Philippine Government
National Asset Management Plan (NAMP) 2022-2023

Table of Contents

List of Tables

List of Figures

1.0 EXECUTIVE SUMMARY

The formulation of the National Asset Management Plan (NAMP) is mandated under the Department of Finance (DOF)-Department of Budget and Management (DBM)-National Economic and Development Authority (NEDA) Joint Memorandum Circular (JMC) No. 2020-1[1], which provides for the implementation of a Philippine Government Asset Management Policy (PGAMP). The PGAMP was issued to provide the government with the policies to operationalize an asset management system (AMS) to ensure the cost-effective management of assets. The NAMP supports the PGAMP by providing the more specific guidelines on, among others, the following:

a. Management of the government's non-financial assets to protect the rights and ownership of the national government [specifically Sec. 4.0 (Asset Management Structure and Mechanisms in the Government); Sec. 7.0 (Sustainable Planning); Sec. 8.0 (Natural Hazard Resilience Planning); Sec. 9.0 (Infrastructure Risk Management Planning); and Sec. 10.0 (Financial Planning)];
b. Mapping of asset investments [specifically Sec. 10.4 (Operations Investment); Sec. 10.5 (Capital Investments)];
c. Phasing, as necessary, of the implementation of the asset management programs of the government [specifically Sec. 4.1 (Covered Agencies and Phasing of PGAMP Implementation)];
d. Open data and public disclosure of relevant asset information [specifically Sec. 5.3 (Open Data and Public Disclosure)]; and
e. Provision of resources and capability development interventions for the bureaucracy and the agencies concerned [specifically Sec. 4.6 (Roadmap for Development and Capability Building).

Consistent with the PGAMP, the first NAMP has a two (2)-year horizon, i.e., 2022-2023, to be revisited annually, as needed. Nonetheless, succeeding iterations of the NAMP may be expanded from the initial two (2) years to three (3) years, to align with the medium-term planning processes, including the preparation of the Philippine Development Plan (PDP), the Public Investment Program (PIP), the Three-Year Rolling Infrastructure Plan (TRIP), the Medium-Term Expenditure Framework (MTEF), and other relevant planning documents. The NAMP likewise serves as a guidance document for the Agency Asset Management Plans (AAMPs) to be formulated by the covered agencies under the PGAMP, by providing a government-wide perspective on how the critical and strategically important non-financial assets of the government shall be managed, utilized or expended in accordance with laws, rules and regulations, such as the Government Accounting Manual (GAM) for National Government Agencies, as well as the pertinent asset management policies and guidelines laid down in the PGAMP and NAMP.

The first NAMP incorporates pertinent available information/data from the three (3) pilot agencies in the implementation of the PGAMP, i.e., 1) Department of Education (DepEd), 2) Department of Health (DOH), and 3) Department of Public Works and Highways (DPWH). It likewise identifies six (6) agencies that will be covered for the continued roll-out of the PGAMP in 2022, i.e., 1) Department of Social Welfare and Development (DSWD), 2) Department of Information and Communications Technology (DICT), 3) Department of Transportation (DOTr), 4) Department of Science and Technology (DOST), 5) National Irrigation Administration (NIA), and 6) Power Sector Assets and Liabilities Management (PSALM) Corporation, as part of the agencies involved in populating the National Asset Registry System (NARS), which shall be the primary facility to record the inventory of assets of the national government.

The focus of the first NAMP is on the critical and strategically important assets of the government or those which have significant socio-economic impact to the country, such as schools, government buildings, roads,

---

[1] *Implementation of a PGAMP* dated 24 September 2020.

bridges, hospitals, dams, irrigation facilities, and treatment and welfare centers. On the other hand, critical assets are those that, if they were to fail unexpectedly, would have a severe consequence on the community or its users. Knowing where the critical and strategic assets are located and in what condition they are, provides an evidential basis for funding and investment. In the future, the NAMP will cover all non-financial assets of the government.

The NAMP banks on the capability and capacity of the national government agencies (NGAs) to deliver services through the effective and efficient management of the government's assets. Hence, the NGAs will be continually provided with the necessary capability development interventions to help ensure that the AM policies and plans are successfully implemented.

The first NAMP also provides discussion on the required levels of service (LoS) for the Government of the Philippines (GOP), and the NGAs to emphasize their importance in asset management. Indeed, the specific purpose of asset management is to meet a required level of service, in the most cost-effective manner, through the management of assets for present and future customers.[2] To further illustrate this, examples of the LoS of the GOP and the three (3) pilot agencies are likewise included.

The NAMP also encapsulates the importance of sustainable and natural hazard resilience planning, as well as infrastructure risk management planning in the management of the assets of the GOP. Urbanization, population and economic growth, and disaster risks from calamities impact the management of the government's assets, which challenge the LoS currently being delivered.

With the GOP's assets being exposed to various kinds of risks, the national financial protection strategy to enhance the government's financial resilience to disaster and climate risks includes the priority to improve the insurance of public assets, since majority of the critical and strategically important non-financial assets of the government are either underinsured or not insured at all.

To further strengthen the planning, programming, budgeting, and monitoring and evaluation linkage, the NAMP discusses financial planning principles to support the GOP in delivering the best value for money for its infrastructure investment program. As infrastructure gets old, or growth exceeds its capacity to deliver, investment is required to meet the need. Hence, monitoring capacity and planning funding for this need is vital.

Since this is the first NAMP of the GOP, it is expected that continual improvement of said document will be evident in future iterations. As the GOP's asset management journey develops and the AMS matures, asset management information, processes, practices, and capability should remain appropriate to support the GOP's objectives and the PGAMP.

---

[2] International Infrastructure Asset Management Manual, 2020

2.0 INTRODUCTION

2.1. Background on the Philippine Government Asset Management Policy (PGAMP)

The PGAMP was issued under the Department of Finance (DOF)-Department of Budget and Management (DBM)-National Economic and Development Authority (NEDA) Joint Memorandum Circular (JMC) No. 2020-1 to provide government agencies with the policies to operationalize an asset management system (AMS) to ensure the cost-effective management of assets, by analyzing the lifecycle, capacity, and utilization of non-financial assets, individually and collectively, and to maximize government funds by targeting scarce resources to the most critical asset needs. More specifically, it aims to operationalize an AMS for all strategically important non-financial assets of the government to increase efficiency, improve decision-making, manage risk better, and reduce costs in government.

It maintains the policy that all resources of the government shall be managed, utilized, or expended in accordance with laws, rules and regulations, and shall be safeguarded against loss or wastage through illegal or improper disposition, to ensure efficiency, economy, and effectiveness in the operations of government. Furthermore, the responsibility to ensure that such policy is faithfully adhered to rests directly with the chief or head of the government agency concerned.

2.2 The National Asset Management Plan (NAMP) 2022-2023 Overall Framework

The NAMP is the principal document demonstrating how the goals, mission, and objectives of the Government of the Philippines (GOP) are to be successfully realized in delivering public services through the effective and efficient management of government assets.

The NAMP aims to provide a strategic national and agency level supported information that allows for prioritized, effective, and timely infrastructure investment decisions by the GOP.

Based on the PGAMP, the first NAMP shall be a two (2)-year national government-wide plan to be issued by the Development Budget Coordination Committee Technical Working Group on Asset Management (DBCC TWG-AM)[3] based on the general principles and guidelines indicated in the DOF-DBM-NEDA JMC No. 2020-1.

This NAMP 2022-2023 is developed within the framework of government policies, particularly of the PGAMP and the Updated Philippine Development Plan 2017-2022, and relies heavily on currently available and agency-provided information and data. It is also aligned to broader strategic frameworks at both national and international levels, such as the *AmBisyon Natin* 2040 and the United Nations Sustainable Development Goals (SDGs) 2030.

---

[3] The inter-agency working group composed of the Department of Budget and Management, Department of Finance through the Bureau of the Treasury, National Economic and Development Authority, and the Office of the President, which was created through DBCC Resolution No. 2019-4 (Ad Referendum Approval for the Creation of the Technical Working Group on Asset Management) dated 21 June 2019, to review and update the policies on the management of government assets to protect the rights and ownership of the national government and establish a common and homogeneous policy on the management of its non-financial assets. This TWG-AM shall continue to exist until an organic agency is tasked to take over.

The NAMP is focused on the following **key challenges**:

1. Urbanization – maintaining levels of service (LoS) for large populations
2. Rural communities – maintaining core LoS
3. Population growth – what it means for the GOP now and in the future
4. Resilience – future measures planned and underway

The NAMP intends to connect the vision, mission, strategic goals, objectives, and indicators through agency-level asset management (AM). Hence, this first NAMP is being developed ahead of the Agency Asset Management Plans (AAMPs), particularly of the three (3) pilot agencies which were determined by the DBCC TWG-AM for the initial implementation of the PGAMP, i.e., 1) Department of Education (DepEd), 2) Department of Health (DOH), and 3) Department of Public Works and Highways (DPWH). Said pilot agencies have strategically important non-financial assets, such as school buildings, roads, bridges, and hospitals. The NAMP relies on the information that will be included in the AAMPs, and will also guide their development. As asset management procedures and practices in the Philippines improve, the concurrent development practices for the NAMP and AAMPs should become normal practice.

The adoption and embedding of the NAMP and AAMPs as business-as-usual activity planning, through the PGAMP, has significant immediate and long-term benefits. These benefits include agencies utilizing, assessing, and reporting on key data; asset management-based upskilling of government personnel; and reframing the government's focus towards service delivery.

The development of the NAMP and AAMPs will require continuous effort for their significant benefits to be realized by the citizens and the country in general. These plans will be developed with strong involvement of the government agencies concerned.

2.3 Purpose of the NAMP

Asset management essentially enables an organization to realize value from assets in the achievement of its organizational objectives[4]. Hence, the NAMP serves as a vital tool to help the government realize value from its various assets towards achieving its strategic and overall objectives.

Applying good AM practices and processes will support evidence-based service delivery. Achievement of sustainable delivery includes ensuring cost-effective, targeted and timely services, aligned to agreed levels of service. Well-built, -managed, and -maintained infrastructure assets provide opportunities for further social and economic development and better quality of life. Moreover, the Philippine's economic prosperity depends, among others, on smart infrastructure investment strategies.

Effective AM provides better accountability, sustainability, risk and resilience management, service delivery and lifecycle management, and financial efficiency, as explained below:

Strong governance and accountability by:

● Demonstrating to owners, customers, and stakeholders that services are being delivered effectively and efficiently;
● Providing a transparent and auditable basis for making service/risk/price trade-off decisions;
● Improving accountability for the use of resources through performance and financial indicators; and

---

[4] 2.2 Benefits of Asset Management, PNS ISO 55000:2017, p. 1

- Providing the ability to benchmark results against similar organizations.

More effective and sustainable decisions by:

- Having robust evidence-based information to support decisions;
- Considering all viable options (including demand management) and all aspects of decisions; and
- Ensuring all lifecycle costs are included in decision processes so that the emphasis is on sustainable efficiencies, not unsustainable short-term gains.

Enhanced customer service through:

- Improved understanding of service requirements and options;
- Improved performance and control of service delivery to the required standards; and
- A more holistic approach to AM within agencies and across the whole of government, through multi-disciplinary management teams.

Effective risk management by:

- Demonstrating compliance with legal and regulatory requirements;
- Understanding the risks related to AM and service delivery and applying a framework to prioritize risk management;
- Applying business continuity practices; and
- Addressing the inter-relationships between different networks.

Improved financial efficiency by:

- Improved decision-making based on costs and benefits of alternatives;
- Prioritization of investments, interventions, and asset care activities;
- Justification for programming and funding of future works;
- Recognition of all costs of owning/operating assets over the lifecycle of the assets;
- Selecting the most effective procurement method; and
- Benchmarking condition and performance to promote innovation and efficiency.[5]

This two (2)-year plan, 2022-2023, provides specific guidelines on, among others, the following:

a. Management of the government's non-financial assets to protect the rights and ownership of the national government [specifically Sec. 4.0 (Asset Management Structure and Mechanisms in the Government); Sec. 8.0 (Sustainable Planning); Sec. 9.0 (Natural Hazard Resilience Planning); Sec. 10.0 (Infrastructure Risk Management Planning); and Sec. 11.0 (Financial Planning)];
b. Mapping of asset investments [specifically Sec. 11.4 (Operations Investment); Sec. 11.5 (Capital Investments)];
c. Phasing, as necessary, of the implementation of the asset management programs of the government [specifically Sec. 4.1 (Covered Agencies and Phasing of PGAMP Implementation)];
d. Open data and public disclosure of relevant asset information [specifically Sec. 5.3 (Open Data and Public Disclosure)]; and
e. Provision of resources and capability development interventions for the bureaucracy and the agencies concerned [specifically Sec. 4.6 (Roadmap for Development and Capability Building).

---

[5] IPWEA AM 101, Introduction to Asset Management, 2021

As will be discussed in the succeeding sections, the NAMP connects with the other pertinent development plans of the GOP, and attempts to improve the linkage between planning, programming, and budgeting, as well as monitoring and evaluation, particularly through the development of the AAMPs.

In addition to realizing the objectives and outcomes of the PGAMP, the NAMP provides a strategic overall summary of national infrastructure objectives [see Secs. 3.4 (Mission, Vision and Goals) and 3.5 (Our Targets)], infrastructure asset lifecycle management [see Sec. 11.0 (Financial Planning)], and projected costs, service levels, growth analysis, risks, and sustainability.

The NAMP provides the national strategic direction in terms of the management of the strategically important non-financial as well as critical assets of the GOP, to eventually cover all non-financial assets of the government.

Further, the NAMP is the government's blueprint for asset management, which provides the pertinent guidelines for lifecycle or Total Cost of Ownership planning, as well as strategies for balancing cost, risk, and performance.

It supports the updated financial modelling for budget and investment strategies across the GOP. It also enables informed strategic planning and decision-making to deliver changing service levels, growth, risk planning, and climate adaptation.

The AAMPs feed into this strategic NAMP document. The NAMP/AAMP development is an inter-agency collaborative process using a "bottom-up" approach for establishing detailed agency information and a strategic "top-down" approach for the NAMP. Beginning the process together will ensure those involved are supported on this journey. Part of the role that both the NAMP and the AAMPs fulfill is a full description of the resources, data and information, skills and capabilities, timelines, business processes, and systems and tools being made available.

2.4 The Philippines Meeting Infrastructure Challenges

The PGAMP prioritizes the importance of raising and addressing asset management challenges across the government. Among these challenges are: (i) asset performance; (ii) rapid urbanization; (iii) population growth; and (iv) resilience risks.

Despite these challenges, the GOP unwavers in its goal to deliver timely, efficient and effective public service.

1. **On asset performance** – Maintenance liabilities expand as the asset base grows. The national government agencies (NGAs) should evaluate the performance of their assets, their AM and AMS. Effective asset data management and the transformation of data to information is a key to measuring asset performance. Further, monitoring, analysis, and evaluation of this information should be a continuous process.[6] Asset condition and asset performance are intrinsically linked to one another. Just because an asset is in bad condition does not mean it is not performing. Conversely, an asset in good physical state may actually not perform to the necessary service level[7].

---

[6] Philippine National Standard (PNS) ISO 55000:2017, p. 9

2. **On rapid urbanization** – The AM process will guide decision-making for investment priorities. There are choices between providing for increasing demand from urbanization, while still ensuring the provision of services (through both existing and new government assets) in some rural areas.

As an example of addressing infrastructure challenges, the New Clark City project as mentioned in the published 2018 Socioeconomic Report (SER)[7], provides:

"Box Article 19.1. New Clark City - Master Plan

The New Clark City is envisioned as a new urban core north of Manila that will host businesses engaged in domestic and/or international commerce, schools and hospitals, and research and development entities. The proposed development is seen as a solution to decongest Metro Manila and spur economic development in regions outside the metropolis. Key projects include:

- Expansion of Clark International Airport;
- National Government Administrative Center Phase 1A;
- Mixed-Use Industrial Real Estate Development;
- New Clark City High-Performance Gymnasium and Sports Museum; and
- Food Processing Terminal and International Food Market."

3. **On population growth** – As part of the demand analysis and management approach, a deeper understanding of the implication of population growth (at both the national and regional levels) on infrastructure needs is achieved. This supports decision makers, having the information available to balance investment into new construction, refurbishing, and maintaining the existing infrastructure.

Population growth and urbanization present significant infrastructure opportunities. Hence, right investment means that levels of service, while being challenged, can be achieved.

As much as urban areas need infrastructure to meet growth-driven demand, there are still significant demand issues in the rural areas. At the same time, assets from the 1960s (or older assets or heritage assets) may be nearing the end of their useful life and will need more attention and funding.

4. **On resilience risks** – The Philippines is ranked 9th on the World Risk Index 2020[8] due to its high exposure to natural hazards, including geohazards (volcanoes and earthquakes), and climatic conditions such as monsoons, thunderstorms, intertropical convergence zones, typhoons and El Niño. The cost of these events in human lives and monetary terms has reached a point where the Philippines has taken a significant shift towards adaptation. Through the AM process, resilience needs are determined as part of an integrated process to ensure that appropriate resilience improvements are made in the context of the many other infrastructure needs such as refurbishment and providing for demand increase.

One success story on this aspect is the mainstreaming of disaster risk reduction in subnational development and land use/physical planning in the Philippines.

As one of the world's largest archipelagos, the Philippines experiences all types of weather events. The coastline is therefore significant, and most areas are low-lying countryside. Hence, spatial planning of settlements is a logical starting point for resilience improvements.

---

[7] https://neda.gov.ph/wp-content/uploads/2019/07/SER-Chapter-19.pdf, accessed on 03 December 2021
[8] "World Risk Report 2020"; Bündnis Entwicklung Hilft (2020) https://www.WorldRiskReport.org

The NEDA implemented recommendations from the National Land Use Committee's action agenda that seeks to strengthen disaster mitigation by: (a) making available hazard maps and relevant disaster information; (b) enhancing local capacity to institute preventive/mitigating measures; and (c) preparing disaster risk reduction enhanced regional and provincial physical framework plans. In addition, a series of online tools and data for natural hazards and risk assessment are provided.

As another example, the COVID-19 pandemic has, and continues to have, significant impacts locally, nationally, and internationally. We Recover as One[9] revisits the programs, activities, and projects that will continually ensure the following:

- Healthy population
- More agile workforce
- Reliable digital technology and infrastructure
- Resilient business environment

The abovementioned risks are opportunities for prudent investment in infrastructure.

---

[9] *We Recover as One* is the report of the Inter-Agency Task Force for the Management of Emerging Infectious Diseases – Technical Working Group for Anticipatory and Forward Planning (IATF – TWG for AFP) led by the National Economic and Development Authority (NEDA)

3.0 STRATEGIC ALIGNMENTS

The strategic actions and expected outcomes from the NAMP and AAMPs are considered in short-term (0-2 years), medium-term (3-6 years) and long-term (6-20 years) timeframes:

Table 1: NAMP and AAMP Timeframe and Anticipated Actions

Timeframe	Anticipated Asset Management Actions
Short-Term (0-2 years)	- Starting now, embed AM practices in day-to-day activities. This is supported through continued NAMP/AAMP development, and through the conduct of AM trainings and capability-building activities. - Meet the government budgetary requirements by focusing on identifying and gathering the right data and information, then analyzing these to support investment opportunities to address demand, resilience, risk management, and service needs challenges. - Develop business cases which provide direct line-of-sight between investment and beneficial outcomes.
Medium-Term (3-6 years)	- Collect standard and consistent data and information from a greater number of government agencies and aggregate them to provide expanded clarity on the wider Philippine infrastructure funding needs. - Support infrastructure investment decisions, budgetary requirements and AM activities through the timely supply of consistent and trusted information. - Identify improvements and opportunities in AM through monitoring of strategic goals and objectives, including the United Nations SDGs 2030 and national strategic and development plan objectives. This will be achieved by embedding AM procedures and practices across the GOP. - Achieve a better understanding and coordination of risk-based strategic resilience planning of assets under one framework.
Long-Term (6-20 years)	- Embed AM practices across the whole of the GOP, providing evidence-based support for investment and budget decisions. The whole of GOP AM practices are embedded as part of "What We Do". Investment decisions and budgetary requirements established through business case processes become routine practice. - Citizens benefit from improvements in their standard of living and experience of service delivery, in line with *AmBisyon Natin* 2040.

The NAMP is envisioned to be revisited annually, as needed, and its time horizon may be expanded from the initial two (2) years to three (3) years in the development of the succeeding NAMPs, to align with the medium-term planning processes, including the preparation of the Philippine Development Plan (PDP), the Public Investment Program (PIP), the Three-Year Rolling Infrastructure Plan (TRIP), the Medium-Term Expenditure Framework (MTEF), and other relevant planning documents.

3.1 Linkage of the NAMP with Other Plans/Documents and the Agency Asset Management Plans (AAMPs)

3.1.1 Link with the Updated Philippine Development Plan (PDP) 2017-2022

The Updated PDP 2017-2022 has been made more responsive to current, emerging and future needs and challenges in different areas and sectors. The Philippines aims to be better prepared and more resilient to any kind of disasters. The Updated PDP 2017-2022 also takes into account the country's international

commitments, including the United Nations SDGs 2030, and serves as a strong foundation for *AmBisyon Natin* 2040[10].

Relatedly, the PGAMP, with the NAMP and AAMPs, will help ensure that the country's development plans are supported by an effective asset management system for all strategically important non-financial as well as critical assets of the government to increase efficiency, improve decision-making, manage risks better, and reduce costs in government.

Chapter 19 of the Updated PDP 2017-2022, which pertains to accelerating infrastructure development, covers, among others, the priorities, strategic framework, targets, strategies and even challenges of infrastructure development in the country.

The PDP recognizes the value of promoting disaster-resilient infrastructure. Hence, under the Updated PDP 2017-2022, the DPWH will conduct an assessment of the structural integrity of existing structures to ensure safety and resilience to natural hazards, particularly during earthquakes. Moreover, the stringent implementation of policies on the issuance of permits for buildings, especially residential, will also be assessed.[11]

The PDP also aims for the housing and urban development sector to pursue building safe, resilient, and sustainable communities through the Building Adequate, Liveable, Affordable, and Inclusive Filipino Communities (BALAI) program, in partnership with the private sector, LGUs, and the communities.[12]

The NAMP supports all the principles and guidelines on asset infrastructure enunciated under the PDP. Since infrastructure underpins the people's standard of living, the GOP must ensure that its infrastructure assets are managed in the best way possible to (a) ensure *resilience* (services will keep functioning), (b) provide *sustainability* (services can be provided as long as they are needed), and (c) ensure services are *economic* (services can be provided cost-effectively).[13] Hence, the GOP has to invest in necessary infrastructure that reaches as many people as possible at an affordable cost.

3.1.2 Link with the *AmBisyon Natin* 2040

Under the *AmBisyon Natin* 2040, the vision is for all Filipinos to enjoy a strongly rooted, comfortable, and secure life (*Matatag, Maginhawa at Panatag na Buhay*) by 2040.

The "*Matatag, Maginhawa at Panatag na Buhay*" could be achieved by, among others, ensuring that the country has infrastructure assets that are sufficient to meet the demands of the people over time. This is precisely the purpose of AM: to meet a required level of service, in the most cost-effective manner, through the management of assets for present and future customers[14].

Specifically, for the Filipinos to have a comfortable (*maginhawa*) life, the *AmBisyon Natin* 2040 includes good transport facilities and opportunities for travel and vacation as among the identified needs of the Filipino people.

---

[10] *https://pdp.neda.gov.ph/updated-pdp-2017-2022/,* accessed on November 9, 2021
[11] Updated PDP 2017-2022, p. 213
[12] *Ibid.*, p. 61
[13] Institute of Public Works Engineering Australasia (IPWEA), AM 101
[14] International Infrastructure Asset Management Manual, 2020

Infrastructure impacts people's lives everyday and supports their way of living. Therefore, infrastructure and property assets should meet the social and recreational needs of the community.[15] Further, good infrastructure supports sustainable societies, hence, building resilient infrastructure is imperative.[16]

3.1.3 Link with the Public Investment Program (PIP)

Infrastructure undoubtedly represents a huge investment from society.[17]

The 2017-2022 PIP contains the rolling list of programs, activities and projects (PAPs) to be implemented by the national government (NG), government-owned or -controlled corporations (GOCCs), government financial institutions (GFIs), and other national government offices and instrumentalities within the medium-term (or the plan period from 2017 to 2022), that contribute to the achievement of the societal goal and targets in the PDP and responsive to the outcomes and outputs in its results matrices.[18]

The NAMP likewise supports the implementation of the PAPs as indicated in the PIP.

