

Document of
The World Bank

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Report No: PAD1382

PROJECT APPRAISAL DOCUMENT

ON A

PROPOSED LOAN FROM

INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT

IN THE AMOUNT OF US\$40.7 MILLION

AND A

PROPOSED LOAN FROM THE CLEAN TECHNOLOGY FUND

IN THE AMOUNT OF US\$23.9 MILLION

TO THE REPUBLIC OF THE PHILIPPINES

FOR THE

METRO MANILA BRT - LINE 1 PROJECT

February 23, 2017

Transport and ICT Global Practice
East Asia and Pacific Region

This document is being made publicly available prior to Board consideration. This does not imply a presumed outcome. This document may be updated following Board consideration and the updated document will be made publicly available in accordance with the Bank's policy on Access to Information.

CURRENCY EQUIVALENTS

(Exchange Rate Effective July 28, 2016)

Currency Unit = Philippine Peso (PHP)
US\$1.00 = 47.2 PHP

FISCAL YEAR

January 1 – December 31

ABBREVIATIONS AND ACRONYMS

ADB	Asian Development Bank
AFC	Automatic Fare Collection
ATC	Area Traffic Control
AUV	Asian Utility Vehicle
BAC	Bids and Awards Committee
BAU	Business as Usual
BP	Bank Procedures
BRT	Bus Rapid Transit
BRTSM	BRT System Manager
CCTV	Closed Circuit TV
COA	Commission on Audit
CTF	Clean Technology Fund
DA	Designated Account
DBM	Department of Budget and Management
DBP	Development Bank of the Philippines
DED	Detailed Engineering Design
DENR	Department of Environment and Natural Resources
DOTr	Department of Transportation
DPWH	Department of Public Works and Highways
DTS	Detailed Technical Study
EDSA	Epifanio de los Santos Avenue
EE	Energy Efficiency
EIRR	Economic Internal Rate of Return
EMA	External Monitoring Agent
ESIA	Environment and Social Impact Assessment
ESMP	Environment and Social Management Plan
EST	Environmentally Sustainable Transport
GDP	Gross Domestic Product
GHG	Greenhouse Gas
GoP	Government of the Philippines
IA	Implementing Agencies
IBRD	International Bank for Reconstruction and Development
IFRs	Interim Financial Reports

ITS	Intelligent Transport System
IVE	International Vehicle Emissions
LGUs	Local Government Units
LRT	Light Rail Transit
LRTA	Light Rail Transit Authority
LTFRB	Land Transportation Franchising and Regulatory Board
MMDA	Metro Manila Development Authority
MRT	Metro Rail Transit
MtCO ₂ e	Metric Ton Carbon Dioxide Equivalent
NESTS	National Environmentally-Sustainable Transport Strategy
NMT	Non-Motorized Transport
NPMO	National Program Management Office
NSC	National Steering Committee
OP	Operational Policy
PAP	Project-Affected Persons
PDO	Project Development Objective
PHP	Philippine Peso
PIP	Project Implementation Plan
PIU	Project Implementation Unit
PM	Particulate Matter
POM	Project Operations Manual
pphpd	passenger per hour per direction
PPP	Public-Private Partnership
PT	Public Transport
PUBs	Public Utility Buses
PUJs	Public Utility Jeepneys
PUVs	Public Utility Vehicles
RE	Renewable Energy
ROW	Right-of-Way
SBD	Standard Bidding Document
SMP	Social Management Plan
SOE	Statement of Expenditure
TESDA	Technical Education and Skills Development Authority
TSC	Technical Support Consultant
VKM	Vehicle Kilometers
VSL	Variable Spread Loan

Regional Vice President:	Victoria Kwakwa
Country Director:	Mara Warwick
Senior Global Practice Director:	Jose Luis Irigoyen
Practice Manager:	Almud Weitz
Task Team Leader:	Vickram Cuttaree
Co-Task Team Leader:	Victor Dato

PHILIPPINES
Metro Manila BRT - Line 1 Project

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PAD DATA SHEET

Philippines

Metro Manila BRT Line 1 Project (P132401)

PROJECT APPRAISAL DOCUMENT

EAST ASIA AND PACIFIC

0000009381

Report No.: PAD1382

Basic Information			
Project ID P132401	EA Category A - Full Assessment	Team Leader(s) Vickram Cuttaree Victor Dato	
Lending Instrument Investment Project Financing	Fragile and/or Capacity Constraints []		
	Financial Intermediaries []		
	Series of Projects []		
Project Implementation Start Date 01-Jul-2017	Project Implementation End Date 30-Jun-2022		
Expected Effectiveness Date 01-July-2017	Expected Closing Date 30-Nov-2022		
Joint IFC No			
Practice Manager/Manager Almud Weitz	Senior Global Practice Director Jose Luis Irigoyen	Country Director Mara Warwick	Regional Vice President Victoria Kwakwa
Borrower: Republic of the Philippines			
Responsible Agency: Department of Transportation			
Contact: Telephone No.:	Anneli Lontoc (63-2) 723-1507, 727-7960	Undersecretary, Department of Transport arlontoc@yahoo.com	
Project Financing Data(in USD Million)			
[X] Loan	[] IDA Grant	[] Guarantee	
[] Credit	[] Grant	[X] Other	
Total Project Cost:	109.41	Total Bank Financing:	64.60

Financing Gap:	0.00						
Financing Source			Amount				
Borrower			44.81				
International Bank for Reconstruction and Development			40.70				
Clean Technology Fund			23.90				
Total			109.41				
Expected Disbursements (in USD Million)							
Fiscal Year	2017	2018	2019	2020	2021	2022	
IBRD							
Annual	0.00	5.50	17.00	13.00	2.70	2.50	
Cumulative	0.00	5.50	22.50	35.50	38.20	40.70	
CTF							
Annual	0.00	5.20	14.80	1.50	1.45	0.95	
Cumulative	0.00	5.20	20.00	21.50	22.95	23.90	
Institutional Data							
Practice Area (Lead)							
Transport & ICT							
Contributing Practice Areas							
Cross Cutting Topics							
[X] Climate Change							
[] Fragile, Conflict & Violence							
[X] Gender							
[X] Jobs							
[X] Public Private Partnership							
Sectors / Climate Change							
Sector (Maximum 5 and total % must equal 100)							
Major Sector			Sector		%	Adaptation Co-benefits %	Mitigation Co-benefits %
Transportation			Urban Transport		100	20%	80%
Total					100		
<input type="checkbox"/> I certify that there is no Adaptation and Mitigation Climate Change Co-benefits information							

applicable to this project.		
Themes		
Theme (Maximum 5 and total % must equal 100)		
Major theme	Theme	%
Financial and private sector development	Infrastructure services for private sector development	60
Urban development	Urban planning and housing policy	20
Public sector governance	Other public sector governance	20
Total		100
Proposed Development Objective(s)		
The Project Development Objective (PDO) is to improve the efficiency, effectiveness and safety of the public transport system along the Project Corridor in Metro Manila in an environmentally sustainable manner.		
Components		
Component Name	Cost (USD Millions)	
BRT Infrastructure	48.86	
System Management	12.68	
Capacity Building and Concept Development and Dissemination	11.05	
Accessibility and Urban Realm Enhancements	18.01	
Project Outcome Monitoring	1.77	
Project Management	7.88	
Systematic Operations Risk- Rating Tool (SORT)		
Risk Category	Rating	
1. Political and Governance	Substantial	
2. Macroeconomic	Moderate	
3. Sector Strategies and Policies	Substantial	
4. Technical Design of Project or Program	Moderate	
5. Institutional Capacity for Implementation and Sustainability	Substantial	
6. Fiduciary	Substantial	
7. Environment and Social	Substantial	
8. Stakeholders	Substantial	
9. Other	Substantial	

OVERALL		Substantial	
Compliance			
Policy			
Does the project depart from the CAS in content or in other significant respects?		Yes []	No [X]
Does the project require any waivers of Bank policies?		Yes []	No [X]
Have these been approved by Bank management?		Yes []	No []
Is approval for any policy waiver sought from the Board?		Yes []	No [X]
Does the project meet the Regional criteria for readiness for implementation?		Yes [X]	No []
Safeguard Policies Triggered by the Project		Yes	No
Environmental Assessment OP/BP 4.01		X	
Natural Habitats OP/BP 4.04			X
Forests OP/BP 4.36			X
Pest Management OP 4.09			X
Physical Cultural Resources OP/BP 4.11		X	
Indigenous Peoples OP/BP 4.10			X
Involuntary Resettlement OP/BP 4.12		X	
Safety of Dams OP/BP 4.37			X
Projects on International Waterways OP/BP 7.50			X
Projects in Disputed Areas OP/BP 7.60			X
Legal Covenants			
Name	Recurrent	Due Date	Frequency
Section I.A&B, Schedule 2 of LA	Yes		Continuous
Description of Covenant			
The Borrower shall maintain the National BRT Steering Committee, NPMO and PIU throughout Project implementation with a mandate, composition and resources satisfactory to the Bank.			
Name	Recurrent	Due Date	Frequency
Section I.C.1, Schedule 2 of LA	No	January 1, 2020	
Description of Covenant			
The Borrower shall put in place an overall legal, financial and institutional framework acceptable to the Bank for the operation and maintenance of the BRT system in Metro Manila.			
Name	Recurrent	Due Date	Frequency

