National Sewerage and Septage Management Program

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Draft –For Discussion Only

National Sewerage and Septage Management Program
NSSMP

Department of Public Works and Highways
National Economic Development Authority
World Bank Water and Sanitation Program-East Asia and the Pacific
AECOM International Development Inc.

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Acronyms

ADB	Asian Development Bank
DENR	Department of Environment and Natural Resources
DILG	Department of the Interior and Local Government
DOH	Department of Health
DPWH	Department of Public Works and Highways
ECC	Environmental Clearance Certificate
EMB	Environmental Management Bureau (DENR)
ESC	Environmental Sanitation Clearance
GAA	general appropriations
GoP	Government of the Philippines
HUC	highly urbanized city
IRR	Implementing Rules and Regulations
ISC	Inter-agency Steering Committee
LCP	League of Cities of the Philippines
LGU	local government unit
LGUGC	Local Government Unit Guarantee Corporation
LINAW	Local Initiatives for Affordable Wastewater Treatment (USAID project)
LWUA	Local Water Utilities Administration
MCC	Millennium Challenge Corporation
MDG	Millennium Development Goal
MWCI	Manila Water Company, Inc.
MWSI	Maynilad Water Services, Inc.
MWSS	Metropolitan Waterworks and Sewerage System
NGA	national government agency
NGO	nongovernmental organization
NEDA	National Economic Development Authority
NRW	non-revenue water
NSSMP	National Sewerage and Septage Management Program
NWQMF	National Water Quality Management Fund
NWRB	National Water Resources Board
O&M	operations and maintenance
PAWD	Philippine Association of Water Districts
PEN	Philippine Ecological Sanitation Network
PSA	Philippine Sanitation Alliance (USAID project)
PWRF	Philippine Water Revolving Fund
PWWA	Philippine Water Works Association
TOP	Technology of Participation
TOR	terms of reference
TWG	technical working group
USAID	United States Agency for International Development
WQMA	Water Quality Management Area

1 Introduction

The Clean Water Act (CWA) requires the preparation of a National Sewerage and Septage Management Program (NSSMP) as part of the integrated framework for water quality management. The NSSMP provides technology interventions and institutional and financial frameworks to guide local governments, water districts, and other local project proponents through the process of developing infrastructure projects to collect, treat, dispose of, and reuse wastewater.

The NSSMP is a subsection of the National Sustainable Sanitation Plan, which is a broader, overarching plan that will include the full spectrum of sanitation challenges such as ending open defecation and treating sewage from markets, agriculture, industry and other point sources and non-point sources of wastewater pollution. While the NSSMP presents six intervention areas to address all of these sources, its primary focus is the larger infrastructure projects that LGUs and water districts will implement to control wastewater through septage and sewerage projects aimed at their densely populated urban centers.

"While the NSSMP presents the full spectrum of sanitation solutions, its primary focus is the larger sewerage and septage infrastructure projects."

The NSSMP provides LGUs and water districts (WDs) with a planning process and tools to identify their priority sanitation issues, and develop a local sanitation plan with short and long term strategies. It guides project proponents through the process of project conceptualization, as they combine technology options with promotion campaigns, financing, and local ordinances to ensure that wastewater management systems are sustainable over the long term. A Guide for Local Governments and Water Districts is included as an annex. It contains detailed information on the planning process, tools for estimating project size and costs, and technology options. The tools and examples are included in the accompanying CD.

2 The Problem

Lack of appropriate sewerage infrastructure and septage management programs in the Philippines is taking a tremendous social, economic and environmental toll. More than 90% of the sewage generated nationwide is not treated properly. This results in economic losses exceeding Php78 billion per year, and 55 deaths per day. Discharge of raw and partially treated sewage is polluting surface waters and contaminating precious groundwater resources affecting health, livelihood and quality of life. Negative impacts upon the nation's waters and the health of its citizens from lack of effective wastewater management will continue until there is a sustained national effort to promote, finance and develop appropriate programs and systems to manage, collect, treat and reuse wastewater.

Problem: More than 90% of the sewage generated nationwide is not treated properly. This results in economic losses exceeding Php78 billion per year, and 55 deaths per day.

Unfortunately, LGUs continue to find it difficult to develop sanitation projects with local resources given competing demands for limited funds. This problem is compounded by an overall lack of enforcement of environmental laws and low level of awareness of the problem by the public and government officials.

2.1 Sewerage and Sanitation Coverage

Of the 11 million people in the Metro Manila area, only about 15% have access to fully piped sewerage. Outside of Metro Manila, it is much less. While about 85% of the people in Metro Manila use septic tanks, many of these tanks are have improper open bottoms, are infrequently or never desludged, and the polluted effluent flows into groundwater, combined sewers or surface waters. Additionally, many informal settlements exist along waterways where there are no sanitary facilities at all, and open defecation is widely practiced. The 3rd Manila Sewerage Project will construct interceptor systems that will provide about 68% of Metro Manila residents with access to improved sanitation by the year 2012. In other cities, urbanizing areas and rural settings, there is virtually no infrastructure for appropriate wastewater treatment and disposal.

2.2 Challenges to Implementation

Cost, lack of space, capacity to develop projects, and lack of political will are challenges to implementing appropriate sewerage and septage management. There is also very little understanding of sanitation and the benefits of wastewater treatment on health, well being, livelihood and the environment. Improving knowledge of appropriate sanitation is the first step in changing attitudes and behaviors, and motivating people to improve their practices and demand better services. And lack of a national program for promoting proper sanitation and wastewater management is perhaps the biggest impediment to wide-scale sanitation improvement in the Philippines today.

2.3 Applicable Laws, Rules and Policies

Relevant regulations for sewerage and septage management include:

- Sanitation Code of the Philippines – requires that septic tanks be water-tight, inspected once a year, cleaned when the sludge has reduced the liquid capacity by 50%, and the sludge must be treated/disposed of properly. It is unlawful to discharge untreated effluent of septic tanks and/or sewage treatment plants to bodies of water without approval of the Secretary.

Lack of a national program for promoting proper sanitation and wastewater management is perhaps the biggest impediment to wide-scale sanitation improvement in the Philippines today.

- Clean Water Act – Within five years, all buildings must be connected to existing sewerage systems in highly urbanized cities (HUCs). For non-HUCs, septage management systems shall be employed.
- Operations Manual on the Rules and Regulations Governing Domestic Septage and Sludge – All septage haulers and septage treatment entities must secure an Environmental Sanitation Clearance (ESC) from the Center for Health Development of the Department of Health. Proper collection, treatment and disposal of the septage is required.
- Plumbing Code of the Philippines – It is unlawful for any person to deposit into any plumbing fixture connected to the excreta and storm drainage systems any oils, greases or other things which could cause damage to the drainage system or public sewer.

3 NSSMP Goal, Objectives, Targets and Scope

Although the scale of the sanitation problem and challenges to implementing solutions can be daunting, there has been progress. The national government has organized two national sanitation summits, the Metro Manila concessionaires are developing sewerage and septage systems, and various LGUs and water districts are developing systems with support from donor-funded programs. The purpose of the NSSMP is to put all these individual initiatives under a common framework to achieve strategic national objectives and significant national impacts. The NSSMP provides guidance and incentives (funding options) that should be attractive to project proponents, and a mechanism to monitor and evaluate progress.