3.1.4 Link with the Three-Year Rolling Infrastructure Program (TRIP)

The TRIP synchronizes the infrastructure planning, programming, budgeting and execution processes of the government both at the oversight and implementing agency level to ensure that the agencies' annual budget ceilings are optimized and utilized in the funding of priority infrastructure programs/activities/projects (PAPs), which are responsive to the outcomes and outputs under the PDP and are readily implementable to minimize underspending, expenditure realignments or cost overruns. The TRIP can also be used by the government as a programming and monitoring mechanism in ensuring that the NG target spending on public infrastructure shall be met.[19]

3.1.5 Link with the Medium-Term Expenditure Framework (MTEF)

DBM Budget Circular (BC) No. 2008-2[20] provides that for 2007 and 2008 and over the medium term, the priority areas approved by the President for funding include basic education, health, and infrastructure development. This is consistent with the identification of the pilot agencies for the implementation of the PGAMP. For FY 2022, the expenditure priorities of the National Government will remain consistent with the 0-10 Point Socioeconomic Agenda, the Updated Philippine Development Plan, and the latest TRIP[21].

---

[15] Institute of Public Works Engineering Australasia (IPWEA), AM 101

[16] *Ibid.*

[17] Institute of Public Works Engineering Australasia (IPWEA), AM 101

[18] https://neda.gov.ph/public-investment-programs/, accessed on November 25, 2021

[19] DBM-NEDA Joint Circular No. 1 *(Policy Guidelines and Procedures for the Formulation of the Three-Year Rolling Infrastructure Program)* dated 29 January 2016

[20] *Policy Guidelines and Procedures for New Spending Proposals* dated 22 April 2008

[21] National Budget Memorandum (NBM) No. 141 (*Budget Priorities Framework for the Preparation of the FY 2022 Agency Budget Proposals*) dated 15 June 2021

3.1.6 Link with Other Guidelines

The NAMP likewise supports the guidelines and strategies enunciated under the DBM-NEDA Joint Circular (JC) No. 1[22], including other pertinent guidelines on the management of government assets, such as the National Guidelines on Internal Control Systems (NGICS) issued under DBM Circular Letter (CL) No. 2008-8 dated 23 October 2008, supplemented by the Revised Philippine Government Internal Audit Manual (RPGIAM) which was issued through DBM CL No. 2020-8 dated 26 May 2020, as well as the Government Accounting Manual (GAM) for National Government Agencies.

3.1.7 Link with the AAMPs

The GOP is working to adopt the coordinated set of activities that together make up best practice AM, to support the government's effective and efficient delivery of services. The future expectation is that separate, linked national- and agency-level strategies addressing strategic planning, business processes and information systems will be developed through the agencies' detailed work programs and procedures and outline of the key steps that align with the PGAMP. The PGAMP and the AM strategies of the NGAs concerned, particularly of the three (3) pilot agencies involved in the roll-out of the PGAMP, i.e., DepEd, DPWH, and DOH, are incorporated into the first NAMP and will ultimately be considered in the preparation of the AAMPs.

The figure below shows the NAMP and AAMP relationships to strategic plans and documents:

Figure 1: NAMP and AAMP Relationships to Strategic Planning and Documentation

---
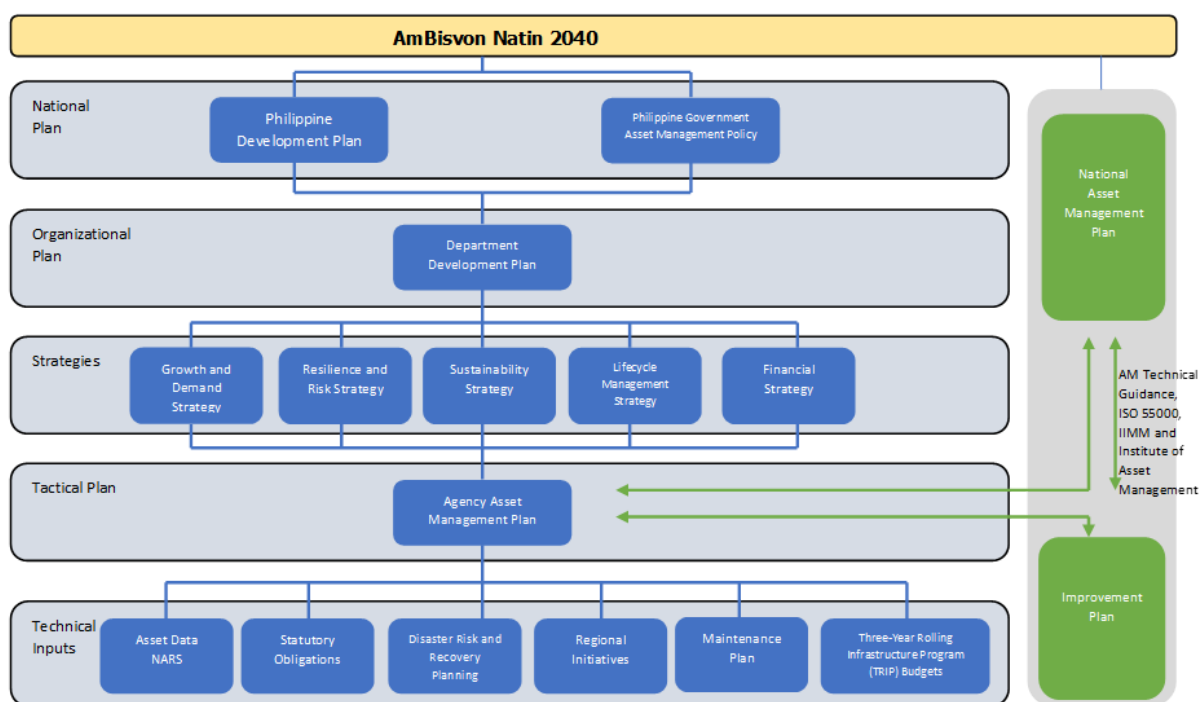
[22] *Guidelines on the Rehabilitation or Construction of Government Buildings/Office Space and the Acquisition or Outright Purchase of Lot and Building* dated 20 October 2016

3.2 Our Partners, Customers, and Key Stakeholders

To enable an efficient level of service, we have identified the partners, customers, and stakeholders relevant to our infrastructure, for a whole-of-government and whole-of-society approach.

Table 2: Partners, Customers, and Key Stakeholders

Category	Customer Groups
The Wider Community	Includes citizens, business/private sector, and community groups
Key Partners	- National government agencies - Local government units - Subject matter experts - Development partners
External Stakeholders	- Contractors, suppliers, and consultants engaged by the GOP - Non-government organizations
Internal Stakeholders	- DBCC TWG-AM - Agency Working Groups on Asset Management

3.3 Overarching Guidelines on the Management of Government Assets

The efficient and effective management of government's assets is key to the achievement of the *AmBisyon Natin* 2040 and other strategic objectives of the government.

Since the responsibility to take care that the AM policy to manage, utilize, or expend government assets is in accordance with laws, rules and regulations rests directly with the chief or head of the government agency concerned, it is vital that top management support is provided in the implementation of its AMS.

Further, the top management, employees and even stakeholders of the NGAs should implement planning, control activities, e.g., policies, processes or monitoring actions, and monitoring activities, to exploit opportunities and reduce risks to an acceptable level.[23]

Infrastructure and financial planning will ensure that the use of scarce resources is maximized and that services are equitably funded over time.[24]

Hence, the importance of efficient and effective management of government's assets cannot be overemphasized. The same is needed for sustainable development, consistent with the objective of asset management to meet a required level of service in the most cost-effective manner, through the management of assets for present and future customers.[25]

---

[23] PNS ISO 55000:2017, p. 2
[24] IPWEA AM 101, Introduction to Asset Management, 2021
[25] *Ibid.*

3.4 Vision, Mission, and Goal

The GOP manages its infrastructure for the benefit of the people, and there are many opportunities and challenges along the way to achieve the strategic goals.

To see how the government is progressing, it is important to continue to gather data and information and report against global frameworks. These frameworks include the Human Capital Index, The Sendai Framework for Disaster Risk Reduction 2015-2030, and the United Nations SDGs 2030.

The *AmBisyon Natin* 2040 states that, "Government, in particular, must use its tools of fiscal, monetary and regulatory policies to steer the development path towards enabling Filipinos to attain their *AmBisyon*."

<u>and</u>

"Government must also ensure that economic growth is broad-based across sectors and regions…"[26]

The vision, mission, and goal of the GOP are broadly, as follows:

Vision: *Matatag, maginhawa at panatag na buhay* for the Filipino people

Mission: Government shall deliver public services to the Filipinos in a sustainable, cost-effective and timely manner

Goal: Recognizing that infrastructure is the backbone of economic growth, all government asset management responses shall be harmonized through NAMP and AAMP processes, which ultimately steer the direction to which all agencies shall manage and allocate their resources to ensure unhampered and sustainable delivery of public services

3.5 Our Targets

The GOP, through the DBCC TWG-AM and the use of the PGAMP and the NAMP, has the responsibility for ensuring that the AM processes to manage critical and strategically important non-financial assets are developed over time.

In addition to targets based on physical asset performance, the wider governmental targets for AM practice are set out, as follows:

    a.   Inter-agency collaboration
    b.   Operational continuity and business recovery
    c.   Faster and more regular deployment of maintenance and management services
    d.   Improved decision support mechanisms
    e.   Prioritization of assets for insurance coverage
    f.   More focused investments
    g.   Greater budget control
    h.   Efficient/cost-effective spending on existing/used infrastructure

---

[26] https://2040.neda.gov.ph/about-ambisyon-natin-2040/, accessed on 03 December 2021

Chapter 19 of the PDP Results Matrices (RM) 2017- 20221 contains the indicators and targets for 2017-2022. Chapter 19 of the RM sets the societal goal the GOP wishes to achieve with accelerating infrastructure development. This societal goal is then broken down into more attainable indicators in the form of the intermediate goals, which are in turn expounded by chapter outcomes and sub-chapter outcomes.

The aforementioned goal and outputs for Chapter 19 are as follows:

Societal Goal: To lay down the foundation for inclusive growth, a high-trust society and a globally competitive knowledge economy created.

Intermediate Goal 1: Reducing inequality.
Chapter Outcome 1: Access to economic opportunities increased.
Sub-Chapter Outcome 1.1: Competitiveness and productivity of economic sectors increased.
Sub-Chapter Outcome 1.2: Gaps in basic infrastructure for human capital development reduced.

Chapter Outcome 2: Human capital development accelerated.
Sub-Chapter Outcome 2.1: Gaps in basic infrastructure for human capital development reduced.

Chapter Outcome 3: Vulnerability of the poor reduced.
Sub-Chapter Outcome 3.1: Safety and security against natural and man-made disasters, especially for the poor, improved.

Intermediate Goal 2: Potential growth increased.
Chapter Outcome 1: Technology adoption advanced and innovation stimulated.
Sub-Chapter Outcome 1.1: Innovative solutions and technologies encouraged/adopted.

Within Chapter 19 of the PDP 2017-2021, "ensuring asset preservation" is among the major strategies for the infrastructure sector. This entails the GOP's continued commitment to strengthen its role in coordinating infrastructure management and emphasizing sustainability, safety and resilience. The specific measures to implement such strategy are:

a. Increased technical and financial capabilities for operations:
- Strengthen regulatory oversight and personnel capacities in various departments for infrastructure planning, management, and operation;
- Mainstream value engineering and value analysis principles at various stages of project development;
- Formulate, use and mainstream technical manuals or guides, such as the DPWH Standard Cost Estimation Manuals in estimating project cost;
- Establish the Philippine Railway Institute to serve as the country's center for skills training, safety management, certification or licensing, and technology innovation;
- Spearhead efforts to improve the allocation of infrastructure budget and the spatial location of infrastructure projects; and
- Develop various infrastructure information databases to aid government entities in formulating, updating, and implementing infrastructure plans and programs.

b. Incorporation of climate change adaptation and disaster resilience measures:
- Consider disaster risk reduction and climate change adaptation strategies to ensure resilient infrastructure facilities; and
- Formulate and implement a national master plan for flood and drainage, which will outline concrete projects for the different flood-prone and affected areas in the country.

c. Enhancement of the security of infrastructure facilities:
- Enhance the security of the country's infrastructure through proactive and coordinated efforts among government agencies.

On the other hand, an example of an agency performance target which may be sourced from Performance Governance System (PGS) end-of-year reporting is the DOH's strategic objective to ensure that 90% of existing health care facilities have two (2) floors (ground, at least walking access first floor) within 10 years from now. To achieve this target, construction or reconstruction of 500 health care facilities will be required and 100% of future facilities will be designed and constructed to this standard.

4.0 ASSET MANAGEMENT STRUCTURE AND MECHANISMS IN THE GOVERNMENT

4.1 Covered Agencies and Phasing of PGAMP Implementation

Consistent with the PGAMP, the NAMP covers all NGAs and instrumentalities under the Executive Branch, including the state universities and colleges (SUCs), GOCCs, GFIs, government corporate entities (GCEs), and government instrumentalities with corporate powers (GICPs). These government entities are mandated to implement the PGAMP and NAMP, establish their respective AM working groups, and submit the AAMPs.

The Legislature, the Judiciary, Constitutional Commissions and the Office of the Ombudsman, as well as the local government units (LGUs), may likewise adopt their respective asset management plans in accordance with the principles and framework under the PGAMP and the NAMP.

4.1.1 Submission of the AAMPs in FY 2022

For FY 2022, the three (3) pilot agencies, i.e., DepEd, DOH and DPWH, are required to start preparing their respective AAMPs, initially using the template provided under Annex A of the DOF-DBM-NEDA JMC No. 2020-1, which provides the minimum information requirements for the AAMPs. These AAMPs shall further be improved/developed once the updated AAMP template has been issued by the DBCC TWG-AM by the 1st Quarter of 2022.

Further, with the continued implementation of the PGAMP, the following NGAs/GOCCs are likewise mandated to formulate their respective AAMPs, as part of the agencies involved in populating the National Asset Registry System (NARS):

1. Department of Social Welfare and Development (DSWD)
2. Department of Information and Communications Technology (DICT)
3. Department of Transportation (DOTr)
4. Department of Science and Technology (DOST)
5. National Irrigation Administration (NIA)
6. Power Sector Assets and Liabilities Management (PSALM) Corporation

Similar to the three (3) pilot agencies, the aforesaid six (6) agencies could initially use the template provided under Annex A of said JMC in formulating their respective AAMPs, with further improvements/developments to be incorporated once the updated AAMP template has been issued by the 1st Quarter of 2022.

The timeline for the submission by the pilot agencies, as well as the aforesaid six (6) NGAs and the next batch of NGAs that will be included in the roll-out of the PGAMP, of their respective AAMPs to the DBCC TWG-AM, shall be included in subsequent issuances by the latter through an inter-agency issuance and/or advisory.

Per the PGAMP, as part of their oversight functions, the monitoring and evaluation of the AMS, as well as the AAMPs of the agencies concerned, shall be done by the NEDA, DBM and the BTr annually during the regular planning, budgeting and financial reporting process. The detailed guidelines on the processing and review of the AAMPs shall be formulated by the NEDA, DBM, and BTr, and may be revised from time to time through the DBCC TWG-AM.

As may be necessary, the NEDA shall take the lead in the coordination of activities to ensure that the NAMP and AAMPs align with national and sub-national (area-wide, regional, and local) development.

On the other hand, the BTr shall continue to be responsible for the management, updating, and maintenance of the NARS.

Lastly, the DBM shall be accountable for monitoring budget execution and oversight.

4.2 Assets Covered by the NAMP

Being a government-wide plan, the NAMP will, in the future, cover all non-financial assets of the government, including lands (such as, but not limited to, those with buildings, used for agricultural purposes, or idle), buildings, infrastructures, and other critical assets as determined by the agencies concerned. On the other hand, motor vehicles, mobile devices, furniture, and other non-critical assets are being excluded in the initial roll-out of the PGAMP. In this first NAMP and AAMPs of the pilot agencies, the non-financial assets covered will be clearly stated in the respective plans.

Further, since this is the first ever NAMP, focus is given to the critical and strategically important non-financial assets of the government or those which have significant socio-economic impact to the country, such as schools, government buildings, roads, bridges, hospitals, dams, irrigation facilities, and treatment and welfare centers. These are the assets that support growth, resilience and levels of service, aligned with the United Nations SDGs 2030, the PGAMP, *AmBisyon Natin* 2040, and the Updated PDP 2017-2022 outcomes. Having good asset data is key to supporting funding requests for sustainable operations, replacement and refurbishment works programs. Knowing where the critical and strategic assets are located and in what condition they are, provides an evidential basis for funding and investment.

4.3 Critical and Strategically Important Non-Financial Assets

The DBCC TWG-AM is responsible for ensuring that the AM processes to manage strategically important assets are developed over time.

Strategic assets may include:

- Those assets providing a specific function, capacity and level of service (often established by using an asset hierarchy); and
- Specific complex assets or single assets with high financial value.

"Strategic assets" are considered differently from "critical assets"[27]. Critical assets are established through a process of categorizing the risks to continuity of services provided by particular facilities or assets.

Criticality can be determined from a combination of risks or potential impacts, such as population serviced, issues that disruptions to service could cause, or asset's resilience to man-made or natural crises events.

---

[27] Likely to result in a more significant financial, environmental, and social cost in terms of impact on organizational objectives (IPWEA, AM 203). Asset having potential to significantly impact on the achievement of the organization's objectives (PNS ISO 55000:2017, p. 14)

A critical asset is a specific infrastructure that, if it were to fail unexpectedly, would have a severe consequence on the community or its users.[28] Examples of critical assets are expressway roads, key bridges, central hospitals, major school campuses, and facilities required in disaster response and recovery actions. Ensuring that critical assets are available in both normal operations and when planning for adverse events may be a driver of focused maintenance, replacement, rehabilitation, improvement programs, and decision-making.

Thus, assets can be both critical and strategic if they have significant impact to the country and their failure will have severe consequences on the community or its users. On the other hand, an asset can be considered strategic but not necessarily critical, e.g., for roads, all national roads are strategic, while only expressway roads are considered critical.

In this regard, the agencies shall include in their AAMPs their strategically important non-financial, as well as critical assets, so these could be given priority for funding in their lifecycle.

Examples of the critical and strategically important non-financial assets of the DPWH are found below:

Table 3: Strategic and Critical Assets of the DPWH under the NARS[29]

Asset Type	Number/Length	Remarks/Notes (e.g., Ownership or Maintenance Responsibility)
Department of Public Works and Highways		
National Roads	**33,212.618 kms** *(as of October CY 2021)*	*This asset type includes all paved (concrete and asphalt) and unpaved (gravel and earth) national roads which are owned and maintained by DPWH. National roads under the Bangsamoro Autonomous Region in Muslim Mindanao (BARMM) are excluded from this summary.*
National Bridges	**8,546 no. of bridges/ 388.057 kms** *(as of October CY 2021)*	*This asset type includes all permanent (concrete and steel) and temporary (bailey and timber) national bridges which are owned and maintained by DPWH. National bridges under BARMM are excluded from this summary.*
Road Slope Protection	**410.67 kms** *(as of October CY 2021)*	*This asset type is found along national roads, owned and maintained by DPWH.*
Flood Control and Drainage Structures	**9,989 units/ 1,866.49 kms** *(as of June CY 2020)*	*This includes all types of flood control and drainage structure systems owned and maintained by DPWH.*
National Government Owned Buildings	**6,341 no. of buildings** *(as of June CY 2021)*	*This asset type includes all DPWH buildings and other government buildings owned by different NGAs, excluding GOCCs and LGUs, repaired/maintained (excluding rehabilitation/retrofitting/ expansion/reconstruction) by DPWH pursuant to Executive Order (EO) No. 285, s. 1987.*
Dredge Fleet and Supporting Vessels	**161 units** *(as of September CY 2021)*	*This asset type is composed of Multi-Purpose Amphibious Dredges (MPADs), Amphibious Excavators (AEs), Cutter Suction Dredges (CSDs), Support Vessels (SVs), Auxiliary Equipment, and Land-based Equipment, owned, maintained, operated and managed by DPWH.*

---

[28] IPWEA, AM 101, Introduction to Asset Management, 2021
[29] Data provided by DPWH, November 2021

4.4 Oversight Agencies and Bodies/Entities

4.4.1 The Development Budget Coordination Committee Technical Working Group on Asset Management (DBCC TWG-AM)

This NAMP is developed by the DBCC TWG-AM, which includes the DBM, NEDA, DOF through the BTr, and the OP. The DBCC TWG-AM has the responsibility to support the NGAs in adopting and developing appropriate maturity in AM practices, processes and systems.

For this stage of the PGAMP implementation, the NAMP was developed before the AAMPs. Therefore, only core information were sourced from the pilot agencies through direct information requests. For future iterations of the NAMP, most information are expected to be sourced from the AAMPs.

Further, the PGAMP has put in place the requirement that AM roles, responsibilities, and functions are to be shared between agencies, which remain responsible for the AM requirements of their sector, e.g., DepEd, DOH, and DPWH.

The DBCC TWG-AM was created under DBCC Resolution No. 2019-4[30] to review and update the policies on the management of government assets to protect the rights and ownership of the national government and establish a homogeneous policy on the management of its non-financial assets.

The specific responsibilities of the DBCC TWG-AM are the following:

1. Review, update and issue the policies on the management of government assets to protect the rights and ownership of the government, in coordination and consultation with the agencies and other stakeholders concerned;
2. Formulate the two-year NAMP and update this as needed;
3. Provide policies on the mapping of asset investments;
4. Develop appropriate governance arrangements around the ongoing collection, management, and maintenance of the data and information gathered to ensure that the capacity to reuse and share information is strengthened;
5. Determine, in coordination with the agencies concerned, the appropriate risk financing schemes for the covered assets to ensure that the government is financially protected from any damage to or loss of its properties due to natural disasters and other hazards; and
6. Handle the coordination of the capacity development interventions needed by the covered agencies for the successful implementation of the PGAMP.

As enunciated in the PGAMP, as part of their oversight functions, the monitoring and evaluation of the AMS, as well as the AAMP of the agencies concerned, shall be done by the DBM, NEDA and BTr annually during the regular budgeting and financial reporting process.

The DBCC TWG-AM is mandated to include in the NAMP a capacity development framework which shall include a competency framework, needs assessment, and interventions needed to develop the capability of the government to implement the NAMP and AAMPs. **This capacity development framework shall be included in the subsequent iterations of the NAMP.** Currently, the DBCC TWG-AM has been handling the coordination of the capacity and capability development interventions needed by the NGAs concerned.

---

[30] *Ad Referendum Approval for the Creation of the Technical Working Group on Asset Management* dated 21 June 2019

As further provided in the PGAMP, the DBM, in coordination with the Civil Service Commission (CSC), shall determine the need to upgrade/reclassify existing or create new positions with competencies necessary for the implementation of the AAMPs.

Furthermore, under the PGAMP, the DBM, in coordination with the Department of the Interior and Local Government and other relevant agencies, shall provide the necessary policies on the sharing of responsibilities in asset management between the national government and the local government units (LGUs), in accordance with the provisions of the Local Government Code of 1991 and other pertinent laws, rules and regulations.

4.4.2 The Commission on Audit (COA)

The accounting and auditing rules and regulations in the government being developed and imposed by the COA, together with the AM principles and policies which would be mandated by the Executive Branch, must exist in harmony. Further, given that AM is a multi-disciplinary effort, the role of the Commission for the successful implementation of the PGAMP is critical.

The DBCC TWG-AM has been in coordination with the COA to involve the latter in the AM trainings, as well as in the development of the first NAMP, to harmonize the government's AM policies with the COA's rules and regulations.

4.5 Individual Agencies

The NGAs are responsible for the management of their respective assets to ensure the delivery of current and intended LoS, and maintain an inventory of these assets. They shall formulate and update their respective AAMPs.

