ASIAN INFRASTRUCTURE INVESTMENT BANK

Sovereign-Backed Financings

Approval Project Document
P000725 Republic of the Philippines
Laguna Lakeshore Road Network Project

Currency Equivalents

(As of February 14, 2024)

Currency Unit – Philippine Peso (PHP)
PHP100.00 = USD1.79
USD1.00 = PHP55.97

Fiscal Year

January 1 – December 31

Abbreviations

ACN	Advance Contracting Notice
ADB	Asian Development Bank
AIIB	Asian Infrastructure Investment Bank
BB	Building Blocks
BBB	Build Build Build
BBM	Build Better More
CCTV	Closed-circuit television
CP	Contract Package
CRA	Climate Resilience Assessment
CSC	Construction Supervision Consultant
CSRN	Consulting Services Recruitment Notice
DBM	Department of Budge and Management
DED	Detailed Engineering Design
DEO	District Engineering Offices
DGCS	Design Guidelines, Criteria and Standards
DOF	Department of Finance
DOLE	Department of Labor and Employment
DENR	Department of Environment and Natural Resources
DPWH	Department of Public Works and Highways
EIA	Environmental Impact Assessment
EIRR	Economic Internal Rate of Return
EIS	Environmental Impact Statement
EMA	External Monitoring Agent
EMP	Environmental Management Plan
ENPV	Expected Net Present Value
E&S	Environmental and Social
ESDD	Environmental and Social Due Diligence
ESEL	Environmental and Social Exclusion List
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental and Social Management Plan
ESP	Environmental and Social Policy
ESS	Environmental and Social Standard
FAM	Facility Administration Manual
FFA	Framework Financing Agreement
FM	Financial Management
GAAP	Gender Assessment and Action Plan
GAP	Gender Action Plan
GBV	Gender-based Violence

GDP	Gross Domestic Product
GHG	Greenhouse Gas
GOP	Republic of the Philippines
GRM	Grievance Redress Mechanism
IC	Investment Committee
IEC	Information and Education Campaign
IFI	International Financial Institutions
IOCT	International Open Competitive Tendering
IPIF	Infrastructure Preparation and Innovation Facility
ISSAI	International Standards of Supreme Audit Institutions
KEXIM	Export-Import Bank of Korea
LARP	Land Acquisition and Resettlement Plan
LGUs	Local Government Units
LIAC	Local Inter Agency Committee
LLDA	Laguna Lake Development Authority
LLRN	Laguna Lakeshore Road Network
MTFF	Medium-Term Fiscal Framework
MDB	Multilateral Development Bank
MFF	Multi-tranche Financing Facility
MPC	Merit point criteria
MSR	Manila South Road
NCR	National Capital Region
NEDA	National Economic and Development Authority
NPV	Net Present Value
NTP	National Transport Policy
OHS	Occupational Health and Safety
O&M	Operation and Maintenance
OP	Operational Priority
PA	Paris Alignment
PAP	Project-Affected Persons
PDP	Philippines Development Plan
PDS	Project Delivery Strategy
PHP	Philippine Peso
PIU	Project Implementation Unit
PP	Procurement Plan
PPM	Project affected People's Mechanism
PPP	Public-Private Partnership
QCBS	Quality and Cost Based Selection
RAP	Resettlement Action Plan
RF	Resettlement Framework
RMC	Road Management Cluster
ROW	Right of Way
RP	Resettlement Plan
SC	Specific Criteria
SEAH	Sexual Exploitation, Abuse, and Harassment
SLEX	South Luzon Expressway
SPP	Strategic Procurement Planning
SPS	Safeguard Policy Statement
UPMO	Unified Project Management Office
USD	United States Dollar
VCR(V/C)	Volume Capacity Ratio
VOC	Vehicle Operating Cost
VOT	Value of Time
WEF	World Economic Forum

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1. Summary Sheet

Project No.	P000725
Project Name	Laguna Lakeshore Road Network Project
AIIB Member	Government of the Philippines (GoP)
Borrower	Republic of the Philippines
Project Implementation Entity	Department of Public Works and Highway (DPWH)
Sector Subsector	Transport Road
Alignment with AIIB's thematic priorities	Connectivity and Regional Cooperation, Green Infrastructure
Project Objective	To improve the efficiency of road travel in the National Capital Region (NCR) and key areas along the Laguna de Bay.
Project Description	The Project will co-finance the construction of a 12.23-kilometer (km) climate-resilient highway along the shoreline of Laguna Lake, connecting San Pedro in the north and Cabuyao in the south. The Project comprises the shoreline embankment plus viaduct, consisting of 7.50km of embankment, and 4.73km of viaducts and bridges combined with flyovers. It includes one interchange at San Pedro/Binan.
Implementation Period	Q4 2024 - Q4 2028, with one-year defects liability period
Expected Loan Closing Date	June 30, 2029
Proposed Amount of AIIB Financing (USDm)	USD188.18
Financing Plan	Project cost: USD721.20 million Project Financing Plan: AIIB loan: USD188.18 million ADB loan: USD362.17 million GoP: USD170.84 million
ES Category (or AIIB equivalent, if using another MDB's ES Policy)	Category A
ES Category Comments	No
Risk (Low/Medium/High)	High
Conditions of Effectiveness	Effectiveness of the co-financing agreement
Key Covenants	(i) Implementation of the Project in accordance with the agreed ADB Facility Administration Manual (FAM), the ADB's Anticorruption Policy, the AIIB's Policy on Prohibited Practices, and the ADB's Safeguard Policies. (ii) Implementation of the Project in accordance with the core labor standards and the Borrower's applicable laws and regulations. Implementation of appropriate safety measures during the construction and commissioning of the Project. (iii) Procurement for the Project in accordance with the ADB's Procurement Policy and Regulations, the FAM, and the ADB's Loan Agreement. (iv) Implementation of the Gender Assessment and Action Plan (GAAP), including adding relevant provisions into the bidding documents and contracts and allocating adequate resources.

	(v) Provision of counterpart support (funds, facilities, services, and other resources necessary or appropriate) by the Borrower to the Department of Public Works and Highways (DPWH) and the Project Implementation Unit (PIU) throughout the implementation of the Project.
Conditions for Disbursement	Fulfillment of all conditions to the effectiveness of the ADB's Loan Agreement
Retroactive Financing (Loan % and dates)	Retroactive financing is not proposed.
Policy Waivers Requested	No
Policy Assurance	The Vice President Policy and Strategy confirms an overall assurance that the proposed Bank Financing complies with the applicable Bank operational policies.
Economic Capital (ECap) Consumption (USDm)	USD17.57
Approval Track (Indicative) (Board/President)	President

President	Liqun Jin
Vice President	Rajat Misra
Director General	Rajat Misra
Manager	Andres Pizarro
Team Leader	Jin Wang, Senior Investment Officer
Team Members	Christopher Damandl, Senior Counsel David Hartcher, Senior Finance Officer Odil Akbarov, SFD - Social Development Specialist Guoping Yu, SFD – Senior Procurement Specialist David Rollinson, SFD – Senior Environment Specialist Shodi Nazarov, SFD - Financial Management Specialist Alberto Alcubilla Arribas, Sr. Investment Solutions Specialist Hayoung Kim, Legal Associate Geanella Allyson Cruz, SFD - Environment Associate Jiaqi Su, Economic Analyst Jessica Halim, Investment Analyst Chang Tian, Team Assistant

2. Context

2.1 **Country and Macroeconomic Overview:** The Philippine economy recovered strongly from the severe impact of the COVID-19 pandemic. Following a 9.5 percent contraction in Gross Domestic Product (GDP) in 2020, it grew by an average of 6.3 percent from 2021 to 2023, becoming one of the fastest growing economies in Southeast Asia. Economic prospects remain positive, with the economy projected to expand by 6.0 percent in 2024 and 6.2 percent in 2025, underpinned by broad-based domestic demand.[1] The Government of the Philippines (GoP) is mobilizing more revenue to support higher investment while keeping within its fiscal consolidation goals under the Medium-Term Fiscal Framework (MTFF) 2022–2028. The fiscal deficit narrowed from an average of 7.9 percent of GDP during 2020–2022 to 6.2 percent of GDP in 2023. The deficit is programmed to further decline to 3.7 percent of GDP by 2028. The national government debt declined from 60.9 percent of GDP in 2022 to 60.1 percent of GDP in 2023 and is on track to decline to below 60 percent of GDP by 2025, in line with the MTFF. Domestic debt comprised nearly 70 percent of the country's total debt in 2023, with long-term debt at three-fourths of the total. The higher share of domestic borrowing helps reduce vulnerability to foreign exchange shocks. Overall, debt metrics remain sound.[2]

2.2 **Infrastructure Development Challenges.** Despite the increased investment in public infrastructure in 2017–2021, the lack of, or underdeveloped, infrastructure remains a core development problem, constraining the Philippines' growth by preventing people from accessing work, markets, education, health care, housing, and other services. The *IMD Global Competitiveness Ranking 2024* placed the Philippines 61st out of 67 economies in terms of quality of infrastructure and 52nd in terms of overall competitiveness[3], well behind regional peers such as Thailand (25th), Indonesia (27th) and Malaysia (34th)[4]. Decades of insufficient investment in infrastructure have saddled the Philippines with a large infrastructure deficit, which reduces its competitiveness. Among the direct impacts of inadequate infrastructure are the high costs of doing business, which undermine business potential and economic opportunities, especially in rapidly growing urban areas. Inadequate infrastructure has also resulted in significant disparities in economic growth and poverty rates among regions, as it has limited the mobility of people and goods, and access to employment and social services. The country's overall quality of infrastructure remains low in terms of accessibility, safety, and affordability. Infrastructure gaps remain among its key challenges, including in transportation and logistics. Poor connectivity limits access to product markets, raises costs, and undermines the competitiveness of businesses.

2.3 **Urbanization Context**. Continued urbanization has put more strain on transport infrastructure, exacerbating existing challenges. Nearly 50 percent of the Philippine population lives in urban areas. The National Capital Region (NCR) [5] is the country's economic powerhouse, generating around 45 percent of the Philippines' GDP. The population of the NCR has grown by about 1 percent annually between 2015 and 2020 and in 2020 has reached

[1] ADB. 2024. Asian Development Outlook. https://www.adb.org/news/slower-inflation-higher-investment-and-consumption-support-philippine-growth-through-2024-2025#:~:text=In%20its%20Asian%20Development%20Outlook,interest%20rates%2C%20the%20report%20said.
[2] ADB, Report and Recommendation of the President to the Board of Directors, 2024
[3] International Institute for Management Development. 2024. *IMD World Competitiveness Ranking 2024*. Philippines Country Profile.
[4] World Competitiveness Ranking https://www.imd.org/centers/wcc/world-competitiveness-center/rankings/world-competitiveness-ranking/rankings/wcr-rankings/#_tab_Rank
[5] The National Capital Region (NCR), also known as Metropolitan Manila, comprises 16 highly urbanized cities and 1 municipality.

13 million people[6]. Calabarzon region[7] is the second most densely populated region in the country, with 67 percent of the population living in urban areas. Rapid industrialization has led the Calabarzon region to become the second-largest contributing region to national GDP, at nearly 17.2 percent[8]. Owing to this, the country's economic success depends to a large extent on Metro Manila and its surrounding cities in the Calabarzon Region's transport performance, while inefficiencies of the urban economy affect the productivity and competitiveness of the entire country.

2.4 **Sectoral Challenges.** The sustained economic growth over the last two decades has accelerated the pace of urbanization of the Greater Manila Area, which, in turn, has resulted in heavy traffic congestion and substantial time and opportunity costs for commuters and businesses. The country lost PHP 3.5 billion per day in 2017 in NCR due to traffic congestion and PHP 2.5 billion per day in surrounding provinces. If no action is taken, these losses would rise to PHP 5.4 billion per day in NCR and PHP 5.9 billion per day in surrounding areas by 2035[9]. Significant levels of congestion exist within NCR and along the national highway from NCR to Calamba in Laguna Province, among other areas, which affects workers, residents, and tourists in the proposed LLRN area and poses severe constraints to the growth of businesses and economy in Laguna and Batangas provinces[10]. The situation is continually worsening in the corridor from NCR to Calamba, where the relocation of industries outside NCR since the 1970s has led to continuous growth in employment and population, making NCR and Calabarzon Region among the most dense and congested regions in Asia[11]. By 2025, it is estimated that the increase in vehicles will further slowdown traffic, leading to average travel speeds for cars of only 16 kilometres per hour (km/h) in NCR and 9 km/h in Laguna Province. The ineffective and inefficient transportation network is causing a rise in transport time and cost, which is preventing businesses from efficiently accessing markets and wider employment talent pools and is detrimental to attracting tourists to the area. The high cost of commuting due to heavy traffic discourages participation of women in the labour force, especially mothers who are already burdened with unpaid housework and childcare at home[12]. Further the constraints due to traffic congestion pose a significant limitation on the future development potential of the region given that the north-south corridor passing through the Laguna Lake perimeter supports the transit of goods and services domestically and internationally, and approximately 46 percent of the nationwide cargo throughput in 2016 occurred in the Manila and Batangas region.[13]

2.5 **Institutional Context.** The Philippines has unique challenges with connectivity as an archipelago, where transport, together with digital connectivity, are important to link markets to each other, connect urban centers to rural areas, and facilitate the movement of people for employment, business and market transactions. As such, it is important for communities to be

[6]The National Capital Region. (NCR) https://www.dti.gov.ph/regions/ncr/profile/#:~:text=The%20National%20Capital%20Region%20has,annually%20from%202015%20to%202020.

[7] Calabarzon region comprises five provinces: Batangas, Cavite, Laguna, Quezon, and Rizal; and one highly urbanized city, Lucena.

[8] Calabarzon a key industrial region, adding significantly to the Philippines GDP, The Philippines Economy, https://oxfordbusinessgroup.com/reports/philippines/2016-report/economy/surpassing-expectations-calabarzon-is-a-key-industrial-growth-region-contributing-significantly-to-national-gdp

[9] Japan International Corporation Agency, 2019. Follow-up survey on Roadmap for transport infrastructure development for greater capital regions (GCR), Manila https://openjicareport.jica.go.jp/pdf/1000041638_03.pdf

[10] LLRN Project – Final Feasibility Study Report. March 2021.

[11] ADB, 2019. Fostering Growth and Inclusion in Asia's Cities. Theme Chapter of the ADB Outlook 219 Update. Manila https://www.adb.org/sites/default/files/publication/524596/ado2019-update-theme-chapter.pdf

[12] NEDA. 2019. Determinants of Female Labor Force Participation in the Philippines. Pasig https://neda.gov.ph/determinants-of-female-labor-force-participation-in-the-philippines/?appgw_azwaf_jsc=sl4AFwvfcxpLbHBVTfGiEMZP2VIUDgIL0pifDPXWOjg

[13] Philippine Ports Authority. Annual Report. 2016 https://www.ppa.com.ph/sites/default/files/annual_report/PPA_2016_AR.pdf

linked to these opportunities through the development of local road networks that reduce the costs of transport, while also adopting active mobility options.[14] The transport sector will have to transform from its current state as an inefficient service provider to a catalyst for growth, economic diversification, and sustainability. The National Transport Policy (NTP) focuses on addressing traffic congestion and poor road network quality as identified in the Philippine Development Plan (PDP) (2017-2022) to be the main problems of road-based transport[15]. The Government developed a roadmap in 2014 for integrated urban development, coordinating multisector transport infrastructure development in NCR and surrounding provinces, and a follow-up study was conducted in 2019[16].The roadmap's vision is to develop regional growth centers across the area and link them with improved expressways and railways. The Government has been promoting a hybrid financing approach for large and complex infrastructure projects where the public sector finances capital expenditure and the private sector operates and maintains the asset under a concession agreement. In addition to this, the "user pays principle" is taken for road infrastructure, for highways carrying long-haul traffic, where a tolling system is applied to reduce public spending on Operation and Maintenance (O&M) while ensuring sustainability.

2.6 **Project Context.** The country adopted a connectivity strategy that aims to improve and strengthen its regional connectivity to ensure managing the growth and development of settlements according to specific urban plans of each region. Calabarzon, where the LLRN traverses five cities, is the major beneficiary, and is accessible through land and sea transportation systems where roads, bridges, and ports are important links for trade, tourism, service activities, and the transport of commodities within and outside the region. The region mainly relies on road transport, particularly major national roads connecting primary and secondary urban centers in other regions. The region is currently served by South Luzon Expressway (SLEX) for the regional traffic and Manila South Road (MSR) for the local traffic. Both these roads are heavily congested during peak hours. It is expected that the LLRN will double the traffic capacity between the Calabarzon region and NCR and reduce travel time between these regions. It will ease the heavy traffic on the SLEX and improve the enabling economic environment.[17] The LLRN aligns with the National Spatial Strategy of the National Physical Framework Plan and cascades down to the urban and transport masterplans of Local Government Units (LGUs).

2.7 **Project Contributions.** To enhance mobility and connectivity and spur economic growth, the Government has been continuing investments in public infrastructure under the national infrastructure Build, Better, More (BBM) [18] Program, following the Build, Build, Build

[14] Government of the Philippines, National Economic and Development Authority (NEDA). 2022. *Philippine Development Plan 2023-2028*.
[15] Government of Philippines, NEDA. Philippine Development Plan, 2017-2022. Manila. NEDA. 2021. Updated Philippine Development Plan, 2017-2022. Manila. And Neda, 2018. National Transport Policy and its Implementing Rules and Regulations, Pasig https://neda.gov.ph/the-national-transport-policy-and-its-implementing-rules-and-regulations/?appgw_azwaf_jsc=L9oU4HEqUmAJ8yOV_w1DBKmV4oriwsPBd57YrKSabJo
[16] Government of the Philippines. NEDA, and Japan International Cooperation Agency. 2014. *Roadmap for Transport Infrastructure Development for Metro Manila and Its Surrounding Areas*. Manila https://openjicareport.jica.go.jp/pdf/12149597.pdf
[17] Government of the Philippines, Regional Development Council (CALABARZON). 2023. *Regional Development Plan for Region IV-A (2023-2028).*
[18] The Build Better More (BBM) is the infrastructure program of the Marcos administration which seeks to expand the previous administration's Build Build Build (BBB) Program to help address the inadequacies of the country's infrastructure. According to the database of the National Economic and Development Authority (NEDA), the BBM infrastructure program for 2023 to 2028 presently includes 198 high impact infrastructure flagship projects (IFPs) with an overall investment cost of P8.8 trillion. Of the 198 IFPs, 124 are entirely new projects while the remaining 74 projects are taken from the previous BBB program. *https://cpbrd.congress.gov.ph/2012-06-30-13-06-51/2012-06-30-13-36-50/1720-ff2024-13-build-better-more-bbm*

(BBB)[19]Program. The Laguna Lakeshore Road Network (LLRN) is a priority infrastructure project for the GoP. It is one of the Infrastructure Flagship Projects (IFP)[20] under the BBB program which is part of the PDP[14] (2023-2028). It is aligned with the Government's PDP and NTP, which aims to improve the connectivity along the western coastlines of Laguna Lake and regional road network quality to support the Philippines' broader national agenda of integrated economic development, diversification, and cooperation. The LLRN aims to address the key development constraints highlighted in above paragraphs by providing a permanent linkage between the different highly progressive yet densely populated cities along the western coastlines of Laguna Lake.

[19] Build, Build, Build (BBB) is the Duterte administration's centerpiece program to usher the Philippines into its "Golden Age of Infrastructure
https://legacy.senate.gov.ph/publications/SEPO/SEPO_AAG%20on%20Infrastructure%20Flagship%20Projects_22Feb2022.pdf
[20] The Infrastructure Flagship Projects (IFPs) is a sub-list of priority projects under the BBB as identified by the National Economic and Development Authority (NEDA).

3. Rationale

3.1 **Expected Beneficiaries.** The primary beneficiaries will be the road users between the NCR and Laguna province, which include industries, business enterprises, residents, commuters, tourists, and other travellers who will obtain access to an expressway which provides a direct route between Metro Manila and Laguna province along the western side of Laguna Lake.

(i) **Industries** around the lake include fisheries, aquaculture, agriculture, recreation and tourism. Numerous large, medium and small enterprises depend on Laguna Lake. The LLRN will facilitate the transit of people, goods, and services domestically and internationally, resulting in lower logistic costs, higher productivity and improved overall competitiveness. Currently, there is no freight rail infrastructure in the Philippines, and increased shipped goods put additional operational and environmental pressure on the existing road network in the Mero Manila and Laguna regions. Particularly, the LLRN will support faster and more reliable journeys to a section of the road network between the ports (the biggest Port of Manila and the second biggest Batangas Port) helping to facilitate improvements in productivity and GDP[21].

(ii) For **residents and commuters**, direct beneficiaries will include people who live in the seven cities in Metro Manila and Laguna province. The LLRN will serve population growth by increasing Metro Manila's network capacity making it easier for people to move around the city. Direct benefits will include enhanced communities' access to job opportunities as well as key social services such as education and health amenities, especially those provided within the NCR, and a resilient and reliable road network which will provide a shorter travel time, reduced vehicle operating cost, enhanced road safety and increased road infrastructure climate resilience.

(iii) **Women will also benefit** – by reducing the travel time burden for women, who are more likely to have significant responsibilities in housework and childcare, has the potential to increase their productivity. With the introduction of the LLRN, the average travel time between Lower Bicutan and Calamba would be expected to be reduced by 25 percent during peak hours[22].

(iv) **Tourism** would be facilitated through the improved connectivity and reduced journey times enabled by the LLRN, such as ecotourism in the Laguna de Bay. For tourists, the direct benefits include improved access to tourist destinations and activities. In particular, road users will benefit from safer and more comfortable travel conditions along the proposed corridor.

(v) In terms of wider **economic benefits**, the LLRN will enhance internal circulation, mobility, and external linkages to support the growth potential of the region and its surrounding areas to improve the region's economic development and diversification.

