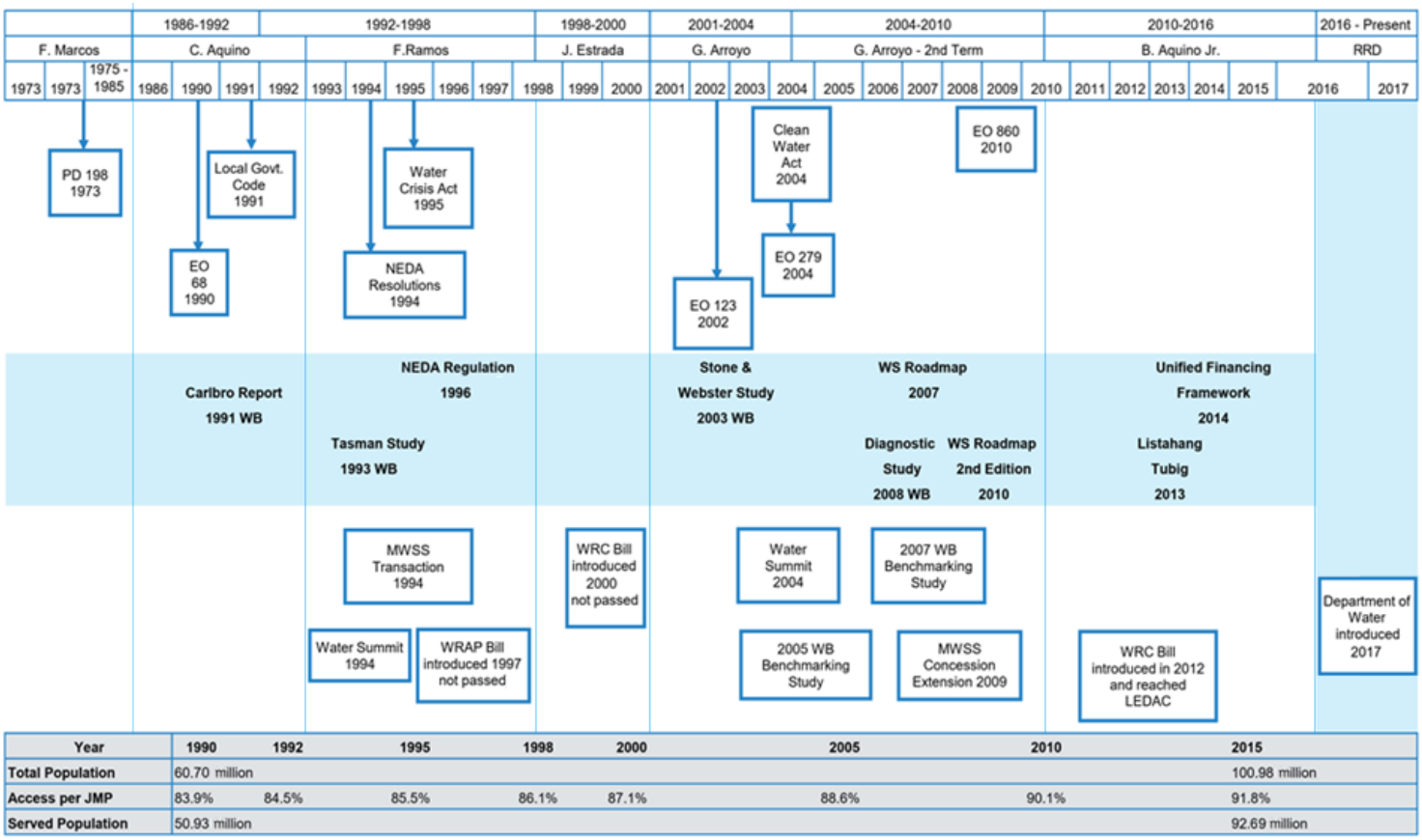


Figure 26: Historical Policy and Program Reforms in the Water Sector

Table 15: Major Reform Initiatives in the Water Sector

Initiative	Objectives	Degree of Success
Establishing WDs and LWUA (PD 198)	Build strong water utilities by providing appropriate corporate form, finance, and technical assistance	LWUA has supported the creation of 844 WDs through institutional requirements, technical assistance, supervision, and financing from 1973–2013.
Establishing MWSS concessions	Encourage Public-Private Partnerships (PPP) to improve operations and service	Maynilad and Manila Water have committed to cover NCR, Rizal, and some parts of Cavite, and Bulacan. According to the 2017 report of MWSS RO, the concessionaires have covered 92.2 percent of these service areas.
Creating a national water regulator	Ensure cost-recovery tariffs, and set service standards and benchmark performance for all WSPs	Despite several attempts, no national water regulatory agency has been created. The main reasons include the failure to demonstrate compelling public benefit, a legislative fear of creating an overly powerful body with too little accountability, and a lack of sustained support from the executive branch.
Implementing EO 279 of 2004: "Instituting Reforms in the Financing Policies for the Water Supply and Sewerage Sector and the WSPs and Providing the Rationalization of LWUA's Organizational Structure and Operations in Support Thereof"	Improve the creditworthiness of WSPs through a "graduation" process with LWUA Expand access to competitive commercial debt markets for WSPs	The EO has been implemented slowly from the outset but has improved thereafter with LWUA's full support. Many WDs have become more creditworthy and received selected financing from government funding institutions (GFIs) and other forms of more competitive commercial credit.

National Economic Regulator for WSS

There have been several attempts and proposals to create a national economic regulator governing all WSPs, but to no avail. A national regulator can hold all WSPs (LGU-run utilities included) accountable by setting standards for service and access as well as by monitoring compliance. This single authority can require all WSPs to adopt cost recovery policies and ensure a viable operation while keeping tariffs at a reasonable and affordable level.

The Clean Water Act

A few active Water Quality Management Areas (WQMAs) have been established in the country. WQMAs can help control and abate water pollution as well as manage "non-attainment areas".

Furthermore, DENR's revised effluent standards have not been converted to those that should be industry-specific. These standards can be derived from several policy directives based on the Clean Water Act of 2004.

DENR's responsibilities as the lead agency for the implementation of the Clean Water Act include the following:

- A National Water Quality Status Report reviewed annually;
- An Integrated Water Quality Management Framework;
- A ten-year water quality management area action plan;
- A National Groundwater Vulnerability Map;
- Water Quality Guidelines reviewed every five years;
- Effluent standards reviewed every five years;
- Internationally accepted procedures for sampling and analysis of pollutants, including testing procedures and accreditation of laboratories;
- Categorized point and non-point sources of pollution reviewed every two years;
- Classification of groundwater sources;
- Classification of water bodies according to their beneficial usage; and
- Information dissemination and conduct of educational awareness and value formation programs/campaigns on the effects of water pollution on health and environment, water quality management, and resource conservation and recovery.

Funding and Financing Support for Sanitation Reforms

The prescribed spending for the six-year action plan for sanitation and wastewater management was not carried out based on an indicative spending from 2013 to 2015. The proposed budget is approximately PHP 87.00 billion or an average of PHP 14.50 billion per year. However, the average amount spent is only approximately PHP 5.30 billion for the Sewage and Refuse Disposal Sanitation and Similar Activities.[28]

The government must develop fiscal and non-fiscal incentives to encourage LGUs and sanitation service providers to create WQMAs, introduce innovative technologies and approaches, as well as control water pollution more efficiently. The National Water Quality Management Fund (NWQMF) and Area Water Quality Management Fund (AWQMF) are fiscal measures that can help bankroll the efforts to control and mitigate water pollution, but they have not been fully operationalized .

Major efforts to develop and promote the wastewater charge system for commercial and residential sectors are needed as mentioned in the Clean Water Act. This initiative has not fully materialized and needs to be further studied.

The Manila Bay Mandamus

The Manila Bay Mandamus has established precedence for compelling government agencies to perform their mandates and take responsibility for years of neglect that resulted in damage to water bodies. Served in September 2002, the Mandamus required concerned government agencies to clean up and rehabilitate Manila Bay and restore its waters to SB classification to make it suitable for swimming, skin diving, and

[28] *PSA, National Accounts of the Philippines*

other forms of contact recreation. The decision is a first of its kind as it is also a continuing Mandamus, and it will be effective until the objective has been accomplished.

However, even with this Supreme Court order, only a few septage treatment facilities in Bulacan, Nueva Ecija, and NCR have been made operational in a span of 15 years. Only a handful of LGUs nationwide have established septage management programs, and a couple of HUCs are working on their existing sewerage systems. The water quality and the productivity of the Bay has continued to deteriorate. This has prompted the President to order its cleanup and rehabilitation. A multi-agency Task Force, led by the DENR, was created to oversee this effort and a three-year Action Plan has been developed and is being carried out.

National Sewerage and Septage Management Program

Figure 27 shows the agencies tasked to implement sanitation projects at the local level as part of the government's flagship sanitation program.

The DPWH, DOH, and Regional Development Councils (RDC) or Provincial Water and Sanitation Units are tasked with providing technical support to LGUs and managing sanitation services. Other agencies, such as DILG, DENR, NWRB, and DSWD are assigned to with providing technical assistance and capacity development to LGUs to comply with national economic and resource regulations. The LGUs are responsible for establishing, operating, maintaining, and guiding WSPs (LGU-run utilities, barangay waterworks, and to some extent, barangay water cooperatives).

WDs would often request assistance from LWUA and rarely from the LGU. External organizations and donors, however, are available to extend support.

Private operators are assumed capable of carrying out their tasks or providing for resources to incorporate regular and sufficient capacity enhancement programs to supplement operations. No government agency monitors

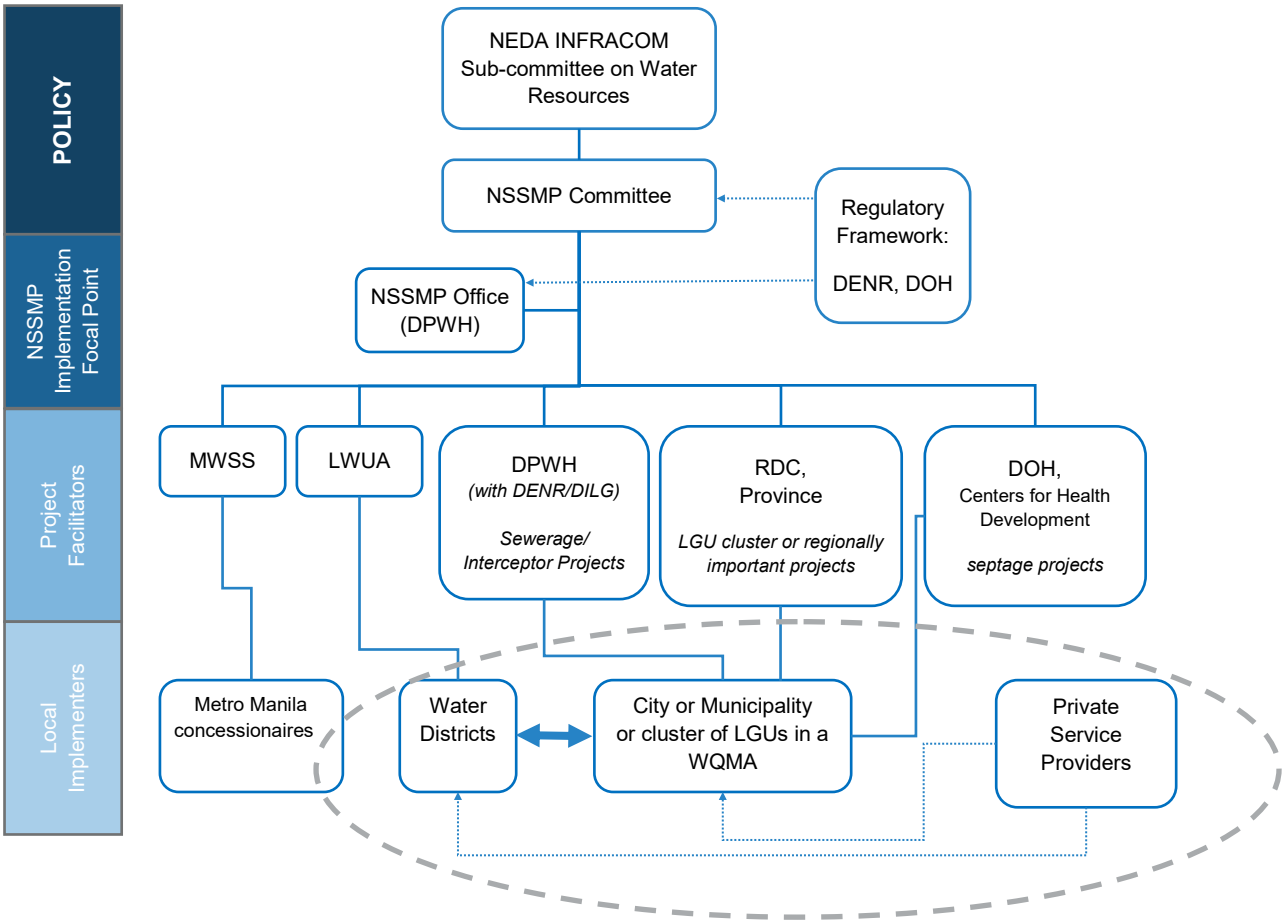


Figure 27: Organizational Chart for Implementing the National Sewerage and Septage Management Program

private operators unless done at the expense of a concession agreement, which is the case for MWSS and its private concessionaires.

The rollout of the NSSMP in the regions had limited impact considering the awareness of local implementers to the details of the said program.

The DPWH is tasked with developing the national program and with listing all sanitation projects nationwide. This task is shared with other departments, such as DOH and DILG. While DPWH has a shortlist of projects, it would require further assessment and technical assistance to develop the initial project proposals.

The NEDA Board has approved the amendments to the NSSMP framework to augment government subsidy for septage management and sewerage system projects in June 2017. A subsidy up to 50.0 percent is allowed for locally-initiated sanitation projects to be given to HUCs, cities, and first-class municipalities. WDs will need to coordinate with LGUs to avail of this subsidy. The scope of the subsidy needs to be expanded to cover all LGUs and WSPs to facilitate the development of sanitation projects. The grant subsidy must not be limited to big LGUs but should instead be demand-driven.

In addition, other important sanitation-related tasks are vying for government attention-as follows:

- Programmatic Environmental Impact Assessment (EIA) and carrying capacity assessment specific to sanitation interventions;
- Pollution research and development program to include non-point sources;
- Emergency sanitation and cleanup operations guidelines;
- Septic tank design standards and alternative on-site systems;
- Unified Plumbing Code and Implementing Rules and Regulations (IRR); and
- Guidelines for Sewerage Planning and Development.

2.7 Financing and Investments

The country's Public Investment Program (PIP) for 2017–2022 has included a budget of PHP 7.76 trillion for infrastructure development over the next six years. Of this amount, PHP 847.20 billion has been allocated by the current administration for infrastructure projects in the 2017 national budget through the "Build, Build, Build" Program, the government's centerpiece program seeking to accelerate infrastructure spending and development. The development and improvement of WSS services form part of this grand infrastructure investment.

On the average, about PHP 3.40 billion is invested annually for WSS programs.[29] This figure includes investments from national and local government agencies and units, private entities, WDs, GOCCs, and non-governmental organizations (NGO), among others. However, this amount is insufficient compared to the much larger annual investments required to achieve universal access to WSS services by 2030.

To supplement the budget, WSS projects can access investment financing through multiple channels and sources. One external channel is the Official Development Assistance (ODA). ODA partners have provided the government with grants and loans aligned with their strategic framework for development. These agencies include the World Bank (WB), the Asian Development Bank (ADB), the UN, and other bilateral aid agencies.

Another external channel is the private sector. The joint effort of the public and private sectors, also called PPP, can also be a mechanism for funding infrastructure projects.

Government banks, such as Land Bank of the Philippines (LBP) and Development Bank of the Philippines (DBP), also provide loans to WDs and large concessionaires. Some LGUs also acquire loans from these GFIs to finance their WSS projects.

In addition, the two largest water service companies in the country, Manila Water and Maynilad, have been expanding their services in NCR through improved water supply connections and redevelopment of existing networks and pipelines.

Some LGUs depend on national grant funds and are hesitant to explore different financial modalities. In addition, some LGUs do not prioritize the development of WSS. Meanwhile, other LGUs focus more on upgrading their water supply facilities than improving sanitation and sewerage.

This discrepancy is noticeable in the technical assistance and budget allotment provided by grants, loans, and aids. Funding for sanitation and sewerage program in rural areas is severely limited.

Financing Policies in the Sector

The following financing policies, guidelines, and reforms are relevant to WSS:

- **EO 279**[30]. EO 279 was passed to institute reforms in the financing policies for WSS and WSPs. All concerned agencies are directed to pursue reform objectives and policies. WSPs may choose their source of financing and encourage participation by LGUs, GFIs, and PFIs in financing WSS projects.
- **Unified Resource Allocation Framework (URAF).** The NEDA Board Committee on Infrastructure (INFRACOM) has developed the URAF to optimize the use of national government resources in increasing access to water and improving WSS, particularly in the LGUs. The URAF outlines the approaches and ways by which to finance the sector in an affordable and systematic manner.

[29] *2008–2012 Annual Average; sourced from the Philippines Water Supply and Sanitation Unified Financing Framework; Castalia and LIDP Report, 2014*

[30] *EO 279 was amended by EO 279-A in 2008 and by EO 62 in 2011. Under EO 279, LWUA was under the supervision of the OP. Under EO 279-A, it was transferred to the Department of Health and then transferred to DPWH under EO 62.*

2.7.1 Water Supply

The total investment for WSS projects is difficult to track owing to numerous financing channels or conduits.

In addition to public funds, WSS projects are financed through PPP and joint venture (JV) agreements. Attempts to form a national account for the WSS sector to enable rationalized monitoring of finances have failed.

Cost Recovery and Tariffs

Water Districts and the LWUA

Under PD 198,[31] LWUA shall have the authority to review the proposed rates of WDs to establish compliance. The rates, which must be supported by a 10-year projected cash flow, must be adequate to provide for:[32]

- Reimbursement from all new customers for the cost of installing new services and meters;
- Revenue from all water deliveries and services performed by the district;
- Annual operating expenses of the district;
- Maintenance and repair works;
- A reasonable surplus for replacement, extension, and improvements;
- Payment of interest and principal, and provision of a sinking fund for payment of debts as they become due; and
- Establishment of fund for reasonable reserves.

The measurement for setting the tariff is the cash balance at the end of the calendar year, which must be within two to three months of the succeeding year's operating expenses. A figure that is too low is considered critically alarming, and a figure that is too high points to a failure to utilize resources to address public need.

The law requires that increases for the minimum charges shall not go beyond 60.0 percent of the current rate. As added protection to the consumers, the minimum charge shall not be more than 5.0 percent of the average income of the low-income group. Although the term "low-income group" is not clearly defined, LWUA considers minimum wage earners under this category. Most tariffs of WDs are within the cap of 5.0 percent of the minimum wage in the country.

Table 16 shows the ideal average minimum charge for the first ten cubic

Table 16: Average Minimum Charge for the First Ten Cubic Meters

Year	Average Consumption Per Month (in m^3)	Minimum Charge for the First Ten Cubic Meters (in PHP)	Cost per 20 m^3 (in PHP)
2016	21.17	198.16	422.04
2015	20.99	197.39	420.26
2014	20.35	195.95	413.85
2013	20.97	195.44	412.81
2012	21.37	194.07	409.98

Source: LWUA

Table 17: General Indicators for the Approval of Tariffs

Indicator	Description
NRW	Production–Consumption/Production
Collection Efficiency	Total current collection/Total current billings
Market Growth	Number of service connections generated for specific years in the CF
Capital Expenditure	Actual implementation of scheduled CapEx in the CF
Cost Control	Deviation from the amount of fixed and other O&M costs in CF
Reserves	Actual amount of reserves as compared to CF projections
Staff Productivity Index	Ratio of WD employees to active connections

[31] *Presidential Decree 198: Declaring a National Policy Favoring Local Operation and Control of Water Systems; Authorizing the Formation of Local Water Districts and Providing for the Government and Administration of Such Districts; Chartering a National Administration to Facilitate Improvement of Local Water Utilities; Granting Said Administration Such Powers as Are Necessary to Optimize Public Service from Water Utility Operations, and for Other Purposes*

[32] *Manual on Water Rates and Related Practices, issued by LWUA February 2000*

meters.[33] The rates are below the cap of 5.0 percent of the average minimum wage[34] in the country, which is calculated at PHP 6,446.00 as provided by the law.

A public hearing is required before water rates can be approved. For WDs covering more than one LGU, a public hearing shall take place for every city or municipality.

Since tariffs are based on prospects and projections, LWUA issued a resolution to ensure that WDs will do what is necessary to achieve their business plans and targets. Table 17 presents the general indicators and conditions in the approval of tariffs.

WDs that fail to adhere to the indicators may be sanctioned, which include withholding an action on or approval of subsequent tariff adjustments or financial assistance.

Private Water Providers and the NWRB

NWRB created a primer on tariff-setting and regulation in March 2005 that applies to WSPs in the private sector. The guidelines require WSPs to come up with a five-year business plan as basis for the requested water rates.

The goal of tariff-setting is to ensure that there are sufficient funds to provide for the agreed-on levels of service, such as number of hours of service, water quality, NRW percentage, service coverage, and pressure at which the service is provided. Thus, WSPs are required to commit to targets and carry out the terms indicated in KPIs.

NWRB adopted the return on rate base (RORB) approach where the revenue requirement for the next five years is based on the level of operating expenses, depreciation of property, and reasonable surplus equivalent to 12.0 percent of net book value of property, etc.

Since the approved tariffs are based on projections, the guidelines included a mechanism to make any upward or downward adjustment at the end of the five-year period to consider deficiencies. NWRB allows a maximum ROI of only 12.0 percent, and adjustments can be applied in the succeeding tariff proposals.

The general rule is to consider consumers as residential connectors, but NWRB may allow other categories if the consumption is substantial. The rate comprises two parts: minimum charge and commodity charge. The minimum residential charge should not exceed 5.0 percent of the family income of the low-income group, within the service area. As part of its monitoring mechanism, WSPs are required to submit an annual report to NWRB, which includes entries on their operation costs and financial performance.

LGU-Run Utilities and the DILG

Expanding sustainable investment in the water sector is hampered by the low level of cost recovery for WSPs. If WSPs are not efficiently managed, this will slow down the pace of development and stall the expansion of the water sector.

Despite state policy for cost recovery, actual progress towards this end has been a challenge.

For some LGU-run utilities, tariffs cannot recover O&M costs. These utilities are dependent on local government subsidies to compensate for O&M costs and capital expenditures.

The structure for LGU-run utilities varies from decreasing to increasing block rates. For lower service levels, majority of tariffs are virtually non-existent. Local governments invest in replacements and maintenance. Additional connection fees do not recover the full costs of connection.

[33] From LWUA website (http://122.54.214.222/water rates/RatesTable.asp)
[34] Source: https://www.nwpc.dole.gov.ph/pages/statistics/stat_comparative.html. For comparative purposes, the figure used is the lowest non-agriculture minimum wage in Region IV-A.

Investment Spending

A summary of significant investments in the WSS sector by the government and GOCCs is shown in Table 18.

Table 18: Investments in the WSS Sector Since 2010

Project/ Program	Source	Amount
Sagana at Likas na Tubig Para sa Lahat (SALINTUBIG) Program	Public funds	PHP 5.81 billion
Capital Investment for 2016 and 2017	Public funds	PHP 1.51 billion
Assistance to Disadvantaged Municipalities/ Assistance to Municipalities 2017	Public funds	PHP 19.43 billion
Tourism Water Supply Infrastructure Program (TWSIP) 2014 General Appropriations Act (GAA)	Public funds	PHP 1.73 billion
Manila Water Company, through its subsidiary Manila Water Philippine Ventures, Inc. (MWPV)	Private funds through loan	PHP 4.00 billion
Angat Water Utilization and Aqueduct Improvement Project Phase II (2010)	Private funds through loan	PHP 5.26 billion

Note: This does not represent the total investment from the government for the WSS sector in the last five years.

A summary of significant investments in the WSS sector by donor agencies is shown in Table 19.

Table 19: Investments in the WSS Sector by Donor Agencies Since 2011

Donor Agency	Program	Amount
World Bank	Support to Philippine water, sanitation, and flood protection initiatives for 2015	USD 4,700.00 million
ADB	Support to WSS projects for the Laguna Lake Flood/Integrated Water Resource Management Program, the Second Phase of the Angat Water Transmission Improvement, Angat Water Transmission Improvement Project, and the Water District Development Sector Project in Metro Manila	USD 770.00 million
ADB	Support to the improvement of water and sanitation assets outside NCR	USD 60.00 million
ADB	Grants of subsidy for sanitation facilities and capacity-building support for LWUA	USD 3.00 million
United States Agency for International Development (USAID)	Expanding access to financing for investments in WSS projects	-
JICA	Support to the development of a water supply system in Metropolitan Cebu	-
Asian Infrastructure Investment Bank (AIIB)	Support to the New Centennial Water Source - Kaliwa Dam Project in Quezon	USD 374.00 million

A summary of projects in water and sanitation under PPP arrangements is shown in Table 20.

Table 20: Water Supply and Sanitation Projects under PPP Arrangements

Project Title	Legal Basis	Project Cost (in USD Billion)	Implementing Agencies (IAs)	Contractual Scheme	Procurement Mode	Duration of Contract
Bohol Water Supply System	NEDA JV Guidelines, RA 7160	0.02	Provincial Government of Bohol	JV	Solicited	Jan 2015 – Dec 2019
Clark Water Supply and Sewerage	RA 7118	0.06	Clark Development Corporation (CDC)	Contract-and-Add (CA)	Solicited	2000–2025; extended to 2040
MWSS Privatization	RAs 7118, 8041, 6234	7.00	MWSS	Contract-Add-Operate-and-Maintain (CAOM)	Solicited	Aug 1977 –Aug 2022
Subic Water and Sewerage	NEDA JV Guidelines	0.12	Subic Bay Metropolitan Authority	JV	Solicited	April 1997 –April 2022

2.7.2 Sanitation

Sanitation projects and water supply projects are funded similarly. Much of the recent financing mix is applicable to sanitation from a pure debt financing scheme and public funding to privately funded Build-Operate-Transfer (BOT) projects to PPP funding mechanisms.

The investments for sanitation facilities and services are allowed by law to be recovered through any viable tariff system. The Philippines, however, has very limited experience in instituting a tariff system for sanitation services and looks to advanced countries for tariff models that can work locally.

Tariff formulation for all WSPs will ideally need to be under one economic regulator. A uniform model of how sanitation systems are safely managed and valuated must be implemented, regardless of institutional structure. The current guidelines for tariff setting for sanitation from LWUA is reflected in a Board of Trustees resolution. These tariffs must incorporate factors, such as cost of money, capital buildup projections, and O&M cost qualified during the probing period. Tariffs can be more encompassing to protect future expenditure requirements of WSPs.

Local councils formulate the tariff for LGU-run and CDA-initiated WSPs. This process is very arbitrary and sometimes without recourse to the true value of the service and investment. It often leads to poor implementation, maintenance, and management of the system and service, and must be reviewed to ensure correct pricing of a vital service.

2.8 Regulation

Several pieces of legislation were crafted and implemented with respect to the WSS sector. Some of the key legislative tools surrounding the WSS sector are briefly discussed below.

2.8.1 Water Code of the Philippines

PD 1067, also known as the Water Code of the Philippines, was promulgated in 1976 and has the following underlying principles:

- All waters belong to the State.
- All waters that belong to the State cannot be the subject to acquisitive prescription.
- The State may allow the use or development of waters by administrative concession.
- The utilization, exploitation, development, conservation and protection of water resources shall be subject to the control and regulation of the government through the National Water Resources Council (later renamed NWRB).
- Preference in the use and development of waters shall consider current usage and be responsive to the changing needs of the country.

2.8.2 Sanitation Code of the Philippines

The Sanitation Code of the Philippines was promulgated in 1975 under PD 856. Chapter 2 of the code covers sanitation.

The code prescribed the standards and procedures for water supply that include standards for drinking water, water treatment for drinking, and disinfection of contaminated water sources and distribution systems.

The code also covered types of water examinations required for drinking water, examining laboratories and submission of water samples for examination, and other protective measures, which include required minimum distances of artesian, deep, or shallow wells from any source of pollution.

2.8.3 Other Legislation, Policies, and Issuances

Table 21 shows the relevant policies and dominant issues from 2002 to 2017.

2.7.4 Economic Regulation

Only 27.0 percent of piped WSPs, mostly WDs and private WSPs, are subject to economic regulation. In addition, there is no lead agency for the sector that grants and revokes licenses and set standards for public and private WSPs. Several agencies (as shown in Table 22) act as economic regulators for water in the absence of a lead regulatory agency.

Some regulations have not been modified to suit certain changes in the WSS sector over the years. For instance, LWUA's long approval process for tariff adjustments has stalled WDs' expansion and improvement projects.

In addition, current tariff structures restrict the responsiveness of small WSPs or WSPs in poor communities. NWRB is not structured to regulate private WSPs, but it has played the role of a regulator since 1978.

LGU-run utilities and MWSS are self-regulated. Most LGU-run utilities perform poorly because they are not required to adhere to set national standards or targets and have limited access to financing. In contrast, MWSS is financially sustainable, but its internal regulatory body presents a potential conflict of interest. The internal body continues to operate after it was created as a "temporary" solution in the absence of an independent body in 1997.

Private water companies and LGUs have explored models of partnerships to reach

Table 21: Relevant Legislation, Policies, and Issuances (2002–2017)

Legislation, Policy, and Issuance	Title
EO 123 of 2002	Reconstituting the NWRB, transferring the tariff setting function of LWUA to NWRB, and transferring it from DPWH to DENR
RA 9286	An Act Further Amending PD 198 (2003)
RA 9275	Philippine Clean Water Act of 2004
EO 279 of 2004	Instituting Reforms in the Financing Policies for the Water Supply and Sewerage Sector and WSPs, and Providing for the Rationalization of LWUA's Organizational Structure and Operations in Support Thereof
EO 387 of 2004	Transferring the LWUA from the OP to the DPWH and Strengthening the Supervision by the DPWH Secretary over the MWSS
EO 738 of 2005	Transferring the LWUA from DPWH to DOH
EO 816 of 2009	Declaring the River Basin Control Office under the DENR as the Lead Government Agency for the Integrated Planning, Management, Rehabilitation, and Development of the Country's River Basins
EO 860 of 2010	Redefining the Composition of the NWRB and returning the tariff setting function from NWRB back to LWUA
EO 62 of 2011	Transferring LWUA from DOH to DPWH
2013 NEDA JV Guidelines	Revised Guidelines and Procedures for Entering into JV Agreements Between Government and Private Entities
DOH Administrative Order 2014-0027	National Water Policy on Water Safety Plans for all Drinking WSPs

more people. NEDA issued the JV Guidelines in 2013, and more than 60 WDs were expected to sign JV agreements by the end of 2018. However, a review of the guidelines revealed major lapses in transparency in the solicitation, application, and implementation of these agreements in 2017.

In addition, many WDs believe that JV agreements violate the restrictions in the contracts that the board of directors of WDs can engage in as stated in Section 31 of PD 198.

Several private companies acquire rights to water sources, so they can sell the permits to WDs. This unchecked process gives undue advantage to the companies.

Lastly, some existing regulations are vague and poorly enforced. The Clean Water Act allows WSPs and LGUs in Metro Manila and HUCs to collect fees from commercial and residential establishments connected to sewerage systems. However, the law does not state the agency responsible for reviewing and approving these fees. This gray area has allowed WSPs to set their own fees without an external review.

Table 22: Regulating Agencies in the WSS Sector

Agency	Regulated Entity
LWUA	WDs
NWRB	Private waterworks including cooperatives, real estate developers and private operators
Philippine Economic Zone Authority (PEZA)	Economic zones
LGU	LGU-run utilities (self-regulated)
MWSS	Manila Water and Maynilad
Tourism Infrastructure and Enterprise Zone Authority (TIEZA)	Designated tourism economic zones (including Boracay)
Subic Bay Metropolitan Authority (SBMA)	Subic Water
CDC	Clark Water

2.9 Issues and Challenges

This report lists herein the most important issues and challenges confronting the WSS sector per component.