Section I.C.2, Schedule 2 of LA	No	February 1, 2018		
Description of Covenant				
The Borrower shall enter into one or more contracts with Technical Support Consultants to support the NPMO and PIU in project management, technical support, procurement, monitoring and evaluation.				
Name	Recurrent	Due Date	Frequency	
Section I.E, Schedule 2 of LA	Yes		Yearly	
The Borrower shall prepare and furnish to the Bank for its approval annual work and financial plans containing all eligible Project activities and expenditures planned for the following fiscal year of the Borrower.				
Name	Recurrent	Due Date	Frequency	
Section IF1, Schedule 2 of LA	Yes		Continuous	
Description of Covenant				
The Borrower, shall ensure that the Project is carried out in accordance with the provisions of the ESIA's, including the ESMP, the RPF and RAPs in a manner satisfactory to the Bank.				
Section IF8, Schedule 2 of LA	Yes		Continuous	
Description of Covenant				
The Borrower shall: (a) ensure that any studies to be supported under the Project are carried out under terms of reference satisfactory to the Bank and duly incorporate the requirements of Bank safeguard policies and be publicly disclosed and consulted upon in accordance with Bank safeguard policies; and (b) ensure that any capacity building activities under the Project are consistent with, and pay due attention to, Bank safeguard policies.				
Team Composition				
Bank Staff				
Name	Role	Title	Specialization	Unit
Vickram Cuttaree	Team Leader (ADM Responsible)	Program Leader		EACPF
Victor Dato	Co-Team Leader	Senior Infrastructure Specialist	Co-TTL	GTIDR
Dominic Reyes Aumentado	Procurement Specialist	Senior Procurement Specialist		GGODR
Tomas JR. Sta.Maria	Financial Management Specialist	Financial Management Specialist		GGODR

Arturo Ardila Gomez	Peer Reviewer	Lead Transport Economist	Transport Economist	GTIDR
Camila Rodriguez Hernandez	Peer Reviewer	Senior Infrastructure Specialist	Urban Transport	GTIDR
Helene Bertaud	Country Lawyer	Senior Counsel		LEGES
Frederick Edmund Brusberg	Safeguards Specialist	Consultant		OPSOR
Gerhard Menckhoff	Peer Reviewer	Consultant	Urban Transport Planning	GTIDR
Hope Arandela Gerochi	Team Member	Consultant		GSURR
Kristine May San Juan Ante	Team Member	Program Assistant		EACPF
Maria Luisa G. Juico	Team Member	Program Assistant		GTIDR
Nupur Gupta	Peer Reviewer	Sr Transport. Spec.	Urban Transport	GTIDR
Roberto B. Tordecilla	Safeguards Specialist	Social Development Specialist	Social Safeguards	GSURR

Extended Team

Name	Title	Office Phone	Location
Samuel Zimmerman	Sr Urban Transport Specialist, Consultant		Washington DC
Vildan Verbeek-Demiraydin	M&E Specialist		Washington DC

Locations

Country	First Administrative Division	Location	Planned	Actual	Comments
Philippines	Metro Manila	Manila and Quezon City			

Consultants (Will be disclosed in the Monthly Operational Summary)	
Consultants Required?	Consultants will be required.

I. STRATEGIC CONTEXT

A. Country Context

1. While benefiting from rapid economic growth, the Philippines faces growing income inequality and unequal sectoral and regional distribution of growth. The Government, which came to power in mid-2016, has identified poverty alleviation, accelerating the peace process and addressing crime as key priorities. In the last eight months, the Government has been undertaking a consultative planning process to develop the Philippines Development Plan (PDP) and the Philippines Security Plan to guide implementation of its reform agenda during 2016-22.

2. One of key priorities identified in the PDP is to address public infrastructure gaps, which are widely recognized as binding constraints to job creation, inclusive growth and equitable social development. In the public sector, low tax effort and weak public investment management limited public infrastructure spending to less than 2.5 percent of GDP annually. Economic growth and poverty reduction in the Philippines has not benefited from urbanization gains as much as in other neighboring countries. The country's urbanization trajectory is uniquely affected by, *inter alia*, the archipelagic geography, highly fragmented structure for spatial and infrastructure planning, and poor metropolitan governance. Philippine cities have not been able to keep pace with explosive urban population growth as evidenced in infrastructure and housing deficiencies, traffic congestion and environmental pollution.

3. To enable broad-based access to development opportunities, the Government calls for increased investment in human capital and improved access to infrastructure. The Government has recognized the need to expand and upgrade the quality of transport infrastructure, support capacity development (institutionalizing inter-agency coordination, improving business processes improvements, and progressively enhancing governance in the sector) and promote the introduction of innovative and international good practices in developing and managing transport infrastructure. Infrastructure is one of the key priorities in the Government 0-10 point agenda with the objective to increase public investment in infrastructure from 1.9% during the previous 6 years to 5.4% of GDP. Improving traffic congestion through investment in mass transportation is considered essential in Manila and other growing cities such as Cebu and Davao.

B. Sectoral and Institutional Context

4. The Philippines is one of the fastest urbanizing countries in East Asia, with more than 60 percent of the total population living in urban areas. With about 12 million people, Metro Manila¹ (MM) dominates the economic scene by generating 33 percent of the country's GDP. However, despite its importance to the Philippine economy, Metro Manila suffers from infrastructure and housing deficits, traffic congestion, air and water pollution and an explosion of informal settlements, all of which have undermined Manila's competitiveness, contribution to growth and quality of life.

5. From 2010 to 2015, the population of Metro Manila expanded at an annual rate of 1.58

¹ "Metro Manila" means the territories comprising the boundaries of metropolitan Manila, as delineated in Section 2 of Presidential Decree 824, dated November 7, 1975.

percent while the total number of motor vehicles registered in Metro Manila increased at an annual, compounded rate of 3.7 percent with no signs of it abating. In 2012 there were 2.2 million vehicles using the major thoroughfares of Metro Manila, with private vehicles constituting 70 percent of the total volume on most major arterial roadways. Other than a small extension of Light Rail Transit (LRT) Line I, the capacity and coverage of the Metro area's arterial roadway and public transport systems has not grown significantly in almost a decade.

6. Congestion is seen as one of the most important issue to be addressed in Metro Manila. Average weekday traffic (minimum and maximum speed) along major corridors of Metro Manila is among the slowest in the region. Commuters in Metro Manila face traffic that ranges from 20 to 38 kilometers per hour (kph), slower than the range in Jakarta (23 to 43 kph), Kuala Lumpur (28 to 52 kph), Singapore (40 to 55 kph) and Bangkok (30 to 53 kph). Slow travel speed increases uncertainty of transport operations, impact road user productivity, increases pollution and reduces the quality of life for all. Moreover, current regulation encourages excessive dwell times on the curb and aggressive behavior on the road (e.g. racing to bus/jEEPney stops and blocking other drivers from loading passengers).

7. Public transport operations. Public transport in Metro Manila is primarily provided by a combination of low level-of-service, unsafely operated Public Utility Buses (PUBs) and Public Utility Jeepneys (PUJs or minibuses). Approximately 50,000 registered PUJs and roughly 3,000 PUBs are in daily operation and carry the majority of public transport users. Furthermore, thousands of provincial buses plying in and out of Metro Manila add to congestion, emissions and accidents. Buses and jeepney drivers operate as “independent contractors,” in effect renting vehicles from their owners. Drivers compete with each other for passengers on the street, resulting in chaotic ground-level conditions.

8. Rail operations. Metro Manila has a small size rail transit system, which includes three lines, i.e., LRT-1, LRT-2, and MRT-3. With a total length of 46 km, the system currently carries only about 5 percent of total motorized trips in Metro Manila. The existing LRT lines and MRT-3 incur significant annual losses paid for by the public sector. This, combined with the large upfront capital costs of rail transit, add to the difficulty of scaling up the rail transit system to meet a larger share of transport demand. While MRT-3 line (a PPP undertaking) is under direct oversight of the Department of Transportation (DOTr), the Light Rail Transit Authority (LRTA) manages the LRT-1 and LRT-2 lines. The LRTA is a DOTr-attached government corporation responsible for the construction, operation, maintenance and/or lease of light rail transit systems and ancillary services in the Philippines. LRT Line 1 has been recently turned over to a private concessionaire for day-to-day operation and maintenance, and the construction of the extension to Cavite, following a successful PPP competitive process

9. Institutional arrangements. Several government agencies at national and local levels are responsible for management and operations of urban transport in Metro Manila. The Department of Transportation (DOTr) is responsible for policy, planning and regulation of transportation and communications services in the country; the Land Transport Office (LTO), an agency attached to DOTr, is responsible for driver licensing and vehicle inspection and registration; and the Land Transport Franchising and Regulatory Board (LTFRB) (also under DOTr) is responsible for granting franchises and setting fares for public transport passenger and freight services. The

Department of Public Works and Highways (DPWH) has the mandate for planning, constructing, and maintaining the country's national road system which overlaps with local road networks inside urban areas. The respective mandates of different departments and agencies have inherent overlaps in the enforcement of traffic rules and control of public transport operations.

10. There are 16 cities and 1 municipality comprising Metro Manila, all headed by local chief executives. The Metro Manila Development Authority (MMDA) was created in 1994 under the Office of the President to treat Metro Manila as a special development and administrative region, in particular by planning metro-wide, cross cutting services such as transport, water supply and sanitation. However, its intended role as the sole traffic authority in Metro Manila was pre-empted by the enactment of the Local Government Code, which gave local government units traffic management functions within their political jurisdiction. Lack of financial and human resources further constrains the ability of MMDA.

11. Cost of traffic congestion. With more cars now on the road, poor connection between mass transportation options, and inefficient and inadequate public transportation, traffic congestion has become a key constraint to Metro Manila's growth. Initial data from the World Bank-Open Traffic Project reveals that average weekday traffic – minimum and maximum – along major corridors of Metro Manila is among the slowest vis-à-vis other cities in the region such as Surabaya, Jakarta, Kuala Lumpur, Ho Chi Minh, Hanoi and Bangkok.² The reduced travel speed increases uncertainty of transport operations and impacts road user productivity as more time is spent on the road. Transport costs (vehicle operating cost and longer travel time) accruing to Metro Manila road users is estimated at PHP 2.4 billion a day in 2012 and will increase to PHP 6.0 billion per day by 2030 if no interventions are made.³ Travel costs also have important equity implications as low income users spends at least 20% of their income on transportation. Aware of the mounting social and environmental costs of traffic congestion, the Government targets to increase infrastructure spending for public transportation and identified the need to address traffic congestion in Metro Manila as a priority.