Under the PGAMP, the covered agencies are mandated to establish their respective Working Group on Asset Management (WG-AM) to oversee the overall implementation of their respective AAMPs.

To develop the first NAMP, the AM practices and processes of the DepEd, DPWH, and DOH, as the pilot agencies in the roll-out of the PGAMP, have been included as examples. This was done through coordination and conduct of consultation meetings with said agencies, as well the administration of the maturity assessment questionnaire in the latter part of 2021 to establish the capabilities of the agency's asset management activities, i.e., what they know about their assets, enable analysis of the survey results, and inform the next steps of implementing AM practices and processes, i.e., how they will improve their asset management.

Said pilot agencies were likewise provided with capability development trainings, such as the PGAMP Executive Level Training sessions in July 2021 and the four (4) micro-credentials AM online self-paced courses from the Institute of Public Works Engineering Australasia from September to November 2021. They have also started to establish their respective WG-AM to lead in the implementation of the PGAMP in their respective agencies.

4.6 Roadmap for Development and Capability Building

Once the strategic context for the infrastructure assets is established, the next stage is to define the AM practices and processes that will support service delivery. This forms the GOP's asset management system (AMS) which defines the procedures and interactions within the government that are needed to achieve its

objectives. A robust management system enables the government to operate consistently and reliably, and provide evidence that what was planned is also what is delivered. The processes should be appropriate, consistently applied, and understood throughout the agencies.

In this regard, the government shall ensure that its AM processes and practices are appropriate and effective by, among others, establishing targets and regularly monitoring the achievement of these targets, and building an asset management capacity in the NGAs.

To ensure that AM practices and processes are appropriate and effective, the NAMP has established a process supporting both performance planning and continual improvements in AM maturity. Each AAMP shall contain improvement plans and targets for implementing identified improvements, as determined through the maturity assessment process. In turn, the NAMP summarizes the status and improvement needs at the national level and, in future years, will also report on the status of target developments.

Further, the government has begun to deliver AM capacity development to the DBCC TWG-AM member-agencies and the pilot agencies, as well as the COA, as part of the PGAMP implementation, as follows:

- Using the PGAMP guidance;
- Supporting the NAMP with AAMP purposes and deliverables;
- What will the NAMP look like – structure and content;
- Individual, structured NAMP and AAMP section development guidance; and
- Where to source data and reference information, and support inter-agency collaboration.

Hence, it could be said that skills development is the most important step for the Philippines to improve AM practices. The ongoing training and development program for asset management should be supported across the NGAs for it to be successful.

The PGAMP requires that the following is provided:

a. The DBCC TWG-AM and the agencies concerned shall include in the NAMP and AAMPs, respectively, a capacity development framework, which shall include a competency framework, needs assessment, and the interventions needed to develop the capability of the government to implement said plans.
b. The DBCC TWG-AM shall handle the coordination of the capacity development interventions needed by the covered agencies.
c. Training/educational institutions may be tapped by the DBCC TWG-AM to provide AM-related development interventions, such as the conduct of trainings and development of modules for AM.
d. The DBM, in coordination with the Civil Service Commission (CSC), shall determine the need to upgrade/reclassify existing or create new positions with competencies necessary for the implementation of the AAMPs.

Table 4: Training Structure for PGAMP Implementation

Training Component	Attendees	Details
Executive Level: General Overview	Officials and technical personnel from the DBM, DOF, BTr, NEDA, OP, COA, and pilot agencies	Introduction, an overview of asset management, development of AMPs and the benefits it provides for asset owners and oversight agencies (DBM, NEDA, BTr)
Online Micro-credentials (self-paced training)	Officials and technical personnel who will be responsible for developing the NAMP and AAMPs, as well as implementing the PGAMP	Completion of four (4) digital badges from the Institute of Public Works Engineering Australasia (IPWEA), including: 1. AM Introduction 2. Understanding the Requirements 3. Lifecycle Management 4. Asset Management Enablers
Specific Asset Management Plan Development	Officials and technical personnel who are responsible for the development of the NAMP and AAMPs	Tailored training in the development, requirements, and interpretation of the NAMP and AAMPs

The DBCC TWG-AM has developed this first NAMP through support from external technical experts. The various stages for the NAMP development include:

- Providing guidance on the NAMP template, contents and level of analysis;
- Joint planning and discussions of the data requirements between the DBCC TWG-AM Working Group (WG) and pilot agencies; and
- Review and assistance with the interpretation of the NAMP sections.

The following tables provide the competency skill level and competency area for asset data and database management:

Table 5: Competency Skill Level

Level	Level Label	Description
Can contribute	A	Contributes to the work of others but does not undertake it independently
Can do independently	B	Undertakes the work independently (though may receive contributions from others)
Can direct	C	Directs and plans the work of others and teams
Can guide and show	D	Leads the work of others

Table 6: Competency Area for Asset Data and Database Management

NARS Database Management	
Competency Category	**Description**
Understanding "*Things I have to know.*"	· Understand the value and importance of the data · How data is being used in the agency · Data flow through the organization and NARS · Knowledge of the fundamental data collection techniques used in the agency · Condition class description for each asset group · Data standards adopted in the NARS · Understand the agency referencing location system · Principles of criticality network classification · Principles of functional road classification · Structure of the NARS data tables · Relational data structure – how data items link to different tables
Execution "*Tasks I can do.*"	· Basic administrative functionalities of NARS (opening files, storing information, system backup, access remotely) · Add information to the system (import, data entry, changing data) · Create new assets in the system · Validate information and identifying quality improvements · Basic queries and reporting from the system
Application "*Knowledge I can apply to new areas.*"	· Audit processes to check the validity and quality of information · Follow system rules/protocol for creating new elements, changing existing table structures or removing information from the system · Create new data interfacing processes · Advanced reporting structure

5.0 ASSET MANAGEMENT INFORMATION SYSTEM (AMIS)

Asset management systems (AMS) include a critical component, i.e., the Asset Management Information System(s) (AMIS), which is defined as the overarching software system and associated quality management and business processes used for the storage, analysis and reporting of AM data.[31] An AMIS provides the ability to understand the assets and make the best decisions to optimize asset lifecycle costs and performance. AMIS functionality also assists in the managing and recording of work undertaken and costs. The overall benefit of an AMIS is in the improved efficiency and effectiveness of the whole AMS.

The following shows the components of an AMIS:

Table 7: AMIS Components

Procedures and Standards	Documents which define how users operate the systems, what to do with the results, and what to do in the event of errors or failures Data management procedures help to maintain data quality and reliability
People	Includes AMIS systems personnel as well as end users People bring the components together and integrate the information system into the business environment
Data	Recorded facts and figures typically stored in tabular format (as distinct from information, which is *knowledge* derived from data)
Hardware	Computers, tablets, printers, network servers, phones, data loggers, and other devices used to assist with on-line or off-line data collection, capture and viewing
Software	Systems and applications (programs) running on computers and servers A wide range of commercial software exists from simple spreadsheets to fully integrated business applications, alongside database and Geographic Information Systems (GIS) and business intelligence tools

Technical standards support management of operations planning, service delivery, and infrastructure delivery processes. These standards form the basis of the GOP's AMS, which bring policies, plans, business processes and information systems together. AMS provides assurance that AM activities will be delivered in line with organizational objectives.

The AMIS then provides a common, understood structure for data, information, and analysis supporting AM technical standards.

---

[31] Section 5.1 (c), DOF-DBM-NEDA JMC No. 2020-1

The following table should be used to support an assessment of the current status of the AMIS:

Table 8: AMIS Assessment Criteria

Aware	*Information in a combination of sources and formats. Awareness of need for asset register.*
Basic	*Basic physical information recorded in a spreadsheet in an asset register or inventory. This may be based on broad assumptions, and may not be complete.*
Core	*Sufficient information to complete asset valuation, and support prioritization of programs. This requires a moderate level of confidence in the source data.* *Asset hierarchy, attribute systems documented, metadata held.*
Intermediate	*Reliable, physical, financial, and risk attributes in a system with analysis and reporting.* *Systematic documented data collection process.*
Advanced	*Work history, type, cost, condition, and performance data held at a component level.* *Systematic and fully-optimized data collection with metadata[32].*

Assessment can be made with regard to the above standards, e.g., AMIS is relatively well-established and meets all the criteria of "Core."

The AMIS, including the software, is an essential tool for AM. Effective analysis tools are required given the size and complexity of the assets which each agency is responsible for. Ensuring interoperability of data and information between agencies is also critical.

The AMIS is core to supporting and reporting consistently and reliably on the available data.

The complexity and volume of assets owned by the GOP require an AMIS to effectively and efficiently enable consistent analysis and reporting.

As part of the AM maturity assessment process, the current state and functionality of each pilot agency's AMIS, including the tools forming the basis of their AMIS, have been reviewed.

The pilot agencies have existing functional AMIS, and these are being developed to meet the needs of the PGAMP. The oversight agencies need to ensure that pilot agencies meet the national requirement for data management. This is through collaborating in the continued population of the NARS data, and engaging in the processes to ensure interoperability with existing systems.

The NARS was developed to be the single register for national assets. The NARS software will hold and manage data with agency asset data feeding into it.

---

[32] A set of data that describes and gives information about other data. In asset management, metadata is important for consistent asset data, and for sharing data between systems and organizations (IPWEA, AM 204, Asset Management Enablers, 2021).

Table 9: AMIS and Data Availability

Agency	Level of Service/ Performance Measures	Asset Data/ Facilities Information	Financial Data/ Reporting
Government of the Philippines	Performance Governance System (PGS) Philippine Statistics Authority (PSA) OpenStat	NARS* Philippines GeoPortal	Public Investment Program Online (PIPOL)
Department of Education	PGS Basic Education Information System (e-BEIS) Program Management Information System (PMIS)	NARS* National School Building Inventory System (NSBI) School Improvement Plan (SIP)	Financial Statements complying with the latest GAM Three-Year Rolling Infrastructure Plan (TRIP) submission PIPOL Budget Execution Documents (BEDs) Budget and Financial Accountability Reports (BFARs)
Department of Health	PGS	NARS* Material Management Team/Inventory Team data management Health Facilities Registry Property Asset Management System (PAMS)**	DOH Financial Management Service (FMS) end-of-year reporting Work and Financial Plan (WFP) BEDs and BFARs
Department of Public Works and Highways	PGS Road and Bridge Information Application (RBIA) Road Condition (RoCond) Assessment Bridge Management System (BMS)	NARS* RBIA National Government Building Information Application (NGOBIA) (for public buildings)** Flood Control Inventory Application (FCIA)** Maintenance Information System on Road Slope and Bridge Repair (MIRB) Annual Infrastructure Program (AIP)	Financial Statements complying with the latest GAM Public Investment Program (PIP) submission NGOBIA (for public buildings)** Infrastructure Assets Registry (for national roads and bridges, and flood control structures)** BEDs and BFARs

*   *NARS asset inventories at 80% complete (November 2021)*
**   *Denotes AMIS/database under development*

5.1 Agency-level AMIS

Under the PGAMP, the NGAs are directed to maintain an inventory of their respective assets, as well as a risk registry, collate data and provide analysis.

The NGAs are not precluded from establishing/maintaining their respective inventory of assets, provided that they shall ensure the interoperability and integration of their systems with the NARS, and follow the standards used by the BTr in the NARS.

5.2 The National Asset Registry System (NARS)

The NARS being managed by the BTr shall remain as the primary facility to record the inventory of assets of the national government.

As of December 2021, the NARS has the following asset data:
   a. School buildings of the DepEd
   b. Roads and bridges of the DPWH
   c. Lands, buildings, hospitals and treatment rehabilitation centers of the DOH
   d. Lands, buildings, centers of the Department of Social Welfare and Development (DSWD)
   e. Lands, buildings and towers of the Department of Information and Communications Technology (DICT)
   f. Water systems and dams of the National Irrigation Administration (NIA)
   g. Power plants of the Power Sector Assets and Liabilities Management (PSALM) Corporation

Currently under works is the gathering of the assets of the Department of Transportation (DOTr) and the Department of Science and Technology (DOST).

The Asset Registry Division of the BTr has been conducting a series of seminars/webinars to the NGAs to introduce the NARS. The webinar/seminar is composed of two (2) sections: 1) Introduction to NARS; and 2) Technical Discussion on NARS. To highlight the importance of mapping or locating the assets, the webinar also provides an overview on the use of Google map in locating the longitude and latitude of an asset.

Agency data on their strategic assets or those supporting the accomplishment of their mandate are identified and are to be part of the NARS. Consultations with the agencies are done to build the technical description of the special asset or infrastructure of the agency.

During the initial stage of the development of the NARS, the assets to be included, as well as the pilot agencies, were based on the identification by the NEDA and the Inter-Agency Committee on Government Property Insurance (IAC-GPI), respectively.

The data gathered during the initial run of the NARS was the basis for the recommendation of the IAC-GPI to pursue the National Indemnity Insurance Program (NIIP) of the government. Furthermore, the government was able to have preliminary information on the need to improve the management of the national government assets, hence, the drafting and finalization of the PGAMP through the issuance of the

DOF-DBM-NEDA JMC No. 2020-1. Finally, the data used for the NIIP were gathered through the NARS initiative, i.e., school buildings of DepEd and roads and bridges under the DPWH.

To improve customer experience and attain better data management, the NARS is currently being upgraded from the Excel template to a web-based portal. Alongside the upgrading is the data gathering and roll-out of the NARS to other government agencies. The agencies are required to provide the NARS with yearly updates to account for new acquisitions and the disposed/decommissioned assets.

The effectivity, accuracy and efficiency of the NARS as the primary inventory of government assets relies on the regular submission of data by the agencies concerned. The BTr, in the performance of its function in managing the NARS, shall facilitate the issuance of calls for submission and other related requirements for the NGAs relative to the updating of the NARS. Relatedly, infrastructure-related budgetary requests emanating from the NGAs must include up-to-date information on government assets. Further, the WG-AM of the agencies concerned shall ensure coordination, cooperation, and communication with the BTr relative to the updating of the NARS. This is consistent with DOF-DBM-NEDA JMC No. 2020-1 wherein the covered agencies shall submit to the DBCC TWG-AM, through the BTr, an inventory of their respective assets containing information listed in Annex B of said JMC, and other related documents, as necessary. The agency WG-AM could assign a focal person or dedicated team for NARS and the implementation of its asset management initiatives.

Hereunder is the NARS roadmap:

Figure 2: The National Asset Registry Roadmap
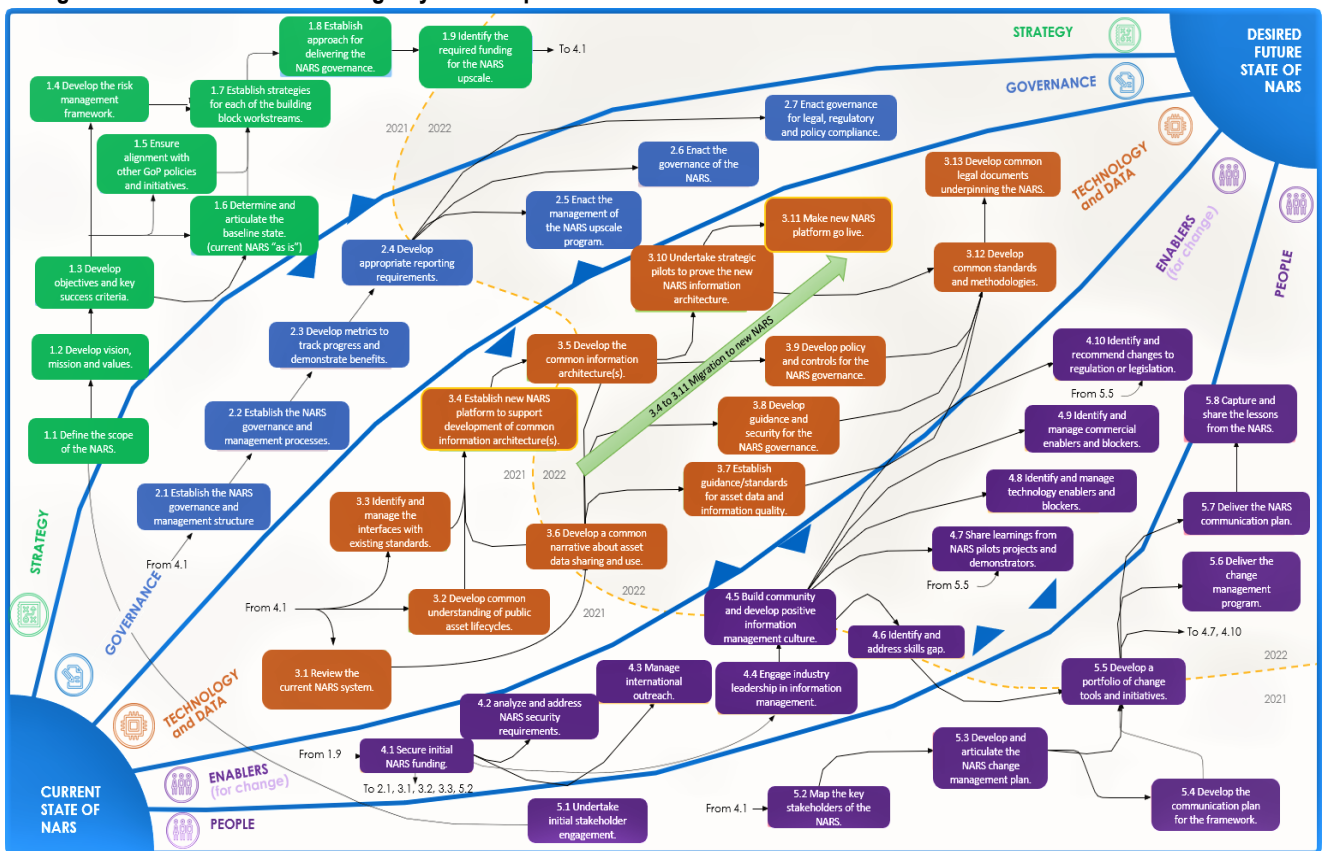
Source: Roadmap for Scaling Up the National Asset Registry System (NARS) of the Government of the Philippines (2021)

5.3 Open Data and Public Disclosure

Data in itself is an asset. Asset information should be considered as an asset in its own right. Good quality data has value to an organization and is critical in the management of its built assets.[33]

Agencies developing more advanced AM functions will need increasing volumes of data, such as maintenance history and costs, to support lifecycle optimisation and the probability and consequence of asset failure for risk management.[34]

Further, information leads to evidence-based policies for the delivery of responsive, reliable and efficient public services. Poor management of asset information can lead to lack of transparency, accountability and legitimacy.

In this regard, the NAMP supports a policy of open data and public disclosure, subject to restrictions provided by pertinent laws, rules and regulations.

This is consistent with the GOP's commitment to increase the availability and utilization of government data that will pave the way towards data-driven governance (for the government), and data-driven innovation and development (for the general public). In order to do so, the supply and demand sides of the government data have to be heightened simultaneously.[35]

Hence, the NAMP and AAMPs shall be made available to the public through publication on the website of the NGAs concerned. The NGAs could invite the public to comment on the plan and provide feedback.

---

[33] *Ibid.*

[34] IPWEA AM 202, Understanding Requirements, 2021

[35] http://ogp.dbm.gov.ph/index.php/action-plan#dict-open-data-philippines-data-gov-ph-and-national-government-portal-gov-ph, accessed on 09 December 2021

6.0 LEVELS OF SERVICE (LoS)

LoS are the cornerstone of AM and provide the platform for all lifecycle management decision-making. They are the existing outcomes a customer receives (or is a target, based on what customers are expecting to receive) from the GOP. These are supported by LoS performance indicators, which are measured using available data and information.

One of the first steps in developing the first NAMP is to record the current LoS, and gain an understanding of:

- Which are set by legal requirements, and
- Which are specified and agreed upon among various stakeholders as part of service delivery.

Service delivery performance measures and targets, where these are established, are connected with the outcomes and indicators documented by the agencies through the Performance Governance System (PGS). Future improvements of the availability and use of the information communicated in this section are documented as part of "Performance Planning and Continual Improvement" (Section 11.0).

Defining LoS is carried out with minimal reference to budgets and costs, which are determined through other AM practices and processes. Historic investment may have determined what has been done in the past but is unlikely to be the driver for defining future service levels.

6.1 Asset Perspective and Agency Perspective LoS

'Levels of service' (LoS or LOS) is a term widely used in the infrastructure industry, and influences all AM decisions. LoS statements describe the outputs an organization intends to deliver to customers and other stakeholders[36], hence, they must be written in terms which the end user can understand and relate to.[37]

It is vital to recognize the linkages between strategic objectives (customer levels of service) and day-to-day service delivery (technical levels of service).

---

[36] Refers to the (1) agencies other than the DBCC TWG-AM which may be called upon to provide inputs in the preparation of related issuances on AM, e.g., those with unique assets; (2) subject matter experts; (3) private sector; or (4) non-government organizations (Sec. 5.1 (s), DOF-DBM-NEDA JMC No. 2020-1)
[37] IPWEA AM 202, Understanding Requirements, 2021

The table below shows an LoS framework:

Table 10: Levels of Service Framework[38]

Concept	Definition	Examples
Service attributes	Aspects or characteristics of a service	Accessibility, affordability/cost, efficiency, quality, quantity, reliability, responsiveness, safety
Levels of service	What the NGA intends to deliver. Describe attributes of the service from a customer point of view	Provision of high-speed internet access
Customer performance measure	How the customer receives or experiences the service. Customer measures are generally those used in public documents.	Appearance of facilities, frequency of disruptions, incidence of illness
Technical performance measure	What the NGA does to deliver the service. These measures support customer measures and tend to be used internally to measure performance against service levels.	Number of times public toilets are cleaned each day, average wait times at intersections, the average condition rating of playgrounds

Hence, it could be said that asset perspective LoS is more focused on outputs (e.g., number of roads built/rehabilitated), while agency perspective LoS, on outcomes (e.g., road networks - reduction in travel time).

Examples of the DOH and DPWH LoS could be found in the following issuances:

❖ DOH requirements, documented through the maturity assessment process, including the questionnaire submissions and interviews conducted in October and November 2021:

➢ Creation of the DOH NARS Committee [Department Personnel Order (DPO) No. 2018-3145]
➢ DOH Inventory Team for Property Plant and Equipment (DPO No. 2018-5361)
➢ ISO 9000/14000 Quality Assurance/Quality Management System (PGS)
➢ Manual of Operations/Procedures (per Bureau)
➢ Government Accounting Manual (Unserviceable properties)
➢ Republic Act No. 9184 or the Government Procurement Reform Act (replacement of assets through procurement)

---

[38] *Ibid.*

❖ DPWH requirements, documented through the maturity assessment process, including the questionnaire submissions and interviews conducted in October and November 2021:

➢ DPWH Special Order No. 247, s. 2021 was institutionalized on 23 September 2021 to create the Philippine Government Asset Management Policy (PGAMP) Focal Persons
➢ The DPWH also institutionalized Department Order (DO) No. 176, s. 2015, with the subject: "Guidelines and Procedures in the Recognition and De-recognition of Infrastructure Assets"
➢ The Manual on Building Service and Real Property Management, through the Joint Circular No. 1 between DBM-DENR-DPWH in 1989 provides guidelines on the scope of building repair and maintenance
➢ The Manual on Maintenance of Flood Control and Drainage Structures in coordination with JICA in 2005
➢ Presidential Decree (PD) No. 17, s. 1972 (Revised Highway Act) and the Annual Maintenance Work Program (AMWP) prepared by the implementing offices following the Philippine Highway Maintenance Management System (PHMMS) Manual guidelines
➢ Operation plans are aligned with the DPWH strategic directions formulated by the management officials of the Department using the Performance Governance System (PGS) as a tool

6.2 Establishment of Levels of Service

In developing a levels of service framework, it can help to classify the key drivers for service levels. Not all service levels are about meeting the customers' needs. At times, there are other reasons for delivering services to a particular standard.

These are typically broken down into three (3) areas or drivers:

1. **External drivers** - the external business context such as legislative requirements that may impose minimum standards (IIMM[39] Section 2.1.1)
2. **Internal drivers** - the internal business context including strategic objectives, the availability of resources and financial constraints (IIMM Section 2.1.2)
3. **Customer expectations** - of the quality of service, balanced against the price they are willing and able to pay for that service (IIMM Section 2.1.3)

Each of these drivers will influence the NGA's decisions about the range, quality and quantity of services provided.[40]

LoS statements require an understanding of asset performance (functionality and reliability) and capability (condition and availability) to deliver the requirements.

