CHAPTER 19

Accelerating Infrastructure Development

Infrastructure projects continued to be implemented even during the COVID-19 pandemic. It will remain an important strategy to accelerate economic recovery and build resiliency going forward.

ASSESSMENT

The sector aims to continue investing in infrastructure and increase public infrastructure spending as a percentage share of the gross domestic product (GDP) and as a foundation for sustainable and inclusive growth.

Table 19.1 summarizes the medium-term fiscal program for infrastructure, showing actual disbursements from 2016 to 2021 and the targets for 2022 until 2024. Buoyed by significant increase in infrastructure investments, the country had robust economic performance, particularly for fiscal years prior to the pandemic. For the years 2023-2024, the Development Budget Coordination Committee (DBCC) target for the infrastructure program is set at more than 5 percent of the GDP. This affirms the important role of infrastructure in the country's economic recovery and resiliency program.

Table 19.1 Medium-Term Fiscal Program for Infrastructure, in PHP billion

Particulars	2016	2017	2018	2019	2020	2021	2022	2023	2024
	Actual Disbursements						Targets		
Infrastructure Disbursements	590.5	690.8	886.2	1,049.9	869.9	1,123.6	1,271.1	1,294.9	1,377.1
% of GDP	3.9%	4.2%	4.9%	5.4%	4.8%	5.8%	5.9%	5.5%	5.4%

Source: Department of Budget and Management (DBM)/(DBCC)

Note: Disbursements include estimated NG infrastructure disbursements, and infrastructure components of subsidy and equity to Government Owned and Controlled Corporation (GOCC) and transfers to local government units (LGU).
FY 2022-2024 figures consistent with the macroeconomic assumptions and fiscal targets approved during the 180th DBCC Meeting on December 14, 2021.[1]

At the onset of the pandemic, the government shifted its infrastructure investment priorities to respond better to the new priorities. These include: (a) provision of basic services such as adequate access to electricity; (b) water supply and sanitation, and health infrastructures; (c) upgrading and expansion of transportation facilities to address mobility requirements; and (d) expansion of the country's digital infrastructure to facilitate digital transformation.

[1] DBM: 180th DBCC Meeting (dbm.gov.ph)

The government has long recognized the role of the private sector in infrastructure development, especially given the fiscal situation brought about by the pandemic. Thus, amendments to the Build-Operate-Transfer (BOT) law (RA 6957) Implementing Rules and Regulations (IRR) were pursued to enhance the effectiveness of Public-Private Partnerships (PPP) in infrastructure development. While the bill amending RA 6957 as amended by RA 7718 was not listed as a legislative priority, both houses of Congress have deliberated on the bill.

NEDA also initiated a study looking into the distribution of infrastructure funds across the country. Regional level data on infrastructure statistics show huge disparities across regions. While this may partly be attributed to the unique needs of each region, social infrastructure indicators show that not all regions are provided adequate facilities and services. Infrastructure data at sub-regional levels is sparse, making it difficult to plan for equitable distribution of infrastructure interventions.

PURSUING NECESSARY INFRASTRUCTURE UNDER THE NEW NORMAL

Transport

One of the biggest impacts of the COVID-19 pandemic on the transportation sector is the reduced demand for passenger transport services. This is due to the combination of community quarantine and mobility restrictions imposed by the government given the high risk of contracting and spreading COVID-19 when using public transportation.

Nonetheless, with the need to re-open the economy while managing health risks, it was important to address the mobility requirements of the riding public, including, among others, the expansion of operations of public transportation, promotion of active/non-motorized transport, and the use of information and communication technology (ICT) for contactless transactions.

Land-based Transport

Land-based transport infrastructure and services were improved to reduce travel time and improve mobility. The Metro Manila Skyway Stage 3 (MMSS3) opened to traffic, and helped decongest EDSA and other major roads along the alignment, reducing travel time from Buendia to Balintawak from two hours to 15-20 minutes.[2] The Kalayaan Bridge was also opened to traffic and helped shorten travel time from Bonifacio Global City to Ortigas from one hour to 12 minutes.[3,4]

EDSA was identified as a main thoroughfare for public transport in the National Capital Region (NCR). The interim operations of the EDSA Busway system started on June 1, 2020, complementing MRT-3 operations and the Bus Augmentation Program in transporting commuters.[5] The Busway features the use of a dedicated lane with 13 stations at the median island to avoid conflict with connecting streets, driveways, commercial centers, and curbside drop-off points, allowing for safer and more efficient travel.

[2] Metro Manila skyway stage 3 (MMSS-3). METRO MANILA SKYWAY STAGE 3 (MMSS-3) | Department of Public Works and Highways. (n.d.). Retrieved December 15, 2021, from https://www.dpwh.gov.ph/DPWH/PPP/projs/MMSS-3

[3] #BuildBuildBuild. (2021, March 23). DPWH to partially open bridge connecting BGC-Ortigas in May. DPWH to Partially Open Bridge Connecting BGC-Ortigas in May | Department of Public Works and Highways. Retrieved December 15, 2021, from https://www.dpwh.gov.ph/DPWH/news/22022

[4] #BuildBuildBuild. (2021, June 12). DPWH opens Kalayaan Bridge on Independence Day. DPWH Opens Kalayaan Bridge on Independence Day | Department of Public Works and Highways. Retrieved December 15, 2021, from https://www.dpwh.gov.ph/DPWH/news/22680

[5] Comms, D. O. T. M. (n.d.). Govph. DOTr. Retrieved December 15, 2021, from https://dotr.gov.ph/55-dotrnews/1790-interim-operations-of-edsa-busway-starts-today.html

Travel time from Monumento to the Parañaque Integrated Terminal Exchange (PITX) was shortened from three to four hours to 45 minutes.

As a response to the COVID-19 pandemic and community quarantine in 2020, the Land Transportation Franchising and Regulatory Board (LTFRB) issued the guidelines[6] for the operations of public utility buses (PUBs) during the general community quarantine (GCQ) period in Metro Manila.

As a precautionary measure against COVID-19, the Department of Transportation (DOTr) and the Toll Regulatory Board (TRB) intensified the use of cashless and contactless transactions through the Radio Frequency Identification (RFID) system in tollways beginning December 2020.[7]

In line with the primary purpose of the *Bayanihan* to Recover as One Act (RA 11494, *Bayanihan* 2), the Metropolitan Bike Lane Networks Project covers areas where economic activities are the highest–Metro Cebu, Davao, and Manila. The total length of bike lanes completed as of June 2021 for the three metropolitan areas is 497 kilometers (km). The Metro Cebu bike lanes have an overall network length of 19.66 km, traversing four LGUs: Lapu-Lapu, Mandaue, Cebu City, and Talisay. The Metro Davao bike lanes have an overall network length of 54.74 km and traverses 14 road sections within the city. The Metro Manila bike lanes have an overall network length of 313.12 km, traversing major thoroughfares (R-1 to R-7, R-3, R-4, R-6, R-8, C-4, and C-5) and 12 cities (Pasig, Marikina, Quezon City, Caloocan, Manila, San Juan, Mandaluyong, Makati, Pasay, Las Piñas, Parañaque, and Taguig).

To augment the existing bike lane network in Metro Manila, bike lane expansion work is being completed in South Metro Manila (with a target length of 49.36 km covering Parañaque, Muntinlupa, and Las Piñas) and in East Metro Manila (with a target length of 16.38 km covering Marikina City).

As part of the COVID-19 response and recovery interventions under *Bayanihan* 2, the Public Utility Vehicle (PUV) Service Contracting Program (SCP) was implemented as a performance-based subsidy to assist transport workers and ensure availability and sustainability of operations of efficient and safe public transportation. Under the SCP, the Free Ride or *Libreng Sakay* program was also implemented to help healthcare workers and authorized persons outside residence (APORs) to safely travel amid the pandemic. By June 30, 2021, the SCP recorded 70,303 registered drivers and an estimated 30,588,969 riders.[8] On September 10, 2021, the SCP Phase II was launched. By December 22, 2021, the SCP Phase II recorded an estimated 42,730,456 riders.

Strategic corridors are still being expanded and enhanced. The government continued the upgrading, expansion, and adequate maintenance of the Philippine road network to facilitate efficient movement of people and goods. From October 2020 to October 2021, the total length of national roads increased by 93.05 km (i.e., from 33,119.57 km to 33,212.62 km). Moreover, the total length of paved roads increased by 240.42 km (i.e., from 32,527.04 km to 32,767.46 km) in the same period. Meanwhile, the number of permanent bridges constructed from October 2020 to November 2021 likewise increased by

[6] Google. (n.d.). MC-2020-019-W-ANNEXES-2.PDF. Google Drive. Retrieved December 15, 2021, from https://drive.google.com/file/d/1m8dQLUgWjgnE9SYCcJ7RTLoEbKeoS_Wr/view

[7] Google. (n.d.). Dept. order no. 2020-012 requiring cashless or contactless on tollways.pdf. Google Drive. Retrieved December 15, 2021, from https://drive.google.com/file/d/1NL6GNc0-2uC0nE1R6p5TaTjgLUBYwA-s/view

[8] Comms, D. O. T. M. (n.d.). Govph. DOTr. Retrieved December 15, 2021, from https://dotr.gov.ph/55-dotrnews/3804-service-contracting-program-released-p-1-5-billion-to-beneficiary-drivers-nationwide-under-the-bayanihan-funds.html

4,311 linear meters (lm) from 382,616 lm to 386,927 lm. Additionally, the length of national bridges increased by 3,836 lm from 384,221 lm to 388,057 lm over the same period.

Rail Transport

The national government endeavored to expand the railway network and develop new lines as a safe and fast mode of travel in high-density corridors, and efficient means of transporting goods. The rail sector was severely affected by the enforcement of 20-30 percent maximum capacity for all public transportation to curb the spread of COVID-19. As restrictions began to ease, a steady increase in ridership was observed in Light Rail Transit (LRT) Line 1, LRT Line 2, and Metro Rail Transit Line (MRT-3). From a total ridership of 4.72 million during the period of enhanced community quarantine (ECQ) in April 2021, it has increased to a total ridership of 12.73 million during the easing of quarantine restrictions to Alert Level 2 in December 2021.