12. Carbon emissions. Air quality will also continue to deteriorate if nothing will be done. Carbon emissions from the transport sector have increased by 6 to 12 percent per year since 1990, and transport's relative share of national greenhouse gas emissions has more than doubled, from 15 percent in 1990 to about 33 percent in 2009. At this rate of growth, GHG emissions from road transport, estimated at 24 MtCO_{2e} in 2007, are projected to increase to 87 MtCO_{2e} by 2030.

13. Gender. Women account for 55 percent of public transport users in Metro Manila, and experience a unique set of challenges. Taking public transportation poses a challenge to women due to overloaded jeepneys where pickpockets and gropers thrive. They also must pay multiple fares on unconnected services because of the need to undertake multiple activities during a single trip from home to work and back. Women face safety and security issues in accessing public transport in the absence of sidewalks and poor street lighting. These issues are especially magnified when trips need to be made during off-peak hours, particularly at night, when public transport services are irregular and personal security is most vulnerable.

² Krambeck, H. et. al, (2015), Open Traffic: Big Data Challenge Project Completion Report, World Bank

³ JICA (2014), Roadmap for Transport Infrastructure Development for Metro Manila and its Surrounding Areas.

14. Transport initiatives for Metro Manila. The Metro Manila Urban Transport Integration Study (MMUTIS), developed during 1996-1999, identified a number of investments in public transport, including MRT, bus systems, road infrastructure, and integrated public transport terminals. A 2007 study carried out by USAID identified a few corridors for prioritized bus improvements emulating some of the characteristics of a BRT system. The National Environmentally Sustainable Transport Strategies (NESTS) carried out in 2011 supported mainstreaming environmentally sustainable transport systems that have low carbon intensity and promote environmentally friendly transport modes. In 2013 JICA prepared a road map for transport infrastructure development for Metro Manila and its surrounding areas, developing a short-term and medium-term investment scenario. In 2015, JICA completed the MMUTIS Update and Capacity Enhancement Project. However, implementation of these plans has been delayed due to multiple challenges as discussed in the above paragraphs, including inadequate financing, fragmented institutional arrangements, and poor technical and project implementation capacity of government agencies.

15. Metro Manila BRT Line 1 Project. In 2009, the Government of the Philippines started the implementation of the Cebu BRT which potentially will become the first BRT in the Philippines. The Cebu BRT is financed by the Government of the Philippines, the World Bank, Clean Technology Fund (CTF) and the Agence Française de Développement (AFD). The dialogue initiated during the preparation of the Cebu BRT project prompted DOTr to look at the potential of the BRT as a cost-efficient solution to public mass transport in other Metro Manila corridors. The proposed Manila BRT - Line 1 project is part of DOTr's medium-term initiatives in improving public transport systems in Metro Manila. It is focused on improving the public transport system on one of the strategic transport corridors in Metro Manila, i.e., the España Boulevard - Quezon Avenue – Quezon Memorial Circle corridor, by developing a 12.3 kilometer BRT system, the first BRT line in Metro Manila. This route is not currently served by any form of mass transit. About 300,000 passengers stand to benefit from the BRT system once it is operational. The infrastructure investment project also provides an opportunity for DOTr to strengthen its planning and implementation capacity through learning by doing. There are two other BRT systems in the pipeline for Metro Manila: (i) the Epifanio Delos Santos Avenue (EDSA) BRT, a 48.6 kilometer BRT corridor that will traverse, EDSA, Ayala Avenue, Ortigas Avenue, Bonifacio Global City in Taguig and the Ninoy Aquino International Airport (NAIA) and, (ii) the C-5 corridor line that will connect the Commonwealth area to South Luzon Expressway (SLEX). The EDSA BRT was recently approved by NEDA Board on September 2016. The implementation of the Metro Manila BRT Line 1 will be done in close coordination with the future BRT projects to ensure compatibility between the different systems.

16. Philippine Investment Plan for the Clean Technology Fund. The project forms a crucial part of the country's Clean Technology Fund (CTF) Investment Plan. The Philippines CTF Investment Plan, approved in 2009, identifies \$50 million in financing for public transport improvements in Cebu and Metro Manila, of which \$23.90 million are proposed for Manila. The CTF plan identifies bus systems as a cost effective method of reducing transport related GHG emissions, and is supporting them as part of a broader \$250 million package of CTF investments that include renewable energy generation and energy efficiency investments.

C. Higher Level Objectives to which the Project Contributes

17. Link to the Philippine Country Partnership Strategy. The overall goal of the World Bank Group's Philippine Country Partnership Strategy (CPS) for FY15-18 is inclusive growth through poverty reduction and shared prosperity. The project contributes to the CPS Engagement Area 3 on Rapid, Inclusive and Sustained Economic Growth by supporting the Government's target of increasing the ratio of public investment to GDP and providing one urban corridor with improved transit services. Also consistent with the CPS, the project will contribute to the knowledge agenda by helping the Government to plan and implement the first BRT line in Metro Manila and provide a framework to scale up public transport improvements in other parts of the Metropolis. The project is also aligned with the pillars of core and transformational engagements outlined in the World Bank Group Infrastructure Strategy Update, FY2012-2015.

18. Impact on poverty alleviation and shared prosperity. The Project is aligned with the Twin Goals of the World Bank Group as it will benefit all public transport users, including the very poor people who cannot afford or use a motorcycle or car. The high cost and poor performance of the public transport in Metro Manila are impediments to employment for the poor. Travel time between homes in the lower cost residential areas and scattered employment centers are high, up to two hours each way. The need to utilize multiple vehicles (e.g., motorcycle taxi, jeepney, bus, and then jeepney again in one trip) makes trips inconvenient and extremely costly, taking up to 40 percent of household income. The project will address this by improving the quality and efficiency of public transport services on an important transport corridor. By providing an affordable, convenient and reliable public transport option, the project is expected to contribute to making job and education opportunities more accessible especially for the poor residing along the corridor. The project also benefits women, who use public transport much more frequently than men and typically carry bags and children. The project design also takes into consideration the needs of people with disabilities.

19. CTF Rationale. The Clean Technology Fund (CTF) involvement will deliver climate benefits directly through the project as well as through the broader strategic promotion of the BRT concept in the Philippines. Implementing the BRT Line 1 alone in Metro Manila is expected to yield a total saving of 2.6 million tonnes of CO_{2e} over 20 years, or an average of 206,892 tonnes CO_{2e} per year.

II. PROJECT DEVELOPMENT OBJECTIVES

A. PDO

20. The Project Development Objective (PDO) is to improve the efficiency, effectiveness and safety of the public transport system along the Project Corridor in Metro Manila in an environmentally sustainable manner.⁴

B. Project Beneficiaries

⁴ The Project Corridor is defined based on the alignment of the BRT Line 1 which starts from Manila City Hall and ends at Quezon Memorial Circle through España Boulevard and Quezon Avenue.

21. The project will directly benefit about 300,000 public transport passengers daily at the start of the operation of the BRT system, more than 75% of whom fall into the bottom 40% in terms of income. Women (accounting for about 50% of the BRT passengers), children, the elderly and people with disabilities will particularly benefit from a safer and more comfortable transport option. The project will also improve (i) the capacity of government departments and agencies to better plan and manage urban transport, (ii) the regulatory environment for the private sector to participate in urban transport development, and (iii) opportunities for the private sector to support transit oriented development. Indirectly, all corridor residents and users in general, including pedestrians, will benefit from the reduced traffic congestion and accidents along the project corridor.

C. PDO Level Results Indicators

22. The key result indicators listed below focus on measurements along the project corridor:

- a. Number of direct project beneficiaries, disaggregated by gender (core indicator to measure overall effectiveness of the project in providing a transport service option).
- b. Average travel time for public transport users during AM peak from Manila City Hall to Quezon Memorial Circle station (measure of efficiency).
- c. Annual GHG emissions savings of transport along the project corridor (CO₂e tonnes per year) (measure of environmental sustainability).
- d. Percentage of beneficiaries satisfied with BRT services, disaggregated by gender (reflects perception of overall effectiveness).
- e. Number of Public and non-motorized transport user accidents along the project corridor (measure of safety).

III. PROJECT DESCRIPTION

A. Project Components

23. The project consists of six main components:

- a. **Component 1: BRT Infrastructure (US\$ 48.86 million, of which IBRD/CTF is US\$ 30.78 million).** This component finances the development of BRT infrastructure along the Project Corridor, including, among others, construction of bus terminals and stations, segregated busways, segregation barriers, and sidewalks, road reconstruction, intersection improvement, landscape strips, warning and directional signage, advanced direction signs, carriageway markings, and associated traffic management infrastructure (such as pedestrian walkways), construction of bus depots, including pedestrian crossing facilities. The GOP will use counterpart funds to finance the provision of compensation and assistance for land acquisition and resettlement related to the development of BRT infrastructure along the Project Corridor.
- b. **Component 2: System Management (US\$ 12.68 million, of which IBRD/CTF is US\$ 1.07 million).** This component finances (i) traffic engineering and management measures along the Project Corridor including, among others, intersection optimization, parking

management, u-turn slots and improved signals; (ii) development of an intelligent bus operational support and management system; (iii) development of IT and marketing functions of the BRT system management; and (iv) provision of technical support consultants for the planning, design and implementation of the Project and the promotion of BRT.

- c. **Component 3: Capacity Building and Concept Development and Dissemination (US\$ 11.05 million, of which IBRD/CTF is US\$ 0 million).** This component includes carrying out of feasibility studies, training and capacity building activities to support the application of the BRT in Metro Manila, and other cities of the Borrower, including public outreach.
- d. **Component 4: Accessibility and Urban Realm Enhancements (US\$ 18.01 million, of which IBRD/CTF is 18.01 million).** This component supports carrying out of specific activities aimed at integrating BRT transport and land use development in Metro Manila by establishing physical connections from stations and terminals to major trip attractors and generators, and through improvement of the pedestrian environment.
- e. **Component 5: Project Outcome Monitoring (US\$ 1.77 million, of which IBRD/CTF is US\$ 1.77 million).** This component finances monitoring and evaluation activities, including, among others, service, data collection, reporting and analysis. The component will provide inputs to DOTr's own transport database used in its system planning and management activities.
- f. **Component 6: Project Management (US\$ 7.88 million, of which IBRD/CTF is US\$ 7.88 million).** This component finances provision of technical and operational support for the day-to-day management, coordination, supervision, procurement, financial management, environmental and social management, including measures for mitigation of social or environmental impacts, and communication of Project activities.