---

[39] International Infrastructure Management Manual
[40] IPWEA AM 202, Understanding Requirements, 2021

The full details of agency LoS shall be specified in each of the AAMPs, while the NAMP summarizes the available key LoS, as follows:

Table 11: NAMP Level of Service Statements

Agency	Level of Service	Performance Measure	Potential Improvements to Level of Service		
			Short Term	Medium Term	Long Term
Government of the Philippines	Accelerate strategic infrastructure development	*Implement strategic infrastructure Ensure asset preservation*	*Continued implementation of PGAMP objectives Establish the first NAMP*	*Develop NAMP and AAMPs through inter-agency collaboration as improving AM practices are adopted Support AM training delivery across government agencies to increase both capability and capacity*	
Government of the Philippines	Transforming towards equity and resiliency: Expand opportunities across regions	*Strengthen national and local capacities for climate and disaster risk reduction and management*	*Continued implementation of PGAMP objectives*	*Delivering identified programs, activities and projects (PAPs) targeting resilience objectives*	
Department of Education	Expand access to basic education	*Percentage of identified remote schools with access to school facilities*	*Confirming priority schools requiring school facilities Confirming the school types included in the measure (public, private, or other state-supported governance structure)*	*Delivering ongoing program of facility upgrades on initial priority schools*	*Delivering ongoing program of facility upgrades on lower priority schools Delivering and monitoring increased maintenance and renewal program*

Agency	Level of Service	Performance Measure	Potential Improvements to Level of Service		
			Short Term	Medium Term	Long Term
Department of Education	Improve education quality and relevance	*Percentage of public schools meeting the standard ratio for classrooms*	*Confirming occupancy (seats) across facilities, and maintaining enrolment data and forecasts*	*Delivering ongoing program of facility upgrades for identified schools*	
Department of Health	Accessibility of essential quality health products and services ensured at appropriate levels of care	*Percentage of provinces with adequate hospital bed to population ratio*	*Confirming bed occupancy across facilities, and maintaining facility usage/capacity data and forecasts* *Enabling hospital service capability levels 1 to 4 to be associated with facilities data*	*Delivering ongoing program of facility upgrades for identified hospitals. The DOH has implemented the Health Facilities Enhancement Program (HFEP) for the construction, upgrading, expansion, repair and equipping of national and local government health facilities.*	
Department of Health	Accessibility of essential quality health products and services ensured at appropriate levels of care	*Percentage of provinces with adequate Regional Health Unit (RHU)/health center to population ratio*	*Confirming bed occupancy across facilities, and maintaining facility usage/capacity data and forecasts*		

Agency	Level of Service	Performance Measure	Potential Improvements to Level of Service		
			Short Term	Medium Term	Long Term
Department of Public Works and Highways	Improved accessibility of transport infrastructure and services	*Percentage of national roads in acceptable condition*	*Continued measurement and trending of road condition data in measuring and reporting target* *Increase coverage to 'unassessed' sections of the network*	*Review targets for road condition, and measurement of condition outcomes*	*Delivering ongoing program of upgrades on priority roads* *Delivering and monitoring increased maintenance and renewal program*
Department of Public Works and Highways	Improved accessibility of transport infrastructure and services	*National road ratio of network classified as 'paved' (against 'unpaved')*	*Confirming surface types across the network, in association with existing data management practices*	*Review targets for surfacing ratios, and measurement of outcomes* *Investigate analysis and forecasting for surface types, based on regions, traffic data, or other factors*	*Delivering ongoing program of upgrades on priority roads* *Delivering and monitoring increased maintenance and renewal program*

6.3 Allowance for Future Needs

The maturity assessment process, including the questionnaire submissions and interviews conducted in October and November 2021 with the pilot agencies, have begun the process of connecting their service delivery with AM practices. Said agencies have identified their established processes, and how these will align with the AM priorities articulated in the NAMP.

The pilot agencies are currently using the PGS Enterprise Scoreboard 2017-2022 to measure the level of accomplishment on each set objective, which is being reported every end of the year.

For example, most of the service levels in the DOH hospitals are already established through policies and guidelines on hospital bed capacity (level 1 tol 4 hospitals), and these are the ideal levels of service expected from the aforementioned medical facilities. In terms of planning, the main concern for the DOH would be the availability of funds and the serviceability or functionality of existing assets and equipment.

Links between the strategies, planning, programs, and service delivery are clearly understood. Hospitals, regional offices, and the Central Office know the plans and overall objectives of the agency. Process owners also know how their work and planning contribute to agency goals. Incorporating asset performance for consideration in planning and evaluation will be established and strengthened in reporting achievement of health goals, improved governance, and support to operations through the AAMP.

The direct connection of the assets to the LoS needs to be established. This will be achieved through the development of the Property Asset Management System (PAMS) of the DOH, which will be used in data collection and eventually incorporated into the data population activities of the NARS.

Hence, providing allowance for future needs can include, for example:

- Resilience planning: What specific focus is needed for potential future calamities
- Urbanization: Utilizing the Philippine Development Plan Spatial Strategy to identify 'hot spots' where it is occurring and future expected growth patterns happens
- Changes in key levels of service: Plans may now have changed in response to the COVID-19 pandemic
- Gaps in levels of service: Addressing these gaps and prioritization
- Emerging funding constraints: Budget cuts needed in a particular area of infrastructure

7.0 SUSTAINABLE PLANNING

Urbanization, population and economic growth, and disaster risks from calamities impact the management of the government's assets. Planning for how the GOP will manage its assets into the future requires an understanding of key demand drivers and how these might change going forward.

Asset management practices and processes, at both agency and national levels, involve estimating demand for the services to be delivered by infrastructure investment over the period covered by the first NAMP, which is a two-year forecast. This is a critical part of AM. Adequate estimation of demand for services can provide significant benefits to citizens and the government. Benefits include planning and providing the right infrastructure (capacity, location) at the right time (to meet the growth predictions).

Further, while growth drives a range of demand factors, there are particular growth patterns and demand drivers which require specific focus. These are very important when responding to and managing growth with regard to the government's assets.

Some growth drivers and demand impacts are particularly relevant to certain geographic areas where response to demand may need to specifically differ. Managing assets effectively requires that these areas are specifically identified to allow for an appropriate level of response.

Below is the latest number of SDGs tagged in the 2020 Public Investment Program (PIP), with amount and number of projects per SDG, as generated from the PIPOL[41]:

Table 12: SDGs Tagged in the 2020 PIP

SDG	Amount (PhP trillions)	Number of Projects
SDG 1 – No poverty	4.3	925
SDG 2 – Zero hunger	1.1	820
SDG 3 – Good health and well-being	2.7	2,445
SDG 4 – Quality education	3.6	3,938
SDG 5 – Gender equality	1.3	1,699
SDG 6 – Clean water and sanitation	0.9	1,759
SDG 7 – Affordable and clean energy	0.3	312
SDG 8 – Decent work and economic growth	6.6	3,215
SDG 9 – Industry, Innovation, Infrastructure	9.5	6,136
SDG 10 – Reduced inequalities	0.5	304
SDG 11 – Sustainable cities and communities	1.2	1,256

---

[41] Public Investment Program Online

SDG	Amount (PhP trillions)	Number of Projects
SDG 12 – Responsible consumption and production	0.2	148
SDG 13 – Climate action	1	2,031
SDG 14 – Life below water	0.3	146
SDG 15 – Life on land	0.6	198
SDG 16 – Peace, justice and strong institutions	1.2	2,544
SDG 17 – Partnerships for the goals	1.3	2,608
Untagged	0.005	
N/A	0.2	

Currently, the implementing agencies are tagging the PIPs based on what they deem as contributing to a specific SDG. Moving forward, the Sub-committee on SDG Secretariat will work with the PIP Secretariat to establish mechanisms and develop guidelines in vetting the SDG tagging in PIPOL.

7.1 Growth and Demand Challenges

Population and economic growth, and urbanization offer challenges and opportunities for the GOP. A clear picture of where this is occurring and what the future pattern might be allows for appropriate planning.

Growth information is key to ensuring appropriate resilient infrastructure assets are provided in areas of high vulnerability. Building infrastructure to meet demand in the right place, at the right time in the future is also among the important key challenges. For example, planning for growth and demand allows for provision of infrastructure assets in the right place and time, supporting the needs of both urban and provincial areas, and populations.

7.2 Predicting Demand for Infrastructure

Annex F of this NAMP provides an overview of the Philippines' population growth, as a whole and per region. Population growth trends help assess the demand for infrastructure.

The primary growth and demand challenge of the Philippines is the country's annual population growth of 1.3%. This population growth means increasing demand for critical infrastructure. These include hospitals, schools, transportation, water and power supply, telecommunications, prisons, among others.

The DBCC's outlook for the country's macroeconomic fundamentals is broadly favorable over the medium-term in view of expectations of a full reopening of the economy with the vaccine rollout; better-than-expected revenue performance improvements in employment prospects; and the passage of key economic recovery bills. Nevertheless, there are downside risks in the form of new coronavirus variants and resurgences[42].

---

[42] National Budget Memorandum No. 141 *[Budget Priorities Framework for the Preparation of the FY 2022 Agency Budget Proposals under Tier 2 (Part II)]* dated 15 June 2021

7.3 Managing and Responding to Demand

The infrastructure assets face pressures from population growth, urbanization, and climate change. At the same time, there is an ever-present demand for increased quality of service. These challenge the LoS being delivered currently.

To meet demand, there is a need to invest in infrastructure projects which are delivered in the right place at the right time. This requires the right data, available at regular intervals, to inform the patterns and trends. Over time, increased data quality and data confidence will improve demand forecasting.

The tools and systems in place to capture and assess data will be vital. Agency information is a key source of detail, communicated through the AAMPs.

Future iterations of these AM plans would include more advanced strategic assessments of these information at a national level. Each iteration should demonstrate increasing levels of confidence in investment planning.

As an example, the DPWH has identified the following main drivers for demand for the infrastructure it provides:

Table 13: DPWH Main Drivers for Infrastructure

Traffic Congestion and Urbanization	*Implications on society include increase in travel time, travel costs and delay in the mobility of essential goods and services. This drives the need to increase the road network capacity by widening of national roads and bridges, construction of by-passes, diversion roads, expressways and long span bridges, and closing gaps in the national road network.*
Travel Convenience and Road Safety	*Implications include decrease in the travel convenience of motorists, higher accident risk for road users and pedestrians, and increase in total operational cost (more fuel consumption). This drives the need to meet international standards for road surface quality (i.e., international roughness index) and provide engineering solutions to road safety concerns (e.g., accident black spots and critical intersections).*
Natural Disasters and Climate Risks	*Due to climate change, infrastructure and its users are more exposed and vulnerable to more frequent and more severe natural calamities, causing loss/damage to properties, injuries and fatalities. Thus, the need to strengthen vulnerable roads and bridges, mitigate flood damage in major river basins, and build disaster-resilient structures in calamity prone areas.*
COVID-19 Pandemic and Other Emerging Health Concerns	*Due to the ongoing COVID-19 pandemic, service delivery and provision of infrastructure facilities were delayed. In this case, DPWH provided alternative work arrangements for its employees, and published health guidelines and procedures in the implementation of infrastructure projects following all related national policies. Key needs of the public during the pandemic were also identified and prioritized, including the provision of bike lanes, pedestrian-safe sidewalks, and construction of quarantine facilities.*

The Build, Build, Build (BBB) Program was adversely affected by the COVID-19 pandemic. Chapter 19: Accelerating Infrastructure Development of the Updated Philippine Development Plan 2017-20223 includes strategies that have particular focus on asset management such as:

1. **Strengthen technical and financial capabilities for operations and maintenance** – Involves upgrading the technical and managerial skills of the country's workforce and building their capacity to innovate. It also calls for the application of value engineering and value analysis (VE/VA) techniques at different stages of project development, as well as emphasizing the significance of masterplans and roadmaps that take particular consideration to the geographic location of infrastructure projects and programs.

2. **Incorporate climate change adaptation and disaster resilience measures and ensure the security of infrastructure facilities** – This calls for the adoption of appropriate technologies (e.g., surveillance systems, satellite-based navigation systems, among others) to mitigate risks that threaten essential infrastructure services, and to enhance coordinated efforts on the security of infrastructure facilities. It also involves joint exercises in disaster response, stakeholder engagement in disaster risk reduction and climate change adaptation, with the end view of meeting international sustainability standard rating systems for construction, the promotion of sustainability incentive programs, and the undertaking of an integrated environmental assessment.

3. **Improve the collection, management, and utilization of infrastructure data across all subsectors for planning, programming, and policy-making** – Part of intensifying infrastructure-related research and development (R&D), this involves identifying vital data and statistics for the infrastructure sector. The intent is to establish comprehensive databases based on available technological applications and platforms, and shall serve as a basis in planning, programming and policy-making.

8.0 NATURAL HAZARD RESILIENCE PLANNING

The Philippines ranks 9th in terms of disaster risk among other countries in the world[43]. Developing a framework for resilience, risk management and planning will help to identify the potential impacts of the highest risks and make better decisions on actions to mitigate those risks. This process can help to reduce the GOP's exposure to the risks of damage and destruction of assets and facilities, and ability to maintain service delivery during disaster events, and the coping capacities, including financial, of government and other organizations.

The risk involving coastal hazards such as typhoons, storm surges, and rising sea levels is high. Moreover, as the Philippines is located within the Ring of Fire, or the Circum-Pacific Belt, earthquakes and volcanic activities pose serious safety risks to the population and the country's infrastructure. Flooding, landslides, droughts, and tsunamis further contribute to the very high levels of natural hazards exposure. For purposes of resilience planning, natural hazards are considered to include other hazards such as pandemics.

Further, the National Disaster Risk Reduction and Management Plan (NDRRMP) 2020-2030 confirms that the Philippines is one of the countries most adversely impacted by climate change. The risk increases where there are sensitive ecological systems, coastal population concentrations, and natural factors permitting exposure to frequent weather extremes. Climate change is producing weather events with increased frequency and severity, exposing the vulnerabilities of previously safe infrastructure assets.

As would be further discussed in Sec. 10.3.1 of this NAMP, from FYs 2017-2021, certain amounts were appropriated under the pertinent GAA to cover the payment for the insurance premium of government assets against natural and/or human-induced calamities, epidemics, crises, and catastrophes.

The National Indemnity Insurance Program (NIIP) was one of the recommendations of the Inter-Agency Committee on Government Property Insurance (IAC-GPI) composed of the DOF as Chairperson, Office of the Executive Secretary as Co-Chairperson, and DBM, Government Service Insurance System (GSIS), and Insurance Commission, as members, which was created under Administrative Order (AO) No. 4 to formulate policies and programs to comprehensively and adequately insure government properties.

The NIIP aims to provide adequate and comprehensive insurance protection to socio-economically important government assets against perils, such as typhoons, floods, storm surges, earthquakes, and volcanic eruptions.[44]

In this regard, establishing the AM processes to support the security and continuity of services to communities, informed by the AM plans developed by the NGAs concerned, is critical in ensuring sustainability and resiliency.

---

[43]   World   Risk   Report   2020.   Focus: Forced   Displacement   and   Migration.   Retrieved   from: https://reliefweb.int/sites/reliefweb.int/files/resources/WorldRiskReport-2020.pdf
[44] https://www.dof.gov.ph/btr-inventories-p1-3-t-non-financial-govt-assets-in-2020/, accessed on 24 December 2021

8.1 Summary of Hazard Exposure and Impact on Infrastructure

The map below shows the Philippines' natural hazard profile:

Figure 3: Philippines' Natural Hazard Profile
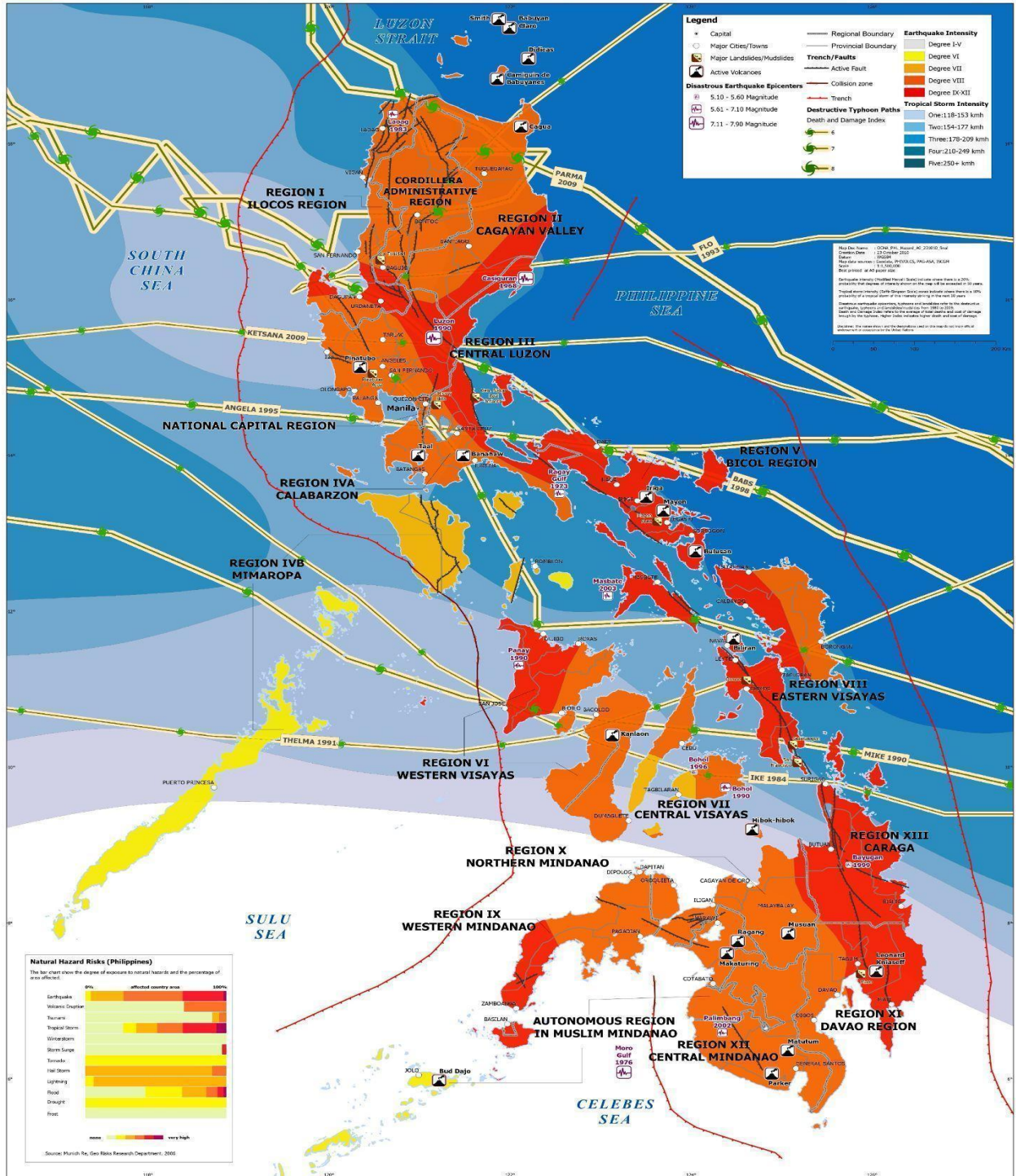
Further, hereunder is the **National Disaster Risk Reduction and Management Council, High-risk Provinces and Natural Hazard Risks:**

Table 14: Philippines High-Risk Provinces and Natural Hazard Risks

HAZARDS	*EARTHQUAKE-INDUCED	GROUND RUPTURE	GROUND SHAKING	LIQUEFACTION	STORM SURGE	TSUNAMI	*RAIN-INDUCED	FLOOD (>1:10,000)	FLOOD (<1:10,000)	VOLCANIC
01. Abra	X	X	X				X	X	X	
02. Agusan del Sur		X					X	X		
03. Antique		X	X	X	X	X	X	X	X	
04. Aurora	X	X	X	X	X	X	X	X	X	
05. Benguet	X	X	X	X			X	X	X	
06. Bohol	X	X	X	X	X	X	X			
07. Cagayan	X	X	X	X	X		X	X	X	
08. Catanduanes	X		X	X	X	X	X	X	X	
09. Cavite	X	X	X	X	X	X	X	X	X	
10. Dinagat Island	X		X	X	X	X	X	X	X	
11. Eastern Samar	X	X	X	X	X	X	X	X	X	
12. Ilocos Norte	X	X	X	X	X	X	X	X		
13. Ilocos Sur	X	X	X	X	X	X	X	X	X	
14. Iloilo	X	X	X	X	X	X	X	X	X	
15. Isabela	X	X	X	X	X		X	X	X	
16. Laguna	X	X	X	X		X	X	X	X	X
17. Leyte	X	X	X	X	X	X	X	X	X	
18. Northern Samar	X	X	X	X	X	X	X	X		
19. Nueva Viscaya	X	X	X	X			X	X		
20. Pampanga	X		X	X	X	X		X	X	X
21. Quirino	X	X	X	X		X	X	X	X	
22. Southern Leyte	X	X	X	X	X	X	X	X		X
23. Surigao del Norte	X	X	X	X	X	X	X	X	X	
24. Surigao del Sur	X	X	X	X	X	X	X	X	X	
25. Zambales	X	X	X	X	X	X	X	X	X	X
26. Zamboanga Sur							X	X		
27. Zamboanga Sibugay							X	X		

Source: GeoPortal: https://geoportal.gov.ph/gpapps/drrm
*refers to earthquake-induced or rain-induced landslides

8.2 Summary of Current Resilience Improvement Programs

Resilience improvements do not only involve investing in the robustness of infrastructure, but also require attention to all the stages of resilience. The NDRRMP 2011-2028 sets down the expected outcomes, outputs, key activities, indicators, lead agencies, implementing partners and timelines under each of the four (4) distinct yet mutually reinforcing thematic areas. The goals of each thematic area lead to the attainment of the country's overall DRRM vision, as graphically shown below:

Figure 4: NDRRMP Thematic Area Goals[45]

Disaster Preparedness
Establish and strengthen capacities of communities to anticipate, cope and recover
from the negative impacts of emergency occurrences and disasters

Disaster Response
Provide life preservation and meet the basic subsistence needs of affected population based on acceptable standards during or immediately after a disaster

Disaster Prevention and Mitigation
Avoid hazards and mitigate their potential impacts by reducing vulnerabilities and exposure and enhancing capacities of communities

Disaster Rehabilitation and Recovery
Restore and improve facilities, livelihood and living conditions and organizational capacities of affected communities, and reduced disaster risks in accordance with the "building back better" principle

Safer, adaptive and disaster resilient Filipino communities towards sustainable development

---

[45] https://ndrrmc.gov.ph/attachments/article/41/NDRRM_Plan_2011-2028.pdf, accessed on 09 December 2021

8.3 Process Description: Natural Hazard Risk Assessment and Planning

The natural hazard risk assessment and planning process consists of the steps below:

Figure 5: Natural Hazard Risk Assessment and Planning Process

Criticality qualifies the impact or consequence for potential events. When infrastructure fails, the impact magnitude depends on the spatial location of the failure and the human or environmental activities that depend on the infrastructure. Infrastructure criticality is determined by the following factors:

- **Strategic importance/significance**: Indication of the strategy at a national, regional, or local level.
- **Dependencies with other infrastructure**: In itself, an asset component may not be deemed critical, but there may be co-dependency with another asset component that is critical. For example, a powerline may not carry high usage, but it may feed into a large wastewater treatment plant.
- **Lifelines:** Linkages to emergency services, hospitals, and life-support utilities. Life-supporting activity considerations also include emergency responses, such as evacuation routes and temporary safe-havens.
- **Redundancy**: The capacity in the system to cope with losing specific links in the services system (such as the ability to utilize backup systems in case critical assets/links of the system fail).