3.1 Goal, Objective and Targets

The overarching objective of the NSSMP is to assist LGUs and WDs to build sewerage and septage treatment facilities using a stakeholder-driven, bottom up planning process.

Goal: Improve environmental conditions and public health in urban areas of the Philippines.
Objective: Enhance the ability of LGUs and WDs to build wastewater treatment systems to treat septage and sewage generated from their urban centers through a stakeholder-driven, bottom up planning process.
Target 1: By 2020, 62 LGUs have developed local sanitation plans.
Target 2: By 2020, LGUs and WDs have built and are operating and maintaining 59 sewerage and septage management systems.
Target 3: By 2020, 9,383,000 people living in urban areas have access to improved sanitation (sewerage and septage treatment facilities).
Target 4: By 2020, Php2.9 billion has been spent on sanitation improvement projects.

These targets will only be achieved if the following occur:

- The NSSMP is disseminated nationwide through an effective promotions campaign that includes a training program
- Technical assistance is available for LGUs and WDs
- Adequate incentives are available, such as funding for feasibility studies, and partial grant funding for infrastructure
- The LGUs and WDs use an effective planning process, promotions campaign and enabling environment (policies, enforcement and user fees), such as those described in the Guide for Local Governments and Water Districts (Annex B)

The targets are rough estimates based on calculations and assumptions detailed in Annex A. They only include projects and activities outside Metro Manila.

3.2 Scope of the NSSMP

The NSSMP targets LGUs and water districts as the major program implementers. They have the mandate to address sewerage and septage, and the greatest ability to design, implement and manage projects.

While the focus of the NSSMP is on septage and sewerage, other sanitation and wastewater issues commonly faced by local governments are also presented so that LGUs can comprehensively address the complex reality that they face. Using the recommended planning process presented in

Section 5, local governments determine their priorities sanitation issues and develop local sanitation plans that fit sewerage and septage management into the larger context. This context includes the following six intervention areas:

- Open defecation;
- Point sources (markets, slaughterhouses, hospitals, high rise housing/offices);
- Septage management including collection, treatment and reuse;
- Non-point sources of sewage pollution, including open bottom septic tanks, backyard hog farms, etc.;
- Sewerage, interceptors and centralized treatment plants; and
- Non-point sources of non-sewage based wastewater from parking lots, storm water pollution, agricultural run off and houses.

The NSSMP is but one component of the National Sustainable Sanitation Plan, which will include programs to address open defecation.

The NSSMP targets LGUs and water districts as the major program implementers. They have the mandate to address sewerage and septage, and the greatest ability to design, implement and manage projects. In areas where Water Quality Management Areas (WQMAs) have been established, LGUs and WDs can develop their programs within the WQMA plan and also request funding from the WQM Fund. In most areas where water districts exist, it will be advantageous for the LGU and the WD to work in partnership, as has happened in Marikina City and Dumaguete City.

The NSSMP is a national program focusing on short and long term planning and implementation of priority wastewater projects. While the main focus is on sewerage and septage, the NSSMP provides guidance on addressing other areas of sanitation that are the reality of the sanitation issues faced by LGUs.

Dumaguete City and Water District Collaboration

The LGU and the water district have signed a memorandum of understanding to jointly develop a septage management program. The LGU and WD will equally share the cost of constructing the treatment facility. The LGU has passed a city ordinance and will manage the facility and enforce compliance, while the WD will own and operate a fleet of vacuum trucks and perform billing and collection. Revenues from the collection of fees will be shared evenly.

In some cases, DENR, DOH, DPWH and even private sector service providers may take the lead in addressing regional septage and sewerage programs that are deemed to have regional, provincial or even national significance. The private sector has been successfully involved in sanitation in Metro Manila through the concessionaire arrangement with the Metropolitan Waterworks and Sewerage System (MWSS), and Zambaonga City is currently developing a public-private partnership for septage collection and treatment. These models can be replicated in other highly urbanized cities throughout the country.

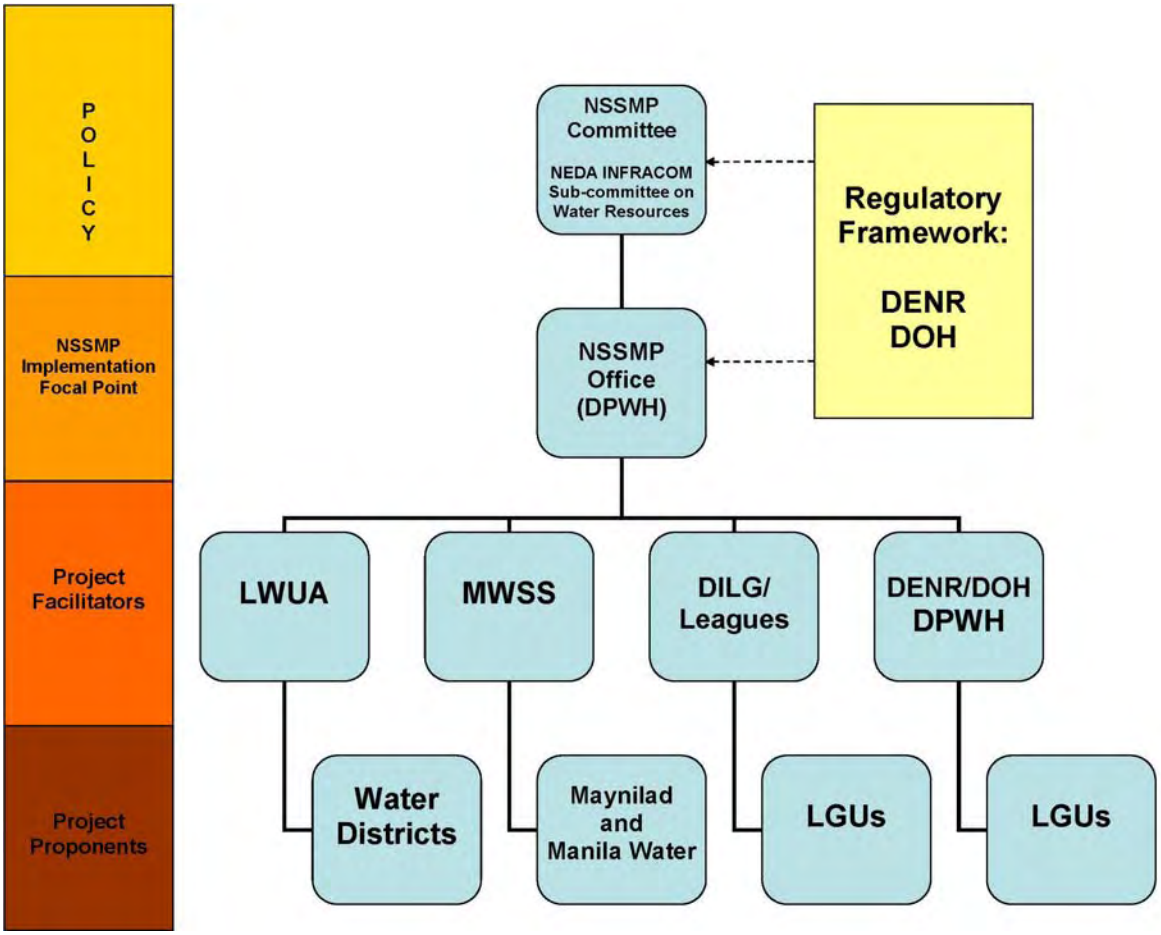
4 Institutional Framework

The CWA mandated DPWH to lead preparation of the NSSMP within twelve months from the date the law took effect. DPWH created an interagency steering committee (ISC) and convened a technical working group (TWG) to prepare the NSSMP, facilitated by a consultant team provided by a grant from the World Bank and Asian Development Bank.