On July 5, 2021, the LRT Line 2 East Extension Project began partial operations, adding 3.79 km to the present 13.8 km operational line. Meanwhile, as of December 2021, the overall status of completion of the MRT-7 Project is at 62.10 percent.

The arrival of the first two tunnel boring machines (TBMs) in February 2021 signaled the start of the implementation of the Metro Manila Subway Project (MMSP) Phase I.

Project preparation for additional rail projects continued with the completion of the feasibility studies of the revival of the Tarlac-San Jose Spur Line and Balagtas-Cabanatuan Spur Line (Northeast Commuter Line) and the North Philippine Dry Port Container Rail Transport Service. These projects support the country's goal to establish rail-based connection for faster movement of freight and the decongestion of truck traffic in the road network.

Air Transport

As of the third quarter of 2021, 9.11 million total passengers were transported via air. Around 2.29 million of whom were via international flights and 6.83 million were through domestic flights. In terms of cargo, a total of 133.74 million metric tons (MMT) was handled, with international cargo at 18.54 MMT and domestic cargo at 115.20 MMT. Both passenger and cargo throughputs at 32.65 million and 277.92 million, respectively, were significantly below the 2021 targets.

To help reduce interruptions in airport operations amidst the pandemic, the Civil Aviation Authority of the Philippines (CAAP) issued various memoranda extending the validity of: (a) licenses and certificates for airmen;[9] (b) certificates for flight operators, which include air operators, and validation of foreign air operator certificates, certificates for handling dangerous goods, Remotely Piloted Aircraft System (RPAS) operators, and agricultural aircraft operators, among others;[10] and (c) aircraft material distributors and maintenance organizations.[11]

[9] CAAP Memorandum Circular (MC) No. 08-2021 dated 26 March 2021 informing that the validity of airmen licenses and certificates, which were extended pursuant to MC No. 10-2020 dated 13 March 2020, remains valid until 30 June 2021.

[10] CAAP MC No. 09-2020 dated 29 March 2021 informing that the validity of certify`icates emanating from CAAP-Flight Operations Department, which were extended pursuant to MC Nos. 10-, and 14-2020 dated 13 and 16 March 2020, respectively, remains valid until 30 September 2021.

[11] CAAP MC No. 07-2020 dated 22 March 2021 informing that the validity of certificates emanating from CAAP-Airworthiness Department, which were extended pursuant to MC No. 10-2020 dated 13 March 2020, remains valid until 30 September 2021.

To enable safe and reliable air transportation, stakeholders were directed to adopt the Safety Seal Certification (SSC) Program implemented under the directives of the Inter-Agency Task Force for the Management of Emerging Infectious Diseases (IATF-EID). Among the measures incorporated in the SSC Program is the mandatory adoption of the Stay Safe Application (Staysafe.ph) which aids the contact tracing initiatives of the government to help control the spread of COVID-19.

Moreover, the Civil Aeronautics Board (CAB) Resolution No. 69 dated October 4, 2021 and IATF-EID Resolution No. 141, s. 2021 provided for the operation of triangulated international flights as a measure to maximize the arrival capacity of flights, accommodate more returning Filipinos to the country, and utilize the available quarantine facilities at other gateways. Conditions to allow airlines to operate include but are not limited to: (a) regular commercial flights operation requirements; (b) IATF health protocols and LGU-imposed regulations; (c) international arrival passenger capacity by airport authorities or local one-stop shop (OSS); (d) health declaration submission and One Health Pass registration; and (e) informing all its passengers of the required protocols and/or other necessary information in a timely manner.

In parallel, DOTr continued to expand the capacities of airports to accommodate increasing demand. Airport projects that have been completed/upgraded to accommodate more passengers include Bicol International Airport, General Santos Airport, Camiguin Airport, Zamboanga Airport, and Siquijor Airport.

Maritime Transport

The COVID-19 pandemic has significantly affected the movement of people and cargo in the maritime sector. As of December 2021, 26.60 million passengers have been transported by sea.[12] In terms of cargo throughput, a total of 336.56 million metric tons of cargo was handled.[13] This remains significantly below pre-pandemic levels and behind the targets for 2021. Operations of passenger ships have been more affected than cargo carriers due to travel restrictions and decrease in the maximum allowable passenger capacity. As the country shifted to a more relaxed alert level status, the Maritime Industry Authority (MARINA) increased the allowable capacity of passenger ships, provided that all necessary safety protocols are implemented.

There have been efficiency improvements and capacity expansion in the maritime transport sector. Amid the challenges brought by the pandemic, the upgrading and expansion of the Port of General Santos (Makar Wharf) was completed. It can now accommodate at least 1,300 large ships calling every year. The Makar Wharf was also identified as one of the Brunei Darussalam, Indonesia, Malaysia, and the Philippines-East ASEAN Growth Area (BIMP-EAGA) gateway ports in the country.[14] In line with enhancing inter-island connectivity and mobility, a total of 579 seaport projects focusing on port development, expansion, rehabilitation, and modernization have been completed since 2016.

[12] Source of data: Philippine Ports Authority (PPA) and Cebu Ports Authority (CPA)
[13] Source of data: PPA, CPA, Subic Bay Metropolitan Authority (SBMA), Authority of the Freeport Area of Bataan (AFAB), and Cagayan Economic Zone Authority (CEZA).
[14] Based on the 2007 Memorandum of Understanding (MOU) between the Governments of Brunei Darussalam, Indonesia, Malaysia, and the Philippines on establishing and promoting efficient and integrated sea linkages.

To further strengthen the country's roll-on/roll-off (RORO) network, a new route from Matnog, Sorsogon to Bogo City, Cebu was opened to provide a direct link between Luzon and Visayas islands. MARINA also issued the revised rules in the grant of missionary route[15] status for RORO passenger (RoPax) ships.

An automated passenger ticketing system was implemented in passenger terminals of Philippine Ports Authority (PPA) to limit face-to-face interactions. Aside from the passenger ticketing system, an electronic-payment portal (EPP) was implemented to digitize the collection and payment of port fees and other related charges. The EPP is integrated with PPA's online systems such as the Electronic Accreditation System (eAS), Electronic Permit Management System (ePMS), and Internet-based Port Operations and Receipting for Terminals System (iPORTS).

Safety and Security

Death rate due to road traffic accidents has significantly decreased. As of second quarter of 2021, there was a decrease in death rate due to road traffic accidents from 10.9 deaths per 100,000 population in 2016 to 7.97 deaths per 100,000 population in 2020[16] and 3.85 deaths per 100,000 in 2021.[17] Both were lower than the annual target of 10 deaths per 100,000 population. The decreasing trend in road traffic accidents is reflective of the impact of travel and movement restrictions due to the pandemic.

Overall compliance of transport facilities with their respective security plans, programs, rules, and regulations was recorded at 64 percent[18] in 2020 and at 47 percent in the 3rd quarter of 2021. Both are lower than the target of 90 percent. This is due to the non-submission of corrective action reports by transport facilities, internal issues on the endorsement of compliance certificates, and postponement or cancellation of field visits and inspections. Note that the latter was due to the imposition of community quarantine and mobility restrictions during the pandemic.

Water Resources

COVID-19 further emphasized the continuing need to develop and improve water supply and sanitation in the country. It also brought to the fore the issue of food security, which is linked to the current situation of the country's agriculture and irrigation requiring efficient management of water resources *(see Chapters 8 and 20).* Meanwhile, considering the need for resilience against severe flooding as experienced in certain regions—such as that in Cagayan Valley brought about by Typhoon Ulysses and the catastrophic effects of Typhoon Odette on the Visayas Region—flood control and risk management will have to be given due attention.

Water Supply and Sanitation (WSS)

WSS policies, plans, and programs in accordance with the Philippine Water Supply and Sanitation Master Plan (PWSSMP) key reform agenda continue to be pursued. With the launch of the PWSSMP on September 16, 2021, several initiatives aligned with the overarching goal of universal access to safe, sufficient, affordable, and sustainable water supply and sanitation have progressed.

[15] Missionary route refers to a route involving one or more direct links covering one RORO capable, available, and suitable ports that have no existing shipping service due to geographic limitation or absence of economic and market viability; MARINA MC No. DS-2021-01 .
[16] Source of data: PSA 2020 census and number of registered deaths associated with road transport accidents.
[17] Source of data: PSA number of registered deaths associated with road transport accidents from January 2021 to June 2021
[18] Source: Office for Transportation Security (OTS)

House Bill (HB) 9948, which provides for the establishment of the Department of Water Resources (DWR) and the Water Regulatory Commission (WRC), was filed at the House of Representatives on August 9, 2021, and is up for plenary deliberation. As for the National Water Management Council (NWMC), a draft executive order is under review by the Office of the Executive Secretary (OES).

The table below provides a summary of and updates on the Key Reform Agenda (KRA) under the PWSSMP.

Key Reform Agenda	Focus	Updates
1. Establishing effective WSS sector institutions	Addressing the fragmented WSS sector	Provincial and municipal WSS master plans to align with the PWSSMP are being updated.
2. Strengthening the regulatory environment	Regulating and managing water resources and water service providers (WSP), including water tariffs	Amendments are being made to streamline issuance of water permits and certificates of public convenience (CPCs) to WSPs.
3. Creating and ensuring effective WSS services	Ensuring appropriate and sustainable operations of WSS service providers	The Local Water Utilities Administration (LWUA) issued Memorandum Circular 011-18 to establish key performance indicators (KPIs) to monitor water district (WD) performance.
4. Balancing water supply and demand	Managing and maximizing finite water resources with end-users	Groundwater management plans are being developed for constrained areas. Comprehensive water resource assessments are ongoing in 18 major river basins. There are also ongoing non-revenue water reduction programs for identified WDs care of the LWUA
5. Building climate resiliency	Adapting to climate change	The DPWH has adopted new provisions in their Design Guidelines, Criteria and Standards, and Standard Specifications for climate-resilient hydraulic structures to complete the revised Green Building Code, with inclusion of provision on standards for water efficiency in building design and construction.
6. Enabling access to funding and financing	Improving availability and acquisition of funds/ financing for WSS	The adoption of a common and unified framework for resource allocation for WSS was submitted to the NEDA Board Committee on Infrastructure (INFRACOM) for approval.
7. Managing data and information	Ensuring availability and accessibility of reliable WSS data	Coordination meetings with the safe water project of the United States Agency for International Development (USAID) have been conducted regarding the development/enhancement of tools related to water utility governance, local water security planning, and support to peer review sessions.
8. Driving research and development	Investing in research and innovations	Regular webinars and various learning sessions through the WSS Virtual Network Sessions were also held, one of which showcased the various research and technologies developed in partnership with the Department of Science and Technology (DOST).