In summary, the LLRN could potentially benefit a population of about 3.47 million[22], and is expected to improve mobility, enhance productivity, increase accessibility, and boost regional economic development given the strengthened connectivity along the lake.

[21] LLRN Project – Final Feasibility Study Report. March 2021.
[22] ADB Report and Recommendation of the President to the Board of Directors, 2024

3.2 **Strategic Fit for AIIB.** The Project aims to support the Philippines' broader national agenda of integrated economic development, diversification, and cooperation by constructing the LLRN. This is aligned with the AIIB's corporate strategy to finance Infrastructure for Tomorrow and consistent with the Bank's vision of a prosperous Asia based on sustainable economic development.

3.3 **Strategic Alignment.** The LLRN is well-aligned with the Thematic Priorities of the Bank's Corporate Strategy: *Connectivity and Regional Cooperation and Green Infrastructure.* The LLRN will build a backbone road network in the Philippines that connects Metro Manila with key areas along the Laguna de Bay, which will play a vital role in regional connectivity and support integrated economic development, diversification and cooperation in the region. The LLRN will incorporate climate resilient design, climate mitigation and adaptation measures during the construction and operation. The LLRN is further aligned with AIIB's (i) *Transport Sector Strategy by supporting the theme of Trunk Linkages,* as outlined above, as well as (b) *Sustainable Cities Strategy on Enhancing Urban Mobility,* by providing a climate-resilient and faster transport link, which will in turn reduce transport constraints on existing roads, improve urban mobility, and increase accessibility of the region. By supporting decongestion in Metro Manila, the LLRN promotes the 'efficient' outcome in the Strategy. Also, traffic decongestion will support a decrease in GHG emissions and other air pollutants, as well as capacity for additional public transport services (an alternative to personal vehicles). Finally, the LLRN is fully aligned with the Sustainable Development Goals (SDGs), which aims to *develop quality, reliable, sustainable and resilient infrastructure and to provide universal access to safe, affordable, accessible and sustainable transport systems for all*.

3.4 **Value Addition by AIIB.** AIIB will mobilize financial resources to fulfil the investment gap in a project that is vital for the social-economic growth of the country and contribute to the long-term transport financing needs in the Philippines. Beyond the provision of financing, AIIB's participation will strengthen the project by: (i) promoting high technical, social, and environmental standards through the Asian Development Bank (ADB)'s co-financing of the Project with AIIB (ii) bringing AIIB's international experience and knowledge in transport (and roads and bridges) sector in designing and executing large scale and complex projects of this nature and drawing lessons learned from similar projects in the other countries and reflecting to the Project; (iii) providing timely support to strengthen the capacity of the implementing entity, Department of Public Works and Highways (DPWH), in terms of technical, project management and monitoring; and (iv) enhancing the project design following international good practice to ensure climate resilience, and gender and socially inclusion.

3.5 **Value Addition to AIIB.** This will be AIIB's first road project in the Philippines. As an Infrastructure Flagship Project in the country, it will: i) provide a great opportunity for the Bank to build its presence and gain valuable experience in the Philippines' transport sector, which has significant infrastructure development needs in the coming years; ii) further strengthen the Bank's experience in financing and executing large scale, technical complex and climate resilient project of this nature and support diversification of AIIB's portfolio in the transport sector; and iii) further strengthen the close institutional partnership between AIIB, DPWH and Department of Finance (DOF), further consolidating AIIB's position as a reliable development partner.

3.6 **Lessons Learned.** The project design reflects the lessons drawn from prior AIIB and ADB experience in the Philippines and other countries, and also from the DPWH's experience in implementing prior international financial institutions (IFI)-funded projects. Relevant lessons

incorporated into project preparation include: (i) conduct advance planning and due diligence; (ii) ensure that the executing agencies have adequate capacity for project preparation, procurement, safeguards, gender mainstreaming, and project management; (iii) ensure strong integration within the overall transport network; (iv) consider operation and maintenance (O&M) requirements at an early stage, including adopt a Public-Private Partnership model to ensure long-term financial sustainability; and (v) integrate climate resilience measures into design specifications to ensure the environmental sustainability of the investment.

4. Project Description

4.1 Introduction

4.1.1 **PD Structure.** The Bank will finance one segment of the corridor, for clarity within the PD, the term "Program" is used to refer to the entire corridor or the full scope of the investment, while the "Project" denotes the segment financed by the Bank (AIIB's investment). The document indicates where specific analyses, such as economic, financial, climate change, gender, environmental and social, or risk assessments, are conducted at the Program level due to the overarching nature of the initiative and their applicability at the project level.

4.2 The Program

4.2.1 **Program Description.** The Program will support the construction of a 37.5 km expressway from lower Bicutan in NCR to Calamba in Laguna Province to improve the traffic congestion in the corridor. The expressway has seven interchanges and a slip road at each interchange to connect to the existing road network. The expressway terminates at the Calamba interchange with the 3.06 km Calamba Slip Road connecting the interim expressway terminal to the Manila South Road (MSR). The Program aims to reduce transportation constraints (e.g., traffic congestion) on the existing road network; promote economic development in the program area and nearby provinces; and provide safe, convenient, and faster travel to road users coming from the north and south of the program area to various tourist and business destinations in Laguna and nearby provinces.

4.2.2 **The Program and the Project.** The expressway is divided into four sections, each represented by Contract Packages (CP[23]) 1, 2, 3, and 4. CP1 includes the main viaduct from Lower Bicutan to Alabang; while CP2 covers with the shoreline embankment and viaduct from Alabang to San Pedro/Binan; CP3 consists of the shoreline embankment and viaduct from San Pedro/Binan to Cabuyao; and CP4 extends from Cabuyao to Calamba with similar structure. The 7.94 km most northern section (CP1) will be financed by Export-Import Bank of Korea (KEXIM). **The Asian Infrastructure Investment Bank (AIIB) and Asian Development Bank (ADB) will jointly co-finance the 12.23 km of middle section (CP3) (the Project).** The remaining 17.33 km sections, comprising CP2 and CP4, will be solely financed by ADB. The northern sections (CP1 and 2) are 15.57 km in total, of which 82 percent will be built as viaduct offshore over the lake. The southern two sections (CP3 and 4) will be a combination of embankments and viaducts on, or adjacent to, the lakeshore. Overall, 53 percent of the LLRN length consists of viaduct and bridges traversing waterways flowing into the lake.

4.2.3 **Program Objective.** To improve the efficiency of road travel in the National Capital Region (NCR) and key areas along the Laguna de Bay.

4.2.4 **Program Components.** The Program consists of the following outputs:

a) **Output 1: Climate-resilient Expressway along Laguna Lakeshore Built.** This component finances the construction of a 37.5 km expressway from Lower Bicutan in NCR to Calamba in Laguna Province. The Program comprises a 12.0 km viaduct from Lower Bicutan to Tunasan and a 25.5 km long combination of shoreline viaduct and embankment from Tunasan to Calamba. The expressway

[23] CP1 is corresponding to the procurement package "Stage 1, CP1" used in the government approved documents, and CP2, 3, and 4 are corresponding to CP 1, 2 and 3 of Stage 2 respectively referred to in the government approved documents.

will be an access-controlled road with seven interchanges, with a slip road at each interchange to connect to the existing road network.

b) **Output 2: Institutional Capacity of DPWH Strengthened**, through funding a capacity building program for DPWH staff on project implementation and Operation and Maintenance (O&M) or large-scale road infrastructure projects.

4.2.5 **Program Civil Works Packages.** Based on the current Procurement Plan (PP), civil works for the Program will be divided into four contract packages (CP[23]) as a form of risk management. CP1 includes the main viaduct from Lower Bicutan to Alabang; CP2 covers the shoreline embankment plus viaduct from Alabang to San Pedro/Binan; CP3 comprises the shoreline embankment and viaduct from San Pedro/Binan to Cabuyao; and CP4 consists of shoreline embankment plus viaduct from Cabuyao to Calamba (see Table 4.1 below).

Table 4.1 Viaduct/Bridge and Embankment Sections for LLRN Mainline

CP	Name	Embankment Length (km)	Viaduct/Bridge Length (km)	Total (km)
1	Lower Bicutan to Alabang	1.13	6.81	7.94
2	Alabang to San Pedro/Binan	1.72	5.91	7.63
3*	**San Pedro/Binan to Cabuyao (the Project)**	**7.50**	**4.73**	**12.23**
4	Cabuyao to Calamba	6.17	3.53	9.70
Total		**16.52**	**20.98**	**37.50**

***** Note: AIIB and ADB will jointly co-finance the 12.23 km of middle section of the expressway (CP3).

4.2.6 **Program Cost and Financing Plan.** The financing plan of the Program is shown below in Table 4.2. CP1[23] will be parallel financed by the Export-Import Bank of Korea (KEXIM); CP 2 and CP 4 will be financed by Asian Development Bank (ADB); and CP3 will be jointly co-financed by AIIB and ADB, with ADB as a lead co-financier.

Table 4.2 Program Cost and Financing Plan

Item	Program Cost (USD m)	Financing (USD m and %)		
		AIIB	ADB	GoP
Civil Works	1,568.53	160.17	1,408.36	-
Consultancy Service	43.50	-	43.50	-
Engineering and Administrative Cost	6.03	-	-	6.03
Land Acquisition	58.63	-	-	58.63
Financing Charges during Implementation	246.08	-	-	246.08
Physical and Price Contingencies	312.94	28.02	246.35	38.58
Taxes and Duties	199.97	-	-	199.97
Total	2,435.69	**188.18 (7.7%)**	1,698.21 (69.7%)	549.30 (22.6%)

Note: excludes the around (i) USD904.35million from KEXIM; (ii)USD142.6million counterpart funding of the KEXIM financing component.

4.2.7 **Program Expected Results.** The Program is expected to result in the construction of the expressway along Laguna Lakeshore, and improvement of the travel time. At completion, the results are expected to be monitored through the key outcome indicator highlighted below:

- Efficiency of road travel improved: Peak Hour Travel time between Lower Bicutan and Calamba (unit: hours);

4.3 The Project

4.3.1 **Project Description.** The Project will co-finance the construction of a 12.23-kilometer (km) climate-resilient highway along the shoreline of Laguna Lake, connecting San Pedro in the north and Cabuyao in the south. The Project comprises the shoreline embankment plus viaduct, consisting of 7.50km of embankment, and 4.73km of viaducts/bridges combined with flyovers. It includes one interchange at San Pedro/Binan

4.3.2 **Project Objective.** To improve the efficiency of road travel in the National Capital Region (NCR) and key areas along the Laguna de Bay.

4.3.3 **Project Component - Construction of the Expressway.** The Project will co-finance the construction of a 12.23km expressway from San Pedro/Binan to Cabuyao in Laguna Province. It comprises a 7.50km of embankment and a 4.73km viaducts/bridges along with flyovers. One interchange at San Pedro/Binan is included. And it consists of 2.295km of slip road, ramps and roundabout at San Pedro/Binan Interchange and 1.19km connecting road to Manila South Road (MSR). The mainline is classified as National Primary Road in accordance with the DPWH Design Guidelines, Criteria and Standards (DGCS).

4.3.4 **Project Cost and Financing Plan.** The Project (CP3[23]) cost is estimated to be USD 721.2 million. The Bank and ADB are proposing to jointly co-finance the Project. The ADB is the lead co-financier and will support 65 percent of the ADB- and AIIB-financed Project cost, and AIIB is expected to co-finance the remaining 35 percent (the Bank will finance USD 188.18 million). The co-financing arrangements for the Project between the ADB and AIIB will follow the Co-financing Framework Agreement signed by the respective Presidents of the two institutions in October 2023. In essence, the ADB's policies and procedures on safeguards, procurement, financial management, project monitoring, and reporting will be used for the Project activities to be financed in whole or in part out of the loan proceeds (including activities to be financed by the Bank). The indicative cost breakdown and financing plan of the Project is shown below.

Table 4.3 Project (CP3) Cost and Financing Plan

Item	Project Cost (USD m)	Financing (USD m and %)		
		AIIB	ADB	GoP
Civil Works	457.62	160.17	297.45	-
Consultancy Service	12.69	-	12.69	-
Engineering and Administrative Cost	1.76	-	-	1.76
Land Acquisition	23.72	-	-	23.72
Financing Charges during Implementation	75.76	-	-	75.76
Physical and Price Contingencies	91.30	28.02	52.03	11.26
Taxes and Duties	58.34			58.34
Total	721.20 (100%)	**188.18 (26.1%)**	362.17 (50.2%)	170.84 (23.7%)

4.3.5 **Project Financing Modality and Co-financing Arrangement.** ADB is financing the LLRN using its Multi-tranche Financing Facility (MFF) modality considering the restrictions of ADB's resource allocation and the annual borrowing capacity of the Government. ADB's MFF splits the LLRN into two tranches, adopting the time-slicing approach for large-scale projects, with each tranche financing slices of contracts per an indicative tranche schedule based on

the contracts' disbursement projections. Individual tranche releases will be subject to the Government's submission of related periodic financing requests, execution of the related loan and project agreements for each tranche, and fulfillment of terms and conditions and undertakings set forth in the GoP-ADB Framework Financing Agreement. The first tranche of the MFF will comprise a regular loan of $1,188.75 million, and the second financing tranche is anticipated to be requested in 2026. The contracts are planned to be awarded in the fourth quarter of 2024, and completion of the work is targeted for 2027 excluding the Defect Liability Period. The Bank proposes one regular loan to co-finance the Project with ADB.

4.3.6 **Project Expected Output.** The Project results are expected to be monitored through the Indicative Intermediate results indicators below.

- Expressway along Laguna Lakeshore between San Pedro/Binan and Cabuyao built:
  - Kilometre (km) of climate-resilient expressway with interchange and connecting road to the existing road network built (unit: km)[24];
  - Kilometre (km) of connecting roads developed in the onshore sections with gender-responsive lanes for pedestrians (unit: km)[25].

4.4 Paris Agreement Alignment (PAA) and Climate Finance.

4.4.1 In line with AIIB methodology for assessing the alignment with the mitigation and adaptation goals of the Paris Climate Agreement, the Program and the Project are assessed as aligned.

4.4.2 **Climate Mitigation Finance.** Based on the incremental approach, the climate mitigation finance for the Program is calculated as USD 3.18 million, being the amount attributable to the USD 0.73 million from AIIB's financing.

4.4.3 **Climate Adaptation Finance.** Adaptation finance is estimated based on the proportional approach for type 1 projects (projects in which climate adaptation is not one of the goals of the project). Given the structural and non-structural measures incorporated, the Project will receive 20 percent climate adaptation finance on its CAPEX components, equivalent to USD 32.03 million.

4.4.4 **Climate Finance**. The total AIIB's climate finance on this Project is USD 32.74 million (17.41 percent).

4.5 Implementation Arrangements and Readiness

4.5.1 **Implementation Period.** The Project's implementation period is the same with the Program implementation period, which is expected to run from December 2024 to December 2028, with one-year defects liability period.

4.5.2 **Implementation Readiness**.

- **Status of Feasibility Studies, Procurement, Land Acquisition.** Implementation readiness is high, as the entire scope of the Program has been appraised. The Feasibility Study (FS) has been completed under ADB's Infrastructure Preparation and

[24] Climate resilient features will include increased height of viaducts and capacity of drainage to account for the projected increase in rainfall and lake-water levels during floods.
[25] Gender-responsive pedestrian lanes will include provisions for sufficient lighting, and smooth pavements and ramps for safe and convenient use especially for women with young children in trams, the elderly, and disabled people in wheelchairs.

Innovation Facility (IPIF)[26] in 2020. The Detailed Engineering Design (DED) for the Program including the tender documents, also supported under the IPIF, has been completed in 2024.[27] Based on the FS and DED, there will be four contract packages for the Program and one contract package for the Project (CP3). Advance procurement activities for the three civil works packages started in September 2024. The contracts are targeted to be awarded by December 2024. An Environmental Impact Assessment (EIA) has been disclosed on ADB and AIIB websites in May 2024 and July 2024 respectively, while the Resettlement Framework (RF) and Resettlement Plan (RP) have been disclosed on ADB and AIIB websites as of July 2024. Assessments of climate change impacts including the Paris Agreement alignment have been conducted. Other due diligence including technical, economics, financial, social and gender assessment have been completed.

- **Required Clearances/approvals for Program Implementation.** The National Economic and Development Authority (NEDA) Board approved the Program in October 2021, and the DOF requested the DPWH to go through an afresh NEDA Board approval via letter dated September 8, 2022, in light of the changes in physical scope and cost that resulted with the completion of the DED. In April 2023, the NEDA ICC requested DPWH (i) to consider a PPP arrangement for O&M, and (ii) to confirm the funding source for connecting road to MSR. Accordingly, DPWH changed the LLRN to be tolled and proposed a hybrid PPP modality. The DPWH also included the connecting roads to MSR in the program scope. The final approval was obtained by NEDA board in July 2024.

4.5.3 Implementation Arrangements.

- **Implementation Management (Executing Agency).** The DPWH is the Executing Agency of the Program and the Project, and coordinates the overall LLRN implementation. As described in the ADB's Facility Administration Manual (FAM), which is legally binding, the DPWH through the Roads Management Cluster II (Multilateral) - Unified Project Management Office (RMC II-UPMO) is wholly responsible for implementing ADB-financed projects, as agreed jointly between the Borrower and ADB, and following the policies and procedures of the Government and ADB. With over 15,000 regular staff, the capacity of DPWH is deemed adequate for its current role and responsibility. Also, DPWH has rich experiences in MDB-financed projects under which it procured and managed civil works and goods and recruited consultants. For the LLRN, the DPWH will provide overall coordination of project implementation, including timely submission of reports to ADB/AIIB; approve procurement plans, procurement actions such as tender evaluation and contract awards; approve working drawings, design documents, engineering designs and cost estimates; carry out consultant selections for construction supervision, external monitor, and O&M PPP transaction advisory services; procure civil works contracts; obtain necessary environmental approval(s) from Department of Environment and Natural Resources (DENR) and other relevant agencies/organizations prior to award of civil works contracts; prepare project financial statements and arrange annual

[26] The IPIF is a project preparation loan provided by ADB to the GOP to conduct FS and/or DED of pre-identified projects. One of these projects is the LLRN.
[27] The DED consultant firm is a joint venture of CTI Engineering International Co., Ltd, Chodai Co., Ltd, Oriental Consultants Global Co., Ltd, Nippon Engineering Consultant Co., Ltd

independent audits; and submit audited project financial statements and audit reports to ADB/AIIB.

- **Program and Project Implementation Unit (PIU).** The Unified Project Management Office – Road Management Cluster II (Multilateral) within the DPWH will serve as the Project Implementation Unit (PIU). It will conduct day-to-day project management, including: ensure that project implementation complies with Government environmental policies and regulations, ADB safeguard policy and provisions of the Environmental Management Plan (EMP) included in the Environmental Impact Assessments (EIAs) cleared by ADB; ensure that environmental protection and mitigation measures in the EMP are incorporated in the detailed design, included in tender documents, implemented and monitored; ensure that procurement and contract management comply with ADB's procurement policy; submit disbursement projections, request budgetary allocations for counterpart funds; ensure implementation of the gender action plan (GAP); ensure compliance with the Government's policies and loan covenants; maintain separate project accounts, prepare project financial records and submit them for audit, and prepare withdrawal applications; and issue project progress reports. The UPMO-RMC II is headed by a Project Director, who reports directly to the Senior Undersecretary for UPMO.
- **Consultant Services (financed by ADB's loan).** In terms of capacity development support, the Program will help the executing agency and implementing agencies to implement a capacity building program for the Government to ensure adequate capacity in O&M and management of the Program and future large and complex infrastructure projects. The Program will also provide dedicated training programs to enhance the Government's capacity to integrate climate adaptation and low carbon measures in the operation of the Program. The consultants will support the DPWH and the UPMO in project implementation, construction supervision, and external monitoring of environmental and social impact:
    - **Construction Supervision Consultant (CSC)**. The CSC will be engaged to guide the project construction process to successful completion. It will provide construction supervision services; monitor the progress of civil works; issue notices to the contractor; review contractor's payment certifications; and identify construction risks and propose mitigation measures.

4.5.4 **Monitoring and Evaluation.** The overall responsibility for monitoring Program results and data collection of Project results indicators rests with the UPMO, supported by the CSC. UPMO will produce quarterly progress report, which will be one of the main means of monitoring project implementation and share them with AIIB and ADB. Also, UPMO will produce the consolidated annual reports including (a) progress achieved by output as measured through the indicator's performance targets, (b) key implementation issues and solutions, (c) updated procurement plan, and (d) updated implementation plan for the next 12 months. These reports will highlight the status of achievement of agreed targets for monitoring indicators (see Annex 1 for details) and detail project implementation progress. These reports will be used as basis to generate a project completion report within six months of loan closing. The project completion report will provide an assessment of the achievement of the output indicators associated with this Project.

4.5.5 **AIIB's Implementation Support.** The Bank is proactively working with the ADB and DPWH teams to provide support on project preparation and eventually on implementation.

AIIB and ADB will jointly conduct periodic field review missions to monitor the implementation progress and budget utilization and ensure compliance to loan covenants. The frequency of these missions is expected to be twice a year, depending on needs.