An NSSMP Committee will be created to coordinate implementation of the NSSMP at the national policy level. Instead of creating a new body, the existing National Economic Development Authority (NEDA) Infrastructure Committee's Sub-committee on Water Resources can be convened to consider sewerage and sanitation projects for inclusion in national infrastructure programming. The NEDA Infrastructure Committee was created to advise the President and NEDA Board on matters regarding infrastructure development including flood control and drainage, and water supply and sanitation. The Committee is co-chaired by NEDA and DPWH and coordinates the activities of all government agencies and government-owned and controlled corporations concerned with infrastructure development.1

The following figure shows the various levels of agency involvement and processes for preparation and implementation of the NSSMP.

Figure 1. Organizational Chart for Implementing NSSMP



[1] Executive Order No. 230

An NSSMP Office will be created within DPWH that will function as the hub of all NSSMP-related matters and be a one-stop shop for information on the NSSMP. It will be the secretariat of the NSSMP Committee and gather monitoring data needed for NSSMP review. As a focal point for information, the NSSMP Office will:

- Conduct information campaigns targeting project proponents (LGUs, WQMAs, water districts) using the NSSMP Guide for Local Governments and Water Districts;
- Collect information from donor agencies, development financing institutions, and private funders on available funding options, capacity-building opportunities or technical assistance relevant to sewerage and sanitation programs and refer project proponents to them; and
- Collect information from the Philippine Ecological Sanitation Network (PEN), which includes national government agencies (NGAs), NGOs, and donors; research and training institutions; consulting groups; technology providers and others on available technologies, trainings or technical assistance and refer project proponents to them.

The NSSMP Office will not act as a clearinghouse for screening projects for funding. A pro-active NSSMP Office would establish close links with the member agencies of the NSSMP Committee especially in gathering monitoring information to track whether the Program is on track in achieving its goals.

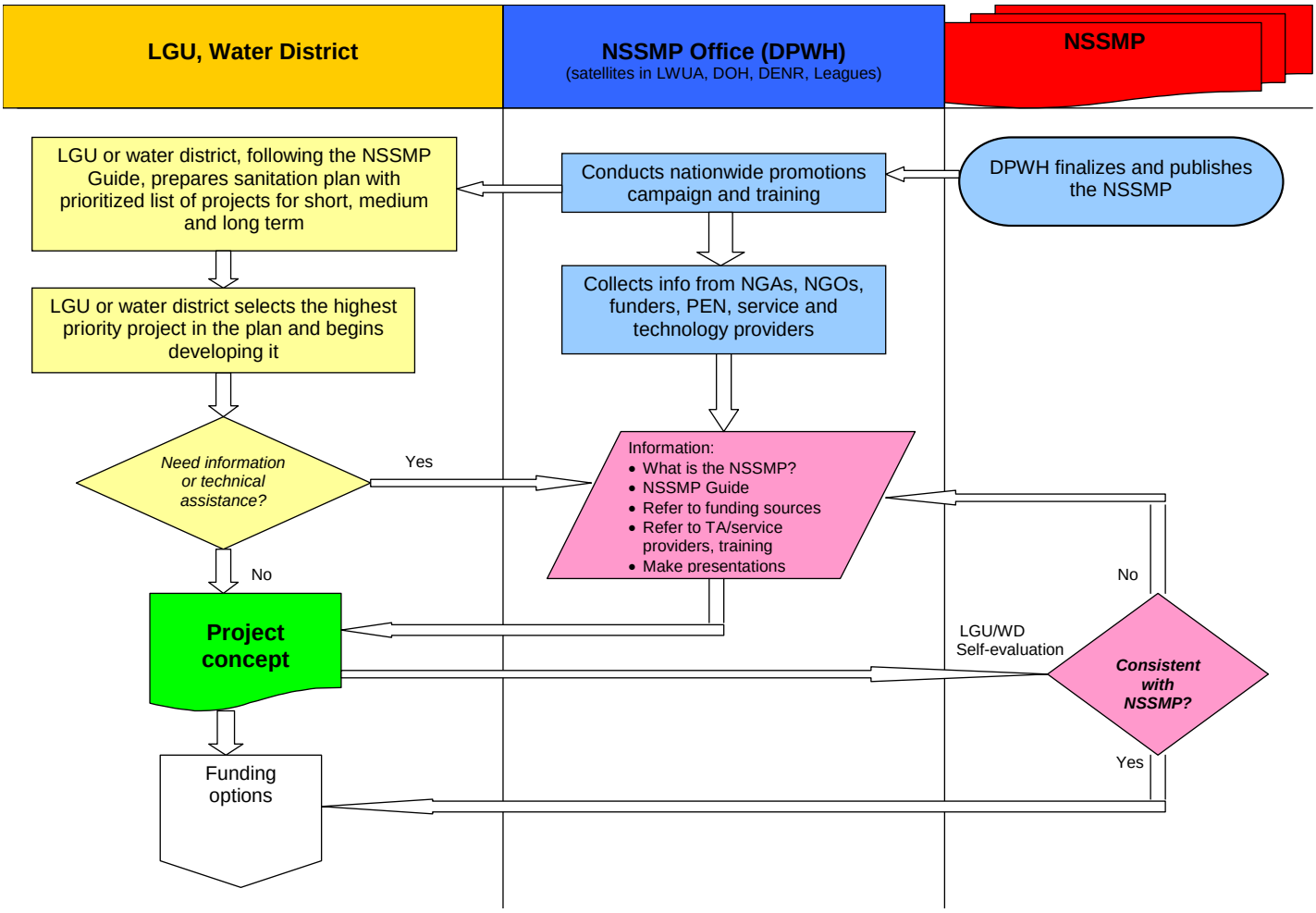
The project facilitator role is divided among several agencies that have the direct link to project proponents: LWUA for the water districts; MWSS for the Metro Manila concessionaires; DILG/Leagues for the LGUs; EMB for the WQMAs. Project facilitators act as the extension of the NSSMP Office in providing information regarding the NSSMP. However, these agencies also exercise some supervisory or regulatory function over their constituents (also the project proponents) under different laws. These supervisory or regulatory powers can be used as incentive or guide to further push the project proponents to conform to the NSSMP framework of prioritizing projects that contribute to the overall national goal, objective and targets.

4.1 Implementation Arrangements

Engagement with the NSSMP is purely demand-driven. The NSSMP Office and project facilitators will do their best to promote the NSSMP and the benefits of following the intervention framework. However, project proponents will identify projects based on their needs and ability to develop and implement.

The project proponents engage the NSSMP initially to gather information and possible technical assistance from development partners or private sector providers of technologies and services. Given that this is a new task and a new office, the NSSMP Office is not expected, initially, to be actively involved in substantive matters such as providing technical advice. This is better left to private sector or development partners who have the expertise and access to the latest information and technologies.