Accomplishments are below WSS targets. According to the Annual Poverty Indicators Survey (APIS), the number of households with access to water supply stood at 91.60 percent in 2020, falling short of the target of 93.11 percent for the year. Coverage of improved sanitation was at 93.90 percent, also below the target of 94.60 percent. To expedite delivery of WSS services in areas where such services are highly needed, a NEDA Board issuance on a common and unified framework for resource allocation for WSS is being proposed.

In the case of Metro Manila, which had been hounded by water interruptions, the completion of the Angat Water Transmission Improvement Project (AWTIP) Tunnel No. 4 in 2020 jumpstarted the rehabilitation of the other aqueducts and tunnels within the Umiray-Angat-Ipo System. This will contribute to improved water security for Metro Manila. On September 7, 2021, the construction of the AWTIP's Aqueduct No. 7 commenced. Meanwhile, preconstruction activities for Tunnel No. 5 began in December 2021.

Meanwhile, in line with the Mandanas-Garcia ruling and the agency's mandate to capacitate LGUs, the Department of the Interior and Local Government (DILG) commenced its profiling of LGU-run water service providers using KPIs. As of December 2021, around 470 LGU-run water utilities have been profiled. Outputs of the profiling activity will be used for the agency's capacity development interventions.

Irrigation

Irrigation development is on track at 64.12 percent in 2020. The National Irrigation Administration (NIA) implemented 170 infrastructure projects for CY 2020, of which 38 projects are in Luzon, 32 in Visayas, 20 in Mindanao, and 80 in selected provinces nationwide. Collectively, these projects resulted in the generation of 26,839 hectares (ha.) of irrigated area and the restoration of 10,895 ha. of irrigation service areas. NIA operated and maintained 247 national irrigation systems (NIS) with an aggregate service area of 901,406 ha. and a firmed-up service area (FUSA) of 801,899 ha. A cropping intensity of 157.93 percent was achieved based on the service area or 177.53 percent based on the FUSA. As of December 31, 2020, feasibility studies for 141 projects and detailed engineering designs for 83 projects were completed.

Flood Control and Management

Flood management plans for several priority river basins were formulated, particularly for Abra, Apayao-Abulug, Jalaur, Buayan-Malungon, Tagum-Libuganon, Ranao (Agus), and Davao. Feasibility studies of proposed priority measures for these major river basins commenced in 2021. The completion of these master plans marked the completion of the flood management master plans for the 18 major river basins in the country.

One of the notable large-scale flood control projects is the Flood Risk Management Project-Cagayan, Tagoloan, and Imus River (FRIMP-CTI), with the Tagoloan River and the Cagayan River subprojects completed in 2019.

Lack of data on flood control remains a constraint in objectively measuring achievements in the sector. The Department of Public Works and Highways (DPWH) is developing an asset management information system for flood risk management (AMIS-FRM) to assist in strategic planning of integrated flood risk management (IFRM) infrastructure development as well as improve monitoring and maintenance works.

Energy

Critical policy reforms to increase competition and encourage investments in the energy sector were implemented. Energy Virtual One-Stop Shop (EVOSS) Act (RA 11234) streamlined the permitting process for all new power generation, transmission, and distribution projects. The establishment of the EVOSS System, a web-based monitoring system for energy applications and a repository of project-related information and permits issued, allowed coordinated submission and synchronous processing of data and information relative to applications for energy projects. The Competitive Selection Process (CSP) introduced in 2015 was enhanced, ensuring competitive, transparent, and least-cost procurement of power supply by distribution utilities for the captive market.

Changes were made to the design of the Wholesale Electricity Spot Market (WESM) to improve its efficiency. The electricity dispatch interval was shortened from one hour to five minutes, allowing a more competitive pricing strategy. Changes in the WESM Market Manual and Retail Rules were made to promote participation in Retail Competition. The establishment of the reserve market also allowed least-cost scheduling of reserves, making WESM more competitive and transparent. However, full commercial operation of the WESM Mindanao has not been realized since its launch in 2017 due to delayed completion in the registration of participants. Based on the November 15, 2021 monitoring report of the Independent Electricity Market Operator of the Philippines (IEMOP), only 41 out of 100 expected participants are fully registered in the WESM Mindanao. Notwithstanding, the System Operator and Generators in Mindanao have transitioned to WESM Central Scheduling on June 26, 2021.

Policies/framework to increase the utilization and competitiveness of renewable energy (RE) were adopted. Rules and guidelines governing the establishment of renewable portfolio standards (RPS) for on-grid and off-grid areas were promulgated. These policies require Distribution Utilities (DUs) to source a portion of the annual power requirement from renewable sources. The rules governing the establishment of the Green Energy Option Program (GEOP) and Green Energy Auction Program (GEAP) were also established. The GEOP gave qualified electricity end-users the power of choice by allowing them to source power from RE suppliers. On the other hand, the GEAP provided RE suppliers with a venue to sell their power capacity at a price that allows them to recover their investments. The rules for operationalization of the RE market, enabling market participants to trade RE Certificates, were also issued.

Reduction of electricity cost. The *Murang Kuryente* Act (RA 11371) allowed the use of PHP208 billion proceeds of the net national government share from the Malampaya Fund for the payment of Stranded Contract Cost (SCC) and Stranded Debt (SD) of the National Power Corporation (NPC) that were assumed by the Power Sector Assets and Liabilities Management Corporation (PSALM).

Transition to a low-carbon energy future poses significant challenges particularly in ensuring the reliability of energy supply. The push for the reduction of greenhouse gas (GHG) emissions has seen many countries transition to low-carbon development. For the energy sector, this meant less reliance on coal and oil-based power plants and increased utilization of RE. However, increasing the share of RE, such as solar and wind, will reduce grid reliability due to their intermittence. Moreover, the commissioning of new power plants takes time.

In terms of installed and dependable capacities, coal-fired power plants contributed 42.5 and 44.9 percent to the 2021 power capacity mix, respectively. While the Department of Energy (DOE) began imposing the moratorium of endorsement for greenfield coal-fired power projects on October 27, 2020, there are still about 4,353.4 megawatts (MW) committed and 1,520 MW indicative coal-fired power projects in the pipeline with target commercial operations from 2022 to 2032.

Meanwhile, the concession for the Malampaya Gas resource is set to expire by 2024 with expected reduction in supply starting in 2022. This is currently the country's only source of natural gas and provides approximately 429 million standard cubic feet per day (MMSCFD) to several natural gas-fired power plants in Luzon with a total capacity of 3,453 MW. The expiration of the concession will affect the country's energy self-sufficiency. In preparation for the eventual depletion of the indigenous Malampaya resource, the DOE issued several permits to private sector companies interested in developing imported Liquefied Natural Gas (LNG)-receiving terminals. These companies are expected to commercially operate the LNG-receiving terminals by mid-2022. As of December 2021, DOE has already issued six active permits to interested proponents to set up LNG terminal projects amounting to about PHP51.21 billion with an aggregate capacity of 21.7 million tons per annum (MTPA). To provide transparent guidelines for prospective investors, the DOE issued the Rules and Regulations Governing the Philippine Downstream Natural Gas Industry. However, there is still a need for a unified law/policy for the natural gas industry to ensure the proposed projects will proceed as planned and propel the growth of the emerging natural gas industry into a mature industry status.

Alternative and cleaner sources of energy. Considering that hydrogen fuel is also considered a viable alternative and cleaner source of energy, the DOE also conducted a study on hydrogen and fusion energy. The completed study showed the potential benefits of hydrogen as an alternative energy source, subject to non-fossil fuel as feedstock.

Meanwhile, through the issuance of Executive Order (EO) No. 116 on July 24, 2020, the DOE-Nuclear Energy Program Implementing Organization (NEPIO) and the Nuclear Energy Program Inter-Agency Committee (NEP-IAC) were established to formulate a national strategy and roadmap addressing the challenges to implementing a Nuclear Power Program (NPP).

Ancillary services are needed to minimize power outages. The issuance of red and yellow alerts by the DOE on May 31, 2021 to June 2, 2021, and the power interruptions experienced in some areas of the Luzon Grid were caused by an insufficient level of ancillary services. These incidents emphasized the role of ancillary services in maintaining the reliability of the supply of electricity in the grid especially as the country transitions to clean energy. The intermittence of variable renewable energies (VREs) greatly affects grid reliability.

While there may be enough installed capacity, the reliability of power plants remains a concern. The "yellow" and "red" alerts recorded in Luzon and Visayas mid-2021 were due to a variety of factors such as unplanned and extended power plant outages, Malampaya gas restrictions (Luzon), decrease in output of solar facilities (Visayas), and insufficient operational reserves. Delays in the commercial operation of new power projects also affect the availability of supply as its capacity is anticipated and considered in the scheduling of planned outage of power plants for maintenance and repair purposes.

To ensure the stability of the power grid, the DOE is strictly enforcing the implementation of the Ancillary Services Policy for the NGCP to fulfill its obligation of providing sufficient levels of ancillary services or power reserves. On June 21, 2021, DOE directed the NGCP to fully comply with the Ancillary Services Policy by procuring the required levels of ancillary services (AS) through firm-contracted arrangements. Likewise, the DOE continues to work closely with enforcement agencies such as the Energy Regulatory Commission (ERC), Philippine Competition Commission (PCC), and Department of Justice (DOJ) to ensure that unplanned, prolonged, and alleged malicious activities of power industry players are scrutinized, investigated, and penalized.

Household electrification. As of December 2021, 95.41 percent of the country or 25.02 million households[19] were provided access to electricity services of DUs, while a total of 1.10 million households remained without access.

To complement the government's ongoing efforts to increase electricity access, the President signed EO 156[20] on December 12, 2021, directing the DOE to identify and take the necessary actions in ensuring that total electrification is realized in inadequately served areas.[21] It also mandates all DUs to submit a comprehensive electrification master plan (CEMP) and allows the DOE to modify or reject the CEMPs if they are not in accordance with the total electrification objective or do not ensure the highest quality and least-cost of service for providing electricity.