The following is an example of road criticality:

Table 15: Criticality Classification for Roads

Criticality Level	Criticality Level 0	Criticality Level 1	Criticality Level 2
Description	A local route or section of the road whose failure would have a minor local economic or social impact, or plays a minor role in access to lifeline/essential services	A local route or section of the road where failure would have a serious local economic or social impact, or is a locally important lifeline route, ensuring access or continuity of supply of essential services during an unforeseen event	A major route or section of the road whose failure would have a significant economic or social impact to more than one region, or is a regionally significant lifeline route, ensuring access or continuity of supply of essential services during an unforeseen event
Further criteria	- Low traffic volumes - Low freight volumes - No significant lifeline utilities or essential services, low socio impact	Feeds locally significant emergency services, hospitals, lifeline utilities, etc.	Feeds regionally significant emergency services, hospitals, lifeline utilities, etc.

8.4 Natural Hazard Risk Assessment Outcomes

Natural hazard assessment is a specialized scientific field undertaken mostly by the DOST.

Prioritizing adaptation investments in addressing natural hazards consists of understanding the infrastructure's risk exposure and the criticality from a wider community's perspective. The figure below shows how this prioritization is done.

Figure 6: Prioritizing Adaptation Investments in Addressing Natural Hazards
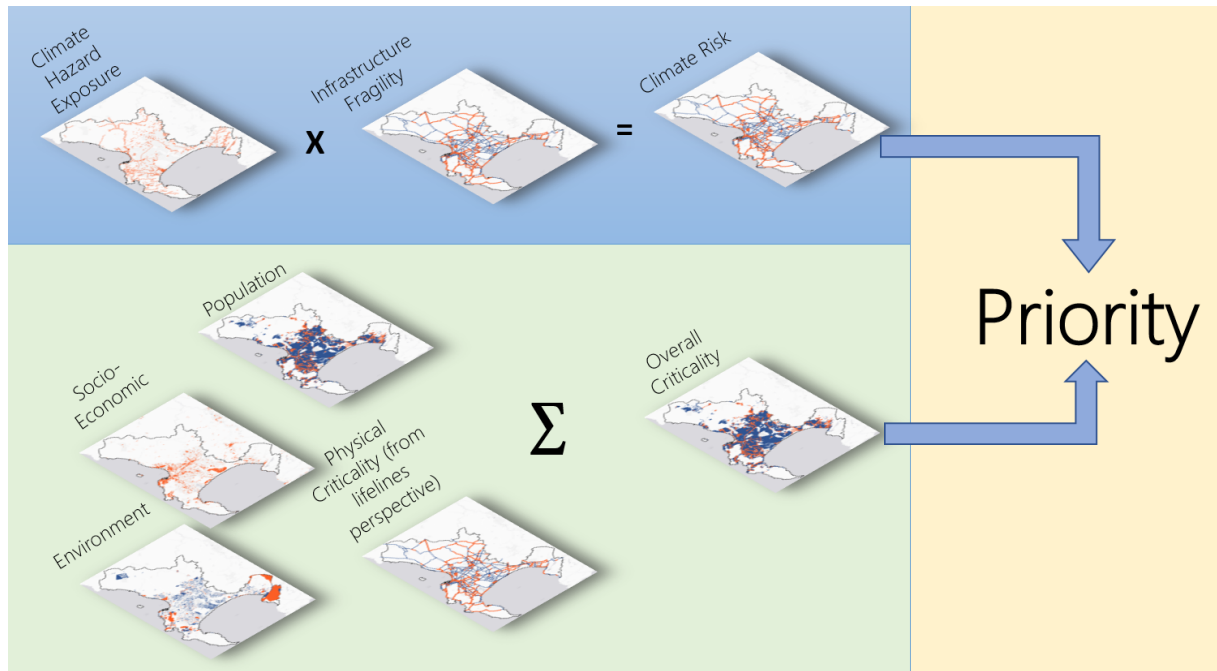
Source: World Bank & South African Treasury

Infrastructure fragility is a function of the ability of the asset to cope with natural events. The fragility consists of two (2) components: 1) The design standard (e.g., flood return period of drainage structures), and 2) The condition of the infrastructure (e.g., old and deteriorated infrastructure is more prone to storm damage).

The GOP follows the Sendai Framework for Disaster Risk Reduction (DRR). According to this framework, addressing natural disaster risks should be prioritized with community protection among the primary objectives.

The GOP has made progress on the four (4) priorities of the Sendai Framework and has key challenges to progress, particularly applying key global frameworks in a coherent manner at country level and strengthening Disaster Risk Management (DRM) governance from the three (3) pilot agencies (DepEd, DOH, and DPWH) to the barangay level.

The table below shows the DPWH top three (3) natural hazard risk resilience priorities in the formulation of its AAMP 2022-2023.

Table 16: DPWH Top Three (3) Natural Hazard Risks Resilience Priorities for AAMP 2022-2023

Risk	Current Resilience Investment Programs
Earthquakes	
Seismic Vulnerability Risk	*Retrofitting/Strengthening of Government Buildings in Preparation of the "Big One" Earthquake Project (School Buildings, Hospitals and Other Public Buildings)*
Typhoon/ Tropical Storms	
Flood Risk	*Flood Management Program including provision of flood control masterplan, construction and rehabilitation of flood mitigation facilities structures and drainage systems in major river basins and principal rivers with overall objective of decreasing areas prone to flooding*
Multi-Hazard	
Multi-Hazard Risk	*Philippines Seismic Risk Reduction and Resilience Project (PSRRRP)* *To be implemented from CY 2021-2026 financed by the World Bank. Includes four (4) components:* ***Component 1:*** *Improving Multi-Hazard Resilience of Public Buildings and Facilities* ***Component 2:*** *Improving Emergency Preparedness and Response in Public Works* ***Component 3:*** *Project Management* ***Component 4:*** *Contingent Emergency Response*
Multi-Hazard Risk	*Construction of Evacuation Centers/Quarantine Facilities/Public Health Facilities*
Multi-Hazard Risk	*Quick Response Fund* *Stand-by fund to be used for reconstruction and rehabilitation programs, activities or projects, including pre-positioning of goods and equipment in order that the situation and living conditions of people living in communities or areas stricken by calamities, epidemics, crises, and catastrophes, which occurred in the last quarter of the immediately preceding year and those occurring during the current year may be normalized as quickly as possible.*

8.5 Resilience Financing Options

Resilience challenges can also be considered as opportunities.

Further, managing the natural hazard risks will require focus, time, human resources, and actual investment. Alignment with the GOP outcomes should always be kept in mind.

External financing options for resilience include donor financing. The table below shows the DPWH cost forecasts for managing the top priority natural hazard risk items:

Table 17: DPWH Cost Forecasts for Managing the Top Priority Natural Hazard Risk Items

Risk	Treatment or Initiative Identified for Resilience Improvements	Cost Estimate (PhP)
Earthquakes		
Seismic Vulnerability Risk	*Retrofitting/Strengthening of Government Buildings in Preparation of the "Big One" Earthquake Project (School Buildings, Hospitals and Other Public Buildings)*	FY 2018 - 210.487M FY 2019 - 767.100M FY 2020 - 1.0B
Typhoon/Tropical Storms		
Flood Risk	*Flood Management Program including provision of flood control masterplan, construction and rehabilitation of flood mitigation facilities structures and drainage systems in major river basins and principal rivers with overall objective of decreasing areas prone to flooding*	FY 2022 – 131.113B *(as proposed under FY 2022 NEP)*
Multi-Hazard		
Multi-Hazard Risk	*Philippines Seismic Risk Reduction and Resilience Project (PSRRRP)*	FY 2021-2026: **US $300M** Component 1: Improving Multi-Hazard Resilience of Public Buildings and Facilities - US$245M Component 2: Improving Emergency Preparedness and Response in Public Works - US$52M Component 3: Project Management - US $3M Component 4: Contingent Emergency Response – Zero Allocation *To be financed by the World Bank*
Multi-Hazard Risk	*Construction of Evacuation Centers/Quarantine Facilities/Public Health Facilities*	FY 2022 – 1.189B *(as proposed under FY 2022 NEP)*
Multi-Hazard Risk	*Quick Response Fund*	FY 2022 – 1.0B *(as proposed under FY 2022 NEP)*

DPWH-Planning Service Note: Natural calamities are already incorporated to the criteria for identifying and prioritizing road and bridge projects.

9.0 INFRASTRUCTURE RISK MANAGEMENT PLANNING

Risk assessment is applied to projects eligible for NEDA approval, and done on an individual project basis. Quantitative risk analysis is applied to projects in the form of conducting a sensitivity analysis for the Net Present Value (NPV) and the Internal Rate of Return (IRR).

Specifically, for public-private partnership (PPP) projects, the Generic Preferred Risk Allocation Matrix (GPRAM) is a registry that enumerates the risks associated with structuring PPPs. The GPRAM also includes possible risk mitigation strategies and suggested contract provisions for each type of risk and the preferred risk allocation (i.e., whether certain risk should be borne by the government, the private partner, or shared by both).

Risk should not be considered at a single project level, but rather across the network. Agencies should ensure that other risks not included in the budget are managed appropriately.

9.1 Risk Management Overview

Risk management includes identifying and managing critical assets as well as strategic and business risks.[46] It helps identify significant risks and actions to mitigate them. This process reduces the government's exposure to asset-related risks, especially for assets associated with providing essential services.

Government agencies with critical infrastructure need to assess the risks to their assets. The NEDA and DBM developed the Guidelines on Evaluation in the National Government[47] as part of the National Evaluation Policy Framework (NEPF). The NEPF aims to improve governance, transparency, accountability and evidence-based decision-making by providing a mechanism that guides government agencies to systematically assess and measure their performance. As such, the NEPF Guidelines provide a concise statement of the institutional responsibilities, rationale, processes and methods for implementing evaluation across the entire public service. As part of the evaluation process, risk identification, assessment and management are key components.

9.2 Risk Assessment Process

Risk evaluation to critical assets allows the identified risks to be analyzed in a systematic manner to identify which risks are the most severe and which are unacceptably high.

The overall risk depends on both the probability and consequence of the event. To estimate the level of risk, the consequences of 'failure' for the levels of service for the identified risk events and the probability of failure must be determined.

Where risks to critical assets are assessed as unacceptable, options for risk mitigation should be identified and evaluated considering the level of risk reduction that would be achieved through implementation of these options against the costs of doing so.

---

[46] IPWEA, AM 101, Introduction to Asset Management, 2021
[47] https://nep.neda.gov.ph/storage/guidelines/1601872178_NEPF-Guidelines%20Booklet-Pass%2014%20Folder_NEPF-Guidelines%20Booklet-Pass%2014.pdf, accessed on 08 December 2021

The figure below shows the risk categories:

Figure 7: Risk Categories (Based on RIMS, 2014)[48]

Planning Risks	Strategic planning risks Asset Management planning risks Service level risks Environmental risks (excluding natural hazards)
Management Risks	Systems/information risks People risks Financial risks
Delivery Risks	Procurement risks Project management risks Contract management risks Communication risks
Physical Asset Risks	Risks common to all assets Risks associated with specific asset types

9.3 Addressing Risk Challenges

Not all risks will result in significant investment, yet they still require to be managed. Some risks may not be at a level where intervention is required, yet they need to be constantly monitored. Further, some of these risks may already be managed or controlled effectively and do not require further management. Other risks may still require further management or investment to be addressed.

The successful implementation of risk management of the national government's critical assets relies on sustained commitment by both the national and local governments, appropriate framework design and communication, and ongoing monitoring and review. Risk monitoring and review should aim to ensure risk levels remain acceptable and management strategies remain appropriate and relevant.

A 'One Planet' approach can be used to frame sustainability measures which embrace the need for infrastructure to stay within socio-ecological limits. This involves recognition of planetary boundaries. The key components for infrastructure include:

- Environmental: Ensuring environmental quality can be preserved and that activities remain within the Earth's limits
- Societal: Ensuring fair access to services
- Economic: Ensuring that services are provided at an affordable cost with fair distribution

---

[48] Roading Infrastructure Management Support (RIMS). 2014. Best-Practice Guidelines for Risk Management on Road Networks. IPWEA-NZ. Retrieved from: https://www.ipwea.org/newzealand/connect/nzentities/ipweanz-rims/bodyofknowledge)

Within this model, the One Planet concept can be aligned with the United Nations SDGs 2030 to guide sustainable infrastructure management:

Figure 8: One Planet Concept

Adapted from original design by Azote for Stockholm Resilience Centre.
The colour scheme of the Planetary Boundaries reflects
direct links to specific SDG Goals and/or Targets. Interactions
between Planetary Boundaries are not incorporated.

Sustainable infrastructure management is part of the One Planet concept, with the environment being the overarching element. Within this resides the social, and then the economic requirements. The role of infrastructure is to provide for and protect both social and economic needs while ensuring a sustainable environment.

10.0 FINANCIAL PLANNING

Financial management in asset-intensive organizations is characterized by high asset values relative to the total organization value. Good financial management principles for asset-intensive organizations include recognizing the consumption of asset service potential (depreciation), categorizing expenditure appropriately, allocating costs to assets as far as practicable, preparing long-term forecasts, cost-effective financing, and effective reporting of financial performance. Adoption of these, alongside AM practices, supports the GOP in delivering the best value for money for its infrastructure investment program. These techniques highlight the strategic choices being made when prioritizing and funding infrastructure.

The decision-making process seeks to optimize the whole of lifecycle cost (also referred to as the Total Cost of Ownership) of government assets, through the priorities identified in the budget submissions by each agency, which should be documented in the AAMPs. Whole of lifecycle costs support long-term financial planning for assets by recognizing:

- Direct costs to build and operate assets, such as initial capital cost and recurrent costs for operations, maintenance and replacements/rehabilitation required over the life of the asset; and
- Indirect costs of the assets, such as financing, insurance, depreciation, or any other liabilities (for example, disposal cost at the end of the life of the asset). Some indirect costs can also be generated revenues, such as user fees charged, leases, or a residual cash value of the asset at the end of its life.

Establishing the link between asset lifecycles and the financial information held for assets is a key aim of AM practice.

10.1 Financial Planning Review

The GOP's infrastructure assets, administered by the government agencies, are covered by the accounting policies, guidelines, and procedures set out in Chapter 10-Property, Plant and Equipment (PPE) of the Government Accounting Manual (GAM) for NGAs. On the other hand, for the GOCCs and LGUs, the applicable policies, guidelines and procedures are the International Public Sector Accounting Standards (IPSAS), Philippine Financial Reporting Standards (PFRS), and other pertinent COA issuances, such as the COA Circular No. 2017-004 (*Guidelines on the Preparation of Financial Statements and Other Financial Reports and Implementation of the Philippine Financial Reporting Standards by Government Corporations Classified as Government Business Enterprises and Philippine Public Sector Accounting Standards by Non-Government Business Enterprises*) dated 13 December 2017 for government corporations, and the GAM for LGUs. Chapter 10-PPE of the GAM for NGAs includes land; land improvements; buildings and other structures; and other PPE, including infrastructure assets, and heritage assets. It also covers accounting treatment, recognition, measurement, and derecognition to ensure that all PPEs are properly valued and recorded.

10.1.1 Accounting and Financial Reporting

Under the GAM for NGAs, assets are resources controlled by an entity[49] as a result of past events, and from which future economic benefits or service potential are expected to flow to the entity.

---

[49] In the Government Accounting Manual, this refers to a government agency, department or operating/technical unit.

The accrual basis for accounting is used for transactions and other events that are recognized when they occur (and not only when cash or its equivalent is received or paid). Therefore, transactions and events are recognized in the accounting records and in the financial statements of the periods to which they relate. The elements recognized under accrual accounting are assets, liabilities, net assets/equity, revenue, and expenses.[50]

An asset shall be recognized in the financial position when and only when (a) it is probable that the future economic benefits will flow to the entity; and (b) the asset has a cost or fair value that can be measured reliably.

The following are indicators of probable inflow of future economic benefits: a) The chance of benefits arising is more likely rather than less likely (e.g., greater than 50%); b) Benefits can be expected on the basis of available evidence or logic.

For the NGAs, additional recognition criteria are provided in the GAM, specifically Chapter 8-Inventories, Chapter 9-Investment Property, and Chapter 10-PPE. However, for GOCCs and LGUs, the recognition criteria provided in the adopted PFRSs and IPSASs, as applicable, shall be applied.

On the other hand, in the Philippine setting, assets are not easily derecognized from the books of accounts. Section 3.b, Chapter 2 of the GAM for NGAs provides the policies on the accountability over government funds or property.

Policies on derecognition of assets are also stated in the GAM chapters for PPE (Chapter 10), Investment Property (Chapter 9), and Inventories (Chapter 8).

10.1.2 Measurement and Valuation of Assets

For the critical non-financial assets of the NGAs, the policies on measurement (initial and subsequent) and valuation of assets in Chapter 10-PPE of the GAM for NGAs shall be applied.

On the other hand, for accounting policies and procedures on measurement and valuation of critical non-financial assets maintained by the GOCCs and LGUs, the IPSAS, PFRS, and other pertinent COA issuances are applicable.

Moreover, the following are indicators of reliable measurement: a) Valuation method is free from material error or bias; b) Faithful representation of the asset's benefits; c) Reliable information will, without bias or undue error, faithfully represent those transactions and events.[51]

Further, an appraisal of the value of an asset is normally undertaken by a member of the valuation profession who holds a recognized and relevant professional qualification. For many assets, the fair value is ascertained by reference to quoted prices in an active and liquid market. Fair value is the amount for which an asset could be exchanged, or a liability settled, between knowledgeable, willing parties in an arm's length transaction.

The abovementioned guidelines are subject to amendments upon issuance of new International Financing Reporting Standards (IFRS), IPSAS, and other COA implementing guidelines.

---

[50] Par. 7, International Public Sector Accounting Standard (IPSAS) 1 - Presentation of Financial Statements
[51] https://www.coa.gov.ph/phocadownloadpap/userupload/Issuances/Manual/GAM_for_NGAs_Volume_I.pdf, accessed on 24 December 2021

10.1.3 Financial Data

Some financial data are contained in the NARS, such as the following:

a. Asset valuation/capitalization/depreciation
b. Asset warranty/transfer, split or retirement
c. Asset insurance
d. Collateralization of assets

In addition to the NARS asset financial data, there are other reported financial statements and disclosure information which align with AM practices. This information may be sourced from the financial statements and disclosures from agency submissions[52]:

.

- Costs of asset repair and maintenance, and replacement/rehabilitation/improvement (see pertinent sections of the GAM for details). These statements support budget expenditure at an agency level.
- Annual depreciation expense (described as "Depreciation Expense" under the "Computation of Value in Use[53]" section of the GAM). This is often considered a key indicator in developing AM practice, where annual depreciation expense aligns both asset useful lives with investment in capital rehabilitation/replacement programs.

Further, the policies on impairment of assets may be found under the IPSAS 21-Impairment of Non-Cash-Generating Assets, and IPSAS- 26-Impairment of Cash-Generating Assets.

---

[52] Please refer to prevailing PFRS, IPSAS, and other pertinent COA issuances for GOCCs and LGUs in their financial reporting.
[53] The present value of the asset's remaining service potential.

The figure below illustrates the DPWH total budgets for 2015-2021:

Figure 9: Department of Public Works and Highways Total Budgets 2015-2021
(National Budget Call submission for 2021) (Billion PhP)

Source: DPWH
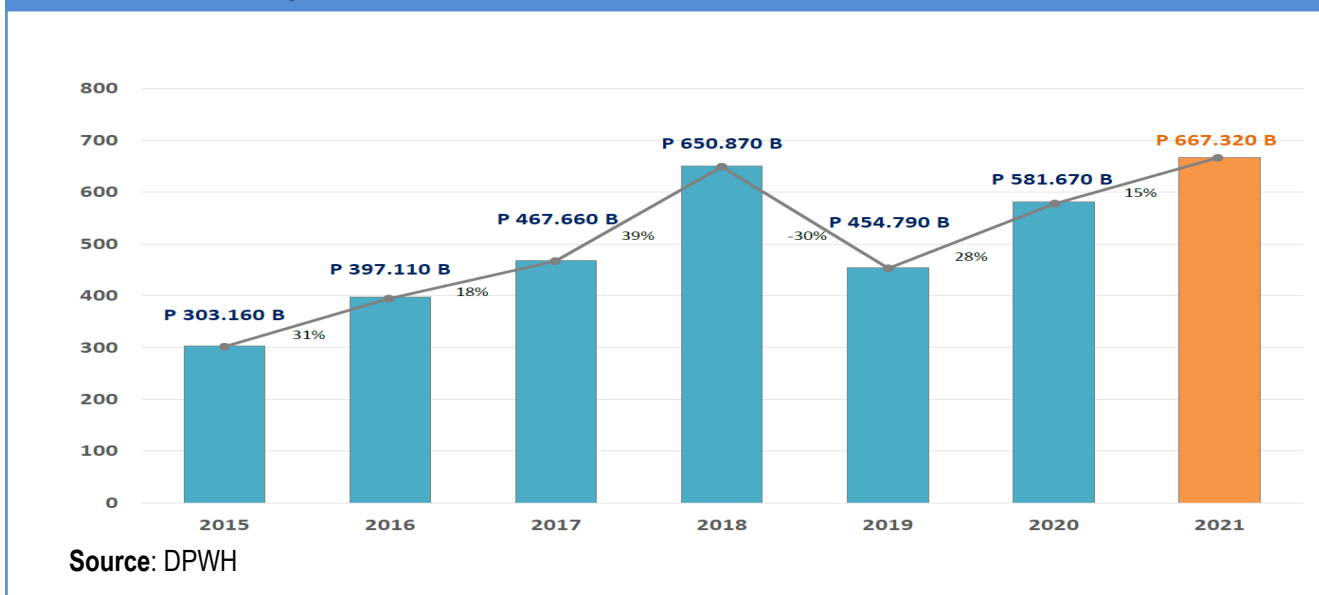
10.2 Funding Our Infrastructure

The government's critical infrastructure is mainly funded through the annual General Appropriations Act (GAA). Recording infrastructure costs along with the funding source, and planned expenditure, are fundamental to enabling valuations, insurance, and maintenance. Hence, the AAMPs of the agencies concerned would be helpful in achieving greater budget control by increasing confidence in agency plans and budgets, as well as the ability to manage the financial requirements of assets at the agency and national levels.

Economic sustainability is focused on ensuring that the GOP's planned asset investment is affordable, equitable, supports the agencies' objectives, and provides the best long-term value, through reduced costs or achieving longer asset lives.

Over time, the total economic costs will need to be considered alongside the GOP's Nationally Determined Contribution (NDC) pursuing greenhouse gases (GHG) reduction and avoidance.

One particular change in financing infrastructure is the implementation of full devolution of certain functions of the Executive Branch as provided under Executive Order No. 138[54]. Aside from the increased revenues from the national tax allotment, a Growth Equity Fund (GEF) shall assist the poorest LGUs. The GEF aims to cover the funding and capacity development requirements of basic infrastructure and other programs, projects and activities of poor, disadvantaged and lagging LGUs to gradually enable them to implement the functions and services devolved to the LGUs by pertinent laws more effectively and efficiently. The Fund is time-bound and performance based, and shall be provided to LGUs for a fixed time frame[55].

---

[54] *Full Devolution of Certain Functions of the Executive Branch to Local Governments, Creation of a Committee on Devolution, and for Other Purposes* dated 01 June 2021

[55] NBM No. 140 *(Budget Priorities Framework for the Preparation of the FY 2022 Agency Budget Proposals Under Tier 2)* dated 24 May 2021

10.3 Disaster Risk Finance

To improve the resilience of government assets to risks, Sec. 5 of Republic Act (RA) No. 656, or the "Property Insurance Law", mandates that every government, except a municipal government below first class, shall insure its properties with the GSIS. Moreover, all critical public infrastructure should be insured by the government. Other forms of disaster risk finance include the National Disaster Risk Reduction and Management Fund (NDRRMF) created under RA No. 10121 (*Philippine Disaster Risk Reduction and Management Act of 2010*) and included in the annual GAA.

RA No. 10121 was enacted mandating the adoption of a DRRM approach, and the formulation of national frameworks and national plans that aims to strengthen the capacity of the national government and the LGUs in coping with the socio-economic and environmental impacts of disasters.

Given that major disasters in the past revealed significant funding gaps experienced by NGAs and LGUs in the aftermath of disaster, one approach identified is to develop appropriate risk transfer mechanisms.