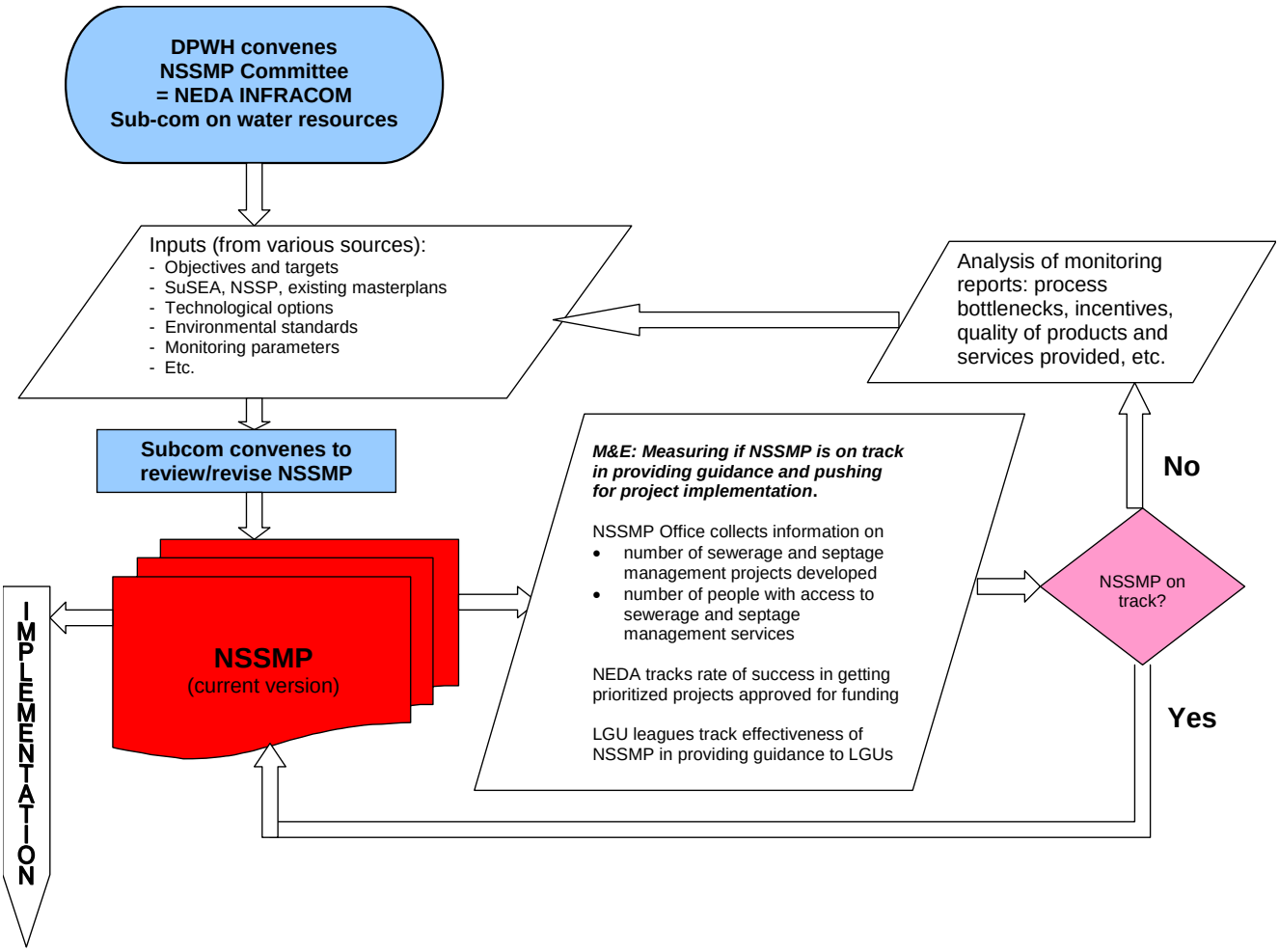
Figure 2. NSSMP Implementation Arrangements



4.2 Monitoring and Evaluation of the NSSMP

The flowchart below describes the process of periodic review, monitoring and evaluation of the NSSMP. After the initial version of the NSSMP is adopted, review and updating becomes an iterative process anchored on reports from agencies tasked to gather relevant data on the pre-determined measurable indicators.

Figure 3. Monitoring and Evaluation of the NSSMP



5 Intervention and Investment Framework - Developing Project-Specific Solutions

The intervention and investment framework guides LGUs and WDs through a planning and prioritization process to develop septage and sewerage projects. The following is a summary; detailed guidance is provided in the Guide for Local Governments and Water Districts (Annex B).

5.1 Developing Local Sanitation Plans

Local governments and water districts can follow these steps to develop local sanitation plans:

Step 1: Determine the Baseline

Conduct a rapid assessment and collect baseline information on the sanitation issues that are prevalent in the community. Teams of assessors go out into randomly chosen areas of the

community and look at the sanitation situation on the ground and interview residents. Review maps and records.

Step 2: Stakeholders' Workshop

Involve stakeholders early on to turn them into partners that will actively support and help implement the plan. Organize a stakeholders' workshop where the sanitation issues can be presented and outputs developed that include identifying program goals and objectives and a consensus on the priority issues and next steps.

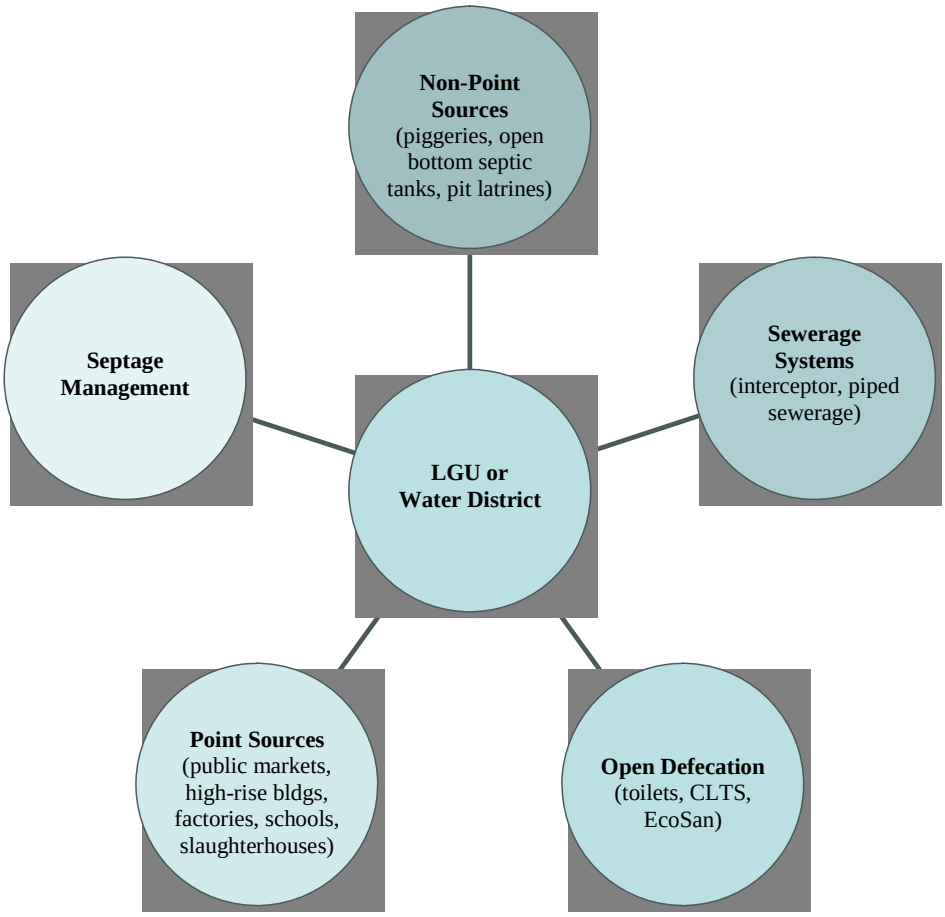
Step 3: Empowering a Technical Working Group

The technical working group (TWG) is a formally recognized body that will define objectives and timeframes, review alternatives and based on evaluation of several alternatives, recommend preferred alternatives for project implementation.