4.5.6 **Procurement.** ADB's Procurement Policy (2017, as amended from time to time) and Procurement Regulations for ADB Borrowers (2017, as amended from time to time) are determined to be generally consistent with the AIIB Core Procurement Principles and Procurement Standards of AIIB's Procurement Policy (November 2022), and they shall apply to this Project, subject to universal procurement.[28,29]

- **Procurement Arrangement.** For implementation of this Project, ADB, as the lead co-financier, will provide Procurement Services to AIIB. AIIB and ADB will review and provide its agreement to the initial project procurement plan and any material changes thereto. ADB's Standard Bidding Documents will be used for the Project, provided that all references to procurement eligibility and to ADB's Procurement Policy shall be understood as requiring universal procurement eligibility. The tender documents issued under the Project will reflect that ADB and AIIB will co-finance the contracts under joint co-financing and include the AIIB's Covenant of Integrity to be completed by tenderers. All procurement notices, such as advance procurement notices, invitations to bid, and contract award notifications, will also reflect that ADB and AIIB will co-finance the contracts under joint co-financing. These notices will be provided to AIIB for publication on its website. ADB and AIIB will inform each other of any procurement-related complaints received by them in connection with the contracts financed under the Project. ADB will provide AIIB with the names of applicants or tenderers for co-financed contracts, and AIIB shall notify ADB, within 5 days, whether AIIB can finance those applicants or tenderers. If no response is received within 5 days, ADB may deem that such applicants or tenderers are eligible. If any applicant or tenderer is not eligible, ADB and AIIB will agree on a remedial action.
- **PIU Responsibility.** The PIU under DPWH, assisted by the DED Consultant, is responsible for the design and procurement aspects of the Project. At the initial stage, the PIU is assisted by the DED Consultant (financed by ADB IPIF) for conducting Advance Procurement actions. PIU also assigns a dedicated Procurement Officer. A regular Procurement Report will be produced by PIU as part of its regular Project Progress Report. Joint AIIB-ADB supervision/implementation support missions as well as procurement capacity building training events may be conducted from time to time.
- **Strategic Procurement Planning (SPP).** Due to co-financing arrangement, the ADB Strategic Procurement Planning (SPP) and the procurement description in ADB's Facility Administration Manual (FAM) will be used in lieu of the Project Delivery Strategy (PDS). The PIU has prepared an initial SPP, which defines a procurement strategy that will support the delivery of the Project outputs and the achievement of the planned project outcomes. Procurement activities include the procurement of large,

[28] The Procurement Eligibility provision in the ADB's Procurement Policy and Regulations require that ADB Loan can be used only for procurement of goods, works, and services produced in, and supplied from, member countries. This provision is not consistent with the Bank Procurement Policy and PIR. Accordingly, as agreed with ADB, the procurement eligibility under this Project shall be understood as requiring universal procurement eligibility, where procurement of goods, works, and services produced in, and supplied from any country.

[29] ADB. 2013. Blanket Waiver of Member Country Procurement Eligibility Restrictions in Cases of Cofinancing for Operations Financed from Asian Development Fund Resources. Manila. Blanket Waiver of Member Country Procurement Eligibility Restrictions in Cases of Cofinancing for Operations Financed from Asian Development Fund Resources | Asian Development Bank

complex civil works contracts and consulting firms to provide construction supervision and engineer support services. An initial Procurement Plan (PP) for the Project has also been prepared. Subject to prior agreement with the Bank, the SPP and PP may be updated from time to time during the Project implementation.

- **Program Procurement Plan (PP).** Based on the latest PP, there will be four high value and complex construction contract packages (CP1-CP4[23]) and two large consulting services contracts (CSC) as well as 2 other smaller consulting services contracts under the Program. KEXIM will fully finance CP1. The Bank will co-finance CP3 jointly with ADB under the Program and ADB will fully finance CP2 and CP4 as well as the consulting services contracts. The selection of CSC and External Monitoring Agent (EMA) for Environmental and Social Impact will follow the ADB Quality and Cost Based Selection (QCBS) method with Open Competitive Selection international advertisement.
- **Project Procurement Plan (PP).** The Project (CP3) will be procured following ADB Open Competitive Bidding with international advertisement, which is equivalent to the AIIB International Open Competitive Tendering (IOCT). An Advance Contracting Notice (can) will be published in both ADB and AIIB websites for CP3 in Q3-Q4 2024. The contract financed by ADB and the Bank will be subject to ADB's prior review, considering the values and risks involved.
- **Advance procurement.** Advance procurement will be used for civil works packages financed by ADB and AIIB, as indicated in the procurement plan. Advance actions include preparation of terms of reference, bidding documents, and requests for proposals; seeking ADB's review and no-objection to these documents; issuance of consulting service recruitment notices (CSRN) or invitations to bid; shortlisting; evaluation of bids or proposals; preparation of evaluation reports and contract award recommendations; and seeking ADB's review and no-objection to the same. However, contracts will only be awarded after the Project has become effective. The issuance of invitations to bid for civil works, or CSRN or requests for proposals for consulting services under advance procurement will be subject to ADB approval. The executing agency (DPWH) and implementing agency (RMCII-UPMO) have been advised that approval of advance procurement does not commit ADB or AIIB to finance the Project.
- **Retroactive Financing.** Retroactive financing will not apply to this Project.
- **Tendering Procedure.** For all Civil Works packages, single-stage two-envelope tendering procedure and Merit Point Criteria (MPC) for evaluation of tenders will be used, giving DPWH the opportunity to strike a balance between cost and quality.
- **E-procurement System.** The borrower's e-procurement system, PhilGEPS, will be used for publication of the procurement opportunities such as ADB's Consulting Services Recruitment Notice (CSRN) or invitations to bid, uploading tender documents, and posting procurement notifications such as clarifications, amendments to the tender documents, and contract awards. The system is not ready for e-tendering.

4.5.7 **Financial Management (FM).** The DPWH will be responsible for maintaining the financial management system of the Program. The FM arrangements will primarily rely on the GoP's systems for budgeting, funds flow, accounting, internal control, and external audit. ADB has conducted a comprehensive FM assessment focusing on a review of funds flow, staffing, accounting policies and procedures, financial reporting and monitoring and audits. As ADB is

a lead co-financier, ADB will provide FM and disbursement-related services per the ADB-AIIB Co-Financing Agreement (C'A)'s standard terms. Such services will include sharing the results of reviews of periodic financial reports, annual audits of project financial statements, review of withdrawal applications, and any other FM-related activities. AIIB is satisfied with the FM assessment capacity and process of ADB. AIIB's assessment and its results are mainly based on ADB's findings.

5. Project Assessment

A. Technical

5.1 Project Design.

5.1.1 **Project Description.** The Project will support the construction of a 12.23-kilometer (km) climate-resilient highway along the shoreline of Laguna Lake, connecting San Pedro in the North and Cabuyao in the South. The Project comprises the shoreline embankment plus viaduct from San Pedro/Binan to Cabuyao. It has a total mainline length of 12.23km, consisting of 7.50km of embankment, and 4.73km of viaducts and bridges combined with flyovers. The mainline is classified as National Primary Road in accordance with the DPWH Design Guidelines, Criteria and Standards (DGCS). It contains one interchange at San Pedro/Binan.

5.1.2 **Definition of Road Components.** The interchanges are linked to the local road by a "slip road". Some of the slip roads shall be connected to the Manila South Road (MSR) by another link road named as the "MSR connecting road". The MSR connecting road will be provided at San Pedro/Biñan. The definition of the LLRN road components is showed in Figure 5.1.

Road Component	Definition
Mainline	Laguna Lakeshore Road extending from Lower Bicutan to Calamba catering through traffics
Ramp	Access road between Mainline and Interchange for traffics entering and exiting the mainline
Interchange	Facility traversed to change direction for entry and exit
Slip Road	Road connecting LLRN to the existing road network (near the municipality boundary at the shoreline) from beyond the roundabout or nose of the on/off ramps.
MSR Connecting Road	Road connecting the Slip Road to the existing Manila South Road (MSR)
Service Road	Road connecting the Slip road to the local/minor roads to collect local traffics

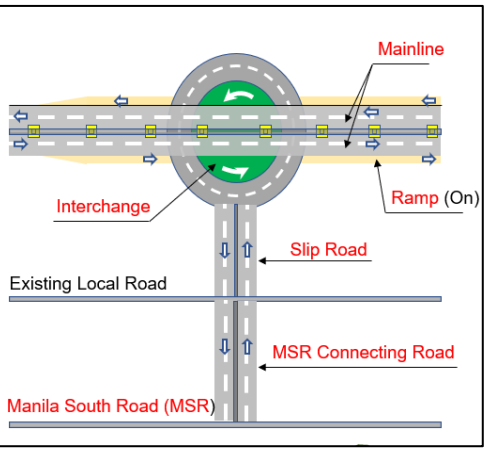
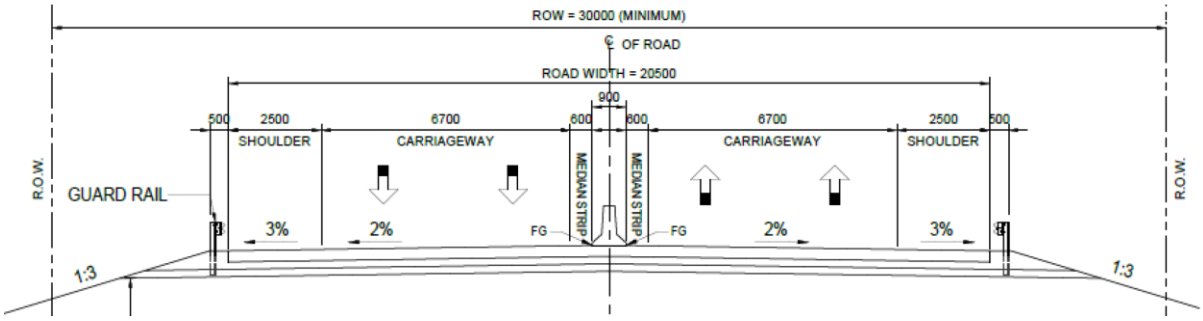


Figure 5.1 Definition of LLRN Road Components

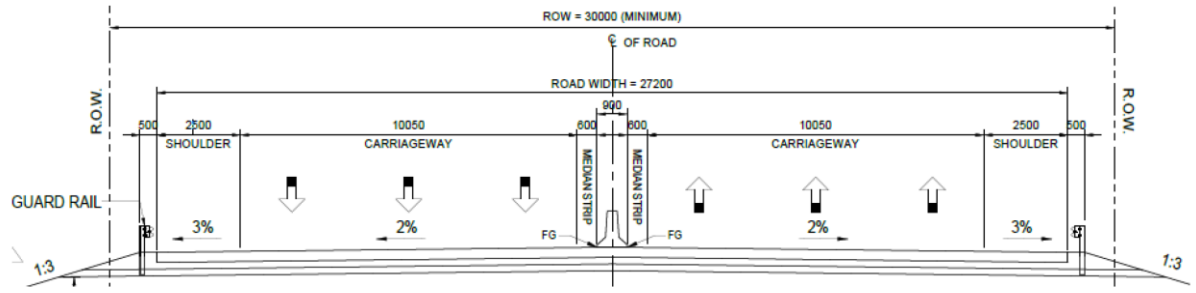
5.1.3 **Traffic Demand Forecast.** The traffic demand forecast has been carried out to confirm the appropriate number of lanes to be used. The method adopted is based on the classical four-step travel demand model: traffic generation/attraction (G/A) model, traffic distribution model, mode choice and traffic assignment model. The existing road network, present OD matrix, and present socio-economic indicators were used as input data. In all steps, the analysis was conducted on a per-vehicle basis (unit is vehicle per day). The future traffic demand in each step was estimated by inputting future condition data (future road network and future socio-economic framework). Traffic demand estimates for LLRN was developed by the project design study involving traffic modeling of NCR and surrounding provinces using network and Origin-Destination (O/D) data updated through different studies in the past such as the LLRN Feasibility Study and HSHMP 2 (High Standard Highway Master Plan Project Phase 2) conducted by JICA in 2021. The traffic projections considered impacts of other large transport projects in progress for completion in NCR and major development projects in the direct influence area of the proposed LLRN. The LLRN is proposed to be implemented with tolling to recover O&M costs and the traffic modelling incorporated the toll charges. The model

is adopting equilibrium traffic assignment to predict the traffic volume. It is recommended that the number of lanes in the area would be six lanes between San Pedro/Binan and Santa Rosa. On the other hand, the segment from Santa Rosa to Cabuyao can still be covered by four lanes. The volume capacity ratio (VCR) result is estimated to be less than 0.6 and the Level of Service (LOS) is within C (moderate traffic), which shows that the number of lanes established is adequate.

5.1.4 **Typical Road Section.** The number of lanes of the Project main highway is three lanes in each direction (dual 3-lane) between San Pedro/Binan and Santa Rosa, while it is two lanes in each direction (dual 2-lane) between Santa Rosa and Cabuyao. As illustrated below, a typical road section of the mainline highway on embankment consists of a median, vehicular lanes, and shoulders. At the embankment section, the shoulder is further provided with shoulder margins with guard rails at the edge. The opposing lanes are separated by a median (New Jersey Type Barrier) which is 2.1m. The median width is inclusive of 0.6m marginal strips at each side of the barrier. At embankment section, the road is provided with a 3.35m wide vehicular lane and a shoulder 2.5m wide. The shoulder is provided with shoulder margin of 0.50m at each side. The vehicular lanes are provided with a crossfall of 2.0 percent and the shoulder with 3.0 percent for embankment sections and 2.0 percent for viaduct sections. The embankment slopes will be in a ratio of 1V:2H and be provided with structures for protection. Guard rails are provided at the edge of the shoulder margins.



Dual 2-Lane



Dual 3-Lane

Figure 5.2 Typical Cross Section of Mainline Embankment Sections

5.1.5 **San Pedro/Binan Interchange.** The San Pedro/Binan Interchange is grade-separated roundabout with straight ramps to the LLRN mainline. The plan of the slip road, ramps and mainline of the San Pedro/Binan Interchange is shown in Figure 5.3 below.

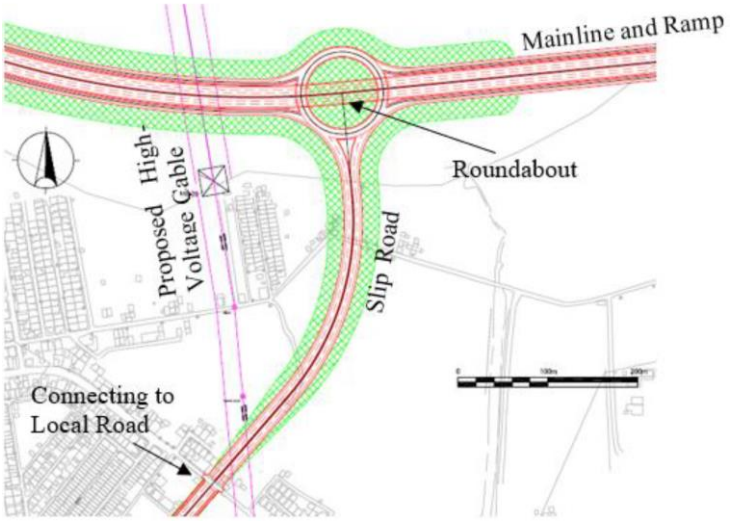


Figure 5.3 Plan of San Pedro/Binan Interchange

5.1.6 **Climate Resilient Feature.** The design, construction and operation of the construction components, including the embankments, viaducts, road pavement and drainage, follow climate resilient standards and methodologies to mitigate the key climate change risks linked to increased precipitation, lake levels and storm events. With the LLRN close to a major geological fault and constructed over lake sediments that will liquify during seismic events, the adopted design and construction standards and methodologies contribute to a high level of earthquake resilience. When constructed, the LLRN will provide the most resilient road link within the southern Manila transport corridor, provide a refuge from flooding and improve accessibility for emergency services and evacuations in the case of natural events.

5.1.7 **Climate Adaptation and Mitigation Measures.** Specific climate adaptation measures included in the design and construction include (i) increased embankment and viaduct height to counter increased lake levels, (ii) increased capacity of cross-culverts and pavement drainage, and (iii) increased lake-side protection of embankments against increased wave action. Should the successful bidders choose to source embankment material by dredging lake sediments rather than from more remote on-land quarry sites, a reduction in material transport-related GHG emissions is expected. The design's climate mitigation measures include solar-powered road lighting and tree planting. Following the Joint MDB Methodological Principles for Assessment of Paris Agreement Alignment, the operation has been assessed as aligned with the goals of the Paris Agreement.[30]

5.1.8 **Road Safety Audit.** A structured road safety audit has been undertaken on the detailed engineering design (DED). The audit included findings, risk ratings, recommendations and client responses, consistent with contemporary road safety audit methodology and DPWH practice. In keeping with contemporary road safety audit methodology and DPWH practice, independent road works and preopening road safety audits are to be undertaken during construction and prior to opening the road sections to traffic.

5.1.9 **Road Safety Inspections.** The technical specifications include relevant and appropriate requirements for managing traffic safety during construction and the CSC is tasked to review and endorse the contractors' traffic management plans for each phase of

[30] AIIB. Assessing the Alignment of AIIB Investment Options with the Paris Alignment. July 2023. Methodology for assessing AIIB Investment Operations Alignment with the Paris Agreement

construction and undertake road safety inspections during the construction period. The need for improved road safety infrastructure practice is specifically recognized in the Safer Roads pillar of the Philippine Road Safety Action Plan 2023-2028.[31] Reviewing, updating and planning the implementation of improved road safety infrastructure practice represents a significant challenge for DPWH and could benefit from a strategic partnership with AIIB and ADB to bring about this specific change in support of the Road Safety Action Plan targets.

5.1.10 **Operation and Maintenance (O&M).** O&M is programmed by the DPWH as a separate contract package to be undertaken by the O&M concessionaire. In addition to the O&M, it will also include the detailed design and construction of toll facilities and additional connecting roads from MSR to SLEX. A preliminary business case report of LLRN as a Toll-Road Facility (Hybrid O&M PPP Project) was prepared as part of the scope of the DED Consultant. Meanwhile, the full-blown business case study on the conceptualization of the O&M for the LLRN will be conducted by the DPWH during the mid-construction of the LLRN Phase 1.

5.2 Operational Sustainability.

5.2.1 **Operational Sustainability.** Business Case Study and Conceptualization of the Operations and Maintenance for the LLRN Project Phase I will be conducted to determine the Project's operational sustainability. Based on its results, the Government of the Philippines will adopt and execute the recommended PPP arrangement correspondingly.

B. Economic and Financial Analysis

5.3 Introduction

5.3.1 The Project objective is to improve the efficiency of road travel in the National Capital Region (NCR) and key areas along the Laguna de Bay. Both the economic and financial analyses target the Program level instead of the Project level because full benefits can only be achieved when the Program is completed.

5.4 Economic Analysis

5.4.1 The Program's economic validity was evaluated by calculating the economic benefits and costs between the "with" and "without" scenarios. The analysis assumes 3 years of construction and 30 years of operations. The benefits will accrue from (i) travel time savings, (ii) vehicle operating cost (VOC) savings, and (iii) Greenhouse Gas (GHG) emission savings. The analysis results indicate that the proposed Program have an economic internal rate of return (EIRR) of 12.2 percent and will generate net present value of USD978.6 million. The EIRR exceeds the social discount rate of 9 percent in the baseline case and the sensitivity tests and thus considered economically viable.

5.5 Financial Analysis

5.5.1 A financial assessment was also undertaken to examine the financial viability of the LLRN Program investment. Revenue will be generated through adoption of an open tolling system (as in use elsewhere on major highways in the Philippines). A single toll rate per vehicle class will be levied depending on the distance traveled. A traffic demand model was

[31] Government of the Republic of the Philippines, Department of Transportation (DOTr). 2023. https://lto.gov.ph/road-safety-action-plan/.

developed to provide the basis for the traffic forecast. The assumed toll rate is derived from a traffic-revenue sensitivity model that considered the willingness-to-pay survey results and an analysis of the relationship between traffic volume and toll fee increases. The incremental revenues generated by the LLRN during its first 30 years of operations are expected to be sufficient to finance its recurring costs, including O&M.

C. Fiduciary and Governance

5.6 Procurement

5.6.1 **Overall Procurement Assessment.** The national procurement rules and procedures described in the Revised Implementing Rules and Regulations (RIRR) of Republic Act (RA) 9184 allows the use of ADB's Procurement Regulation for ADB Borrowers and ADB Procurement Policy for ADB-financed contracts. Therefore, there is no significant risk identified in the legal and regulatory framework. Procurement assessment targets the Program level instead of the Project level considering the overall procurement capacity of the client.

5.6.2 **UPMO Capacity.** The Program is expected to involve 4 high value and complex contracts to be procured under International Open Competitive Tendering, including viaducts and bridges, embankments, slip roads and local connecting roads. DPWH operates in an adequately competitive local construction industry, and it has access to information about contractors' qualifications and experience to fully assess the market and design the most appropriate procurement strategy. DPWH, particularly UPMO, has prior experience in managing MDB-financed infrastructure projects, but smaller and less complex than the LLRN. DPWH is also currently implementing several projects funded by international lending institutions. DPWH's Procurement Service that manages its procurement activities has adequate capacity composed of qualified personnel with procurement experience not only in the Government Procurement System but also in procurement of foreign funded projects such as ADB.

5.6.3 **Procurement Risk.** Overall, DPWH has adequate capacity to manage the procurement activities under the proposed Program. The procurement risk is rated Moderate for the following key reasons. Risks may include: (i) the LLRN implementation schedule is very tight; (ii) while DPWH has sufficient experience in implementing projects funded by ADB, the Government, and other international financial institutions, it has not executed any project of this scale and level of complexity; (iii) many projects under the Flagship Infrastructure Projects are under the umbrella of DPWH, therefore its procurement capacity may reach its limit, causing delays in implementation of the LLRN; and (iv) several large-scale infrastructure projects under the Flagship Infrastructure Projects are expected to be brought to the market around the same time, which may saturate the market, and tenderers may have to choose between projects, hence the level of competition may be affected.