Table 23: WSS Issues and Challenges

Components of WSS Sector and Their Objective Statements	Issues and Challenges Water Supply Sanitation
Natural Resources System Efficiently Managed Finite Water Resources and Water Ecosystem	▪ Some potential water sources are polluted or contaminated.
	▪ Water sources are insufficient in some areas. Other sources are drying up due to over-extraction or sensitivity to weather patterns and climate change.
	▪ Assuming business as usual, the country will experience high water stress owing to high total water withdrawal against projected renewable water resources by 2040.
	▪ Rainfall variability and extreme weather events (usually attributed to climate change) make water resource management more difficult.
	▪ Excessive groundwater extraction has led to saltwater intrusion and groundwater-related subsidence.
Socioeconomic System WSS Promoting Socioeconomic Growth	▪ Increasing population and economic growth increase water demand and generation of waste and wastewater.
	▪ Rising temperature (due to climate change) will increase water usage.
	▪ Climate change increases the risk of waterborne diseases and transmission of malaria.
Use of and Impact on Water Responsible Use and Balanced Demand and Supply	▪ The quality of water resources is deteriorating because of unmanaged wastewater entering the water ecosystem.
	▪ There is a lack of awareness and concern about the effects of unmanaged waste and wastewater on watersheds, water sources, and water ecosystems.
	▪ There is a lack of appropriate technologies, or application thereof, to optimize the use of water resources.
	▪ There is no clear policy promoting water demand management to maximize available water supply. This includes water efficiency and water conservation for all users, the use of the right quality of water for its intended use, the use of economic instruments and other incentives/disincentives to effect behavioral change.
Administrative and Institutional System Enabling Administrative and Institutional Arrangements	▪ There is no single body focused on WSS, resulting in a fragmented sector with multiple water institutions and no clearly defined institutional roles regarding sanitation issues.
	▪ There is no apex body to oversee the whole cycle with respect to the use of the country's water resources — from the source, to the quantity and manner to which water is used, to sanitation and treatment, and ultimately, back to the source. Also, the inadequacy in numbers of river basin organizations makes it difficult to carry out a holistic planning approach.
	▪ NWRB does not have the appropriate institutional structure to complement its mandate as a policy-making body, water resource regulator, and economic regulator.[35]
	▪ WSS data gathered by the PSA are limited.
	▪ LGUs lack the capacity and capability to perform their obligation of ensuring the reliability of WSS services per the LGC.[36]

[35] *The regulatory stick of NWRB is not exercised when financing from their institution is unavailable.*

[36] *LGUs that run water utilities often lack the technical and financial capacity to operate, maintain, and expand their services. Furthermore, in some LGUs, WSS is not a priority.*

[37] *Several economic regulatory agencies were formed to oversee the water sector thus making them very inefficient with respect to their regulatory functions.*

[38] *Only 27.0 percent of the country's piped water utilities (mostly WDs and private utilities) are subject to economic regulation, leaving 73.0 percent without any standard guidelines for tariff setting or oversight on performance.*

[39] *The issues on WSS data collection and management include, but are not limited to: (a) lack of an information and monitoring system on access and coverage; (b) lack of baseline data on WSS; (c) inadequate sector data that can guide policy and investment decision makers; (d) unavailability of current/up-to-date water resources data; (e) very limited data on water quality and sanitation; and (f) outdated data of most WSPs registered under NWRB's Listahang Tubig*

Table 23 (continued): WSS Issues and Challenges

Components of WSS Sector and Their Objective Statements	Issues and Challenges Water Supply Sanitation
Policies, Regulation, and Management WSS-related Policies, Regulations, and Management	▪ The sector's economic regulatory framework is severely fragmented,[37] poorly enforced, and has very limited[38] coverage. Also, there is no regulatory oversight on JV arrangements.
	▪ Poor enforcement of and compliance with policies and laws (i.e., Clean Water Act, and other resource-, economic-, environment-related policies) can be observed.
	▪ The sector lacks an independent water agency with the power to grant and revoke licenses, as well as the authority to set standards and targets for private and public WSPs.
	▪ WSS data and information used in decision-making are limited, scattered among the different government agencies/offices that have water-related functions, and poorly managed and monitored.[39]
	▪ Implementation, monitoring, and management of WSS services and infrastructure are sorely lacking.[40]
	▪ There have been no directives or strategies by which to translate PDP/SDG targets and commitments into local programs and projects.
	▪ Issuance of water rights is not regulated. In addition, speculators hoard water permits.
	▪ Sanitation interventions are inadequate, not sustainable and unbalanced in terms of implementation.[41]
	▪ Many WSPs have inadequate management and O&M capability.[42]
	▪ Water rates are too low in some areas, thus yielding no cost recovery.
	▪ Access to potential technologies is restrictive.[43]
	▪ Water is being used as a political commodity. Some LGUs and WDs are caught up in political conflict or burdened by interference from politicians, thus affecting the interest of water consumers.
	▪ Investments in WSS sector are insufficient.
WSS Infrastructure and Services Resilient, Responsive, and Sustainable WSS Infrastructure and Services	▪ Water supply systems (or structures) are not properly designed,[44] constructed, operated, and maintained.
	▪ There is a lack of water supply structures to optimize available resources,[45] ensure water quality and sanitation,[46] or provide access to water.[47]
	▪ Funds are inadequate[48] and access to financing is difficult,[49] yet there are programs and projects (NSSMP, LWUA WD Development Sector Project) with very few takers.
	▪ Some WSPs are not operational and sustainable.[50]
	▪ Some WSPs, including WDs and LGU-run utilities, fail to serve barangays within their franchise area and meet water supply and service delivery standards[51]
	▪ Some WSPs are unfamiliar with new technologies and updated techniques.

[40] Monitoring of water quality and sanitary facilities is minimal or rarely done. There are no nationwide programs established to implement and monitor wastewater/fecal sludge collection and treatment tied to water pollution control. A lack of comprehensive and participatory planning at the local level and a lack of proper community engagement can also be observed.

[41] The government has failed to invest on a scaled-up, sustained, and well-coordinated campaign at the national and the local levels. Sanitation policies and programs are lopsided, i.e., emphasis is placed on the responsibility of WSPs and not on public participation and sanctions for noncompliance.

[42] There is a lack of capacity with respect to O&M and WSS improvement planning, and fundamentals on tariff setting among some WSPs. Some LGU-run utilities, in particular, cannot increase rates and thus, are subsidized. To some extent, unqualified board members are appointed to head many WDs.

[43] Potential technologies entail many requirements and conditions, thus making such technologies expensive or difficult to adopt.

[44] WSS infrastructure is not resilient to climate change and climate hazards. Furthermore, proper and comprehensive studies on intended water sources are not conducted before structures are built and conveyance pipes laid. Many (relatively) newly constructed water supply systems (mostly in rural areas) do not or poorly operate because water sources are too limited.

[45] Certain potential water sources are too expensive to develop; other sources are located very far from communities.

[46] There is a lack of water laboratories and septage facilities in far-flung areas.

[47] Most surface water sources require high dams, tunnels, and long conveyance lines. Elevated communities have no access to water supply when a water source is located in a lower area. Water has to be transported to island communities that have limited or no potential water resources.

[48] National funds are inadequate for the maintenance, rehabilitation, and expansion of water systems.

[49] Smaller and less or non-creditworthy water districts and LGU-run utilities find it difficult to comply with the stringent requirements to access funds and financing.

[50] WSPs are not operated as business enterprises. There are WSPs with high NRW (e.g., 60.0 percent or more).

[51] Some WSPs need to address consumer-related issues such as unsatisfactory service, limited coverage of franchise areas, and inefficient water supply delivery.

3 Vision and Development Outcomes

3.1 Vision

"All Filipinos have access to sustainable and affordable safe water supply, and to adequate safely managed sanitation services by 2030."

3.2 Sector Goals and Outcomes: Benchmarks and Targets

The PWSSMP's vision is set on the universal access to WSS services by 2030. It is in accordance with the direction towards achieving the PDP targets by 2022. Table 24 details the sector goals and targets per the SDG, PDP, and the Clean Water Act of 2004.

Table 24: Sector Goals and Benchmarks

Hierarchy of Objectives	National Targets and Commitments	Baseline	Source of Data
Goal	Universal (100.0 percent) and equitable access to safe and affordable drinking water by 2030	92.0 percent	NDHS, 2017
	Universal access to adequate and equitable sanitation by 2030	69.0 percent	NDHS, 2017
Outcomes	By 2022, percentage of households with access to safe water supply increased to 95.0 percent	88.0 percent	FIES, 2015
	By 2022, percentage of households with access to basic sanitation increased to 97.0 percent	74.0 percent	FIES, 2015
	By 2020, all LGUs (1,634) will have developed septage management systems.	3.0 percent (52 of 1,634)	PWSSMP Inventory
	By 2020, the 17 HUCs will have developed sewerage systems.	6.0 percent (1 of 17)	PWSSMP Inventory
	By 2020, approximately 43.60 million people will have had access to septage treatment facilities.	41.0 percent (17.93 of 43.60 million)	PWSSMP Inventory
	By 2020, approximately 3.20 million people will have had access to sewerage treatment facilities.	24.7 percent (3.20 of 12.98 million)	PWSSMP Inventory
	By 2020, PHP 26.30 billion will have been invested in sanitation improvement projects.	No data available	
	By 2020, approximately 346 million kilograms of biochemical oxygen demand (BOD) will have been diverted from the environment per year as a result of the sewerage and septage management projects.	No data available	

Legend: SDG 2030 PDP 2017–2022 Clean Water Act of 2004

3.2.1 Water Supply

3.2.1.1 Normative Elements

The normative content of the human right to water supply may serve as a guide in assessing the state of the country's WSS sector (i.e., if the minimum baseline requirements of providing WSS services are met). The normative elements are divided into five categories (Table 25).

Table 25: Normative Content of the Human Right to Water Supply

Normative Content	Key Concepts and Definition
Availability	▪ The quantity of water for drinking and domestic use must be available: – Level I service: at least 20 liters per capita per day (lpcd) – Level II service: at least 40 lpcd – Level III service: at least 80 lpcd ▪ Water supply must be reliable and available at any time of the day.
Physical Accessibility	▪ Water facilities must be physically accessible, i.e., near or within one's home or place of work. ▪ Distance from dwelling to water point and source to person ratio must be as follows: – Level I service: 250 m; 15 households – Level II service: 25 m; 4–6 households – Level III service: within premises; 1 household ▪ The time spent in hauling water must be a maximum of 30 minutes. ▪ There must be a safe and convenient path for all. ▪ Adopted technology must be user-friendly. ▪ Water must be accessible to men and women of all ages and those with specific needs.
Quality/Safety	▪ Water supply must be safe for drinking and must comply with the PNSDW and other water quality standards contained in relevant laws and policies.
Affordability	▪ Water service must be reasonably priced and affordable; payment must not limit people's capacity to acquire other basic goods and services.
Acceptability	▪ Water supply services must be acceptable in relation to the cultural needs and preferences of users. ▪ Water must be of an acceptable color, odor, and taste for personal or domestic use; otherwise, people may resort to unsafe alternatives. ▪ Facilities, such as public rest rooms, must be acceptable especially with regards the standards of personal hygiene. Facilities must ensure the privacy and dignity of users.

Source: The Influence of the Human Rights to Water and Sanitation Normative Content in Measuring the Level of Service (Flores, 2017)

3.2.1.2 Access

This master plan envisions a percentage increase in access to safe water supply to 95.9 percent in 2022 and 100.0 percent in 2030 (see Table 26). By 2030, approximately 128 million Filipinos would have had universal access to safe water supply.

Baseline data in water supply access per province were gathered from the regional planning workshops. Numbers were consolidated to form the regional outlook per level of service (see Figure 28) forming the overall target at the national level.

Table 26: Water Supply National Targets and Commitments for 2022 and 2030

Population	2015 Baseline		2022 Target		2030 Target	
	Percentage	in Millions	Percentage	in Millions	Percentage	in Millions
Total	100.0%	100.98	100.0%	113.47	100.0%	127.58
With Access to Safe Water	87.2%	88.05	95.9%	108.82	100.0%	127.58
Without Access to Safe Water	12.8%	12.93	4.1%	4.65	-	-

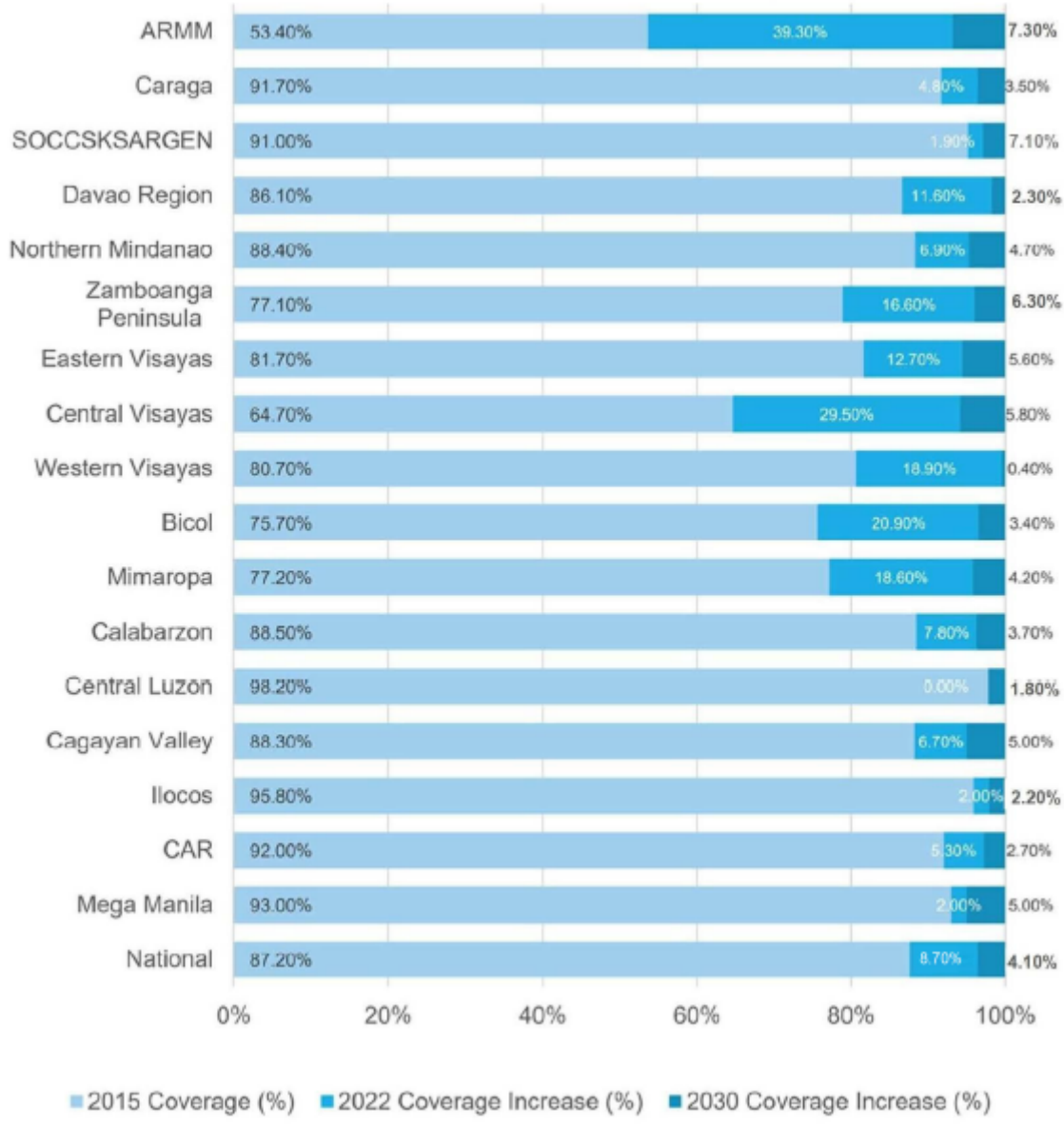


Figure 28: Coverage Baseline and Targets in 2022 and in 2030 towards 100% Coverage

3.2.1.3 Service Quality

Target beneficiaries must receive safe and reliable water supply at all times. This definition excludes cases where the distance to the water source is excessive, water is rationed, or water pressure or quality is inadequate.

The following KPIs of service quality will be measured for all levels of water supply service:

- Water Quality;
- Water Reliability/Availability; and
- Water Pressure.

Data are lacking in some areas, thus a survey using the specified indicators is needed to establish the baseline conditions with which future numbers will be compared.

Water Quality

Water quality measures how good the water is in terms of supporting beneficial uses or meeting environmental values. Potable water is water that is suitable for drinking and cooking. Potability considers the safety of water in terms of health, and its acceptability to the consumer, which is in terms of taste, odor, color, and other qualities palatable to the senses.

As mandated by law, all water supply sources and drinking WSPs must abide by the requirements prescribed by PNSDW which was updated and stipulated in DOH Administrative Order No. 2017-0010. The standards provide the minimum criteria for the chemical, physical, and microbiological quality of potable water.

NWRB and DOH prescribe protocols to test the water at the supply source and through the distribution system. The minimum frequency of physical and chemical sampling for drinking water supply is once a year. Table 27, details how often testing is done for the microbiological properties of water.

Level III WSPs, particularly WDs, are required to maintain 0.2 mg/l of residual chlorine at the farthest point of the service area. This protocol ensures that water quality is safe from the water source to the customers' taps.

Monitoring and testing are important when major developments or environmental changes occur, or if important changes are found in the water quality from a tested source thus compromising water quality.

Access to safe water must include acceptable water quality. However, the quality of water at the source is not monitored, and data, if available, are kept in different agencies depending on the level of source and management type.

The KPI for water quality is the percentage of water sources and/or WSPs that meet PNSDW requirements. Baseline conditions will have to be established and collated at the national level. The recommended target is that 100.0 percent of water sources and WSPs are safe and potable.

Table 27: Minimum Frequency of Sampling for Drinking Water Supply Systems for Microbiological Examination (from PNSDW)*

Source and Mode of Supply	Population Served	Minimum Frequency of Sampling
Level I	90–150	Once in three months
Level II	600	Once in two months
Level III	Less than 5,000	Two samples monthly
	5,000–100,000	One sample per 5,000 population + 2 additional samples per month
	More than 100,000	One sample per 10,000 population, plus 12 additional samples monthly
Emergency Supplies of Drinking Water		Before delivery to users

* The values in the table are for total coliform and thermotolerant coliform / *E.coli*

Water Reliability and Availability

Water reliability and availability measure the percentage of water sources and/or WSPs that deliver 24-hour water supply.

Water rationing occurs at every level of service when water supply is not available all day. Water that is not readily available 24 hours a day poses health risks and affects meter efficiency. Polluted water may infiltrate the leaks in pipe joints and service taps when water service is cut.

Therefore, maintaining a 0.2mg/L residual chlorine helps counter the health risk.

Similar with water quality, baseline data for water availability must be established. WSPs must strive to achieve 24-hour water availability, especially considering that water service must be reliable during times of emergencies.

However, in most small WSPs, economic reasons prevent 24-hour daily water service. Availability depends on system pressures (e.g., during peak hours) and the capacity of available water sources. In these cases, monitoring and recording the average number of hours of water availability must be done. Collected data are paramount in establishing an average at the national level, which may serve as a benchmark for the operations of WSPs.

Water Pressure

The quality of water service is measured by the amount of water pressure available at the household connection (for Level III) and public tap (for Level II). Water pressure is directly proportional to discharge or flow rate, and consequently, water volume. Low pressures mean less water supply being delivered at a certain time.

In addition, maintaining minimum pressures in the pipe prevents supply contamination and promotes the overall efficiency of the water supply system. The minimum pressure at system junctions (i.e., points in the network where links join and where water enters or leaves the network) must be 10 psi or 7 m (equivalent to a two-story house) at peak hours. On the other hand, the minimum pressure is 7 m at peak hours for each household. At the most remote end of a water supply system, minimum pressure may be allowed to be as low as 3 m (equivalent to a one-story house).

The maximum allowable pressure in the system must be 70 m. Pipes may not be able to withstand greater pressures, which may result in pipe bursts.

For the PWSSMP, the minimum pressure of 7 m is adopted for Level III WSPs. This is based on the standards used by the country's two biggest Level III WSPs, Maynilad and Manila Water. The key indicator to be monitored is percentage of Level III WSPs with the 7-meter minimum pressure.

3.2.1.4 Sustainability

The following KPIs measure sustainability:

- Percentage of population with consumption of at least 20 lpcd (Level I), 40 lpcd (Level II), and 80 lpcd (Level III);
- Percentage of WSPs that meet the NRW targets; and
- Percentage of WSPs that meet operating ratio and collection efficiency targets

To ensure efficient WSPs, the following must be undertaken:

- Organize water utilities as economic enterprises or form new WDs;
- Enforce a system for rewards and incentives to motivate WDs to improve their performance;
- Create a special unit in municipalities that will handle Level I and Level II services; and
- Create a dedicated office in the provinces to lead the development of WSP projects and coordinate with those in charge of provincial development plans.

3.2.1.5 Results Matrix (Comprising Existing and New KPIs)

In addition to the goals in the PDP 2017–2022, improvements in service quality and sustainability of WSPs will be measured.

Below are the proposed benchmarks and targets in regard to access, service quality, and sustainability involving LGUs and WSPs.

Table 28: Proposed Benchmarks for the Water Supply Sector

Key Performance Indicator	Source of Data	2015 Baseline	2022 Target	2030 Target
Percentage of households with no access to safe water	PSA	12.8%	6.6%	0.0%
Percentage of households with access to Level III systems	PSA, Regional Consultations	43.6%	58.3%	77.1%
Percentage of households with access to Level II systems	PSA, Regional Consultations	11.2%	15.0%	14.0%
Percentage of households with access to Level I systems	PSA, Regional Consultations	32.4%	20.1%	8.9%
Percentage of WSPs providing water that meets the PNSDW requirements	No data available			
Percentage of Level III WSPs achieving 7 m minimum water pressure	No data available			
Percentage of WSPs that have sufficient water sources to serve franchise beneficiaries	No data available			
Percentage of Level III WSPs with an average per capita consumption equal to or less than 120 lpcd	No data available			

3.2.2 Sanitation

3.2.2.1 Normative Elements

The normative content of the human right to sanitation guides the assessment of the minimum baseline requirements for providing WSS services to the populace. Table 29 divides the normative elements into five categories.

Table 29: Normative Content of the Human Right to Sanitation

Normative Content	Key Concept and Definition
Availability	▪ The number of sanitation facilities (with associated services) near one's residence or place of work must be sufficient. ▪ Facilities may be individual and/or shared.
Physical Accessibility	▪ Sanitation facilities must be reliable. ▪ Sanitation facilities must always be accessible. ▪ Sanitation facilities must have a reasonable waiting time. ▪ Sanitation facilities must have a safe and convenient path for all. ▪ The technology adopted by sanitation facilities must be user-friendly.
Quality/Safety	▪ Sanitation facilities must be technically safe (i.e., with stable and sound structures). ▪ Sanitation facilities must be hygienically safe (i.e., they prevent contact or exposure to vectors, pathogens, and other transmitters of disease) ▪ Safe management and disposal of human urine and feces are practiced. ▪ The population must have access to water for bathing, handwashing, as well as anal and genital cleansing. ▪ The female population must have adequate water for bathing, handwashing, and menstrual hygiene.
Affordability	▪ Access to sanitation facilities and services must be affordably priced for users without limiting their capacity to acquire other basic goods and services.
Acceptability	▪ Sanitation facilities and services must be culturally acceptable. ▪ Sanitation services must ensure privacy. ▪ Acceptability in most cultures means building separate facilities for women and men, especially in public places.

3.2.2.2 Access

The following KPIs measure access:

- Percentage of households with access to improved facilities (safely managed, basic, limited);
- Percentage of households practicing open defecation;
- Percentage of households with septic tanks (on-site systems);
- Percentage of households with access to septage collection services;
- Percentage of households with access to a sewerage system;
- Percentage of households connected to a sewerage system;
- Percentage of HUCs with sewerage service provision; and
- Percentage of non-HUCs with septage service provision.

The ultimate goal of the sanitation subsector is to achieve universal access to safely managed sanitation facilities and services by 2030. This means that at the household level, these facilities should include, at the very least, a toilet and septic tank to be considered as *safely managed*.

While this is the long-term end goal, the subsector should also focus on eliminating the lowest levels of sanitation access in the short term. The most pressing sanitation concern in the country is to put an end to unimproved sanitation and open defecation practices which, as of 2015, stood at 2.0 percent and 4.0 percent, respectively. Open defecation involves households that

have no access to any type of toilet facility, and thus dispose of human feces elsewhere. Unimproved sanitation involves the use of pit latrines without slabs or platforms, hanging latrines, or bucket latrines. As defined in the sanitation service ladder in Section 2.3.2, neither of these two practices hygienically prevents human contact with excreta, or safely manages excreta. Therefore, the construction of sanitary toilets and septic tanks is an urgent need in areas and regions where these numbers are high.

Achievement of this goal shall be measured by the overall percentage of households with access to an improved sanitation facility. Meeting 100.0 percent of this indicator in the short term will uplift sanitation standards, and more importantly, contribute to eliminating open defecation. To further complement this KPI, the percentage of households practicing open defecation shall also be measured, to not only reflect the increase and improvement of sanitation facilities, but to also advocate for positive change in current sanitation human practices and behavior.

Basic sanitation, septage and effluent treatment, and sewerage systems must therefore be monitored. The percentage of households with septic tanks determines the success of campaigns to improve basic sanitation. This indicator includes all acceptable on-site treatment system alternatives as determined by DOH. The baseline was 74.0 percent in 2015, and the targets are 97.0 percent by 2022 and 100.0 percent by 2030.

The percentage of households with access[52] to sewerage services must be distinguished from the percentage of households that are connected to a sewerage system. Measuring the latter determines the success rate of connecting households to the sewerage system, when available.

As of 2015, access to septage management services was recorded at 17.0 percent nationwide, while access to sewerage services was registered at 12.0 percent. The percentage covered by sewerage services was even lower at 3.0 percent.

The number of local governments (i.e., HUCs and non-HUCs) complying with certain septage management and sewerage services protocols must be monitored.

HUCs are required to establish sewerage systems to cover at least 50.0 percent of their urban core. The areas without sewerage and non-HUCs shall employ septage management.

These baseline figures are very low and will likely reach only 67.0 percent for septage services and 23.0 percent for sewerage services by 2022. The targets under the NSSMP will require all LGUs to have septage management programs and all HUCs to have sewerage systems by 2020.

3.2.2.3 Service Quality

The following KPIs measure service quality:

- Morbidity rates due to water-related illnesses and diseases;
- BOD removed from the ecosystem;
- Volume of wastewater collected and treated; and
- Treatment plant capacity utilization.

The impact of sanitation and wastewater management on health and the environment must be monitored.

Any reduction in morbidity rates as a result of effective control and management of waterborne diseases should be monitored and reported. This type of monitoring helps determine the general impact of poor WSS and helps influence the policy and decision makers who are in charge of overseeing priority budget allocations and project assistance.

Many factors affect the occurrence and spread of water-related diseases. Proper hygiene and good sanitation contribute significantly to the reduction of the incidence of disease. Studies show that the provision of clean water alone can reduce water-related deaths by 21.0 percent, good sanitation alone by 37.0 percent, and handwashing alone by 35.0 percent.

Regarding impact on the environment, the objective is to reduce the volume of pollutants that enter the water ecosystem. BOD, a unit of measure, can be used as a surrogate for the degree of organic pollution of water, or the amount of

[52] *"Access" is defined as having a service available to users; for sewerage services, a household has access if it can tap into a sewerage line that leads to a treatment facility. This number may be different from the number of those that are actually connected or have actually tapped into the systems.*

dissolved oxygen needed by aerobic biological organisms to break down organic matter that is present in wastewater. In determining the targets for BOD reduced or pollution intercepted, an individual is approximated to use an average of 100 liters a day, which translates to about 80.0 percent of the water used converted to wastewater. Wastewater typically has an average BOD level of 200 mg/L and needs to be reduced to a maximum limit of 50 mg/L (current limit for class C water). The BOD removed from the ecosystem is computed based on the projected population and the treatment efficiency of septic tanks pegged at 40.0 percent and sewerage systems at 100.0 percent.

WSPs must monitor the volume of collected and treated wastewater and its impact on the capacity utilization of the treatment facility. This indicator must determine the service quality provided by the wastewater management or sanitation program. For start-up treatment facilities, capacity utilization starts low but gains volume over the first year and slowly reaches maximum capacity towards the end of the design program cycle (lasting three to five years).

3.2.2.4 Sustainability

The indicator for sustainability is the percentage of service utilities that comply with national standards for sanitation (e.g., those set by DENR, DOH, and LGUs).

Compliance with policies, guidelines, and local ordinances ensures the following:

- tasks are performed according to standards;
- safeguards are established and followed;
- residuals are properly managed; and
- reliable and verifiable records are in place

The targets correspond to the volume of wastewater managed in a year.

The volume capacity of treatment plants varies and cannot be readily compared with each other. The said capacity shall represent the volume capacity that was processed by a facility in observance of and compliance with standards. All access figures (coverage) shall correspond to 100.0 percent of service utilities that are compliant. A lower percentage for this indicator would mean a lower number of WSPs that have worked to meet national standards.

Other indicators may be prescribed depending on the local conditions and priorities, but local proponents or implementers must adhere to what is required by the national statistician and the lead agency. This is because reporting at the local level is elevated to a global level.

3.2.2.5 Results Matrix (Comprised of Existing and New KPIs)

Four areas measure the quality of service delivery and performance standards of sanitation services. The three key result areas are *access*, *service quality,* and *sustainability*. (The fourth is finance, which is discussed separately.)

An initial survey using the specified indicators is needed to establish the baseline conditions before interventions are done. Service delivery standards and performance for sanitation services are specified for the three program areas: basic (on-site) sanitation services, septage management services, and sewerage systems.

For each category, the laws, regulations, and SDG guidelines are specific in terms of the water utilities to be covered and the periods during which they should be covered. The fourth category includes other wastewater treatment methods pertaining to non-domestic wastewater and wastewater from non-point sources, which will require further research and new policy guidelines.

Regarding the quality of service, the DOH and DENR will be the lead agencies tasked to check compliance regarding all programs and projects of LGUs and the private sector, and adherence of other government agencies to sanitation guidelines.

The DOH will prescribe basic sanitation programs, which will focus on outlawing unsanitary facilities (e.g., hanging latrines, bucket latrines, floating latrines, and

latrines without slab covers) and open defecation as well as provide guidance in recommending strategies and local policy formulation (e.g., microfinancing supported by a strong behavioral change communication program). DOH will continue to promote the use of the Operational Manual on the Rules and Regulations Governing Domestic Sludge and Septage for developing and managing septage management programs.

DOH will work with other government agencies on sanitation projects. It will coordinate with DPWH in developing operational guidelines governing planning and managing sewerage services and programs.

DOH will also work with DENR to check adherence to the revised effluent standards regardless of technology or system employed. Future guidelines and administrative orders will be developed to provide more guidance in developing programs and projects at the local level. Health risks and environmental impacts will be accounted for in future guidelines and policies.

Table 30 shows the proposed benchmarks to guide local governments and service providers as to the targets for the next four years according to the three areas.

Table 30: Proposed Benchmarks for the Sanitation Sector

Key Performance Indicator	Source of Data	2015 Baseline	2022 Target	2030 Target
Percentage of households with access to improved facilities	DOH/PSA	94.0%	100.0%	100.0%
Percentage of households practicing open defecation	DOH/PSA	4.0%	0.0%	0.0%
Percentage of households with septic tanks (on-site system)	DOH/PSA	74.0%	97.0%	100.0%
Percentage of households with access to septage collection services	DOH/PSA	17.0%	69.0%	100.0%
Percentage of households with access to a sewerage system	DOH/PSA	12.0%	23.0%	60.0%
Percentage of households connected to a sewerage system	DOH/PSA	3.0%	20.0%	50.0%
Percentage of HUCs with sewerage service provision	DOH/PSA	53.0%	94.1%	100.0%
Percentage of non-HUCs with septage service provision	DOH/PSA	0.7%	61.2%	100.0%
Percentage of WSPs complying with national standards for sanitation (e.g., DENR, DOH, and LGUs)	LGU/DENR-EMB/DOH	17.0%	67.0%	100.0%
Volume of BOD removed from the ecosystem,[53] in tons (T)	LGU/DENR-EMB/DOH	65.40	233.20	514.10
Volume of wastewater collected and treated, in tons (T)	LGU/DENR-EMB/DOH	2.95	3.32	3.81
Treatment plant capacity utilization	LGU/DENR-EMB/DOH	For septage and sewerage treatment facilities, percent utilization starts high after the first year and reaches full capacity towards the end of the 3–5 year cycle.		

[53] *In addition to reduced BOD content of wastewater released to the environment, water quality of effluents must also comply with the minimum standards provided under DENR Administrative Order No. 2016-08 (Water Quality Guidelines and General Effluent Standards of 2016).*

4 Priority Reforms, Programs, and Activities

4.1 Policy Directions

"The primary strategy for the water resources sector is to address its fragmented structure through the creation of an apex body and the formulation of master plans that will foster coordinated efforts across the country." —PDP 2017–2022

4.1.1 Philippine Development Plan 2017–2022

The PDP has been clear in addressing the issues and challenges faced by the WSS sector. The following key development plans are listed under water resources:

- **Create an apex body** to address the fragmented structure of the water resources sector;
- **Create master plans** that will foster coordinated efforts across the country;
- **Enable the apex body to institutionalize a science-based river basin approach** that integrates the IWRM principles;
- **Enable NWRB and NEDA to strengthen coordination and linkages with partner institutions**[54] across the different subsectors towards achieving adequate access and sustainable water resources management;
- **Enable the government to enhance the capacities of concerned entities** in developing and managing water-related projects;
- **Expedite the processing of water permits** by deputizing and capacitating local or regional agents;
- **Review and strengthen existing laws and regulations** on water resources;
- **Prioritize surface water source development** for water-critical areas;
- **Incorporate groundwater recharge system** in the development of the surface water source for critical areas according to prescribed standards;
- **Use eco-efficient water infrastructure** to address water demand and supply mismatch; and
- **Explore measures to promote efficient water utilization**.

In terms of development plans for the WSS sector:

- **Pursue institutional reforms** to encourage and guide investments in WSS;
- **Create an independent economic regulatory body** for the WSS sector for transparent and consistent regulation;
- **Establish a URAF** with a definite scope and streamlined process to consolidate and make more accessible all available financial resources to support WSS projects;
- **Prepare a WSS master plan** to guide concerned IAs to attain universal access in the sector;
- **Support plans to broaden the scope of the NSSMP**[55] to improve the response from LGUs and WDs;
- **Enable the government to assist WDs** in expanding the coverage of reliable water service at affordable rates and reducing NRW while ensuring economically viable operations; and
- Ensure water security in water-critical areas and NCR by:
  - **developing new water sources**;

[54] LGUs, national government agencies, GOCCs, NGOs, private investors, and the academe.

[55] Proposed measures can include creating septage projects, expanding eligibility, which will cover other cities and municipalities, and allowing WDs to directly apply for the grant.