Step 4: Identify Priority Sanitation Intervention Areas

LGUs and WDs should develop a plan to address their priority issues in the short term (years 1-3) and long term (years 4 – 10). The following figure shows five intervention areas. The TWG should use the baseline data to identify the issues that need to be addressed.

Figure 4. Intervention Areas



This task helps the TWG link common sanitation issues with actual issues from their community. Often, LGUs find they need to address several of the five areas. Once issues are identified, prioritization may begin, through use of the Sanitation Questionnaire.

Step 5: Prioritizing Projects using the Sanitation Questionnaire

The TWG will consider the questions and rank the answers based on the data gathered during the baseline assessment. A 0 rank will indicate an issue is not a problem, where a ranking of 5 will indicate the most serious problem. Adding up the scores in each category will provide a priority ranking, which will relate directly to the order in which the projects should be addressed.

Figure 5. Sanitation Priority Questionnaire

Sanitation Priority Questionaire for LGUs and WDs

Instructions: Use baseline data and discussions with with elected officials, stakeholders and Technical Working Group.
Rank each question from 1 to 5 with one being least important and 5 being most important.
Add the total score for each section and compare sections to determine 1st, 2nd and 3rd sanitation priorities.

	Ranking
Open Defecation	
Informal settlers have limited access to toilets resulting in open defecation	0
Informal settlers are located near bodies of water used for fisheries	0
Informal settlers are located near drinking water supplies	0
There are no programs in place currently to relocate informal settlers	0
	0
Non-point source	
Pit toilets or Antipolo-style latrines are contributing to groundwater pollution	0
Open bottom septic tanks are leaching into shallow groundwater	0
Erosion from construction sites is a problem during rainy season	0
Wastewater from animal farms or fertilizer are contributing to pollution	0
	0
Point Source	
There are no pretreatment programs for removing grease from restaurant wastewater	0
Wastewater from the public market is not properly treated and the discharge goes to surface water	0
Slaughterhouses in the area are not equipped with proper wastewater treatment	0
The public hospital does not have proper wastewater treatment	0
	0
Septage	
There are no programs to ensure that all new septic tanks are properly designed and built	0
Septic tanks are not routinely checked and desludged when half full of sludge (every 3 to 5 years)	0
There is no proper septage treatment facility within 1 hour drive of the LGU	0
Septage is being disposed without treatment on agricultural land or in water bodies	0
	0
Sewerage	
Septic tanks discharge to open drains or streams	0
Combined sewers discharge septic tank effluent to rivers and streams	0
Wastewater from sewer outfalls causes odors and nuisance conditions affecting quality of life	0
New housing developments do not include complete sewage collection and treatment	0
	0

Step 6: Developing the Local Sanitation Plan

The sanitation plan considers short term (years 1- 3) and long term (years 4- 10) interventions. Three basic questions define the framework for strategic sanitation planning:

1. What is the current situation, or where are we now?
2. What are the objectives of the planning process, or where do we want to go?
3. What are the options for moving from the first to the second, or how do we get from here to there?

The local sanitation plan will serve as a roadmap for government and other stakeholders as they work together to develop projects to improve sanitation in their communities. A comprehensive guideline to developing a strategic sanitation plan is included in the NSSMP Guide for Local Governments and Water Districts (Annex B).

5.2 Designing Projects to Achieve Results

To effectively achieve results on the ground that will be sustained over time, sanitation projects must adequately address infrastructure, promotions and enabling environments simultaneously. .

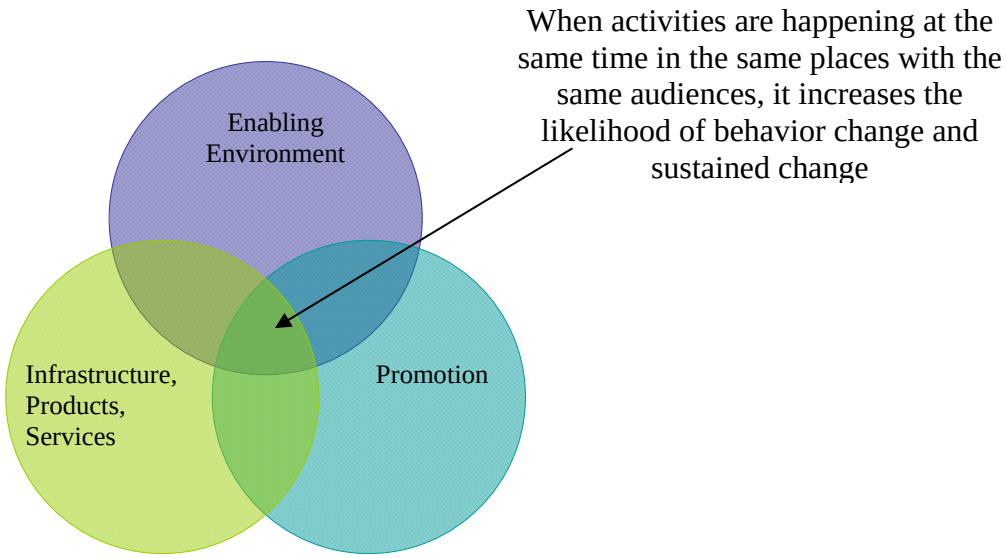
These broad categories are defined as follows:

Infrastructure, Products and Services: These are technologies and systems such as septic tanks and toilets, septage treatment plants, desluding services, and interceptor sewers;

Promotion: Promotion campaigns increase knowledge and awareness about sanitation issues, change behavior, and help to drive the demand for sanitation services and increase the willingness to pay for these services[2]; and

Enabling Environment. Local conditions that promote change and provide information, resources, and services that help the target audience sustain those changes. These include rules and regulations, access to financing, and the social aspects of community that encourages proper behavior. It also includes the skills of staff and service providers.

Figure 6. Achieving Sustainable Results



[2] See United States Agency for International Development. 2009. Ten Steps to Bringing About Positive Change Through Your Water and Sanitation Promotion Program (included in the NSSMP CD)

5.3 Toolkit for Developing Projects

The CD included with this document includes an interactive computer-based toolkit that help project planners determine the basic parameters of a given sanitation project. The tools help to determine the following:

- Volume of wastewater generated per day from the activity or source;
- Strength of the wastewater in terms of pollution load;
- Area required for different wastewater treatment schemes;
- Cost estimates for wastewater treatment infrastructure and operations;
- Number of trucks for septage programs;
- Full cost recovery period; and
- Recommend user fee or tariff to achieve full cost recovery.