B. Project Financing

1. Lending instrument

24. The lending instrument for this project will be an Investment Project Financing (IPF) Loan, due to the nature of the Project.

2. Project Cost and Financing

25. The project will be financed by a World Bank loan (US\$40.70 million) and CTF loan (US\$23.90 million). GoP will provide US\$44.81 million as counterpart funds. The IBRD Loan is a variable spread loan with a final maturity of 25 years, including a grace period of 10 years. The CTF Loan was approved by the CTF on January 13, 2016 and has a 20-year maturity, including a 10-year grace period.

26. The CTF loan (approved in 13 January 2016) of US\$23.90 million is offered with a

service charge of 0.75 percent per annum on the disbursed and outstanding loan balance and a 20-year maturity, including a 10-year grace period, with principal repayments at 10 percent for years 11-20. Principal and service charge payments accrue semi-annually. A management fee equivalent to 0.18% of the undisbursed balance of the loan will be charged, in which case the fee payments will accrue semi-annually after loan signing.

Indicative Project Cost (US\$ Million)

Components	TOTAL	CTF	IBRD	WB total	GoP
1. BRT Infrastructure	48.86	12.79	17.99	30.78	18.08
BRT Infrastructure	30.78	12.79	17.99	30.78	-
Land Acquisition & Resettlement	18.08	-	-	-	18.08
2. System Management	12.68	0.4	0.67	1.07	11.61
3. Capacity Building	11.05	-	-	-	11.05
4. Urban Enhancements	18.01	6.97	11.04	18.01	-
5. Project Outcome Monitoring	1.77	1.77	-	1.77	-
6. Project Management	7.88	-	7.88	7.88	-
Base Cost Total	100.25	21.93	37.58	59.51	40.74
Contingency	9.06	1.97	3.02	4.99	4.07
Front-end fee	0.10	-	0.10	0.10	-
TOTAL	109.41	23.90	40.70	64.60	44.81

C. Lessons Learned and Reflected in the Project Design

27. The following lessons are based on the Bank's experience in BRT projects in developing countries, most recently with the Cebu BRT in the Philippines.

28. Setting up an institutional basis that is conducive to coordinated planning and regulation is critical to the success of urban transport projects. This project will support the development of a national framework for policy, proposal development, and oversight of BRT, centered on the BRT-National Program Management Office (BRT-NPMO) and a BRT National Steering Committee. The Metro Manila BRT Line 1 will be managed by a dedicated BRT System Manager with the oversight of DOTr or its designated entity (as System Owner) which has the mandate to oversee public transport systems and ancillary services, including bus services in the metropolis. This institutional arrangement, which is in line with international good practices, will facilitate better coordination in public transport planning and management in Metro Manila. Successful projects include the Lima, Mexico and Colombia BRT program and the specific arrangement will be confirmed during implementation. Risk of delays in the start of BRT operation is addressed by ensuring that the potential bus operators are shortlisted before the commencement of the BRT trunk corridor works.

29. BRT design should be based on an approach which is: comprehensive (land use-transport integration and multi-modal requirements are addressed), continuous (plans, planning data and tools are updated on a regular basis), cooperative (all stakeholders participate, communications

plan and stakeholder analysis are developed), connected (capital projects are consistent with adopted long range plans), championed (there is ownership and support at the highest political level), and adaptive (scale-up interventions can be scaled up in an incremental fashion and design is flexible). These are part of the overall design of the Metro Manila BRT Line 1 Project.

30. It is critical to understand how politics and key stakeholder groups would impact the formulation, implementation, and enforcement of public transport plans, policies, and regulations. These matters have been given due attention during the preparation/design of the Metro Manila BRT Line 1 Project through two-way communication with broad stakeholders throughout the life of project to ensure that their needs and concerns are reflected in the project planning, design and implementation arrangements and adequately addressed through appropriate measures that are to be implemented throughout the life of the project.

31. The BRT design and construction will follow a context-sensitive approach rather than any pre-selected one-size-fit-all standards, as travel patterns, spatial conditions, traveler behaviors, existing infrastructure, and local legal frameworks and politics vary in different cities. Affordability and implementability, as well as compatibility with the future BRT projects being considered should also be a driving factor during project implementation.

32. The success of the first BRT line in a city is critical to ensure further support to the BRT concept and subsequent lines being developed. The implementation of a BRT line often generates concerns and opposition due to the difficulty to incorporate existing operators and operational constraints (such as left turn). There are now proven ways to address these issues and a good engineering design aware of recent development in left-turn management and good traffic lights can make a difference. The project addresses this risk by ensuring a TSC is hired to advise the design and implementation of the BRT.

33. Such success is also very dependent on political support and ownership and quick implementation. Lack/diminishing of political support is at the heart of compromise in design standards (such as not providing segregated lanes) that can lead to failure or limit the BRT success. Delays in implementation typically start a vicious cycle, with increased traffic and more unhappy motorists. The implementation of the Metro Manila BRT Line 1 will take into consideration lessons from the implementation of the Cebu BRT by giving a strong emphasis on the mobilization of key consultants during the first year of implementation.

34. Early development and implementation of a formal, multimedia communications strategy addressing the spectrum of stakeholders is critical. Multimedia communications have been a key feature of project preparation and such communication will be continued during project implementation.

IV. IMPLEMENTATION

A. Institutional and Implementation Arrangements

35. The project will be implemented by DOTr, which will have the overall responsibility for

its coordination and management.⁵ DOTr has set up a National Steering Committee (NSC) on October 18, 2012 for overall policy formulation and oversight of bus rationalization in the Philippines. NSC membership includes all national and city-based agencies, including representatives of the City of Manila and Quezon City. A Memorandum of Understanding (MoU) will be signed among all agencies laying down key responsibilities and obligations during the design, implementation and operation of the system.

36. A National Project Management Office (NPMO) has been set up on October 9, 2012 to support the mandate of NSC and oversee implementation of all bus improvement plans, policies, standards, regulations, and projects nationwide. A Project Implementation Unit (PIU) consisting of representatives from DOTr, MMDA, and the City of Manila and the Quezon City and specialist consultants will be established within NPMO to carry out day-to-day project implementation, including project management, financial management, procurement, environmental and social safeguards, monitoring, and reporting. A Technical Support Consultant (TSC), to be funded in part under both the on-going Cebu and Manila BRT projects, will assist DOTr and PIU in the areas of project management, technical support, monitoring and evaluation.

37. **Operation Business Model.** The delivery model of the Metro Manila Line 1 is initially proposed as a PPP model with the public sector responsible for the delivery of infrastructure as well as planning, regulating, operating and controlling the system. The Metro Manila BRT Line 1 will be managed by a competent System Manager under the oversight of DOTr or its designated entity (as System Owner). The System Manager will assist the DOTr or its designated entity (as System Owner) in managing the day-to-day operation of the BRT system, including contracting out the BRT operations (including operation and maintenance of buses to be brought in by operators, stations and terminals, depots, fare collection systems, etc.) to private operators through competitive contracting, as well as in monitoring and supervising the performance of the entire system. The feasibility study examined the potential revenue that a BRT system would generate and indicated that a PPP arrangement could potentially be developed for the private sector to procure buses, operate the BRT and provide support services (fare collection, maintenance of support infrastructure, etc.). The different options for the scope of services and incentive mechanisms for the private sector will be assessed more in details during implementation.

B. Results Monitoring and Evaluation

38. A results framework has been developed (see Annex 1) and will provide the basis for monitoring and evaluation (M&E) of the project. The framework was discussed with the client to ensure understanding and agreement. DOTr has not conducted similar M&E before and thus local capacity is low. As a result, the project includes a Project Outcome Monitoring component that would finance M&E activities. A capable consultant will be engaged to carry out necessary

⁵ The project encompasses two cities which both have limited capacity for preparing and implementing major infrastructure projects. It has been the practice in Metro Manila, where DOTr is based, that national government agencies are responsible for major infrastructure projects. However, the two cities have been involved in the project planning and preparation, and will also be involved in project implementation.

surveys and studies to assist DOTr in measuring the achievements of the outcome and intermediate indicators during project implementation. Public transport user satisfaction surveys will be conducted before, during and after project implementation to regularly assess citizen feedback. The intermediate indicators that track project implementation in detail will also be monitored and reported semi-annually in the Implementation Support and Results Reports (ISR) to be prepared by the Bank team.

C. Sustainability

39. According to the financial analysis (see Annex 5), the Metro Manila BRT Line 1 is expected to cover all recurring costs, including bus purchase or lease cost, vehicle operating costs (fuel, drivers, service personnel, maintenance, etc.), and the costs of management of the BRT system (System Manager, control center personnel, terminal staff, fare collection cost, infrastructure maintenance, rapid response vehicles).

40. In addition, the project addresses issues of sustainability by directly supporting policies that advance broad societal interests over the long term, e.g., building political support for public transport sectoral and institutional reforms, and developing National Government and Local Government institutional capacities in addressing integrated land use and transport planning, traffic management and public transport. By managing specific concerns of PUJ and PUB operators and drivers, and putting in place a mitigating framework, the project would lay the basis for sustainable reform of bus operations.

V. KEY RISKS AND MITIGATION MEASURES

41. The overall risk is considered **Substantial**. The risks envisaged in those risk categories that are rated substantial and the risk management measures being put in place are discussed below.

42. Political and Governance Risk. The Philippines conducted national elections in mid-2016 and the current administration has been in place for almost 8 months. The new administration won the elections on a change agenda and brought in new teams and priorities aligned with this agenda. The government structure remained as is and new Cabinet Secretaries and other key officials have been recently appointed. The country's new Philippines Development Plan (PDP), which will provide the framework and directions for the medium-term development agenda from 2017-2022 was approved by the NEDA Board on February 20, 2017. With PDP approval, we expect more specific targets and projects to be developed for the sectors and implementing agencies. Given that the transition process is not yet fully completed, the country's political and governance risk is considered substantial.