- **protecting watersheds** critical to existing and potential water sources;
- **exploring technologies** in water supply;
- **expanding sewerage and sanitation infrastructure;**[56] and
- **maximizing and maintaining Angat Dam** and all its accessory structures.

4.1.2 Creation of an Apex Body

The PDP identified the creation of an apex body for the water supply, sewerage and sanitation subsectors as a primary strategy to address the fragmented structure and uncoordinated efforts of government units and agencies across the country. The continued overlapping and fragmented management and regulation of water resources and services hinder the enactment and implementation of comprehensive, integrated and doable long-term solutions to decades-old sector issues and attain universal access targets.

The apex body shall address the fundamental governance and institutional issues of the sector by being the single entity that will be in charge of the overall policy-making, planning, programming, and management of the country's water resources. It will coordinate, monitor and evaluate sector performance and take appropriate action as needed.

The apex body will also pave the way for an integrated and coordinated planning and implementation of programs and projects that promote synchronized, sustainable and science-based management of the country's water resources that would address the imbalance in water resource utilization, reduced water availability, declining water quality, recurrent flooding, and other water-related issues in many parts of the country.

House Bills Filed

Several house bills (HB) proposed the creation of an apex body (e.g., bearing the names "Department of Water", "Department of Water Resources" (DWR), or "Department of Water Irrigation, Sewage, and Sanitation Resource

Table 31: House Bills Filed for the Creation of an Apex Body from 2013-2018

House Bill (HB) No.	Full Title	Date Filed in Congress	Status
HB 38	An Act Rationalizing the Resource Management of the Water Sector, Creating the Department of Water, Sewage, and Sanitation, and for other purposes	1 July 2013	▪ Referral to the Committee on Government Reorganization on 23 July 2013 ▪ Secondarily referred to the Committee on Public Works and Highways
HB 221	An Act Creating the National Water Resources Management Authority and Appropriating Funds Therefor	30 June 2016	▪ Referral to the Committee on Government Enterprises and Privatization on 26 July 2016
HB 2457	An Act Rationalizing the Resource Management of the Water Sector, Creating the Department of Water, Sewage, and Sanitation, and for other purposes	3 August 2016	▪ Referral to the Committee on Government Reorganization on 10 August 2016 ▪ Secondarily referred to the Committee on Public Works and Highways
HB 4955	An Act Creating the DWR and Services and Appropriating Funds therefor	8 February 2017	▪ Referral to the Committee on Government Reorganization on 15 February 2017 ▪ Secondarily referred to the Committee on Public Works and Highways
HB 8068	An Act Creating the Department of Water, Irrigation, Sewage and Sanitation Resource Management, defining its Powers and Functions, Appropriating Funds therefor, and for other purposes	7 August 2018	▪ Referral to the Committee on Government Reorganization on 21 September 2018 ▪ Secondarily Referred to the Committee on Public Works and Highways ▪ Previous Committee Referrals: Primarily Referred to Government Enterprises and Privatization on 8 August 2018 ▪ Secondarily Referred to the Committee on Public Works and Highways on 8 August 2018

[56] *Including detention ponds for control of discharges*

Management"). Table 31 briefly describes the house bills filed from 2013 to 2018.

4.1.3 Creation of an Independent Economic Regulatory Body

The creation of an independent economic regulatory body shall address the fragmented, poorly enforced, and low-coverage regulatory regime in the WSS sector. This single entity shall consolidate the economic regulatory powers of various water agencies into one national body that shall have the power to grant and revoke licenses, as well as the authority to set standards and targets for both private and public water utilities.

The proposed measure seeks to achieve the following objectives:

- Achieve universal access to improved water and sanitation services for the entire country through an effective economic regulatory system that can compel expansion and improvement of service;
- Encourage private sector participation in the development of water and sanitation services;
- Protect the interests of consumers;
- Regulate wastewater tariffs (i.e., sewerage and septage management); and
- Address the conflicts of interest inherent in the current regulatory agencies.

4.1.4 Recent Initiatives

Similar bills, known as the *Department of Water Resources Act* and *Water Regulatory Act* have been drafted under the guidance of NEDA. The proposed mandate of the department is as follows:

- It shall be the primary agency responsible for the comprehensive and integrated water resources development and management in the Philippines;
- It shall exercise such powers and functions needed to review, revise, harmonize, and integrate policies and regulations for conservation of water resources and effective management of water supply, sanitation, irrigation, hydropower, flood control, stormwater and urban drainage;
- It shall be guided by the IWRM framework, address climate risks, and ensure sustainability of natural ecosystem functions and services; and
- It shall seek to improve water conservation, increase system efficiencies, and optimize the use of all freshwater in the country including groundwater, surface water, rainwater, runoffs, floods, treated wastewater, and stormwater and urban drainage to meet various needs.

The DWR is to be composed of:

- The Department Proper;
- Attached agencies namely, LWUA, MWSS, National Irrigation Administration (NIA), Laguna Lake Development Authority (LLDA), and any other agency exercising water resources management, conservation, and protection functions that the president may order to be transferred to the department; and
- Water Resources Regional Offices.[57]

Meanwhile, the independent economic regulator, will harmonize regulatory practices, processes, fees, and the like to facilitate and rationalize the expansion, improvement, and efficient provision of WSS services in the country. It will also eliminate conflicts of interest through the separation of economic regulation and operation functions of agencies vested with these dual functions. Economic regulation shall cover setting and compliance monitoring of tariffs, coverage, technical standards, and performance standards.

[57] *As deemed appropriate and necessary by the Secretary*

4.2 Key Reform Agenda (Soft Components)

Eight key reform agenda (KRA) have been identified prioritizing specific interventions for the WSS sector. These KRA are based on important issues and challenges confronting the sector. Figure 29 illustrates the PWSSMP results framework with the eight KRA and the priority programs supporting each other towards achieving the WSS sector targets and commitments, and the contribution to AmBisyon Natin 2040. Table 32 highlights the focus of each KRA and Table 33 matches the issues and challenges (per Section 2) with their corresponding KRA.

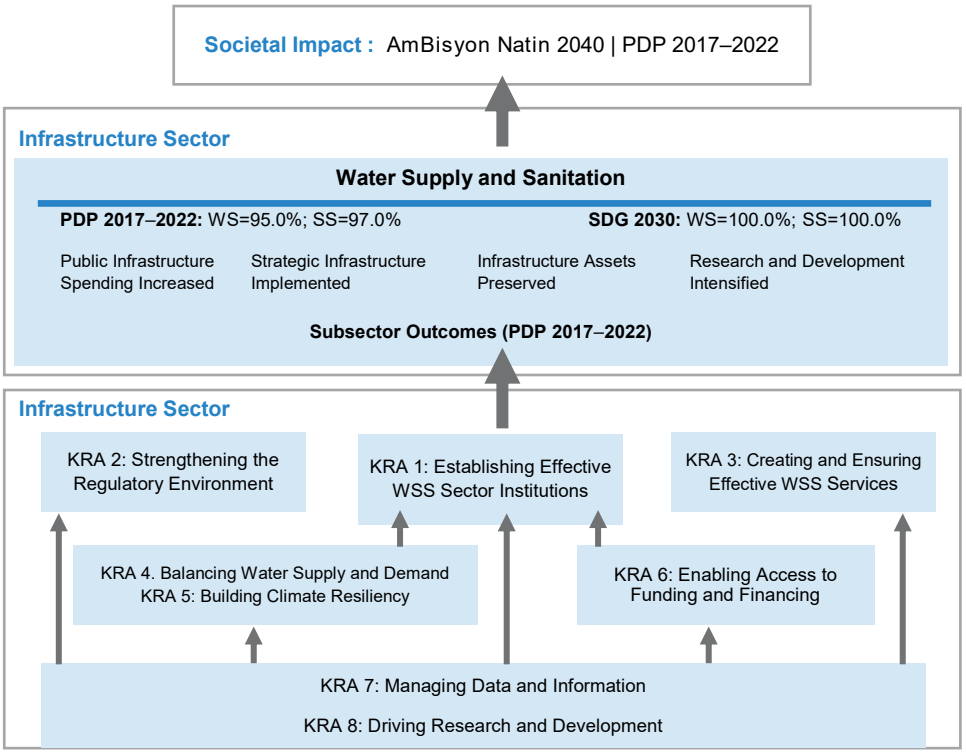


Figure 29: PWSSMP Results Framework Diagram

Table 32: Eight Key Reform Agenda

Key Reform Agenda	Focus
KRA 1: Establishing Effective WSS Sector Institutions	Addressing the fragmented WSS sector.
KRA 2: Strengthening the Regulatory Environment	Regulating and managing water resources and WSPs, including water tariffs.
KRA 3: Creating and Ensuring Effective WSS Services	Ensuring appropriate and sustainable operations of WSS service providers.
KRA 4: Balancing Water Supply and Demand	Managing and maximizing finite water resources with end-users.
KRA 5: Building Climate Resiliency	Adapting to climate change.
KRA 6: Enabling Access to Funding and Financing	Improving availability and acquisition of funds / financing for WSS services.
KRA 7: Managing Data and Information	Ensuring availability and accessibility of reliable WSS data.
KRA 8: Driving Research and Development	Investing on research and innovations.

Table 33: Issues and Challenges of Each WSS Component by Key Reform Agenda

KRA	Natural Resources System	Socioeconomic System	Use of and Impact on Water
	Efficiently Managed Finite Water Resources and Water Ecosystem	WSS Promoting Socioeconomic Growth	Responsible Use and Balanced Demand and Supply
KRA 1: Establishing Effective WSS Sector Institutions			
KRA 2: Strengthening the Regulatory Environment	▪ Existing water sources become insufficient as some dry up resulting from over extraction. ▪ Excessive groundwater extraction leads to saline intrusion and groundwater-related land subsidence.		
KRA 3: Creating and Ensuring Effective WSS Services			
KRA 4: Balancing Water Supply and Demand	▪ Some potential water sources are polluted or contaminated. ▪ The country may experience high water stress by 2040. ▪ Rainwater which is a potential source is not harvested and stored for future use.	▪ Increasing population and economic growth increase water demand and generated waste and wastewater.	▪ Water quality deteriorates as a result of unmanaged wastewater. ▪ There is inadequate or a lack of awareness of and concern about the effects of unmanaged waste and wastewater on watersheds, water sources, and water ecosystems.

Administrative and Institutional System	Policies, Regulation and Management	WSS Infrastructure
Enabling Administrative and Institutional Arrangements	WRR-related Policies, Regulations and Management in Place	Sufficient, Responsive and Sustainable WSS Infrastructure and Services
▪ There is no single body overseeing and regulating the WSS sector.	▪ WSS services and infrastructure are poorly implemented, monitored and managed. ▪ There have been no directives or strategies with which to translate PDP/SDG targets and commitments into local programs and projects.	
▪ NWRB does not have the appropriate institutional structure to effectively implement its mandate. ▪ Several uncoordinated and inefficient regulatory agencies for water exist.	▪ Policies and laws are poorly enforced and complied with. ▪ There is a lack of a cohesive policy framework. ▪ The issuance of water rights is not properly regulated and implemented.	
▪ Some LGUs, WDs, and other WSPs lack the capacity and capability to perform their obligation of ensuring effective and adequate WSS services.	▪ WSS services are inefficiently monitored and managed, while infrastructure is poorly maintained. ▪ Sanitation interventions are not sustainable and not fully implemented. ▪ Some WSPs have inadequate O&M capability. ▪ Some conflicts occur between LGUs and WDs.	▪ Some water supply systems or structures are not properly designed and constructed or do not undergo regular maintenance. ▪ There is inadequate or a lack of infrastructure to optimize available resources, ensure water quality and sanitation, or provide access to water supply. ▪ Some WSPs are not operational and sustainable. ▪ Most WSPs have failed to serve whole franchise areas (barangays) and meet norms and standards.

Table 33 (continued): Issues and Challenges of Each WSS Component by Reform Agenda

KRA	Natural Resources System	Socioeconomic System	Use of and Impact on Water
	Efficiently Managed Finite Water Resources and Water Ecosystem	WSS Promoting Socioeconomic Growth	Responsible Use and Balanced Demand and Supply
KRA 5: Building Climate Resiliency	▪ Existing water sources become insufficient as some dry up arising from sensitivity and vulnerability thereof to weather patterns/ climate change. ▪ Water resource management becomes more difficult owing to rainfall variability and extreme weather events. ▪ Sea level rise threatens to contaminate freshwater sources.	▪ Increasing temperature increases water usage. ▪ Climate change increases the risk of waterborne diseases and the transmission of malaria.	
KRA 6: Enabling Access to Funding and Financing			
KRA 7: Managing Data and Information			
KRA 8: Driving Research and Development			▪ There is a lack of appropriate technologies, or application or use thereof, to optimize the use of water resources.

Administrative and Institutional System	Policies, Regulation and Management	WSS Infrastructure
Enabling Administrative and Institutional Arrangements	WRR-related Policies, Regulations and Management in Place	Sufficient, Responsive and Sustainable WSS Infrastructure and Services
		▪ Climate-resilient water supply structures are too inadequate to optimize available resources, ensure water quality and sanitation, or provide reliable access to water supply.
	▪ Water rates are too low in some areas and yield no cost recovery.	▪ Investments are insufficient. ▪ Funding is inadequate or difficult to access; in case funds are available, only a few LGUs and WSPs request access thereto.
▪ WSS data gathered by the PSA are limited.	▪ Available WSS data are insufficient to enable planning, management, and decision-making to proceed well. ▪ There are no information and monitoring systems pertaining to access and coverage. Baseline data on WSS are inadequate. ▪ Water resources data are not updated. ▪ WSPs data on NWRB's Listahang Tubig are not updated. ▪ Data on water quality and sanitation are very limited.	
	▪ Access to potential technologies is restrictive.	▪ The sector is generally not in tune with new technologies and updated techniques.

4.2.1 KRA No. 1: Establishing Effective WSS Sector Institutions

Rationale and Objectives

KRA No. 1 establishes an effective WSS sector institution through the following objectives:

- Create an apex body to address the fragmented structure of the sector and institutionalize a science-based river basin approach that integrates the IWRM principles;
- Create master plans to foster coordinated efforts and guide the concerned IAs to attain universal access in the sector; and
- Strengthen NWRB and NEDA's coordination with partner institutions across different subsectors.

Top Priority Actions

- NEDA to lead in addressing the institutional fragmentation in the absence of an apex body for the WSS sector that would coordinate development policies and plans following the IWRM principles *(1.10).*

Related to the above action, NEDA will then:

- Coordinate issuance of administrative guidelines, rules and regulations requiring all LGUs to adopt climate-resilient and green technology, and promoting a rights-based planning approach *(1.7)*;
- Coordinate the mandate of all WSPs to prioritize water supply provision with integrated sanitation services *(1.3)*; and
- Develop an advocacy and communication plan to garner support for the prioritization of the sector's policy reforms and investment requirements *(1.4)*.

The following are also considered top priority for this KRA:

- NEDA to lead the representation at OP to issue the EO establishing the National Water Management Council (NWMC) *(1.9)*; and
- NEDA to identify champions in the Upper and Lower Houses to sponsor the creation of an apex body for the WSS sector and support the deliberations based on the Executive Version *(1.1).*

Follow-Through Actions

The identified top priority actions will set the cornerstone for the following actions:

- NEDA to request and accomplish the establishment of an OP order for all government buildings and new construction projects, including those in resettlement areas, to have rainwater harvesters (RWHs); require all LGUs to issue ordinances requiring the use of RWHs and storage facilities for all new developments within their jurisdiction; and issue the use of water-efficient fixtures *(1.8);*
- DILG and DOH to promote the formulation of a rights-based provincial master plan as the basis for the preparation of local/municipal WSS development plans *(1.6);*
- LWUA to formulate verified business plans and seek approval of its rationalized budget increase for LWUA's programs *(1.5);*
- NEDA and NWRB to map out the organizational setup for NWMC *(1.2.2);*
- NEDA and NWRB to come up with a Framework Plan *(1.2.3);*
- NEDA and NWRB to review the capacity requirements of NWMC's organization *(1.2.4);*
- NEDA will pursue the establishment of the NWMC, pending the creation of an apex body for the WSS sector *(1.2);* and
- NEDA to spell out the IRR for NWMC (with NWRB as Vice-Chairperson) (*1.2.1).*

The culmination of this KRA is the Creation of an apex body for the WSS sector. *(1.11).*

4.2.2 KRA No. 2: Strengthening the Regulatory Environment

Rationale and Objectives

KRA No. 2 aims to strengthen the existing regulatory environment consistent with the PDP through the following objectives:

- Pursue institutional reforms to encourage and guide investments in the WSS sector;
- Create an independent economic regulatory body for the WSS sector for transparent and consistent regulation;

- Expedite the processing of water permits by deputizing and capacitating local or regional agents; and
- Review and strengthen existing laws and regulations on water resources.

Top Priority Actions

- NEDA to identify champions in the Upper and Lower Houses to sponsor the creation of an apex body for the WSS sector and an independent economic regulator for WSS, and support the deliberations based on the Executive Version *(2.1).*
- LWUA to strengthen its enforcement of economic regulations, especially on service expansion *(2.9)*, which will require the following sub-tasks:
  - NEDA to review and improve the NEDA JV Guidelines to be responsive to WD conditions (with considerations on the Local Water District Manual on Categorization, Re-Categorization and Other Related Matters [LWD-MaCRO]) *(2.2);* and
  - NWRB, LWUA, and DILG to review current cost recovery framework and tariff setting methodologies (WDs, LGU-run water utilities, private sector) to cover sanitation services *(2.3).*
- DILG to issue guidelines for LGUs to adopt a cost-based methodology that will promote financial sustainability *(2.4),* which will also require:
  - NWRB, LWUA, and DILG to review current cost recovery framework and tariff setting methodologies (WDs, LGU-run water utilities, private sector) to cover sanitation services *(2.3).*
- NWRB to continue updating its data in Listahang Tubig *(2.8a)* with the following sub-task:
  - NWRB to assess the quantity and quality of all water resources *(2.6).*
- NWRB to coordinate the review and assessment for existing guidelines for issuing water permits and Certificates of Public Convenience (CPCs) of NWRB and NIA *(2.7).* The pre-requisite actions for which are as follows:
  - Review and rationalize NWRB guidelines for granting of water permits and CPCs to private operators *(2.7.1);*
  - Review existing water permits and CPCs to weed out speculators, and check and verify water rights (i.e., volume granted should not exceed volume required); NWRB to require the following in water permit applications: Memorandum of Agreement (MOA) with the WD for private bulk water supplier (intending to sell to WD), and Sangguniang Bayan (SB) resolution (for LGU level CPC) *(2.7.2);* and
  - Review water permits granted to NIA to free up water sources for water supply *(2.7.3).*

Follow-Through Actions

The follow-through actions for this KRA to ensure sustained development are the following:

- LWUA, NWRB, and MWSS-RO to capacitate and increase its tariff review staff *(2.5);*
- DILG to issue a Memorandum Circular to LGUs to be guided by tariff setting methodologies for water supply and wastewater management services *(2.11);* and
- NWRB to establish benchmarking system results *(2.8b).*

The milestone of this KRA is the Creation of the Water Regulatory Commission (WRC) *(2.10).*

4.2.3 KRA 3: Creating and Ensuring Effective WSS Services

Rationale and Objectives

KRA No. 3 focuses on interventions for WSPs and service providers. It aims to address the issues and challenges that hinder the effective delivery of WSS services to its target beneficiaries and franchise areas.

KRA No. 3 ensures effective and sustainable WSS services with cost-efficient and well-designed WSS structures, and adequate institutional capability to efficiently operate and maintain WSS systems. This area proposes the following measures:

- Enable the government to enhance the capacities of concerned entities in developing and managing water-related projects;
- Support plans to broaden the scope of the NSSMP to improve the response from LGUs and WDs;
- Assist WDs by expanding the coverage of reliable water service at affordable rates and by reducing NRW while ensuring economically viable operations; and
- Expand and upgrade sewerage and sanitation infrastructure.

Top Priority Actions

- LWUA to classify at what reform stage the WDs are (i.e., critical, recovery, stable, and expansion) *(3.2a);*
- LWUA to assess the viability of non-operational WDs towards their operationalization *(3.3);*
- NWRB to capacitate WDs and LGU-run WSPs on tariff setting and formulation of business plans *(3.7);*
- DILG to evaluate the effectiveness of other programs, especially those directed at the poor and waterless municipalities, in accelerating access to WSS services (e.g., SALINTUBIG, Local Government Support Fund–Assistance to the Municipalities [LGSF-AM], and other programs for WSS-related CBOs) *(3.1);*
- DILG to put up central management systems (develop a template on how LGUs could come up with this setup) *(3.6a);*
- DILG to keep BWSAs (LGU responsible for technical standards) *(3.6b);*
- DILG to encourage the operation of WSPs as economic enterprises by LGUs and/or with private partners *(3.4);* and
- DILG, DOH, and LWUA to conduct capacity needs assessment of WSPs and LGUs within their respective jurisdictions and prepare training/mentoring programs internally or in partnership with other service providers *(3.8).* This will require NEDA to:
  - Lead the preparation of the capacity development agenda for the national agencies involved in WSS activities *(3.8.1);* and
  - Compile a compendium of reference materials, toolkits, knowledge products for planning, project development, utility reform, etc. *(3.8.2).*

Follow-Through Actions

The follow-through actions are based on the identified priority actions:

- LWUA to set KPI targets for service coverage, performance, and financial sustainability *(3.2b);* and
- DILG to develop and conduct a pilot implementation of a business/ management model where government and CBOs enter a partnership/ arrangement to operate and maintain a water utility *(3.5).*

4.2.4 KRA No. 4: Balancing Water Supply and Demand

Rationale and Objectives

KRA No. 4 focuses on interventions in addressing water scarcity and managing the finite water resources with end-users. It balances demand and supply while safeguarding the water ecosystem through the following measures:

- Explore policies and projects to promote efficient water utilization;
- Prioritize surface water source development for water-critical areas;
- Incorporate groundwater recharge systems in the development of surface water sources for critical areas wherever possible and in accordance with prescribed standards;
- Use and design eco-efficient water infrastructure to address any mismatch between water demand and supply; and
- Develop new water sources to protect watersheds that are critical to existing and potential water sources.

Top Priority Actions

- DILG and LWUA to encourage WSPs implementation of NRW reduction programs (leak detection) to achieve standard performance improvement program *(4.3),* which will require:

  - WSPs to control and establish district metered areas (DMAs) and install mother meters *(4.6).*
- NEDA to coordinate issuance of administrative guidelines, rules and regulations requiring all LGUs to require green technology *(4.9);*
- NWRB to conduct resource assessment and recommend which areas should shift from groundwater to surface water sources *(4.4).* The following are identified sub-tasks for NWRB:
  - Rationalize water permit system *(4.4.1);*
  - Review existing water permits to weed out speculators *(4.4.2);* and
  - Review and update pricing system for resource extraction *(4.4.3).*
- NWRB to develop and implement a communication strategy for water demand management (WDM) and wastewater management *(4.7).*

Follow-Through Actions

The following are subsequent actions from the top priority actions:

  - NEDA to request and accomplish the establishment of an OP order for all government buildings and new construction projects, including those in resettlement areas, to have RWHs; require all LGUs to issue ordinances requiring the use of RWHs and storage facilities for all new developments within their jurisdiction; and issue the use of water-efficient fixtures *(4.2);*
  - NWRB, LWUA, and DILG to initiate shift to surface water and bulk water development *(4.8);*
  - NWRB to strengthen implementation of resource management and allocation of water resources policies, systems, and database *(4.10);*
  - DILG and LWUA to identify an award and recognition program for good performing WSPs*(4.11);*
  - LWUA and DILG to provide rewards for best performing WSPs *(4.1);* and
  - Enter into co-management agreements with other agencies, LGUs, and multi-stakeholder organizations such as RBOs and Watershed Councils to protect and rehabilitate the watersheds within their areas following the IWRM principles *(4.5).*

4.2.5 KRA No. 5: Building Climate Resiliency

Rationale and Objectives

KRA No. 5 focuses on interventions in addressing issues and challenges related to climate change. It intends to build a climate-resilient WSS sector through the following measures:

- Consider disaster risk reduction and climate change adaptation strategies to ensure climate-resilient facilities; and
- Enable the government to enhance the capacities of concerned entities in developing and managing water-related projects.

Top Priority Actions

- DPWH to revise the Referral Codes of the National Building Code of the Philippines to include policies and standards for water efficiency in building design/construction. *(5.6);*
- DPWH to issue and require design standards, guidelines and specifications for climate-resilient hydraulic structures *(5.8);*
- DPWH to issue a Department Order requiring retention/retarding basins for flood control and drainage systems *(5.2);* and
- NEDA to coordinate issuance of administrative guidelines, rules, and regulations requiring all LGUs to require green technology *(5.4).*

Follow-Through Actions

The identified top priority actions will reinforce these follow-through actions:

  - WSPs to design WSS infrastructure based on the DPWH Design Guidelines, Criteria and Standards and Standard Specifications for climate-resilient hydraulic structures *(5.1b);*
  - NEDA to request the establishment of an OP Order for all (National

Government Agencies [NGAs] and LGUs) government buildings and facilities to utilize green technologies, including groundwater infiltration *(5.3);*

- NEDA to review all major WSS proposed projects to check if climate considerations were already integrated *(5.7);*
- LWUA and DILG to require WSPs to prepare WSS Emergency Response Plans, and to coordinate with the LGU on the development of their Disaster Risk Reduction and Management (DRRM) and Contingency Plans *(5.5);*
- LWUA and DILG to ensure the installation of RWHs and storage facilities *(5.10);*
- DPWH and WSPs to construct new WSS infrastructure in low-risk areas *(5.1a);* and
- DPWH to ensure implementation of climate-resilient hydraulic structures and retention/retarding basins for flood control and drainage systems *(5.9).*

4.2.6 KRA No. 6: Enabling Access to Funding and Financing

Rationale and Objectives

KRA No. 6 focuses on interventions geared towards the improvement of access to funding and financing for WSS services through the following:

- Establish a URAF with a definite scope and streamlined process to consolidate and offer financial resources to WSS projects.

Top Priority Actions

- LWUA to review and rationalize government financing policies to harmonize with URAF principles *(6.2);*
- DPWH to adopt the URAF principles for the inclusion of funding and coverage of NSSMP *(6.4);*
- DOF to develop and recommend for adoption policies to crowd-in PFIs *(6.3);* and
- NEDA to pursue the implementation of the URAF in the sector in accordance with the PWSSMP. URAF has the following fundamental criteria for allocating resources *(6.1):*

  a. Poverty incidence;

  b. Level of access; and

  c. Incidence of waterborne diseases.

  Prior to this, NEDA is expected to:

  - Establish the URAF Technical Working Group (TWG) to be the focal technical team that will implement URAF; draft the implementing guidelines of the URAF; and develop an investment program to achieve SDG 6 targets *(6.1.1); and*
  - Develop standard appraisal tools such as a viability gap funding (VGF) model for rationalizing national government grants *(6.1.2).*

Follow-Through Actions

The follow-through actions for this KRA are as follows:

- NEDA to build the capacity of national institutions to effectively carry out mandates and new roles under the URAF *(6.5);* and
- DOF and DBM to support budget requirements *(6.6).*

4.2.7 KRA No. 7: Managing Data and Information

Rationale and Objectives

KRA No. 7 focuses on interventions in addressing issues and challenges related to availability, accessibility, reliability, and use of WSS data and information. It ensures the availability and accessibility of reliable and sound WSS data for planning, programming, and policy formulation, consistent with the PDP 2017-2022.

Top Priority Actions

- Develop database of WSS information system that can be used for strategic planning, policy formulation, program/ project development, and M&E *(7.8);*
- NWRB and NEDA to develop and deploy a comprehensive WSS management information system (MIS) *(7.3);*
- NWRB and NEDA to develop and streamline programs for the establishment

of baseline data (e.g., pertaining to SDG, coverage, safely managed sanitation services, and other relevant indicators) *(7.4);*

- NEDA to develop communication strategy for the sector development plans and programs *(7.6),* which will also require NEDA to:
  - Facilitate an inter-agency discussion on the communication strategy for the programs of NWRB, DILG, DOH, and LWUA *(7.5).*
- NEDA, with support from agencies, to integrate a database for the WSS sector that shall act as a repository of all WSS data *(7.2).* This action has the following sub-tasks:
  - Formulate guidelines and framework(s) for the harmonization and integration of WSS data *(7.1);*
  - NWRB and NEDA to link the data repository with PSA *(7.2.1);*
  - NWRB and NEDA to identify official/ credible sources of data such as PSA, PAGASA, etc. *(7.2.2);* and
  - NWRB and NEDA to map out current sources of WSS data such as PWSSMP database, NWRB Listahang Tubig, WD data from LWUA, water supply-related data from DILG, and sanitation-related data from DOH and DPWH *(7.2.3).*

Follow-Through Actions

The identified priority actions will justify the follow through action:

- NWRB, DILG, DOH, and LWUA to develop IEC programs for their respective advocacies. *(7.7)*

4.2.8 KRA No. 8: Driving Research and Development

Rationale and Objectives

KRA No. 8 focuses on interventions related to research and development, innovative solutions, technologies, or policies that restrict the use of potential technologies concerning WSS. It explores new technologies in water supply.

Top Priority Actions

- NEDA to promote the conduct of research and development studies based on priority research and development agenda (i.e., tie-up with academe, WSS partners, and experts) *(8.3);* and
- NWRB to formulate research and development agenda based on priority needs of key partner agencies and stakeholders. The agenda should include, among others, technology on lowering energy costs and increasing water efficiency; sanitation technology options for challenging contexts (e.g., high water table, flood-prone, etc.); low-cost and decentralized septage systems; and policies such as raw water pricing and tradeable water regime *(8.1).*

Follow-Through Actions

The identified priority actions will justify the follow-through action:

- Create a Research and Development Division under the envisioned NWMC Planning Department with the immediate task of formulating the WSS research and development agenda based on needs *(8.2).*

4.2.9 Other Actions

The KRA Action Plan of the PWSSMP also identified other actions that will aid in achieving the goal of each KRA, albeit relegated into lower priorities. These are presented in Chapter 4.3.

4.3 Key Reform Agenda (KRA) Action Plan

Simultaneous with the implementation of PWSSMP and investment program are various activities and actions identified in the eight KRA. The action plan and corresponding action tree for the respective KRA are presented below.