An example of the septage tool is provided below. The user will fill in data from their baseline survey in the yellow boxes for such parameters as number of water district service connections and estimates of the number and size of septic tanks. The tool will automatically calculate daily flows, number of trucks, cost estimate for construction and operations, and estimated time for full cost recovery.

Figure 7. Septage Tool: Sample Screen Shot

What is the Design Flow of your Septage Treatment Facility??

Instructions *Type in the information in the* yellow *boxes below. Find the calculated values for your septa* blue *box at the bottom of the page*

1	How many households are there in the coverage area?	22,000	homes
2	How many commercial/institutional establishments are in the coverage area	3,500	businesses/institutional users
3	What is your compliance target? As a percentage of the homes in the target area, what percentage do you think will par	90%	per cent of the homes are likely to participate.
4	From the survey data, what per cent of homes have septic tanks?	90%	per cent of homes have septic tanks.
5	From the survey, of the homes that have septic tanks, what is the percent of the tanks that are desludgable?	75%	per cent of the septic tanks are desludgable.
6	From the survey, what is the average volume of residential septic tanks in the target community?	4	cubic meters
7	From the survey, what is the average volume of commercial/institutional septic tanks in the target community?	10	Cubic meters
8	Septic tanks should be desludged every 3 to 5 years. What is the target desluding frequency for your program?	5	years
9	How many days a week will your program operate?	5	days per week

Answer: **The design flow of your septage treatment facility** **70** **cubic meters per day***

1,423 **cubic meters per month**

17,075 **cubic meters per year**

Working days per month	20.42
Working days per year	245
Working weeks a year	49
Number of weeks a year	52

List of Tools

- Site Plan Checklist – Used to verify all of the required information is included on the site plan;
- Grease Interceptor Sizing tool – Used for restaurants and commercial kitchens to properly size their grease interceptors;
- Septic Tank Sizing Tool – Used to determine proper sizing of two compartment septic tanks;
- ABR Sizing Tool – Used for sizing of anaerobic baffled reactor (ABR) systems for between 10 and 100 housing units or similarly sized commercial facilities;

- Constructed Wetlands Sizing Tool – Used to set the design parameters for this low-cost technology; and
- Septage Tool – Use to determine sizing and costs of comprehensive septage management program.

5.4 Project Intervention and Investment Framework

The Intervention and Investment Framework combines infrastructure with promotions and enabling environment. The LGU or water district can develop an effective project by filling in each category so that when combined together, represents a comprehensive approach to solving the problem.

Details on the framework are included in the NSSMP Guide for Local Governments and Water Districts (Annex B). Additionally, example projects (program packages) are presented for four divisions of LGUs based on population. Project implementers can refer to these samples as they develop their own specific frameworks to address their priority projects. The Intervention and Investment Framework with program packages for Division 1 LGUs is shown in Figure 8.

Figure 8. Intervention and Investment Framework with Program Packages

LGU	Intervention	Infrastructure/ Product/Service	Indicators	Cost			Enabling Environment		Promotions
Local Government Unit	In Order of Priority	Preferred Technology	# of people with access to improved sanitation	Expenses	Php (million)	Full Cost Recovery (years)	Tariff/User Fee	Funding Source	Policy/Social Aspects/Skills	Promotions Campaigns
Division 1: Representing HUCs - Population over 200,000. Indicative LGUs such as Cebu, Zamboanga, Davao, Dasmarinas, Iloilo, Las Pinas, Malabon and other HUCs										
LGU: A	1- Septage Management	Centralized treatment and fleet of septage trucks - Shared project between WD and LGU	644,218	Construction	148.9	8 years	1.7 pesos per cubic meter of water consumed	30% by internal funds 60% by Land Bank 10% NWCMF	Septage Ordinance	Encourage people to avail of service - pay for fee increase - proper use of septic tank
Population: 800,000				Annual Operations- Treatment	31.9					
Designation: HUC				Annual Operations- Collection	16.9					
	2- Interceptor system	Intercept combined sewerage from 5.5 KM waterfront area and treat with mechanized system	200,000	Construction	135	12 years	10% of water bill	issuance of Bonds	Capacity building	Support increased fee for service
				Annual Operations- Treatment	7.5					
				Annual Operations- Collection	2.5					
	3- Open Defecation	Provide toilets and common toilet blocks for informal settler community along waterfront	4,500	Construction	15	N/A	40 pesos per month per user	20% internal LGU funds	penalty system	Use and maintain toilets - CLTS
				Annual Operations- Treatment	0.75			Pooled financing		
				Annual Operations- Collection	1.5					
	4- STP Public market	Install secondary sewerage treatment for public market	7,500	Construction	12		5 pesos per stall	20% internal LGU funds	Market vendors organization	Targeted to market vendors - support fee for service
				Annual Operations- Treatment	0.5			80% BOT / Public Private partnership		
				Annual Operations- Collection	0.4	6 years				
LGU: B	1- Septage Management	Three decentralized treatment systems - Collection by private contractors	534,014	Construction	146.2	7 years	1.9 pesos per cubic meter of water consumed	30% by internal funds 60% by Land Bank 10% NWCMF	Septage ordinance	Encourage people to avail of service - pay for fee increase - proper use of septic tank
Population: 785,700				Annual Operations- Treatment	31.2					
Designation: HUC				Annual Operations- Collection	15.6					
	2- Interceptor and Wastewater Treatment Plant for Downtown Connections	Interceptor sewer for three outfalls near city center. Wastewater treatment by lagoon system	50,000	Construction	110	12 years	10% of water bill	issuance of Bonds	Capacity building	Support increased fee for service
				Annual Operations- Treatment	9					
				Annual Operations- Collection	5					
	3- Public slaughterhouse wastewater system	ABR - Biogas digester - wetlands system	250	Construction	7.5	N/A	10 Pesos per 100 kg live weight	20% internal LGU funds	penalty system	Food safety campaign highlighting proper sanitation
				Annual Operations- Treatment	0.8			Pooled financing		
				Annual Operations- Collection	1					
	4-Wastewater system for relocation housing	ABR - wetlands for 750 homes	3,750	Construction	15	7 years	40 pesos per month per home	20% internal LGU funds	Market vendors organization	Targeted to homeowners - proper use of septic tanks, understanding fees
				Annual Operations- Treatment	2			80% BOT / Public Private partners		
				Annual Operations- Collection	2					
LGU: C	1- Interceptor system and wastewater treatment for 1.3 km of riverfront	Pipe line with combined sewer overflows to collect 8 combined storm/wastewater outfalls . Treatment by lagoon	250,000	Construction	175	12 years			Sewer ordinance requiring connection within 35 meters and proper septic tanks for new construction . Fees	To support user fee and proper septic tanks and connections
Population: 556,300				Annual Operations- Treatment	15					
Designation: HUC				Annual Operations- Collection	7					
	2- Septage management - Treatment by LGU/Water District, collection by private Sector	Treatment by sewage lagoons, drying beds for 96483 connections	462,415	Construction	103.5	7 years	2.8 pesos per cubic meter of water consumed	issuance of Bonds	Septage ordinance	To support septage program , avail of services, support fee
				Annual Operations- Treatment	22.1					
				Annual Operations- Collection	11					
	3-Wastewater system for relocation housing - 1250 families	Anaerobic baffled reactors with constructed wetlands	6,250	Construction	11.7	9 years	9360 pesos connection fee (can be paid over time) plus 166 pesos per month for operations	20% internal LGU funds Pooled financing		Partner with NGO like Gawad Kalinga . Promote benefits of proper sanitation to increase willingness to pay
				Annual Operations- Treatment	2					
				Annual Operations- Collection	0.5					
	4- Wastewater system for public hospital - 360 beds	Package treatment plant		Construction	4.7	7 years	Add 62 pesos per bed-day to cover cost of system + 3.3 pesos per bed-day for O&M (assumes 300 bed days per day)	20% internal LGU funds 80% BOT / Public Private partners	Market vendors organization	Targeted to homeowners - proper use of septic tanks, understanding fees
				Annual Operations- Treatment	0.3					
				Annual Operations- Collection	NA					
LGU: D	1- Program to end open defecation	CLTS	25,000	Construction		N/A				CLTS program initiated by City
Population: 653,966				Annual Operations- Treatment						
Designation:				Annual Operations- Collection						
	2- Septage management	Treatment and collection for 46232 service connections. Use biodigester with anaerobic filter and sedimentation drieding ponds	376,848	Construction	103.1	6 years	2.6 pesos per cubic meter		Septage ordinance User Fee	To support septage program , avail of services, support fee
				Annual Operations- Treatment	22.1					
				Annual Operations- Collection	10.9					
	3- Sewerage and wastewater treatment for urban core	Interceptor for 3.6 km of river front with 12 outfalls. Then pumping 4 km to treatment. Serving 190,000 people in urban core	190,000	Construction	228	10 years			Sewer ordinance requiring connection within 35 meters and proper septic tanks for new construction . Fees	To support user fee and proper septic tanks and connections
				Annual Operations- Treatment	18					
				Annual Operations- Collection	16					
	4-Wastewater system for public market	ABR/SBR for 1500 dry stalls, 400 food service, 350 meat, fish and vegetable stalls	5,000	Construction	9.2	5 years	5 pesos per stall per day		User Fee, Market Vendors Assoc	Healthy Markets Initiative - Promotions on Food Safety, Sanitation
				Annual Operations- Treatment	1.3					
				Annual Operations- Collection	0.3					