Energy efficiency as a way of life. The passage of the Energy Efficiency and Conservation Act of 2019 (RA 11285) and the issuance of its IRR in 2019 ended the country's almost 30 years of voluntary energy efficiency market. In line with this, priority programs have been put in place to include: (a) the Government Energy Management Program (GEMP); (b) Demand Side Management, Philippine Energy Labeling Program (PELP); (c) mainstreaming of energy efficiency and conservation in LGUs; (d) performance improvement of government buildings/facilities; and (e) development of the National Energy Efficiency and Conservation Plan (NEECP).

Resiliency of energy infrastructure. The Energy Resiliency Policy was issued on January 17, 2018 to strengthen existing infrastructure facilities, incorporate mitigation improvements into their reconstruction and rehabilitation plans, improve operational and maintenance standards and practices, and develop resiliency standards. This policy stipulates that all energy industry players are expected to formulate and submit their respective Resiliency Compliance Plans (RCP), which contain an inventory of all plans, programs, and activities pertaining to improvement of infrastructure and systems, stockpiling, and response and recovery measures. As of December 2021, 161 industry players have already submitted their respective RCPs.

The energy sector likewise activated its Task Force on Energy Resiliency (TFER) during calamities/disasters for quick response and rehabilitation. The TFER is called upon to address power supply disruptions brought about by typhoons and other natural disasters.

[19] The potential households based on PSA's 2015 Census is 22,984,271.

[20] "Instituting Measures to Ensure Consistent and Reliable Electricity Service in Inadequately Served Areas, Improve Performance of Ineffective Distribution Utilities, and Achieve Total Electrification of the Country" signed by the President on 12 December 2021.

[21] Collective term for unviable, unserved, underserved, and poorly served areas.

ICT Infrastructure

The country's digital connectivity improved, mainly through industry players' efforts. According to Speedtest Global Index, the country's Internet speed improved significantly since the end of 2020. As of December 2021,[22] average download speed of 82.61 megabits per second (Mbps) was recorded for fixed broadband, a significant increase from 31.07 Mbps in December 2020. Moreover, mobile broadband speed was estimated at 42.22 Mbps, almost double from 22.50 Mbps in the same period. Despite these improvements, the country's digital infrastructure remains inadequate with current Internet speeds below the global average[23] of 123.91 Mbps and 71.11 Mbps for fixed and mobile broadband, respectively.

Rural-urban disparity in terms of digital connectivity is still persistent.[24] The substantial digital divide still persists with urban areas remaining better-connected in both fixed and mobile broadband access compared to rural areas. Lack of digital connectivity in the rural areas affects the delivery of basic public services. The Philippines has not satisfactorily achieved economic efficiency and social equity that could have been maximized with universal broadband access.

The natural monopoly characteristics—high investment requirements, economies of scale, and presence of network externalities—of broadband services and other infostructures make it difficult to ensure adequate coverage and acceptable quality. Various structural changes and new technologies, such as unbundling of vertical services and infrastructure sharing, among others, will address barriers to entry in different segments of the broadband market with reduced capital investment requirements. For instance, a bill proposing an Open Access on Data Transmission Law–which will lower barriers in establishing needed infostructures to improve coverage and quality by allowing interested parties the unimpeded use of infostructures at transparent and fair rates–is still pending in the legislative branch.

The Department of Information and Communications Technology's (DICT) Department Circular (DC) No. 08, or the common tower policy, is an interim measure while awaiting a full open access law. The DC provides guidelines on the use of towers built by independent tower companies (ITC). These towers could be leased out under similar terms envisioned in the open access policy. To implement this DC, DICT and DepEd entered into a cooperation agreement[25] where common towers built by ITCs on DepEd land could be leased out while being used in the Philippine Education Network (PEN). A total of 23 ITPs[26] are currently registered according to the common tower policy. Guidelines were issued to streamline the processes for the issuance of permits, licenses, and clearances with respect to the rollout and construction of ICT infrastructure and also pursuant to RA 11032 ("Ease of Doing Business and Efficient Government Service Delivery Act of 2018").[27] DILG also directed[28] LGUs to strictly observe the provisions of the guidelines to facilitate the accelerated rollout of ICT infrastructure and services.

---

[22] Speedtest Global Index (Philippines). https://www.speedtest.net/global-index/philippines

[23] Speedtest Global Index. https://www.speedtest.net/global-index

[24] Regional distribution of households with or without internet access. National ICT Household Survey 2019. https://dict.gov.ph/ictstatistics/wp-content/uploads/2021/01/HH-012.pdf

[25] https://www.deped.gov.ph/2021/04/19/joint-statement-of-deped-and-dict/

[26] Source: https://dict.gov.ph/dict-accelerates-tower-build-with-issuance-of-provisional-certificates-to-itcs/

[27] Joint Memorandum Circular (JMC) No. 01 (s. of 2021) signed by the Anti-Red Tape Authority (ARTA), Department of Information and Communications Technology (DICT), Department of the Interior and Local Government (DILG), Department of Human Settlements and Urban Development (DHSUD), Department of Public Works and Highways (DPWH), Civil Aviation Authority of the Philippines (CAAP), National Telecommunications Commission (NTC), National Electrification Administration (NEA), Energy Regulatory Commission (ERC) and the Philippine Competition Commission (PCC)

[28] DILG Memorandum Circular No. 2021-135 (dated 1 December 2021)

Social Infrastructure

Education

In December 2019, DepEd launched *Sulong Edukalidad* which includes Improving the Learning Environment as one of four key reform areas. However, its implementation was hampered by the pandemic. Thus, DepEd formulated the Basic Education Learning Continuity Plan (BE-LCP) to address the new challenges posed by the pandemic.

Implementation rate of basic education facilities remains low. Based on 2020 data, classroom to pupil ratios for Primary, Junior High, and Senior High Schools are at 1:29, 1:39, and 1:35, respectively. A total of 7,233 classrooms were constructed under the Basic Education Facilities Fund (BEFF) for FY 2018 to 2020. Construction is underway for 12,464 classrooms and 859 Technical Vocational Laboratories (TVL), respectively, as of December 2021. For the Last Mile Schools Program (LMSP), which involves construction and rehabilitation projects for 9,225 identified LMS, only 170 (1.8%) of these projects have been completed as of 2020. For the LMS Fund from 2020 to 2021, 51 sites are ongoing construction while 30 sites are under procurement. Overall, disbursement for the construction of facilities remains to be an issue based on second quarter 2021 data. Of the FY 2021 allocated budget, only PHP1.02 billion has been disbursed and PHP2.30 billion obligated, while PHP7.15 billion remains unobligated.

The proportion of public schools with connection to electricity and with adequate water and sanitation facilities remain within target in 2020. On the other hand, the percentage of public schools with internet access is below target at only 64.2 percent for Primary School, 72.2 percent for Junior High School, and 67.3 percent for Senior High School. A total of 102,362 ICT packages have been procured under the FY 2021 and FY 2020 Funds.

Health

Health facilities remain inadequate. Based on the National Health Facility Registry (NHFR), there are a total of 1,318 licensed hospitals in the country. Private hospital bed spaces increased over the years from 4,000 in 1990 to 22,773 in 2020, but the country's bed-to-population ratio declined due to slow growth of public beds and rapid population growth. In terms of hospital level care, about six and 33 of the 114 highly urbanized cities/independent component cities (HUC/ICCs) did not have enough Level 1 and 2 hospital beds, respectively.

The Philippine Health Facilities Development Plan (PHFDP) 2020-2040 formulated by the Department of Health (DOH) estimates that only 50 percent of the population can access frontline health facilities[29] within 30 minutes of travel. These facilities serve as entry point of patients into the health system where simple cases are handled while more complex cases are referred to higher-level or specialized health facilities. This lack of frontline facilities forces patients to higher-level facilities or specialized units and take up capacities of these healthcare facilities despite their cases warranting only the attention of frontline units.

As of October 2021,[30] only 68 percent of barangays have access to a rural health unit and health center (RHU/HC) as opposed to DOH's target of 80 percent. The deficiency is due to the shift in priority facilities

[29] Barangay Health Stations (BHS), Rural Health Units, and Health Centers (RHU/HC)
[30] 27 October 2021 DOH letter/submission

identified in the Universal Health Care (UHC) Act, i.e., from barangay health station (BHS) to primary care facility. Temporary treatment and monitoring facilities (TTMF) and other COVID-related health facilities (e.g., isolation and quarantine facilities) were also prioritized over frontline facilities due to the pandemic.

The DOH's response to the COVID-19 pandemic is anchored on the Prevent, Detect, Isolate, Treat and Reintegrate (PDITR) strategy. DOH provided the resources needed by the "isolate" and "treat" pillars of this strategy through the Health Facilities Enhancement Program (HFEP), a banner program that aims to improve public health facilities by constructing new and upgrading and rehabilitating existing public health facilities across the country, which identified a total of 32 COVID-19 referral hospitals (with 19 catering to moderate to severe COVID-19 patients) and established COVID-19 isolation facilities. In implementing the "detect" component of the strategy, the Food and Drug Authority (FDA), in collaboration with the Research Institute for Tropical Medicine (RITM), licensed 199 COVID-19 testing laboratories nationwide, composed of 154 licensed RT-PCR laboratories and 45 GeneXpert laboratories.

The HFEP is poorly implemented. Under the HFEP, 78 newly-constructed BHS, six LGU hospitals, and two other health care facilities (HCFs) were completed, while 183 BHS, 24 RHU, one polyclinic, 31 LGU hospitals, 23 DOH hospitals, and four other HCFs were repaired and renovated in 2019. Notwithstanding, based on the 2020 Annual Audit Report of the Commission on Audit (COA), several HFEP infrastructure projects were either idle/unutilized or with substantial delays in implementation. Some of the challenges encountered in the management of HFEP infrastructure projects include: (a) failure to secure all the necessary documents; (b) lapses in the conduct of the Detailed Engineering Design (DED); (c) leniency of the agency in granting extensions/suspension of work to the contractors; (d) failure to adhere to the prescribed procurement timeline under the Government Procurement Reform Act (GPRA) or RA 9184; (e) delayed release of the sub-allotment advice (SAA); (f) inability to closely monitor project implementation; and (g) delayed release of funds from the DOH-Central Office. Realization of benefits from these assets were deferred because the properties are at risk of deterioration, loss, and lapse of warranty period.