5.6.4 **Procurement Risk Mitigation Measures.** To mitigate the above risks, the following actions were recommended or have been taken: (i) given the high level of the Project readiness, advance procurement will be used for the supervision consultants services and external monitoring consultants for social and environmental aspects, and all the 4 civil works contracts so that most of the contracts can be awarded as soon as the LLRN becomes effective (see Paragraph 4.5.6); (ii) the Program includes consultancy services to supervise construction and provide engineering and project management support to DPWH; (iii) ADB project team and consultants hired under ADB Technical Assistances (Tas) provide capacity

building and extended implementation support to DPWH on an as needed basis and subject to agreement of ADB; (iv) universal procurement will apply, allowing eligible tenderers from all countries to participate; and (v) a rigorous market engagement plan will be conducted before bidding to disseminate the Program information, gauge the level of interest in the Program, seek feedback from the market and set appropriate technical requirements and Merit Point Criteria with reasonable weightings of scores for technical and financial proposals if applied in the Tender Documents for procurement of works, to maximize competition.

5.7 **Financial Management (FM)**

5.7.1 **FM Risk.** The financial management assessment (FMA) assessed the financial management arrangements of DPWH, including fund flow, staffing, accounting policies and procedures, financial reporting and monitoring, internal and external auditing arrangements and financial information systems, and the sufficiency of the financial management arrangements for implementing the project. Based on the assessment, the key financial management risks identified are: (i) limited staffing capacity for accounting and internal audit; (ii) delayed availability of counterpart funding; (iii) manual reconciliation and preparation of project financial statements; and (iv) errors and misstatements in the audited project financial statements.

5.7.2 **FM Risk Mitigation Measures.** These risks are considered manageable, the main actions to mitigate the identified risks include (i) appointing necessary staff with clear terms of reference for quality assurance and review of transactions, (ii) DPWH will discuss annually with oversight agencies (DOF and DBM) the allocation of the required budget for the LLRN and submit to financiers evidence that sufficient budget was released for the Program to ensure sufficient budget is allocated, (iii) enhancing the agencies' accounting and reporting systems, and (iv) adding the Program in the internal audit unit's annual work plan and monitoring audit findings. The financial management action plan has been agreed with the Government.

5.7.3 **Counterpart Budget.** The DPWH uses an electronic budgeting system called eBudget to record the budget. The eBudget is integrated with the electronic New Government Accounting System (eNGAS). The UPMO prepares the budget per project for each succeeding year in conjunction with physical targets. Budgets are prepared for all significant activities in sufficient detail to allow meaningful monitoring of subsequent performance. Information collected from different units forms part of the required total budget. Actual expenditures are compared to the budget on a monthly and quarterly basis. The reports are submitted to the Commission on Audit (COA) and the DBM monthly and quarterly. There is evidence that Government counterpart funding needed to be made more adequately. For 2022 and 2023, the General Appropriations Act is lower than the requested funds. When the budget is sent for approval, only around 9-10 percent of the budget is approved for the projects, which causes delays in the release of counterpart funds for the ADB-financed projects. As a mitigating measure, DPWH will discuss annually with oversight agencies (DOF and DBM) the allocation of the required budget for the LLRN and submit to ADB and AIIB evidence that sufficient budget was released for the Project.

5.7.4 **FM Staffing.** All the accounting and financial management functions are performed by the Accounting Division under the Finance Service in DPWH at the central level and are structured to support effective financial management of projects. The Foreign-Assisted Projects Section of the Accounting Division handles the accounting and financial management

functions of the ADB projects. The finance and accounting staff are qualified, experienced, and permanent employees. However, the accounting staff assigned to externally funded projects are currently limited in number. Due to the large volume of financial transactions involved in processing externally financed projects, additional accounting staff is needed to support the review, recording, and monitoring of financial transactions related to the projects. To mitigate the risk, DPWH will hire two additional staff (1-FS, 1-PMU) to support the review, recording, and monitoring of financial transactions related to ADB-funded projects. The Program will also hire an accountant under the consulting services package. And new staff will undergo financial management and disbursement trainings to be familiar with ADB requirements.

5.7.5 **FM System.** The DPWH will maintain, or cause to be maintained, separate books and records for all expenditures incurred on the projects from all funding sources and will prepare project financial statements following the accrual-based accounting under the International Public Sector Accounting Standards. The financial accounting and reporting system use the COA's eNGAS, an eBudget system and a project life cycle system to track physical activity and associate it with financial transactions. Both eNGAS and eBudget are integrated. Nevertheless, the system does not support the generation of all financial reports. The preparation of the statement of cash flows requires manual intervention and the use of Microsoft Excel. The accounting information system follows the chart of accounts mandated by the COA. The expenditure categories used differ from those indicated in the ADB loan agreement. To prepare the statement of cash flow and project financial statements following ADB's expenditure categories, data must be extracted from eNGAS and transferred to Microsoft Excel.

5.7.6 **Accounting.** The DPWH is guided by the Government Accounting Manual, which provides specific and detailed instructions on processing, recording, and reporting financial transactions. The manual follows the COA prescribed requirements. The accounting policy and procedures manual is updated regularly. Procedures are in place to ensure that only authorized persons can alter or establish a new accounting policy or procedure. Policies and procedures clearly define conflict of interest and related party transactions and provide safeguards to protect the organization from them. The manuals are distributed to appropriate personnel.

5.7.7 **FM Audit.** The IAS of the DPWH reports to the Secretary of the DPWH and conducts management audits and operations audits of DPWH activities, wherein the conduct of compliance audit is a prerequisite. The internal audit unit of the DPWH does not include the existing ADB projects in its annual work program. For ADB-financed projects to be part of their annual work program, there needs to be a written agreement between ADB and UPMO stating that the internal audit of the program would be conducted regularly. The DPWH will cause the project financial statements to be audited in accordance with the International Standards of Supreme Audit Institutions by the COA. The audited project financial statements and the auditor's opinion will be presented in English within six months from the end of the fiscal year. The audit report for the project financial statements will also include a management letter.

5.8 Disbursements

5.8.1 **Disbursement Arrangement for ADB-AIIB Funds.** Considering the joint co-financing approach, disbursement of ADB and AIIB loan proceeds will follow ADB's Loan

Disbursement Handbook (2022, as amended from time to time)[32] and detailed arrangements agreed between the Government and ADB. ADB will handle all project disbursements according to its disbursement procedures. The Project will use the direct payment procedure of ADB. For ADB loan disbursement, the DPWH will prepare withdrawal applications and supporting documents and submit them to ADB, the payments for the ADB portion will be made directly by ADB. For AIIB loan disbursement, the DPWH should submit one original of the withdrawal application and copies of supporting documents to AIIB, and one original of the withdrawal application and copies of supporting documents to ADB. ADB will review each withdrawal application and advise AIIB to make the necessary payment, if any, subject to approval by AIIB. The payments for the AIIB portion will be made directly by AIIB after receiving the payment instructions from ADB, along with a copy of the application and the results of ADB's review of that application.

5.8.2 **Disbursement Arrangement for Counterpart Funds.** The Government will finance the land acquisition, project management, administrative costs and local taxes and duties in cash under the project. The UPMO will be responsible for preparing the annual contract awards and disbursement projections, requesting budgetary allocations for counterpart funds, preparing withdrawal applications, and sending the withdrawal applications to ADB. The UPMO is responsible for collecting and maintaining supporting documents for the project expenditures they have incurred.

5.9 Governance and Anti-corruption

5.9.1 **Governance and Anti-corruption.** AIIB is committed to preventing fraud and corruption in the projects it finances. It places the highest priority on ensuring that projects AIIB finances are implemented in strict compliance with AIIB's Policy on Prohibited Practices (2016). Implementation will be monitored regularly by AIIB staff. The Bank reserves the right to investigate, directly or indirectly through its agents, any alleged corrupt, fraudulent, collusive, coercive or obstructive practices, and misuse of resources and theft or coercive practices relating to the project and to take necessary measures to prevent and address any issues in a timely manner, as appropriate. Detailed requirements will be specified in the Loan Agreement and the Project tender documents. AIIB will monitor the work related to tender document preparation and tender/proposal evaluation under Bank financing.

5.10 Cybersecurity

5.10.1 **Cybersecurity.** This is a Road project, the investment is identified as a Critical Infrastructure. The infrastructure is not likely to be targeted, and the level of exposure is considered as low.

5.10.2 **Potential Cyber Threats.** Potential cyber threats are present in LLRN operating system. As the LLRN plans to adopt an open tolling system, for instance, it may need to employ a radio-frequency identification system and process digital payments, replacing human operators. Cyber threats in transport operations may come from the interference of communications within transportation networks. Transportation systems often consist of subsystems that relay signals to one another. Routing and timing attacks can be mobilized to intercept these messages and modify their content, thereby incapacitating the system.

[32] ADB Loan Disbursement Handbook 2022. Loan Disbursement Handbook 2022

5.10.3 **Mitigation Measures for Cyber Threats.** Transportation cybersecurity incidents in the Philippines have not led to a significant level of economic damage. The Philippines has made some strides in addressing cybersecurity challenges by passing laws on data privacy protection and cybercrime prevention. The Cybercrime Investigation and Coordination Center (CICC) became operational in 2020 and has a responsive role, rather than a proactive role in preventing cyberattacks. Cybersecurity investments infrastructure enhancements will be critical elements to ensure the success of the deployment of government systems, these key infrastructures will jointly lay a robust foundation for supporting the digital transformation agenda of the Philippines. The Philippines adopted the National Cybersecurity Plan (2023-2028) and direct the implementation.

D. Environmental and Social

5.11 Introduction

5.11.1 The Project is Contract Package (CP) 3 of the LLRN Program, other 3 CPs are associated facilities of the Project. The Environmental and Social (ES) due diligence has been conducted for the LLRN Program. The Program assessment will be applicable to the Project assessment as the Project is a part of the Program.

5.11.2 **Project (CP3) Environmental and Social (ES) Impacts.** The Project is a combination of viaduct and embankment which will traverse both land area and the Laguna Lake, thus, environmental and social impacts are perceived particularly on biodiversity, fish cages, communities, and potential changes to the lake's activities and properties. Some areas in the Project are used for planting agricultural produce except for places which are used as residential areas and may be affected by the construction activities that will result to changes and alteration of surface landform. In terms of social impacts, key receptors affected by the Project are residential houses, commercial structures, trees and agricultural crops, public utilities and infrastructure. The Project impacts have been assessed including impacts from the proposed construction of yard facilities for CP3. With this, extensive baseline environmental studies and impact assessments have been undertaken for the LLRN.

5.12 Environmental and Social (ES) Policy and Categorization

5.12.1 **ES Due Diligence.** The environmental and social (ES) risks and impacts were assessed in accordance with ADB's Safeguard Policy Statement (SPS). To ensure a harmonized approach to addressing the ES risks and impacts of the LLRN, and as permitted under AIIB's Environmental and Social Policy (ESP), ADB's SPS will apply to the Program in lieu of AIIB's ESP. AIIB has reviewed ADB's SPS and is satisfied that: (a) it is consistent with AIIB's Articles of Agreement and materially consistent with the provisions of AIIB's ESP, including the Environmental and Social Exclusion List (ESEL) and the relevant Environmental and Social Standards (ESSs); and (b) the monitoring procedures that are in place are appropriate for the Program.

5.12.2 **Program ES Risk Category.** ADB has categorized the ES risks of the LLRN Program as Category A for Environment, A for Involuntary Resettlement and C for Indigenous Peoples (which are equivalent to Category A if AIIB's ESP were applicable). The Program category is based on the identified potential significant impacts on the lake's flood detention function, biodiversity – especially on freshwater ecology, water quality, noise and vibration, occupational and community health and safety, displacement of the Project-affected peoples

(PAP), likely impacts on fisherfolks/fishing communities, vessel navigation, and vehicular traffic.

5.12.3 **Project ES Risk Category.** The Project ES Category by ADB is A for Environment, A for Involuntary Resettlement and C for Indigenous Peoples (which are equivalent to Category A if AIIB's ESP were applicable).

5.13 Environmental and Social Instruments

5.13.1 **Environmental Studies Developed.** During the Feasibility Study (FS) Stage in 2019, an Environmental Impact Assessment (EIA) study has been carried out following the procedural requirements and scope of impact assessment specified under the Philippine Environmental Impact Statement System (PEISS) and the ADB SPS (2009). Upon completion of the Environmental Impact Statement (EIS) and Environmental Management Plan (EMP), an Environmental Compliance Certificate (ECC) has been secured by the DPWH for the Program on 19 May 2022. This has been upgraded to a DED EIA based on the April 2024 alignment which has been disclosed in ADB website on 27 May 2024 and AIIB website in July 2024. In addition to this, to help achieve net improvement in biodiversity of the lake, a Biodiversity Action Plan (BAP) has also been developed.

5.13.2 **Social Studies Developed.** In the FS stage of the Program, a Resettlement Plan (RP) has been prepared which includes surveys for land and structures that may be affected by the proposed alignment, and the DED RP has also been prepared and completed based on the latest detailed design of the proposed alignment, following the ADB policy on Involuntary Resettlement. Detailed Measurement Survey (DMS) and census activities have been completed based on the Parcellary Survey Plan which formed part of the DED RP. Stakeholder engagement commenced during the FS preparation stage and extensive information and education campaigns (IEC) have been continuously on-going. Indicative general implementation schedule for the resettlement plan has been identified and RP implementation activities will commence from the third quarter of 2024 and will end by the end of 2028. However, this schedule will be updated periodically by the RMCII-UPMO, ESSU, UPMO Resettlement Task Force (URTF), Technical Working Group (TWG), and Resettlement Implementation Committee (RIC) and Local Inter Agency Committee (LIAC).

5.14 Environment Aspects

5.14.1 **Geological Hazards.** The environmental studies conducted for the Program identified environmental issues and concerns which are primarily related to potential impacts on biodiversity and properties of the lake and its surrounding areas due to construction works associated with the embankment and viaduct. The Program is located along the western coastline of Laguna Lake wherein the vicinity of the Program is found to be susceptible to seismic, volcanic, and typhoon hazards. The Program will not influence nor affect geohazards, but direct impacts on the infrastructure from earthquake is anticipated. With this, the design of the road network adopted applicable design standards in compliance with DPWH regulations and based on the determined ground acceleration level. Historical records prove that the lakeshore areas are affected by flooding and because of the Program, flooding events may be influenced and cause inundation of farm lots, residential and commercial areas near the lake. A flood simulation study and historical flood analysis were conducted to assess the influence of the Program to the flooding conditions in the lake. Results show that on extreme weather events, increase in water level and flooding may be attributed from the overland flow

discharge in inland areas or surface runoff and that, an increase of about 19-30 hectares of land will be flooded due to the embankment road for flood return periods of 25, 50, and 100 years. The values are all less than 5% which is considered minimal impact to the neighborhood. This rise in water level from the lake is typically more significant than the flooding caused by overland flow discharge from inland areas. To mitigate flood risks, the Program design has incorporated results of the flood analysis and allotted a significant safety margin of 1-meter freeboard from the highest recorded flood level. An Emergency Response Plan (ERP) is required to be prepared and implemented by the Contractor (during construction phase), and by the LGU and Laguna Lake Development Authority (LLDA) (for operations and monitoring) to address any emergency issue such as flooding events. Channels of communication to concerned government agencies such as LLDA, MMDA Flood Management Unit, DPWH, in the formulation of the emergency procedures will be included in the ERP. Flood monitoring mechanisms will be in place during and after implementation of the project. The ERP will include provisions on readiness to implement evacuation procedures when needed in case of flooding events.

5.14.2 **Water Quality**. Laguna Lake is utilized for different purposes and majority of the sites in the lake including those in the Project site where water sampling has been conducted did not meet the guideline values for dissolved oxygen (DO) and biochemical oxygen demand (BOD) as compared to DENR Administrative Order No. 2016-08 and Administrative Order No. 2021-19, Class C limits and International Finance Corporation (IFC) Environmental Health and Safety (EHS) Guidelines (IFC), 30 April 2007. During the preconstruction and construction phase, water contamination and water degradation due to accidental spills and leakage may occur in the Program since there will be casting yard, batching plant, stockyard, and drying area.

5.14.3 **Impacts to the Lake.** Physical properties of the lake are found to be affected in terms of contaminants. Due to construction activities of the Program, the lake may be put to risk on accidental spillages, siltation, erosion, and resuspension of particles in the water that may increase turbidity and total suspended solids (TSS). **Specifically for the Project**, during the construction of viaduct, embankment (including dredging), slip roads and connecting roads, obstruction and alteration of surface water flows, and resuspension of sediments are expected. During dredging works and excavations, the suspension of particulates, solids, and high turbidity will impact the lake. Significant quantities of dredging sand will be deposited within the proposed LLRN area which may give rise water quality impacts. Mitigation measures such as silt curtains should be properly deployed and the requirements within the EMP properly conveyed to the contractors responsible for the disposal. Site design features to prevent and contain contaminated spills from transport of materials, storage, handling, etc. will include measures such as knee walls, berms, secondary containment areas, oil/water separators. Dehydration method and regular hauling of dredged sand and silt from sedimentation pond will also be done to prevent overflowing and surface run-off. On a positive note, the dredging operations will help reduce the effects of sedimentation on the lake and will gradually reduce the storage capacity of precipitated water which in turn provides resistance to flooding events. For heavy construction works, the EMP included installation of a well-designed silt curtain control scheme. Construction waste from camp sites and ancillary facilities will be managed and disposed of according to national regulations by state licensed companies. Location of planned disposal sites for different waste materials including dredged materials have been identified. There will be secondary containment for waste materials that may trigger soil contamination and materials that are identified as contaminants.

5.14.4 **Air Quality and Noise Level.** In terms of air quality, baseline results of particulate matter (PM2.5) at several stations exceeded the IFC EHS Guidelines. During the FS stage, the background noise measurement levels at all 30 sampling stations were higher than the noise criteria of IFC (both daytime and night-time), thus, for the DED stage, the Program has adopted the +3dB(A) from measured baseline. During operations and construction phases, noise and vibration impacts are likely to occur especially in northern area of CP1, southern area of CP2, whole area CP3, and CP4. A noise model (ASJ RTN-Model 2008) was generated using the typical cross-sections of LLRN for the operational year 2025, 2030, 2035, and 2040 with projected traffic and results show that noise levels exceed the noise standards for residential area and construction area. Based on the noise assessment conducted, the distances for the calculated noise levels by construction activities go to 66 dB, the lowest noise criteria in the Project (CP3) at night, are, about 100m for embankment, about 95m for viaduct and pavement constructions, about 190m for DMM, and about 185m for PVD, and about 40m for geotextile tube construction. For the distances in yards, about 125m for basin yard, and about 130m for construction yards are necessary. Usage of sound barriers during construction phase is proposed in the EMP. For the areas exceeding noise standards, monitoring noise at the sensitive receptors close to the alignment in CP3 and CP4, and entering part of slip roads, shall be conducted. During the operational phase, significant noise impacts are not anticipated given the set-back distances of the project alignment within the lake. However, interchange areas may give rise to traffic noise impacts given the proximity to sensitive receivers and therefore mitigation measures outlined in the EMP should be followed as well as operational phase monitoring to ensure any exceedances identified are mitigated.

5.14.5 **Critical Habitat and Biodiversity Impacts.** Issues on critical habitat and biodiversity impacts were studied and assessed. The Program is not within the vicinity of any declared protected areas, national parks, watershed reserves nor wildlife preserves and sanctuaries. However, the Program triggers Critical Habitat under IFC PS6 Criterion 1 (a) Endangered Species, Criterion 1 (b) Vulnerable Species and Criterion 2 Restricted Range species. **For the Project,** Floral diversity includes 40 flora species and 20 faunal species. Impacts to species and habitats are temporary during construction period due to site preparation activities but risk to displacement of species is perceived. The EMP has been developed to include measures to avoid, control, and reduce these risks supplemented by a Terrestrial Habitat Planting Plan.

5.14.6 **Potential Impacts.** During operational phases of the Program, potential impacts including pollution, noise disturbance, light and movements will influence the terrestrial habitats and species present in the Program site. The Laguna Lake will experience pressure from construction of viaduct and embankment which may potentially alter the water flow near the outflow of Pasig River. Construction activities may result to pollution, siltation, and exposure of sediments and will affect some freshwater habitats, benthic macroinvertebrates, aggregation of wetland birds, and other species. These environmental issues have been captured by the EIA, thus, the following subplans were identified to be developed to manage and mitigate potential biodiversity impacts by the Program including a Terrestrial Habitat Planting Plan, Freshwater Habitat Planting Plan, and Biodiversity Action Plan (developed).

5.14.7 **Biodiversity Action Plan (BAP).** The Biodiversity Action Plan (BAP) contains actions to support achievement of net improvement in biodiversity of the lake. Actions include development and expansion of green filters; capacity building on biodiversity for local communities around the lake; further research on potential use and removal of invasive

species; and development of framework for Biodiversity Management Plan (BMP). A separate assessment will be completed for the preparation of the Freshwater Habitat Planting Plan.

5.14.8 **Environment Aspects Summary**. Overall, the EMP has outlined appropriate and robust mitigation measures to address, manage, and monitor the identified Program impacts during the different stages of the LLRN.

5.15 Social Aspects

5.15.1 **Resettlement Framework (RF).** An RF has been prepared to guide the assessment of involuntary resettlement impacts and the preparation of RP(s) for the Program. The RF sets out requirements in terms of standards, entitlements, and practices to be applied by the GoP to ensure that involuntary resettlement impacts caused by the Program are appropriately assessed and mitigated. An RP has been prepared to address the Program's land acquisition and resettlement impacts, following ADB's SPS (2009) and relevant Government laws and regulations, and in consultation with affected families. Information about the Program has been disclosed and consultations with affected families and other stakeholders have been undertaken throughout the project preparation and the RP was disclosed on the DPWH, ADB, and AIIB's websites. A project-specific three-tier Grievance Redress Mechanism (GRM) is developed and will be in place to resolve grievances related to land acquisition, resettlement plan implementation, environmental impacts and management, and other project implementation-related concerns.