43. These risks are being addressed through continuous engagement between the national and local governments in the planning, design, and implementation of the project. Formal endorsement of the Project has been sought from the two LGUs as part of the government's internal project approval process. Risks related to unsolicited proposals for other mass transit options have been mitigated by the establishment of the National Steering Committee (NSC) that promotes the BRT project. With support from the project, the NSC will lead the development of

a clear national policy on giving priority to BRT as a highly efficient and effective mass transit option.

44. From a broader country perspective in order to improve transparency and build greater resiliency to integrity risks the Government has been implementing, with support from the Bank, an "Integrity Management Program" (IMP). It is a national program that several departments have adopted in the first phase, including DPWH, the Department of Health and the Department of Social Welfare and Development. It is expected that additional departments will commence implementation of the IMP under the second phase, currently underway.

45. One of GoP priority is to obtain emergency powers to deal with traffic congestion in Metro Manila and other areas. The expectation is to improve decision making and support complex institutional reforms. This will require legislation and the exact scope of the powers has yet to be determined by the Philippine Congress. The specific content of the draft bill is not final and it is difficult to assess at this stage if the bill will pass, what would be the final scope, and how this would be used in practice. In any case, the Bank procurement and safeguards guidelines will apply to the Manila Line-1 BRT during implementation.

46. Institutional Capacity for Implementation and Sustainability. DOTr, Manila City and Quezon City do not have experience in building or managing high quality bus transit and corridor improvement systems. They may not be able to find qualified and suitable system manager, and bus operators. Also, the early experience of DOTr with the Cebu BRT reflects capacity gaps, especially related to slow procurement. At this time, there are significant delays in the procurement of the Technical Support Consultant (TSC), which is one of the critical elements for that project to strengthen institutional capacity. Finalization of the recruitment of the TSC would need to be accelerated. In addition, under this project, training and the development of robust governance structures and appropriate procurement processes to select the most qualified players would be undertaken.

47. Fiduciary. Considering the limited experience of DOTr and the LGUs with Bank processes and systems for FM, procurement, and governance and anti-corruption, and learning from the extensive delay in selection of key consultants under Cebu BRT, the fiduciary risk under the Project is substantial, which will be mitigated through a range of measures for strengthening the FM and procurement functions as detailed in Annex-3.

48. Environment and Social Risks. The potential loss of employment and livelihood by some Public Utility Vehicle (i.e. bus and jeepney) operators, drivers and support workers is a major social risk. In addition, the implementing agency's lack of familiarity with relevant Bank social and environmental safeguards guidelines, as well as safeguard capacity constraints may lead to implementation delays. In order to manage these risks; (a) most PUV operators will be allowed to continue providing services on the corridor until their current franchises expire, giving them adequate time to change their business models, (b) the project will also provide direct assistance to affected jeepney operators, including new jeepney operation opportunities, re-training, and livelihood restoration (see more details in the next paragraph on stakeholder risk); and (c) the Bank will provide extensive training on Bank safeguard policies, both at the local and national levels and will also provide limited technical support to the PIU on hiring and managing

environmental and social safeguards consultants.

49. Stakeholder Risk. Stakeholders especially those bus and jeepney workers (as mentioned above), as well as private vehicle drivers, private land developers, and others who are benefitting from the current system may resist the proposed new BRT operation and could jeopardize project implementation. In order to manage these risks, a proactive two-way communications program has been part of the preparation process. Risk management during project implementation and operation includes continuous public communications, franchise and route restructuring and training, re-employment and sustainable livelihood programs for affected drivers and conductors and support crew and their families.

VI. APPRAISAL SUMMARY

A. Economic and Financial Analyses

50. Economic Analysis. A detailed economic analysis was conducted for investments in the public transport system (including infrastructure, ITS, and ATC), traffic engineering, management and safety, urban environment improvements and project management, which together account for over 95 percent of the total project cost. The majority of the project benefits comes from savings in travel time and reductions in vehicle operating costs. The economic analysis also takes into consideration benefits due to reducing externalities (e.g. reduction in accidents and greenhouse gas (GHG) emissions as a result of transport modal shift such as from cars/motorcycles/jeepneys to buses). The project is expected to deliver an economic internal rate of return (EIRR) of 15.35%. A sensitivity analysis evaluated (i) a capital cost increase of 10 percent; (ii) a decrease in benefits of 10 percent (e.g. increases in travel times and vehicle operating costs); and (iii) the combination of both capital cost increase and decrease in benefits. In all three scenarios, the EIRRs are above the discount rate of 12 percent. See Annex 5 for further details.

51. Financial Analysis. Once implemented, the improved bus system is expected to be financially sustainable over its operating life. Total annual recurring costs (including direct operating cost, system management, bus purchase, infrastructure maintenance, and technical support consultants) are expected to be PHP 2.3 billion (about US\$ 51 million). Revenues from bus fares and commercial activities (advertising) in the opening year are projected to be PHP2.5 billion, of which 92 percent is derived from fares (estimated at PHP 10 per passenger per trip). Revenues are expected to grow as passenger demand grows in the following years. Fares on the new BRT system are assumed to be the same as currently charged on the PUJs (ranging from PHP10 to PHP 20), despite the service standards being higher.

52. GoP will be responsible for providing counterpart funding for land acquisition, Component 2 (System Management), Component 3 (Capacity Building) and for debt servicing. These expenditures will be covered by the Government budget and potential official development assistance from other donors.

B. Technical

53. Strategic Context. The proposed BRT Line 1 is part of the Strategic Mass Transit Network planned by DOTr for Metro Manila. It will be the first BRT to be developed in this metropolitan region and is intended to demonstrate the benefits and potential of BRT. It will run on a strategic transport route cutting diagonally through upper half of Metro Manila. This route is not currently served by any form of mass transit.

54. Project design seeks to avoid, minimize and manage key delivery risks in implementation, including social impact, particularly the impact on existing jeepney operators, environmental impact, land acquisition, and potential opposition from stakeholders. The adopted technical design does not attempt, initially, to serve all identified public transport demand within the corridor. Within the first ten years of operation new stations will be placed relatively far apart, positioned where land acquisition is not required. No passing lanes will be provided at any station to avoid the need for taking extra space from other traffic, although “reservoir passing lanes” will be considered at stations where space is available and traffic engineering measures will also be used to provide bus priority. During this time most of the existing Public Utility Jeepney (PUJ) services will continue to operate; they will provide additional service for intermediate locations and reduce the overall impact on the existing transport system. Infrastructure to support this level of service is defined to sit within the confines of the existing road right of way, negating the need for land acquisition and managing the overall environmental impact.

55. Key design considerations. The proposed project follows the principles of BRT and adopts key BRT features. It focuses on improvements to public transport, treating the travel mode in a holistic manner. It actively considers travel patterns of current users of the corridor and the inconvenience endured by those travelers. It treats public transport as a system with a series of interventions required to improve the function, the operation and level of service.

56. Dedicated BRT bus lanes will be installed in the center of the carriageway between Manila City Hall and Quezon Memorial Circle by reallocating existing lanes and with due consideration to the avenue of trees along the alignment.

57. The BRT stations will be located within the bus lane environment (on the section between Manila City Hall and Quezon Memorial Circle). “Reservoir space” instead of overtaking lanes will be provided at stations where space is available, to minimize land acquisition while still providing flexibility for bus operation. Traffic engineering measures such as bus queue jumpers and bus signal priorities will also be used to improve efficiency and reliability of bus operations. Level boarding and alighting will be provided at all stations where dedicated bus lanes are provided to provide better access to physically challenged persons and also facilitate fast boarding and alighting.

58. Service crews will be stationed at every station to monitor station environment and also provide any necessary assistance to passengers. CCTV and other surveillance equipment will also be installed on every bus and station to ensure safety and security. Signalized at-grade pedestrian crossings will be provided at all stations, and foot over bridges will be added in locations where there are heavy and fast vehicle flows, to ensure the road safety of BRT users.

59. Based on passenger demand forecasts, a “direct service” operational plan is proposed. Regular BRT services will be operated between Manila City Hall and Quezon Memorial Circle on dedicated BRT lanes constructed by the project, with both 18m and 12m long buses, fueled with Euro IV diesel and equipped with air conditioning, multiple doors, and Intelligent Transport Systems (ITS). Additionally, express bus services that would directly connect major origins and destinations of people travelling along the corridor will also be provided. Reservoir passing lanes and “virtual” passing lanes will be provided at selected stations where land and space is available to facilitate more flexible BRT operations and increase the capacity of the system. It is expected that the capacity of the system will not be exceeded by growing demand until 2030, and by that time the system will need to be upgraded in order to continue to meet the demand. All technical and operational solutions, including the timing for introduction of the articulated buses will be further assessed during the detailed design stage.

60. Automatic fare collection (AFC). An integrated automatic fare collection system, which is being implemented, by the DOTr and LRTA for all urban rails in Metro Manila will be used for BRT Line 1, and it will be further expanded to cover regular bus services in the future.

61. Public transport integration. The project will finance interchange stations and good quality pedestrian environment to improve connection between BRT Line 1, LRT 1 and MRT 3, as well as feeder bus/jeepney services. Bicycle parking will also be provided at or near bus stations. The project also takes into consideration the planned MRT 7. Once the design of MRT 7 is developed, interchange stations would be identified and designed to facilitate seamless transfers between MRT 7 and BRT Line 1. The project will also ensure that it will be fully integrated with the EDSA BRT line (intersection along Quezon Avenue) that was recently approved by NEDA in September 2016, and compatible with future BRT projects in Manila. The DOTr-BRT National PMO will be supervising all BRT projects which will ensure that the interoperability components of a BRT system are standardized. These would require (i) defining the specifications of bus stations (location of doors and floor height) and vehicles (e.g. number and location of doors, side doors and floor height), (ii) the use of a common fare policy (including the use of Automatic Fare Collection and fare structure) which should enable a passenger to transfer across BRT and MRT lines, (iii) the use of an Intelligent Transport System to manage the deployment of buses and providing the riding public of transit information (arrival and departure), and (iv) the procurement of all required space for BRT facilities to ensure interoperability requirements. The BRT lines are also expected to be marketed as one integrated transit system, with one logo and one marketing strategy, among others.