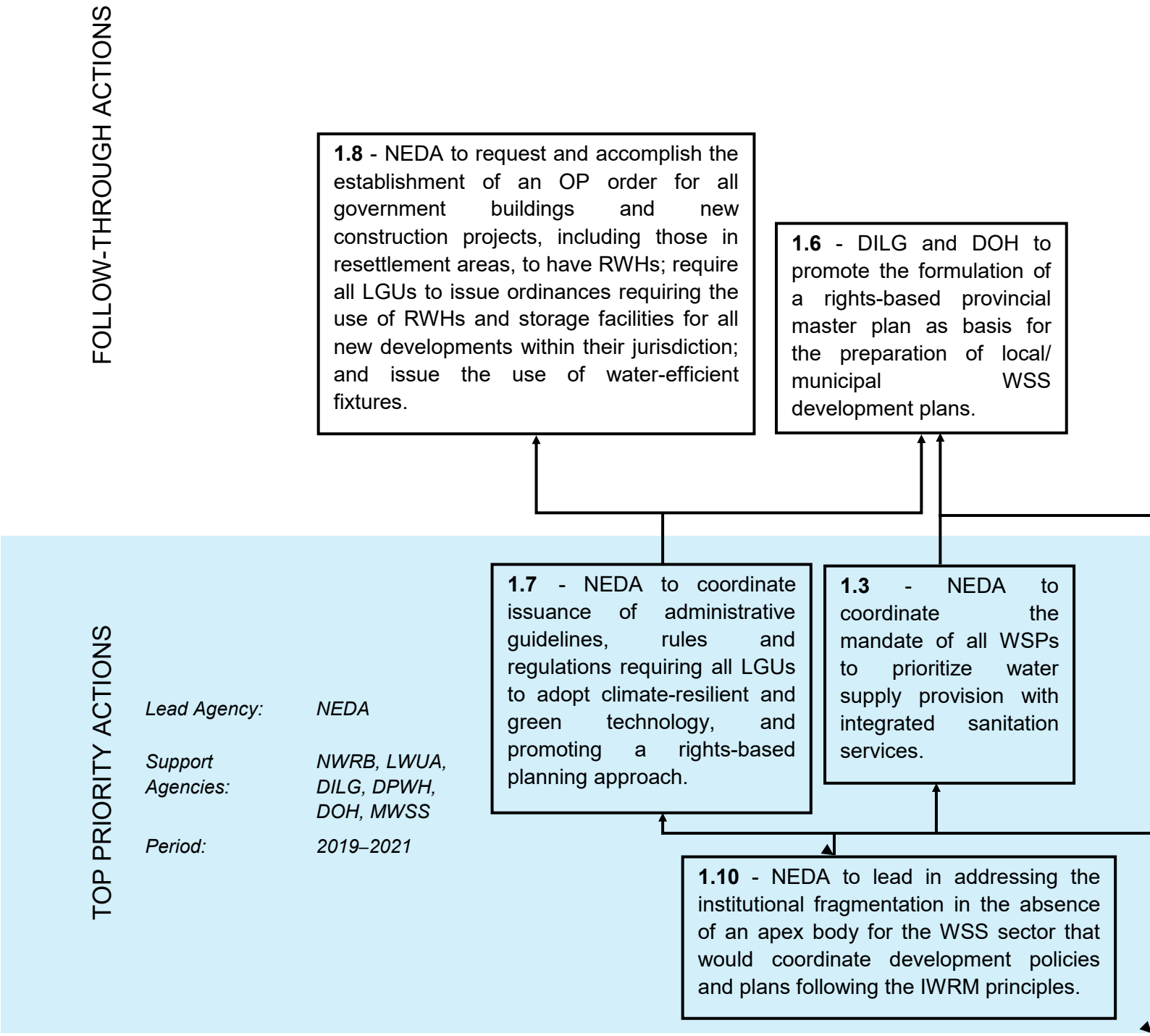
KRA 1: Establishing Effective WSS Sector Institutions

Key Actions		Driver	Support Agencies	Timeline
A. Priority Actions				
1.1	Identify champions in the Upper and Lower Houses to sponsor the creation of an apex body for the WSS sector and support the deliberations based on the Executive Version.	NEDA	NWRB, LWUA, DILG, DPWH, DOH	2019–2020
1.2	Pursue the establishment of the NWMC pending the creation of an apex body for the WSS sector: 1.2.1 Spell out the IRR for NWMC (with NWRB as Vice-Chairperson); 1.2.2 Map out the organizational setup for NWMC (NWRB); 1.2.3 Come up with a Framework Plan; and 1.2.4 Review the capacity requirements of NWMC's organization.	NEDA	NWRB, DOH, DILG	2020
1.3	Coordinate the mandate of all WSPs to prioritize water supply provision with integrated sanitation services.	NEDA	DILG, LWUA, LGUs, DOH, WDs, DPWH, MWSS	2019–2020
1.4	Develop an advocacy and communication plan to garner support for the prioritization of the sector policy reforms and investment requirements.	NEDA	NWRB, LWUA, DILG, DOH	2019–2020
1.5	Formulate verified business plans and seek approval for a rationalized budget increase for LWUA's programs.	LWUA	NEDA, DBM	2020–2021
1.6	Promote the formulation of a rights-based provincial master plan as basis for the preparation of local/municipal WSS development plans.	DILG, DOH	NEDA, LWUA, NWRB, LMP, LPP, LGUs	2020 onwards
1.7	Coordinate the issuance of administrative guidelines, rules, and regulations requiring all LGUs to adopt climate-resilient and green technology, as well as promoting a rights-based planning approach.	NEDA	DILG, DPWH	2019–2020
1.8	Request and accomplish the establishment of an OP order for all government buildings and new construction projects, including those in resettlement areas, to have RWHs; require all LGUs to issue ordinances requiring the use of RWHs and storage facilities for all new developments within their jurisdiction; and issue the use of water-efficient fixtures.	NEDA	DPWH, HLURB	2019–2020

Key Actions		Driver	Support Agencies	Timeline
1.9	Lead the representation at the OP to issue an EO establishing the NWMC.	NEDA	NWRB	2019–2020
1.10	Address institutional fragmentation in the absence of an apex body for the WSS sector that would coordinate development policies and plans following the IWRM principles.	NEDA	NWRB	2019–2021
1.11	Create an apex body for the WSS sector.	NEDA	NWRB, LWUA, DILG, DPWH, DOH	2020–2021
B. Other Actions				
1.12	Establish a WSS Data Center.	Apex Body (NWRB/ NWMC/DWR); NEDA (interim)	DOH, LWUA, DILG, NWRB, DPWH, MWSS	2020–2021
1.13	Develop and conduct a pilot implementation of the integrated provision of WSS services in selected water utilities.	LWUA, DILG, DOH	NEDA	2020–2021
1.14	Develop and conduct a pilot implementation a local WSS governance framework that enables LGUs to realize their obligation of ensuring access to WSS and where the LGUs shall drive the effective provision of WSS services. Consider the creation of a local WSS development office that will help plan and coordinate WSS activities and coordination at the local level with national agencies.	DILG	NEDA, DOH	2020
1.15	Develop a strategy and program that will prioritize investments in far-flung and security risk areas.	NEDA	LWUA, DILG, NAPC, and selected LGUs	2020
1.16	Come up with a Joint Memorandum Circular (JMC) on an integrated water and sanitation planning process at the local level (municipal) based on Local Sustainable Sanitation Plan (LSSP) of DOH and Integrated Safe Water, Sanitation and Hygiene (iWASH) of DILG in line with the development of provincial masterplans and regional WSS	NEDA	DILG, DOH	2020–2022
1.17	Recommend improvements/changes to certain governmental regulations (mainly Commission on Audit [COA], DBM, DENR, and NWRB) that will enable WDs to be run efficiently and effectively as commercial enterprises. There are certain governmental regulations that hamper the operational procedures of the WDs which could be reviewed and streamlined.	LWUA	NEDA, COA, DBM, DENR, NWRB	2021
1.18	Propose amendments to PD 198 and certain regulatory guidelines of various agencies that impact WD operations.	TBD	TBD	TBD

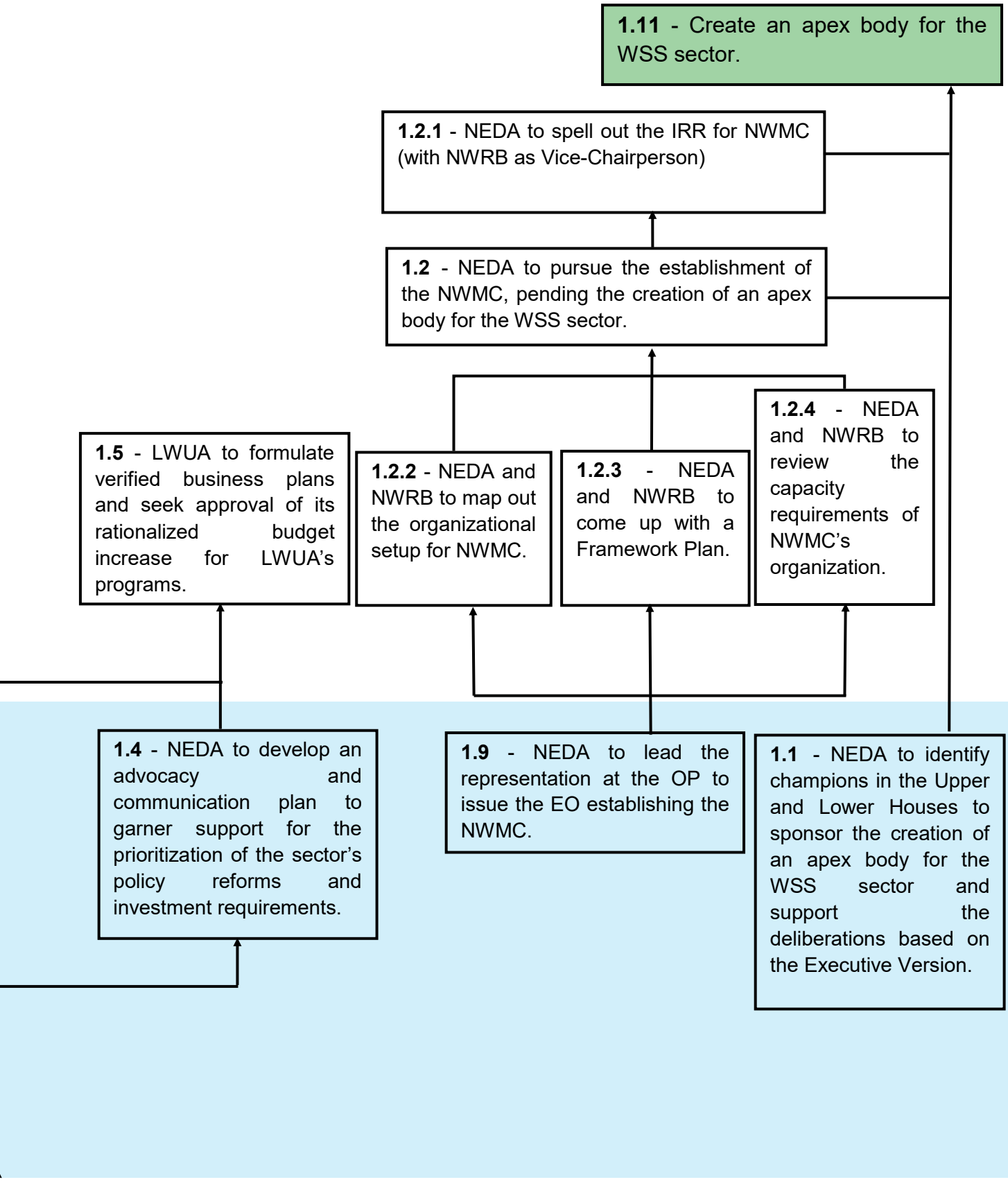
KRA 1: Establishing Effective WSS Sector Institutions

Action Tree



Legend:

- *KRA Milestone*
- *Top Priority Actions*


1.11 - Create an apex body for the WSS sector.
1.2.1 - NEDA to spell out the IRR for NWMC (with NWRB as Vice-Chairperson)
1.2 - NEDA to pursue the establishment of the NWMC, pending the creation of an apex body for the WSS sector.
1.5 - LWUA to formulate verified business plans and seek approval of its rationalized budget increase for LWUA's programs.
1.2.2 - NEDA and NWRB to map out the organizational setup for NWMC.
1.2.3 - NEDA and NWRB to come up with a Framework Plan.
1.2.4 - NEDA and NWRB to review the capacity requirements of NWMC's organization.
1.4 - NEDA to develop an advocacy and communication plan to garner support for the prioritization of the sector's policy reforms and investment requirements.
1.9 - NEDA to lead the representation at the OP to issue the EO establishing the NWMC.
1.1 - NEDA to identify champions in the Upper and Lower Houses to sponsor the creation of an apex body for the WSS sector and support the deliberations based on the Executive Version.

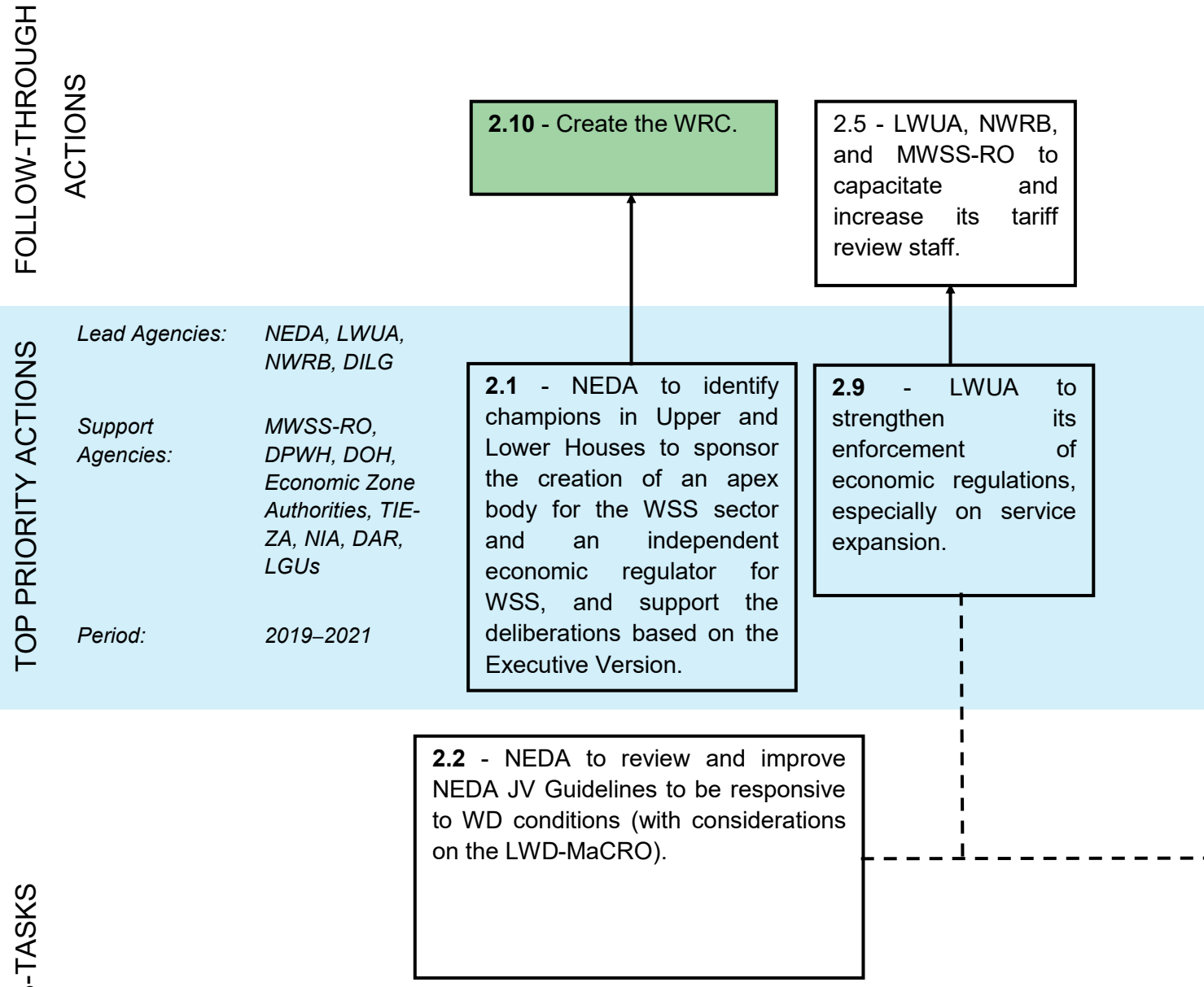
KRA 2: Strengthening the Regulatory Environment

Key Actions		Driver	Support Agencies	Period
A. Priority Actions				
2.1	Identify champions in Upper and Lower Houses to sponsor the creation of an apex body for the WSS sector and an independent economic regulator for WSS, and support the deliberations based on the Executive Version.	Apex body (NWRB/ NWMC/DWR), NEDA	Legislative champions, DILG, LWUA, NWRB, MWSS-RO, DPWH, DOH, Economic Zone Authorities, TIEZA	2019–2020
2.2	Review and improve NEDA JV Guidelines to be responsive to WD conditions (with considerations on the LWD-MaCRO).	NEDA	LWUA, Philippine Association of Water Districts (PAWD)	2019–2020
2.3	Review current cost recovery framework and tariff setting methodologies (WDs, LGU-run water utilities, private sector) to cover sanitation services.	NWRB, LWUA, DILG	NEDA w/ selected LGUs, development partners, CDA, private sector	2020
2.4	Issue guidelines for LGUs to adopt a cost-based methodology that will promote financial sustainability.	DILG	Not Applicable	2020
2.5	Capacitate and increase its tariff review staff.	LWUA, NWRB, MWSS-RO	NEDA, DBM	2019–2021
2.6	Assess the quantity and quality of all water resources.	Apex body (NWRB/ NWMC/DWR)	NEDA	2019 onwards
2.7	Coordinate the review and assessment of existing guidelines for issuing water permits and CPCs of NWRB and NIA. 2.7.1 Review and rationalize NWRB guidelines in regard to the granting of water permits and CPCs to private operators. 2.7.2 Review existing water permits and CPCs to weed out speculators, and check and verify water rights (i.e., volume granted should not exceed volume required); NWRB to require the following in water permit applications: MOA with WD for private bulk water supplier (intending to sell to WD), and SB resolution (for LGU level CPC). 2.7.3 Review water permits granted to NIA to free up water sources for water supply.	NWRB	NEDA, NWRB, LGUs, LWUA, NIA, Department of Agrarian Reform (DAR)	2019–2020
2.8a	Continue updating Listahang Tubig.	NWRB	Not Applicable	2019–onwards
2.8b	Establish benchmarking system results.	NWRB	Not Applicable	2020
2.9	Strengthen its enforcement of economic regulations, especially on service expansion.	LWUA	NEDA	2019–2021

Key Actions		Driver	Support Agencies	Period
2.10	Create the WRC.	NEDA	Legislative Champions, DILG, LWUA, NWRB, MWSS-RO, DPWH, DOH, Economic Zone Authorities, TIEZA	2019–2021
2.11	Issue Memorandum Circular to LGUs to be guided by tariff setting methodologies for water supply and wastewater management services.	DILG	LWUA, DOH, DPWH	2019–2021
B. Other Actions				
2.12	Submit Annual Data Report of all water utilities as input to Annual Benchmarking Report of all WSPs.	Apex body (NWMC/ DWR) / NEDA/NWRB (interim)	DILG, LWUA, CDA	Annual
2.13	Formulate a policy on the imposition of fees or charges deemed necessary for water resources conservation and protection, such as: a. Polluter's Fee, which shall be based on the net waste load depending on the wastewater charge formula pursuant to R.A. 9275 or the Clean Water Act; b. Raw water price, determined by the Apex Body, which shall take into account, the scarcity of water; and c. Appropriate structures for payment of environmental services.	Apex body (NWMC/ DWR) / NWRB (interim)	Not Applicable	2020 onwards
2.14	Disseminate and monitor compliance of WSPs with standards.	Apex body (NWMC/ DWR), DILG, LWUA, NWRB, DOH	Union of Local Authorities of the Philippines (ULAP), LPP, LCP, LMP	2019 onwards
2.15	Publish all hearing decisions in NWRB website.	NWRB	Not Applicable	2019–2020
2.16	Align WD business plans to KPIs.	LWUA	Not Applicable	2020–2021
2.17	Continue LGU competitiveness awards and recognition	DILG	Not Applicable	2019 onwards
2.18	Conduct learning events to harmonize economic regulations at the regional roundtable discussions (RTD) (sharing and alignment).	TBD	Not Applicable	TBD
2.19	Improve tariff formula to take into consideration WDM, small WSPs, poor communities, power cost adjustment, and consumer price index (CPI).	NWRB, LWUA, MWSS, Independent Regulatory Body, WSPs	DOF, NEDA	2019–2020

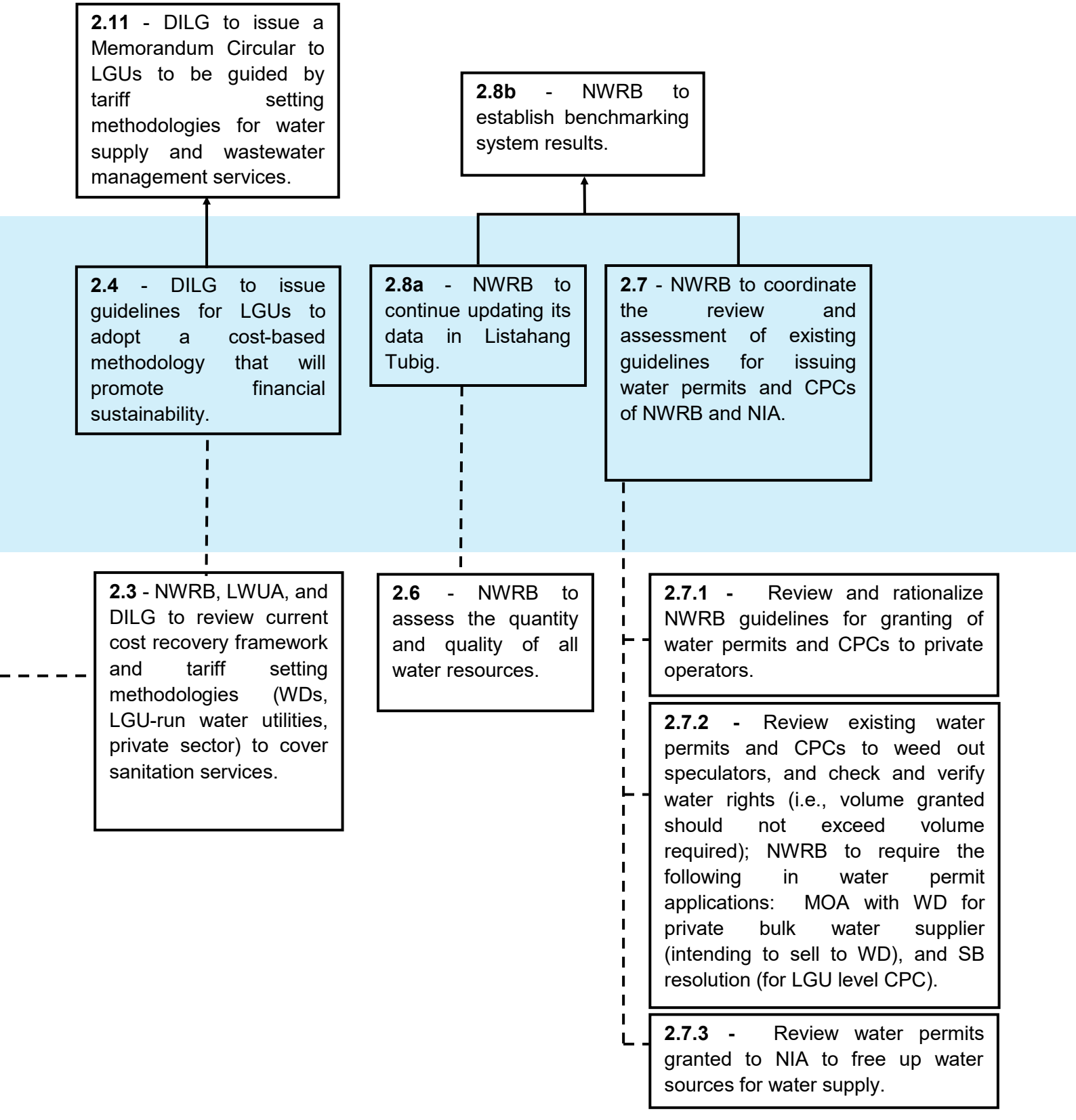
KRA 2: Strengthening the Regulatory Environment

Action Tree



Legend:

- *KRA Milestone*
- *Top Priority Actions*

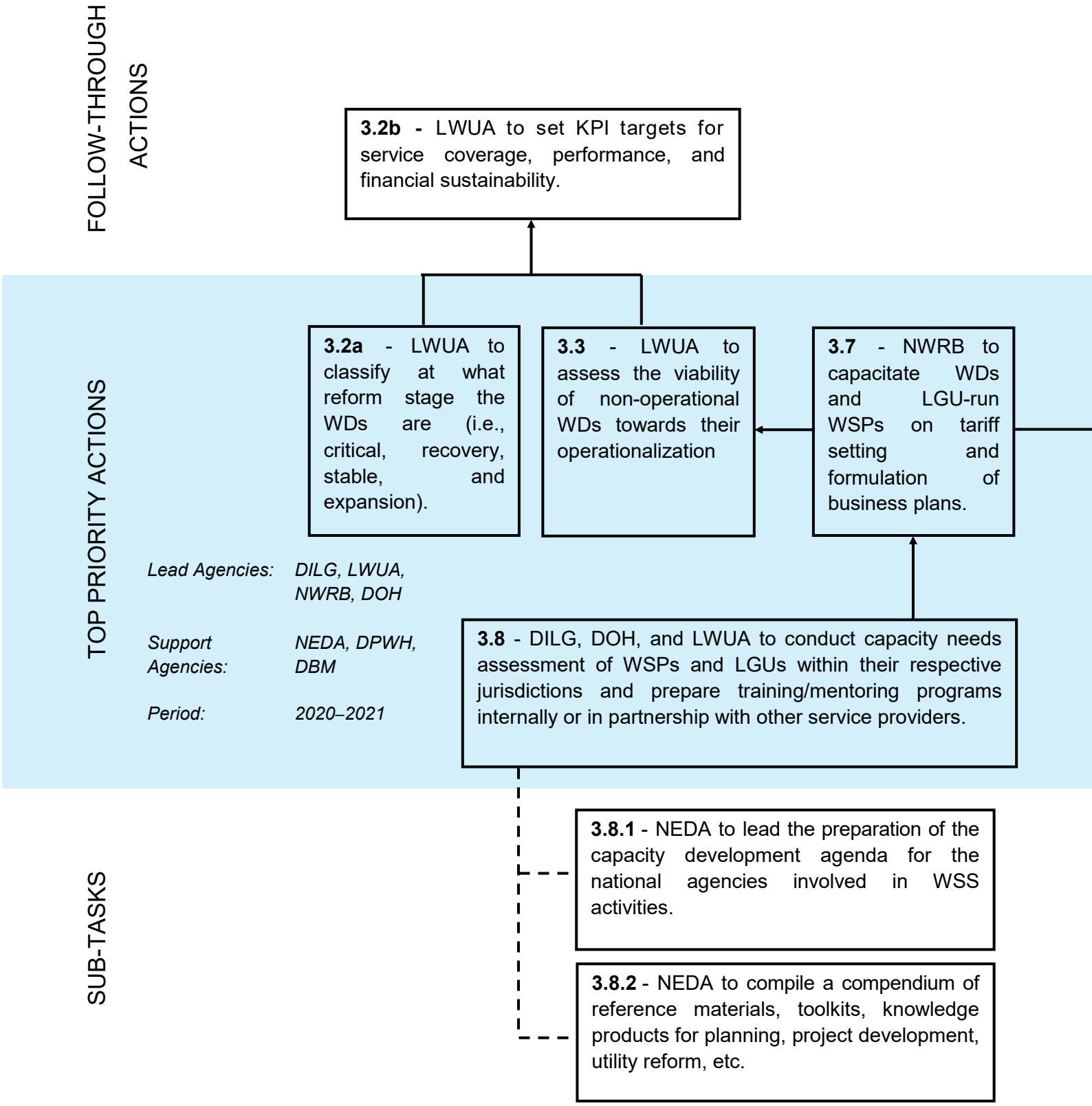

2.11 - DILG to issue a Memorandum Circular to LGUs to be guided by tariff setting methodologies for water supply and wastewater management services.
2.8b - NWRB to establish benchmarking system results.
2.4 - DILG to issue guidelines for LGUs to adopt a cost-based methodology that will promote financial sustainability.
2.8a - NWRB to continue updating its data in Listahang Tubig.
2.7 - NWRB to coordinate the review and assessment of existing guidelines for issuing water permits and CPCs of NWRB and NIA.
2.3 - NWRB, LWUA, and DILG to review current cost recovery framework and tariff setting methodologies (WDs, LGU-run water utilities, private sector) to cover sanitation services.
2.6 - NWRB to assess the quantity and quality of all water resources.
2.7.1 - Review and rationalize NWRB guidelines for granting of water permits and CPCs to private operators.
2.7.2 - Review existing water permits and CPCs to weed out speculators, and check and verify water rights (i.e., volume granted should not exceed volume required); NWRB to require the following in water permit applications: MOA with WD for private bulk water supplier (intending to sell to WD), and SB resolution (for LGU level CPC).
2.7.3 - Review water permits granted to NIA to free up water sources for water supply.

KRA 3: Creating and Ensuring Effective WSS Services

Key Actions		Driver	Support Agencies	Period
A. Priority Actions				
3.1	Evaluate the effectiveness of other programs, especially those directed at poor and waterless municipalities, in accelerating access to WSS services (e.g., SALINTUBIG, LGSF-AM, and other programs for WSS-related CBOs).	DILG	NEDA, LWUA	2020–2021
3.2a	Classify at what reform stage the WDs are (i.e., critical, recovery, stable, and expansion).	LWUA	NEDA, DILG, DPWH, DOH, CDA, NGOs, DBM	2020–2021
3.2b	Set KPI targets for service coverage, performance, and financial sustainability.	LWUA	NEDA, DILG, DPWH, DOH, CDA, NGOs, DBM	2020–2021
3.3	Assess the viability of non-operational WDs towards their operationalization.	LWUA	NEDA	2020–2021
3.4	Encourage the operation of WSPs as economic enterprises by LGUs and/or with private partners.	DILG	LGUs	2020–2021
3.5	Develop and conduct a pilot implementation of a business/ management model where government and CBOs enter a partnership/arrangement to operate and maintain a water utility.	DILG, select LGUs	CDA, NEDA, LWUA, NGOs, development partners	2021
3.6a	Put up central management systems (develop a template on how LGUs could come up with this setup).	DILG, LGUs	NWRB	2020–2021
3.6b	Keep BWSAs (LGU responsible for technical standards).	DILG, LGUs	NWRB	2020–2021
3.7	Capacitate WDs and LGU-run WSPs on tariff setting and formulation of business plans.	NWRB	LWUA, DILG	2020–2021
3.8	Conduct capacity needs assessment of WSPs and LGUs within their respective jurisdictions and prepare training/ mentoring programs internally or in partnership with other service providers. 3.8.1 Lead the preparation of the capacity development agenda for the national agencies involved in WSS activities. 3.8.2 Compile a compendium of reference materials, toolkits, knowledge products for planning, project development, utility reform, etc.	DILG, DOH, LWUA	NEDA	2020–2021

Key Actions		Driver	Support Agencies	Period
B. Other Actions				
3.9	Conduct a capacity needs assessment of LWUA and WDs.	LWUA	NEDA, DBM	2020–2021
3.10	Develop and implement a responsive capacity-building program for LWUA and WDs.	LWUA	NEDA, DBM	2020–2021
3.11	Conduct a capacity needs assessment of selected LGUs, the regional water and sanitation (WatSan) hubs, and of the DILG.	DILG	CDA, NEDA	2020–2021
3.12	Develop a capacity-building program for LGU-run water utilities and Regional WatSan Hubs, and study the needed reforms for DILG to enable it to respond to the needs of the LGU-run water and sanitation utilities.	DILG	CDA, NEDA	2020–2021
3.13	Study the feasibility of setting up Regional Training Centers for WDs and LGU-run water and sanitation utilities.	NEDA	LWUA, DILG, CDA, regional WatSan hubs	2020–2021
3.14	Develop and implement capacity-building programs, including disaster risk reduction (DRR), designed for WSS personnel and officials.	DILG, LWUA, DPWH, Private Sector, Office of Civil Defense (OCD), Climate Change Commission (CCC), DOH	NEDA, CCC, DBM, LGUs	2019 onwards
3.15	For PPP: a. Formulate decision tools to guide WDs and LGUs to determine appropriateness of PPP as a service provision option. b. Disseminate materials/templates for PPP project development and procurement. c. Develop guidelines for PPP contract management.	NROs, PPP Center, LWUA	Not Applicable	2020–2021

Action Tree



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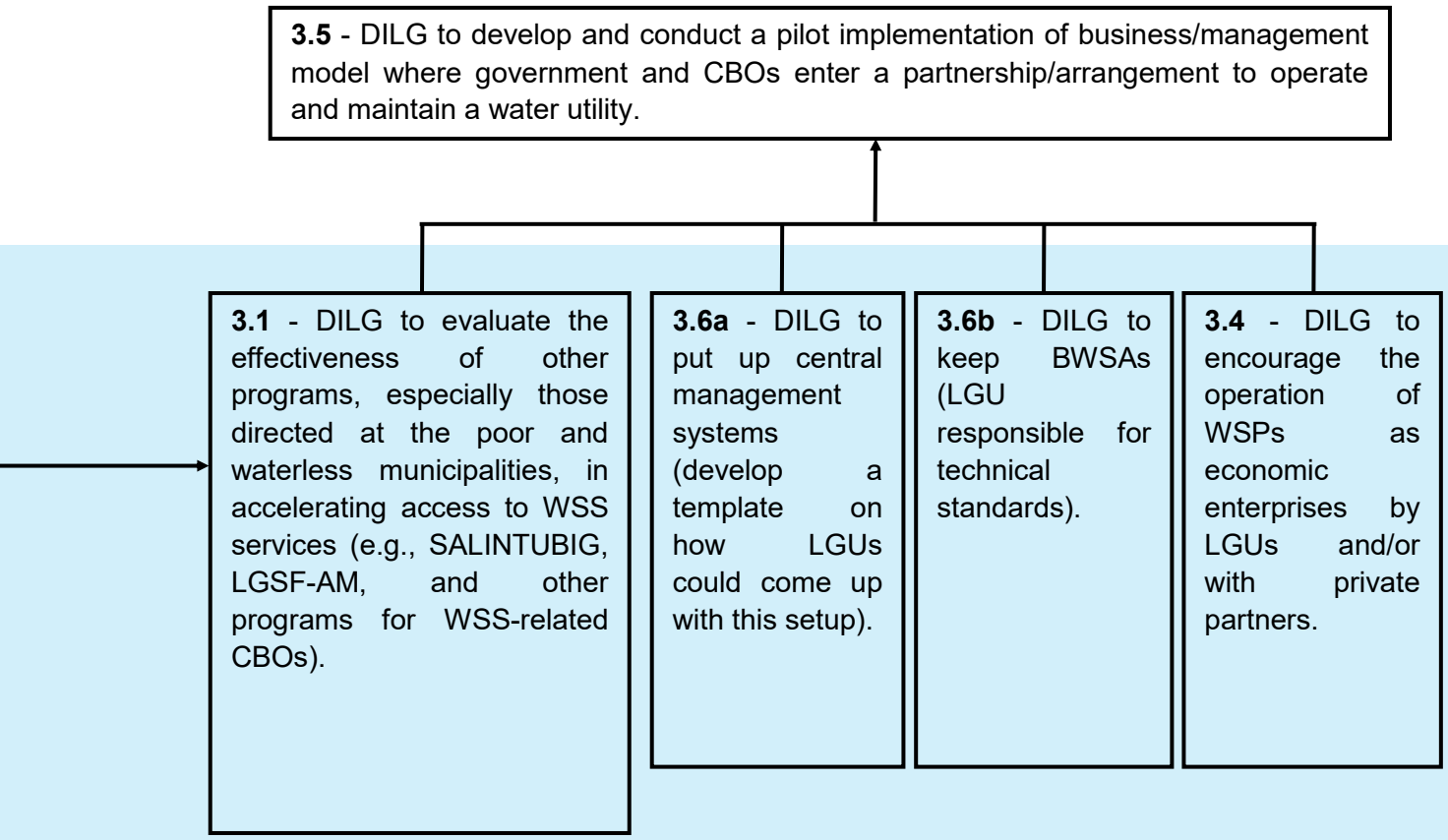
- *Top Priority Actions*

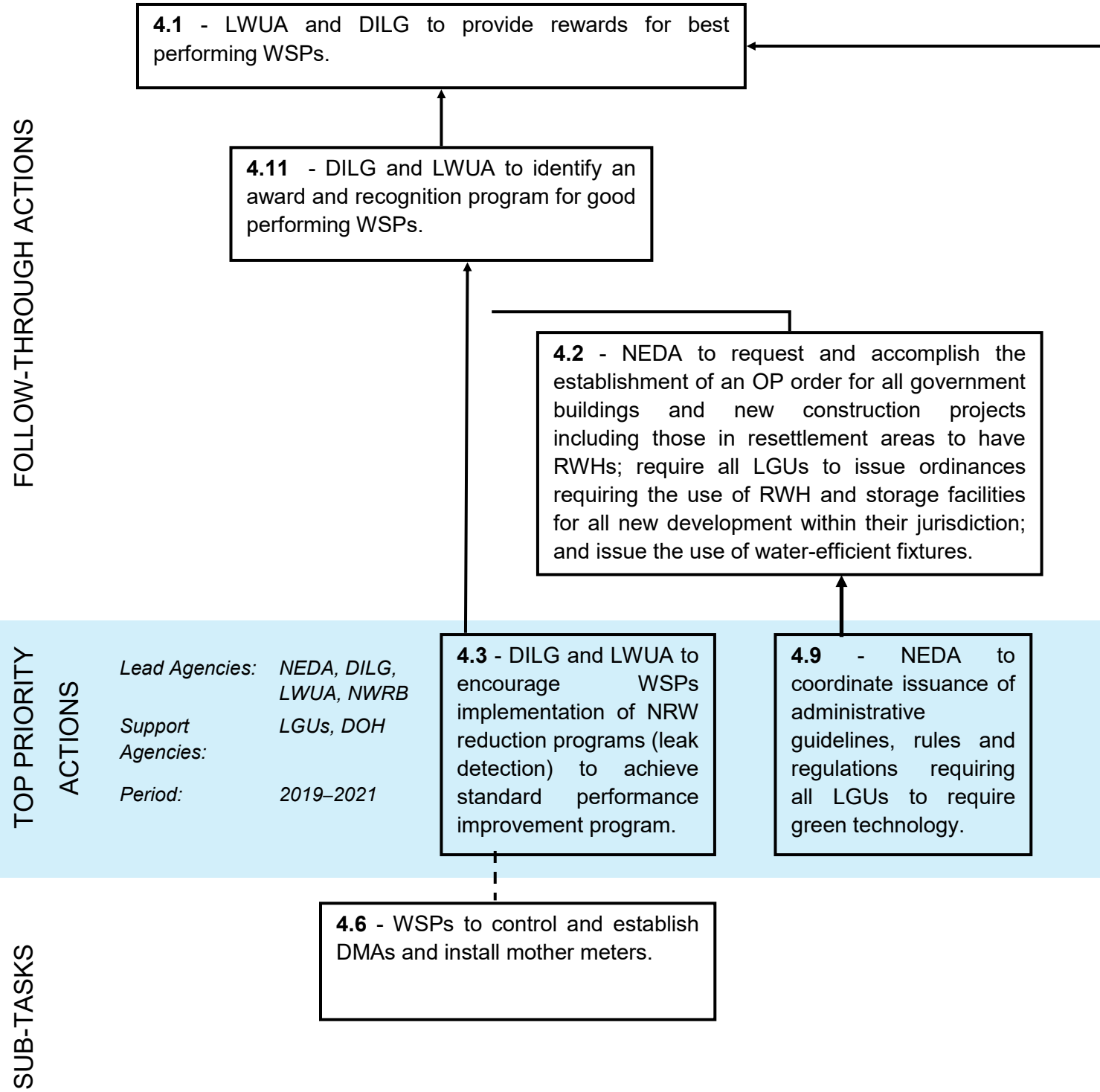

3.5 - DILG to develop and conduct a pilot implementation of business/management model where government and CBOs enter a partnership/arrangement to operate and maintain a water utility.
3.1 - DILG to evaluate the effectiveness of other programs, especially those directed at the poor and waterless municipalities, in accelerating access to WSS services (e.g., SALINTUBIG, LGSF-AM, and other programs for WSS-related CBOs).
3.6a - DILG to put up central management systems (develop a template on how LGUs could come up with this setup).
3.6b - DILG to keep BWSAs (LGU responsible for technical standards).
3.4 - DILG to encourage the operation of WSPs as economic enterprises by LGUs and/or with private partners.