5.15.2 **Program Involuntary Resettlement.** The involuntary resettlement impacts are likely to be significant. ADB has classified the Program as Category A for involuntary resettlement following ADB's SPS (2009). The Program will affect land areas in Taguig, Muntinlupa, San Pedro, Biñan, Santa Rosa, Cabuyao, and Calamba. The Program will require about 169.84 ha of land comprising 40.66 ha of private land, 111.68 ha of LLDA land, and 17.50 ha of government land, and will impact 1,084 families with 4,757 persons. Of the 1,084 families, 935 families will be significantly affected in terms of physical and economic displacement and the remaining 149 families will experience non-significant impacts. About 73 percent of the affected families are non-titleholders and tenants, and 87 percent are vulnerable. Currently, DPWH has finalized the updating of RP and is planning to proceed with the establishment of RP implementing institutions (such as Helpdesk and GRM, Technical Working Group, Resettlement Implementation Committee (RIC) operations and coordination with LGU, the appointment of PAP representative in RIC). DPWH aims to complete the RP implementation before starting construction for each relevant section. DPWH will ensure that no physical or economic displacement will occur, and no civil works commence until and unless full compensation at replacement cost has been paid and other eligible assistance in line with the resettlement plan is provided to the affected families, in respect of the relevant site. The table below presents the summary of land acquisition and resettlement impacts.

Table 5.1: Summary of Land Acquisition and Resettlement Impacts

Impact	Extent/Numbers				
	CP1	CP2	CP3 (Project)	CP4	TOTAL LLRN
Private Land Acquisition (in ha)	0.86	4.28	**9.21**	26.31	40.66
Government (Public) Land Required (in ha)	44.07	9.71	**67.32**	8.08	129.18
Total Land Requirement (in ha)	44.92	13.99	**76.54**	34.39	169.84

Total number of affected families (significant + non-significant)	251	233	**447**	153	**1,084**

Note: CP1 is corresponding to the procurement package "Stage 1, CP1" used in the government approved documents, and CP2, 3, and 4 are corresponding to CP 1, 2 and 3 of Stage 2 respectively referred to in the government approved documents.

5.15.3 **Project Involuntary Resettlement.** The Project (CP3) will only cover areas in San Pedro, Biñan, Santa Rosa and Cabuyao and the Project will require about 76.54 ha of land comprising 9.21 ha of private land, 67.32 ha of government (public) land. The Project land acquisition will affect 447 families with 2001 individuals. Of the 447 affected families, 398 affected families are expected to be significantly affected, comprising 347 physically displaced families, 50 economically displaced families (loss of shop/fish cage/fish traps), and 1 physically and economically displaced family. About 87 percent of the affected families are non-titleholders and vulnerable.

5.15.4 **Mitigation Measures for Social Impacts**. In order to mitigate the adverse social impacts of the Program, the RP has been prepared in compliance with ADB's SPS (2009). Compensation at replacement cost is an adopted principle of the Program and will be provided to all Project Affected People (PAPs) losing land and/or other assets subject to their eligibility, due to land acquisition and Right of Way (ROW) clearing for the Program. As appropriate, compensation will be accompanied with assistance, as outlined in the entitlement matrix of RP. DPWH will work closely with the LGUs and Housing Agencies in the implementation of the land acquisition and ROW clearing work, resettlement and the disbursement of compensation and assistance in accordance with the project entitlements set out in the RP. For informal settler families (ISFs), relocation includes availing of Government socialized housing and livelihood programs from the LLRN in collaboration with housing agencies and LGUs. The RP includes a program to restore or improve incomes and livelihoods. This includes short-term and long-term interventions that are appropriate for the needs and requirements of PAPs requiring assistance. Approaches and methods adopted for income and livelihood restoration are consistent with the requirements of ADB's SPS 2009 and include but not limited to (i) compensation for the loss of income (ii) assistance for the restoration of income at the relocation site, (iii) assessment of training needs and provision of training/capacity building for livelihood restoration and improvement; and (iv) assistance to job placements and referrals for priority hiring of PAPs to serve as contracted human resources during construction. All land acquisition and resettlement funds will be provided by GOP. Payment of compensation and assistance to the affected persons are to occur before the dispossession of assets and/or displacement of PAPs occurs. The DPWH will be responsible for the timely allocation of funds needed to implement the RP(s).

5.16 Indigenous Peoples

5.16.1 **Indigenous Peoples**. ADB has classified the Program as Category C for indigenous peoples (IP) following ADB's SPS (2009). No IP communities nor their ancestral domain will be affected. The National Commission on Indigenous Peoples issued a Certificate of Non-Overlap to DPWH on August 20, 2024, certifying that the Program does not affect any ancestral domain/land of indigenous cultural communities/Indigenous Peoples.

5.17 Occupational Health and Safety, Labor and Employment Conditions

5.17.1 **Occupational Health and Safety (OHS).** OHS and Community Health and Safety (CHS) risks are anticipated during construction and operational phase. Construction risks are primarily associated with road accidents due to movement of trucks, vehicles and equipment,

hazards from working over water for construction of viaduct and embankment, risks to accidents from pile driving activities, working at height, hazards from falling debris, and risks to injuries of workers. For operational phase, road safety risks will be present in terms of road accidents due to increased traffic and higher speed limit on the bridge/viaduct. The EMP identified the need for contractors to prepare the following plans and implement the key mitigation measures to address risks to OHS including preparation of an OHS Plan, Emergency Preparedness and Response Plan, Traffic Management Plan, compliance to DPWH and Department of Labor and Employment (DOLE) on Health and Construction Safety (DPWH Department Order No. 56 s.2005, DOLE Republic Act 11058, Department Order No. 198, etc.), and conduct of orientation and regular training and monitoring on Health and Safety and Environment (HSE) and OHS. Funding for implementation of the identified plans shall be included in the project cost.

5.17.2 **Impacts on Local Economy and Work Force.** The EIA assessed the Program impacts in terms of local economy and work force. The Program is anticipated to provide opportunities to support local economies, employment, and skills and livelihood through generation of employment of skilled and unskilled workers, increase in business opportunities through purchase of goods and services by the Program and its workers, sourcing of materials from nearby provinces, and potential in-migration of individuals/households. To effectively manage labor and employment conditions, the EMP has outlined hiring requirements for contractors which should have provisions such as prioritizing and hiring local skilled and unskilled laborers, women skilled and unskilled laborers, particularly giving priority to the affected communities, transparent and non-discriminatory recruitment procedures, etc. These provisions will be incorporated in the bidding documents.

5.17.3 **Impacts to Fisherfolks/Fishing Communities**. The Project will affect about 50 economically displaced families due to loss of shop/fish cage/fish traps. A series of consultation meetings have been conducted with the APs and other stakeholders including Local Government Units and Fisherfolk Organizations, and other lake-based sectors. The design of the LLRN has considered the potential livelihood impacts to the fisherfolks and viaduct portions of the alignment have a vertical clearance of at least a 5.6 m from mSL for non-navigable portion, 7.6 m from mSL for fishing boats and 8.6 m from mSL for passenger boats from the design flood level to allow fisherfolks to pass beneath the viaduct portions. Fishery basins were incorporated along the LLRN mainline. Each fishery basin would be sized to fit the local fish boat demand and have adequate navigation clearance connect between the basin and Laguna Lake.

5.17.4 **Mitigation Measures for Fisherfolks Impacts.** During civil works, if there is an impact on fishery-based livelihood, DPWH will assess the impact and propose mitigation measures following the involuntary resettlement policy principles of this Program. DPWH will update the RP or prepare an addendum to the RP, with necessary provisions made in the entitlement matrix as required and make adequate budgetary provisions. Compensation rates will be determined by the replacement cost study and informed by values prescribed by the Bureau of Fisheries and Aquatic Resources. The updated RP or the addendum to the RP shall be submitted to ADB for approval, implemented, and subjected to internal and external monitoring.

5.18 Stakeholder Engagement, Consultation and Information Disclosure

5.18.1 **Stakeholder Consultation.** As part of the GoP requirements and ECC application process during the scoping stage of the EIA, stakeholder engagement commenced at the early

stages (FS stage) and stakeholder identification and IEC meetings have been completed for the Program. For the Project, Santa Rosa, Binan, and Cabuyao LGU representatives and stakeholders have been consulted at both FS and DED stage. Although the timing of these IECs were conducted during the COVID-19 pandemic, meaningful consultations were successfully conducted through various approaches and combination of online and onsite activities such as focus group discussions (FGDs), online video conferencing, and webinars. The IECs have been conducted with the presence of representatives from the Department of Environment and Natural Resources (DENR), LGUs, National Government Agencies (NGAs), fisherfolk organizations, affected communities represented by disadvantaged or vulnerable groups, elderly, solo-parents, women, and persons with disabilities (PWDs). During the public scoping activities, participants include fishermen, boat operators, fish cage owners, farmers, ambulant vendors, business owners, transport drivers/operators, local government officials, women, and senior citizens. As expected, during these IECs and consultations, there were concerns raised in terms of communities whose livelihoods are dependent on the lake, potential water quality and flooding impacts, and land acquisition and resettlement impacts. These concerns have been considered during the preparation of the EIA in DED stage and the enhanced and updated EMP and RP aim to address these through the proposed mitigation measures. In general, the outcomes of these consultations have been positive and the support of the LGUs and key stakeholders were evident through their participation in the activities conducted for the LLRN.

5.18.2 **Stakeholder Engagement and Communication Plan.** The Program has outlined a stakeholder engagement and communication plan that will serve as a guide for executing consultations throughout the stages of the Program implementation, including the Project implementation. Stakeholder groups identified include PAPs, LGUs, project agencies, consultants, and contractors, the National Government, utility companies, non-governmental organizations (NGOs), and religious groups. Methods of communication for each stakeholder were identified based on the communication needs. Various approaches were planned, including holding consultation meetings, focus group discussions (FGDs), seminars and trainings, coordination meetings, site visits, and regular monitoring reports.

5.18.3 **ES Documents Disclosure.** The ES documentation in English has been disclosed by DPWH on its website in July 2024, on ADB website (May 2024) and AIIB's website (July 2024).

5.19 Project Grievance Redress Mechanism

5.19.1 **Grievance Redress Mechanism (GRM).** The LLRN Program has developed a project-level GRM to receive and resolve project-related grievances in accordance with the requirements of ADB's SPS (2009). A GRM should be accessible and applicable to all members of the public and entities within the Program's area of influence and can be expected to address such matters as property damage; worker behavior in the community; excessive dust, noise, and disturbance; traffic congestion; safety concerns; prolonged blockage of access to businesses and homes; effects on livelihood; and disruptions to public services such as electricity, water and sewerage. All complaints received from Project-Affected People (PAPs) shall be properly documented. Locally appropriate public consultation and disclosure processes were used to disseminate information about the GRM. The information on the GRM and ADB's accountability mechanism are also included in the EIA, RP and other ES documents and disseminated to PAPs. The EIA includes appropriate measures to manage the complaints raised by both stakeholders (including communities) and workers. Complaints raised by workers will be handled by project GRM. GRM will be extended to workers, who may

have grievances related to working conditions, living conditions in construction camps, safety and health issues, labor rights violations, mistreatment, or other matters. All laborers, skilled workers, and site engineers employed on-site by the PCs or by any of their subcontractors should have access to the mechanism. The layers in the Project level GRM hierarchy are comprised of the following: (1) Contractor level, (2) Construction Supervision Consultant level, (3) Barangay, city LGU and LIAC level, (4) Municipal or City Grievance Redress Committee (GRC) level (Level 1 in RP) and (5) DPWH UPMO (Level 2 in RF and Level 3 in RP). PAPs were informed about the GRM during stakeholder consultation meetings (SCMs). The GRM was established by the DPWH during the assessment period and will continue to evolve during project-preconstruction stage.

5.19.2 **Existing GRM System.** The existing system in place at DPWH to resolve complaints will also be available to the affected persons or any other stakeholder. People can visit the DPWH Public Assistance and Complaints Desk and fill up the walk-in form located at the front desk of all DPWH offices to register complaint, or can send an email to dpwh_feedback@yahoo.com or call 165-02 the DPWH 24/7 call center hotline or access the Stakeholder Relation Service (SRS) hotline or post on DPWH social media accounts – Department of Public Works and Highways, Philippines Facebook page and @DPWHph on Twitter.

5.20 Bank's Project-Affected People's Mechanism

5.20.1 The proposed Project will be co-financed with ADB. The Bank has agreed that ADB's ES policy and procedures will apply to the Project and that it will rely on the ADB's determination as to whether compliance with those policies and procedures has been achieved under the Project. The Bank has further agreed with the ADB that it will rely on that institution's Accountability Mechanism to handle submissions relating to ES issues under the Project. Consequently, in accordance with Bank's Policy on the Project-affected People's Mechanism (PPM), submissions to the PPM under this Project will not be eligible for consideration by the PPM. Information on ADB's Accountability Mechanism is available at: https://www.adb.org/who-we-are/accountability-mechanism.

5.21 Proposed- Follow-Up / Monitoring and Supervision Arrangements

5.21.1 **Program Monitoring and Supervision.** The Department of Public Works and Highways (DPWH) is the Executing Agency (EA) who is responsible for overall coordination, policy direction, and administration of project activities, including safeguards. The Road Management Cluster II (multilateral) of the Unified Project Management Office (RMCII-UPMO), the implementing agency, is responsible for the timely allocation of the budget for land acquisition, implementing the resettlement plan, and ensuring full payment of compensation and assistance to the affected persons before making available the land to the contractors. The Environmental and Social Safeguards Unit (ESSU) established within the RMCII-UPMO, and having experience in implementing ADB-financed projects, will be responsible for the day-to-day implementation of the resettlement plan, land acquisition, and internal monitoring of the implementation of the resettlement plan. The RMCII-UPMO will be assisted by the Social Safeguards Expert of the Construction Supervision Consultant (CSC). DPWH will establish the Right-of-Way Task Force under RMCII-UPMO, comprising three teams of District Engineering Offices and staff from Regional Offices of NCR and Region IVA, to expedite the land acquisition and resettlement. DPWH will engage an external monitoring expert/agency, acceptable to ADB as per the requirement for a safeguard category A project financed by ADB.

5.21.2 **AIIB Monitoring and Supervision.** AIIB will jointly co-finance the 12.23 km of middle section of the expressway (CP3) with ADB. AIIB will require semi-annual monitoring reports and retain the rights to conduct implementation monitoring and supervision for ADB-AIIB co-financed Project (CP3) along with ADB. AIIB will support ADB in coordination and organization of monitoring and supervision missions with the Client and will regularly receive relevant project reports from ADB as per Cofinancing Agreement (CFA). Disclosure of ES information will comply with AIIB's disclosure requirements.

E. Climate Change

5.22 Climate Change

5.22.1 **Paris Alignment.** The Program does not fall into the list of Universally Aligned activities and thus, an assessment has been conducted to determine its alignment with the mitigation goals of the Paris Agreement (BB1).

5.22.2 The highway construction related costs will include climate resilience measures, identified through a thorough climate risk and vulnerability assessment. It is therefore the explicit intent of those activities to build the highway that is resilient to the impacts of climate change. Project has allocated appropriate climate change measures as part of climate adaptation solutions.

5.22.3 A Climate Resilience Assessment (CRA) has been carried out following the Joint MDB's methodology to assess the alignment of the Program with the adaptation goals of the Paris Agreement (BB2). The Program has been assessed as aligned for both Mitigation and Adaptation and thus, as Paris Aligned.

5.22.4 **Climate Mitigation Finance.** Based on the incremental approach, the climate mitigation finance for the Program is calculated as USD 3.18 million, being the amount attributable to the AIIB USD 0.73 million. The qualifying elements are i) the installation of solar powered street lighting on the project road and ii) the tree planting in suitable areas, both under the category of 'Energy efficiency, on-site renewable energy, CO_2 e-emission reduction, and carbon sinks in public areas and installations' and iii) the development of a strategy for decarbonizing the road network under the jurisdiction of the DPWH, included under the category of 'Research, development and innovation'.

5.22.5 **Climate Adaptation Finance.** Climate adaptation finance is estimated based on the proportional approach for type 1 projects (projects in which climate adaptation is not one of the goals of the project). The Program incorporates structural and non-structural measures tackling the climate hazards that could likely materially affect it, namely:

(1) The Potential increases in design Laguna Lake levels is addressed by the additional viaduct height, the additional embankment height and the increased embankment armoring.

(2) The Increase in extreme rainfall intensity is addressed by increased embankment cross-culvert capacity and the increased drainage culvert capacity.

(3) The LLRN incorporate an Emergency Response and Disaster Risk Reduction Plan introduced in partnership with potentially affected LGUs to mitigate impacts of climate change on local flooding.

Following AIIB's methodology, the Program is entitled to receive 20 percent climate adaptation finance, equivalent to USD 37.6 million.

5.22.6 **AIIB Climate Finance.** The total AIIB's climate finance on this Project is USD 32.76 million (17.41 percent).

F. Gender Aspects

5.23 Gender Aspects

5.23.1 **Approach to gender.** The LLRN Program is categorized as Effective Gender Mainstreaming by ADB [33] as its program's outputs contribute to addressing gender equality and/or women's empowerment. A Gender Assessment and Action Plan (GAAP) consists of 16 targets and activities linked to the Program's outcome and outputs.

5.23.2 **Gender Assessment.** Key gender inequality and social exclusion issues for PAPs include: (i) lack of meaningful participation in decision making for women. Project-affected women, often engaged in domestic activities, face higher travel costs and accident risks due to traffic congestion and flooding, increasing their caregiving burdens; (ii) gender discrimination, marginalization and stereotyping in infrastructure projects. Project-affected women are often excluded from construction jobs due to skill mismatches and household duties. Their informal work experience and limited skills hinder reemployment, and their needs are often overlooked in project design; and (iii) Gender-based Violence (GBV) and Sexual Exploitation, Abuse, and Harassment (SEAH). The influx of men for civil works and displacement of vulnerable women increases risks of GBV, SEAH, unwanted pregnancies and abandonment.

5.23.3 **Gender Actions.** To ensure gender inclusivity, stakeholder engagements included gender-balanced consultations and women-only focus groups, and will also provide training for women in road construction. The engineering design features gender-sensitive elements like street lighting, Closed-circuit televisions (CCTVs), a pedestrian walkway, and commercial space for project-affected women. During construction, the Program aims to employ at least 20 percent women, establish a Grievance Redress Mechanism (GRM) for SEAH and GBV, provide gender-sensitive facilities, and offer relevant training and safety seminars. Additionally, sex-disaggregated data will be monitored and published on the DPWH website.

5.23.4 **Implementation of Gender Action Plan (GAP).** The DPWH UPMO RMC II, assisted by CSC's gender specialists, will oversee the implementation, monitoring, and evaluation of the GAP. A GAP focal person has been assigned for the Program (Project), and civil works contractors will handle gender actions in their contracts. Quarterly and annual GAP progress reports will be prepared and submitted to ADB and AIIB. DPWH UPMO RMC II will also support gender-related missions and inspections.

G. Risks and Mitigants

[33] ADB. 2021. *Guidelines for Gender Mainstreaming Categories of ADB Projects*. Manila. Guideline for Gender Mainstreaming Categories of ADB Projects

Table 5.2: Summary of Risks and Mitigating Measures		
Risk Description	**Assessment (H/M/L)**	**Mitigation Measures**
Program/Project Implementation Risks		
Financing Risk		
Delay in the release of project budget	M	The DPWH will (i) ensure that the necessary budget is included every year in DPWH's requests to the DBM, and (ii) monitor the expenditure against the available budget and to process reallocation of funds to the Program.
Financial Management Risk		
Errors in financial accounting and reporting, manual reconciliation of project financial statements	M	DPWH will (i) procure an accounting system to allow generation of financial statements (ii) ensure quality assurance review of transactions, (iii) establish robust procedures for preparation and review of financial statements, (iv) add the Program in the internal audit units annual work plan, and report findings in the QPR, and (v) ensure FM staff receive financial management and disbursement training.
E&S Risk		
Land acquisition delays affecting civil works construction	H	Three units of Districts Engineering Offices (DEOs) are proposed to undertake land acquisition and DPWH ROW acquisition team will assist the affected landowners in securing all necessary clearances. The implementation of RP will be carried out with support and in coordination with key institutional stakeholders such as Laguna Lake Development Authority (LLDA), National Housing Authority (NHA), Department of Human Settlements and Urban Development (DHSUD), Social Housing Finance Corporation (SHFC), and LGUs. In addition, the LLDA will be involved in the design of project assistance and measures to mitigate project impacts, and the preparation of livelihood restoration plans for affected people.
DPWH Capacity Risk		
DPWH's limited capacity for procurement and management	H	DPWH has significant experience in managing large MDB-financed contracts, and has procured civil works, goods, and recruited consultants. In addition, DPWH has robust procurement support already in place through consultants funded through the ADB-financed IPIF. A construction supervision consultant will be hired to ensure project implementation quality. The Bank team will closely cooperate with ADB and DPWH to address administrative issues
Program/Project O&M Risks		
O&M Contractor		
Delay in the engagement of O&M contractor	H	DPWH will commence by 2025 the process of engaging the O&M contractor, and will ensure a fair allocation of risks between the Government and the O&M contractor.

Annex 1: Results Monitoring Framework

Project Objective (PO):	**To improve the efficiency of road travel in the National Capital Region (NCR) and key areas along the Laguna de Bay**								
Indicator Name	**Unit of measure**	**Base-line Data 2024**	**Cumulative Target Values**				**End Target**	**Frequency**	**Responsibility**
			2025	**2026**	**2027**	**2028**			
Program Objective Indicators: *(Outcome indicators measure each aspect of the PO statement and are to track progress toward the achievement of the PO)*									
Peak hour travel time between Lower Bicutan and Calamba	hour	0.96	0.96	0.96	0.96	0.72	0.72	First Year of Operation	DPWH
Intermediate Project Results Indicators: *(To measure key intermediate results under each component that are necessary for showing progress toward achieving PO. They can capture outputs or short-term outcomes.)*									
1. Km of climate-resilient expressway mainline built[34]	km	0	3	7	10	12.23	12.23	Annual	DPWH
2. Km of connecting roads developed in the onshore sections with gender-responsive lanes for pedestrians[35]	km	0	0	0	0	1.19	1.19	Annual	DPWH

[34] Climate resilient features will include increased height of viaducts and capacity of drainage to account for the projected increase in rainfall and lake-water levels during floods.
[35] Gender-responsive pedestrian lanes will include provisions for sufficient lighting, and smooth pavements and ramps for safe and convenient use especially for women with young children in trams, the elderly, and disabled people in wheelchairs.