62. Vulnerable Population. The BRT system is designed with specific features tailored to address the needs of women, children and people with physical disabilities and follows Bank guidelines on accessibility for people with disabilities (*Bus Rapid Transit Accessibility Guidelines*, World Bank 2007). BRT vehicles will provide for more space for luggage or bags when compared to jeepneys. Upgrades in sidewalks and walking facilities, paired with well-lit stations and surveillance equipment installed on buses and at stations, will provide for safer access to and from public transport. Well-organized public transport stations will reduce conflict between vehicles and pedestrians and provide a safer environment for all public transport users in Metro Manila, particularly women and children.

C. Financial Management

63. DOTr's Finance and Comptrollership Services Unit will be responsible for handling the financial management of the project. The Project Implementation Unit (PIU) will include financial management specialists to be deployed by DOTr to support the project on a day to day basis and will report to the DOTr Finance and Comptrollership Service. An assessment of DOTr's financial management systems concluded that DOTr's financial management systems meet Bank requirements. The assessment noted that DOTr lacks experience in implementing a World Bank financed project, although its capacity is being improved through the on-going implementation of Cebu Bus Rapid Transit Project (Cebu-BRT).⁶ To address this risk, a financial management (FM) staffing plan for the PIU has been developed and staff will be trained on World Bank's financial management policies and procedures. Details of the FM arrangements are in Annex 3.

64. Retroactive Financing. Withdrawals up to an aggregate amount not exceeding US\$2,000,000 from IBRD Loan may be made for payments made for eligible expenditures prior to the countersignature of the Loan Agreements, but on or after September 1, 2016.

D. Procurement

65. DOTr will be responsible for project procurement. The procurement capacity and risk assessment of DOTr noted that it has carried out procurement of large contracts for works, goods and consultant services, and will do so for the Bank-financed Cebu-BRT. However, DOTr's experience to date of procurement under the Bank's Procurement and Consultant Guidelines is still limited. The early experience of DOTr with the Cebu BRT reflects capacity gaps, especially related to slow procurement. At this time, there are significant delays in the procurement of the Technical Support Consultant (TSC), which is one of the critical elements for that project to strengthen institutional capacity, which in turn has prevented the procurement process of civil works from being started and adversely impacting on the overall implementation of the project.

66. The assessment identified areas for further improvement to address the following: (a) inadequate experience with the Bank's Procurement and Consultant Guidelines and Processes; (b) insufficient information available on the annual procurement plan; (c) delays in procurement processes; (d) lack of systematic notification of procurement results; and (e) delays in release of payments. The procurement risk is Substantial. Risk management measures include: (a) maintaining an experienced Procurement Specialist in the PIU; providing relevant training on procurement for PIU and DOTr staff; (b) preparation of a Project Implementation Plan (PIP) with a specific procurement section; procurement plan to be updated at least annually, (c) carrying out advance procurement of key consultants and ensure that technical preparation activities such as designs, land acquisition, safeguard requirements are completed in time to enable the procurement process of civil works to be started without delay, (d) putting in place a mechanism in DOTr for systematic monitoring and reporting of procurement and contract implementation performance, (e) regular publishing of contract award information in PhilGEPS, and (f) conducting annual procurement audits by the Commission on Audit (COA) as part of the

⁶ The World Bank loan for Cebu Bus Rapid Transit Project was declared effective in December 2014 and that project is still in the early stage of implementation.

financial audit. Other improvements in the public procurement system that will be adopted under the project include CSO/NGO and private sector involvement as observers in the procurement process. With assistance from the Bank team, the DOTr has prepared a draft Procurement Plan for the Project that was further reviewed and finalized at negotiations. The PIP was prepared by DOTr, reviewed and found acceptable by the Bank team.

E. Social (including Safeguards)

67. Project design has been guided by consultation with users, interest groups, and stakeholders together with an ethnographic study of transport users. Recommendations from consultations have been taken into account in the project design. The project is expected to have positive social impacts by improving public transportation along the corridor. The technical assistance may also include feasibility studies. Such feasibility studies will be subject to the preparation and review by Bank of TORs to include safeguards policy requirements as applicable to the type of feasibility study. If any of the TOR requires the preparation of safeguards instruments such instruments will also be subject to Bank review. The borrower will refer to the Bank's Interim Guidelines on the Application of Safeguards Policies to Technical Assistance.

68. **Social impact assessment.** An Environment and Social Impact Assessment (ESIA) was conducted during project preparation. Currently there are about 6,384 jeepney and bus drivers, conductors, operators and support workers working on PUJ and PUB routes in the project corridor that could be potentially affected by the project, potentially affecting their livelihoods and reducing their incomes. The project design intentionally seeks to minimize the impact on existing jeepney and bus operations by adopting light BRT infrastructure design options and allowing many existing jeepney and bus routes to continue operating on the corridor and serving transport needs that are not met by the BRT service. The ESIA also sets out options for jeepney operators and drivers who may be affected by the BRT project, including participation in the competitive selection process for BRT bus operations, operating feeder services on restructured routes, operating on new routes in other areas in Metro Manila, or applying for open franchises of services such as bus-for-hire or school/tourist bus services. Technical skills training will be offered to displaced drivers, conductors, support staff, and/or their qualified household members to enable them to be gainfully employed in other sectors. A social management plan has been developed as part of the Environment and Social Management Plan (ESMP) to guide assistance to be provided under the project to the affected families and social groups. The mini bus services, so called AUV (Asian Utility Vehicle) sector in Manila, is unlikely to be affected during construction phase due to their route flexibility, while during the operation phase of the project the AUV sector can serve as feeder to the project. The ESIA also considered the project impacts on ambulant vendors as minor, because (1) vendors are mobile and they can easily shift from one location to the other and adjust their business practices; (2) PUJ/PUBs will be reduced on the project corridor gradually and thus there is time for vendors to move and change their business locations; (3) the project will improve pedestrian environment and attract more public transport and non-motorized transport users along the corridor, and thus improve the business environment and bring more potential customers for ambulant vendors.

69. **Involuntary Resettlement OP 4.12.** Most infrastructure and facilities to be constructed under the project are located within the existing right of way of roads, and thus would not

involve land acquisition. However, about 3.2 hectares of land would need to be acquired for the construction of two bus depots; the specific locations of these depots however have not been finalized by appraisal. DOTr intends to purchase vacant land or land with few occupants. If there are formal or informal dwellers living on the selected sites for bus depots, the project may also need to acquire land for resettlement for those dwellers. Additionally, the project may result in temporary or permanent income loss to establishments along the corridor during construction. Compensation for land acquisition, removal of structures, resettlement site acquisition and development, and potential income losses are estimated to cost about US\$18 million, which will be financed by the government. Actual costs may be lower if the final selection of sites and the final design of stations are able to avoid or minimize dismantling of structures or obstructing access to these structures or properties. DOTr has prepared a Resettlement Policy Framework (RPF) for the Project, acceptable to the Bank, to guide possible land acquisition and resettlement activities that may take place during the project implementation. Before civil works begin at the two bus depot sites, the Borrower will prepare a site-specific RAP(s) for the two bus depot sites.

70. **Women and other vulnerable groups.** Consultations revealed the following key concerns of women, the elderly and differently abled passengers regarding the existing jeepney and bus services, which will be reflected in the design of the proposed BRT system: (a) physical harassment possibly due to overloading; (b) inadequate security; (c) difficulty in travelling with children and luggage; (d) the need for a payment scheme to allow for multiple trips; and (e) public transport design that considers the needs of the elderly and differently abled passengers.

71. **Communication Plan.** A communication plan has been prepared as part of the ESIA and will be implemented by DOTr to ensure that all stakeholders are given accurate, timely and relevant project information during the different stages of the project.

F. Environment (including Safeguards)

72. The project triggers OP 4.01 on environmental assessment. It is classified as a Category A project due to potential negative social impacts on jeepney and bus operators including drivers, conductors and support workers. The project ESIA confirms that the Project will generate significant environmental benefits, including reduction of green-house gas (GHG) emissions and local air pollution. The ESIA also identifies some negative environmental impacts during the construction and operational phases, although most of these are temporary and reversible.

73. **Environmental impact assessment.** An environmental impact assessment was undertaken as part of the ESIA to evaluate environmental issues associated with direct and indirect impacts of the project during the planning, construction, and operational phases. A total of 20 consultations were conducted. The ESIA report details the potential impacts and the concomitant mitigating measures which form the basis for analyzing alternative BRT infrastructure sites and system technologies that will generate the least environmental and social impacts. Dust, waste, noise and vibration will be generated and are to some extent unavoidable during the construction phase. The detailed design for BRT infrastructure will give due consideration to an existing avenue of trees along the corridor alignment. Alternative options (in terms of the specific location, size, and shape of stations) will be carefully assessed to avoid or

minimize the relocation of trees. Since the government has yet to finalize the specific locations of the bus depots and ancillary facilities, these were not covered by the ESIA. A separate ESIA will be carried out for the bus depots and ancillary facilities once their locations are finalized. The TOR for the ESIA is included as Annex of the ESIA Report.

74. An ESMP has been established through the ESIA process to address the potential environment impacts of the project. The ESMP is in line with OP 4.01 and the administrative frameworks relevant to the environmental assessment of transport-related projects in the Philippines. The Borrower will update the ESMP once the final alignment and detailed engineering designs for the BRT line are completed. The DOTr has the overall responsibility of implementing the ESMP and the overall compliance to the requirements of the WB safeguards requirements. Initiatives to strengthen the capacity of DOTr to execute the safeguard works and requirements shall be implemented. A program for environmental and social safeguards capacity development for DOTr is recommended and will be completed during implementation. Annex 3 of this PAD provides the overall institutional arrangements for the project. Environmental and social safeguards specialists will be hired as part of the Project Implementation Unit (PIU) overseen by the National Project Management Office (NPMO).