Solid Waste Management

Compliance with the Ecological Solid Waste Management Act of 2000 (RA 9003) improved but still below target. Solid waste management (SWM) remains a major challenge because waste disposal facilities remain inadequate to cope with the increasing rate of waste generation especially in urbanized areas. A large proportion of the population remain unserved by basic SWM facilities. In 2020, an additional 824 material recovery facilities (MRFs) were established, bringing the total to 11,546 MRFs, providing services to 14,450 barangays nationwide. This represents 34.37 percent of the total number of barangays, which is still below the 50 percent target for 2020. As of 2021, barangays with access to MRFs increased from 34.37 percent in 2020 to 35.27 percent or 14,828 barangays. On the other hand, there is some improvement in terms of the provision of sanitary landfills (SLF). As of 2021, around 28.52 percent of the barangays have access to SLFs, surpassing the Department of Environment and Natural Resources' (DENR) target of 27.91 percent for the year.

To address the solid waste management problem in the country, the government has been promoting the adoption of waste-to-energy (WTE) technologies. The DENR established guidelines[31] on the evaluation,

[31] DENR Administrative Order No. 2019-21 "Guidelines Governing Waste-To-Energy (WTE) Facilities for the Integrated Management of Municipal Solid

establishment, operation, and decommissioning of WTE facilities for the integrated management of municipal solid wastes. Relatedly, the DOE issued policies and implemented programs[32] that aim to promote WTE facilities as baseload RE and prescribed policies and programs to enhance the participation of the electric power industry players in the development of WTE facilities.

IN FOCUS: RM, YOUNG PROFESSIONAL IN THE CAPITAL

RM, 25 years old, is the eldest of three children in a family hailing from the countryside. He comes from a family of farmers that tilled the land where they have lived for multiple generations. His siblings are studying at the local public high school and local state college in their hometown.

RM is a college graduate and works in the country's capital, Metro Manila. His parents and siblings mostly rely on his earnings for their daily needs and school expenses. At night, he attends classes for his post-graduate degree.

RM is a digital native who is well-versed in media and technology. He dreads the daily traffic of the commute from his residence in Metro Manila to his workplace in a bustling central business district (CBD) because of the time wasted in traffic. He feels that his work and his classes can be conducted virtually.

He bemoans the scorching tropical heat of the Philippines but does not dare to buy an air-conditioning unit (ACU) because of expensive electricity prices. As he lives in Metro Manila, RM has access to a decent supply of water which he considers a luxury compared to conditions in his hometown.

Wastes". <https://emb.gov.ph/wp-content/uploads/2020/01/Guidelines-Governing-Waste-To-Energy-WtE-Facilities-for-the-Integrated-Management-of-Municipal-Solid-Wastes.pdf>

[32] DOE Department Circular No. DC2022-02-002 "Prescribing the Policies and Programs to Promote and Enhance the Development of Biomass Waste-to-Energy (WtE) Facilities". <https://www.doe.gov.ph/sites/default/files/pdf/issuances/dc2022-02-0002.PDF?withshield=1>

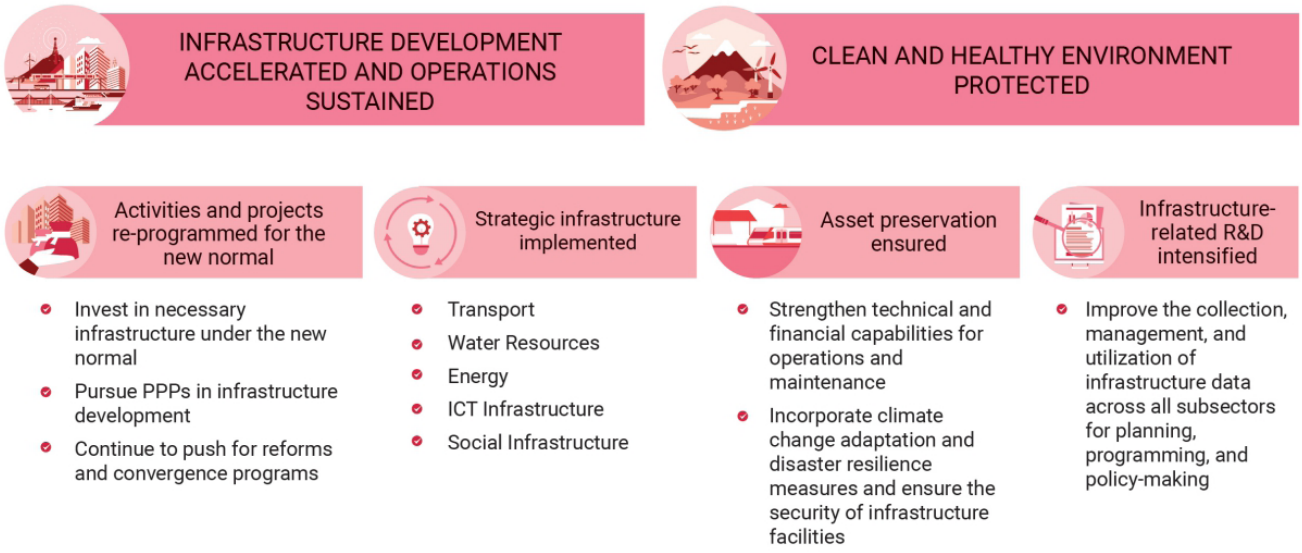
STRATEGIC FRAMEWORK

Nearly every aspect of RM's day-to-day experience depends on infrastructure in its various forms, which is similarly felt by many other Filipinos who need improved and reliable infrastructure facilities and services for better living and well-being. Thus, with the infrastructure's critical role in achieving the goals and aspirations of Filipinos, there is an urgent need to accelerate infrastructure development.

As stated in the Updated PDP 2017-2022, the strategic framework for the infrastructure sector remains relevant in support of the recovery efforts of the country.

The goal of the sector remains the same: ensure adequate infrastructure to satisfactorily support the activities of the socioeconomic system. Even as the country has yet to fully address infrastructure backlogs, the pandemic has posed new challenges in terms of the type of infrastructure to prioritize given limited resources. Healthcare, water resources, logistics, and ICT infrastructure have become even more urgent. The demand for efficient public transportation and safe and modern educational facilities has been gaining traction. At the same time, the country also has to invest in infrastructure projects that create jobs and spur more economic activities that are crucial for economic recovery and inclusive and sustainable growth.

Figure 19.1 Strategic Framework to Accelerate Infrastructure Development



STRATEGIES

IMPLEMENTING STRATEGIC INFRASTRUCTURE FOR CONTINUOUS ECONOMIC RECOVERY AND RESILIENCY BUILDING

Adopt smart technologies to enhance sustainability in different infrastructure sub-sectors. Smart technologies can be applied over a wide spectrum of infrastructure sub-sectors to enhance sustainability and promote people-centered development. The Philippine government can make use of areas of cooperation available under regional initiatives (APEC, ASEAN, etc.) to aid the diffusion of smart technologies. This is a more inclusive and proactive approach for the development and use of smart technology by national government, local governments, and the private sector.

Wider adoption of smart infrastructure has strong synergies with the following aspirations in infrastructure development and services:

1. Integrated infrastructure development planning,
2. Intelligent transport and logistics systems, and
3. Integrated health data management system.

There are different use cases for Smart Technologies which would allow for better insight and control of the area of application. If competently managed, data generated from smart facilities can be aggregated and used for policymaking and planning purposes. A serviceable data management system would also increase the efficiency of the proposed national policy on master plans.

NEDA's proposed policy on master plans is geared towards integrated infrastructure development planning. Once adopted, the policy will harmonize master plan formulation and facilitate the discussion and implementation of the country's infrastructure development program. Importantly, the use of ICT tools to generate data will allow for proper and timely analysis and evidence-based planning to equitably distribute infrastructure investments.

Transport

The transportation system plays a critical part in the country's economic recovery. It is important for transport infrastructure to be climate- and pandemic-resilient to provide unhampered movement of people and goods as well as support economic activities and humanitarian logistics.

Support the consolidation and passage of various measures for priority road users. The legislative measures will: (a) lay down the rights of the priority road users (such as commuters, pedestrians, active transport, and light mobility vehicle/personal mobility device users); (b) strengthen the directives of the National Transport Policy (NTP) and its IRR to increase trust in, and preference for, public transportation; and (c) establish infrastructure for active and low-carbon emitting mobility.

The COVID-19 pandemic has highlighted the importance of expanding public transportation capacity and the need for participative and data-driven policymaking. The NTP-IRR reiterates the government's

responsibility to formulate programs and projects based on public need and to seek social acceptance through the active involvement of stakeholders, including the LGUs. DOTr shall continue to be the primary policy, planning, programming, coordinating, implementing and administrative entity of the executive branch of the government on the promotion, development, and regulation of a dependable and coordinated network of transportation systems, as well as in the fast, safe, efficient, and reliable transportation services.

Pursue the development of a unified database and transport model. The use of data will allow better utilization and integration of the country's transportation system to drive economic growth and build sustainable communities. Mobility data[33] shall also be made available to the public as open data. This will encourage the participation of the private sector in the development of applications and other ICT-based services that can enhance the mobility of people, goods, and services.

Land-based Transport

Ensure efficient and safe operations of public transportation. Implementation of the SCP shall continue to provide transport workers a reliable source of income with the enforcement of health measures in public transportation to prevent the spread of COVID-19 while also providing efficient and reliable transportation services to the public. Systems supporting cashless and contactless transactions shall likewise be improved and expanded to be interoperable among various modes of transportation through the automatic fare collection system (AFCS).

Expand coverage of public infrastructure catering to active and public transport. Active transport networks, such as bike lanes and pedestrian walkways, shall continue to be expanded in metropolitan areas to further promote sustainable mobility, reduce air pollution, and improve overall public health. Enhancement of high-capacity cost-effective public transport shall likewise be pursued to address traffic congestion in urban roads, including the development and operation of Integrated Transport Terminals. Policies and implementation of active and public transport shall be prioritized over private vehicle transport, in line with the NTP and its IRR.