KRA 4: Balancing Water Supply and Demand

Key Actions		Driver	Support Agencies	Period
A. Priority Actions				
4.1	Provide rewards for best performing WSPs.	LWUA, DILG	DPWH, DOH, LGUs	2019 onwards
4.2	Request and accomplish the establishment of an OP order for all government buildings and new construction projects including those in resettlement areas to have RWHs; require all LGUs to issue ordinances requiring the use of RWHs and storage facilities for all new developments within their jurisdiction; and issue the use of water-efficient fixtures.	NEDA	DPWH, HLURB	2019
4.3	Encourage WSPs implementation of NRW reduction programs (leak detection) to achieve standard performance improvement program.	DILG, LWUA	LGUs, LWUA, DILG, NWRB	2019–2021
4.4	Conduct resource assessment and recommend which areas should shift from groundwater to surface water sources. 4.4.1 Rationalize water permit system. 4.4.2 Review existing water permits to weed out speculators. 4.4.3 Review and update pricing system for resource extraction.	Apex body (NWRB/ NWMC/DWR), LWUA, DILG	NEDA	2020–2021
4.5	Enter into co-management agreements with other agencies, LGUs and multi-stakeholder organizations such as RBOs and Watershed Councils to protect and rehabilitate the watersheds within their areas, following the IWRM principles.	DENR, RBOs, LGUs	LGUs, NGOs, RBOs, watershed management councils, NWRB	2019 onwards
4.6	Control and establish DMAs and install mother meters.	WSPs	LGUs, LWUA, DILG, NWRB	2019–2021
4.7	Develop and implement a communication strategy for WDM and wastewater management.	NWRB	NEDA, NWRB, LWUA, DILG, DOH	2019–2020
4.8	Initiate shift to surface water and bulk water development.	NWRB, LWUA, DILG	NEDA	2020
4.9	Coordinate issuance of administrative guidelines, rules, and regulations requiring all LGUs to require green technology.	NEDA	DILG	2020
4.10	Strengthen implementation of resource management and allocation of water resources policies, systems and database.	NWRB	NEDA	2020
4.11	Identify an award and recognition program for good performing WSPs.	DILG, LWUA	NEDA	2020–2021

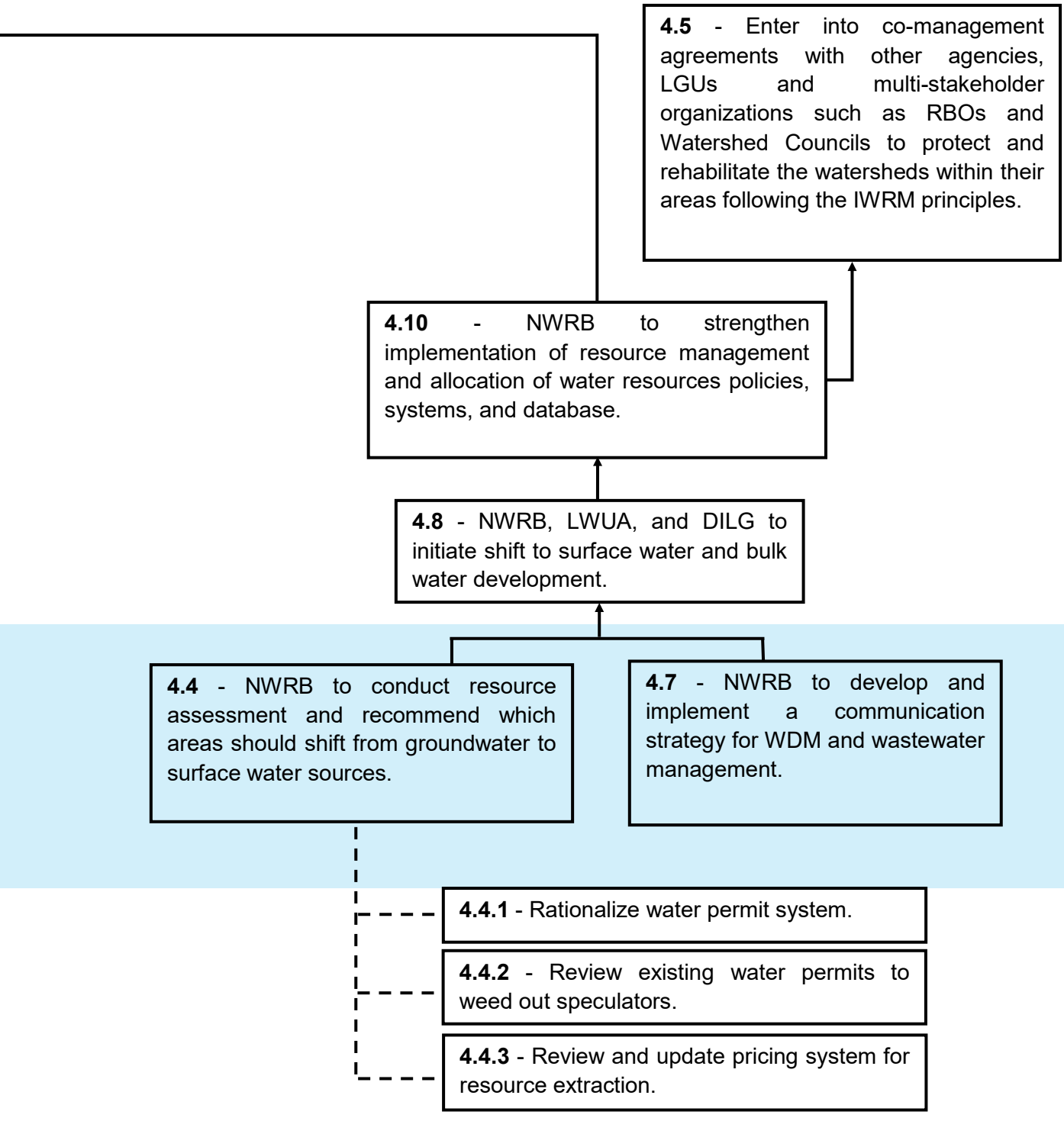
Key Actions		Driver	Support Agencies	Period
B. Other Actions				
4.12	Develop strategic WSS communication plans and information, education, and communication (IEC) campaigns targeting the public on the following: a. Proper sanitation; b. Water Demand Management (water efficiency and water conservation), rainwater harvesting, reuse of treated wastewater, reduction of NRW; and c. Promotion of WSPs' services, plans, and programs.	DENR, LWUA, MWSS, NEDA, NWRB, WSPs, DOH, DILG	Not Applicable	2019–2021
4.13	Strengthen and coordinate policy making and planning for flood management by integrating stormwater/urban drainage as well as appropriate retention/retarding basins to help mitigate the detrimental and catastrophic effects of flooding.	Apex body (NWRB / NWMC / DWR)	Not Applicable	2020–2021
4.14	Develop encouraging conservation measures and/or ordinance that will reduce per capita consumption.	LGUs, LWUA, DILG, NWRB	Not Applicable	2019–2021

Action Tree



Legend:

- *Top Priority Actions*


4.5 - Enter into co-management agreements with other agencies, LGUs and multi-stakeholder organizations such as RBOs and Watershed Councils to protect and rehabilitate the watersheds within their areas following the IWRM principles.
4.10 - NWRB to strengthen implementation of resource management and allocation of water resources policies, systems, and database.
4.8 - NWRB, LWUA, and DILG to initiate shift to surface water and bulk water development.
4.4 - NWRB to conduct resource assessment and recommend which areas should shift from groundwater to surface water sources.
4.7 - NWRB to develop and implement a communication strategy for WDM and wastewater management.
4.4.1 - Rationalize water permit system.
4.4.2 - Review existing water permits to weed out speculators.
4.4.3 - Review and update pricing system for resource extraction.

KRA 5: Building Climate Resiliency

Key Actions		Driver	Support Agencies	Period
A. Priority Actions				
5.1a	Construct new WSS infrastructure in low-risk areas.	DPWH, WSPs	DILG, LWUA, LGUs, DOH	2019 onwards
5.1b	Design WSS infrastructure based on the DWPH Design Guidelines, Criteria and Standards and Standard Specifications for climate-resilient hydraulic structures.	DPWH, WSPs	DILG, LWUA, LGUs, DOH	2019 onwards
5.2	Issue a Department Order requiring retention/retarding basins for flood control and drainage systems.	DPWH	NEDA, DENR, NWRB	2019–2020
5.3	Request the establishment of an OP Order for all (NGAs and LGUs) government buildings and facilities to utilize green technologies, including groundwater infiltration.	NEDA	DENR, DILG, CCC	2019–2020
5.4	Coordinate issuance of administrative guidelines, rules and regulations requiring all LGUs to require green technology.	Apex body (NWRB/ NWMC/DWR), DILG	NEDA, DENR, CCC, DOH, DPWH	2019
5.5	Require WSPs to prepare WSS Emergency Response Plans, and to coordinate with the LGU on the development of their DRRM and Contingency Plans.	LWUA, DILG	OCD, CCC, LGUs	2019–2022
5.6	Revise the Referral Codes of the National Building Code of the Philippines to include policies and standards for water efficiency in building design/construction.	DPWH	Not Applicable	2019
5.7	Review all major WSS proposed projects to check if climate considerations were already integrated.	NEDA	DPWH	2019 onwards
5.8	Issue and require design standards, guidelines and specifications for climate-resilient hydraulic structures.	DPWH	NEDA	2020
5.9	Ensure implementation of climate-resilient hydraulic structures and retention/retarding basins for flood control and drainage systems.	DPWH	Not Applicable	2020–2021
5.10	Ensure the installation of RWHs and storage facilities.	LWUA, DILG	DPWH	2020–2021
B. Other Actions				
5.11	Develop risk mitigation measures for vulnerable WSS infrastructures in high risk areas (i.e., including conflict areas).	LGUs	DILG, OCD, DOH	2019 onwards

KRA 6: Enabling Access to Funding and Financing

Key Actions		Driver	Support Agencies	Period
A. Priority Actions				
6.1	Implement the URAF in the sector in accordance with the PWSSMP. URAF has the following fundamental criteria for allocating resources: a. Poverty incidence; b. Level of access; and c. Incidence of waterborne diseases. 6.1.1 Establish the URAF TWG to be the focal technical team that will implement URAF; draft the implementing guidelines of the URAF; and develop an investment program to achieve SDG 6 targets. 6.1.2 Develop standard appraisal tools such as a VGF model for rationalizing national government grants.	NEDA	DOF	2020
6.2	Review and rationalize government financing policies to harmonize with URAF principles.	LWUA	NEDA, DOF	2019
6.3	Develop and adopt policies to crowd-in PFIs.	DOF	NEDA, GFIs	2019–2020
6.4	Adopt the URAF principles for the inclusion of funding and coverage of NSSMP.	DPWH	NEDA Board, DBM	2019–2020
6.5	Build the capacity of national institutions to effectively carry out mandates and new roles under the URAF.	NEDA	DOF, DBM	2020
6.6	Support budget requirements.	DOF, DBM	Not Applicable	2020
B. Other Actions				
6.7	Put up regulations, for LGUs that are given grants, regarding KPIs and appropriate institutional setups to ensure that greenfield investments are sustainable. Consider the initial investment by the national government as capitalization, which is leveraged by external financing.	NEDA, GFIs, DILG	Not Applicable	2021
6.8	Have an appropriate policy with LWUA on debt overhang, have measures in place, such as suspending debt payments or a moratorium for not imposing penalties (requiring WDs to have a balloon payment for them to be able to borrow money to improve or expand their services).	NEDA, GFIs, DILG	Not Applicable	2021
6.9	Pursue Presidential issuance directing national government and/or local government interventions in areas with high poverty incidence, low level of access, and high incidence of waterborne diseases.	Apex body (NWRB / NWMC / DWR)	DILG, NEDA, LWUA, DOH, OP, DENR	2022 onwards
6.10	Review financing facilities with emphasis on its effective implementation.	DOF, NEDA, LWUA, GFIs, DILG	Not Applicable	2020–2021

KRA 5: Building Climate Resiliency

Action Tree

FOLLOW-THROUGH ACTIONS

5.1a - DPWH and WSPs to construct new WSS infrastructure in low-risk areas.

5.5 - LWUA and DILG to require WSPs to prepare WSS Emergency Response Plans, and to coordinate with the LGU on the development of their DRRM and Contingency Plans.

5.1b - WSPs to design WSS infrastructure based on the DPWH Design Guidelines, Criteria and Standards and Standard Specifications for climate-resilient hydraulic structures.

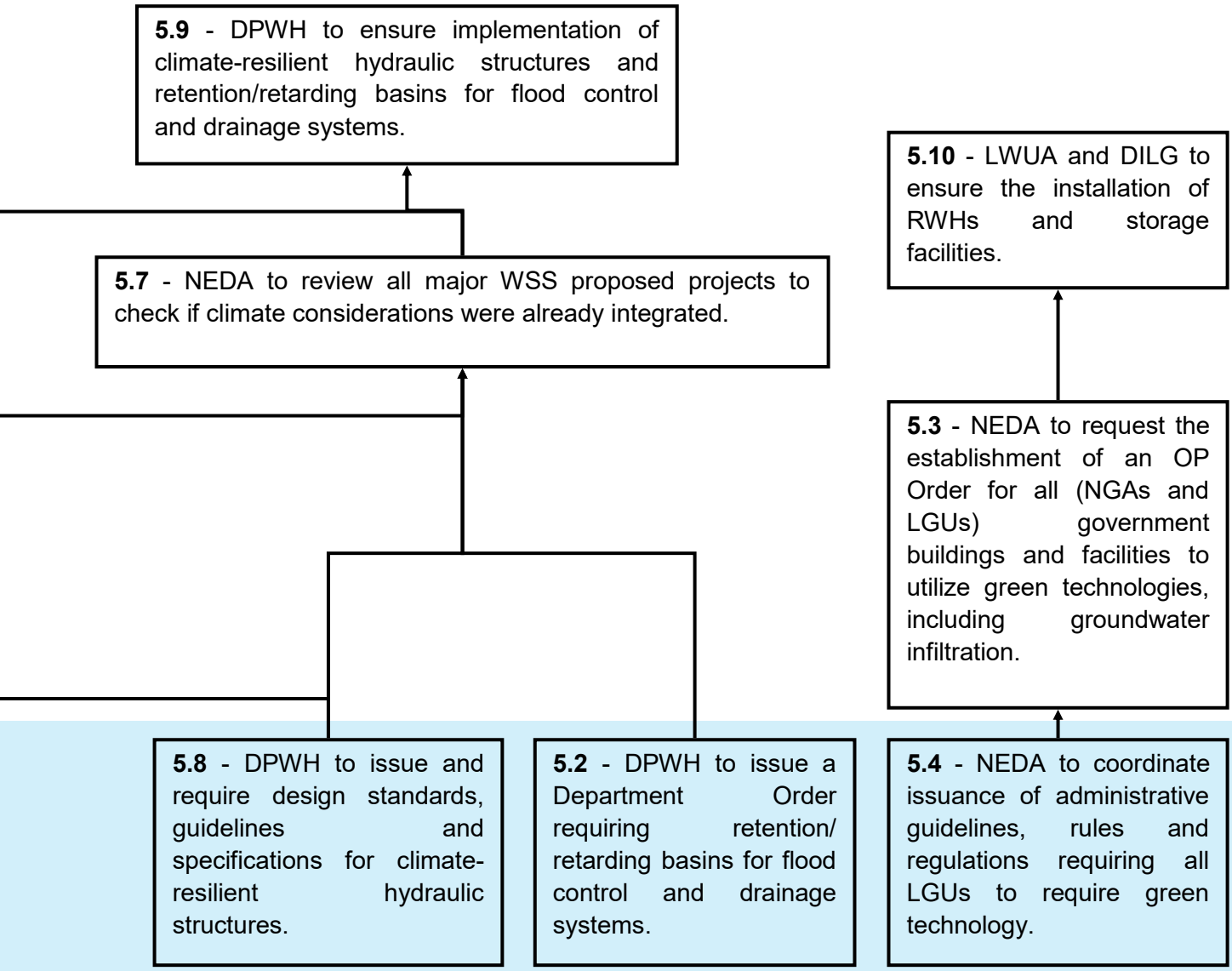
TOP PRIORITY ACTIONS

5.6 - DPWH to revise the Referral Codes of the National Building Code of the Philippines to include policies and standards for water efficiency in building design/construction.

Lead Agencies:	*DPWH, NEDA*
Support Agencies:	*DILG, LWUA, DENR, NWRB*
Period:	*2019–2020*

Legend:

- *Top Priority Actions*


5.9 - DPWH to ensure implementation of climate-resilient hydraulic structures and retention/retarding basins for flood control and drainage systems.
5.10 - LWUA and DILG to ensure the installation of RWHs and storage facilities.
5.7 - NEDA to review all major WSS proposed projects to check if climate considerations were already integrated.
5.3 - NEDA to request the establishment of an OP Order for all (NGAs and LGUs) government buildings and facilities to utilize green technologies, including groundwater infiltration.
5.8 - DPWH to issue and require design standards, guidelines and specifications for climate-resilient hydraulic structures.
5.2 - DPWH to issue a Department Order requiring retention/ retarding basins for flood control and drainage systems.
5.4 - NEDA to coordinate issuance of administrative guidelines, rules and regulations requiring all LGUs to require green technology.

KRA 6: Enabling Access to Funding and Financing

Action Tree

FOLLOW-THROUGH ACTIONS

6.5 - NEDA to build the capacity of national institutions to effectively carry out mandates and new roles under the URAF.

TOP PRIORITY ACTIONS

Lead Agencies: *NEDA, DOF, LWUA, DPWH*

Support Agencies: *DBM, DILG, DOH*

Period: *2019–2020*

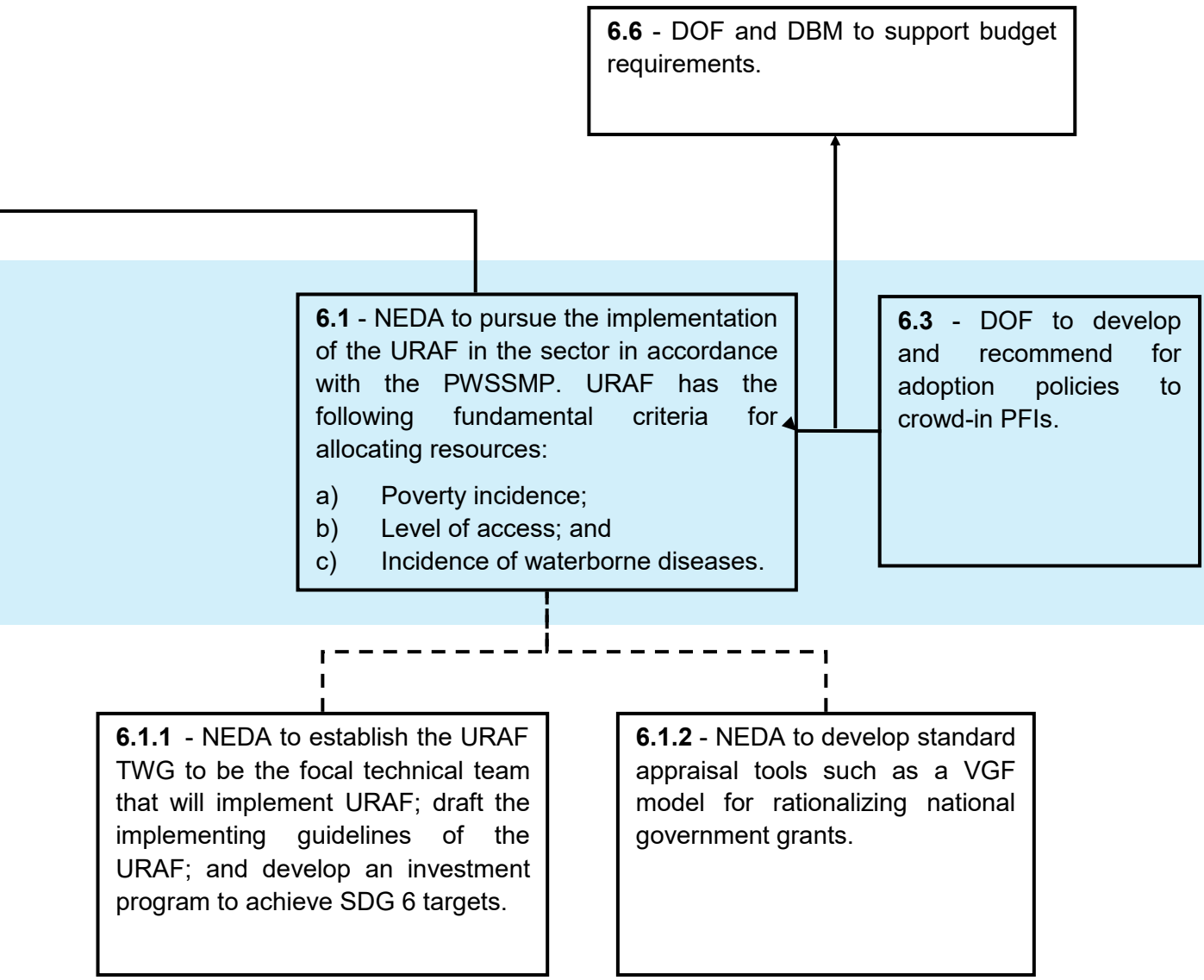
6.2 - LWUA to review and rationalize government financing policies to harmonize with URAF principles.

6.4 - DPWH to adopt the URAF principles for the inclusion of funding and coverage of NSSMP.

SUB-TASKS

Legend:

- *Top Priority Actions*


6.6 - DOF and DBM to support budget requirements.
6.1 - NEDA to pursue the implementation of the URAF in the sector in accordance with the PWSSMP. URAF has the following fundamental criteria for allocating resources:
a) Poverty incidence;
b) Level of access; and
c) Incidence of waterborne diseases.
6.3 - DOF to develop and recommend for adoption policies to crowd-in PFIs.
6.1.1 - NEDA to establish the URAF TWG to be the focal technical team that will implement URAF; draft the implementing guidelines of the URAF; and develop an investment program to achieve SDG 6 targets.
6.1.2 - NEDA to develop standard appraisal tools such as a VGF model for rationalizing national government grants.

KRA 7: Managing Data and Information

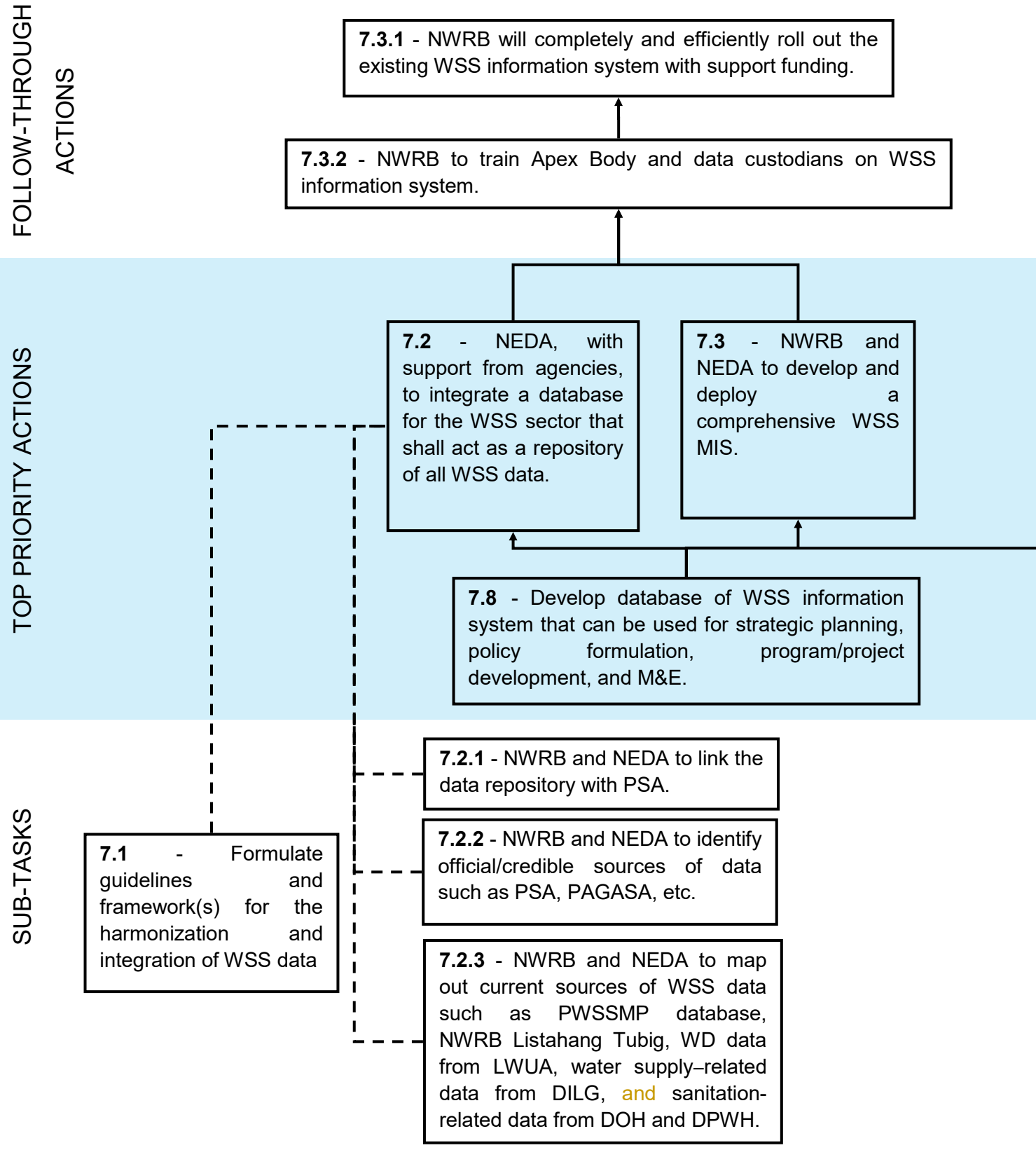
Key Actions		Driver	Support Agencies	Period
A. Priority Actions				
7.1	Formulate guidelines and framework(s) for the harmonization and integration of WSS data.	Apex body, (NWRB/NWMC/ DWR)/NEDA (interim)	PSA, DOH, LWUA, NWRB, MWSS, DPWH	2019–2020
7.2	Integrate a database for the WSS sector that shall act as a repository of all WSS data. 7.2.1 Link the data repository with PSA. 7.2.2 Identify official/credible sources of data such as PSA, PAGASA, etc. 7.2.3 Map out current sources of WSS data such as PWSSMP database, NWRB Listahang Tubig, WD data from LWUA, water supply-related data from DILG, and sanitation-related data from DOH and DPWH.	Apex body (NWRB/NWMC DWR)/NEDA (interim)	DOH, LWUA, DILG, NWRB, DPWH, MWSS, PSA	2019–2020
7.3	Develop and deploy a comprehensive WSS MIS. 7.3.1 Completely and efficiently roll out the existing WSS information system at NWRB with support funding. 7.3.2 Train apex body and data custodians on WSS information system.	Apex body (NWRB/NWMC DWR)/NEDA (interim)	DOH, LWUA, DILG, NWRB, DPWH, MWSS, PSA, DBM	2019–2021
7.4	Develop and streamline programs for the establishment of baseline data (e.g., pertaining to SDG, coverage, safely managed sanitation services, and other relevant indicators).	Apex body (NWRB/NWMC DWR)/NEDA (interim)	PSA, DOH, LWUA, DILG, NWRB, DPWH	2020–2021
7.5	Facilitate an inter-agency discussion on the communication strategy for the programs of NWRB, DILG, DOH, and LWUA.	NEDA	NWRB, DILG, DOH, LWUA	2019–2020
7.6	Develop a communication strategy for the sector development plans and programs.	NEDA	NWRB, DILG, DOH, LWUA	2019–2020
7.7	Develop IEC programs for the respective advocacies of NWRB, DILG, DOH, and LWUA.	NWRB, DILG, DOH, LWUA	NEDA	2020–2021
7.8	Develop database of WSS information system that can be used for strategic planning, policy formulation, program/ project development, and M&E.	NEDA	NWRB, LWUA, DILG, DPWH	2020–2021
B. Other Actions				
7.9	Determine extent of adoption/harmonization of UN definitions of SDGs.	PSA, NEDA	DOH, LWUA, DILG, MWSS, NWRB	2020–2021
7.10	Develop common data report for all WSPs.	Apex body (NWRB/NWMC DWR)/NEDA	DILG, LWUA, CDA	Annual

KRA 8: Driving Research and Development

Key Actions		Driver	Support Agencies	Period
A. Priority Actions				
8.1	Formulate research and development agenda based on priority needs of key partner agencies and stakeholders. The agenda should include, among others, technology on lowering energy costs and increasing water-efficiency; sanitation technology options for challenging contexts (e.g., high water table, flood-prone, etc.); low-cost and decentralized septage systems; and policies such as raw water pricing and tradeable water regime.	Apex body (NWMC/ DWR) / NEDA/NWRB (interim)	DOH	2019–2020
8.2	Create a Research and Development Division under the envisioned NWMC Planning Department with the immediate task of formulating the WSS research and development agenda based on needs.	Apex body (NWRB/ NWMC/DWR/ NEDA (interim)	DOST, DBM	2019–2020
8.3	Promote the conduct of research and development studies based on priority research and development agenda (i.e., tie-up with academe, WSS partners and experts).	Apex body (NWRB/ NWMC/DWR/ NEDA (interim)	DOST, Academe	2019–2021
B. Other Actions				
8.4	Establish an improved accreditation process of WSS-related new technologies.	Apex body (NWRB/ NWMC/DWR/ NWRB)	DOST, Department of Trade and Industry (DTI)	2019–2020
8.5	Establish and implement government financial support on local WSS-related inventions.	DBM, DOF	DOST, Academe	2019 onwards
8.6	Tap local inventors and scientists with attractive government support.	Apex body (NWRB/ NWMC/DWR)/ NEDA (interim)	DOST, Academe	2020 onwards
8.7	Develop and adopt advance infrastructure design and construction methodology solutions.	Apex body (NWRB/ NWMC/DWR)/ NEDA (interim)	DOST, DPWH	2021 onwards

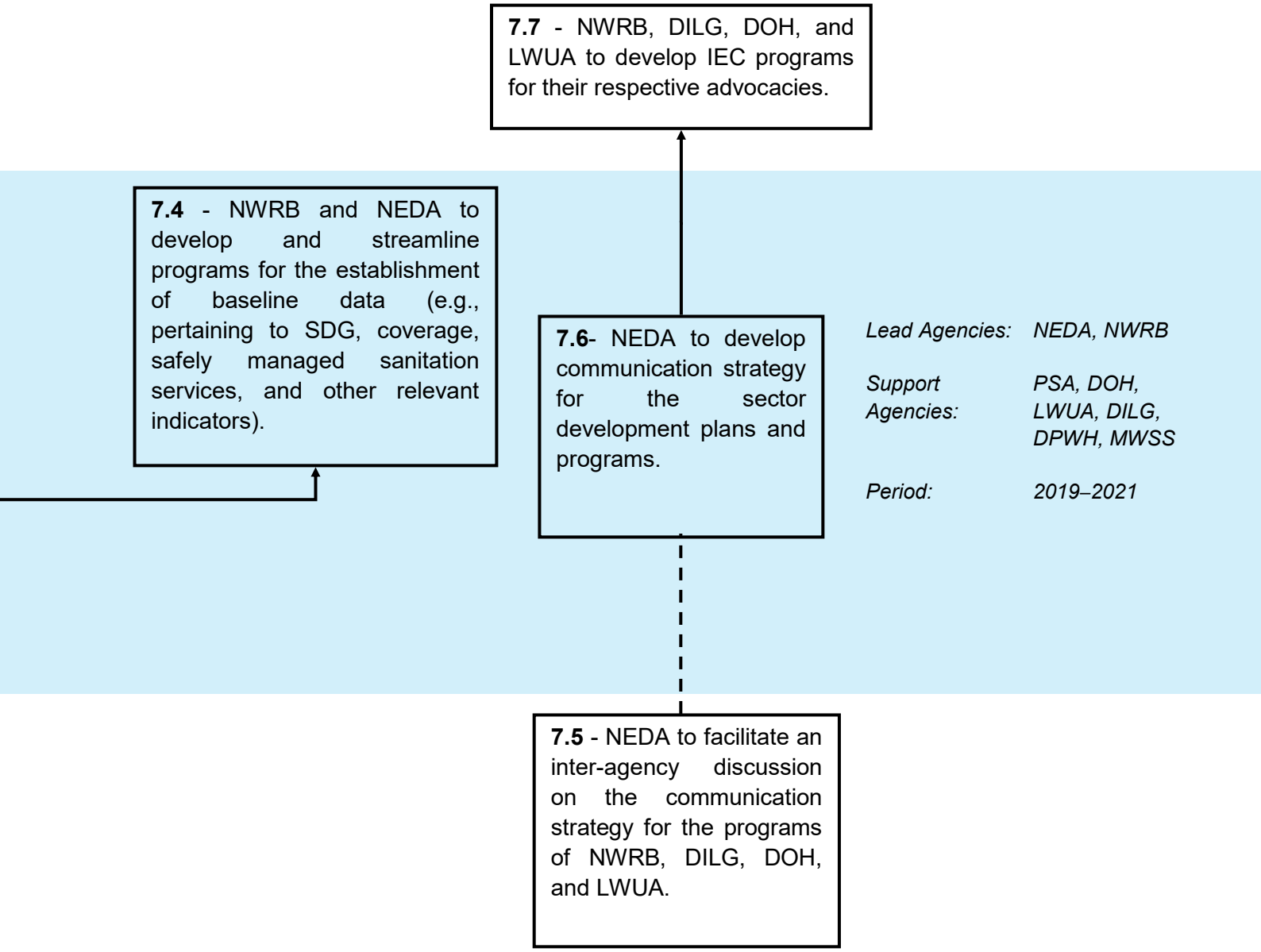
KRA 7: Managing Data and Information

Action Tree)



Legend:

- *Top Priority Actions*


7.7 - NWRB, DILG, DOH, and LWUA to develop IEC programs for their respective advocacies.
7.4 - NWRB and NEDA to develop and streamline programs for the establishment of baseline data (e.g., pertaining to SDG, coverage, safely managed sanitation services, and other relevant indicators).
7.6- NEDA to develop communication strategy for the sector development plans and programs.
Lead Agencies: NEDA, NWRB
Support Agencies: PSA, DOH, LWUA, DILG, DPWH, MWSS
Period: 2019–2021
7.5 - NEDA to facilitate an inter-agency discussion on the communication strategy for the programs of NWRB, DILG, DOH, and LWUA.