75. **Physical Cultural Resources.** The ESIA was able to identify the cultural properties and historical landmarks found along and near the corridor. These properties include old buildings and bridges, churches, parks, historical monuments and shrines, and government institutions. Manila City, being the older settlement site has the greatest number of these cultural and historical properties. The important sites validated by the ESIA include historical monuments and shrines such as the Quezon City Memorial Circle, Nacpil-Bautista House, and the Bantayog ng mga Bayani Memorial. As important places of worship, the Quiapo Church, Iglesia ni Cristo complex, Masjid Al-Dahab Mosque, and the Santo Domingo Church were identified. The UST, the oldest catholic university in Asia, is also located along the corridor. Other significant places near the corridor include the Intramuros, Manila Metropolitan Theatre, Mehan Gardens, National Museum, Manila City Hall, Manila Central Post Office, and Plaza Lawton. Included as important historical features of Manila are the old bridges connecting the various parts of Manila and traversing the Pasig River. Originally built during the Spanish period and rebuilt through the years, the bridges include the Quezon Bridge and the Ayala Bridge. Other old bridges located near the corridor are the Jones Bridge and the Santa Cruz Bridge. There is a possibility that due to excavation work, property of historical, cultural or religious importance may be found. During construction, the landscape of the sites may also be affected and structural damage to old structures may result due to vibrations, earth moving and excavation of adjacent areas. The ESMP provides for the mitigating measures needed to address such disturbances or the handling of chance finds.

76. **Public communication.** DOTr has initiated a process of two-way communication during project preparation and intends to continue this during the construction and operational phase. DOTr will maintain records of environmental and social complaints received during consultations, field visits, informal discussions, and letters, together with the subsequent follow-up and resolutions of issues. A total of 29 consultation sessions were held for this project, seven of which were undertaken during the Detailed Technical Study (DTS) phase (January to August 2013), 21 sessions during the ESIA preparations (January to March 2015) and one in

November 2016 (after the first disclosure of the ESIA). Initial discussions during the DTS were with the local government units of Quezon and Manila cities, representatives from the transport sector, and special interest groups like women's and transport safety groups. Twenty (20) additional consultations were held (19 during the ESIA preparation and one after the ESIA) with the affected PUV sector and two sessions with the PWD-interest groups. Issues raised during the consultations with the PUV sector focused on the way in which the project will be affecting their livelihood, their potential roles in the operation of the BRT system in the future, and on how the government will be able to assist them in terms of livelihood restoration and skills development. Issues raised by the PWD sector focused on how to enhance the accessibility of the BRT facilities including the buses. Two additional consultations are planned to present the final ESIA Report.

77. **Disclosure.** The ESIA report and the RPF were disclosed locally on May 15, 2015; they were also disclosed electronically at the Bank's Infoshop on May 15, 2015. Brochures in English and Tagalog will be distributed on the rights and responsibilities of displaced people and notices will be posted in barangays in the City of Manila and in Quezon City. The ESIA and RPF were consulted again on November 3, 2016 and re-disclosed locally on January 26, 2017 and at the Bank's Infoshop on January 17, 2017.

78. The technical assistance component of the project may also include feasibility studies. Such feasibility studies will be subject to the preparation and review by Bank of TORs to include safeguards policy requirements as applicable to the type of feasibility study. If any of the TOR requires the preparation of safeguards instruments such instruments will also be subject to Bank review. The borrower will refer to the Bank's Interim Guidelines on the Application of Safeguards Policies to Technical Assistance

G. World Bank Grievance Redress

79. Communities and individuals who believe that they are adversely affected by a World Bank (WB) supported project may submit complaints to existing project-level grievance redress mechanisms or the WB's Grievance Redress Service (GRS). The GRS ensures that complaints received are promptly reviewed in order to address project-related concerns. Project affected communities and individuals may submit their complaint to the WB's independent Inspection Panel which determines whether harm occurred, or could occur, as a result of WB non-compliance with its policies and procedures. Complaints may be submitted at any time after concerns have been brought directly to the World Bank's attention, and Bank Management has been given an opportunity to respond. For information on how to submit complaints to the World Bank's corporate Grievance Redress Service (GRS), please visit <http://www.worldbank.org/GRS>. For information on how to submit complaints to the World Bank Inspection Panel, please visit www.inspectionpanel.org.

Annex 1: Results Framework and Monitoring

PHILIPPINES: Metro Manila BRT - Line 1 Project (P132401)

Results Framework

Project Development Objectives

To improve the efficiency, effectiveness and safety of public transport system along the Project Corridor in Metro Manila in an environmentally sustainable manner.

These results are at Project Level

Project Development Objective Indicators

Indicator Name	Baseline	Cumulative Target Values					End Target
		YR1	YR2	YR3	YR4	YR5	
1. Direct project beneficiaries (number)	0	0	0	0	250,000	300,000	300,000
Of which female (percentage)	0	0	0	0	50	50	50
2. Average travel time for public transport users during AM peak from Manila City Hall to Quezon Memorial Circle station –(minutes)	90	-	-	-	43	43	43
3. Annual GHG emissions savings of transport along the project corridor (CO ₂ e emissions per tons per year)	0	0	0	0	0	8,779	8,779
4. Beneficiaries satisfied with BRT services (percentage)	0	0	0	0	50	70	70
Of which are female (percentage)	0	0	0	0	50	50	50
5. Public and non-motorized transport user accidents along the project corridor	3.4	-	-	-	-	-	0.2

(number)							
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Intermediate Results Indicators

Indicator Name	Baseline	Cumulative Target Values					End Target
		YR1	YR2	YR3	YR4	YR5	
Component 1. BRT Infrastructure							
1. BRT bus lane constructed along the project corridor (km.)	0	0	0	11.5	11.5	11.5	11.5
2. BRT bus depots constructed (number)	0	0	0	1	2 if justified	2 if justified	2 if justified
Component 2. System Management							
3. Bus routes provided under performance-based contract (number)	0	0	0	1	1	1	1
4. Specially designed high quality buses procured (number)	0	0	0	151	160	167	167
5. Functional BRT Operation Control Center in place (text)	None	0	0	Space and equipment for operation control center available and staff hired and trained to operate.	BRT operational control center fully functioning.	BRT operational control center fully functioning	BRT Operational control center fully functioning.
6. Junctions with improved traffic engineering under the project (number)	0	0	0	16	16	16	16
Component 3: Capacity Building and Concept Development and Dissemination							
7. New BRT line FS completed (Yes/No)	0	No	No	No	No	Yes	Yes
8. Government staff and other transport stakeholders participated in BRT and other urban	0	10	30	50	100	150	150

Intermediate Results Indicators							
Indicator Name	Baseline	Cumulative Target Values					End Target
		YR1	YR2	YR3	YR4	YR5	
transport training supported by the project (number)							
Component 4: Accessibility and Urban Realm Enhancement							
9. Pedestrian access facilities improved or upgraded under the project (meters)	0	0	0	1,600	3,200	3,200	3,200
Component 5: Project Outcome Monitoring							
10. Annual surveys conducted (Number)	0	0	1	2	3	4	4
11. Transport database developed and regularly updated (text)	None		Transport database designed	Transport data collected and regularly uploaded to the transport database	Transport database maintained and updated regularly	Transport database maintained and updated regularly	Transport database maintained and updated regularly
Component 6: Project Management							
12. NPMO and PIU staff trained under the project (number)	0	10	20	30	40	50	50
13. Number of quarterly reports submitted on-time	0	4	8	12	16	20	20

Indicator Description

Project Development Objective Indicators				
Indicator Name	Description	Frequency	Data Source / Methodology	Responsibility for Data Collection
1. Direct beneficiaries, (number)	Direct beneficiaries are the BRT system's (average) daily ridership or passengers	Annual	Based on automated fare collection data that will be collected by the System Manager. Annual average weekday ridership will be reported, in addition to total annual ridership. This is consistent with current reporting on LRT ridership. The target data is based on the Metro Manila BRT FS forecast for the year 2020.	PIU
Of which female (percentage)	Percentage of female BRT passengers out of the average total BRT daily ridership or passengers	Annual	Based on automated fare collection data that will be collected by the System Manager. The share of female ridership will be estimated via survey sampling. The target is based on the 2010 Census for NCR, wherein females account for about 51% of the population according to the Philippine Statistical Authority website.	PIU
2. Average travel time for public transport users during AM peak	Vehicle travel time (in minutes) from Manila City Hall (origin) to	Annual	Based on travel time data that will be collected by the System Manager. As	PIU

Project Development Objective Indicators				
Indicator Name	Description	Frequency	Data Source / Methodology	Responsibility for Data Collection
from Manila City Hall to Quezon Memorial Circle station (minutes)	Quezon Memorial Circle (destination). Year 1 to 3 refer to period when BRT project is still under implementation. Hence, no BRT travel time yet.		designed, the BRT system will provide a segregated lane for high-capacity and quality buses from Manila City Hall to Quezon Memorial Circle. This is expected to result in faster travel times to public transport users vis-à-vis other public transportation options, thereby improving efficiency along the project corridor. The baseline and target average travel time are based on the 'without' and 'with' project scenario, respectively, for the AM peak from Manila City Hall-Quezon Memorial Circle, as forecasted by DOTr. The peak hours will be defined by DOTr during the first year of implementation.	
3. Annual GHG emissions savings of transport along the project corridor (CO ₂ e tonnes per year)	The indicator reflects CO ₂ savings between years 1 and 5. Note that initial CO ₂ e will initially be low but will increase overtime as ridership increases more steeply especially between years 6 and 20.	Annual	Estimation of GHG emissions based on the methodology of the Metro Manila BRT FS. Introducing a BRT system is expected to provide public transport users a high-quality,	PIU