Annex 2: Detailed Program/Project Description

Background

1. **Laguna Lake.** The Laguna Lake (or, Laguna de Bay) is the largest inland body of water in the Philippines and one of the largest lakes in Southeast Asia. It is bounded by the Sierra Madre Mountain ranges on the northeast, the Caliraya volcanic plateau on the east, mountains of Laguna and Batangas including Mt. Banahaw and Mt. Makiling on the south and southeast. The lake is divided into four (4) bays, namely West Bay, Central Bay, East Bay, and South Bay. It is on the southeast of the National Capital Region (NCR), about 25 km away from the Philippine capital, Manila.

2. **Existing Highway.** The LLRN Program is proposed to be built along the shorelines of the Laguna Lake. Its Phase I will be on the western shorelines of the lake, Phase II will be on its eastern shorelines. The Program will begin from the City of Taguig to the City of Calamba in Laguna. Currently, there are two (2) road networks existing in the area catering to motorists traveling from Metro Manila to the provinces in the Region IV-A or CALABARZON Region and vice versa. These are the South Luzon Expressway (SLEX) with its entry points in Taguig, Paranaque, Muntinlupa, and Laguna; and the Manila South Road (MSR) starting at Muntinlupa City, passing through the cities of San Pedro, Biñan, Santa Rosa, and Cabuyao and ends in Calamba in Laguna.

3. **Traffic Congestion.** Significant congestion has identified along the national route from Manila (North) to Los Baños (South), which contributes to the country's major economic and social problems. The network is essential for business and tourist transit between major cities, such as the Ninoy Aquino International Airport, and activity centers as the road network runs alongside the Philippines' most densely populated area. The Volume Capacity Ratios (VCR) on key linkages are at 1.50, which is significantly higher than what is considered an acceptable condition for a road network. The Level of Service for the majority of the corridor was also graded F (the lowest possible score for a Level of Service Scheme). These capacity constraints significantly limit the economy's potential future development. If the whole road network becomes totally congested, the efficient flow of people and goods will suffer tremendously.

LLRN Program

4. The Laguna Lakeshore Road Network (LLRN) Program is one of the seven projects under the ADB infrastructure Preparation and Innovation Facility (IPIF)[36] which aims to support the Department of Public Works and Highways (DPWH) to deliver more effective, efficient and innovative infrastructure projects all over the country. It is primarily intended to provide a safer and a faster alternative to motorists traveling from north to south and vice versa, with the end-goal of vitalizing the economies of the sounding areas including Laguna, Rizal, Cavite, and Batangas, by providing the following: (a) a resilient, reliable transportation network for commuters and residents; (b) faster journey travel times; (c) ease of access to tourism destinations and activities; and (d) enhanced internal circulation, mobility and external linkages to support the growth potential of the region and its surrounding areas.

[36] The IPIF is a project preparation loan provided by ADB to the GOP to conduct FS and/or DED of pre-identified projects. One of these projects is the LLRN.

5. Further, the LLRN will provide economic development opportunities through enhanced productivity due to better accessibility and savings in travel time. In its completion, the Program will result in the following economic outcomes: reducing the economic cost of transportation; supporting economic development and diversification of the region; and supporting integrated, equitable economic development of the region within the country. Looking at societal outcomes, the Program will result in the following: enhancing community access to employment, education and other social services; and social benefits will primarily accrue to the residents in terms of enhanced access to the key health, education and other amenities provided within the National Capital Region (NCR).

6. The LLRN is aligned with the following impact: Adequate, quality, sustainable, resilient, and safe transport infrastructure provided in the Greater Capital Region (GCR) for the economic transformation of the country.[37] The LLRN will have the following outcome: efficiency of road travel improved.[38]

7. **Output: Climate-resilient expressway along Laguna Lakeshore built.** A 37.50 kilometers expressway from lower Bicutan in NCR to Calamba in Laguna Province will be built to improve the traffic congestion in the corridor. The expressway will be a toll road with seven interchanges and a slip road at each interchange to connect to the existing road network. The expressway terminates at the Calamba interchange with the 3.06km Calamba Slip Road connecting the interim expressway terminal to the Manila South Road through the Parian-San Jose-Bucal Bypass Road. The first 12.0 km long viaduct of the alignment traverses about 500m offshore between Lower Bicutan and Tunasan, while the succeeding 25.5 km long combination shoreline viaduct and embankment runs along or near the shoreline between Tunasan and Calamba. Overall, 53 percent of the Program length consists of viaduct and bridges where waterways flow into the lake. There are seven interchanges and slip roads for connecting the LLRN with the existing road network. Interchanges and slip roads are proposed at Sucat, Alabang, Tunasan, San Pedro/Binan, Cabuyao and Calamba. At San Pedro/Binan, and Cabuyao the slip roads will be extended to meet the existing Manila South Road (MSR) by another connecting road.

8. **Road Classification and Design Speed**. The mainline and slip roads are classified as National Primary Road in accordance with the DPWH Design Guidelines, Criteria and Standards (DGCS). In accordance with the road classification, a design speed of 80 kilometres per hour (kph) is applied for the mainline and slip road. A lower design speed is adopted for slip road on rolling terrain, MSR connecting road and ramps.

Table A2.1 Design Speed

Road Component	Design Speed
LLRN Mainline	80 kph
Slip Road (flat terrain)	80 kph
Slip Road (rolling terrain)	60 kph
MSR Connecting Road	60 kph
Ramp and Service Road	40 kph

9. **Typical Cross Section.** Typical road sections consist of a median, vehicular lanes, and shoulders. The median width is inclusive of 0.6m marginal strips at each side of the barrier. The road is provided with a 3.35m wide vehicular lane and at embankment section, a shoulder

[37] Government of the Philippines, National Economic and Development Authority. 2022 . *Philippine Development Plan*, 2023–2028. *Philippine Development Plan 2023-2028*

[38] The design and monitoring framework for the investment program is in the Appendix 1.

2.5m wide. The shoulder includes a shoulder margin of 0.50m at each side. Guard rails are provided at the edge of the shoulder margins. The vehicular lanes are provided with a crossfall of 2.0 percent and the shoulder with 3.0% for embankment sections and 2.0 percent for viaduct sections. The embankment slopes will be in a ratio of 1V:2H and will be provided with structures for protection.

10. **Civil Works Packages.** Civil works for the Program are planned to be divided into 4 construction packages as a form of risk management, as well as to increase the bidding pool and thus enhance competition[39]: Package 1 is for the main viaduct from Lower Bicutan to Alabang; Package 2 with the shoreline embankment plus viaduct from Alabang to San Pedro/Binan; Package 3 shall comprise the shoreline embankment plus viaduct from San Pedro/Binan to Cabuyao; and Package 4 with shoreline embankment plus viaduct from Cabuyao to Calamba.

11. **Operation and Maintenance (O&M).** Contract Package 5 (CP5) is programmed by the DPWH as a separate contract package to be undertaken by the O&M concessionaire. In addition to the O&M, it will also include the detailed design and construction of toll facilities and additional connecting roads from MSR to the South Luzon Expressway (SLEX). A preliminary business case report of LLRN as a Toll-Road Facility (Hybrid O&M PPP Project) was prepared as part of the scope of the DED Consultant. Meanwhile, the full-blown business case study on the conceptualization of the O&M for the LLRN Project will be conducted by the DPWH during the mid-construction of the LLRN Phase I.

The Project

12. **Project Description.** The Project will co-finance a section (CP3) of the Program, which commences from San Padro/Binan to Cabuyao with a total length of 12.23km. It will include one (1) interchange at San Pedro/Binan.

13. **Mainline Cross Sections.** The first mainline roadway of the Project which is from its beginning to the City of Santa Rosa is a dual 3-lane (2x3) carriageway and the second mainline roadway which starts from Santa Rosa to the end of CP3 is a dual 2-lane (2x2) carriageway. The slip road at San Pedro/Biñan connecting the mainline road is dual 2-lan carriageway.

14. **The Slip Road at San Pedro/Binan Interchange.** The proposed grade-separated roundabout connection is located at the Municipal Boundary of San Pedro/Binan along Laguna Lake shoreline. The slip road from the roundabout will connect to the inland by an at-grade levelled slip road. The designed slip road connection will be a dual 2-lane carriageway corridor (2 x 3.35 m lane width each direction) and paved with Portland Cement Concrete Pavement (PCCP). The profiles of the slip road, ramp and mainline at San Pedro/Binan are shown in Figure A2.1.

[39] Interim Report of the Detailed Engineering Design. 2022

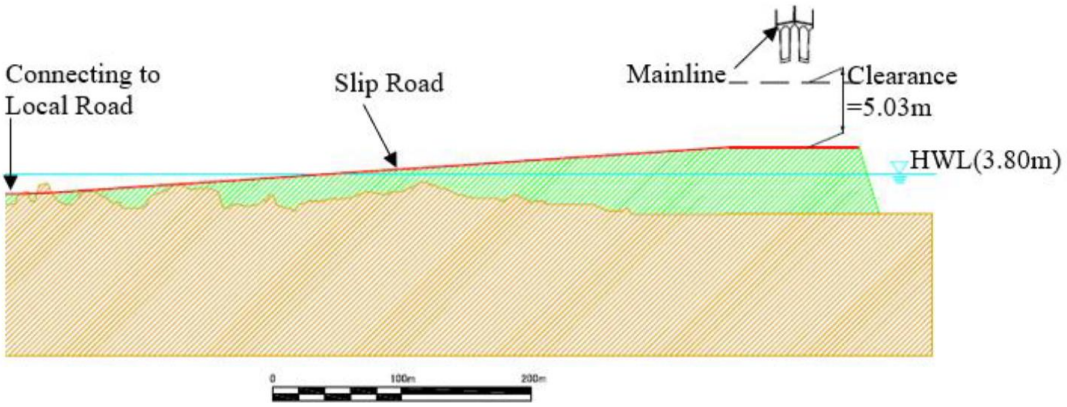


Figure A2.1 Profile of Slip Road and Ramp at San Pedro/Binan Interchange

15. **MSR Connecting Road at San Pedro/Binan Interchange.** The MSR Connecting Road is the road connecting the San Pedro/Biñan interchange and slip road to the MSR. The connecting road will be a four-lane divided road. The road cross-section comprises four lanes at 3.35m wide per lane, 1.2m wide raised median, 0.5m wide median strip, 0.67m curb and gutter, 1.83m sidewalk and 0.5m shoulder strip for a total width of 21.60m. The typical cross section of connecting road in San Pedro/Biñan is shown in Figure A2.2.

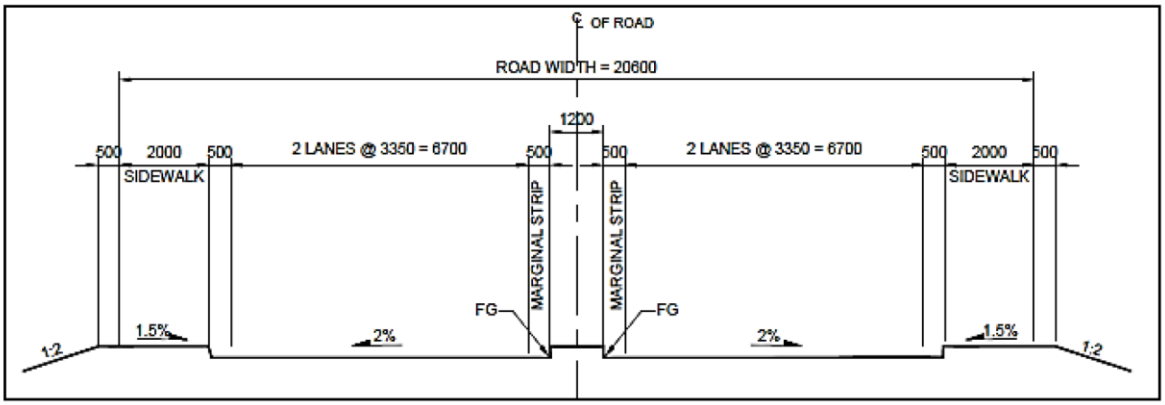


Figure A2.2 Typical Cross Section of San Pedro/Binan MSR Connecting Road

16. **Climate Resilience.** The project area is prone to seasonal flooding that will be further exacerbated by climate change through increased rainfall, extreme weather, and the impact of sea level rise on the lake and existing flooding in the area. The investment Project will incorporate climate- and disaster-resilient features to address these risks, including increased height of viaducts and capacity of drainage to account for the projected increase in rainfall and lake-water levels during flooding, nature-based solutions as part of the embankment, and incorporation of solar lighting. The expressway will also enable additional emergency access to flooded areas, which will help with the rescue, reconstruction, and recovery from damage.

17. **Gender Inclusive Design.** The investment project will include community facilities, such as pedestrian walkways, small park, among others, which will be designed with gender-responsive features and meet international safety standards for pedestrians, including persons with disabilities, children, older people, and women. The investment project will improve the living conditions of people in the lakeshore areas and create a more dynamic economy by providing better access to NCR, and more broadly to GCR.

Annex 3: Paris Agreement Alignment and Climate Finance

1. **Introduction.** The Bank has committed that it will fully align its operations with the goal of the Paris Agreement (PA) since mid-2023. To achieve that target, in July 2023, the Bank launched its Methodology for Assessing the Alignment of AIIB Investment Operations with the PA[40]. The document elaborates the application of the Joint Multilateral Development Bank (MDB) methodological framework to aligning AIIB investment operations with the PA. The AIIB Methodology has been followed to assess the alignment of the Program with the PA.

A. PA Alignment in Climate Mitigation (BB1)

2. **Specific Criteria (SC).** The Program does not fall under the Framework's 'universally aligned' list of activities. This means that the Program needs to be further assessed against a set of 5 specific criteria (SC1-SC5) to determine its contribution towards climate action that is consistent with the mitigation goals of the PA. The criteria consist of the following:

(i) *SC1 and SC2: Nationally Determined Contribution (NDC) Alignment and Long-Term Strategy (LTS) Alignment*. The Program should not be inconsistent with the country NDCs, LTSs, and other national, regional, or sectoral low-carbon policies and strategies compatible with the PA mitigation goals.

(ii) *SC3: Low Carbon Pathway (LCP) Consistency.* The Program should not be inconsistent with the road transport fleet decarbonization pathway of the country.

(iii) *SC4a: Alternatives Test.* A more efficient transport infrastructure cannot serve the current and forecasted passenger and freight demand with a similar level of service.

(iv) *SC4b: Lock-in Test.* The Program should not prevent the future deployment of more efficient vehicle fleet, as well as other Paris-aligned activities.

(v) *SC5: Economic Viability.* The Program should be economically viable, when considering the GHG emissions during construction and operation (valued at a shadow carbon price).

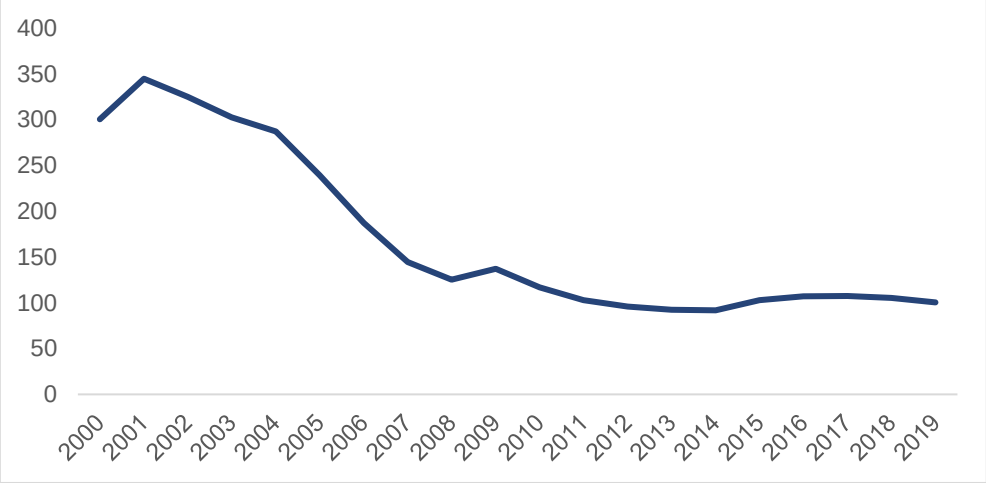
3. **SC1 and SC2: NDC and LTS Alignment**. While the Government's updated NDC does not specifically mention pathways for its transport sector, it includes a commitment to reduce GHG emissions in various sectors including transport[41]. The document also outlines the Government's ambitious aim to achieve a GHG emissions reduction and avoidance of 75 percent against a projected business-as-usual cumulative economy-wide emission of 3,340.3 $MtCO_2e$ within 2020-2030[41]. The latest National Transport Policy[42] notes that transport networks shall continuously adopt technologically responsive and applicable standards for vehicle emissions, as well as promote the use of clean and energy-efficient transport technology/fuels or higher compliant vehicles. The NCCAP 2011-2028[43] also supports a transition to environmentally sustainable transportation through a shift to cleaner alternative fuels, vehicle emission control policies, as well as integrated land use and transport planning processes. More recently, the Government has approved a temporary zero-tariff policy for

[40] AIIB; "Methodology for Assessing the Alignment of AIIB Investment Operations with the Paris Agreement"; July 2023. https://www.aiib.org/en/about-aiib/who-we-are/partnership/_download/Methodology-for-Assessing-the-Alignment-of-AIIB-Investment-Operations-with-the-Paris-Agreemement.pdf
[41] Nationally Determined Contribution. Republic of the Philippines. 15 April 2021.
[42] National Transport Policy. National Economic and Development Authority of the Republic of the Philippines. 2017.
[43] National Climate Change Action Plan 2011-2028. Climate Change Commission of the Republic of the Philippines. 2010.

electric vehicles in the next 5 years[44] as a manifestation of its prevailing Electric Vehicle Industry Development Act[45]. Against this backdrop, the Program will not prevent the use of more efficient vehicles. Further, the Program will support the new energy application including solar-powered lights. Thus, the Program can be considered as not inconsistent with SC1 and SC2.

4. **SC3: LCP Consistency.** A qualitative assessment of the policies and strategies for the decarbonization of the road sector in the Philippines has been carried out, which has been supplemented by a quantitative analysis of the historical trends of CO_2 emissions in the transport sector in the country. It has been found that overall, the Philippine Government has a plan to decarbonize the road transport fleet as exemplified in the Electric Vehicle Industry Development Act of 2022. The implementation of mitigation actions under the Philippine Urban Mobility Plan will also achieve reductions in accumulated GHG emission. Moreover, the Philippine Development Plan 2023–2028 aims to expand and upgrade transport infrastructure to create a safe, sustainable, resilient, integrated, and modern transport system. A focus is on expanding and improving public high-capacity transportation in urban areas, which will mitigate the inefficiencies and hazards caused by slow-moving jeepneys. The analysis of the historical trends of GHG emissions in the transport sector in Philippines indicates that the carbon intensiveness of the sector has steadily decreased over the last two decades, as captured in the figure below. Based on the arguments provided, it can be determined that the Program is not inconsistent with the road transport fleet decarbonization pathway of the Philippines. Therefore, the Program can be considered as not inconsistent with SC3.

Figure A3.1. GHG Emissions (tCO_2e) per USD million GDP generated by the Transport Sector in the Philippines



Source: Climate Watch's Climate Analysis Indicator Tool (CAIT).

5. **SC4a: Alternatives Test.** The Program plays a critical part in the country's overall economic development plan by decongesting the road network around NCR and Laguna Provinces, as well as providing a safer and faster alternative to the motorists traveling north/south to vitalize the economies for the surrounding areas including Laguna, Rizal,

[44] Executive Order 12, Jan. 13. Marcos OKs temporary zero-tariff policy for e-vehicles, spare parts. Manila Bulletin. 19 January 2023.
[45] Republic Act No. 11697: Electric Vehicle Industry Development Act. 15 April 2022. RA 11697 EVIDA Law: Electric Vehicle Industry Development Act Philippines - LTO Portal PH

Quezon and Batangas. The Program is the lowest-carbon viable option for mobility in the context of NCR and Laguna Provinces, compared to other alternatives:

(i) The existing road travel route that could provide access to the same origins and destinations (ODs) is densely urbanized with a congested road network. There are two road networks existing in the area catering to motorists traveling from Metro Manila to the provinces in the region of CALABARZON: South Luzon Expressway (SLEX) with its entry points in Taguig, Paranaque, Muntinlupa and Laguna, and the South Manila Road (MSR) starting at Muntinlupa, passing through the cities of San Pedro, Binan, Santa Rosa, and Cabuyao and ends in Calamba in Laguna. As mentioned, significant levels of congestion exist along the national highway from Metro Manila to Laguna Province. The volume to capacity ratios on key links in the network exceeds 1.50 which is beyond what is considered reasonable to support an efficient road network.

(ii) There is an existing railway option that provides services between Manila and Calamba. These services are limited to passengers and allow travelers to connect Manila and Calamba (approximate 2.5 hours) but not over 24 hours. This railway service has the following disadvantages: First, the railway does not provide 24/7 service to travelers as a road does; Second, railway does not provide seamless connection as a road does; and Third, railway does not provide freight transportation services as a road does. Further, the LLRN will also serve as an emergency evacuation route for the Laguna de bay around peoples in case of a natural hazard, and the railway option cannot provide this service. To conclude, there is an existing low carbon alternative but does not provide equal or superior level of service as compared to the AIIB's financed expressway.