A strategic approach to risk financing will ensure that the national balance sheet (assets and liabilities) can withstand a range of shocks, which may arise from natural disasters or economic downturns. Asset and liability values vary due to depreciation or changes in market or replacement value. Operating decisions and fiscal surpluses or deficits may further impact net worth.

Broad categories of costs must be understood if the government is to enable modelling of how the government balance sheet and national economy may evolve in response to major shocks. These costs include:

- Balance sheet revaluations: Changes in the value of assets and liabilities as a result of a shock, e.g., changes in the value of property owned by the government;
- Direct fiscal costs: Actual costs incurred as a result of a shock, e.g., financial support, cost to rebuild infrastructure, triggering of contingent liabilities; and
- Indirect fiscal costs: Changes to future government revenue and expenses as a result of the economic impact of a shock.

Balance sheet "resilience" can be strengthened by the agencies working to:

- Manage risk efficiently to enhance the resilience of public services to shocks and optimize costs;
- Establish durable financing arrangements to support national and agency policy settings; and
- Develop and maintain strong systems to support and ensure efficient and effective management of assets and liabilities.

The DOF has elaborated a national financial protection strategy to enhance the government's financial resilience to disaster and climate risks. This strategy contains the priority to improve insurance of public assets. In line with this priority, the DOF is supporting key national government agencies to develop sectoral Disaster Risk Finance and Insurance (DRFI) strategies.

Options for risk financing may include:

- Post-event debt funding;
- Pre-funding through a scheme to offset or reduce the need for post-event borrowing or transfers; and
- Insurance and reinsurance to diversify potential loss-cost recovery and aid reconstruction.

Policy priorities to strengthen the GOP's financial resilience could consider steps to:

- Increase available information on assets under management;
- Assess climate risk exposure of major assets and propose adaptation plan;
- Enhance asset resilience through retrofitting investments and proactive maintenance;
- Reduce the funding gap for meeting post-disaster spending needs;
- Improve the speed and effectiveness of post-disaster expenditure, in cooperation with the DBM and DOF; and
- Improve tracking of expenditure on risk reduction and prevention and integration of risk reduction spending in maintenance planning.

By doing so, the quality of cost-benefit analyses and the evaluation of investment proposals will be enhanced, leading to more competitive (i.e., lower) risk premiums and interest expenses demanded by creditors for lending, which then leads to savings which may be used to deliver public services.

10.3.1 The National Indemnity Insurance Program

For the FYs 2017 and 2018 GAAs, an amount of PhP1 Billion and PhP2 Billion, respectively, were provided under the National Disaster Risk Reduction Management Fund (NDRRMF) for the insurance of government facilities. The pertinent guidelines for the implementation, monitoring, and reporting on the use of said amounts were provided under the DOF-DBM JMC Nos. 2017-1[56] and 001-2018[57], respectively.

For the FYs 2019 and 2020 GAA, the DOF-DBM-Government Services Insurance System (GSIS) JMC No. 004-2020[58] was issued to provide the guidelines on the implementation, monitoring, and reporting on the indemnity insurance of strategically important government assets, specifically school buildings owned by or donated to the DepEd, and roads and bridges under the jurisdiction of the DPWH, based on a list generated by the BTr and approved by the DOF, DBM and GSIS.

While the DOF-DBM-GSIS JMC No. 004-2020 states that a Special Provision (SP) in the BTr's budget under the FYs 2019 and 2020 GAA each provided PhP2 Billion to cover the payment of insurance premium of government assets against natural or human-induced calamities, epidemics, crises, and catastrophes, only the PhP2 Billion appropriation under the FY 2019 GAA[59] would be utilized to support the indemnity insurance of DepEd school buildings, with said FY 2020 GAA to be used for a different stimulus that is consistent with the applicable provisions in said GAA.

---

[56] *Guidelines on the Implementation, Monitoring, and Reporting on the Use of PhP 1 Billion Allocation Under the National Disaster Risk Reduction Management Fund for Insurance of Government Facilities* dated 30 June 2017

[57] *Guidelines on the Implementation, Monitoring, and Reporting on the Use of PhP 2 Billion Allocation Under the National Disaster Risk Reduction Management Fund for the Insurance of Government Facilities Against Natural Calamities* dated 10 December 2018

[58] dated 13 December 2020

[59] Said amount, however, lapsed and was reverted to the National Treasury.

Further, for the FY 2021 GAA, an amount of PhP2 Billion was appropriated[60] under the NDRRMF for the indemnity of government assets, albeit the same was approved by the Office of the President (OP) to be used for funding of more urgent projects under the NDRRM Program.[61]

As a steward of assets, the government's role is to ensure the good investment and appropriate use of resources, including contributing to the business continuity planning and disaster recovery of said assets[62]. Hence, it should be ensured that availment of any insurance product would be cost-effective on the part of the GOP.

10.4 Operations Investment

Operational procedures are wide ranging and, in some cases, complex. For operational planning, cost and budget management is one crucial factor.

The table below shows the DPWH cost forecasts for operations and maintenance items:

Table 18: DPWH Cost Forecasts for Operations and Maintenance Items

Asset Group	Planned Program/Works	Cost Estimate (PhP)
Planned (Scheduled) Maintenance Program		
National Roads	*Preventive maintenance of carriageway*	FY 2022 - 15.68B *This is based on the Medium-Term Plan, Public Investment Program (FY 2017-2022)*
National Roads	*Routine maintenance of carriageway, roadside and road safety facilities*	FY 2022 - 14.937B FY 2023 - 15.330B *[as requested by Bureau of Maintenance (BOM) under the 3-year Rolling Program for FY 2022-2024]* FY 2022 – 7.519B *(as proposed under FY 2022 NEP)* *Covers all 16 regions nationwide*
National Bridges	*Routine maintenance of bridges*	FY 2022 - 1.463B FY 2023 - 1.609B *(as requested by BOM under the 3-year Rolling Program for FY 2022-2024)* FY 2022 – 1.251B *(as proposed under FY 2022 NEP)* *Covers all 16 regions nationwide*

---

[60] Congress-introduced change/adjustment that shall be subject to the approval by the President pursuant to Item No. V of the FY 2021 President's Veto Message

[61] Through a Memorandum from the Executive Secretary (MES) to the DBM and NDRRM Council dated 01 December 2021

[62] Item 6.1.2, DOF-DBM-NEDA JMC No. 2020-1 *(Implementation of a Philippine Government Asset Management Policy)* dated 24 September 2020

Asset Group	Planned Program/Works	Cost Estimate (PhP)
Flood Control and Drainage Structures (FCDS)	*Repair and maintenance of FCDS and related facilities*	FY 2022 - 2.515B FY 2023 - 2.740B *(as requested by BOM under the 3-year Rolling Program for FY 2022-2024) Excludes NCR - handled by the Metro Manila Development Authority (MMDA)*
National Government Owned Buildings	*Repair and maintenance of DPWH buildings and other national government owned public buildings*	FY 2022 –1.171B FY 2023 –1.288B *(as requested by BOM under the 3-year Rolling Program for FY 2022-2024) Covers all 16 regions nationwide*
Unplanned (Reactive Maintenance)		
All Assets	*Quick Response Fund - Stand-by fund to be used for reconstruction and rehabilitation programs, activities or projects, including pre-positioning of goods and equipment in order that the situation and living conditions of people living in communities or areas stricken by calamities, epidemics, crises, and catastrophes, which occurred in the last quarter of the immediately preceding year and those occurring during the current year may be normalized as quickly as possible*	FY 2022 – 1.0B *(as proposed under FY 2022 NEP)*
Proactive Maintenance (Supporting Infrastructure Upgrades or Resilience)		
National Roads	***Asset Preservation Program -*** *Rehabilitation/Reconstruction/ Upgrading of Damaged Paved Roads*	FY 2022 - PhP 10.87B *This is based on the Medium-Term Plan, Public Investment Program (2017-2022)*
National Bridges	***Bridge Program*** *- Retrofitting/ Strengthening of Permanent Bridges*	FY 2022 – PhP 2.769B *This is based on the Medium-Term Plan, Public Investment Program (2017-2022)*

10.5 Capital Investments

Agencies must be able to explain the drivers behind the increasing investment needs. Asset management will support a shift in focus to the important issues such as "where investment is most needed," and away from relying on "what was spent in the past," and "what we think is needed". Asset management practices support an evidence-based assessment of the prioritized investment to meet future challenges.

As infrastructure gets old, or growth exceeds its capacity to deliver, investment is required to meet the need. Monitoring capacity and planning funding for this need is vital.

Securing the right level of sustained investment now and into the future is vital to consistently achieving the objectives and performance indicators, which provide the right infrastructure at the right time, in the right place, and within affordable budgetary constraints. Infrastructure investment decisions, budgetary requirements, and activity management are supported through the timely supply of consistent and trusted information.

Establishing monitoring and reporting against strategic goals, objectives, and performance indicators[63] provides a robust base of evidence for securing ongoing funding.

Please refer to Annex A herein for the top 20 highest funded projects from 2017 to 2020 based on the 2020 PIP and the SDGs they contribute to.

In addition, the DPWH Capital Expenditure Budget for FYs 2020 and 2021 may be found in Annex B herein.

10.6 Financial Statements and Projections

A crucial output from both asset management and financial management is a forecast assessment of financial needs and funding requirements. These forecasts should bring together all relevant data from asset management processes. The forecasts should be presented in both NAMP and AAMPs, with clearly articulated assumptions and confidence factors for a suitable forecast period.

As an example, Annex C herein provides the DPWH's cost forecasts for its priority projects.

---

[63] A process of assessing progress toward achieving predetermined goals, including information on the efficiency with which resources are transformed into goods and services (outputs), the quality of those outputs (how well they are delivered to clients and the extent to which clients are satisfied) and outcomes (the results of a program activity compared to its intended purpose), and the effectiveness of government operations in terms of their specific contributions to program objectives

11.0 PERFORMANCE PLANNING AND CONTINUAL IMPROVEMENT

Improvement and performance planning involves establishing a completion timeline, with demonstration of a commitment to ongoing staff and organizational effort. An improvement program, if adopted and appropriately funded, will support teams and individuals in upskilling to deliver an effective AMS.

11.1 The Purpose of Improvement Planning

Introducing the NAMP processes and building the capabilities of the GOP on AM is an iterative process. Hence, there will always be:

- Gaps in understanding
- Assumptions
- Tension between levels of service and costs to deliver services
- Change, growth (and sometimes decline), resilience (calamities), changes in risk appetite, adapting to climate change, and maintaining/managing levels of service

Jointly beginning the process at both the national and agency level will ensure that those involved are supported in this journey. Part of the role that both the NAMP and the AAMPs fulfill is using a common approach in describing the resources, data and information, skills and capabilities, timelines, business processes, and systems and tools being made available, forming the national asset management system.

Well-performing agencies carefully consider the value of improving asset management information, processes, practices, and capability. The focus is on ensuring AM practices are appropriate to support the agency's objectives and the PGAMP.

A continual improvement program focused on AM practices and maturity levels will support the following:

- Implementation of AM policies, covering strategic planning, procedures, and processes
- Improved service delivery through prioritization of projects
- Description of the personnel and financial resources required, to achieve the NAMP objectives

Figure 10 below shows the typical asset management improvement cycle, which starts with the assessment of the current AM capacity and capability within the agencies. This AM maturity assessment scores the quality and functionality of tools, systems, people and skills that make up the AMS. Then, as part of the NAMP and AAMP development, a Maturity Assessment Questionnaire (MAQ) was developed and completed by the respective pilot agencies to feed into the NAMP. This initial NAMP covers the start of the first improvement cycle.

Figure 10: Asset Management Improvement Cycle
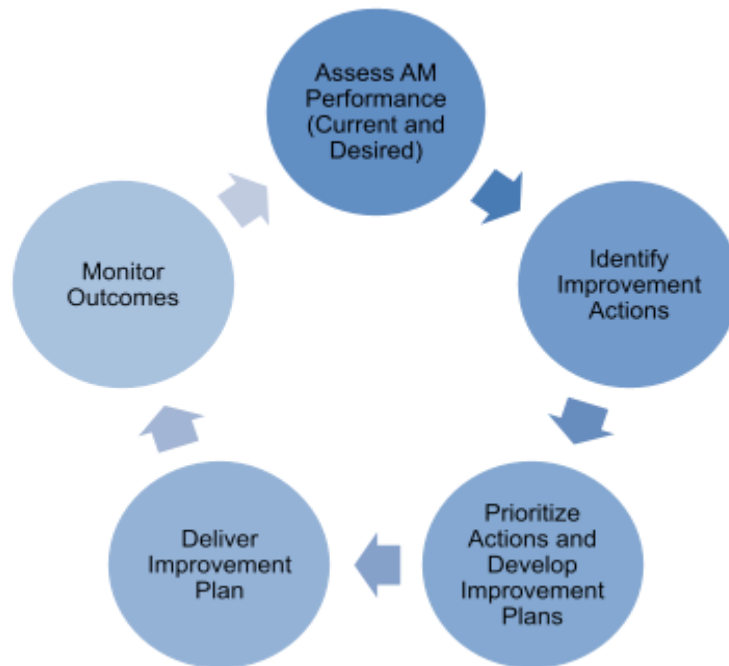
Best-practice AM for the GOP is aligned with the descriptors and elements set out in the International Infrastructure Management Manual (IIMM) and referenced in the Institute of Asset Management guidelines and ISO 55000 standards.

The focus is to build on the current day-to-day work of the agency towards implementing AM minimum requirements for levels of practice. The PGAMP, NAMP, and AAMPs provide the tools and techniques to develop budgets and work programs based on appropriate asset inventory data, information, and analysis. Further use involves resilience and risk management in infrastructure planning, asset lifecycle management, and establishing levels of service standards.

In developing the AAMPs, understanding the agencies' current day-to-day practices and process forms the basis of future asset management improvement programs. The asset management maturity assessment provides this link.

The elements being assessed (refer to Table 19) will be integrated into the future iterations of the AAMPs.

Table 19: Asset Management Maturity Area

Asset Management Practice Area	Asset Management Maturity Area	AAMP Structure	NAMP Structure
Understanding and Defining Requirements	Agency AM Policy and Strategy	Activity Overview	The NAMP likewise shows alignment with NG policy and strategy.
	Asset Management Plans		
	Technical Standards and Requirements		
	Alignment with National Government Policy and Strategy		
Asset Information Enablers	Asset Information Strategy	Planning Systems, Data, Assumptions and Confidence Levels	The AMIS, LoS and demand forecasting are likewise part of the NAMP structure.
	Asset Inventory Data		
	Asset Management Information Systems		
	Asset Performance and Condition		
	Levels of Service and Managing Service Delivery	Levels of Service	
	Forecasting Demand	Managing Demand	
Natural Hazard Resilience Risk Planning	Readiness and Resilience	Resilience and Risk Management	Resilience and Risk Management, Sustainability, and Financial Planning are also found in the NAMP. However, the level of details and scope are different. The NAMP provides the overview, definition, rationale, and details expected in the AAMPs.
	Response		
	Recovery		
Infrastructure Risk Management Planning	Safety and Security		
	Managing Physical Infrastructure Service Risk		
	Sustainable Development	Sustainability	
Lifecycle Management and Decision Making	Decision-Making (including Systems Engineering)	Lifecycle Decision Making	
	Operational and Maintenance Planning		
	Capital Works Planning		
	Financial Planning and Valuations	Financial Planning	
Asset Management Practice	Asset Management Leadership and Training	Asset Management Practice	Continual Improvement/Performance Planning is also found in the NAMP. Similarly, the level of details for continual improvement under the NAMP is different from the AAMPs. The NAMP looks at the overall Executive Branch's continual improvement needs while the AAMPs are agency specific.
	Agency Management Systems	Planning by Appropriate Persons	
	Service Delivery Mechanisms		
Continual Improvement	Competency Framework for AM		
	Validation and Improvement	Performance Planning	

These key elements are critical in achieving sustained performance of the government's assets at the lowest lifecycle cost. A practice assessment creates a clear picture of how well the organization is performing in each of these elements and where the weaknesses lie.

Annex E of this NAMP further explains and provides an overview of the AAMP template per Annex A of the DOF-DBM-NEDA JMC No. 2020-1.

11.2 Identification of Improvement Actions

Only information readily available at the time of formulating the NAMP, from the pilot agencies, and those included in the NARS are considered in this first NAMP, with an expectation of identifying other relevant information, and gaps in information to be addressed in subsequent NAMP and AAMPs.

The identification of improvement actions is a living and ongoing process. The first step for best practice AM improvement planning is to understand the current and future levels of appropriate knowledge, systems, and processes for managing the GOP's assets and activities. A clear understanding of the gap between current and desired practices will help identify the improvements needed.

The planning of improvements for future years starts while working on the NAMP and AAMPs in each planning cycle. Improvement plans should continue to be used and documented over each generation of the NAMP to track progress and target improvements which demonstrate best value through service delivery gains.

The sources for the improvement plans include:

- Outcomes from the MAQ and follow-up interviews with respective pilot agencies
- Identifying gaps in processes and information as part of the development and writing of each section of the NAMP and AAMPs
- Identified and ongoing development projects and initiatives

Building on the strength and professionalism of the agencies' management and operations, it is pleasing to observe the current level of AM maturity demonstrated through the assessment process. These AM maturity levels were assessed from each completed MAQ, with testing and calibration completed through a formal interview process involving DBM and other member-agencies of the DBCC TWG-AM Working Group, the agency management and its WG-AM members, and the World Bank specialists.

Figures 11 to 13 summarize the MAQ outcomes for the pilot agencies:

Figure 11: Summary of Asset Management Maturity Assessment for DepEd
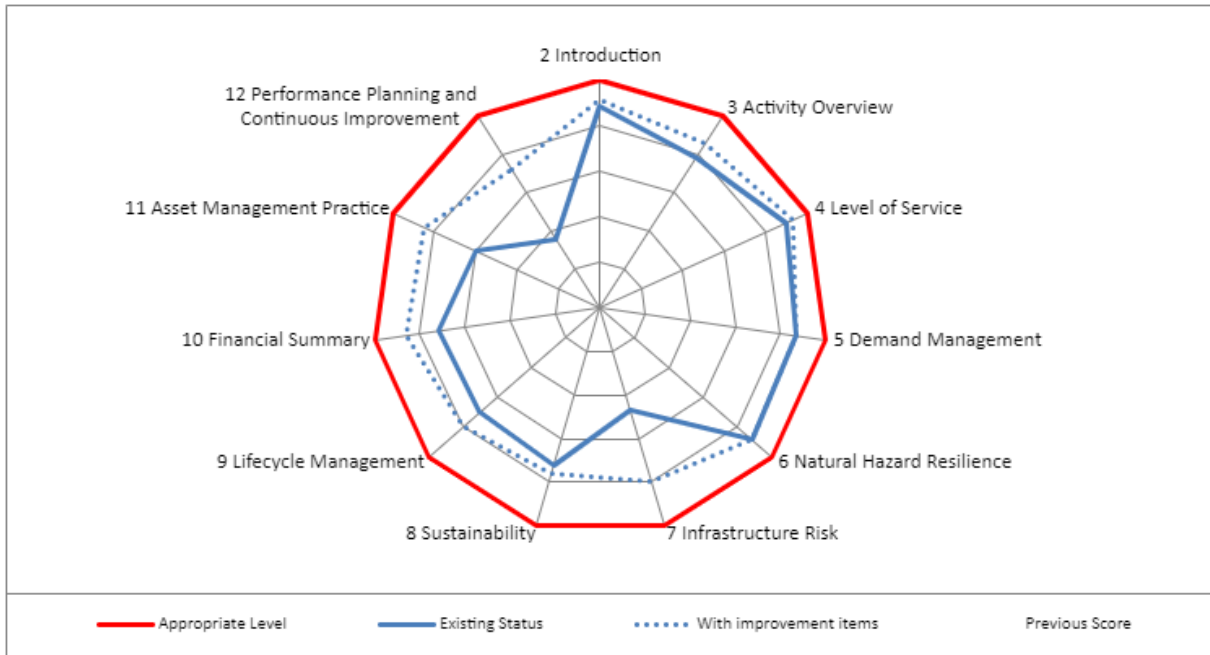
Figure 12: Summary of Asset Management Maturity Assessment for DOH
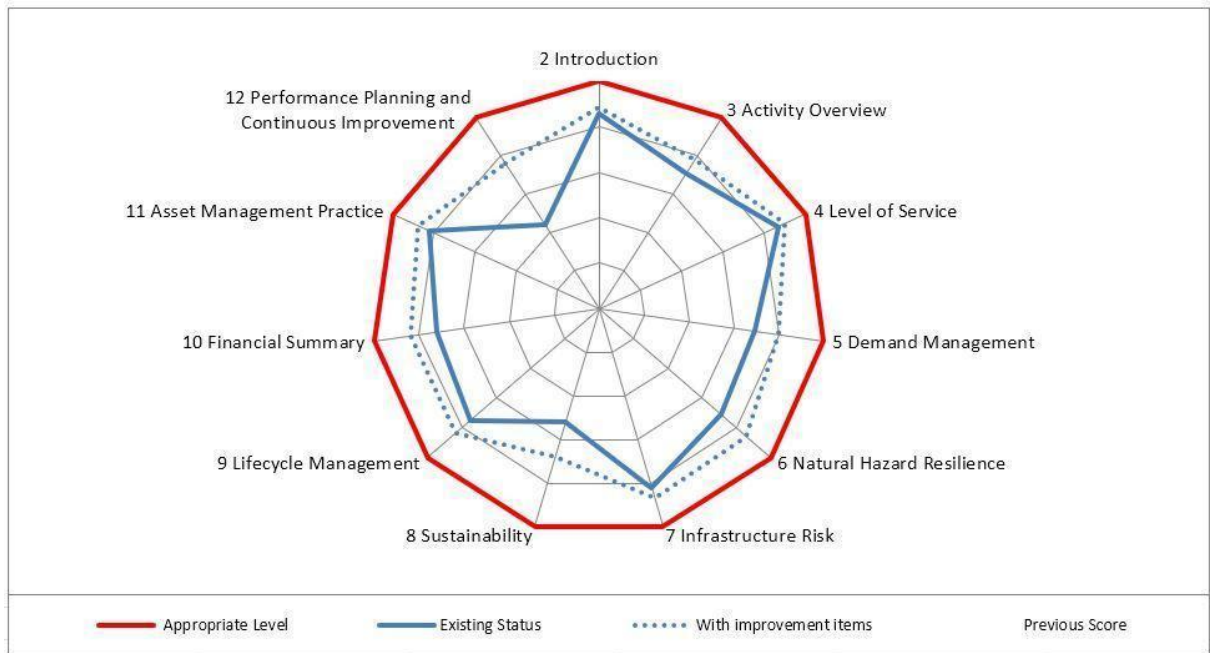
Figure 13: Summary of Asset Management Maturity Assessment for DPWH
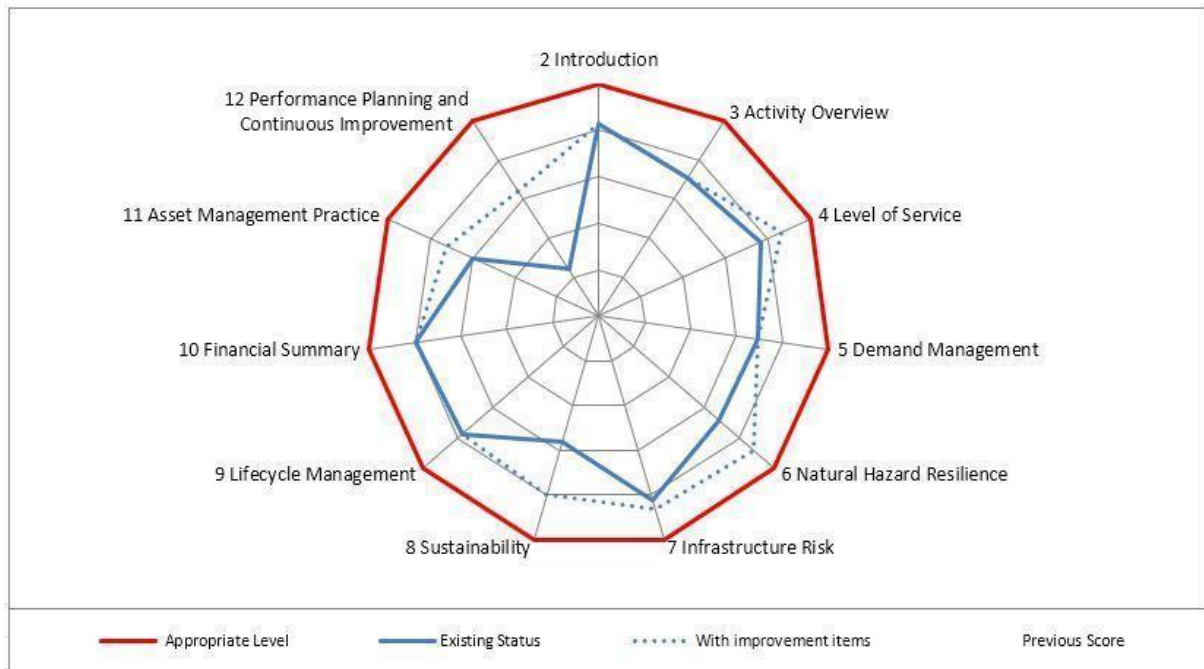
The relative performance difference between agencies is irrelevant because different aspects of AM practice will have differing levels of importance and relevance to a specific asset grouping. Therefore, the primary use of the MAQ outcomes is the internal assessment and improvement identification, and it is not recommended to use this as benchmarking between the agencies.