6 Financing Projects

In addition to current sources of financing such as national and international transfers, private capital and local income, the following fund sources should be employed in order to meet the NSSMP targets: 1) charging user fees; 2) private sector through concession agreements or management contracts; and 3) co-financing by DPWH from its general appropriations and by the National Water Quality Management Fund (NWQMF) and the Area Water Quality Management Fund (AWQMF).

6.1 User Fee

Cost recovery is essential for insuring that wastewater services will be sustainable. LGUs and WDs should charge user fees not just to meet cash flow needs but also to achieve full cost recovery over the long term. The spreadsheet-based toolkit included in the NSSMP Guide (Annex B) estimates the minimum user fee to fund capital costs, operations and maintenance, and future capital requirements.

For effective pricing, the LGU/WD will need to consider affordability, willingness to pay and the effects of the pricing scheme (conservation pricing scheme[3] vs. a uniform charge per cubic meter of water used) on the revenues. They can estimate users' willingness to pay by conducting surveys.

A common way to collect user fees is through the water bill. Each property owner pays for both water and sewerage or septage services through their monthly utility bill. This approach works well if a water district is present and involved in providing sanitation services.

6.2 Concession Agreement or Management Contract

A concession agreement allows the private sector to infuse its own funds into a project by giving it a chance to recoup its investment and make a reasonable profit over a defined time or concession period. The concession agreements between the government and the two Metro Manila concessionaires prove the feasibility of this model. A management contract can also be used for septage management projects since it is an agreement that engages the services of a private operator to deliver a service. Manila Water has been employing this model in its desludging operations. It has engaged the services of a private desludger that is paid based on the volume of septage that it collects and transports to the treatment facility.

6.3 Co-financing from DPWH

For projects that require significant investment requirements, co-financing should be provided by the national government. The CWA encourages LGUs to submit a list of their priority projects to DPWH, which will subsequently include the investment requirements of the projects in its annual funding request to Congress. The process for LGUs and WDs to follow in requesting

[3] This involves charging a higher unit price as consumption rises.

funds from DPWH is contained in the NSSMP Guide (Annex B). Targeted technical assistance should be provided to LGUs/WDs and DPWH to enhance their capacities in project development and project evaluation, respectively. The funding for this assistance may come from donor agencies or the national or area WQMFs.