(iii) Based on the above reasons, this makes the road the most efficient choice of transport infrastructure to be constructed to serve current and forecasted traffic demand. In this regard, the Program can be considered as not inconsistent with SC4a.

6. **SC4b: Lock-in Test.** As a common carrier agnostic to types of motorized vehicles, the Program is not subject to technological lock-in of a particular type of fleet. The Program can be considered as future-proofed, as it will be able to accommodate the infrastructure required to enable the deployment of future lower-carbon fleets, once available. The Program will be designed to allow the future deployment of more energy-efficient public transport fleet, vehicle types, or road operations, as well as other Paris-aligned activities. These measures include (i) following international standards and best practices in its construction to use low-carbon materials (lower carbon concrete and asphalt) and consume less energy (energy-efficient lighting); and (ii) integration of renewable energy sources to various aspects of the road operations such as street lighting, CCTV and digitalized O&M technologies. It is anticipated that road transportation will continue to play a central role in mobility generally (while supporting the transition to lower carbon vehicles) and that roads are not susceptible to becoming stranded assets or at risk from transition from a climate mitigation perspective. The Program can be considered as not inconsistent with SC4.

7. **SC5: Economic Viability.** The Program is still economically viable when considering the carbon emissions due to the construction and operation. Therefore, the Program can be considered as not inconsistent with SC5.

As the Program (Project) is not inconsistent with the Specific Criteria (SC1 to SC5) we conclude that the Program (Project) is aligned with the mitigation goals of the Paris Agreement (BB1).

B. PA Alignment in Climate Adaptation (BB2)

8. **Joint MDB Methodology.** The Joint MDB methodology for assessing the investment's climate adaptation alignment with the PA consists of the following steps:

(i) *Climate risk and vulnerability assessment.* Identify and assess physical climate risk to determine whether the bridge infrastructure and its users are vulnerable to climate hazards;

(ii) *Climate adaptation and resilience measure definitions.* Propose measures to address the identified physical climate risks and support the delivery of climate-resilient road infrastructure; and

(iii) *Consistency with broader and national context for climate resilience.* Ensure that the road operation is consistent with the policies/strategies/plans for climate adaptation and resilience at the national, regional, local, city, level as considered relevant and/or with private sector or community-driven priorities.

9. **Climate risk and vulnerability assessment.** The CRVA found that these climate hazards can materially affect the Program:

a. **Increase in Rainfall**: Data retrieved from the World Bank Climate Change Knowledge Portal[46] for the National Capital Region and Region IV-A encompassing the Program area and the entire Laguna Lake Basin Based revealed an increase in annual maximum 1-day rainfall (Rx1day) of up to 20 percent is likely to occur. Future increase in rainfall will increase the risk of lakeshore flooding.

b. **Sea/Laguna-Level Rise.** Data from the Intergovernmental Panel on Climate Change (IPCC) Sixth Assessment Report (AR6) Sea Level Projection Tool[47] estimated Sea level rise between 0.17m to 0.38m (period 2046-2065) and between 0.26m to 0.82m (period 2081-2100). Hydrodynamic modeling of the Manila Bay, Pasig River, and the Laguna Lake revealed a 0.70m sea level rise translates to a 0.52 m increase in the Lake's water level. In combination with the increase in rainfall, the risk of lakeshore flooding is compounded.

c. The potentially affected Program components are i) viaduct (Lower Bicutan to San Pedro) and road embankment (San Pedro to Calamba); ii) pavement drainage and cross-culvert capacity affected by increases in short-duration precipitation; iii) the effectiveness of lake-side protection of the road embankment will also be exposed to potential increases in lake level due to combined precipitation increase and sea level rise; and iv) lake shore areas within the embankment might be exposed to flooding of greater magnitude to changes (increases) in short-duration precipitation events.

10. **Climate adaptation and resilient measures.** The Project includes on the project design and construction, specific climate adaptation measures tackling the material climate hazards found on the CRVA:

[46] World Bank. Climate Change Knowledge Portal. https://climateknowledgeportal.worldbank.org/

[47] 30-year simulated time series assembled for 26 Coupled Model Intercomparison Project (CMIP) 6 models based on 1985-2014 historical simulations and projected socioeconomic pathways SSP245 (intermediate) and SSP585 (high) from 2041-2070. Annual maximum 1-day rainfall (Rx1day) were estimated from fitted extreme value distributions of 5-, 10-, 20-, 50-, and 100-year return periods. Gumbel and generalized extreme value (GEV) distributions for NCR and Region IV-a were generated for each model, scenario, distribution, return period and percent change in the design rainfall between 1985-2014 ad 2041-2070 were calculated resulting to 28 estimates for each combination. For each distribution, the median (50th percentile), 75th, 90th, and 95th percentile were estimated.

- **Road embankments:** increased freeboard (embankment height in excess of design requirement) added in response to potential increase in design Laguna Lake levels. Climate change increment of 0.3m added to freeboard increment of 0.6m.
- **Viaducts and bridges:** increased navigation clearance under structures added to reflect potential increase in design Laguna Lake levels. Climate change increment of 0.3m added to 1.0m safe passage clearance for both fishing and passenger ships.
- **Drainage culverts**: to mitigate potential impacts of roadway embankments on flooding at lakeshore margins, all box culverts were sized to accommodate 10 percent to 20 percent increases in design precipitation due to climate change. Equalizing culvers and waterway culverts were implemented to prevent like water from backflowing inland.
- **Lakeside communities:** Emergency Response and Disaster Risk Reduction Plans introduced in partnership with potentially affected LGUs to mitigate impacts of climate change on local flooding.
- **Embankment armoring**: Lake-side embankment armoring enhanced to accommodate potential increases in wave run-up due to combined impacts of increased rainfall intensity and sea level rise on Laguna Lake level.
- **Laguna Lake's Flood Storage Function**: The embankment road as designed coupled with tributary dredging and improved local drainage will not increase flooding based on hydrodynamic modeling of the highest flood levels that occurred in the past 100 years[48]. Two flood stages were evaluated, lake's water rising and receding stages. When lake water is rising during extreme rainfall, the embankment road section of the Program serves as a dike providing flood protection. During periods of receding flood water, the strategic location of the culverts will result to more areas experiencing less flooding. [49]

11. **Consistency with Broader and National Context for Climate Resilience**. The LLRN Program is consistent with the national policies and strategies for climate mitigation and adaptation. The LLRN is aligned with the Government's climate change commitments including the Philippines NDC, which targets substantial reduction of carbon emissions and climate adaptation. It is also aligned with the NCCAP 2011–2028 and the National Transport Policy which prioritize climate proofing, rehabilitation, and improvement in the country's transport infrastructure. Specifically, the Program contributes to the Philippines' NCCAP 2011-2028 goal to "render infrastructure sector resilient to the escalating impacts of climate change".

12. Given the climate adaptation measures incorporated in the Program (tackling the climate hazards found to materially affect the LLRN during the CRVA) and the not inconsistency with the NDC and other climate adaptation national plans, we can conclude that the LLRN is aligned with the adaptation goals of the Paris Agreement (BB2) also and therefore it is Paris Aligned.

C. Climate Finance (Mitigation)

[48] 2012 Habagat (monsoon) and 2009 Typhoon Ondoy generated similar flood levels of 13.86 and 13.85m (based on the Laguna Lake Development Authority's (LLDA) Datum)
[49] flood depth will decrease at least 0.1m

13. Some elements of the Project financed by the AIIB & ADB qualify as climate mitigation finance as they are listed on the Joint MDB common principles for tracking climate mitigation finance. Namely i) the installation of solar powered street lighting on the project roads and ii) the tree planting in suitable areas, both under the category of 'Energy efficiency, on-site renewable energy, CO_2 emission reduction, and carbon sinks in public areas and installations', and iii) the development of a strategy for decarbonizing the road network under the jurisdiction of the DPWH, included under the category of 'Research, development and innovation'.

14. The total estimated climate mitigation finance of the Program is USD 3.18 million of which USD 0.73 million will be financed by the AIIB.

Table A3.1 Climate Mitigation

Mitigation Activity	**Estimated CAPEX** (USD million)	**Mitigation Finance Justification**
Installation of solar powered street lighting on the project road	3.06	All street lighting along the project road will be powered by renewable solar energy. The total installation costs for these solar streetlights are counted as mitigation finance. This activity is included on the JMDB common principles under the category of 'Energy efficiency, on-site renewable energy, CO_2e-emission reduction, and carbon sinks in public areas and installations'.
Tree planting in suitable areas	0.025	This activity is included on the on the JMDB common principles under the category of 'Energy efficiency, on-site renewable energy, CO_2e-emission reduction, and carbon sinks in public areas and installations'.
Develop a strategy for decarbonizing the road network under the jurisdiction of the DPWH	0.10	The strategy will be fully aligned with the county's NDC and commitments to decarbonize transport. The full costs of climate mitigation consultant engaged to develop the decarbonization strategy is counted as mitigation finance under the category included under the category of 'Research, development and innovation'.
Total mitigation CAPEX ($ million)	**3.18**	-
Mitigation CAPEX finance by AIIB ($ million)	**0.73**	-

D. Climate Finance (Adaptation)

Step 1: Please refer to the CRVA on the BB2 section above.

Step 2: The highway construction related costs will include climate resilience measures, identified through a thorough climate risk and vulnerability assessment. It is therefore the explicit intent of those activities to build the highway that is resilient to the impacts of climate change. Project has allocated appropriate climate change measures as part of climate adaptation solutions, which are listed in the paragraph below.

Step 3: Some elements of the Project financed by the AIIB qualify as climate adaptation financed as substantial contributors to climate resilience tackling some of the potential material climate hazards found during the Climate Risk and Vulnerability Assessment (CRVA). Namely:

- The Potential increases in design Laguna Lake levels is addressed by the Additional viaduct height, the Additional embankment height and the Increased embankment armoring.
- The Increase in extreme rainfall intensity is addressed by Increased embankment cross-culvert capacity and the Increased drainage culvert capacity.
- The Program incorporate an Emergency Response and Disaster Risk Reduction Plan introduced in partnership with potentially affected LGUs to mitigate impacts of climate change on local flooding.

15. Given the difficulties estimating the CAPEX of the climate adaptation finance measures, the climate team has assessed the final climate adaptation finance percentage of the Project using AIIB's proportional approach. The Project does not have climate adaptation as one of its main objectives, however, it incorporates some climate resilient elements as listed above (structural and non-structural) on its design tackling more than one climate hazard and thus, can be considered a climate adapted project under type 1. The Project is entitled to receive 20 percent climate adaptation finance on the CAPEX components financed, equivalent to USD 32 million.

16. The total AIIB's climate finance (from both mitigation and adaptation) on this Project is US 32.76 million (17.41 percent).

Table A3.2 Climate Adaptation

Adaptation Activity	Target Climate Risk	Adaptation Finance Justification
Additional viaduct height	Potential increases in design Laguna Lake levels due to increases in rainfall intensity, sea level rise	Incremental cost of aqueduct height (additional concrete and steel for bored piles and concrete columns)
Additional embankment height	Potential increases in design Laguna Lake levels due to increases in rainfall intensity, sea level rise	Incremental costs of excavation, fill and ground treatment.
Increased embankment armoring	Potential increases in design Laguna Lake levels due to increases in rainfall intensity, sea level rise	Incremental difference in thickness of Lakeside Armor Rock Protection and Landside Armor Rocks
Increased embankment cross-culvert capacity	Increase in extreme rainfall intensity, flood discharge from local catchments	Incremental costs of concrete, steel, excavation
Increased drainage culvert capacity	Increase in extreme rainfall intensity, runoff	Incremental costs of concrete, steel, excavation

Annex 4: Gender Equality and Social Inclusion

1. **Introduction.** The Bank intends to improve the quality and impact of its investments by incorporating gender considerations into projects. It is thus important to capture the potential ways this Project may address gender inequalities within its scope. This analysis is done by following the methodology outlined in the Bank's Guideline on Gender Equality Annex (GEA) for Transport Projects, which consists of 3 parts:

(i) *Gender Assessment (GA): an empirical assessment to obtain a practical understanding of the LLRN's gender equality context in respect to the country and/or (sub) sector it operates in; as well as to identify addressable gender inequalities within the Project's scope.*

(ii) *Gender Action Plan (GAP)*: a set of specific activities that will be executed to improve the Project's gender equality outcome, in respect to the identified addressable gender inequalities. It may be organized around the 4 common project phases: engagement, engineering design, construction, and operations.

(iii) *Gender Indicators (GI)*: a set of simple, measurable, time-specific, and gender-disaggregated indicators that relate to activities in the GAP either directly or indirectly, but not necessarily in an exhaustive manner.

2. **Purpose.** The purpose of this GEA is to improve the Project's design and impact for its stakeholder gender groups. It is not meant to diagnose preexisting gender inequalities in the country or sector, nor should it aim to solve problems of a national or societal nature.

3. **Gender Assessment and Action Plan (GAAP).** As the LLRN Program is categorized as *effective gender mainstreaming*[50], ADB has prepared a GAAP. The GAAP outlines measures to safeguard project-affected communities from unintended Program associated risks while paying attention to vulnerable populations such as women, children, the elderly, those who identify as lesbian, gay, bisexual, and transgender (LGBT); and persons living with disabilities as well as extreme poverty. Alongside protective measures, actions that contribute towards achieving strategic goals on gender equality, women empowerment, and social inclusion will be initiated. Additionally, the LLRN Program will invest in strengthening institutional capacity of the DPWH to mainstream gender in its operations. This analysis will refer to the GAAP.

4. **Implementation, Monitoring and Evaluation of the GAP.** The DPWH UPMO RMC II will be accountable for the implementation, monitoring and evaluation of the GAP and will be assisted by the CSC's international and national gender specialists and consultants. A Gender and Development (GAD) focal person in DPWH UPMO RMC II has been assigned for the Program. Civil works contractors will be accountable for gender actions related to their respective contract packages. Quarterly and annual reports on the GAP's progress will be prepared by the gender specialists and consultants and civil works contractors for DPWH UPMO RMC II, and submitted along with other project reports and statuses of covenants to financiers. The DPWH UPMO RMC II will assist ADB's conduct gender-related missions as needed, including spot inspections of the progress of gender-responsive features of the Program.

[50] Asian Development Bank. Guidelines for gender mainstreaming categories of ADB projects. 2021.

A. Gender Assessment (GA)

5. **Country-level Indicators.** The Philippines, home to around 54.55 million women,[51] performs above the global average and most of Southeast Asia in the three widely used gender indicators: the United Nations' (UN) Gender Inequality Index (GII)[52], UN's Gender Development Indicator (GDI)[53], and the World Economic Forum Global Gender Gap Index (GGI):[54]

(i) The GII reflects losses in potential human development due to gender inequalities across the dimensions of (i) female reproductive health; (ii) empowerment in education and politics; and (iii) labor market participation. A high GII value indicates high inequality between men and women, and vice-versa. In 2021, The Philippines received a GII score of 0.419, ranking above the world average of 0.465 but below many of its Southeast Asian peers including Thailand, Viet Nam, Brunei Darussalam, Malaysia, and Singapore. [55]

(ii) The GDI is a reference on the (dis)advantage of women against men[56] in terms of achievement across the basic human development dimensions: (i) life expectancy; (ii) years of schooling; and (iii) earned income. A high GDI value indicates low inequality between men and women, and vice-versa. In 2021, the Philippines received a GDI score of 0.990, ranking above the world average of 0.958 and most of its Southeast Asian peers except Thailand, Viet Nam, and Singapore.[57]

(iii) The GGI assesses countries' distribution of resources and opportunities between genders based on outcomes of the key dimensions: (i) economic participation and opportunity; (ii) educational attainment; (iii) political empowerment; and (iv) health and survival. A high GGI value indicates low inequality between men and women, and vice-versa. In 2022, the Philippines received a GGI score of 0.783, ranking 19th in the world, higher than all its Southeast Asian peers, and second highest after New Zealand within East Asia and the Pacific.[51]

6. **Legislation and Policies.** The Constitution of the Philippines specifies that the State "recognizes the role of women in nation building and shall ensure the fundamental equality before the law of women and men".[58] The Philippines was the first Southeast Asian country to ratify the Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW) in 1981.[59] It also ratified CEDAW's Optional Protocol in 2003, participated in the Beijing Platform for Action (BPFA) in 1995,[60] and committed to the Sustainable Development Goals (SDGs) in 2015.[61]

7. **The Philippines' Polices on Gender Equality.** Although Filipino women are still significantly underrepresented in politics with at least twice the number of men compared to

[51] World Economic Forum. 2022.
[52] United Nations Development Programme. 2022.
[53] GDI is based on the dimensions of (i) life expectancy at birth; (ii) expected years of schooling; and (iii) estimated earned income. A high GDI value indicates low inequality between men and women, and vice-versa. United Nations Development Programme. 2022
[54] GGI is based on the dimensions of (i) economic participation and opportunity; (ii) educational attainment; (iii) political empowerment; and (iv) health and survival. A high GGI value indicates low inequality between men and women, and vice-versa. World Economic Forum. 2022.
[55] United Nations Development Programme. 2022.
[56] Gender Development Index & Gender Inequality Index. Liberato, T. 2021.
[57] United Nations Development Programme. 2022
[58] The Constitution of the Republic of the Philippines, article II section 14. The Republic of the Philippines. 1987.
[59] Convention on the Elimination of all Forms of Discrimination. The Philippine Commission on Women. 2023.
[60] Beijing Platform for Action. The Philippine Commission on Women. 2023.
[61] Achieving Sustainable Development. Serrano I. for Social Watch. 2016.

women holding positions in the public sector[62] and men disproportionally holding higher-level decision-making positions,[63] the Philippines have made substantial progress in promoting gender equality in recent years through a multitude of legislative schemes. The most notable is the Magna Carta of Women (Republic Act No. 9710),[64] a comprehensive women's human rights law enacted in 2009 with the aim of eliminating discrimination against Filipino women by promoting and protecting their rights in all aspects of life including the workplace, education, and political participation, through appropriate plans, policies, and mechanisms. The law also established the Philippines Commission on Women (PCW) as the primary policymaking and coordinating body on women and gender equality concerns, as well as the supervisor of the Magna Carta of Women's implementation.[65] The PCW's Gender Equality and Women's Empowerment (GEWE) Plan 2019-2025 serves as a key strategic reference for government agencies' Gender and Development plans and budgets.[66]

8. **The Philippines' Regulations on Gender Equality.** The World Bank Women, Business and Law Index indicates that the Philippines has little to no legal barriers for women to obtain employment, equal pay, and entrepreneurship opportunities.[67] Several laws addressing gender equality and women protection in the workplace are outlined in the following table:

Table A4.1 The Philippines' Regulations on Gender Equality at the Workplace

Republic Act No. 7877 (1995) / "Anti-Sexual Harassment Act"	Prohibits sexual harassment in the workplace, education or training environment and provides for the administrative and criminal sanctions for the commission of sexual harassment
Republic Act No. 9262 / "Anti-Violence Against Women and Their Children Act"	Provides protection and remedies for victims of violence against women and their children, including physical, sexual, psychological, and economic abuse
Republic Act No. 10354 (2012) / "Reproductive Health Act"	Establishes that pregnancy or the number of children shall not be grounds for non-hiring or termination from employment
Republic Act NO. 10151 / "Night Workers Act"	Repeals provisions of the Labour Code which prohibited women from working from 10pm-6am, and ensures that alternatives to night work is available to women before and after childbirth, also that they will not lose their status, seniority, or access to promotion
Republic Act No. 11210 / "Expanded Maternity Leave Law"	Increases the number of days of maternity leave for working mothers from 60 days to 105 days and allows them to extend their leave up to 30 days without pay
Republic Act No. 8282 / "Social Security Law"	Ensures that eligible female employees receive 100 percent of her average salary for 60-78 days as a daily maternity benefit, regardless of marriage status
Republic Act No. 8972 / "Solo Parents' Welfare Act"	Provides benefits and privileges to solo parents and their children, including flexible work arrangements, educational assistance, and housing benefits
Department Order No. 174 (2019) issued by the Department of Labor and Employment	Requires employers to provide flexible working arrangements to their employees, including part-time work, telecommuting, and flexible hours, in order to help them balance their work and family responsibilities

[62] World Economic Forum. 2022.
[63] Country Gender Action Plan FY 20-24. The World Bank Group in the Philippines. 2021.
[64] Republic Act No. 9710. The Republic of the Philippines. 2009.
[65] Herstory. The Philippine Commission on Women. 2023.
[66] Gender Equality and Women Empowerment Plan. The Philippine Commission on Women. 2023.
[67] Women, Business and the Law 2022 Report. World Bank. March 2022.

9. **Existing Gender-Specific Behaviors and/or Challenges.** Despite its progressive legislative landscape, the Philippines is still a patriarchal society emphasizing male dominance in social institutions,[68] and the sociocultural landscape still lags.[69]

10. **Labor Force.** In terms of education, statistics indicate that Filipino women are more educated than men, but less likely to participate in the labor force due to inequalities in job opportunities in a job market that favors men over women. Women make up 90 percent of the economically inactive as a result of household and/or family duties[70], and women's labor force participation rate (51.2 percent) is lower than men (75.4 percent)[71]. Although there is now a larger share of boys than girls in the Philippines' growing numbers of primary education enrollment, the reverse is still true for secondary and tertiary education. [6262] Yet while the labor force has almost 50 percent more men than women, only around 40 percent of women employed compared to 60 percent of men[62]. This is because of cultural beliefs that women are responsible for managing and budgeting for the household while also maintaining their jobs.[72] Most Filipinos also believe that childcare should be provided by family members, preferably their mothers.[73] The proportion of poor families, by sex of family head (%) presents interestingly more men headed households are poor at 14.7 compared to women headed households at 9.1. The proportion of unpaid family workers (%) are mostly women at 11.3 and only 4.7 men.