Rail Transport

Sustain the expansion of rail network and other mass transit systems and ensure accessibility, affordability, convenience, and reliability. The rail network shall continuously be improved and expanded, consistent with the objective of moving more people and cargo rather than vehicles. Rail-based projects that facilitate interregional accessibility and faster movement of freight while decongesting traffic along road networks to and from cargo terminals shall likewise be prioritized.

Improve policies on procurement activities and capacity building for skilled workers in mass transit systems. To ensure the availability of highly specialized spare parts and supplies, the procurement policies, guidelines, and activities of the rail sector will be improved. In anticipation of the forecasted need for skilled workers in the sector, capacities and skills of mass transit workers will be upgraded. The Philippine Railway Training Center shall continue to provide comprehensive technical training for rail professionals.

[33] Mobility data are information related to the interactions and movement of people, goods, and vehicles in the transportation system

Air Transport

Sustain implementation of optimal airports system capacity to expand airport capacities at pace with growing demand. The government shall continue the expansion of runways and passenger terminal buildings, among others, to accommodate the increase in passengers as well as the rehabilitation and/or modernization of airport facilities and equipment to comply with the International Civil Aviation Organization (ICAO) and International Air Transport Association (IATA) standards of existing regional, provincial, and community airports. Initiatives on enabling night-time operations such as installation of Aeronautical Lighting System and Instrument Landing System will still be pursued.

Explore the potential of airports as a catalyst for local tourism development and new growth centers. The government shall encourage initiatives on establishing a gateway airport to connect feeder airports and provide access to tourist destinations and cultural heritage sites. This strategy is strengthened with the recent accomplishments of the aviation sector in terms of upgrading/expanding regional/ provincial airports to cater to more passengers.

Maritime Transport

Prioritize the implementation of sustainable and disaster-resilient port facilities. While continuing the expansion and development of ports to ensure inter-island mobility, "Green Port" initiatives shall be prioritized and focus shall be shifted towards sustainable port operations. Infrastructure facilities in ports shall be designed to be climate-resilient and focused on minimizing environmental externalities and mitigating the impacts of climate change. DOTr and its attached agencies shall use alternative fuels and give preference to energy-efficient port equipment. These measures are also in consonance with the efforts of the International Maritime Organization (IMO) and other global stakeholders in reducing GHGs emitted by ships and port equipment.

Continue to implement the Maritime Industry Development Plan (MIDP). To address the challenges in the maritime transport sector which were aggravated by the COVID-19 pandemic, the eight priority programs[34] of the MIDP shall continue to be implemented. Noting that the Philippines is the leading source of seafarers globally, the 2021 updating of the MIDP involves the inclusion of Program 9: Development and Provision of Qualified and Competent Seafarers Human Capital Requirement for the Global Maritime Industry. The MIDP shall likewise be updated annually to ensure that the plan is responsive to the needs of the maritime transport industry.

Coordination and convergence of government agencies and the academe shall be strengthened to bring science and technology (S&T) innovations to the Philippine maritime transport industry, particularly on the development of transportation technologies, intelligent transport systems (ITS), modernization of fleets, and alternative fuels.

Promote Coastal and Inland Waterways Transport System as an alternative sustainable transport mode. With the completion of the feasibility study on the Pasig River Ferry System (PRFS), the government shall continue supporting the development of Coastal and Inland Waterways Transport

[34] Eight priority programs: 1) Upgrading of Domestic Shipping in Support of the Nautical Highway Development; 2) Development of Shipping Services for Maritime Tourism; 3) Development of Coastal and Inland Waterways Transport (CIWT) System; 4) Strengthening of Safety Standards of Philippine-Registered Fishing Vessels; 5) Development of a Global Maritime Hub; 6) Enhancement of Maritime Safety in the Philippines; 7) Modernization of Maritime Security in the Philippines; and 8) Establishment of Maritime Innovation and Knowledge Center.

System, which can be an efficient, cost-effective, and environment-friendly alternative to move people and commodities over long distances. The expansion of the system to other metropolitan and HUCs will also be explored to increase regional connectivity and reduce traffic congestion.

Safety and Security

Transport safety and security remain top priorities in the sector. The transportation agencies shall continue to push for strict observance of health and safety measures as public transport capacity gradually increases in transitioning to the new normal, including strategic programs, projects, and activities contributing to the government's PDITR+Vaccinate (PDITR+V) strategy to combat the COVID-19 pandemic. On transport support and local travel, the government shall continue to enforce strict implementation of the "7 Commandments"[35] started in June 2020, for passengers, drivers, and operators while aboard public transportation.

Moreover, as part of the government's efforts to improve transport safety and security, ensure compliance with safety and environmental standards, and prepare the sector in transitioning to the new normal, the following policy reforms, programs, projects, and activities shall be pursued and continued:

1. Private Motor Vehicle Inspection Systems Program,
2. Amendment of the Transport and Traffic Code of the Philippines (RA 4136),
3. Vehicle Scrappage Program, and
4. Committee on the Harmonization of Vehicle Standards and Regulations (CHVSR) activities.

Continue to strictly implement road safety measures. Safety features shall be continuously incorporated in modernizing traditional PUVs and implementing new public mass transit systems. Infrastructure such as street crossing for school zones and other public spaces along national roads shall be replaced with pedestrian over/underpass, if applicable, and low-speed vehicles such as tricycles and pedicabs must be restricted from plying national highways to reduce road crash incidents. Road safety laws and ordinances shall also continuously be strictly implemented such as the use of dedicated bus lanes, motorcycle lanes, and loading/unloading areas; Land Transportation and Traffic Code (RA 4136); Anti-Distracted Driving Act (RA 10913); Children's Safety on Motorcycles Act (RA 10666); and Road Speed Limiter Act (RA 10916).

Water Resources

Moving forward, the water resources sector shall continue promoting Integrated Water Resources Management (IWRM). Efforts shall be expanded to cover Integrated Coastal Zone Management (ICZM). Local water-related master plans shall be harmonized with the relevant development plans (i.e.,

[35] 7 Commandments: 1. Magsuot ng face mask at face shield; 2. Bawal ang pagsasalita, pakikipag-usap o pagsagot ng telepono; 3. Bawal kumain; 4. Kailangang may sapat na ventilation; 5. Kailangang may frequent disinfection; 6. Bawal magsakay ng symptomatic passenger; 7. Kinakailangang sumunod sa appropriate physical distancing.

Comprehensive Land Use Plan [CLUP] and Comprehensive Development Plan [CDP]) particularly those related to the development of water resources programs, activities, and projects (PAPs) in a spatial context. Furthermore, the proposed PAPs shall also be aligned with priority projects reflected in the CDP and corresponding river basin master plans. Given the insufficiency of the allocated investments for water resources-related PAPs, projects shall continue to explore various arrangements, such as PPPs to aid in the funding and implementation of water resources PAPs.

Aside from funding, assistance shall be provided in terms of capacity development, particularly to regional areas, especially in light of the devolution of certain functions due to the Mandanas-Garcia ruling. DILG's capacity development program will cover five governance reform areas for LGUs: Information Management (e.g., WASH Sector Planning, geo-tagging), Project Planning and Design (e.g., Build Back Better, water source development, detailed engineering and design preparation), Construction and Maintenance (e.g., Contract Management and Construction Supervision, Safety, and Health in implementation of infrastructure projects), Operation and Maintenance/Asset Management (e.g., Non - Revenue Water management), and Procurement.

Water Supply and Sanitation

Continue pursuing WSS policies, plans, and programs in accordance with the PWSSMP KRAs. Monitoring of the progress of the PWSSMP in terms of the eight KRAs is crucial to ensure that the country's commitment to provide universal access to safe water supply and sanitation for all is on track.

The pursuit of WSS institutional reforms, which is one of the top priority actions under the PWSSMP, particularly in the creation of an apex body as well as independent economic regulatory body for the sub-sector would help address fragmentation. In the absence of an apex body for the water sector, several initiatives under the KRAs of the PWSSMP that require the coordination of various WSS-related agencies shall be continued.

There is a need to set up and maintain a comprehensive consolidated database (including geospatial data) not just for the water supply and sanitation sub-sector but for the whole water sector. This shall provide context, not only in terms of the spatial overlay of the existing and proposed water infrastructure within the country but also information on the interactions of different water sub-sectors over specific areas and regions, which could aid in the overall planning for the management of water resources.

Irrigation

Continue pursuing initiatives on attaining food security through irrigation and achieving water security. With the successful completion of the National Irrigation Master Plan (NIMP), its initiatives shall be implemented. These include the formulation of regional and provincial master plans aligned with the NIMP, integration of Value Engineering/Value Analysis in the appropriate stages of irrigation development, and implementation of the NIA Devolution Transition Plan (DTP) on communal irrigation system development, in line with the implementation of the Mandanas Ruling *(see Chapters 8 and 20).*

In line with this, policy and institutional reforms such as the enactment of the National Land Use Policy Act to protect agricultural lands, strengthened institutional coordination for watershed and aquifer protection and management, and the integration of emerging water-efficient technologies as well as climate change adaptation and disaster risk reduction and management (CCA/DRRM) in irrigation development, will be supported.

In terms of water security, the revisiting and updating of the water security framework/roadmap should be continued and expanded to a national scale to provide information on the current available water resources and assess how best to attain universal access to water supply, particularly for water scarce regions.

Flood Control and Management

Continue efforts on flood control and management. DPWH will continue to prepare master plans for high-risk principal river basins and update the existing river basin flood master plans where needed, including the master plans for five of the 18 major river basins, namely, Cagayan, Bicol, Agusan, Panay, and Pampanga River Basins.

The implementation of flood management and mitigation measures should also be accelerated to meet the plan targets to increase flood-protected areas, including the construction and maintenance of flood mitigating structures and drainage systems, along with flood mitigating facilities in major and principal river basins.

In general, with the absence of an overall national plan for the subsector, specific indicators under the subsector need to be determined to aid in identifying and prioritizing program, activities, and projects that would directly address the overall issue on riverine, urban, or coastal flooding.

The increased number of severe flooding that caused catastrophic damage to flood-prone regions proves the need not just for flood-resilient infrastructure facilities, but also the effective management of such facilities (such as in dam management and operational protocols).