KRA 8: Driving Research and Development

Action Tree

FOLLOW-THROUGH ACTIONS

8.2 - Create a Research and Development Division under the envisioned NWMC Planning Department with the immediate task of formulating the WSS research and development agenda based on needs.

TOP PRIORITY ACTIONS

8.3 - NEDA to promote the conduct of research and development studies based on priority research and development agenda (i.e., tie-up with academe, WSS partners and experts).

8.1 - NWRB to formulate research and development agenda based on priority needs of key partner agencies and stakeholders. The agenda should include, among others, technology on lowering energy costs and increasing water efficiency; sanitation technology options for challenging contexts (e.g., high water table, flood-prone, etc.); low-cost and decentralized septage systems; and policies such as raw water pricing and tradeable water regime.

Lead Agencies:	*NEDA, NWRB*
Support Agencies:	*DOH, DOST, Academe*
Period:	*2019–2021*

Legend:

- *Top Priority Actions*

4.4 Priority Programs: Key Actions (Hard Components)

The priority programs support the KRA through:

a) WSS potential projects; and

b) Identified projects.

4.4.1 WSS Potential Projects

Table 34 presents the total infrastructure investment requirements to achieve WSS sector targets by 2023 and 2030. The total amount is derived from anticipated demand based on projected population, economic growth, and factored-in investments to ensure the continuous delivery of WSS services provided by existing facilities and systems. The computation also included the expected upgrade of the current WSS access to higher and better service levels. The resulting investment costs are considered to comprise the WSS sector potential projects required to realize and attain access targets.

A list of robust WSS projects in various stages of conception and development has also been provided by sector stakeholders during numerous regional consultation workshops and dialogues. This list includes a classification of "identified projects " (see Section 4.4.2).

However, the projected impact of these projects would not be sufficient to achieve national targets. Additional projects, particularly those implemented on a larger scale and with more coverage, shall be identified during the implementation of the Master Plan.

Table 34: Investment Requirements to Achieve WSS Sector Targets

Region	Population	Gap in Access to Water Supply	Gap in Access to Sanitation	Total Budget Requirement (in PHP billion)	Budget Requirements for 2023 (in PHP billion)	Budget Requirements for 2030 (in PHP billion)
CAR	1,722,006	137,516	523,458	20.42	12.42	8.00
Region I	5,026,128	210,460	271,458	57.67	37.36	20.31
Region II	3,451,410	-	92,934	38.44	27.39	11.06
Region III	11,218,177	201,026	756,951	106.66	76.43	30.23
Region IV-A	14,414,774	1,659,631	926,875	213.92	148.72	65.20
Region IV-B	2,963,360	674,207	520,886	33.41	22.73	10.68
Region V	5,796,989	1,407,084	672,902	51.58	33.03	18.55
Region VI	7,536,383	1,457,642	1,186,720	81.69	57.37	24.32
Region VII	7,396,898	2,609,319	1,229,842	101.64	75.30	26.34
Region VIII	4,440,150	594,882	1,314,215	54.41	36.68	17.73
Region IX	3,629,783	832,841	245,591	42.68	27.16	15.53
Region X	4,689,302	545,846	260,214	59.75	40.32	19.43
Region XI	4,893,318	679,003	396,798	55.76	35.71	20.05
Region XII	4,545,276	265,247	610,714	66.25	45.84	20.41
Region XIII	2,596,709	214,780	431,633	31.37	22.71	8.65
ARMM	3,781,387	1,760,648	1,310,520	52.54	34.49	18.05
Total	88,102,050	13,250,132	10,751,711	1,068.19	733.66	334.53

4.4.2 Identified Projects

As previously described, projects proposed by various stakeholders in the regional and national consultations make up the list of "identified projects".

The regional consultation workshop participants listed current and potential WSS projects envisioned to contribute to achieving sector targets. Majority of them, however, are still in the conceptual stage.

In addition, representatives of national government agencies (NGAs) provided their list of projects (e.g., see Figure 30 for DILG project beneficiaries for 2019). These government projects are discussed in detail in Chapter 5.

Table 35 summarizes the short- and medium- term budget requirements and corresponding number of household beneficiaries of identified projects of DILG, LWUA and other agencies, disaggregated per region and by infrastructure type (e.g., for water supply or sanitation).

4.4.3 Prioritizing Projects to Achieve National targets

To ensure that funded infrastructure projects shall contribute to the timely achievement of the national targets, a "prioritizing framework" has been developed:

- Higher priority is given to WSS infrastructure projects where majority of the target beneficiaries belong to households without access to safe water supply and households without access to basic sanitation.
- Higher priority is given to WSS infrastructure projects deemed feasible and ready for the next stages of project development (i.e., feasibility studies and related preparatory works already carried out).

Table 35: Summary of Identified Programs and Projects

Agency	Infrastructure Type	Project Cost for Implementation in 2020–2023 (in PHP billion)	Project Cost for Implementation in 2024–2030 (in PHP billion)	Household Beneficiaries	Percentage of Population Covered
DILG Assistance to Municipalities	Water Supply	1.05	-	1,667,138	8.0%
	Sanitation	0.19	-	322,049	2.0%
DILG SALINTUBIG	Water Supply	1.55	-	863,992	4.0%
LWUA	Water Supply	10.74	-	4,748,123	24.0%
CAR	Water Supply	2.45	26.80	448,430	100.0%
	Sanitation	1.71	3,691.46		
	WSS	0.002	-		
Region I	Water Supply	7.33	1,003.85	1,241,079	100.0%
	Sanitation	0.10	8,950.88		
	WSS	0.003	-		
Region II	Water Supply	3.01	13,944.71	845,036	96.0%
	Sanitation	1.51	1,263.12		
Region III	Water Supply	34.34	1,935.10	2,174,945	72.0%
	Sanitation	0.21	57,625.82		
	WSS	2.50	67.00		
Region IV-A	Water Supply	2.05	-	1,547,066	39.0%
MIMAROPA Region	Water Supply	4,104.45	1,916.95	765,497	100.0%
	Sanitation	6,182.00	383.98		
	WSS	8.00	-		
Region V	Water Supply	3,505.27	3,878.59	1,341,295	100.0%
	Sanitation	51.10	7,368.14		
	WSS	80.05	0.20		
Region VI	Water Supply	-	10.00	474,538	25.0%
	Sanitation	-	80.00		
Region VII	Water Supply	1,261.91	2,562.90	1,412,468	74.0%
	WSS	35.00	-		
Region VIII	Water Supply	730.50	1,401.68	999,767	82.0%
	Sanitation	-	338.00		
	WSS	1.00	-		

Table 35 (continued): Summary of Identified Programs and Projects

Agency	Infrastructure Type	Project Cost for Implementation in 2020-2023 (in PHP million)	Project Cost for Implementation in 2024-2030 (in PHP million)	Household Beneficiaries	Percentage of Population Covered
Region IX	Water Supply	370.90	21,876.77	870,600	97.0%
	Sanitation	2.00	905.97		
	WSS	155.84	-		
Region X	Water Supply	8,556.43	8,892.80	828,170	70.0%
	Sanitation	4,392.48	2,299.04		
	WSS	257.10	15.00		
Region XI	Water Supply	5,172.77	792.79	1,154,438	87.0%
	Sanitation	5,273.57	541.99		
Region XII	Water Supply	32.16	474.95	1,000,291	82.0%
	Sanitation	0.17	91.42		
	WSS	790.28	64.00		
Region XIII	Water Supply	24.90	8,512.44	548,645	87.0%
	Sanitation	-	3,104.55		
ARMM	Water Supply	4,331.95	10,691.01	725,449	100.0%
	Sanitation	11,742.74	8,060.54		
	WSS	12.80	41.60		
Subtotal	Water Supply	88,559.95	77,921.34		
	Sanitation	31,355.98	94,704.91		
	WSS	1,347.57	187.80		
Total		**121,263.50**	**172,814.05**	**23,979,016**	**72.0%**

Legend:

Percentage derived with respect to national population

Percentage derived with respect to regional population

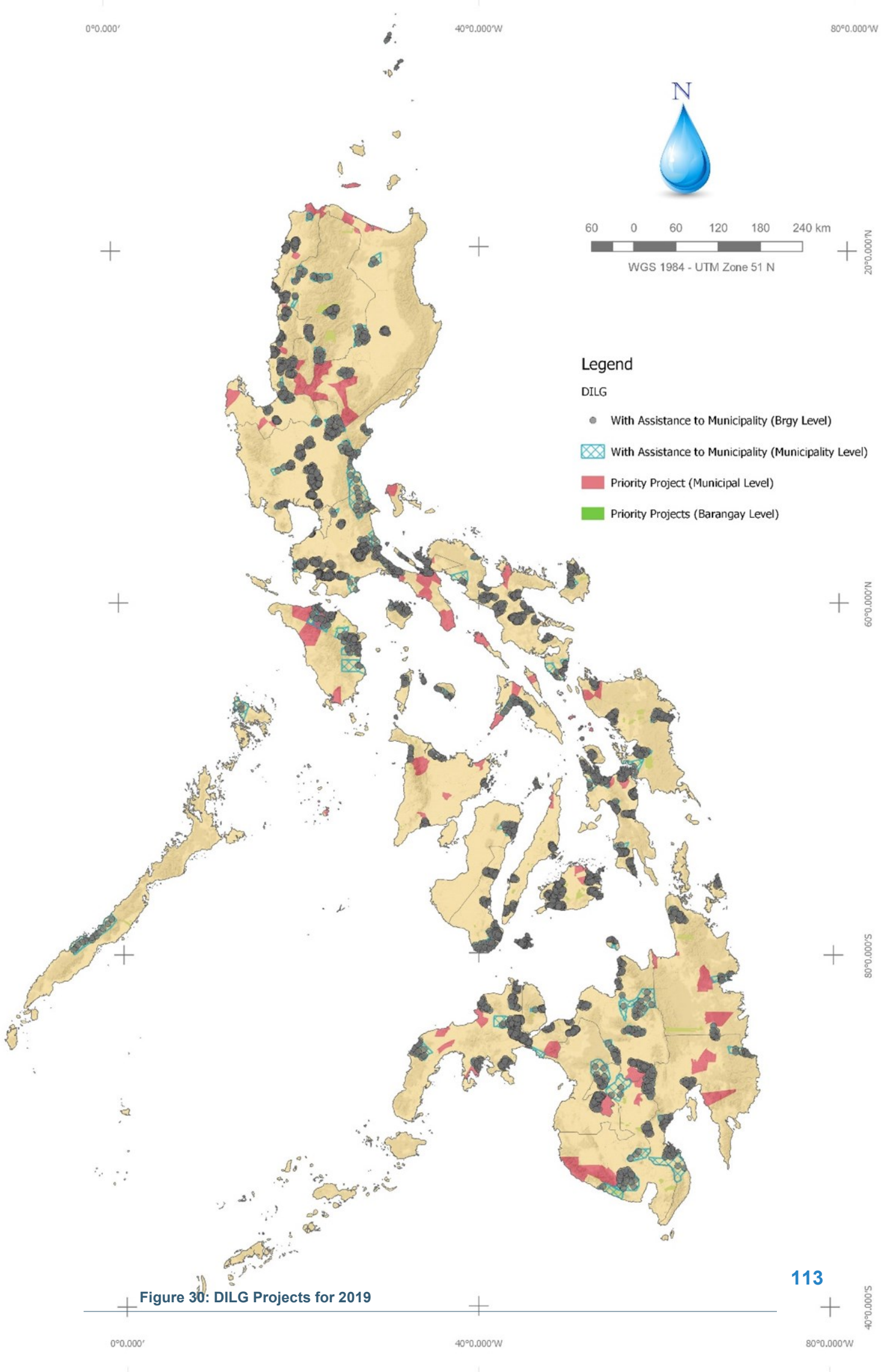


Figure 30: DILG Projects for 2019

5 Investment Program and Financing Plan

5.1 Investment Requirements

The total budget required to achieve WSS universal access is estimated at PHP 1.07 trillion over 11 years (2020–2030) (see Table 36). Around PHP 0.73 trillion is required to achieve PDP targets by 2023.[58]

Another PHP 0.34 trillion is needed to achieve universal access by 2030. These figures also include non-physical investments totaling PHP 1.13 billion that would cover the implementation of the PWSSMP reform programs.

5.1.1 Physical Investments

As discussed in Section 4.4.1, physical investments comprise the required infrastructure to achieve the WSS access targets. Development costs intended to bridge sectoral gaps and improve levels of service of access determine the total investment requirements.

The unit development costs per WSS infrastructure per service level were derived using NCR prevailing rates, which were then adjusted to come up with the regional unit development costs. Annex C details the methodology employed in deriving the unit development costs used in computing the investment requirements.

5.1.2 Non-Physical Investments

Non-physical investments needed by the sector is estimated at PHP 1.13 billion. This amount covers: (a) the implementation cost required to carry out programs and activities under the eight KRA, and (b) the project management cost of the operational plan.

The former requires approximately PHP 323.00 million of allocation for activities conducted by concerned agencies, which may include NEDA, LWUA, DILG, NWRB, DOH, NIA, NPC, Department of Energy (DOE), and the proposed DWR. These agencies may employ consulting services to assist in various aspects of program

Table 36: Total Investment Requirements from 2020–2030

Investment Requirements (in PHP billion)	2020–2023	2024–2030	Total
Physical	733.66	334.53	1,068.19
Water Supply:	278.07	233.01	511.08
Level III	234.11	216.95	451.06
Level II	37.56	15.32	52.87
Level I	6.40	0.74	7.15
Sanitation:	455.59	101.52	557.11
Improved/Basic	349.50	84.02	433.52
Septage	48.89	6.00	54.89
Sewerage	57.20	11.50	68.70
Non-Physical	0.66	0.47	1.13
Eight KRA*	0.32	-	0.32
Project Management	0.34	0.47	0.81
TOTAL	734.32	335.00	1,069.31

**Additional investments for the eight KRA for 2024–2030 will be defined at a later stage.*

[58] *One year has been added to the implementation timeline, per the original 2022.*

implementation, such as research, and consultative, development, and legal work.

The project management cost of the operational plan requires an additional PHP 335.30 million over four years and entails the establishment of a PMO, which will be an inter-agency umbrella led by the NEDA-SWCR, LWUA, DILG, NWRB, and DOH.

The PMO must be adequately staffed to evaluate proposed projects, assist in project preparation, organize and strengthen the implementing units for specific subprojects (e.g., WDs, LGUs, CBOs), and assist in technical and environmental aspects (e.g., water sources, review of proposals, environmental impacts, climate change adaptation work, economic and financial evaluation, and review of contracts).

Approximately PHP 469.00 million will be allotted to the PMO for project activities from 2024 to 2030, which will be distributed over seven years. Table 37 shows the total non-physical investment requirements per KRA. The details and bases of the costs are found in Annex C.

5.2 Financing Plan

A financing plan for the required investments for the period 2020–2023 is shown in the following sections. (Only the plan for the short term of the PWSSMP has been detailed since financing mechanisms may change with the finalization of the URAF.)

5.2.1 Funding and Financing Water Supply

Funds for implementing the Master Plan will be sourced mostly from public funds. However, increased collaboration with the private sector is considered to leverage loans from both GFIs and PFIs. This is consistent with the reforms in the financing policies for the WSS sector under EO 279, s. 2004.

Pursuant to these reforms, LGU-run utilities availed themselves of loans and credit lines from the Municipal Development Fund Office (MDFO), GFIs, and PFIs.

Table 37: Total Amount of Non-Physical Investments for 2020–2023

		Non-physical Investments	Amount in PHP million
A		Implementation Cost of the Programs	322.70
	1	*Establishing Effective WSS Sector Institutions*	*45.70*
	2	*Strengthening Regulatory Environment*	*52.60*
	3	*Creating and Ensuring Effective WSS Institutions*	*52.60*
	4	*Balancing Water Supply and Demand*	*26.50*
	5	*Building Climate Resiliency*	*35.80*
	6	*Enabling Access to Funding and Financing*	*44.80*
	7	*Managing Data and Information*	*33.60*
	8	*Driving Research and Development*	*31.10*
B		Project Management Cost of the Operational Plan	335.30
		TOTAL	658.00

Approximately PHP 4.00 billion in loans have been approved to finance various WSS projects in 2015 (per 2015 COA Annual Financial Reports for LGUs). At least 30 eligible WDs were issued clearance to secure over PHP 6.00 billion in commercial loans for funding efficiency improvement programs in 2016.

As shown in Figure 31, the financing plan shall be as follows:

a) The PWSSMP lists 37.4 percent (PHP 103.99 billion) of water investments from GFIs, including 7.0 percent (PHP 19.45 billion) for Level III systems under LWUA.

b) Private sector financing through commercial loans for funding project development costs of HUCs is assumed to be 42.7 percent (PHP 118.86 billion) of total water infrastructure investments.

In addition, private capital has been considered with 6.3 percent (PHP 17.63 billion) of the investments coming from WSPs' partnerships with private operators. These partnerships have emerged owing to changes in the management and operational arrangements of WSPs.

The principles of the URAF (i.e., to maximize development financing through capital grants) have been adopted and made available to WSPs to keep usage charges affordable and implement target subsidies to benefit poor communities.

Moreover, WSPs that cannot afford to expand their service in outlying areas can access the 13.5 percent (PHP 37.59 billion) grant allocation for expansion of service coverage. This grant allocation aims to incentivize the operationalization of the 200 WDs[59] in low-income municipalities.

Tariff-setting policies adopt full cost recovery. Thus, capital grants through VGF[60] and output-based aid (OBA)[61] or blended financing will ensure that poor communities can satisfy their basic needs without having to spend beyond 5.0 percent[62] of their family income.

Further identification of actual VGF, OBA, and blended finance beneficiaries must be established during the PWSSMP implementation. This evaluation is based on eligibility criteria and depends on achieving industry key performance indicators (e.g., service coverage).

Criteria and Methodology

The development costs by level of service and province were established using the PSA 2015 Census of Population.

The criteria for determining grant allocation include poverty incidence, waterborne and sanitation-related disease incidences, and

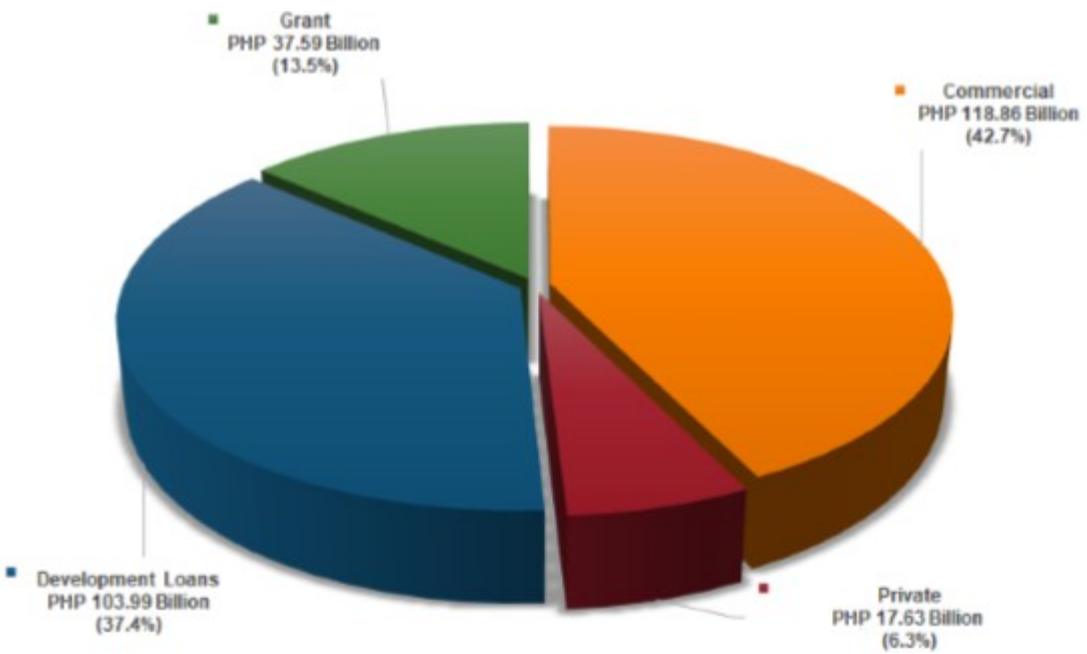


Figure 31: Breakdown of Water Supply Investments, 2020–2023

[59] *www.lwua.gov.ph: 233 non-operational WDs as of December 2015 (National Economic and Development Authority Board INFRACOM)*

[60] *VGF is defined as capital grants which reduce the need for commercial finance to keep tariffs at affordable levels.*

[61] *OBA, as defined by Global Partnership for OBA, is a results-based financing scheme designed to estimate access to and delivery of infrastructure and social services for the poor using performance-based incentives, rewards, or subsidies. It links the payment of aid or grant to the delivery of specific services.*

[62] *Affordability threshold for combined water and sanitation tariffs per LWUA Board Resolution 59-2017*

universal access gaps. Figure 32 shows the proposed prioritization criteria, which will be further refined through the implementation of the URAF.

Table 38 shows the 20 provinces with the highest poverty incidence among families.

The percentage of grant allocation (applicable for Level III water systems only) based on province income classification is listed in Table 39.

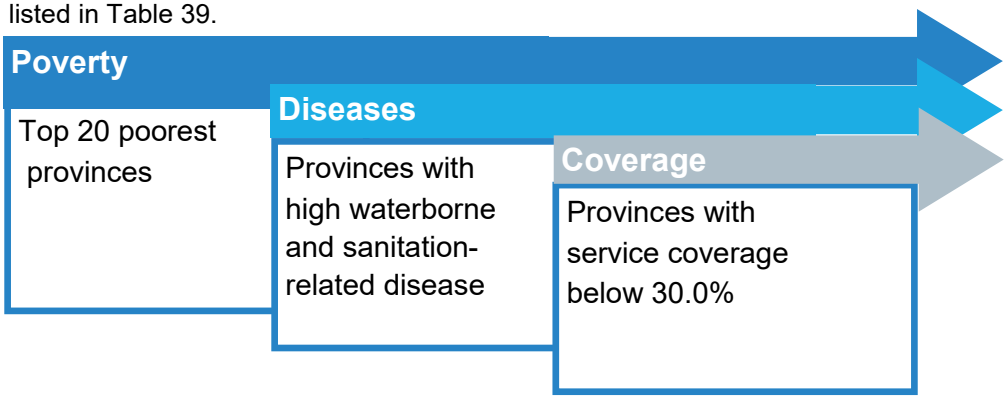


Figure 32: Grant Allocation for Water Supply Projects

Table 38: Ranking of Provinces with the Highest Poverty Incidence among Families

Rank	Province	Annual Per Capita Poverty Threshold (in PHP)	Estimated Poverty Incidence Among Families (in Percent)	Estimated Magnitude of Poor Families (in No. of Families)
1	Lanao del Sur*	22,802.00	66.3	109,258
2	Sulu*	20,778.00	49.6	83,289
3	Maguindanao*	21,423.00	48.8	86,100
4	Northern Samar*	21,574.00	47.9	57,003
5	Sarangani*	20,753.00	47.3	49,240
6	Bukidnon*	23,682.00	47.0	135,909
7	Zamboanga del Norte*	21,725.00	41.1	99,149
8	Western Samar	20,139.00	39.5	58,326
9	Sultan Kudarat	20,620.00	39.2	71,444
10	Negros Oriental*	22,823.00	38.7	138,029
11	Eastern Samar	22,886.00	37.4	37,919
12	Agusan del Sur	22,957.00	37.0	50,990
13	Lanao del Norte	21,836.00	36.3	73,536
14	Masbate	20,406.00	35.5	69,674
15	North Cotabato	20,555.00	34.5	109,146
16	Catanduanes	21,660.00	33.6	20,022
17	Surigao Del Sur	22,759.00	32.0	42,879
18	Sorsogon	20,480.00	31.7	61,905
19	Apayao	20,947.00	30.9	6,945
20	Southern Leyte	23,318.00	30.2	27,083

**Highest proportion of poor families with income below the poverty threshold in both the 2012 and 2015 poverty statistics*
Note: Expanding to the next poorest provinces did not alter the financing plan.

Table 39: Percentage of Grant Allocation per Income Class

Income Class	Poverty	Diseases	Coverage
1st	0.0%	0.0%	0.0%
2nd	10.0%	10.0%	10.0%
3rd	50.0%	30.0%	30.0%
4th	50.0%	50.0%	50.0%
5th	60.0%	60.0%	60.0%

Water Supply Financing Plan

To achieve the universal concept of SDG 6 and mobilize additional financing, the PWSSMP has varied financing plans per level of service. To supplement development and commercial loans, VGF and OBA are available to less viable WSPs to fund their equity or manage their issues concerning tariff affordability.

Technical assistance grants for capacity development, project preparation and implementation, and O&M efficiency are included.

In addition, the PWSSMP provides leverage finance to WSPs that extend their services to rural and urban fringe areas and to institutions that offer small and affordable loans for water service connections of the poor and the marginalized population.

The proposed financing mechanisms per level of service are as follows:

Level III

- Grant financing (VGF and OBA) is based on criteria;
- Technical assistance grants are for non-operational WDs and qualified LGU-run utilities;
- Financial assistance is to be given to WDs under LWUA's revised lending policies (Board Resolution Nos. 57-2017 and 92-2017);
- GFIs and PFIs, and commercial loan programs are available to eligible WSPs; and
- Private capital funds for HUCs and WSPs may be under joint venture agreements.

Level II

- A 100.0 percent grant allocation is given to the top 20 provinces with the highest poverty incidence; 50.0-50.0 percent loan-grant mix, on the other hand, may be applied to the remaining provinces.

- Blended finance, through microfinancing institutions (MFIs), is considered to fund users' equity (e.g., WaterCredit and WaterConnect Programs).

Level I

- 100.0 percent grant financing is intended to support poor rural communities; target aid is also extended to community-based WSPs or institutions serving the rural areas, which may be implemented through the DILG's Local Development Support Fund - Assistance to the Municipalities (LDSF-AM) Program in partnership with MFIs.

Figure 33 presents the computed distribution of investments per level of service following the financing plan mentioned earlier.

Flow of Funds

The proposed flow of funds for water supply investments during project implementation is shown in Figure 34.

Following the proposed financing shown in Figure 31, funding classified under development loans for the WS subsector will come from LWUA, and GFIs/MFIs. Grants will be coursed through LWUA and DILG/ LGUs, as well as the DOF-MFIs. HUCs and private WSPs will mostly take up funding from commercial loans.

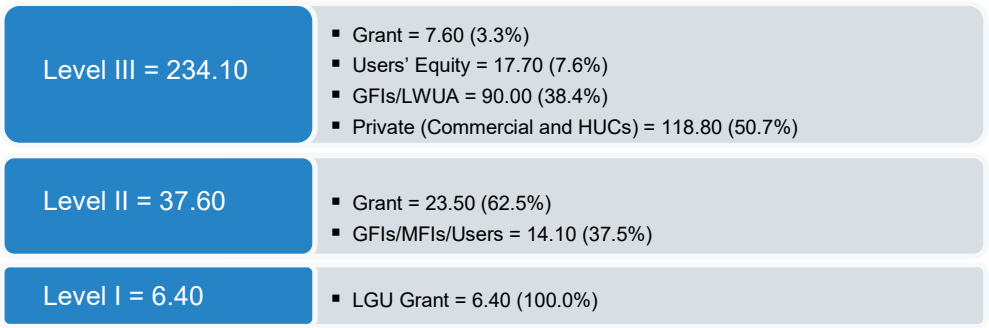


Figure 33: Financing Plan for Water Supply Sector Investments (in PHP Billion), 2020–2023

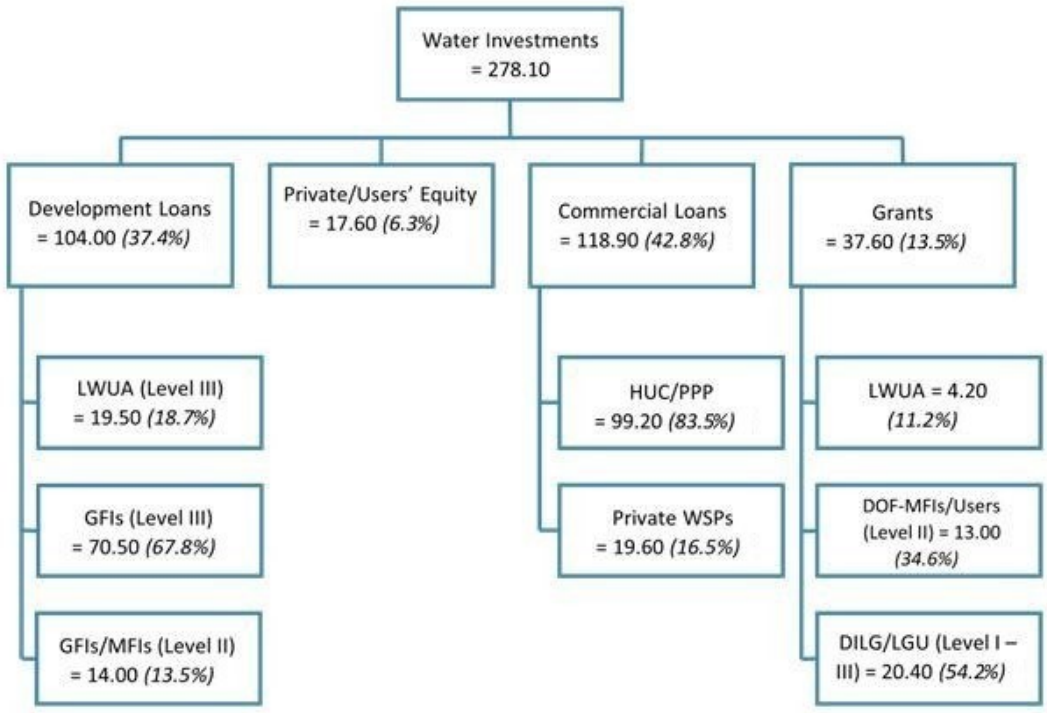


Figure 34: Flow of Funds for Water Supply Investments (in PHP Billion), 2020–2023

5.2.2 Funding and Financing Sanitation

Achieving universal access to sanitation requires dedicated public funds and scaling up of private investment to enable the government and its development partners to integrate the implementation of water and sanitation infrastructure.