The figures show three (3) lines:

- **Solid red line** - provides the required capacity and capability as stated by the PGAMP;
- **Solid blue line** - illustrate the current state of asset management practices; and
- **Dotted blue line** - illustrate the improvement plans already in process for the agencies.

The difference between solid red line and solid blue line is the current gap in AM practice that has to be addressed in subsequent years.

A summary of some of the strengths and improvements include:

Strengths:

1. There is already strong maturity in AM practices and processes across all agencies. Although formal AM processes may not have been used historically, all these agencies have successfully managed a significant asset base. The adoption of AM best practices and developing NAMP and AAMPs will streamline the processes and help to realize the full benefits of an integrated AMS.
2. Agencies are strong in the basic areas of AM, such as understanding the asset base and how it is performing, covered in their respective activity overviews. This strong capability is a combination of the progress which the agencies have already made with data collection, and AMIS implementation and management. It also reflects the agencies' respective inputs into the development of the NARS.
3. Agencies are strong in the main drivers of infrastructure investment needs, particularly in establishing their level of service, and forecasting demand management.

4. The impact and importance of policies and issues driving business practices and AMS implementation are emphasized by the relatively strong performance by the agencies in activities included as part of financial planning requirements.

Main Improvement Areas:

1. Because this is the first year of NAMP and AAMP development, all agencies have significant gaps in performance planning and continual improvement practices. The MAQ provides details of the improvement needs identified, as indicated in the summaries of asset management maturity assessment.
2. Although there are already strong capabilities in areas of lifecycle management planning, there are significant opportunities to improve AM practices, and sophistication in this area. More focus on integrated planning processes between investment drivers (demand, level of service, risk and resilience) will achieve improved and more optimized lifecycle outcomes.
3. All agencies are strong in their emergency response and disaster management processes and activities during calamities. There are, however, significant improvements to realize in the areas of continuity planning and readiness to manage the impacts of calamities. Improvements can also be made in the systems supporting the forward planning for resilience improvements and enhancing AM processes delivering recovery and reconstruction. Some strong developments are underway to address these improvement areas.
4. Along with improving resilience, the GOP should also put additional focus on integrating AM practices with sustainability. In particular, focusing on mitigating the carbon footprint of agency activities, through the AM processes, could drive operational management and service delivery.
5. The MAQ has also identified that most agencies have some improvements to prioritize in order to integrate different infrastructure planning processes. The formulation of each agency WG-AM, overseen by the DBCC TWG-AM at the national level, will largely help facilitate this integration.

11.3 Prioritizing Proposed Actions and Timetable

The delivery of the NAMP improvement plans across the GOP requires strong management, proper resources, and regular monitoring and reporting to the DBCC TWG-AM, through the processes established in the PGAMP and documented in the NAMP and AAMPs. Targets must have a clear purpose and definition, to enable meaningful progress reporting that supports desired future requirements.

Table 20 lists the identified improvement areas that were identified during the initial implementation of the PGAMP from 2020 to 2021.

Priorities identified in the table are:

- **Very High:** Improvements of highest priority that have to start immediately and be completed within the next 12 months.
- **High:** Priority improvements that should be addressed prior to the next iteration of the NAMP in the next 1-2 years.
- **Medium:** Improvements that should be addressed over time with a targeted completion period between 2-3 years.

Table 20:   NAMP Improvement Program

Source (NAMP Section)	Priority	Improvement	Maturity Assessment Element	Action by	Target Completion
Secs. 5.0, 5.1, 5.2	VERY HIGH	**NARS:** Continue the further development of NARS according to the NARS development roadmap, and the respective AMIS of the pilot agencies	Asset Data	1st Sem, 2022	End-2022
Secs. 4.0, 4.1, 4.2	VERY HIGH	**AM Structure and Mechanisms in the Government: Continue the identification of** covered agencies and assets for 2023	AM Policy and Strategy	2nd Sem, 2022	End-2022
Sec. 4.6	HIGH	**Roadmap for Development and Capacity Building:** Continue the provision of capability building interventions to the DBCC TWG-AM, pilot agencies, COA, and other NGAs to be subsequently covered in the roll-out of the PGAMP	Competency Framework for AM	1st Sem, 2022	End-2023
Sec. 7.0	HIGH	**Sustainability**: Consider sustainability and resiliency in the AM planning by the NGAs	Sustainability	1st Sem, 2022	End-2023
Sec. 8.0	HIGH	**Integrate Natural Hazard Resilience to Asset Management**: Consider sustainability and resiliency in the AM planning by the NGAs	Resilience	1st Sem, 2022	End-2023
Sec. 9.0	HIGH	**Integrate Risk to Asset Management**: Consider sustainability and resiliency in the AM planning by the NGAs	Risk	1st Sem, 2022	End-2023

Source (NAMP Section)	Priority	Improvement	Maturity Assessment Element	Action by	Target Completion
Secs. 3.0, 3.1	HIGH	**Strategic Alignments:** Update the NAMP based on the PDP to be issued under the next administration by July 2022	Alignment with NG Policy and Strategy	1st Sem, 2023	End-2023
Secs. 6.0, 6.3	HIGH	**Level of Service**: Review and update the LoS targets from individual agencies in light of national views and objectives. This will require a strong understanding of the link between LoS targets and investment consequences.	Level of Service	1st Sem, 2023	End-2023
Secs. 7.0, 7.1	HIGH	**Growth and Demand Challenges**: Improve understanding of growth and demand challenges at a national level. More support from the national level is required to provide the data and information to the pilot agencies.	Demand Forecasts	1st Sem, 2023	End-2023
Secs. 7.0, 7.2	HIGH	**Predicting Demand for Infrastructure**: Continue to documente national priorities for capital projects to address growth issues	Demand Forecasts	1st Sem, 2023	End-2023
Secs. 10, 10.6	HIGH	**Financial Statements and Projections:** Update data per the AAMPs of the agencies	Financial Planning and Valuations	1st Sem, 2023	End-2023
Sec. 11.0	MEDIUM	**Performance Planning and Continual Improvement:** Update the improvement plan	Continual Improvement	1st Sem, 2023	End-2023

12.0 ANNEXES

12.1 Annex A: Top 20 Highest Funded Programs (2017-2020) and SDG Contribution (2020 PIP, NEDA)

12.2 Annex B: DPWH Capital Expenditure Budget (2020/2021); General Appropriations Act (GAA) Allocations (PhP)

12.3 Annex C: DPWH Cost Forecasts for Delivering Prioritized Growth Projects

12.4 Annex D: NARS Data Structure for Asset Management Processes

12.5 Annex E: AAMP Template at a Glance

12.6 Annex F: Philippine Population Growth Trends

Annex A

12.1 Top 20 Highest Funded Programs (2017-2020) and SDG Contribution
(2020 PIP, NEDA)

Rank	Program	Amount (PhP Billions)	Implementing Agency	Spatial Coverage	SDGs
1	Construction/Maintenance of Flood Mitigation Structures and Drainage Systems	1112.4 [289.2 (Capital Outlays Only) 290.7 (including Foreign Assisted Projects)]*	DPWH	Nationwide	11,9,13,1
2	Basic Education Facilities	957.0	DepEd	Nationwide	4,9,6,7
3	Local Programs	886.4 (525.3)*	DPWH	Nationwide	11,3,4,6,8,9, 10,12
4	Improvement/Widening of National Roads	864.0 (179.7)*	DPWH	Nationwide	9,11,3,10
5	Asset Preservation of National Roads	650.8 [200.1 (Capital Outlays only) 204.7 (including Foreign-Assisted Projects)]*	DPWH	Nationwide	9,11,3,13
6	Modernization of the Dr. Jose Fabella Memorial Hospital	390.2	DOH	NCR	3,11,1
7	Construction and Maintenance of Bridges along National Roads	362.8 [118.0 (Capital Outlays only) 124.7 (including Foreign-Assisted Projects)]*	DPWH	Nationwide	9,11,3,10
8	(Rail) Metro Manila Subway	357.0	DOTr	NCR	9,11
9	(Rail) PNR South Commuter (ManilaCalamba)	345.7	DOTr	NCR, Region IVA	9,10,8
10	Pantawid Pamilyang Pilipino Program	345.3	DSWD	Nationwide	1, 10

Rank	Project	Amount (PhP Billions)	Implementing Agency	Spatial Coverage	SDGs
11	Construction/Maintenance of Flood Control Structures along Major River Basins and Principal Rivers	289.5 [70.9 *(Capital Outlays only)* 90.8 *(including Foreign-Assisted Projects)]**	DPWH	Nationwide	11,9,13,1
12	(Rail) PNR North Phase 2 Malolos – Clark)	283.8	DOTr	Region III	9,11,8,10
13	Assistance to Municipalities Program (AMP) – Local Government Support Fund (LGSF)	242.7	DILG	Regions I, II, III, V, VI, VII, VIII, IX, X, XI, XII, XIII, CAR, NCR, IV-A, MIMAROPA	16,1,6,3,13,11
14	Other Research Priorities Agenda	214.9	DOST	Nationwide	9, 3
15	Pipol Konek! Free Internet Wi-Fi Connectivity in Public Places Project	196.0	DICT	Nationwide	11,1,4,8
16	Construction of 5-Storey Engineering and IT Research and Development Building with complete facilities and equipment	180.0	CHED	Region XI	4,9,8
17	NFA – Buffer Stocking Program	159.9	DA	Nationwide	2, 8
18	Access Road leading to Tourism Destinations (TRIPC Phase II)	156.6 (82.0)*	DPWH	Nationwide	8, 9, 11,10
19	(Rail) PNR North Phase 1 (Tutuban – Malolos)	149.1	DOTr	Region III	9, 10, 8
20	(Rail) PNR South Long Haul (Manila-Bicol, with extension to Sorsogon and spur line to Batangas) a.k.a PNR Bicol	145.3	DOTr	Region V, Region IVA	9,11,8,10

*Based on DPWH FYs 2017-2020 GAA (PhP Billions)

Annex B

12.2 DPWH Capital Expenditure Budget (2020/2021);
General Appropriations Act (GAA) Allocations

Capital Program	2020 (PhP)	2021 (PhP)
Asset Preservation Program		
Preventive Maintenance	16,773,000,000	14,251,000,000
Rehabilitation/ Reconstruction/ Upgrading of Damaged Paved Roads	11,648,000,000	9,876,000,000
Rehabilitation/ Reconstruction of Roads with Slips, Slope Collapse and Landslide	16,879,000,000	36,588,000,000
Construction/ Upgrading/ Rehabilitation of Drainage along National Roads	5,568,000,000	4,183,000,000
Network Development Program		
Road Widening	34,171,000,000	31,857,000,000
Construction of By-pass and Diversion Roads	40,278,000,000	50,321,000,000
Construction of Missing Links/ New Roads	19,536,000,000	24,430,000,000
Construction of Flyovers/ Interchanges/ Underpasses/ Long Span Bridges	3,322,000,000	4,405,000,000
Off-Carriageway Improvement	5,981,000,000	4,986,000,000
Paving of Unpaved Roads	4,002,000,000	2,445,000,000
Bridge Program		
Replacement of Bridges (Temporary to Permanent)	140,000,000	261,000,000
Replacement of Permanent Weak Bridges	4,339,000,000	3,205,000,000
Retrofitting/ Strengthening of Permanent Bridges	3,676,000,000	2,518,000,000
Rehabilitation/ Major Repair of Permanent Bridges	1,514,000,000	2,087,000,000
Widening of Permanent Bridges	15,045,000,000	12,298,000,000
Construction of New Permanent Bridges	1,950,000,000	2,275,000,000
Flood Management Program		
Construction/Maintenance of Flood Mitigation Structures and Drainage Systems	61,891,000,000	65,875,000,000
Construction/Rehabilitation of Flood Mitigation Facilities within Major River Basins and Principal Rivers	18,804,000,000	25,065,000,000
Local Program		
Public-Private Partnership Strategic Support Fund (including ROW, Subsidy, and Variations)	4,662,000,000	2,441,000,000
National Building Program	4,736,000,000	10,664,000,000
Construction / Repair / Rehabilitation / Improvement of Various Infrastructure including Local Projects	112,581,000,000	148,744,000,000
Local Infrastructure Program	76,837,000,000	118,775,000,000

Capital Program	2020 (PhP)	2021 (PhP)
Convergence and Special Support Program		
Construction/Improvement of Access Roads leading to Airports, Seaports, Railway Stations, Declared Tourism Destinations and Trades, Industries and Economic Zones	36,671,000,000	34,329,000,000
Construction/Improvement of Various Infrastructures in Support of National Security	6,524,000,000	7,767,000,000
Construction/ Rehabilitation of Water Supply/Septage and Sewerage/ Rain Water Collectors	1,047,000,000	2,809,000,000
Rehabilitation of Disaster-Related Infrastructure and Other Facilities	1,000,000,000	1,000,000,000
Construction/Rehabilitation/Improvement of Facilities for Persons with Disabilities (PWD) and Elderlies/Senior Citizens, including Gender-Responsive Facilities	480,000,000	550,000,000
Improvement of Capacity of Provincial Bridges along Provincial Roads		476,000,000
Pasig River Ferry Convergence Program		150,000,000
Special Road Fund - Motor Vehicle User's Charge (MVUC)		15,067,000,000

Source: DPWH FYs 2020 and 2021 GAA

12.3 DPWH Cost Forecasts for Delivering Prioritized Growth Projects

Activity	Treatment of Initiative Identified for Managing Growth	Cost Estimate (PhP) FY 2022	Cost Estimate (PhP) FY 2023	Cost Estimate (PhP) FY 2024
Philippine Development Plan Strategic Objectives/Legislative Changes				
Chapter 19 of Philippine Development Plan (PDP) 2017-2022: **Accelerating Infrastructure Development**	Transportation Sector: Road and Bridges *This is the Summary for Organizational Outcome 1 (OO1) based on the Medium-Term Plan, Public Investment Program (2017-2022)*	249.12B	260.27B	195.91B
Programmatic Approach				
Asset Preservation Program	a.Construction/Upgrading/ Rehabilitation of Drainage along National Roads	a. 4.60B	a. 5.06B	a. 5.57B
	b. Preventive Maintenance	b. 15.68B	b. 17.24B	b. 18.97B
	c.Rehabilitation/ Reconstruction of Roads with Slips, Slope Collapse and Landslide	c. 40.25B	c. 44.27B	c. 44.7B
	d.Rehabilitation/ Reconstruction/Upgrading of Damaged Paved Roads *This is based on the Medium-Term Plan, Public Investment Program (2017-2022)*	d. 10.86B	d. 11.95B	d. 13.15B
Network Development Program	a. Construction of By-pass and Diversion Roads	a. 65.95B	a. 66.89B	a. 7.61B
	b.Construction of Flyovers/ Interchanges/ Underpasses/ Long Span Bridges	b. 5.04B	b. 4.77B	b. 5.25B

Activity	Treatment of Initiative Identified for Managing Growth	Cost Estimate (PhP) FY 2022	Cost Estimate (PhP) FY 2023	Cost Estimate (PhP) FY 2024
	c. Construction of Missing Links/ New Roads	c. 38.64B	c. 35.17B	c. 14.24B
	d.Off-Carriageway Improvement	d. 5.48B	d. 6.03B	d. 6.64B
	e.Paving of Unpaved Roads	e. 2.69B	e. 2.96B	e. 3.25B
	f. Road Widening	f. 35.04B	f. 38.55B	f. 42.4B
	This is based on the Medium-Term Plan, Public Investment Program (2017-2022)			
Bridge Program	a.Construction of New Bridges	a. 2.50B	a. 2.76B	a. 3.03B
	b.Rehabilitation/Major Repair of Permanent Bridges	b. 2.30B	b. 2.53B	b. 2.78B
	c. Replacement of Bridges (Temporary to Permanent)	c. 0.29B	c. 0.32B	c. 0.35B
	d.Replacement of Permanent Weak Bridges	d. 3.56B	d. 3.88B	d. 4.27B
	e. Retrofitting/Strengthening of Permanent Bridges	e. 2.77B	e. 3.05B	e. 3.36 B
	f. Widening of Permanent Bridges	f. 13.53B	f. 14.88B	f. 16.37B
	This is based on the Medium-Term Plan, Public Investment Program (2017-2022)			

Annex D

12.4 NARS Data Structure for Asset Management Processes

PGAMP refers to the following common data specifications:
- Section A – General Information
- Section B – Location Information
- Section C – Legal Information
- Section D – Financial Information
- Section E - Insurance Information
- Section F - Technical Specifications[64]

NARS contains data about the public assets of DPWH, DOH and DepEd per the following structure:
- "Common Data Specifications" (contains data recorded in line with PGAMP sections A, B, D and E)
- "Technical Specifications for Lands" (PGAMP section F.1)
- "Technical Specifications" for general buildings (type-specific) (PGAMP sections F.2.1 - F.2.12)
- "Technical Specifications" for school buildings (PGAMP sections F.3.1 - F.3.13)
- "Technical Specifications" for hospital and health (treatment and rehabilitation) buildings (PGAMP sections F.4.1 - F.4.14, F.5.1 - F.5.14)
- Roads "Technical Specifications" - F.8.1 - F.8.13 (not provided as part of the PGAMP)
- Bridges "Technical Specifications" - F.9.1 - F.9.26 (not provided as part of the PGAMP).

The NARS data can be used in preparing the following Sections of the NAMP, listed in the "Data and Information" requirements, and the NAMP "Quick Guides:"
- Section 2.2, 2.3, and 2.4
- Section 3.1
- Section 6.1 (where AAMP information may not yet be available), and 6.2
- Section 10.3

12.4.1 Asset Master Data Maintenance/Management

National Asset Number	(A.1.)
Organization Code *UACS	(A.2.)
Facility Code (**School ID**/ Hospital ID/ **Road ID**/ **Bridge ID**/ Center ID, Etc.)	(A.3.)
Property Type / Account Codes	(A.4.)
Name	(A.5.)
Property Number / Identification Code	(A.6.)
Region	(B.1.)
Province	(B.2.)
Municipality	(B.3.)
Barangay	(B.4.)
*PSGC / Barangay Code	(B.5.)
Street Name	*(B.6.)*
Subdivision / purok	*(B.7.)*
House No / Bldg No / Lot No / Block No	*(B.8.)*

---

[64] DOF-DBM-NEDA JMC No. 2020-1

Latitude	(B.9.)
Longitude	(B.10.)
Owner	(C.1.)

12.4.2 Asset Valuation/Capitalization/Depreciation

Acquisition Cost	(D.1.)
Net Book Value	(D.2.)
Accumulated Depreciation	(D.3.)
Asset Life (years)	(D.4.)
Number of years of use	(D.5.)
Remaining Life	(D.6.)
Amount	(D.7.1)
Date of Valuation	(D.7.2)
Amount	*(D.8.1.)*
Date of Assessment	*(D.8.2.)*
Amount	*(D.9.1.)*
Date of Appraisal	*(D.9.2.)*
Amount	(D.10.1.)
Date of Improvement/ Rehabilitation	(D.10.2.)

12.4.3 Asset Warranty/Transfer, Split, or Retirement

Asset	(D.11.1.)
Contents	(D.11.2.)
Total	(D.11.3.)
Mode of Disposal	(D.12.)
Disposal Value	(D.13.)
Currency	(D.14.)
Remarks	(D.15.)

12.4.4 Asset Insurance

Asset	(E.1.1.)
Contents	(E.1.2.)
Total	(E.1.3.)
Type of Policy / Coverage Type	(E.7.1.)
Details	(E.7.2.)
Period From	(E.8.1.)
Period To	(E.8.2.)
Underwriting Year	(E.9.)
Currency	(E.10.)
Cat	*(E.11.1.1.)*
No Cat	*(E.11.1.2.)*
Cat	*(E.11.2.1.)*
No Cat	*(E.11.2.2.)*
Total Cat	*(E.11.3.1.)*

No Cat	*(E.11.3.2.)*

12.4.5 Collateralization of Assets

Registration No. (OCT/ TCT No.)	*(F.1.1.)*
Elevation	*(F.1.2.)*
Vertices	*(F.1.3.)*
Lot Area (m2)	(F.1.4.)
Security Type	(F.1.5.1.)
Details	(F.1.5.2.)
Land Use Type	(F.1.6.1.)
Details	(F.1.6.2.)

12.4.6 Asset Performance

Building Type	(F.2.1)
Details	(F.2.2.)
Date Constructed	(F.2.3.)
Area per Floor (m^2)	(F.2.4.)
Number of Floors	(F.2.5.)
Total Floor Area (m^2)	(F.2.6.)
Building Footprint Area (m^2)	(F.2.7.)
Number of basements	*(F.2.8.)*
Number of Mezzanines	*(F.2.9.)*
Grade	(F.2.10.)
Remarks	(F.2.11.)
Walls	*(F.2.12.1)*
Mezzanines	*(F.2.12.2.)*
Roofs	*(F.2.12.3.)*
Columns	*(F.2.12.4.)*
Joist / Girders	*(F.2.12.5.)*
Remarks	*(F.2.12.6.)*
School Classification	(F.3.1.)
Occupancy	(F.3.2.)
Hospital Classification	(F.4.1.)
Authorized Bed Capacity	(F.4.13.1.)
Remarks	(F.4.13.2.)
Treatment and Rehabilitation Center Classification	(F.5.1.)
In Patient Occupancy Authorized Bed Capacity	(F.5.2.1.)
Remarks	(F.5.2.2.)
Functional Classification	(F.8.1.)
Total Road Length	(F.8.2.)
Length per Surface Type:	

Concrete	*(F.8.3.1.)*
Asphalt	*(F.8.3.2.)*
Earth	*(F.8.3.3.)*
Gravel	*(F.8.3.4.)*
Directional Flow of Traffic	*(F.8.4.)*
Number of Lanes	*(F.8.5.)*
Year of Construction	(F.8.6.)
Pavement Type	(F.8.7.)
Surface Type	(F.8.8.)
Terrain Type	(F.8.9.)
Hazard Risk	(F.8.10.)
Hazard Threat	(F.8.11.)
Condition	(F.8.12.)
Remarks	(F.8.13.)
General Bridge Type	(F.9.1.)
Bridge Type of Construction	(F.9.2.)
Year of Construction	(F.9.3.)
Condition	(F.9.4.)
Load Limit	(F.9.5.)
(Number) No. of Lanes	*(F.9.6.)*
Carriageway Width (meters)	*(F.9.7.)*
Terrain Crossed	*(F.9.8.)*
Overall Width (meters)	(F.9.9.)
Overall Length (meters)	(F.9.10.)
Maximum Bridge Height (meters)	*(F.9.11.)*
Length of Span (meters)	*(F.9.12.)*
Hazard Risk	(F.9.13.)
Hazard Threat	(F.9.14.)
Deck Material	*(F.9.15.)*
Deck Wearing Surface	*(F.9.16.)*
Deck Drainage	*(F.9.17.)*
Pier Type	*(F.9.18.)*
Pier Material	*(F.9.19.)*
Pier Foundation Type	*(F.9.20.)*
Main Member Material	*(F.9.21.)*
Slope Protection	*(F.9.22.)*
Abutment Type	*(F.9.23.)*
Abutment Foundation Type	*(F.9.24.)*
Abutment Material	*(F.9.25.)*
Remarks	(F.9.26.)