Energy

Energy is among the drivers of economic growth. Thus, the government will implement strategies that will ensure the reliability, sustainability, and competitiveness of energy supply to support the country's economic recovery and transition to new normal.

Addressing power outages indicated by Yellow and Red Alerts. The DOE will strictly enforce existing policies that will ensure energy security: the Energy Resiliency Policy;[36] the adoption of the general framework governing the provision and utilization of Ancillary Services;[37] provision of guidelines for planned outage schedules of power plants and transmission facilities and the publication of the Grid Operating and Maintenance Program (GOMP);[38] and the policy for transparent procurement of ancillary

[36] DOE DC2018-01-001 Adoption of the Energy Resiliency in the Planning and Programming of the Energy Sector to Mitigate Potential Impacts of Disasters
[37] DOE DC2019-12-0018 Adopting a General Framework Governing the Provision and Utilization of Ancillary Services in the Grid
[38] DOE DC2020-02-004 Providing the Guidelines on the Planned Outage Schedules of Power Plants and Transmission Facilities and the Public Posting of

services by the system operator.[39] Strict and continued implementation of these policies will ensure adequate supply of electricity.

Full commercial operation of WESM in Mindanao. The full commercialization of the WESM in Mindanao will be pursued to provide a competitive market for buying and selling electricity that is not covered by bilateral contracts, while promoting efficiency in the scheduling and dispatch of generation capacities in the region.

Continue to implement strategies to attain household electrification targets. The energy sector aims to achieve 100 percent electrification of targeted and identified households based on the 2015 Census by 2022 and on the latest available Census by 2023 to 2040. The energy sector will continue to implement appropriate solutions and strategies for increasing electricity access and adopt more innovative solutions in bringing electricity to households and communities throughout the country. A congruent part of the electrification effort is for the DUs to execute and swiftly implement their Total Electrification Masterplans. These plans define the appropriate strategies, including the funding sources to be utilized, in the expansion of electricity access to unserved and underserved areas.

A policy that will support government's effort in achieving its electrification targets is being pursued through the proposed Microgrid Bill. Ratified by the Bicameral Committee and anticipated to be signed as a law in 2022, it seeks to promote the use of microgrid systems for total electrification. The bill stipulates that microgrid system providers are allowed to operate in any area with no electricity access or where the power connection does not provide 24/7 electricity supply. It also has the goal of clearly identifying the processes and reducing red tape to employ and encourage the private sector to come in, use private capital, and help the government roll out its total electrification plan.

Continuous development of downstream natural gas. The Philippine Energy Plan (PEP) 2020-2040 envisions "to establish a world-class, investment-driven and efficient natural gas industry that makes natural gas the preferred fuel by all end-use sectors." To support such an objective, the DOE, through its Downstream Natural Gas Roadmap, in the medium-term will: (a) formulate and implement industry operating standards and codes of practice for natural gas; and (b) issue regulatory frameworks to encourage private investment in developing natural gas infrastructures for receiving, storing, and transporting natural gas from source to demand centers.

In the long term, the focus of efforts will be on the continuous development of agenda in the medium term through further policy issuances and supplemental legislation for the advancement of the natural gas industry. In anticipation of the forthcoming depletion of the indigenous natural gas supply from the Malampaya Gas Field, the DOE shall continue making immediate efforts to augment the energy supply through the development of LNG terminals.

the Grid Operating and Maintenance Program.

[39] DOE DC2021-10-0031 Prescribing the Policy for the Transparent and Efficient Procurement of Ancillary Services by the System Operator

Transition to a low carbon energy future. The Clean Energy Scenario under the PEP 2020-2040 will be supported by further encouraging RE development. The government will pursue the development of Competitive Renewable Energy Zones (CREZ) and explore the potential of offshore wind energy. The full operationalization of the Renewable Energy Market (REM), the GEAP and GEOP will ensure the competitiveness and increased utilization of renewables. The Enhanced Net Metering Program will also be rolled out in off-grid areas. Further, the energy sector, as indicated in the power sector roadmap of the PEP 2020-2040, is set to study and draft guidelines for power plant decommissioning. The guidelines to be developed will define, clarify, and direct the industry on decommissioning and, in the long-term, assist in the entry of newer capacities that will provide greater security and reliability to the grid.

Collaborative efforts with interested stakeholders will also be pursued to further explore the inclusion of hydrogen in the country's energy mix and address the current gaps and challenges, particularly on infrastructure and regulatory framework. These collaborative efforts will include studies on hydrogen technologies for on-grid and off-grid applications.

The DOE-NEPIO and NEP-IAC will focus on the following major issues to ensure the successful implementation of NPP: (a) National Policy; (b) Legislative Framework; (c) Alignment with International Standards; and (d) Public Awareness. The government will also continue exploring the feasibility of nuclear energy for power generation to support the country's transition towards sustainable and lower emission development.

ICT Infrastructure

Recognizing the heightened importance of ICTs to cope with the challenges post-pandemic and to support the needs of the new normal, the government shall continue to push for the development of critical policy reforms and implement digital connectivity programs to address the digital divide and accelerate the country's digital transformation.

Pursue policy reforms to address barriers to entry and limited competition in the market. The proposed bill adopting the Open Access on Data Transmission Law still needs to be pursued as this shall liberalize the shared use of infostructures. However, as its passage lies with the legislative, implementation of the common tower policy shall be enhanced in the interim. More government agencies shall be involved in similar arrangements entered into by DepEd and DICT in support of the common tower policy. Likewise, the number of registered ITCs and the number of common towers built and their location shall be closely monitored to help promote equity and coverage. Other means of infrastructure and resource sharing of government agencies for deploying more common towers or other infostructures shall also be explored.

Continue digital connectivity program to allow access to the broadband services. The government's digital connectivity programs such as the National Broadband Program and Free Wi-Fi for All Program shall be continued to complete the industry players' initiatives at expanding the current digital infrastructures, allowing more citizens to access broadband services.

The government shall promote and model productive use of digital technologies. LGUs, being close to the people, can be catalysts in the wider use of ICT by modelling and promoting the use of digital technologies. However, LGUs first need to be capable to do so. DICT has programmed the Framework on ICT Strategic Roadmap (FISR) and Guidebook for LGUs for 2022. The Roadmap and Guidebook will aid LGUs in building their ICT capabilities moving forward.

The DICT plans to begin formulation of the National ICT Development Plan (NICTDP) by 2023. The NICTDP will promote the seamless operation of "one government" despite offices being located in different geographical locations. The successful implementation of the vision of the NICTDP will reduce the tedious coordination between government agencies and enable government to provide better services to the public.

Enhancing LGU and government capabilities in digital technologies will provide a good foothold towards implementing smart city concepts. Greater application of smart developments at the local level, with government acting as a model, will help in implementing similar concepts at different levels of society because smart development benefits from wider networks. Smart development is likewise an attractive development strategy because it can be applied to almost all development areas and is primarily focused on the application of ICT to improve the welfare of people. Government, both local and national, setting an example will build confidence and make it more acceptable to the rest of the country as a whole.

Reliability and security are other factors that will affect diffusion of ICT in various use cases. On the security front, the DICT will intensify implementation of the National Cybersecurity Plan 2022 and update it as necessary.

Social Infrastructure

Education

Sustain efforts to address backlogs in the provision of education facilities. DepEd shall continue to prioritize the construction and rehabilitation of education facilities under its Last Mile School Program to close the gaps between geographically isolated and disadvantaged and conflict-affected areas, including their counterparts in the urban areas. DepEd is also ensuring learning continuity by providing immediate response and support to schools through the construction and renovation of school facilities, health-related infrastructure, and other interventions. Further, DepEd shall also sustain the provision of other basic education facilities and ICT-related learning tools/equipment and infrastructure to address the broader needs in the education sector and continuously support the effective implementation of the alternative platforms for education under the BE-LCP.

Implement the BE-LCP. DepEd shall support and provide the pilot public schools with supplemental funds to ensure the safe return of students, faculty, and other personnel to schools, and to ensure the smooth implementation of the pilot face-to-face classes as embodied in DepEd-DOH Joint Memorandum Circular No. 1 s. 2021 "Operational Guidelines on the Implementation of Limited Face-to-Face Learning Modality." This will be a shared responsibility among DepEd, DOH, DILG, and other relevant stakeholders *(see Chapter 10)*.

Health

Sustain strategic implementation of health facilities. The DOH will sustain the implementation of the PHFDP 2020-2040, particularly towards ensuring the provision of at least one BHS in barangays, an additional 2,400 RHU/HC by 2025, an additional 400,000 beds (majority of which are Level 1 beds) to meet the projected hospital care by 2040 of around 2.7 beds per 1,000 population, and Specialty Centers for a total of 16 specialties.[40] To ensure accessibility of health facilities across the continuum of care, selected DOH hospitals will be upgraded to operate with Specialty Centers for one or more identified medical and/or surgical specialties and shall serve as apex or end referral hospitals of Health Care Provider Networks (HCPN). These selected DOH hospitals shall be designated as National Specialty Centers, Advanced Comprehensive Specialty Centers, and Basic Comprehensive Specialty Centers for each of the specialties. The DOH will also invest in the upgrading and establishment of Specialized Laboratories, Blood Service Facilities, and Drug Abuse Treatment and Rehabilitation Facilities at the national, subnational, and regional levels *(see Chapter 10)*.

Solid Waste Management

Enhance technical capacities of LGUs in the implementation of SWM initiatives. The DENR- Environmental Management Bureau (EMB) shall capacitate LGUs on alternative waste management technologies, especially in the treatment and disposal of household healthcare wastes. The government shall continue to improve its knowledge management systems through increased investments in innovation as well as research and development. Guidelines on the Construction and Operation of Residual Containment Area (RCA), MRF, and Transfer Stations shall be developed, including that for the Clustering of LGUs for Common SLF. The regulatory framework for facilities utilizing WTE technologies shall be pursued to guide the implementation of WTE facilities in the country. All funded MRFs and dumpsite closure and rehabilitation activities shall be monitored *(see Chapter 20)*.