11. **Economic Participation.** In terms of economic participation, women operate around one-third of businesses in the Philippines.[74] However, they are overrepresented in tourism and retail services, with at least 3.5 million women working in the informal economy, being among the hardest sectors hit by the pandemic.[75] On the other hand, men are 3 times more likely to be employed in engineering, manufacturing, and construction than women.[62] 10 percent of Filipino women are employed without pay in family-owned business as domestic workers, compared to only 4 percent of men.[73] Women are also more likely to take part-time work and earn on average USD26,900 lower annually compared to men,[62] exposing them to economic abuse and domestic violence.[73] Prostitution is a common resort for women living in poverty and job insecurity.[76] Nationwide, 3 out of 5 unpaid family workers were women and women's jobs were concentrated in the service and sales industry where income was low, and mainly characterized as informal employment where they were without social security benefits.

12. **Marital and Sexual Affairs**. In terms of marital and sexual affairs, Filipino women are notably more disadvantaged than men. One in four Filipino women have experienced gender-based violence, with 40 percent not seeking help[77] due to prevalent victim-blaming culture[78]. In 2022, 14 percent of women aged 15-49 experienced various forms of physical and sexual

[68] Special issue on gender and populism in the Philippines. Review of Women's Studies. University of the Philippines Center for Women's and Gender Studies. 2020. Special Issue on Gender and Populism in the Philippines | ScholarBank@NUS
[69] Violence against women in the Philippines: barriers to seeking support. 2 May 2022.
[70] ADB. Philippines Country Partnership Strategy (2018-2023) Inclusive and Sustainable Growth Assessment
[71] Government of the Republic of the Philippines, Philippine Statistics Authority (PSA). *2024 Fact Sheet on Women and Men*.
[72] Doctor to the Barrios, Experiences with the Philippine Reconstruction Movement, Chapter 10: Family Planning in the Barrios. Flavier, Juan Martin. New Day Publishers (1970/2007), p. 157, ISBN 971-10-0663-4.
[73] Overcoming barriers to women's work in the Philippines. World Bank Blogs. 11 April 2022.
[74] Philippines Women in Culture, Business & Travel: A Profile of Filipino Women in the Fabric of Society. World Trade Press, Inc. 2010. Philippines Women in Culture, Business & Travel - ScholarVox International
[75] Women Empowerment in the Philippines. Manila Bulletin. 20 March 2022.
[76] Commission on Human Rights. https://chr.gov.ph/. 2021.
[77] National Demographic and Health Survey (NDHS) | Philippine Statistics Authority. Philippine Statistics Authority. 2017.
[78] Special issue on gender and populism in the Philippines. Review of Women's Studies. University of the Philippines Center for Women's and Gender Studies. 2020. https://scholarbank.nus.edu.sg/handle/10635/194831

violence and the number of cases reported to Philippine National Police (PNP) have increased from 11,307 in 2022 to 13,213 in 2023, highest reported was in 2021 at 13,830. According to the Philippine Commission on Women (PCW) it is alarming that violence against women and their children persists in the country despite current government and CSOs actions to address the problem.

13. **Transportation.** In terms of transportation, Filipino women spend on average 10-20 percent more than men due to their daily tasks which requires frequent switching between different transport modes and making many stops in a single trip.[79] Furthermore, while 72.5 percent of crash victims in the Philippines are male, females, due to social norms, disproportionately bear the responsibility of caregiving for injured and disabled crash victim family members, adding to the burden of existing paid and unpaid work.

14. **Gender Issues faced by the Affected Population.** Based on the above findings and consultations, key gender inequality and social exclusion issues relevant to the LLRN Program's PAPs include the following:

(i) **Poor access to economic resources and opportunities.** Women and vulnerable sectors experience time poverty and drudgery resulting from traffic congestion along the existing roads due to slower speeds and longer trip times to access basic goods and services such as health, education, employment opportunities and working women experience loss of productivity.

(ii) **Lack of meaningful participation in decision-making for women.** Men, being more prevalent in the formal workplace, generally have a more dominant voice. Project-affected women activities are more limited to domestic chores and thus they are more exposed to the negative impacts of current traffic conditions and floodings during monsoon and typhoons (higher travel costs exacerbated by congestion and/or inaccessible roads) as well as increased risk of accidents (caregiving burdens of children and accident victims).

(iii) **Gender discrimination, marginalization and stereotyping in infrastructure projects.** Project-affected women are more likely to be excluded from construction employment due to skill mismatches. Additionally, their household duties, more informal work experience, and limited skills may hinder project-affected women reemployment efforts if displaced, despite new jobs created by the Program. Women's lesser voice also makes it more likely for their gender-specific needs to be overlooked in the Program's design.

(iv) **Gender-based violence (GBV), sexual exploitation, abuse, and harassment (SEAH).** The influx of men hired for civil works and the displacement of economically vulnerable women are likely to increase GBV and SEAH risks, including prostitution within the Program's area. Project-affected women are at higher risk due to disrupted routines and the presence of outsiders, which can lead to unwanted pregnancies and abandonment of women and/or their children.

B. Gender Action Plan and Gender Indicators

[79] Beyond Access: Gender and Transport Justice in Davao City, Philippines. Rivera. 2021. https://www.iss.nl/en/media/2021-11-rivera-roselle-leahthesis-abstractenglish0

15. **Stakeholder Engagement.** To ensure that the stakeholder engagement process considers all relevant gender groups' opinions, the following actions were or will be taken:

(i) Ensuring equitable gender representation in public consultations. DPWH, with the assistance of DED consultants, carried out a total of 31 consultation activities from September 2020 to July 2023. These consultations were attended by 1791 individuals comprising 926 females (52 percent) and 865 males (48 percent)[80].

(ii) Conducting women only focus groups to create a safe space for Filipino women to voice out their concerns and opinions that otherwise may not be captured or underestimated, considering the dominance of the male gender in the society.

(iii) Provided trainings in road construction, maintenance, and operations for a total of 128 female TVET[81] scholarship recipients; and (ii) at least 52 PAPs for the Program's Livelihood Restoration and Improvement Program.

(iv) Training members of the Grievance Redress Mechanism, relevant agencies, and contractors on GBV-SEAH prevention and response.

16. **Key Actions for Design.** Based on best practices and stakeholder consultation results, the following features will be included in the LLRN Program: (i) gender-sensitive technical design features such as street lighting; CCTVs; maternity-friendly rumble strips; signalized intersections; sidewalks, ramps and railings; and road signages; (ii) a pedestrian walkway catering to women's travel needs; and (iii) a designated space along slip roads for project-affected women commercial activities[82].

17. **Construction Phase.** For the introduction of gender-specific actions applicable to the construction phase of the Project, the following actions are proposed or will be taken:

(i) Establishing specific targets for women employment in the contracts associated with the construction of the Program's roads (i.e., hiring of at least 20 percent or 556 women[83]).

(ii) Establishing a Grievance Redress Mechanism (GRM) which incorporates provisions for prevention, response, and reporting on SEAH and GBV in the Program.

(iii) Providing gender-sensitive facilities such as separate and adequate toilets as well as dressing rooms for female workers.

(iv) Conducting orientations and trainings on the overall GAP, GBV, SEAH and reproductive health for a total of 210 Program key implementors (i.e., PMO staff, contractor staff, local officials).

(v) Conducting road safety awareness seminars for at least 180 residents of the local communities and 7000 students of 2 high schools.

[80] 732 individuals comprising 410 females (56 percent) for CP1, 311 individuals comprising 143 females (46 percent) for CP2, 597 individuals comprising 303 females (51 percent) for CP3, and 151 individuals comprising 70 females (46 percent) for CP4.
[81] Examples of TVET courses leading to non-traditional skilled occupations for females are solar power installation and maintenance, computer technology, heavy equipment operation, welding, tiling, painting, etc.
[82] Interim Report of the Detailed Engineering Design Chapter 15. February 2024
[83] DPWH Department Order No. 130 of 2016 titled: Guidelines for the Implementation of the Provisions of Republic Act No. 6685 and Republic Act No. 9710 or the Magna Carta of Women, which implores the DPWH, concerned local government units and private sector contractors and subcontractors to purposively employ women so that they comprise at least 20% of the total workforce in skilled or unskilled positions across the phases and stages of construction/civil work (section 9).

(vi) Consolidation, monitoring, and publication of sex-disaggregated data, collected from progress reports, in the DPWH website. This also includes the GAAP implementation status report prepared by the GAD Focal Point and Contractor.

Annex 5: Member and Sector Context

A. Member context

1. The Philippines economy exhibited strong growth prior to the pandemic, outpacing its regional economies. During the pandemic, it experienced a sharp contraction in 2020 but has rebounded back to 6 percent growth since 2022, supported by the recovery of services sector, strong domestic demand and increased private investment.[84] Moving forward domestic demand and large young population is expected to maintain the growth momentum, underscoring the importance domestic transport and logistics networks.
2. Demographic trends in the Philippines center on an expanding middle class, growing population, and large share of youth in population. These have all contributed to the Philippines being one of the most demographically dynamic economies in Southeast Asia. These demographic characteristics fuel the services sector and consumer demand led growth driver of the economy. The Philippine economy also has strong grounding in business activities including business process outsourcing, real estate, tourism, financial services activities, and manufacturing of electronic products.[85] Of these, the manufacturing sector is most exposed to external factors, namely electronics exports being subject to risks of growth downturn in global economic environment. Nonetheless manufacturing activities have seen growth of more than 10 percent as of January 2023 (volume of production index), again spurred on my strong domestic demand.
3. Despite positive demographic characteristics, labor market conditions have declined recently due to COVID setbacks and challenges to creating sufficient employment opportunities for the 54 percent of population under the age of 25. The lack of skilled jobs for the growing young labor force has also led to a “brain drain” with a reported 10 percent of the population working abroad.[86] Nonetheless unemployment is currently below the unemployment rate of 5.4 percent seen during the pandemic.
4. Services and agriculture traditionally account for the largest share of employment in the Philippines. Since the early 2000s an increasing number of jobs shifted to services from agriculture. The resulting increase in non-agricultural wage incomes in turn contributed to the notable drop in poverty from 39.4 to 16.7 percent between 2000-2018. In terms of productivity there have also been gains, however labor productivity in the Philippines (USD8,095 in 2021) continues to fall behind peers such as Viet Nam (USD10,628) and Indonesia (USD11,858).[87] Reducing high energy and transport costs due to a large infrastructure gap is expected to improve productivity and competitiveness. Global Infrastructure Outlook estimates an investment need of USD136 billion in the road transport sector alone.
5. The Government of the Philippines (GoP) is pursuing ongoing economic reforms, business reforms, and development plans ranging from attracting foreign investors to financing infrastructure developments. Economic reforms include tax reform and easing of foreign ownership restrictions. The GoP is also driving a public investment initiative to aimed at

[84] IMF Article IV 2022 No. 22/369
[85] World Bank 2022
[86] Philippines Country Risk Report Q3 2023, Fitch Solutions https://store.fitchsolutions.com/country-risk/philippines-country-risk-report
[87] Philippine Job Report, World Bank, 2023 https://thedocs.worldbank.org/en/doc/632eecc9771ac2a7ee18c3aad99d9c0b-0070062023/original/World-Bank-Philippine-Jobs-Report-2023.pdf

crowding in private sector investment for infrastructure investment projects. Complimentary initiatives on improving infrastructure, such as road and other transport projects, fall under the Build Build Build (BBB) program overseen by the overarching Philippine Development Plan (PDP) for 2023-2028.

6. As a large archipelago nation, the Philippine economy is particularly vulnerable to risks of climate change, ranking 8th amongst countries most affected by extreme weather events.[88] Areas most impacted will be changes in land (e.g., resilience of infrastructure; agricultural land area), labor productivity (e.g., health impacts; disproportionate impacts on vulnerable community), and agriculture production. Increasing temperatures and more frequent natural events such as typhons are contributing factors. Climate change associated impacts will primarily affect coastal community infrastructure as well is poor and vulnerable communities throughout the nation.

7. The Philippines' GHG emissions have increased in the past decade despite remaining relatively low compared to regional peers. Energy production, agriculture and transport are the main contributors to GHG emissions, with the transport sector the biggest fossil fuel consuming sector in the Philippines. The World Bank lists the reduction of emissions from transport as one of selected development and climate priorities in the 2022 Philippines Country Climate and Development Report. Improved and new road transport infrastructure will have an outsized role to play in emission targets through road speed and congestion relief benefits. See PA Alignment in Climate Mitigation SC1: NDC Alignment, section A.4.

8. Manilla and the National Capital Region (NCR) are acutely aware of risks posed by climate change given the regions significant urbanization, including outside Manilla, and exposure to coastal areas. The population of NCR is 13.4 million and is expected to reach 14.0 million by 2030. Daytime population increases by an additional 3 million people from surrounding provinces (Bulacan, Rizal, Laguna, and Cavite provinces), and this figure may increase further by 2030. The main economic activities include fisheries, aquaculture and agriculture as well as recreation and tourism. Between 2020 and 2021 the fastest growing industries were centered around transportation and storage as well as mining and quarrying.

B. Sector Context

9. The Philippine Department of Public Works and Highways (DPWH) reports a total road length of over 34,000 kilometers.[89] This includes primary, secondary, and tertiary roads as per the Road Classification System of the Philippine Highway Act of 1953. A number of road conversions and classification changes occurred since arriving at the three-tier system. Road conversion not only applies to classification, but also funding and which organization is responsible for upkeep and maintenance.

10. While the road network is comparable with other countries in the region in terms of length, the road network by type and road quality falls behind in the Philippines. As such, investments in road maintenance, construction, and improvement are important. Over 65 percent of total roads are concrete and non-asphalt, while approximately 2 percent of roads are earth roads or gravel covered. As of 2019, 44 percent of total road length was

[88] Country Climate and Development Report: Philippines, World Bank, 2022 https://www.worldbank.org/en/country/philippines/publication/philippines-country-climate-and-development-report
[89] Republic of the Philippines Department of Public Works and Highways, 2022; Philippine Highway Network, 2022 https://www.dpwh.gov.ph/dpwh/DPWH_Road_and_Bridge_Inventory/Road%20Data%202016/index.htm

categorized under “bad” and “poor” roughness, and 25 percent as “good”. Aside from road quality, the growing population and urbanization have led to significant congestion, increase road travel time, and GHG emissions. Inefficiencies in public mass transport have also contributed to rising congestion on roads.

11. Road safety not only impacts quality of life but also economic productivity. This is the case in the Philippines where 77 percent of road crash injuries and fatalities fall into the “economically productive” age groups of 15-64 years of age.[90] At the same time accidents are on the rise in the Philippines. The increasing, rather than decreasing, trend in traffic incidents has been attributed several factors including the higher percentage of passenger mobility traveling by land (80 percent), increasing motorization, increasing urbanization, and the need for improved road quality.

12. Since in the independence of the Philippines up to the 1980s the Philippine Road network expanded significantly in terms of total length. However qualitatively there was lower focus on functionality, pavement quality, and life span of structures such as bridges. To improve the safety, reliability, and efficiency of the road network the GoP has been investing in road networks over the last decades. Examples include the Medium-term Philippine Development Plan (MTPDP) 1992-1998 which set targets for improving the ratio of paved arterial and secondary roads.

13. The GoP spearheads a number of ongoing programs and development plans aimed at improving road transport effectiveness, quality, safety and accessibility. Most prominent is the Build Build Build (BBB) program which is part of the Philippine Development Plan. The Build Build Build Program envisions improvement in both roads and mass transport such as rails. The program sets targets for infra spending to GDP increasing year to year, from 4.6 in 2020 to 5.8 in 2022. It will implement, among other goals, a traffic decongestion program, convergence and rural road development program, and mass transport program nationally. Since 2016, the program has constructed, maintained, and upgraded over 31,977 kilometers of roads, with 13,841 kilometers on going.[91] The program also includes bridge construction and flood control infrastructure construction.

14. The NCR region is also pursuing localized plans for improving and expanding transport infrastructure, such as the comprehensive roadmap for transport development in in the NCR developed by the National Economic and Development Authority (NEDA). Projects in the region include the construction of a skyway extension, metropolitan link roads, express ways connecting north and south Luzon, and mass transport projects such as Metro Manila Transit System. NEDA has also set goals to increase the percentage share of total passenger trips in Metro Manilla from 1 percent to 14 percent 2021-2028. As well as the use of PPPs, particularly in the form of BOT contracts, to increase the flow of private capital and innovation into the construction of roads.

[90] Guide for Road Safety Opportunities and Challenges: Low-and middle Income country profiles, 2020 https://www.aprso.org/sites/default/files/document/2020-10/FINAL_Road%20Safety%20Country%20Profiles_compressed%5B1%5D.pdf

[91] Republic of Philippines, Department of Public Works and Highways, Strategic Infrastructure Programs and Projects https://www.coursesidekick.com/civil-engineering/6954024

Annex 6: Country Credit Fact Sheet

A. Recent Economic Development

1. The Philippines is a lower-middle-income country with a GDP per capita of USD 3,726 and a population of 117 million.[92] Prior to the pandemic, the economy thrived with a robust 6 percent growth. The 2020 global health crisis triggered a sharp 9.5 percent contraction, especially impacting contact-intensive sectors. The post-pandemic period (2021-2022) witnessed a commendable recovery with GDP growth rebounding to 5.7 percent and accelerating further to 7.6 percent, fueled by strong domestic demand and private investment. Growth moderated in 2023 to 5.6 percent due to a confluence of global shocks, inflation, and slowing consumption.

2. Inflation stabled at 2.4 percent in 2019-2020 and picked up to 3.9 percent in 2021, due to the increase in food prices and the pandemic-induced supply shocks. The 2022 inflation increased sharply to 5.8 percent, surpassing the upper band of the official target, and peaked at 6 percent in 2023. To anchor inflation within the target, the BSP held the policy rate at 6.5 percent after a cumulative 450 basis points hike since May 2022.

3. The pre-pandemic fiscal deficit remained below 4 percent of GDP. The fiscal deficit widened to 6.2 percent of GDP in 2021, due to increased health expenditure and declined tax revenue. It narrowed to 55 percent of GDP in 2022 and 5.1 percent of GDP in 2023 as the fiscal consolidation continues.

4. To finance the deficit, the public debt surged from 37 percent of GDP in 2019 to 57.4 percent of GDP in 2022 and declined slightly to 56.6 percent of GDP in 2023. Still, it was kept within the cap of 60 percent of GDP.

5. After a short surplus of 3 percent of GDP in 2020, the current account balance switched back to a deficit of 1.5 percent of GDP in 2021 and then widened to 4.5 percent of GDP in 2022, because imports rebounded, and domestic demand recovered under the high inflation environment. The 2023 current account deficit narrowed to 2.6 percent of GDP due to a rise in goods exports and tourism.

6. External debt increased from 22 percent of GDP in 2019 to 27 percent of GDP in 2021 and remained stable at this level in the subsequent years with a small decline. To finance the external deficit, the international reserves decreased from USD 110 billion in 2020 to USD 96 billion in 2022, but it remains robust at USD104 billion at the end of Q1 2024. The Philippines peso has depreciated since 2020.

B. Economic Indicators

Economic Indicators	2021	2022	2023	2024*	2025*	2026*
Real GDP growth (% change)	5.7	7.6	5.6	6.3	6.2	6.2
CPI Inflation (average, % change)	3.9	5.8	6.0	3.6	3.0	3.0
General government overall balance (% of GDP)	-6.2	-5.5	-5.1	-4.1	-3.6	-2.9
General government gross debt (% of GDP)	57.0	57.4	56.6	56.9	56.7	55.7
Public gross financing needs (% of GDP) 1/	10.4	10.6	11.4	10.0	9.6	8.3
Current account balance (% of GDP)	-1.5	-4.5	-2.6	-2.2	-1.6	-1.3
External debt (% of GDP) 1/	27.0	26.6	26.4	25.8	25.3	..

[92] World Bank's World Development Indicators for the Philippines in 2023.

Gross international reserves (USD bill.) 1/	108.8	96.1	103.8	104.1	..	..
Exchange rate (LCU/USD, EOP) 2/	50.99	55.67	55.39	58.25	..	..

Data source: IMF World Economic Outlook (April 2024 Edition), unless otherwise stated.
Notes: * denotes projected values. 1/ IMF Country Report No. 23/414. 2/FX data retrieved from Refinitiv on July 12th, 2024.

C. Economic Outlook and Risks

7. Philippines' GDP growth is projected increase steadily to 6.4 percent in 2029, on the back of stronger consumption demand, higher public and private investment, and a recovery in exports. Downside risks to the outlook stem from geoeconomic fragmentation, high interest rates, and climate-related shocks, while efforts to attract foreign direct investment, promote business-friendly reforms, and enhance competitiveness could raise the economy's long-term growth potential.

8. Inflation is expected to fell to 3.6 percent in 2024, which is within the within the target band of 2-4 percent and converge to the mid-point of 3 percent in the medium term, anchored by a moderation in commodity price and tighter monetary policy.

9. Fiscal deficit is expected to narrow to 4 percent of GDP in 2024, as the tax income recovered from business and tourism. The government also continues the fiscal consolidation where higher capital spending and a more gradual increase in revenues is expected. The public debt-to-GDP ratio is projected to decrease slightly to 55.7 percent in 2026 and further to 51 percent of GDP in 2029, well below the 60 percent official cap.

10. The current account deficit is expected to narrow to 1.3 percent of GDP in 2026 and further to less than one in 2029. The external debt appears sustainable and resilient to interest rates and growth shocks. It is projected to remain stable at around 26 percent of GDP in the near term. The external risks come from peso depreciation, which would raise external debt as a percentage of GDP or consumption of the international reserve.

11. Fitch affirmed at BBB in June 2024. S&P maintained its rating of BBB+ since November 2022. Moody's kept a Baa2 rating since September 2022. The outlooks are stable for all the three rating agencies.