Similar to the strategy for water (and as presented in Figure 35), the PWSSMP allocates 45.2 percent (PHP 205.87 billion) of grant funds to move investments towards urban areas outside Mega Manila. Development financing through GFIs for basic and improved sanitation account for 43.2 percent (PHP 196.67 billion); investments for septage and sewerage programs implemented by LGU-run utilities, the private sector, or WDs amount to 10.2 percent (PHP 46.45 billion) of the total sanitation investment requirement.

Criteria and Methodology

The PWSSMP has considered the following strategies based on the findings and deliberations in the regional consultation workshops:

a. Develop an estimated investment requirement by level of sanitation and province;

b. Expand the NSSMP to provide technical grants for feasibility studies and other project preparation activities;

c. Enhance access to development or commercial loans to finance the remaining balance after the 50.0 percent grant subsidy under the NSSMP. This strategy includes incorporation of sanitation projects in existing financing programs of GFIs, e.g. DBP's Water for Every Resident (WATER) Program;

d. Create incentives for HUCs that have been consistent in complying with NSSMP guidelines; and

e. Expand the NSSMP criteria for grant-loan mix available to other LGUs or WSPs.

Figure 36 shows the grant allocation scheme considered for sanitation investments. For LGUs implementing a septage/sewerage program, 50.0 percent will be provided as grant under the existing NSSMP. Under the PWSSMP, enhancement of financing for basic to improved sanitation is recommended.

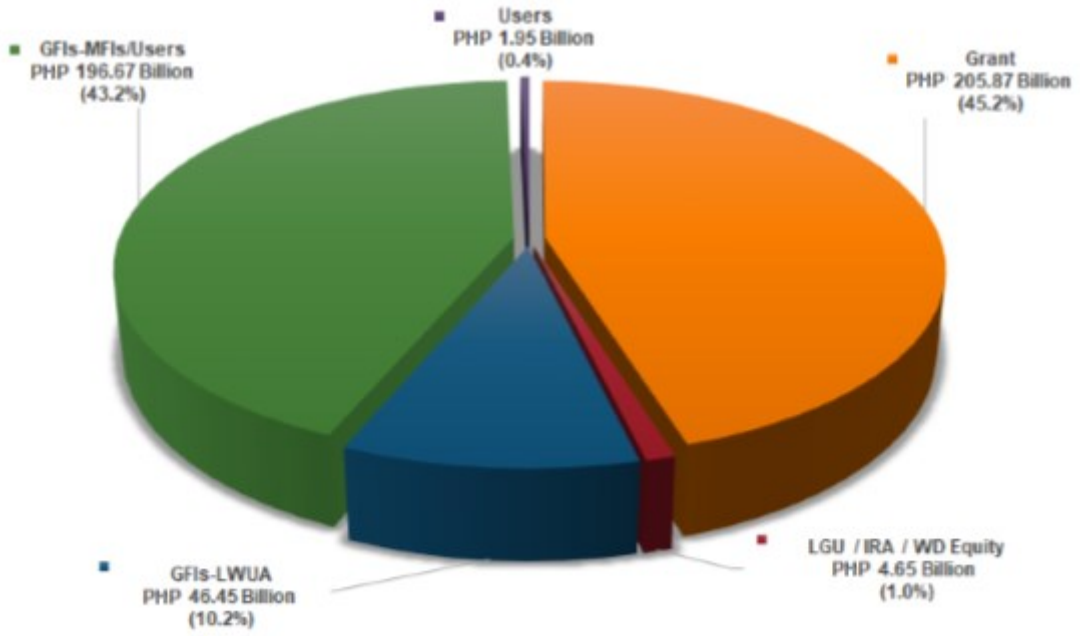


Figure 35: Breakdown of Sanitation Investment, 2020–2023

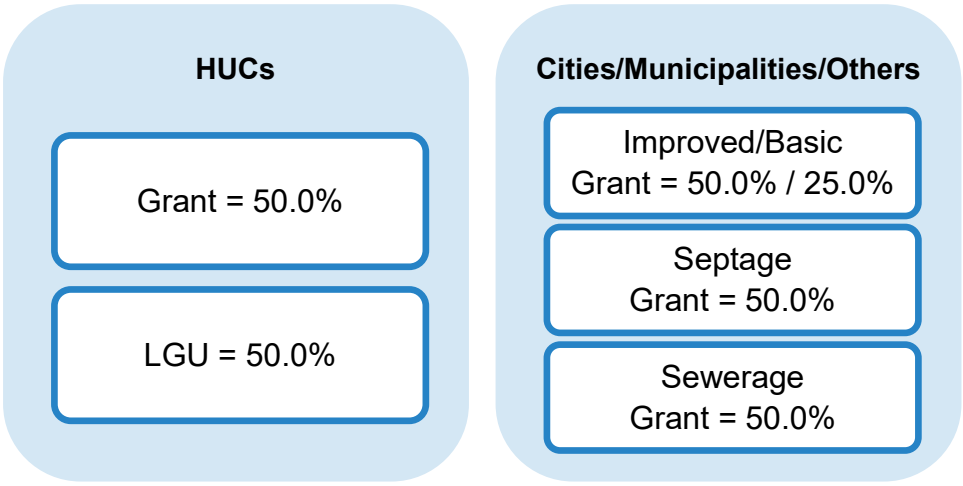


Figure 36: Grant Allocation for Sanitation Projects

Grants at 25.0 percent (HUCs) and at 50.0 percent for other LGUs will be provided to poor communities through fund-blended financing.

Sanitation Financing Plan

The strategies for financing sanitation projects are listed below:

Basic/Improved Sanitation

- Establish mechanisms for 100.0 percent grant financing of the construction of flush toilets for poor households (estimated at 25.0 percent of the population) practicing open defecation or using unimproved sanitation facilities.
- Develop blended finance through NGOs or institutions to extend small and affordable loans to households to fund users' equity (e.g., Water.org's WaterCredit and WaterConnect Programs).

Septage Management

- Promote increased access to financing through VGF and concessional loans to fund project implementation, including equity. The rationale for this strategy is that the government carries the responsibility of ensuring proper septage management systems.

Under the PWSSMP, the NSSMP shall be subsumed under the URAF principles. As part of the NSSMP, a 50.0 percent grant fund may be supplemented with 50.0 percent development financing from GFIs to ensure tariffs remain within the affordability threshold. This scheme is aimed at mobilizing private financing of septage management programs for all cities and first -income class municipalities, in partnership with WDs, WSPs or LGUs.

Sewerage Systems

- Develop a specialized subsidy mechanism to support large-scale and high-cost sewerage programs that will address efficient collection of sewage generated by households and commercial buildings, and effluent released from individual septic tanks. The NSSMP framework prioritizes HUCs with 50.0 percent capital grants and subsidies subject to program guidelines.
- Other priority areas, such as tourism zones, heritage sites, and qualified critical areas, may be eligible for a grant subsidy.

With the adoption of VGF under the URAF, GFIs may be utilized as a conduit for the grants for sewerage projects. LWUA will continue to oversee project implementation and grant dispensation of WDs undertaking sanitation projects in partnership with LGUs. Figure 37 presents the computed funding per level of service and financing type for the total sanitation subsector investments.

Flow of Funds for Sanitation

A flowchart detailing the process of submission, evaluation, and approval of

subsidy grant applications is shown in Figure 38.

For improved and basic sanitation infrastructure, it is recommended that GFIs and MFIs consider blended financing if they are to submit their proposals to DOF for review.

Under the expanded NSSMP, three agencies, namely the DILG, DPWH, and LWUA, will be tasked to disburse grant subsidies and financial assistance, facilitating a more robust dispensation of the grant money and increased number of evaluated applications. It is recommended that LGUs and LGU-run utilities submit their proposals to the DILG, while HUCs and WDs may submit theirs to DPWH and LWUA.

Regional counterpart and central offices shall review proposals before endorsing these to DBM for approval. DOH shall be in charge of monitoring the projects' contribution towards attaining universal access to sanitation.

Figure 39 presents the proposed flow of funds for sanitation projects. As previously discussed, grants will be coursed through LWUA, DPWH, DILG, and GFIs-MFIs. Development loans for improved sanitation may be accessed by LGUs from GFIs and MFIs. For septage and sewerage projects, loans may be accessed from GFIs and LWUA.

5.2.3 Disbursement Plan

A disbursement plan for the required investments for WSS for the period 2020–2023 has been prepared factoring in the financing mechanisms discussed in the previous sections, which is detailed in Annex D.

Considering that the sector targets set by PDP should be achieved by 2023, construction work is programmed between the second and fourth years while the capacity development of WSPs will be undertaken by the third and fourth years.

Distribution of funds according to the financier is based on the timing of disbursement for a feasibility study/detailed engineering design (FS/DED), physical works, and capacity development.

Details of the investment requirement, financing plan and disbursement plan for the period 2020–2023 are shown in Annex D.

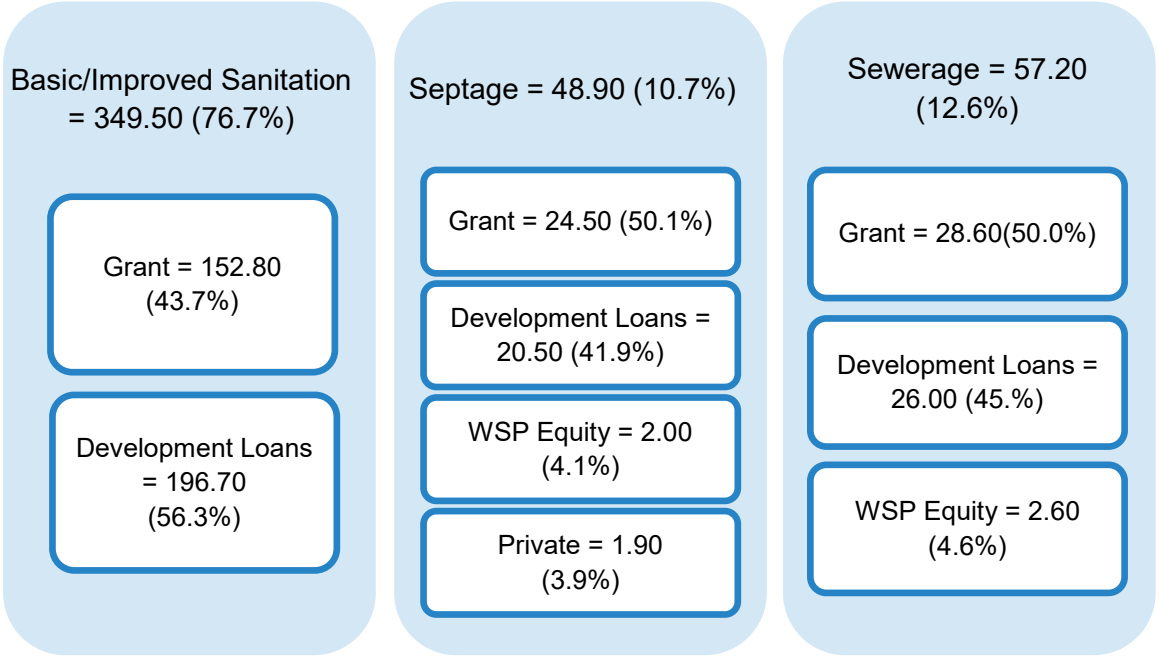


Figure 37: Funding and Financing Allocation for Sanitation Projects (in PHP Billion)

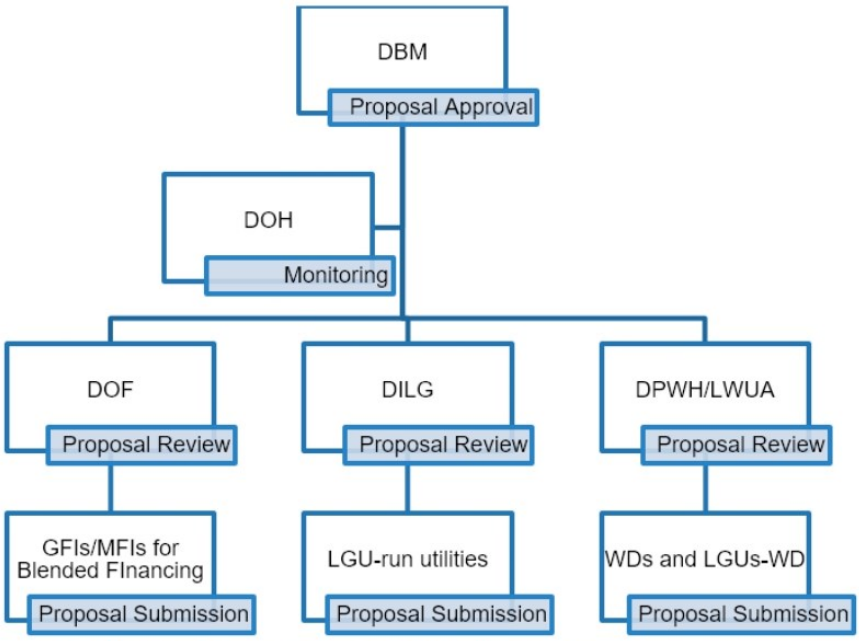


Figure 38: Proposed Flow of Applications for Financing Sanitation Projects

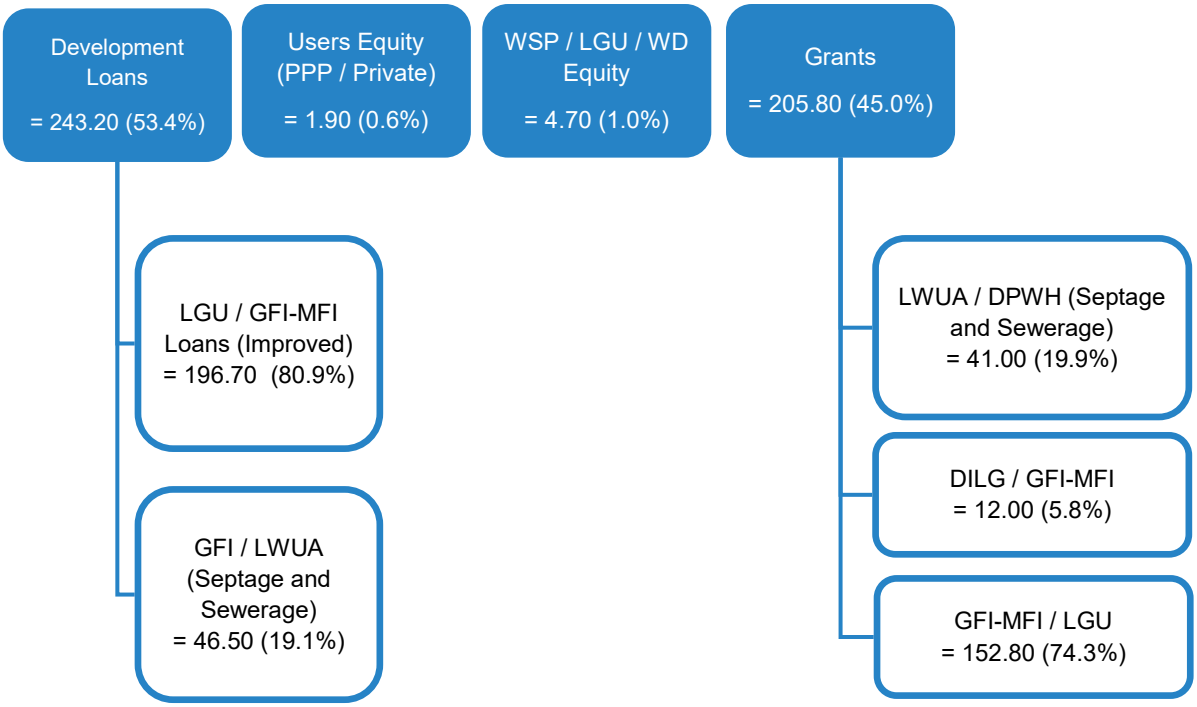


Figure 39: Proposed Flow of Funds for Sanitation Projects (in PHP Billion)

5.3 Plan Timeline

While the PDP and SDG targets will have been met by 2023 and 2030, respectively, the PWSSMP takes into account the state of the WSS sector beyond that period. In particular, further improvement of service access and upgrading of related infrastructure will consistently be pursued. Thus, the PWSSMP considers the following timeline:

- Short Term: 2020 to 2023
- Medium Term: 2024 to 2030
- Long Term: 2031 to 2040

Projects and activities contributing to the realization of sector targets and goals, especially for the short term, have been identified to facilitate their implementation alongside the operationalization of the PWSSMP. The assessment was made on the basis of the reform activities and their schedule of implementation.

The prioritization of short-term projects is based on: (a) the readiness of the projects (e.g., preliminary studies and assessment conducted, coverage area and project beneficiaries defined, project proponent/s organized and well-capacitated to operate and maintain WSPs to ensure sustainability); (b) funding or financial assistance having been secured; or (c) the project study area being included per immediate development plans of implementing entities (e.g., government agencies, etc.).

Proposed projects in the short term that have secured or likely to secure funding are included in the Priority Investment Program. The majority of the projects in the Priority Investment Program are based on pipeline projects, as gathered from DILG and LWUA, which have been the main project and fund IAs in the WSS sector in recent years.

The consultations with LWUA and its roadmap determined the agency's plans and direction, aiding the prioritization of WD-covered areas for short-term projects. In addition, DILG's pipeline projects under SALINTUBIG and Bottom-Up Budgeting (BUB) programs for 2019 have been considered in the priority list.

As of 2018, NEDA has bid feasibility studies for Mandamus, non-Mandamus, high NRW, and non-operational WDs. The WDs with expected complete concept design and feasibility studies by 2019 have been included in the pipeline projects for 2020 (mobilization).

Also included under NEDA's Project Development and Other Related Studies (PDRS) Fund is the conduct of feasibility studies and/or concept designs for bulk water supply in selected provinces in the country. DILG will execute the project as its implementing agency.

Initially identified and proposed projects in the short term are based on the key sector agencies' plans and directions in the immediate future. These are expected to increase and be expanded once the PWSSMP implementation is in full swing.

The PAPs to be determined thereafter shall be directed towards achieving WSS sector access targets per province and/or region. Targets not met in the short term (if any) shall be covered by PAPs that are slated for the medium and long terms.

5.3.1 Short-Term Investment Needs

Table 40 shows the key immediate activities to be implemented in the first three years of PWSSMP's short term. Among these activities are various organizational and institutional reforms, preparatory works for infrastructure projects, and activities leading to the establishment of a unit that shall operationalize the Plan.

As discussed in Section 5.1.1, the required infrastructure investments for the period 2020–2023 is PHP 734.32 billion. Of this value, about PHP 62.00 billion worth of programs and projects have been initially identified, proposed, and included in the Priority Investment Program, which is scheduled for implementation in the short term.

Table 40: Immediate Key Activities

		2020	2021	2022
A. Physical Investments				
1	Use prioritization criteria (i.e., readiness, impact/urgency) to screen and confirm the short list of investment projects to be implemented in 2020.			
2	Carry out project preparation work for the Priority Investment Program (2019-2020).			
3	Implement the Priority Investment Program.			
4	Implement and expedite the implementation of sanitation programs.			
5	Develop sanitation programs (basic/improved) in collaboration with NGOs, MFIs or the 20 provinces. Provide grants through the MFIs as seed fund for a sanitation program.			
6	Facilitate the implementation of the NSSMP and work out implementation hurdles with LGUs.			
B. Non-Physical Investments				
	Organizational and Institutional Development Reforms			
1	Organize the WSPs and transform them into commercially operated and financially viable utilities:			
1.a	Operationalize the 230 non-operational WDs.			
1.b	Turn over completed SALINTUBIG WDs and organize them as WDs.			
1.c	Restructure and strengthen 100 LGU utilities into commercially operated and viable entities.			
2	Strengthen key water sector organizations.			
2.a	Reorganize LWUA and increase its staff complement to enable it to meet its increased functions and responsibilities.			
2.b	Reorient and capacitate DILG to focus on providing assistance with regard to setting up Level II water systems and basic/improved sanitation as well as providing continuing capacity-building to LGUs that run water utilities.			
2.c	Review and improve the performance of other sector agencies such as the DPWH, DOH, NWRB and DILG thru an effective capacity development program.			
3	Develop and pilot a model for integrated WSS services.			
4	Implement and institutionalize the integrated planning of WSS at the LGUs, prepare municipal WSS development plans, and consolidate such plans at the provincial and regional levels.			
C. Implementation and Project Management Support				
1	Work out the passage of an EO that will enable the implementation of the PWSSMP. The EO among other things, shall:			
1.a	Approve the PWSSMP and the accompanying Investment Program.			
1.b	Pave the way for the delineation of functions and responsibilities among key agencies involved in policy development and service provision.			
1.c	Adopt and implement the proposed Operational Plan and Investment Program.			
2	Work through the INFRACOM - SCWR, enable the issuance of Memo Circulars, Administrative Orders, Board Resolutions and other policy actions to implement quick and immediate reforms in the different agencies in the sector (DWPH, LWUA, DILG, NWRB, DOH, DENR, and others).			
3	Set up and operationalize the central WSS database at the NEDA.			

Most of the items in the Priority Investment Program are based on concrete pipeline projects from LWUA and DILG. The projects' tangibility requires that they be implemented within the short-term planning horizon.

Each project under the Priority Investment Program has a total investment requirement upon which the projected disbursements for 2020 and 2021 are based. Activities for these first two years include project preparation such as feasibility studies, detailed engineering and design, and other work that shall be procured and conducted prior to the construction stage.

Activities related to soft components (e.g., capacity-building and IEC programs (especially for the sanitation subsector), shall also be conducted in the same period. The budget requirement for project preparatory activities will be estimated using assumed percentages based on prevailing and historical industry trends and standards.

Table 41 lists and describes the schedule of programs included in the Priority Investment Program. Table 42 details their corresponding investment requirements and projected disbursements for 2019 and 2020. Annex E lists the study areas (WDs, LGUs) and corresponding program schedule.

5.3.2 Medium- to Long-Term Investment Needs

Table 42 shows the investment requirements for the identified short-term projects under the Priority Investment Program. It summarizes the total investment needs to meet the following: 95.0 percent target relating to access to water supply, 97.0 percent basic sanitation targets by 2023, and universal access by 2030.

The WSS sector requires about PHP 1.07 trillion worth of physical and non-physical investments from 2020 to 2030 to achieve the targets set by the PDP and SDG. A large fraction of this amount is needed in the short term to reach the targets in inclusive years.

However, spending for the remaining and/or unrealized targets in the short term is expected to be carried over to the medium and long terms, and shall be combined with the required PHP 335.00 billion worth of infrastructure investments with respect to universal access.

Table 41: Projects under the Priority Investment Program

Projects	Description
Schedule A	▪ WS improvement and expansion projects with pending requests for financial assistance from LWUA ▪ Ongoing evaluation of requests, with projected approval in 2019
Schedule B	▪ WDs under LWUA Master Plan available list ▪ WDs covered by Proposed Water Supply Expansion/Improvement and NRW Reduction Program
Schedule C	▪ WDs lined up for feasibility studies with regard to NRW reduction ▪ Expected FS completion in 2020 ▪ Program for improvement activities to start in 2021
Schedule D	▪ Non-operational WDs lined up for FS with regard to operationalization ▪ Expected FS completion in 2002 ▪ Program for operationalization to start in 2021
Schedule E	▪ DILG SALINTUBIG projects lined up for 2020
Schedule F	▪ DILG Assistance to Municipalities (AM) projects lined up for 2020 (water and sanitation projects)
Schedule G	▪ Investment requirements for sanitation; percentage for FS derived
Schedule H	▪ Septage management projects for non-Mandamus WDs

Table 42: Priority Investment Program

	Identified Short-Term Projects		Total Investment Requirement (in PHP billion)	Projected Disbursement (in PHP billion)		Remarks/Details
				2019	2020	
1	**Existing WDs**		**11.29**	**0.42**	**0.54**	
1.1	With confirmed funding: ADB loan		3.24	0.07	0.11	Completion of FS and project preparation of four WDs in 2020 (9.0 percent), project construction work starts in 2021 (10.0 percent mobilization of four projects to be completed in three years)
1.2	With proposed projects:		8.05	0.35	0.43	
	Approved 2020 Budget		*0.35*	*0.35*		
	With Ongoing Evaluation/ Request	*Schedule A*	*2.75*		*0.28*	*Assumed 10.0 percent in 2021 or under ODA (thereafter)*
	WUA Master Plan Available List for 2020	*Schedule B*	*4.35*		*0.09*	*Feasibility studies and project preparation (9.0 percent) in 2021*
	With Feasibility Studies Completed by 2020	*Schedule C*	*0.60*		*0.06*	*An NRW Reduction Project FS will be completed in 2019; the project starts in 2021 (10.0 percent mobilization)*
2	**Non-Operational**		**0.70**	**-**	**0.08**	
2.1	With Feasibility Studies Completed by 2020	Schedule D	0.60		0.06	10.0 percent mobilization by 2021
2.2	SALINTUBIG Formed as LGU/ WDs		0.10		0.02	10 LGUs at PHP 10.00 million (9.0 percent FS and project preparation in 2021)
3	**DILG**		**4.24**	**2.69**	**1.55**	
3.1	2020 List of Projects	Schedule E	1.55	1.55		Water supply projects in various barangays and municipalities
3.2	2020 List of Assistance to Municipalities Projects	Schedule F	1.14	1.14		Potable water supply, rainwater catchment facility, health and sanitation projects
3.3	2020 Assumed Same Amount		1.55		1.55	
4	**Sanitation**		**46.15**	**0.24**	**3.88**	
4.1	Feasibility Studies of HUCs in 2020-2021	Schedule G	44.65	0.24	1.67	Feasibility studies of sewerage projects in 2020–2021
4.2	6% Project Preparation for Basic and Improved Sanitation				1.96	44.0 percent government funds for basic and improved sanitation; assumed FS and project preparation (6.0 percent) in 2021
4.3	Septage Projects (LWUA Master Plan)	Schedule H	1.50		0.25	Establishment of septage management programs for 30 WDs at PHP 50.00 million per WD; five WDs scheduled in 2021
	Grand Total		**62.38**	**3.35**	**6.05**	

5.3.3 Strategic Interventions

Apart from the activities and reforms proposed in the eight KRA (as discussed in detail in this plan), a number of other strategic interventions to achieve the WSS sector targets in 2023 and 2030 are discussed below. These shall help ensure that the proposed infrastructure projects are realized and are readily applicable and adoptable at the local level.

These interventions shall also be discussed in detail and shall be region-specific in the subsequent regional roadmaps included in this Volume.

Water Supply

The proposed strategic interventions for the water supply sector are presented in Table 43.

To meet the targets for access and coverage and the normative content of water (service standards), the scope of works requiring capital investments needed in 2023 and 2030 are listed in Table 44.

Table 43: Proposed Strategic Interventions for Water Supply

Access to Safe Water	Planning and Development	Service Provision	Regulation	Promotion
95.0% Access to Safe Water by 2023 Universal Access by 2030	▪ Planning, program or project design ▪ Establishing labs and water quality testing centers ▪ Lobbying for the Regional WSS Masterplan	▪ M&E expansion ▪ Integration/ Amalgamation ▪ Automation ▪ Residuals management ▪ Mitigation ▪ Water potability maintained at all times ▪ Providing 24/7 water supply service ▪ Achieving 100.0% coverage	▪ Arbitration ▪ Compliance with PNSDW 2017 ▪ Compliance training from DOH	▪ Willingness to connect and pay ▪ Demand creation

Table 44: Scope of Works Requiring Capital Investments Needed for the Water Supply Targets

Service Level	2023	2030
Level III	▪ Construction of water treatment facilities ▪ Distribution network expansion ▪ Provision of service connections ▪ Development of a Water Safety Program ▪ Establishment of adequately equipped laboratory testing centers in strategic areas to serve all service levels clientele	▪ Construction of water treatment facilities ▪ Distribution network expansion ▪ Provision of service connections ▪ Development of a Water Safety Program ▪ Automation of operations and major services
Level II	▪ Rehabilitation of existing water supply system to upgrade it to Level III	▪ Rehabilitation of water supply system to upgrade it to Level III
Level I	▪ Upgrading to “safe level” those water sources found “unsafe”	▪ Adoption of a rain water harvesting program in areas not reached by Levels II and III services

Sanitation

Table 45 presents specific strategic interventions for varying levels of access coverage for improved sanitation. This indicates that proposed interventions are specific and tailor-fitted to actual local conditions.

Capital investments for the sanitation targets will include programs in basic sanitation, septage management, and sewerage management.

For basic sanitation, it is recommended that DOH prescribe a national basic sanitation program for the entire country, looking into a combination of micro-financing and behavior change communication. A Department Administrative Order on standard septic tank use and design will also be released by DOH soon after the planned consultation activities are rolled out in the country's three major island groups (i.e., Luzon, Visayas, and Mindanao).

For septage management, a clustering approach will be recommended to reduce capital costs and attain economies of scale. Clustering of municipalities to be served by their dedicated proposed STP has been accomplished by the provinces' representatives in the regional consultations. Clusters shall be discussed in detail in the succeeding regional roadmaps.

Table 45: Proposed Strategic Interventions for Sanitation

Access to Improved Sanitation	Planning and Development *Planning* *Program or Project Design* *Institution Building* *Training* *Financing* *Climate/Disaster Resiliency* *Policy*	Service Provision *Operations* *M&E* *Expansion* *Amalgamation* *Automation*	Regulation *Tariff/Pricing* *Resource* *Arbitration* *Registration, Permits, Rights*	Promotions *Social Preparation* *Advocacy* *Demand Creation* *Behavior Change*
High Access Areas with 60.0 to 100.0 percent Improved Sanitation Coverage	▪ LSSP should be incorporated into the WSS Sector Plan, local development plan (LDP), annual investment program (AIP), and local health plan (LHP). ▪ A sewerage system program should be developed to provide service in the urban core coordinating with those in charge of the septage management program; project urban sprawl ▪ A NSSMP subsidy grant for sewerage and septage management programs should be in place. ▪ Capacity development in regard to sewerage systems should be planned and integrated with other infrastructure. ▪ A sanitation ordinance covering sewerage system and septage management services should be passed, possibly integrating it into the environment code and WQMA action plan.	▪ Sanitation programs should focus on implementing sewerage systems and completing septage management programs. ▪ Expansion of urbanized and urbanizing barangays should be pursued. ▪ M&E system should conform to PSA/ Census (covered by sewerage system, households desludged, and on-site systems).	▪ Tariff should be computed using full cost recovery with infusion of capex subsidy for sewerage projects. ▪ LGU implementers have undergone compliance training given by DOH and DENR (particularly in sewerage systems), and the Dept. of Agriculture (DA) with respect to regulations/ guidelines governing disposal of by-products. ▪ Penalties should be strictly imposed on those not complying with certain requirements, including LGUs/ WDs by filing cases with the environmental ombudsman.	▪ Promotions should focus on enjoining the public to connect to the sewerage system when made available stressing the importance of compliance and the benefits therefrom. ▪ Promotional efforts regarding water demand management should be supported to minimize wastage and unnecessary use of water. ▪ Building buy-in for paying for sanitation services should be promoted.

Table 45 (continued): Proposed Strategic Interventions for Sanitation

Access to Improved Sanitation	Planning & Development *Planning* *Program or Project Design* *Institution Building* *Training* *Financing* *Climate/Disaster Resiliency* *Policy*	Service Provision *Operations* *M&E* *Expansion* *Amalgamation* *Automation*	Regulation *Tariff/Pricing* *Resource* *Arbitration* *Registration, Permits, Rights*	Promotions *Social Preparation* *Advocacy* *Demand Creation* *Behavior Change*
Medium Access Areas with 30.0 percent to 59.0 percent Improved Sanitation Coverage	▪ LSSP should be incorporated into the WSS Sector Plan, LDP, AIP, and local health plan. ▪ A septage management program should be developed to provide service to the entire population using a customized approach in rural areas. ▪ The NSSMP subsidy grant should be included in septage management programs. ▪ A sanitation ordinance covering septage management services should be passed, possibly integrating it with the environment code and WQMA action plan.	▪ Sanitation programs should focus on implementing septage management programs and completing projects on basic sanitation and zero open defecation. ▪ Systems should be expanded to cover increase in population and additional buildings. ▪ M&E system should conform to PSA/ Census (covered by households desludged and on-site systems). ▪ Sewerage system programs should be introduced.	▪ Tariff should be computed using full cost recovery with possible infusion of capex subsidy for septage management projects (with possible clustering of LGUs). ▪ LGU/WD implementers should have undergone compliance training given by DOH and DENR (particularly in septage management systems), and by DA regarding regulations/ guidelines on disposal of by-products. ▪ Strict penalties should be imposed on those not complying with certain procedures, including LGUs/WDs, by filing cases with the environmental ombudsman.	▪ Promotions should focus on enjoining households to have their septic tanks desludged once a septage management plan is in place; ▪ The importance of building the right septic tanks and the benefits of good sanitation should likewise be promoted. ▪ Building buy-in for paying for sanitation services should be promoted.