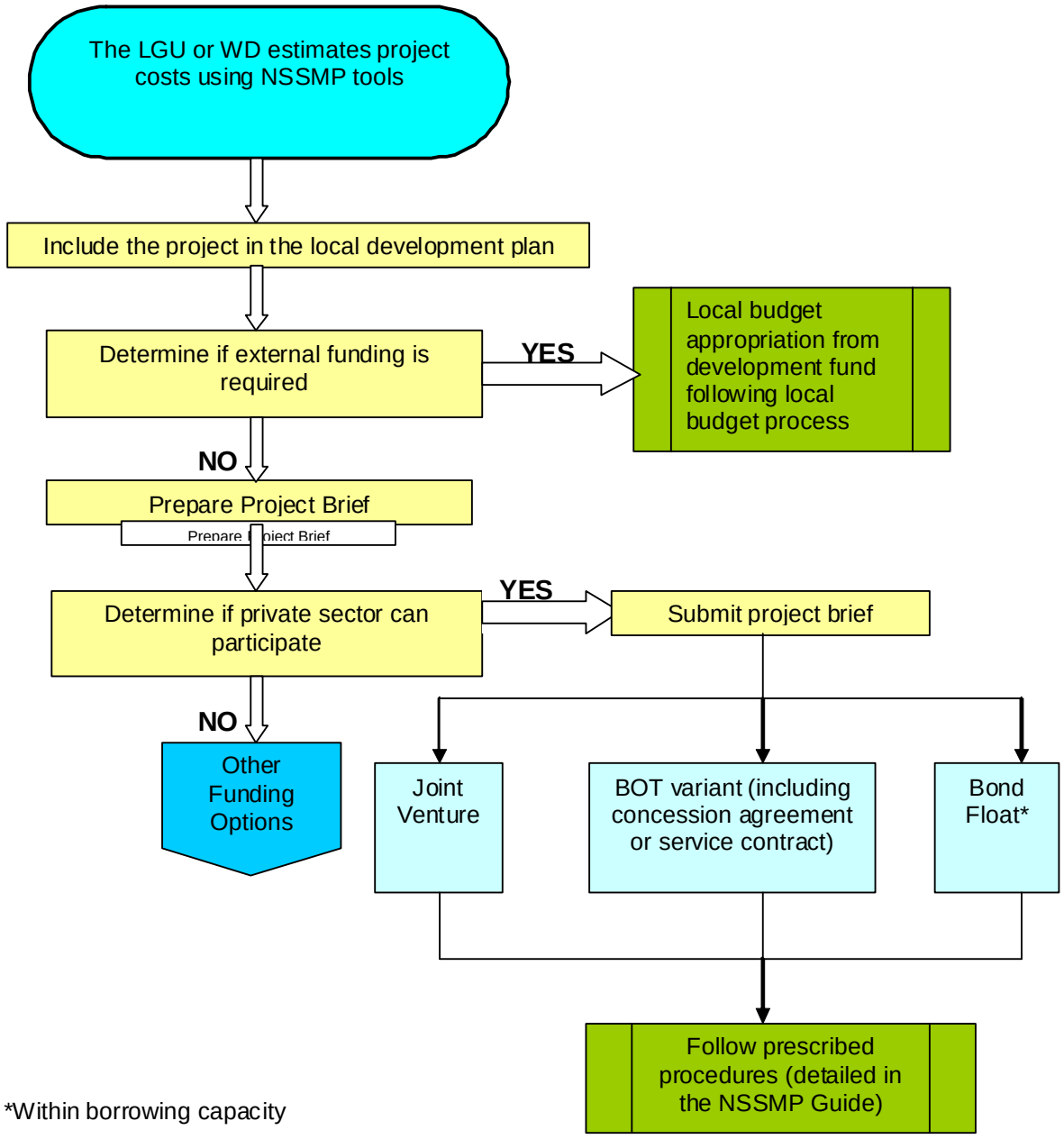
6.4 Water Quality Management Funds

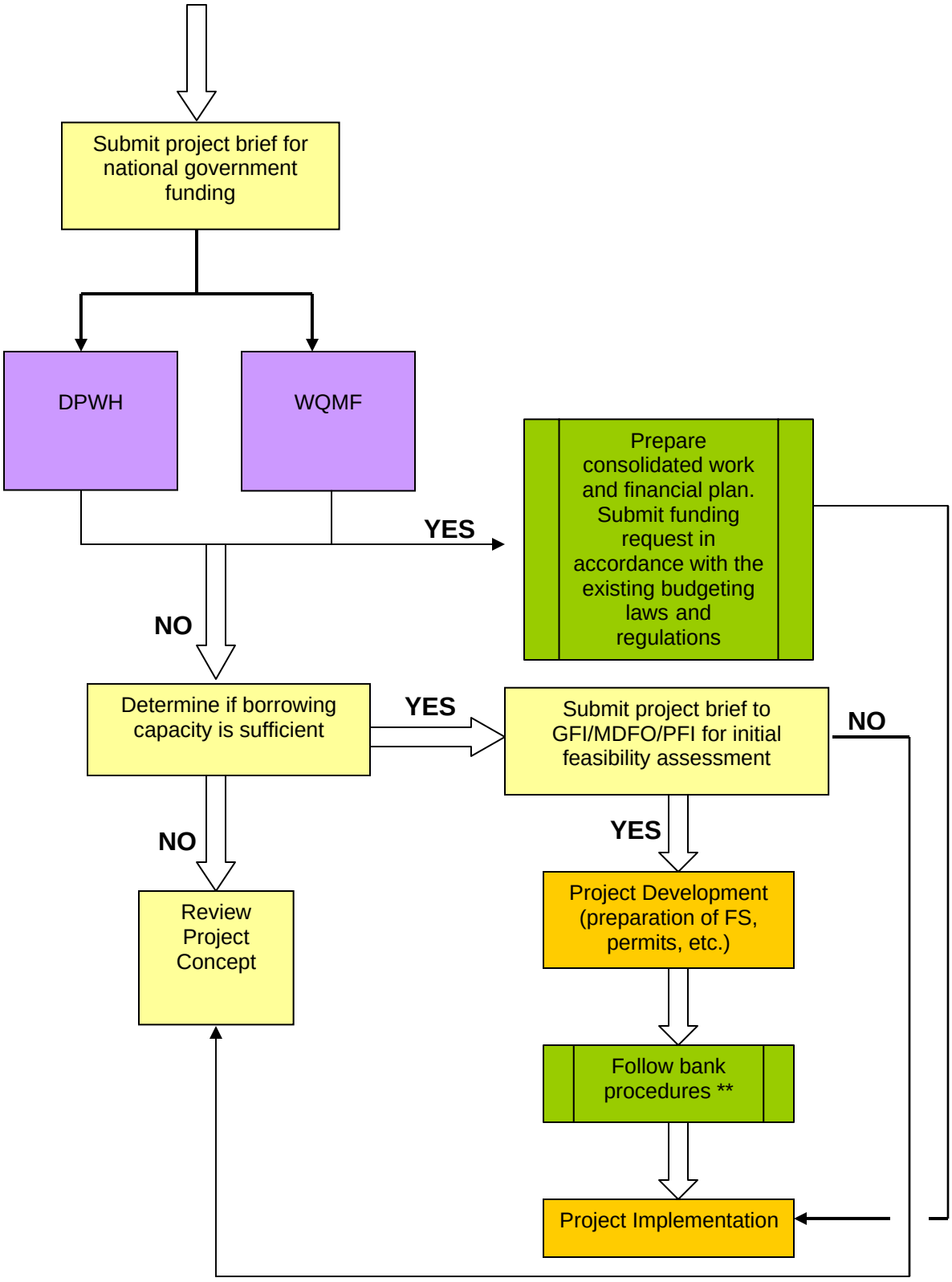
Both the NWQMF and AWQMFs were established by law under the Clean Water Act (CWA) and will be managed by DENR. However, the guidelines for their establishment and use are still pending with DENR. The amount of money in these funds might not be large enough to support large sanitation infrastructure projects, so perhaps only smaller LGUs or WDs will access capital financing from these funds. Funding for technical assistance, feasibility studies or support for promotions campaigns may be awarded to larger LGUs/WDs. The use of the AWQMFs will be determined by the WQMA Governing Board, but the Environmental Management Bureau Director must approve the annual work and financial plan.

6.5 Financing Framework

Figure 9 lays out the key processes in the financing framework**.** The detailed steps for LGUs and WDs to follow are contained in the NSSMP Guide (Annex B).

Figure 9. Key Financing Processes





** A guarantee from another entity may be required by private banks to support the loan

Annex A: Computation of Targets

Likely Septage Projects in 10 years

	Number of Projects	Pesos	Dollars	Average cost per project $$	Number of people with septage management
Division 1 (HUCs) - 75% will implement	28	1,761,245,689	36,692,619	1,322,257	6,437,213
Division 2 (100K - 200K) - 50% will implement	14	361,519,615	7,531,659	557,901	1,321,326
Division 3 (50K - 100K) - 25% will implement	16	207,979,286	4,332,902	279,542	760,148
Total	57	2,330,744,589	48,557,179		8,518,687

Likely Interceptor/Sewerage Projects in 10 years

		Number of Projects	Pesos	Number of people with access to sewerage
Division 1 (HUCs) - 75% will implement		3		
	LGU A		135,000,000	200,000
	LGU B		110,000,000	150,000
	LGU C		175,000,000	250,000
Division 2 (100K - 200K) - 50% will implement		2		
	To Be Determined		90,000,000	125,000
	To Be Determined		110,000,000	140,000
Division 3 (59K - 100K) - 25% will implement		0	0	
	Total	5	620,000,000	865,000

Summary

Number of Projects	62
Cost	2,950,744,589
Number of people	9,383,687

Annex B: Guide for Local Governments and Water Districts