12.5 AAMP Template at a Glance

AAMP minimum information requirements:

I. **Objectives** – brief overview on the intended outcomes of the AAMP, including the major performance indicators and targets of strategic assets managed, relative to the achievement of the agency's mandate

II. **Organizational Set-up in Asset Management** – discusses the units responsible for the optimal utilization and management of the assets, and enumerates their functions in the overall asset management of the agency

III. **Agency Working Group on Asset Management** – provides the documentation of the establishment/composition of the agency working group, and enumerates the members and functions of the working group

IV. **Agency-Specific Policies and Practices on Asset Management** – provides the policies and practices of the agency on asset utilization. This shall include, among others, the policies and procedures covering maintenance, planning, including the scope and frequency of regular condition inspections, of procurement and disposal, and the existing resources of the agency to manage its assets, such as information technology systems

V. **Summary of the Inventory of Assets** – provides a general overview of the assets based on data and information from the NARS

VI. **Asset Performance**– provides detailed information on levels of service of the different types or groups of strategic assets managed by the agency, such as its performance, reliability, and availability, among others. The agency may identify the gaps observed in the current levels of service and the intended action plan on closing the same, as well as discuss its asset management-related issues/concerns.

VII. **Intended Actions on the Assets**– provides a detailed list of assets that the agency targets to acquire, repair/rehabilitate, lease or dispose, among others, within the covered period. The proposals shall be justified through an outline of future demand, considering variables such as population growth, urbanization, and climate change adaptation, among others. The projection of future needs serves as an input on the agency budgets and plans. Justifications for said proposals are necessary, such as the conduct of demand analysis.

VIII. **Maintenance Plan** – This portion shall discuss the detailed plan on how each asset, both existing and those for acquisition, shall be maintained. It describes the maintenance strategies to optimize the operations of the assets to meet its performance requirements. It also identifies the actions and systems to be utilized to assess whether the assets are to be rehabilitated/replaced, preserved, among others.

IX. **Risk Analysis** – discusses the foreseen risks that may affect the assets and their performance, as well as the proposed actions to minimize the effects of said risks. This part should include, among others, a discussion on the geographical location of the assets and the vulnerabilities

(consider natural hazards, calamities and the impacts of climate change, climate adaptation, and sustainability) therein.

X.   **Capability and Capacity Building** – narrates the needs assessment for asset management, as well as the proposed interventions and timeline of implementation for the purpose. It also describes and identifies the competency needs, capability development, organizational maturity (people, skills/capacity, tools, processes), and management requirements for asset management, as well as the proposed interventions and timeline of implementation for the purpose.

XI.   **Budgetary Requirements**– provides a detailed cost estimate needed to implement the intended actions, maintenance of assets, capacity building and minimize the asset-related risks. This serves as an important input in the planning for budget requests and investment strategies of the agency.

○

12.6 Philippine Population Growth Trends

Population and Annual Growth Rate for the Philippines and its Regions, Provinces, and Highly Urbanized Cities Based on the 2000, 2010, 2015, and 2020 Censuses[1]

Region, Province, and Highly Urbanized City	01-May-00	01-May-10	01-Aug-15	01-May-20
Philippines	76,506,928[a]	92,337,852[b]	100,981,437[c]	109,035,343[d]
National Capital Region (NCR)	9,932,560	11,855,975	12,877,253	13,484,462
City of Manila	1,581,082	1,652,171	1,780,148	1,846,513
City of Mandaluyong	278,474	328,699	386,276	425,758
City of Marikina	391,170	424,150	450,741	456,059
City of Pasig	505,058	669,773	755,300	803,159
Quezon City	2,173,831	2,761,720	2,936,116	2,960,048
City of San Juan	117,680	121,430	122,180	126,347
City of Caloocan	1,177,604	1,489,040	1,583,978	1,661,584
City of Malabon	338,855	353,337	365,525	380,522
City of Navotas	230,403	249,131	249,463	247,543
City of Valenzuela	485,433	575,356	620,422	714,978
City of Las Piñas	472,780	552,573	588,894	606,293
City of Makati	471,379	529,039	582,602	629,616
City of Muntinlupa	379,310	459,941	504,509	543,445

Region, Province, and Highly Urbanized City	01-May-00	01-May-10	01-Aug-15	01-May-20
City of Parañaque	449,811	588,126	665,822	689,992
Pasay City	354,908	392,869	416,522	440,656
Pateros	57,407	64,147	63,840	65,227
Taguig City	467,375	644,473	804,915	886,722
Cordillera Administrative Region (CAR)	1,365,412	1,616,867	1,722,006	1,797,660
Abra	209,491	234,733	241,160	250,985
Apayao	97,129	112,636	119,184	124,366
Benguet	330,129	403,944	446,224	460,683
City of Baguio	252,386	318,676	345,366	366,358
Ifugao	161,623	191,078	202,802	207,498
Kalinga	174,023	201,613	212,680	229,570
Mountain Province	140,631	154,187	154,590	158,200
Region I (Ilocos Region)	4,200,478	4,748,372	5,026,128	5,301,139
Ilocos Norte	514,241	568,017	593,081	609,588
Ilocos Sur	594,206	658,587	689,668	706,009
La Union	657,945	741,906	786,653	822,352
Pangasinan	2,434,086	2,779,862	2,956,726	3,163,190
Region II (Cagayan Valley)	2,813,159	3,229,163	3,451,410	3,685,744

Region, Province, and Highly Urbanized City	01-May-00	01-May-10	01-Aug-15	01-May-20
Batanes	16,467	16,604	17,246	18,831
Cagayan	993,580	1,124,773	1,199,320	1,268,603
Isabela	1,287,575	1,489,645	1,593,566	1,697,050
Nueva Vizcaya	366,962	421,355	452,287	497,432
Quirino	148,575	176,786	188,991	203,828
Region III (Central Luzon)	8,204,742	10,137,737	11,218,177	12,422,172
Aurora	173,797	201,233	214,336	235,750
Bataan	557,659	687,482	760,650	853,373
Bulacan	2,234,088	2,924,433	3,292,071	3,708,890
Nueva Ecija	1,659,883	1,955,373	2,151,461	2,310,134
Pampanga	1,614,942	2,014,019	2,198,110	2,437,709
City of Angeles	267,788	326,336	411,634	462,928
Tarlac	1,068,783	1,273,240	1,366,027	1,503,456
Zambales	433,542	534,443	590,848	649,615
City of Olongapo	194,260	221,178	233,040	260,317
Region IV-A (CALABARZON)	9,320,629	12,609,803	14,414,774	16,195,042
Batangas	1,905,348	2,377,395	2,694,335	2,908,494
Cavite	2,063,161	3,090,691	3,678,301	4,344,829

Region, Province, and Highly Urbanized City	01-May-00	01-May-10	01-Aug-15	01-May-20
Laguna	1,965,872	2,669,847	3,035,081	3,382,193
Quezon	1,482,955	1,740,638	1,856,582	1,950,459
City of Lucena	196,075	246,392	266,248	278,924
Rizal	1,707,218	2,484,840	2,884,227	3,330,143
Region IV-B (MIMAROPA Region)	2,299,229	2,744,671	2,963,360	3,228,558
Marinduque	217,392	227,828	234,521	239,207
Occidental Mindoro	380,250	452,971	487,414	525,354
Oriental Mindoro	681,818	785,602	844,059	908,339
Palawan	593,500	771,667	849,469	939,594
City of Puerto Princesa	161,912	222,673	255,116	307,079
Romblon	264,357	283,930	292,781	308,985
Region V (Bicol Region)	4,686,669	5,420,411	5,796,989	6,082,165
Albay	1,090,907	1,233,432	1,314,826	1,374,768
Camarines Norte	470,654	542,915	583,313	629,699
Camarines Sur	1,551,549	1,822,371	1,952,544	2,068,244
Catanduanes	215,356	246,300	260,964	271,879
Masbate	707,668	834,650	892,393	908,920
Sorsogon	650,535	740,743	792,949	828,655

Region, Province, and Highly Urbanized City	01-May-00	01-May-10	01-Aug-15	01-May-20
Region VI (Western Visayas)	6,211,038	7,102,438	7,536,383	7,954,723
Aklan	451,314	535,725	574,823	615,475
Antique	472,822	546,031	582,012	612,974
Capiz	654,156	719,685	761,384	804,952
Guimaras	141,450	162,943	174,613	187,842
Iloilo	1,559,182	1,805,576	1,936,423	2,051,899
City of Iloilo	366,391	424,619	447,992	457,626
Negros Occidental	2,136,647	2,396,039	2,497,261	2,623,172
City of Bacolod	429,076	511,820	561,875	600,783
Region VII (Central Visayas)	5,706,953	6,800,180	7,396,898	8,081,988
Bohol	1,139,130	1,255,128	1,313,560	1,394,329
Cebu	2,160,569	2,619,362	2,938,982	3,325,385
City of Cebu	718,821	866,171	922,611	964,169
City of Lapu-Lapu (Opon)	217,019	350,467	408,112	497,604
City of Mandaue	259,728	331,320	362,654	364,116
Negros Oriental	1,130,088	1,286,666	1,354,995	1,432,990
Siquijor	81,598	91,066	95,984	103,395
Region VIII (Eastern Visayas)	3,610,355	4,101,322	4,440,150	4,547,150

Region, Province, and Highly Urbanized City	01-May-00	01-May-10	01-Aug-15	01-May-20
Biliran	140,274	161,760	171,612	179,312
Eastern Samar	375,822	428,877	467,160	477,168
Leyte	1,413,697	1,567,984	1,724,679	1,776,847
City of Tacloban	178,639	221,174	242,089	251,881
Northern Samar	500,639	589,013	632,379	639,186
Samar (Western Samar)	641,124	733,377	780,481	793,183
Southern Leyte	360,160	399,137	421,750	429,573
Region IX (Zamboanga Peninsula)	2,831,412	3,407,353	3,629,783	3,875,576
Zamboanga Del Norte	823,130	957,997	1,011,393	1,047,455
Zamboanga Del Sur	836,217	959,685	1,010,674	1,050,668
City of Zamboanga	601,794	807,129	861,799	977,234
Zamboanga Sibugay	497,239	584,685	633,129	669,840
City of Isabela	73,032	97,857	112,788	130,379
Region X (Northern Mindanao)	3,505,708	4,297,323	4,689,302	5,022,768
Bukidnon	1,060,415	1,299,192	1,415,226	1,541,308
Camiguin	74,232	83,807	88,478	92,808
Lanao Del Norte	473,062	607,917	676,395	722,902
City of Iligan	285,061	322,821	342,618	363,115

Region, Province, and Highly Urbanized City	01-May-00	01-May-10	01-Aug-15	01-May-20
Misamis Occidental	486,723	567,642	602,126	617,333
Misamis Oriental	664,338	813,856	888,509	956,900
City of Cagayan De Oro	461,877	602,088	675,950	728,402
Region XI (Davao Region)	3,676,163	4,468,563	4,893,318	5,243,536
Davao De Oro (Compostela Valley)	580,244	687,195	736,107	767,547
Davao Del Norte	743,811	945,764	1,016,332	1,125,057
Davao Del Sur	504,289	574,910	632,588	680,481
City of Davao	1,147,116	1,449,296	1,632,991	1,776,949
Davao Occidental	254,512	293,780	316,342	317,159
Davao Oriental	446,191	517,618	558,958	576,343
Region XII (Soccsksargen)	3,222,169	4,109,571	4,545,276	4,901,486
Cotabato (North Cotabato)	958,643	1,226,508	1,379,747	1,490,618
Sarangani	410,622	498,904	544,261	558,946
South Cotabato	690,728	827,200	915,289	975,476
City of General Santos (Dadiangas)	411,822	538,086	594,446	697,315
Sultan Kudarat	586,505	747,087	812,095	854,052
City of Cotabato	163,849	271,786	299,438	325,079
Region XIII (Caraga)	2,095,367	2,429,224	2,596,709	2,804,788

Region, Province, and Highly Urbanized City	01-May-00	01-May-10	01-Aug-15	01-May-20
Agusan Del Norte	285,570	332,487	354,503	387,503
City of Butuan	267,279	309,709	337,063	372,910
Agusan Del Sur	559,294	656,418	700,653	739,367
Dinagat Islands	106,951	126,803	127,152	128,117
Surigao Del Norte	374,465	442,588	485,088	534,636
Surigao Del Sur	501,808	561,219	592,250	642,255
Bangsamoro Autonomous Region in Muslim Mindanao	2,803,045	3,256,140	3,781,387	4,404,288
Basilan (Excluding City of Isabela)	259,796	293,322	346,579	426,207
Lanao Del Sur	800,162	933,260	1,045,429	1,195,518
Maguindanao (Excluding City of Cotabato)	801,102	944,718	1,173,933	1,342,179
Sulu	619,668	718,290	824,731	1,000,108
Tawi-Tawi	322,317	366,550	390,715	440,276

[1] 2020 Census of Population and Housing, Philippine Statistics Authority, https://psa.gov.ph/content/2020-census-population-and-housing-2020-cph-population-counts-declared-official-president

13.0 GLOSSARY OF TERMS

Agency **Asset Management Plans (AAMPs).** The AAMP is a two-year road map that will demonstrate how the agency's intended investment strategy will achieve its development activity and agency goals through its AMS. It is the agency's written representation of intended capital, maintenance and operational programs for its existing asset base, and investment in new infrastructure which is based on its understanding of demand, customer requirements and the details of its network or portfolio of assets (a group of assets with similar characteristics and use). In summary, the AAMP will provide the financial forecasts for maintenance, operational, capital renewal, and capital improvement budgets.

Annual Depreciation Expense. Is described as "Depreciation Expense" under the "Computation of Value in Use" section of the GAM. This is often considered a key indicator in developing AM practice, where annual depreciation expense aligns both asset useful lives with investment in capital rehabilitation/replacement programs. The present value of the asset's remaining service potential.

Asset. Refers to all non-financial assets of the government, including lands (such as, but not limited to, those with buildings, or used for agricultural purposes, or idle), buildings, infrastructures, and other critical assets as determined by the agencies concerned. Deemed as infrastructure assets, or any other asset considered by the GOP to be included for the purpose of the NAMP and AAMPs. Excluded from this definition are motor vehicles, mobile devices, furniture, and other non-critical assets.

Asset Hierarchy. A framework for segmenting assets based on appropriate classifications. The asset hierarchy can be based on asset function, asset type or a combination of the two (IPWEA AM 203, Lifecycle Planning, 2021).

Asset Management. Refers to coordinated activities of an organization to realize value from assets (PNS ISO 55000:2017, p. 14)

Asset Management Information System (AMIS). The overarching software system and associated quality management and business processes used for the storage, analysis and reporting of AM data (PGAMP, 2020); A computer-based tool which supports the AM functions (IPWEA AM 204, Asset Management Enablers, 2021)

Asset Management System (AMS). Management system for asset management whose function is to establish the asset management policy and asset management objectives (PNS ISO 55000:2017, p. 15). Defined under ISO 55000:2014, AMS is a set of interrelated and interacting elements of an organization, whose function is to establish the AM policy and objectives, and the processes needed to achieve those objectives. Elements of the AMS include the policies, plans, business processes and information systems, which are integrated to give assurance that the AM activities will be delivered in line with organizational objectives.

Asset Performance. The extent to which assets provide certain levels of service.

Climate. In the usual narrow sense, the

average weather. More rigorously, the statistical description 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. The climate in a wider sense is the state, including a statistical description, of the climate system (IPCC, 2014).

Climate Adaptation. The process of adjustment to actual or expected climate and its effects. In human systems, adaptation seeks to moderate or avoid harm or exploit beneficial opportunities. In some natural systems, human intervention may facilitate adjustment to the expected climate and its effects [Intergovernmental Panel on Climate Change (IPCC), 2014].

Climate Change. A change in the state of the climate that can be identified (for example, by using statistical tests) by changes or trends in the mean and/or the variability of its properties, and that persists for an extended period, typically decades to centuries, due to natural forces of human activity (Republic Act 10121). Climate change includes natural internal climate processes or external climate forcing such as variations in solar cycles, volcanic eruptions and persistent changes due to human activity in the composition of the atmosphere or in land use (IPCC, 2014).

Data. Raw internal inputs such as facts and figures, which are compiled either manually or using an automated system, that are not yet interpreted.

Depreciation. The systematic allocation of the depreciable amount (cost of an asset or other amount substituted for cost, less its residual value) of an asset over its useful life.

Disasters. Severe alterations in the normal functioning of a community or a society due to hazardous physical events interacting with vulnerable social conditions, leading to widespread adverse human, material, economic or environmental effects that require immediate emergency response to satisfy critical human needs and that may require external support for recovery (IPCC, 2014). Republic Act 10121 describes disasters as a result of combined exposure to hazard, presence and condition of vulnerability, and insufficient capacity or measure to cope or reduce possible negative consequences. It may impact human, physical, mental and social well-being, together with damage to property, destruction of assets, loss of services, social and economic disruption and environmental degradation.

Fair Value. The amount for which an asset could be exchanged or a liability settled, between knowledgeable, willing parties in an arm's length transaction.

High Exposure to Natural Hazards. The presence of people, livelihoods, species or ecosystems, environmental functions, services, resources, infrastructure, or economic, social, or cultural assets in places and settings that could be adversely affected by a change in the external stresses a system is exposed to. In the context of climate change, these are normally specific climate and other biophysical variables (IPCC, 2007).

Impacts. The effects on natural and human systems of extreme weather and climate events

and of climate change. Impacts generally refer to effects on lives, livelihoods, health, ecosystems, economies, societies, cultures, services and infrastructure due to the interaction of climate changes or hazardous climate events occurring within a specific time period, and the vulnerability of an exposed society or system. Impacts are also referred to as consequences and outcomes (IPCC, 2014).

Information. Data that has been given value through analysis, interpretation, or compilation in any meaningful form.

Infrastructure. Fixed structures that support socio-economic activities and well-being of the community, which includes buildings and physical networks such as transportation, water, power, communications, education and health facilities, and other related government assets.

Infrastructure Assets. Asset systems or networks that serve defined communities where the system as a whole is intended to be maintained to a specified level of service by the continuing maintenance and replacement of its components, for as long as the service is still required. Section 1.1.1 of IIMM; In addition to the criteria for recognizing Property, Plant and Equipment (PPE), infrastructure assets have the following additional characteristics:

　　　1. Part of a system or network
　　　2. Specialized in nature and do not have alternative uses
　　　3. Immovable
　　　4. May be subject to constraints on disposal
In accordance with Philippine Public Sector Accounting Standard (PPSAS) 17, public infrastructures shall be recognized as PPE in the agency's financial statements.

Infrastructure Fragility. Referred to as the ability of the asset to cope with natural events. Natural

fragility is defined in terms of two elements. First, there is the change in natural fragility that happens along a curve over time. At particular times on the curve, certain conditions may be more prevalent and, as a result, the overall fragility of the system may either suffer or improve. The second element is the wear and tear on the infrastructure as it is subjected to repeated strains. (McDougall, 2010).

Interoperability. The ability to transfer and use data and information in a uniform and effective manner across multiple organizations and IT systems.

Investment. The commitment of financial and physical resources to the delivery of government services with the expectation of receiving future benefits. It includes changes to asset portfolios or infrastructure managed by or through the covered agencies, such as through acquisition or disposal.

Levels of Service (LoS). Parameters or combination of parameters which reflect social, political, environmental, and economic outcomes that the organization delivers (PNS ISO 55000:2017, p. 15). Define the asset's performance targets in relation to reliability, quantity, quality, responsiveness, safety, capacity, environmental impacts, comfort, cost/affordability, and legislative compliance.

Lifecycle Costs. The amount of cash or cash equivalents paid and the fair value of the other consideration given to acquire an asset at the time of its acquisition or construction.

Metadata. Refers to "data about data" or the information describing aspects of data, such as name, format, content, and the control of, or over, data.

National Asset Registry System (NARS). Information technology-based registry being housed at and maintained by the BTr, which contains an inventory of assets of the government. Among those stored therein are the geographical, legal and financial data, asset attributes, risk mitigation features, and insurance information. It is also intended to include other modules such as asset lifecycle management, disaster risk modelling, and asset prioritization, identified as future improvements for the NARS.

Natural Disasters and Other Hazards. The potential occurrence of a natural or human-induced physical event, trend or physical impact that may cause loss of life, injury or other health impacts, as well as damage and loss to property, infrastructure, livelihoods, service provision, ecosystems and environmental resources (IPCC, 2014).

Non-financial Assets. Assets of the government which have significant social, economic or environmental impact to the country, such as schools, government buildings, roads, bridges, hospitals, dams, irrigation facilities, and treatment and welfare centers (DOF-DBM-NEDA JMC No. 2020-1).

Pilot Agencies. The government agencies for the pilot roll-out of the AMS, i.e., the assets included in this plan are those that are managed by the Department of Education (DepEd), Department of Public Works and Highways (DPWH) and Department of Health (DOH).

Property, Plant and Equipment (PPE). Are tangible assets that are:
1. Purchased, constructed, developed or otherwise acquired
2. Held for use in the production or supply of

goods or services or to produce program outputs
3. For rental to others
4. For administrative purposes
5. Expected to be used during more than one reporting period
6. Not intended for resale in the ordinary course of operations

Resilience. The capacity of social, economic, and environmental systems to cope with a hazardous event, trend, or disturbance by responding or reorganizing in ways that maintain their essential function, identity and structure, while also maintaining the capacity for adaptation, learning, and transformation (IPCC, 2014). It refers to the ability of a system, community or society exposed to hazards to resist, absorb, accommodate and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions (Republic Act 10121).

Risk. The potential for consequences where something of value is at stake and where the outcome is uncertain, recognising the diversity of values. Risk is often represented as probability or likelihood [chance of a specific outcome occurring, where this might be estimated probabilistically (IPCC, 2014)] of occurrence of hazardous events or trends, multiplied by the impacts if these events or trends occur. The term 'risk' is used to refer to the potential, when the outcome is uncertain, for adverse consequences on lives, livelihoods, health, ecosystems and species, economic, social and cultural assets, services (including environmental services), and infrastructure. Republic Act 10121, defined risk as the combination of the probability of an event and its negative consequences. Risk results from the interaction of vulnerability, exposure, and hazard.

To address the evolving impacts of climate change, risk can also be defined as the interplay between hazards, exposure, and vulnerability (IPCC, 2014).

Risk Assessment. The overall qualitative and/or quantitative process of risk identification, risk analysis, and risk evaluation, with multiple entry points for communication and engagement and monitoring and reviews (AS/NZS ISO 31000:2009, Risk Management Standard). Republic Act 10121 or the Philippine Disaster Risk Reduction and Management Act of 2010, risk assessment is a methodology to determine the nature and extent of risk by analyzing potential hazards and evaluating existing conditions of vulnerability that together could potentially harm exposed people, property, services, livelihood and the environment on which they depend. Risk assessments with associated risk mapping include: a review of the technical characteristics of hazards such as their location, intensity, frequency and probability; the analysis of exposure and vulnerability including the physical, social, health, economic and environmental dimensions; and the evaluation of the effectiveness of prevailing and alternative coping capacities in respect to likely risk scenarios.

Useful Life. The period over which an asset is expected to be available for use by an agency.

Value. The net fiscal, economic, and well-being benefits of an asset or investment proposal over its lifecycle considering dimensions of effectiveness, efficiency, sustainability, resilience, and adaptability.

Vulnerability. The propensity or predisposition to be adversely affected. Vulnerability encompasses a variety of concepts and elements, including sensitivity or susceptibility to harm and lack of capacity to cope and adapt (IPCC, 2014). Vulnerability is the characteristics and circumstances of a community, system or asset that make it susceptible to the damaging effects of a hazard. It may arise from various physical, social, economic, and environmental factors which may include poor design and construction of infrastructure, minimal protection of assets, ineffective public information and awareness, limited official recognition of risks and preparedness measures, and disregard for wise environmental management (Republic Act 10121)