Table 45 (continued): Proposed Strategic Interventions for Sanitation

Access to Improved Sanitation	Planning & Development *Planning* *Program or Project Design* *Institution Building* *Training* *Financing* *Climate/Disaster Resiliency* *Policy*	Service Provision *Operations* *M&E* *Expansion* *Amalgamation* *Automation*	Regulation *Tariff/Pricing* *Resource* *Arbitration* *Registration, Permits, Rights*	Promotions *Social Preparation* *Advocacy* *Demand Creation* *Behavior Change*
Low Access Areas with 0.0 percent to 29.0 percent Improved Sanitation Coverage	▪ LSSP should be incorporated into the WSS Sector Plan, LDP, AIP, and local health plan. ▪ A basic sanitation program should be developed and an ordinance thereon passed to make sure that every household/building has a toilet and septic tank and access to on-site treatment. ▪ Financial support should be pursued for basic sanitation programs – a combination of micro-finance and behavior change communication, possibly integrating OBA, sweat equity, and sanitation vouchers. ▪ Interventions should be planned for rural and inaccessible areas; alternative on-site systems should be developed.	▪ Sanitation programs should focus on implementing projects in basic sanitation and zero open defecation. ▪ M&E system should conform to PSA/ Census in place (covered by on-site systems). ▪ Septage management programs should be initiated.	▪ LGU/WD implementers should have undergone compliance training initiated by DOH and DENR (particularly in basic sanitation systems). ▪ Compliance with Office of the Building Officials and Sanitary Inspectors regulations and guidelines should be required. ▪ Strict penalties should be imposed on those not complying with building regulations and laws on open defecation.	▪ Promotions should focus on enjoining the public, households and building administrators to have their toilets and septic tanks properly installed; ▪ The level of public awareness of the benefits of good sanitation should be raised. ▪ Public awareness of the health and environmental hazards of open defecation should be generated.

6 Implementation, Monitoring, and Evaluation Arrangements

The PWSSMP is ready for implementation using the current WSS institutional arrangements and practices. The eight KRA (soft components) are expected to improve the enabling environment of the WSS sector even as priority programs (hard components) are being pursued.

The implementation of the PWSSMP has the following guiding principles:

- The PWSSMP includes the creation of an apex body.
- A PMO must implement the initial activities of the PWSSMP while the apex body is being developed.
- The infrastructure investment program can be implemented in two stages:
  - Stage 1 is to be implemented by the PMO. The apex body has to be set up with the objective of creating a new department (referred to in this document as "Department of Water Resources" or "DWR"). The transition of responsibilities according to the new setup will be ongoing including the establishment of the Philippine WSS Information System to support the DWR. The PMO shall implement the initial investment program as set in the PWSSMP while the transition is ongoing and in support of the DWR.
  - Stage 2 is to be implemented by the DWR. With the PMO catalyzing the implementation of the PWSSMP in Stage 1 and building the capacity of the DWR, the next stage is expected to undergo a smooth transition.
- The financing mechanisms in the previous chapter may change with the finalization of the URAF. The first phase of the infrastructure investments includes activities to bridge the transition to the URAF.
- The pre-investment activities are required for the preparation of the implementation of the investment program for PWSSMP. This undertaking may take 12 months.
- The PWSSMP can be implemented in four phases:
  - Phase 1 (2019) includes the 12-month pre-investment activities;
  - Phase 2 (2020 to 2023) marks the start of the implementation by the PMO of the PWSSMP investment program from 2020-2023;
  - Phase 3 (2024 to 2030) is the continuation of the implementation of the PWSSMP investment program by the DWR starting 2024; and
  - Phase 4 (beyond 2030), on the other hand, considers the remaining projects and activities that may be implemented beyond 2030 and may lead to the culmination of AmBisyon Natin 2040. While the PWSSMP considers the planning horizon of 2019-2030, continuous improvement of service access and upgrade of related infrastructure shall be pursued.

6.1 General Oversight and Guidance

While the apex body is in its startup stage, NEDA shall be the executing agency with respect to the PWSSMP implementation. The DWR will be the implementing agency backstopped by NWRB during the interim setup.[63]

INFRACOM-SCWR provides oversight and guidance. The project steering committee (PSC) must include NEDA, DPWH, DILG, DOH, DOF, DBM, and the DWR.

[63] *NWRB has the legal mandate but needs further support and institutional strengthening to enable it to discharge its functions.*

6.2 Management and Supervision

The PMO, as shown in Table 46, can be placed under the oversight of NEDA or NWRB.

The following offices shall manage the phases of implementation:

Table 46: Management and Supervision for PWSSMP Implementation

Phase	Management	Supervision
Phase 1 (2019)	NEDA	NEDA, OP
Phase 2 (2020 to 2023)	PMO	NWRB, NEDA, OP
Phase 3 (2024 to 2030) and Phase 4 (2030 and beyond)	DWR	OP

6.3 Project Execution

The PWSSMP will be implemented as follows:

- **Phase 1 (2019)** covers the **pre-investment activities**, and must be executed by NEDA as the PMO. This phase includes the approval and adoption of the PWSSMP and Priority Investment Program.
- **Phase 2 (2020 to 2023)** implements the **PWSSMP and Priority Investment Program.** Phase 2 shall execute investment programs from 2020 to 2023 to achieve the WSS targets as stipulated in PDP 2017-2022.
- **Phase 3 (2024 to 2030)** must be led by the **DWR** and must continue the implementation of Phase 2. Phase 3 shall execute investment programs **from 2024 to 2030**. This phase covers the remaining WSS gaps to achieve universal WSS services in the country. Implementation of any remaining and/or unfinished PAPs after said period may be executed beyond 2030 and shall be covered in **Phase 4 (beyond 2030).**

Phase 1 (2019): Pre-Investment Activities

The pre-implementation activities will include the following:

- Approval and adoption of the PWSSMP and Priority Investment Program. The PWSSMP including its investment program will be submitted to the NEDA INFRACOM for approval and adoption. Upon approval thereof, the INFRACOM will serve as the steering committee to oversee and direct the implementation of the masterplan.
- Scope, program, and plan for finances. The scope of the activities to be conducted under the PWSSMP Priority Investment Program will be confirmed with the Government of the Philippines, the budget available for the infrastructure component program and the prioritization of the reform activities. An initial scope for the PMO is attached including an estimate of the budget in the PWSSMP (See implementation schedule in Table 12 in Annex C).
- Rollout of the PWSSMP and Operational Plan. The rollout will be undertaken through regional conferences, distribution of the audiovisual presentation (AVP), and the dissemination of printed copies of the PWSSMP. The proposals for funding and financing of investment projects will be solicited from LGUs, and the coverage, scope and objectives of the PWSSMP will be explained. The RDCs will lead the rollout in their respective regions and will be involved in the implementation.
- PWSSMP Priority Investment Program preparation activities for the Priority Investment Program. The pre-implementation program includes a priority investment program for implementation in 2020. Project preparation activities, such as project feasibility studies, detailed engineering

and design, and procurement shall be carried out in 2019. The projects under the Priority Investment Program must be ready for implementation after the establishment of the PMO. Proposals that have not been included in the budget for 2019 shall be prioritized for inclusion the following year.

Phase 2 (2020 to 2023) and Phase 3 (2024 to 2030): Priority Investment Program

The PWSSMP Priority Investment Program will include the following components:

- Pro-poor WSS Infrastructure. This component complements KRA 1.2, especially funding of WSS programs that focus on the delivery of services to far-flung, hard-to-reach and poverty-stricken areas with a right-based local governance framework.
- PPP-friendly WSS Investments. This component complements KRA 2.1 especially in regard to establishing a PPP arrangement suitable for WSPs.
- Integrated WSS investments. This component complements KRA 3 and KRA 4, that identify various infrastructure interventions, including integrating runoff storage (detention and retention basins) in flood mitigation projects, developing surface water sources with an integrated groundwater recharge system, developing non-traditional alternative water sources, and adopting provincial or district bulk (surface) water supply systems.
- Support for WSS investments in climate resiliency. This component complements KRA 4 and supports the initiative to improve existing structures by making them climate-resilient (e.g., compliant with climate-related infrastructure standards). New climate-resilient WSS structures must be designed.
- Support for infra-expansion investments to increase coverage. This component complements KRA 5 by providing funds to enable qualified WSPs to expand their systems. This expansion will increase coverage and provide economies of scale to improve O&M and ensure the viability of the WSP systems.

Two modalities are preferred but not imposed in implementing PWSSMP Priority Investment Program:

- Investments for WDs: For existing and potential WDs, the mode of implementation is that undertaken through LWUA.
- Investments thru LGU-run utilities: For existing and potential LGU-run utilities, the mode of implementation is that carried out through DILG or LGUs.

The other investment modalities for private and community-based service providers are to be established during Phase 1 (pre-investment activities) and the URAF.

Implementation of the KRA

Simultaneous with the implementation of PWSSMP Priority Investment Program are various activities and actions identified in the eight KRA. An indicative schedule of activities pertaining to the KRA is provided in Annex F.

6.4 Framework of Collaboration

This section sets the framework of collaboration of the agencies, institutions, and WSPs in the WSS sector.

Statement of Common Purpose

In addition to the national targets and commitments to achieve universal access to safe water and basic sanitation, a common purpose of this WSS endeavor states:

"Water is life, and sanitation is dignity."

Access to water is a basic need and a right to life. In addition, providing safe water and safely managed sanitation recognizes and respects human dignity.

Goals

The goal of this PWSSMP is to set the country's direction towards achieving the WSS national targets and commitments. Thus, the PWSSMP considers the current situation and works with the fragmented sector towards achieving these targets.

The goals of the PWSSMP are as follows:

- To achieve a collaborative and effective working relationship among line agencies, institutions, WSPs, partners, and the stakeholders;
- To collectively influence national policies and the public on water use, conservation, and sanitation;
- To offer or improve opportunities and supports regarding WSS initiatives and efforts;
- To demonstrate a united and integrated sector with a common purpose and goal; and
- To work towards an integrated and coordinated WSS sector.

Working Together

The following principles govern collaboration initiatives:

- A conviction that we can be more effective by working together;
- A public service philosophy with the constituents at its core;
- A commitment to transparency and accountability;
- A commitment to regular, open, and inclusive communication; and
- A mutual respect for the distinct (though overlapping) responsibilities and undertakings of line agencies consistent with the overall thrust of the sector.

Roles and Responsibilities

PMO

- Evaluate and approve proposals;
- Procure the services of consultants for the DED/FS;
- Implement DED/FS and other preparatory studies for LGU-run utilities;
- Prepare an updated investment and disbursement program;
- Procure and engage construction supervision consultants; and
- Monitor and evaluate the PWSSMP and Investment Program.

DBM

- Review and approve requests for funds;
- Monitor disbursements;
- Review, approve, and allocate funds based on the approved investment program (only from the government's end); and
- Disburse funds to the PMO for LGU-run projects.

DILG

- Receive, screen and endorse proposals from LGU-run utilities;
- Prepare TOR and assist in the selection and assist in the selection;
- Monitor progress of implementation and liaise between the LGU and the PMO; and
- Liaise between the PMO and the LGU and develop or implement a capacity-building program for Level I and Level II WSPs.

DOH, NWRB, DBM, DPWH, Regional NEDA Offices, and LGUs

- Review proposals that respond to programs and projects specific to the agencies;
- Provide inputs to the TOR and assist in the selection of consultants for the respective projects of the agencies;
- Provide input to the disbursement program, when appropriate;

- DOH shall liaise with the DILG on the needs for capacity-building regarding sanitation;
- NWRB shall facilitate the processing of water permit applications and ensure a rational water allocation; and
- Disburse funds to the PMO for LGU-run projects.

LWUA

- Receive, process, and endorse proposals from WDs;
- Prepare TOR and assist in the selection;
- Implement DED/FS and other preparatory studies;
- Prepare an updated disbursement program based on the status of DED/FS; and
- Procure and engage construction supervision consultants to verify disbursement to the WDs.

Water Districts and LGU-run Utilities

- Submit proposals to LWUA/DILG;
- Assist in the selection of consultants (if required);
- Work with the consultants in regard to the DED/FS;
- Prepare for the implementation and construction of WSS systems, and submit requirements to LWUA and DILG; and
- Engage contractors.

Regional NEDA and Provincial LGUs

- Provide regional and provincial data as well as targets and accomplishments based on agreed-on KPIs;
- Receive, review for completeness, and endorse proposals;
- Monitor physical progress of projects and disbursements through Local Project Monitoring Committees; and
- Provide feedback on project development and implementation.

6.5 Mechanisms and Processes (General)

PWSSMP and Investment Program: Hard Components

Planning and Programming

Regional WSS master plans set regional targets and the regions' contribution to the national targets. These plans include establishing provincial and municipal WSS data and provincial strategies, programs, and identified projects. The data will be entered into the Philippine WSS Information System.

To aid planners, the PWSSMP also includes a WSS systems planning overview and toolkit (attached as Annex F).

WSS Projects for Funding

The process and mechanism for WSS infrastructure projects for funding vary by component and mechanism (e.g., through LWUA, DILG, DPWH, DOH). These shall be detailed and finalized during Phase 1.

Progress Monitoring and Assessment

The progress of the PWSSMP shall be monitored through the PWSSIS. The status of projects will be updated by the concerned province and validated by the respective regions.

Monitoring of projects includes attribution of approved WSS projects to the regional and national targets. Thus, progress in reference to national targets can be assessed, and appropriate actions can be made to address concerns and improve performance.

Assessment of Performance

In terms of achievement of national targets and commitments, assessment of

performance shall be done using PSA data.

Key Reform Agenda: Soft Component

Implementation and M&E

The eight KRA will be implemented by various agencies. Section 6.5.1 provides the results-based matrix that indicates which KRA are to be undertaken, the responsible agencies, success indicators, means of verification (e.g., data sources), and timeline.

NEDA, PMO, and DWR shall evaluate the progress of work in the KRA.

6.5.1 Results-Based Monitoring and Evaluation Matrix

The results-based monitoring and evaluation matrices below summarize the expected outcomes of the PWSSMP by KRA and are supplemented by data on the time frame and agencies responsible.

To ensure alignment and conformity with the government's reporting system, the timing, manner of, frequency, method of aggregation, and other procedural elements of data collection for the proposed success indicators will abide by the protocol already established by the government in monitoring and reporting its accomplishments.

Table 47: Results-Based Monitoring and Evaluation Matrix

WSS Sector Outcomes				
Reform Outcome	Success	Means of Verification	Data Source	Time Frame
Water	Percentage of households with access to safe water supply increased	National surveys	NEDA, PSA	2019 onwards
Sanitation	Percentage of households with access to basic sanitation increased	National surveys	NEDA, PSA	2019 onwards
KRA No. 1: Establishing Effective WSS Sector Institutions				
Reform Outcome	Success	Means of Verification	Data Source	Time Frame
WSS service providers meeting key WSS performance targets	Number of WDs meeting KPI targets	Water utility accomplishment reports	LWUA, NWRB, MWSS	2019 onwards
Synergy of efforts in the fulfillment of WSS-related agency mandates	MOUs between and among NGAs in the WSS sector	Copies of signed MOUs	NGAs	2019 onwards
MAJOR OUTPUTS				
▪ WSS apex body established ▪ Local WSS Development Office established ▪ Capacity-building programs developed and implemented for LGUs (WSPs, WSS Development Office), WDs, and LWUA ▪ LGU-led water utilities transformed into either economic enterprises or with PSP/PPP ▪ Study on possible amalgamation of WSPs conducted ▪ PD 198 amended				

KRA No. 2: Strengthening the Regulatory Environment				
Reform Outcome	Success	Means of Verification	Data Source	Time Frame
Stronger enforcement of regulatory guidelines to protect customers' interests and to ensure the viability of WSPs	Percentage of JV agreements reflecting the consumer safeguard provisions identified by the Government of the Philippines	Copies of approved JV contracts	NEDA, LWUA	2019 onwards
	Percentage of consumer complaints resolved	LWUA and WD reports	NEDA, LWUA	2019 onwards
	Number of days to approve requests for tariff adjustment shortened	NWRB board resolutions	NWRB	2019–2020
	Percentage of households inspected for compliance to set sanitation standards	Provincial Health Office (PHO) monitoring reports	DOH, PHOs	2019 onwards

MAJOR OUTPUTS

- Legal opinion on legality of JV contracts as affirmed by DOJ, Office of the Government Corporate Counsel (OGCC) released
- Regulator clearly identified
- Transparent bidding procedures established
- Contracts with clearly defined investment schedules, service obligations, and penalties enforced
- Responsive tariff structure developed
- Tariff review processes improved and expedited
- NWRB guidelines for granting of water permits and CPCs to private operators reviewed and rationalized
- Water permits granted to NIA reviewed
- WRC established

KRA No. 3: Creating and Ensuring Effective WSS Services				
Reform Outcome	Success	Means of Verification	Data Source	Time Frame
WSS service integrated in its approach and operation	No. of days within which WSS service is approved from time of request reduced	Consumer surveys	LWUA, DILG, DOH, LGUs, WDs	2019 onwards
	Percentage of households provided with both WSS services	Water utility reports	LWUA, DILG, DOH, LGUs, WDs	2019 onwards

MAJOR OUTPUTS

- WSS services well designed (with emphasis on residents in geographically isolated and depressed areas [GIDA] and who belong to poor communities, indigenous people, and other marginalized sectors)
- Community awareness of the importance of water quality and the causes of water pollution raised
- Appropriate and sustainable WSS facilities and infrastructure built
- WSS services in annual local development programs integrated and mainstreamed

KRA No. 4: Balancing Water Supply and Demand				
Reform Outcome	Success	Means of Verification	Data Source	Time Frame
Optimized utilization of available water sources	No. of WSPs with non-traditional water sources (e.g., rainwater, recycled floodwater) formed	Water utility accomplishment reports	LWUA, LGUs, WDs	2019 onwards
	No. of hectares of watershed protected	Forest Management Bureau (FMB) and RBCO reports	NWRB, DENR (FMB and RBCO), LGUs	2019 onwards
	Percentage of NRW reduced	Water utility accomplishment reports	LGU, LWUA, NWRB	2019 onwards
Regulated water demand	Per capita consumption reduced without downgrading the standard of living	Water utility accomplishment reports	NWRB, LGU, LWUA	2019 onwards

MAJOR OUTPUTS

- IWRM councils formed
- River basin studies completed
- Potential water sources developed
- Bulk water supply at provincial and/or river basin levels established
- Policies on the efficient use of water implemented
- Wastewater reclaimed and recycled
- Nontraditional water sources (e.g., rainwater) explored and developed
- New pipelines and appurtenances replaced and/or installed
- System pressure regulated
- Number of sanitation projects increased

KRA No. 5: Building Climate Resiliency				
Reform Outcome	Success	Means of Verification	Data Source	Time Frame
Climate-resilient WSS infrastructure and services	Percentage of water utilities with water security plan approved	LWUA and DOH records	LWUA, DOH	2019 onwards
	Percentage of flood control and drainage structures built with retarding/retention basins for future use	DPWH, HLURB records	DPWH, HLURB	2019 onwards

MAJOR OUTPUTS

- Climate resiliency measures passed and made mandatory
- New WSS systems located, designed, and constructed taking climate risks into consideration
- WSS systems improved and made climate-resilient
- Sanitation systems designed to consider volume reduction and changes in wastewater characteristics and ecosystems
- Water efficiency standards of water fixtures issued and included as a provision of the Building Code and Plumbing Code
- Guidelines requiring labelling of efficiency of water use of water fixtures issued
- Watersheds protected and rehabilitated

KRA No. 6: Enabling Access to Funding and Financing				
Reform Outcome	Success	Means of Verification	Data Source	Time Frame
Increased investments in the WSS sector	Percentage in financing and funding (by amount and type) increased	LWUA, records of GFI and PFI	LWUA, GFIs, PFIs	2019 onwards
	Percentage in number of WSPs with access to financing and funding increased	LWUA, GFI and PFI records	LWUA, GFIs, PFIs	2019 onwards

MAJOR OUTPUTS

- URAF fully implemented
- LWUA financing policies and transaction processes streamlined
- WSPs and LGUs trained in accessing financing
- Funding arrangements consolidated through LWUA
- More competitive and flexible terms of GFIs effected

KRA No. 7: Managing Data and Information				
Reform Outcome	Success	Means of Verification	Data Source	Time Frame
Comprehensive, harmonized, integrated, up-to-date and reliable WSS database of the Philippines	Increase in the number of WSS performance indicators harmonized with SDG WSS indicators	PSA website	NEDA, PSA	2019 onwards
	Increase in the number of SDG-related WSS indicators captured by Philippine WSS database within 6 months	Philippine WSS database	Apex body, NEDA (interim)	2019 onwards
Data from WSS Information System readily available and regularly used by policy-makers, line agencies, LGUs, and WSS partners, and WSS service providers	100.0% of data used in reporting WSS performance taken from Philippine WSS database	NGA planning and implementation documents	NGAs	2020 onwards

MAJOR OUTPUTS

- Guidelines and framework for the harmonization and integration of WSS data drafted
- Philippine WSS Information System developed
- Data custodians in the apex body trained in WSS Information System
- Law compelling data custodians to timely and regularly enter and upload WSS-related data passed

KRA No. 8: Driving Research and Development				
Reform Outcome	Success	Means of Verification	Data Source	Time Frame
Use and adoption of innovative WSS technologies and cost-effective solutions	Percentage in per capita consumption reduced	LWUA, WDs, MWSS, NWRB records	LWUA, NWRB, MWSS, DILG, LGUs	2019 onwards
	Satisfaction with sanitation services (with particular focus on innovation and cost) kept up	Customer satisfaction surveys, WD records	WDs	2019 onwards
	Sanitation service fees maintained or reduced			

MAJOR OUTPUTS

- Research and Development Division and division in charge of accrediting WSS-related new technologies at apex body formed
- Accreditation process of new technologies related to WSS improved
- Studies on innovative technologies and cost-effective solutions adopted and properly implemented; government financial support for local WSS-related inventions sustained
- Studies on advance infrastructure design and construction methodology solutions adopted, enforced, and properly implemented
- Philippine WSS database made responsive to macro-level WSS research and development requirements

Glossary

Annual Poverty Indicators Survey (APIS)	A nationwide survey that presents data on the socioeconomic profile of Filipino families, and other information that relates to their living conditions. (PSA)
Basic Sanitation Facility	Use of improved facilities which are not shared with other households
Basic Water Facility	Drinking water from an improved source provided collection time is not more than 30 minutes for a roundtrip including queuing
Black Water	Wastewater containing feces or other remnants of sanitary use (UN International Groundwater Resources Assessment Center)
Biological Oxygen Demand	A measure of the amount of oxygen removed (respired) from aquatic environments by aerobic microorganisms either in the water column or in the sediments. (DENR)
Climate	Climate in a narrow sense is usually defined as the average weather, or more rigorously, as the statistical description in terms of the mean and variability of relevant quantities over a period of time ranging from months to thousands or millions of years. The classical period for averaging these variables is 30 years, as defined by the World Meteorological Organization. The relevant quantities are most often surface variables such as temperature, precipitation, and wind. Climate in a wider sense is the state, including a statistical description, of the climate system. In various chapters in this report different averaging periods, such as a period of 20 years, are also used. (Intergovernmental Panel on Climate Change [IPCC], 2012)
Climate Change	A change in the state of the climate that can be identified (e.g., by using statistical tests) by changes in the mean and/or the variability of its properties and that persists for an extended period, typically decades or longer. Climate change may be due to natural internal processes or external forcing, or to persistent anthropogenic changes in the composition of the atmosphere or in land use. (IPCC, 2012)
Cold Days/ Cold Nights	Days where maximum temperature, or nights where minimum temperature falls below the 10th percentile, where the respective temperature distributions are generally defined with respect to the 1961-1990 reference period. (IPCC, 2012)
Creditworthy WSPs	Self-sustaining WSPs capable of accessing financing from GFIs and/or PFIs (LWUA)
Domestic Consumption (Use)	Water used for household purposes such as washing, food preparation and showers . It is the quantity, or quantity per capita, of water consumed in a municipality or district for domestic uses or purposes during a given period. It sometimes encompasses all uses, including the quantity wasted, lost, or otherwise unaccounted for.
Disaster Risk Reduction	Denotes both a policy goal or objective, and the strategic and instrumental measures employed for anticipating future disaster risk; reducing existing exposure, hazard, or vulnerability; and improving resilience. (IPCC, 2012)
Drinking Water	Water intended for human consumption or for use in food preparation.
Effluent	Discharges from a known source passing into a body of water or land, or wastewater flowing out of a manufacturing plant, industrial plant including domestic, commercial and recreational facilities.
Effluent Standard	Any legal restriction or limitation on quantities, rates, and/or concentrations or any combination thereof, of physical, chemical or biological parameters of effluent which a person or point source is allowed to discharge into a body of water or land.

El Niño-Southern Oscillation	A warm-water current that periodically flows along the coast of Ecuador and Peru, disrupting the local fishery. It has since become identified with a basin-wide warming of the tropical Pacific Ocean east of the dateline. This oceanic event is associated with a fluctuation of a global-scale tropical and subtropical surface pressure pattern called the Southern Oscillation. This coupled atmosphere-ocean phenomenon, with preferred time scales of 2 to about 7 years, is collectively known as the El Niño-Southern Oscillation. It is often measured by the surface pressure anomaly difference between Darwin and Tahiti and the sea surface temperatures in the central and eastern equatorial Pacific. During an ENSO event, the prevailing trade winds weaken, reducing upwelling and altering ocean currents such that the sea surface temperatures warm, further weakening the trade winds. This event has great impact on the wind, sea surface temperature, and precipitation patterns in the tropical Pacific. It has climatic effects throughout the Pacific region and in many other parts of the world, through global teleconnections. The cold phase of ENSO is called La Niña. (IPCC, 2012)
Environmental Management	A system which includes, but is not limited to, conservation, regulation and minimization of pollution, clean production, waste management, environmental law and policy, environmental education and information, study and mitigation of the environmental impact on human activity, and environmental research.
Flood	The overflowing of the normal confines of a stream or other body of water, or the accumulation of water over areas that are not normally submerged. Floods include river (fluvial) floods, flash floods, urban floods, pluvial floods, sewer floods, coastal floods, and glacial lake outburst floods. (IPCC, 2012)
Governance	The way government is understood has changed in response to social, economic, and technological changes over recent decades. There is a corresponding shift from government defined strictly by the nation-state to a more inclusive concept of governance, recognizing the contributions of various levels of government (global, international, regional, local) and the roles of the private sector, of non-governmental actors, and of civil society. (IPCC, 2012)
Groundwater	Subsurface water in which the pressure is equal to or higher than the local atmospheric pressure. In other words: water below the water table or phreatic level. (UN-International Groundwater Resources Assessment Center)
Integrated Water Resources Management	A process which promotes the coordinated development and management of water, land and related resources to maximize economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems and the environment.
Landslide	A mass of material that has moved downhill by gravity, often assisted by water when the material is saturated. The movement of soil, rock, or debris down a slope can occur rapidly, or may involve slow, gradual failure. (IPCC, 2012)
Latrine	A structure, usually consisting of a hole in the ground that is used as a toilet.
Level I Water Source	*Point source;* This service level provides a protected well or a developed spring with an outlet but without a distribution system. Hence, the users go to the source to fetch water. Level I sources are generally adaptable in rural areas where the houses are thinly scattered. These sources serve an average of 15 households within a radius of 250 meters.

Level II Water Source	*Communal faucet system or stand post;* A piped system 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 still go to the supply point (communal faucet) to fetch water. This type of system is generally suitable for rural and urban fringe areas where houses are clustered densely to justify a simple piped system.
Level III Water Source	*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.
Limited Sanitation	Use of improved facilities shared between two or more households.
Limited Water	Drinking water from an improved source where collection time exceeds 30 minutes for a round trip, including queuing.
Millennium Development Goals	Eight international development goals for the poorest people for the year 2015. It was established during the Millennium Summit of the UN in 2000. (UN Development Programme)
Morbidity Rate	Number of deaths due to a disease divided by the total population. (DOH)
Non-Revenue Water	Water that has been produced and is "lost" before it reaches the customer.
Open Defecation	Disposal of human feces in fields, forests, bushes, open bodies of water, beaches or other open spaces or with solid waste.
Public private participation	Contractual arrangements entered into by the government with the private sector.
Runoff	That part of precipitation that does not evaporate and is not transpired, but flows through the ground or over the ground surface and returns to bodies of water. (IPCC, 2012)
Safely managed Water Facility	Drinking water from an improved water source which is located within premises, available when needed and free from fecal and priority contamination.
Safely managed Sanitation Facility	Use of an improved sanitation facility which is not shared with other households and where excreta are safely disposed on-site or transported and treated off-site.
Sanitation	A wide range of services and arrangements pertaining to the hygienic and proper management of human excreta (feces and urine) and community liquid wastes to safeguard the health of individuals and communities; A process pertaining to preventing diseases by hindering pathogens or disease-causing organisms found in excreta and sewage from entering the environment and coming into contact with people and communities; The construction of adequate handling, collection, treatment, and disposal or reuse facilities and the promotion of proper hygiene behavior, so that facilities are effectively used at all times. (Philippine Sanitation Roadmap)
Sanitation Facilities	On-site facilities such as toilets and septic tanks for safe disposal of human waste.
Sanitation Services	Management of excreta from the facilities used by individuals, through emptying and transport of excreta for treatment and eventual discharge or reuse. (UNICEF/WHO Joint Monitoring Programme)
Septage	The sludge produced in individual onsite wastewater-disposal systems, principally septic tanks and cesspools.
Septage Management	Comprehensive programs for managing septic tanks and the procedures for the desludging, transporting, treating and disposing of septic tank contents.
Sewage	Waterborne human or animal wastes, excluding oil or oil wastes, removed from residences, buildings, institutions, industrial and commercial establishments together with such groundwater, surface water and storm water as maybe present including such waste from vessels, offshore structures, other receptacles intended to receive or retain wastes, or other places (or the combination thereof)

Sewerage	which include, but are not limited to, any system or network of pipelines, ditches, channels, or conduits including pumping stations, lift stations and force mains, service connections including other constructions, devices, and appliances appurtenant thereto, which involves the collection, transport, pumping and treatment of sewage to a point of disposal.
Sludge	Any solid, semi-solid or liquid waste or residue generated from a wastewater treatment plant, water supply treatment plant, or water control pollution facility, or any other such waste having similar characteristics and effects.
Sustainable Development Goals	Also known as Global Goals, which build upon the successes of the MDGs. It has 17 goals for year 2030 that call to action to end poverty, protect the planet and ensure that all people enjoy peace and prosperity. (United Nations Development Programme)
Surface Water	Water located on the surface of the Earth, such as in streams, rivers, and lakes. (UN-International Groundwater Resources Assessment Center)
Treatment	Any method, technique, or process designed to alter the physical, chemical or biological and radiological character or composition of any waste or wastewater to reduce or prevent pollution.
Tropical Cyclone	The general term for a strong, cyclonic-scale disturbance that originates over tropical oceans. Distinguished from weaker systems (often named tropical disturbances or depressions) by exceeding a threshold wind speed. A tropical storm is a tropical cyclone with one-minute average surface winds between 18 and 32 m s-1. Beyond 32 m s-1, a tropical cyclone is called a hurricane, typhoon, or cyclone, depending on geographic location. (IPCC, 2012)
Unified Resource Framework Allocation (URAF)	The URAF-WSS is a framework that aims to address the fragmented and uncoordinated approach in funding and implementing WSS projects across the country and will aid the achievement of universal access and improved service standards. It intends to address the inequitable delivery of basic WSS infrastructure caused by inadequate funding, low technical capacities of small service providers, and institutional challenges through the development of a common structure for rationally allocating available resources towards expediting the improvement and expansion of WSS services provision.
Unimproved Drinking Water	Drinking water from an unprotected dug well or unprotected spring.
Unimproved Sanitation Facility	Use of pit latrines without a slab or platform, hanging latrines and bucket latrines.
Vulnerability	Degree of loss to a given element or set of elements at risk resulting from a hazardous phenomenon of a given magnitude.
Warm Days/Warm Nights	Days where maximum temperature, or nights where minimum temperature exceeds the 90th percentile, where the respective temperature distributions are generally defined with respect to the 1961-1990 reference period. (IPCC, 2012)
Water Supply	The share of water abstraction which is supplied to users (excluding losses in storage, conveyance and distribution). (Global Water Partnership)
Waste	Any material either solid, liquid, semisolid, contained gas or other forms resulting from industrial, commercial, mining or agricultural operations, or from community and household activities that are devoid of usage and discarded.
Wastewater	Waste in liquid state containing pollutants.
Wastewater Treatment	A process used to convert wastewater into an effluent (outflowing of water to a receiving body of water) that can be returned to the water cycle with minimal impact on the environment or can be directly reused.
Water Pollution	Any alteration of the physical, chemical or biological or radiological properties of a water body resulting in the impairment of its purity or quality.
Water Quality	The characteristics of water which define its use in terms of physical, chemical, biological, bacteriological or radiological characteristics by which the acceptability of water is evaluated.

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