[40] *cancer care, cardiovascular care, lung care, renal care and kidney transplant, brain and spine care, trauma care, burn care, orthopedic care, physical rehabilitation medicine, infectious disease and tropical medicine, toxicology, mental health, geriatric care, neonatal care, dermatology care, and eye care*

RESULTS MATRIX

Table 19.2 Results Matrix

INDICATOR	BASELINE (YEAR)	TARGETS				ACTUAL	
		2020	2021	2022	EOP	2020	2021
Public infrastructure spending increased (% share to Gross Domestic Product or GDP)	4.1 (2016)	4.2	5.4	4.5	4.5	4.8	5.8
Power/Energy							
Power requirements met (% available capacity over peak demand) [a]	144 (2016)	148	147	150	150	153	149
Luzon	140 (2016)	143	144	148	148	144	142
Visayas	149 (2016)	150	146	135	135	153	148
Mindanao	162 (2016)	172	161	177	177	204	186
Energy intensity (primary energy) reduced (tons of oil equivalent per million peso)	6.71 (2016)	5.82	5.66	5.56	5.56	6.44	6.65
Energy intensity (electricity consumption) reduced (kWh per million peso)	11.18 (2016)	10.93	10.83	10.84	10.84	11.54	12.63
Electricity consumption per capita increased (kWh per capita)	879.46 (2016)	1,043.52	1,095.91	1,163.54	1,163.54	933.24	904.80
Proportion of HHs with electricity to total number of HHs increased (%, cumulative)	90.70 (2016)	96.00	98.00	100.00	100.00	94.49	95.41
Transport Infrastructure							
Road Transport							
Travel time (decreased) via land per key corridor (in hours)							
Metro Manila	2.97 (2016)	3.12	3.11	3.11	3.11	2.49	2.38
Quezon Avenue	0.23 (2016)	0.25	0.25	0.25	0.25	0.25	0.19
Commonwealth Avenue	0.26 (2016)	0.28	0.28	0.28	0.28	0.18	0.16
Radial Road 10 (R:10)	0.25 (2016)	0.26	0.26	0.26	0.26	0.19	0.18
Marcos Highway	0.19 (2016)	0.20	0.20	0.20	0.20	0.18	0.16
Circumferential Road 5 (C:5)	0.82 (2016)	0.86	0.85	0.85	0.85	0.64	0.59
Epifanio de los Santos Avenue (EDSA)	0.89 (2016)	0.94	0.93	0.93	0.93	0.77	0.83

INDICATOR	BASELINE (YEAR)	TARGETS				ACTUAL	
		2020	2021	2022	EOP	2020	2021
Roxas Boulevard	0.32 (2016)	0.34	0.34	0.34	0.34	0..33	0.33
National Route 1 (N1)/ Pan-Philippine Highway (Laoag - Zamboanga)	61.12 (2016)	50.94	48.39	45.84	45.84	-	-
Manila - Baguio	7.04 (2016)	5.86	5.57	5.28	5.28	-	-
Manila - Pagudpud	13.36 (2016)	11.13	10.58	10.02	10.02	-	-
Manila - Cagayan	12.11 (2016)	10.09	9.59	9.08	9.08	-	-
Manila - Clark	2.80 (2016)	2.34	2.22	2.10	2.10	-	-
Clark - Subic	2.09 (2016)	1.75	1.66	1.57	1.57	-	-
Manila - Batangas	3.46 (2016)	2.88	2.74	2.60	2.60	-	-
Iloilo - Capiz	2.62 (2016)	2.18	2.07	1.96	1.96	-	-
Surigao - Davao	7.10 (2016)	5.92	5.62	5.33	5.33	-	-
Butuan - Iligan City	5.80 (2016)	4.83	4.59	4.35	4.35	-	-
Cagayan De Oro – Davao City	5.70 (2016)	4.75	4.51	4.27	4.27	-	-
Bacolod - Dumaguete - Bayawan	8.46 (2016)	7.05	6.70	6.35	6.35	-	-
Danao - Cebu - Santander	4.61 (2016)	3.85	3.65	3.46	3.46	-	-
Air Transport							
Air passenger movement increased (in number of passengers, cumulative)	71.54M (2016)	29.42M	32.65M	38.33M	38.33M	21.51M	9.12M
Cargo shipped via air increased (international and domestic) (MT, cumulative)	285.86M (2016)	165.54M	277.92M	328.93M	328.93M	165.95M	133.74M
Water Transport							
Passengers transported by sea increased (in number of passengers, cumulative)	89.16M (2016)	90.11M	91.66M	93.27M	93.27M	31.16M	26.60M
Cargo shipped increased (international and domestic) (MT, cumulative)	302.68M (2016)	317.92M	325.12M	332.06M	332.06M	311.41	336.56M
Number of vehicles carried by Roll-on/Roll-off (RORO) vessels increased	5.50M (2016)	6.70M	6.77M	6.84M	6.84M	5.07	6.88M

INDICATOR	BASELINE (YEAR)	TARGETS				ACTUAL	
		2020	2021	2022	EOP	2020	2021
Rail Transport							
Passenger trips via rail in Metro Manila increased (in % share to total passenger trips, cumulative)	11 (2014)	16	17	19	19	1	-
Information and Communications Technology (ICT)							
Average broadband download speed increased (Mbps)	4.30 (2016)	25.00	30.00	35.00	35.00	31.44	82.61
Water Resources							
Water Supply and Sanitation							
Proportion of cities/municipalities served by water districts with 24/7 water supply increased (%, cumulative)	84.00 (2016)	86.00	88.00	90.00	90.00	82.30	-
Proportion of cities/municipalities served by sewerage or septage management facilities to total number of cities/municipalities increased (%, cumulative)	To be determined (TBD)	TBD	TBD	TBD	TBD	TBD	-
Water Resources							
Water Supply and Sanitation							
Proportion of households (HHs) with access to safe water supply to total number of HHs increased (%, cumulative)	87.60 (2016)	93.11	94.49	95.87	95.87	91.60	-
Proportion of HHs with access to improved sanitation to total number of HHs increased (%, cumulative)	91.90 (2016)	94.60	95.28	95.95	95.95	93.90	-
Social Infrastructure							
Classroom to pupil ratio improved							
Primary[b]	1:34 (2014)						
Kindergarten		1:25	1:25	1:25	1:25	1:29	-
Grades 1-3		1:30	1:30	1:30	1:30	1:29	-
Grades 4-6		1:40	1:40	1:40	1:40	1:29	-
Secondary[c]	1:48 (2014)						
Junior HS		1:42	1:40	1:40	1:40	1:39	-
Senior HS		1:42	1:40	1:40	1:40	1:35	-
Water and sanitation (WatSan) to pupil ratio improved							
Primary (K to 6)[b]	1:39 (2014)	1:31	1:30	1:30	1:30	1:29	-

INDICATOR	BASELINE (YEAR)	TARGETS				ACTUAL	
		2020	2021	2022	EOP	2020	2021
Junior HS	1:49 (2014)	1:41	1:40	1:40	1:40	1:42	-
Senior HS	1:49 (2014)	1:41	1:40	1:40	1:40	1:41	-
Proportion of public schools with connection to electricity to total number of public schools increased (%, cumulative)							
Primary (K to 6)	86 (2015)	92	94	95	95	98	-
Junior HS	95 (2015)	98	99	100	100	99	-
Senior HS	95 (2015)	98	99	100	100	98	-
Proportion of public schools with adequate water and sanitation facilities to total number of public schools increased (%, cumulative)							
Primary (K to 6)	91 (2014)	96	98	98	98	94	-
Junior HS	94 (2014)	100	100	100	100	96	-
Senior HS	94 (2014)	100	100	100	100	98	-
Barangays with access to Material Recovery Facilities (MRFs) (in % of total no. of barangays, cumulative)	31.28 (2016)	50	55	60	60	34.37	35.27
Number of barangays served by MRFs	13,149 (2016)	21,018	23,119	25,221	25,221	14,450	14,828
Barangays with access to Sanitary Land Fills (SLFs) (in % of total no. of barangays, cumulative)	15.17 (2016)	26.58	27.91	29.30	29.30	28.21	28.52
Number of LGUs served by SLFs (1,634 LGUs)	248 (2016)	434	456	479	479	461	466
Proportion of Barangays with Barangay Health Stations (BHS), Rural Health Units (RHU) or Urban Health Centers (UHC) to the total number of barangays[d] (42,036 as of 2016) increased (%, cumulative)	57.00 (2017)	69.84	80.04	90.24	90.24	68.02	68.04
Regions with at least one (1) Biosafety Laboratory 2 (BSL2) with Real Time Polymerase Chain Reaction (RT-PCR) testing capacity	- (2020)	TBD	TBD	17	17	-	-
Regions with at least 1 dedicated referral hospital/facility/floor/wings to serve as primary referral center for severe or critical Corona Virus Disease 2019 (COVID-19) cases	- (2020)	TBD	TBD	17	17	-	-

INDICATOR	BASELINE (YEAR)	TARGETS				ACTUAL	
		2020	2021	2022	EOP	2020	2021
Information and Communications Technology							
Proportion of public schools with internet access to total number of public schools increased (%, cumulative)							
Primary (K to 6)	20 (2015)	80	90	100	100	-	-
Junior HS	54 (2015)	90	95	100	100	-	-
Senior HS	54 (2015)	90	95	100	100	-	-
Transport Infrastructure							
Land Transport							
Road traffic accident rate reduced (in number of incidents per 100,000 population) - incidents of accidents	10.70 (2016)	10.00	10.00	10.00	10.00	7.97	3.85
Water Resources							
Irrigation							
Cropping intensity increased (%, cumulative)	143 (2016)	164	166	166	166	166	-
Ratio of actual irrigated area to the total potential irrigable area increased (%, cumulative)	59 (2016)	63	65	67	67	64.12	-
Flood Control and Management							
Ratio of flood-protected areas to the total flood-susceptible areas increased (%, cumulative)	TBD	TBD	TBD	TBD	TBD	-	-

Note: 2020 targets were set prior to onset of the COVID-19 pandemic and retained in the midterm update. 2021, 2022, and end-of-plan targets were adjusted to take into consideration the effects of the COVID-19 pandemic.
[a] Power requirements including 25% reserves. The ratio must always be maintained above 100%.
[b] Total number of primary schools as of 2015 is 38,657.
[c] Total number of secondary schools as of 2015 is 8,082.
[d] Total number of barangays as of 2016 is 42,036.