Project Development Objective Indicators				
Indicator Name	Description	Frequency	Data Source / Methodology	Responsibility for Data Collection
	The indicator takes into account the impact of all road vehicles driving within and through the project corridor's impact area (i.e. geographic boundary in which the implementation of the project will have an impact)		higher-capacity and, therefore, more environmentally sustainable means of public transportation vis-a-vis existing public transport options along the project corridor.	
4. Beneficiaries satisfied with BRT services (percentage)	Based on a scale of 1-5 (1=poor, 3=satisfactory, 5=excellent or highly satisfactory), percentage of BRT riders surveyed that rated BRT services overall as 3 and above.	Annual	The target is to have at least half of the survey respondents perceive the BRT service as at least satisfactory, reflecting the minimum effectiveness of the BRT system in addressing the needs of public transport users along the corridor.	PIU
Of which female (percentage)	Based on a scale of 1-5 (1=poor, 3=satisfactory, 5=excellent or highly satisfactory), percentage of female BRT riders out of that total female BRT riders surveyed that rated BRT services overall 3 and above.	Annual	The project is expected to provide a more accessible and safe public transportation option for passengers which are shown to be important particularly to female public transportation users. The target is to have at least half of the female survey respondents perceive the BRT service as at least	PIU

Project Development Objective Indicators				
Indicator Name	Description	Frequency	Data Source / Methodology	Responsibility for Data Collection
			satisfactory.	
5. Public and non-motorized transport user accidents along the project corridor (number)	Count of number of accidents per million vehicle km that occur between the following: (i) two public transport vehicle, (ii) pedestrian and a public transport vehicle, and (iii) a bicycle rider and public transport vehicle. Relevant accident data will be collected only after the BRT project is completed.	Annual	MMDA and LGU (Manila and Quezon City) accident data. The project will provide improvements in the corridor management, and safer and better access to public transportation. As designed, the BRT system will provide a segregated lane for high-capacity and quality buses from Manila City Hall to Quezon Memorial Circle.	PIU

Intermediate Results Indicators				
Indicator Name	Description	Frequency	Data Source / Methodology	Responsibility for Data Collection
1. BRT bus lane constructed along the project corridor (km.)	Segregated portion of the BRT corridor (Manila City Hall to Quezon Memorial Circle).	Annual	Mission reports. Target is based on the BRT FS.	PIU
2. BRT bus depots constructed (number)	Number of bus depots that are constructed and operational	Annual	Mission reports. Based on the BRT FS, two bus depots will be constructed to ensure the efficient operation of the BRT System.	PIU
3. Bus routes provided under performance-based contract (number) (text)	Performance-based bus routes are awarded	Annual	Mission reports. One route will provide service between Manila City Hall and Quezon Memorial Circle in a dedicated bus lane.	PIU
4. Specially designed high quality buses procured (number)	Number of BRT buses procured as per configurations required by the project.	Annual	Mission reports. Target number of buses is based on the BRT FS to ensure expected public transport demand along the corridor are adequately met.	PIU
5. Functional BRT Operation Control Center in place (text)	BRT control center adequately equipped with functioning computer hardware, computer software application and communication equipment.	Annual	Mission reports. A well-functioning BRT control center is necessary to the effective operation of the BRT system.	PIU
6. Junctions with improved traffic engineering under the	Junctions where the package of traffic engineering measures	Annual	Mission reports. Junctions along the corridor (based on BRT FS) would need	PIU

Intermediate Results Indicators

Indicator Name	Description	Frequency	Data Source / Methodology	Responsibility for Data Collection
project (number)	(such as revised or new signal control, introduction of bus priority, pedestrian crossing, foot bridges, etc.) were implemented.		to be improved to ensure the efficient and effective operation of the BRT system and safe access to public transportation services.	
7. New BRT line FS completed (number)	Final report of the feasibility study for a new BRT line submitted to DOTr.	Annual	Mission reports. The project provides resources for the development of another BRT line in Metro Manila. The target is to have a completed FS by end of the project.	PIU
8. Government staff and other transport stakeholders participated in BRT and other urban transport training supported by the project (number)	Number of government officials (director level and up) who attended training funded by the project	Annual	Mission reports. For the target, it has been assumed that at least 50 government staff from agencies/institutions involved in the policy development, planning, and implementation of BRT systems (from the national steering committee and NPMO/PIU member institutions) and other transport stakeholders will be provided training starting at year 3 (start of operations) of the project.	PIU
9. Pedestrian access facilities improved or upgraded under the	Meters of sidewalks or walkways connecting to stations and adjacent	Annual	Mission reports. Target was set based on assumption that 200	PIU

Intermediate Results Indicators				
Indicator Name	Description	Frequency	Data Source / Methodology	Responsibility for Data Collection
project (meters)	major buildings constructed or re-constructed		meters of sidewalks and walkways will be improved per station (16 stations total as per the BRT FS) by year 4.	
10. Annual surveys conducted (number)	Annual monitoring surveys undertaken. The surveys can serve as proxy indicators for citizen engagement.	Annual	Mission reports. An initial annual survey will be undertaken a year before operation (at Year 2) to establish baseline for user satisfaction of public transport services.	PIU
11. Transport database developed and regularly updated (text)	Database of transport data gathered through the M&E system is in place and updated semi-annually.	Semi-Annual	Mission reports. Maintaining a database of the transport information from the M&E system will support project monitoring and provide insights to the government on improving urban transport planning and development in Metro Manila.	PIU
12. NPMO and PIU staff trained under the project (number)	Number of NPMO and PIU staff that has participated in BRT and urban transport related training. Staff may include regular and contractual employees.	Annual	Mission reports. Target is based on the assumption that 10 persons from the NPMO and PIU will be trained per year. Improving the capacity of PIU staff is essential in the effective and sustained implementation of the project.	PIU

Intermediate Results Indicators

Indicator Name	Description	Frequency	Data Source / Methodology	Responsibility for Data Collection
13. Quarterly reports submitted on-time (number)	Number of quarterly reports submitted on or before the date due	Quarterly	Mission reports. Target is to have each quarterly report submitted on-time, reflecting efficient project management.	PIU

Annex 2: Detailed Project Description

PHILIPPINES: Metro Manila BRT - Line 1 Project (P132401)

1. The following presents the detailed costs of the project:

Table A2.1 Detailed Project Costs in US\$ Million

Components	TOTAL	CTF	IBRD	WB total	GoP
1. BRT Infrastructure	48.86	12.79	17.99	30.78	18.08
Segregated Busway	6.27	2.33	3.94	6.27	-
Highway Reconstruction	1.21	0.45	0.76	1.21	-
Intersection Improvement	2.86	1.06	1.8	2.86	-
Stations	8.67	4.57	4.1	8.67	-
Terminals	0.35	0.13	0.22	0.35	-
Depots	11.42	4.25	7.17	11.42	-
Land Acquisition & Resettlement	18.08	-	-	-	18.08
2. System Management	12.68	0.4	0.67	1.07	11.61
Traffic Management	8.36	-	-	-	8.36
Intelligent Transportation Systems (ITS)	1.35	-	-	-	1.35
System Management IT/Marketing	1.31	-	-	-	1.31
Technical Support Consultants	1.66	0.4	0.67	1.07	0.59
3. Capacity Building	11.05	-	-	-	11.05
Detailed Design	4.81	-	-	-	4.81
Concept Dissemination and Development	6.24	-	-	-	6.24
4. Accessibility and Urban Realm Enhancements	18.01	6.97	11.04	18.01	-
Pedestrian Crossings	13.63	5.08	8.55	13.63	-
Urban Real Enhancements	4.38	1.89	2.49	4.38	-
5. Project Outcome Monitoring	1.77	1.77	-	1.77	-
6. Project Management	7.88	-	7.88	7.88	-
Base Cost Total	100.25	21.93	37.58	59.51	40.74
Contingency	9.06	1.97	3.02	4.99	4.07
Front-end fee	0.10	-	0.10	0.10	-
TOTAL	109.41	23.90	40.70	64.6	44.81

Component 1 – BRT Infrastructure

2. A direct bus service is proposed from Manila City Hall to Quezon Memorial Circle with provision for express bus services for passengers, connecting them to major origin and destinations along the corridor.

3. This component will finance goods, works, and services for detailed design, construction and supervision of BRT infrastructure and systems, including, among others, segregated busways (surfacing and colouration), highway reconstruction (markings and drainage), intersection improvements, stations, terminals, and depots. The GoP will finance the land acquisition and resettlement cost.

4. Segregated busway, road reconstruction, and intersection improvement: Infrastructure design was developed after an understanding of service plan requirements including the capacity of the BRT running way together with the passenger capacity of stations and terminal, and passenger access. Key elements of the BRT design are:

- a. Segregated busway between Manila City Hall and Quezon Memorial Circle (BRT running lanes: 2 x 3.5m, bypass lane: 3.5 m, sidewalk: 2.0 m, segregation between BRT and general traffic lane: 0.25m, pedestrian crossings at-grade when possible,)
- b. BRT overtaking lane at select stations;
- c. Stations and terminals along the busway route (station platform: 4.0m minimum). 14 pairs and 3 separate stations/terminals will be allocated for the Manila City Hall – Quezon Memorial Circle route.
- d. Depots for the overnight parking and servicing of buses designated to operate BRT services, as well as facilities (offices, canteens, rest areas) for the staff

5. Key BRT planning design criteria include:

- a. Accommodate demand and the maximum required service frequencies;
- b. Maximum use of exclusive, designated bus lanes;
- c. Separation of BRT and “feeder” vehicles from passengers and non-passenger pedestrians;
- d. Reservoir passing lanes and “virtual” passing lanes will be provided at selected stations where land and space is available;
- e. Priority of public transport vehicles over other vehicles, most notably at signalized intersections;
- f. Minimum vehicle dwell times;
- g. Modern, safe, comfortable, convenient transit facilities and high quality passenger waiting environments for customers; and
- h. Better accessibility for physically challenged travelers, women, and other vulnerable groups.
- i. Minimum impact and disruption to the environment and livelihoods of existing transport providers
- j. Minimum impact on the existing road right of way
- k. Reliable and consistent dissemination of pertinent information to BRT users
- l. Smart and integrated mode of payments

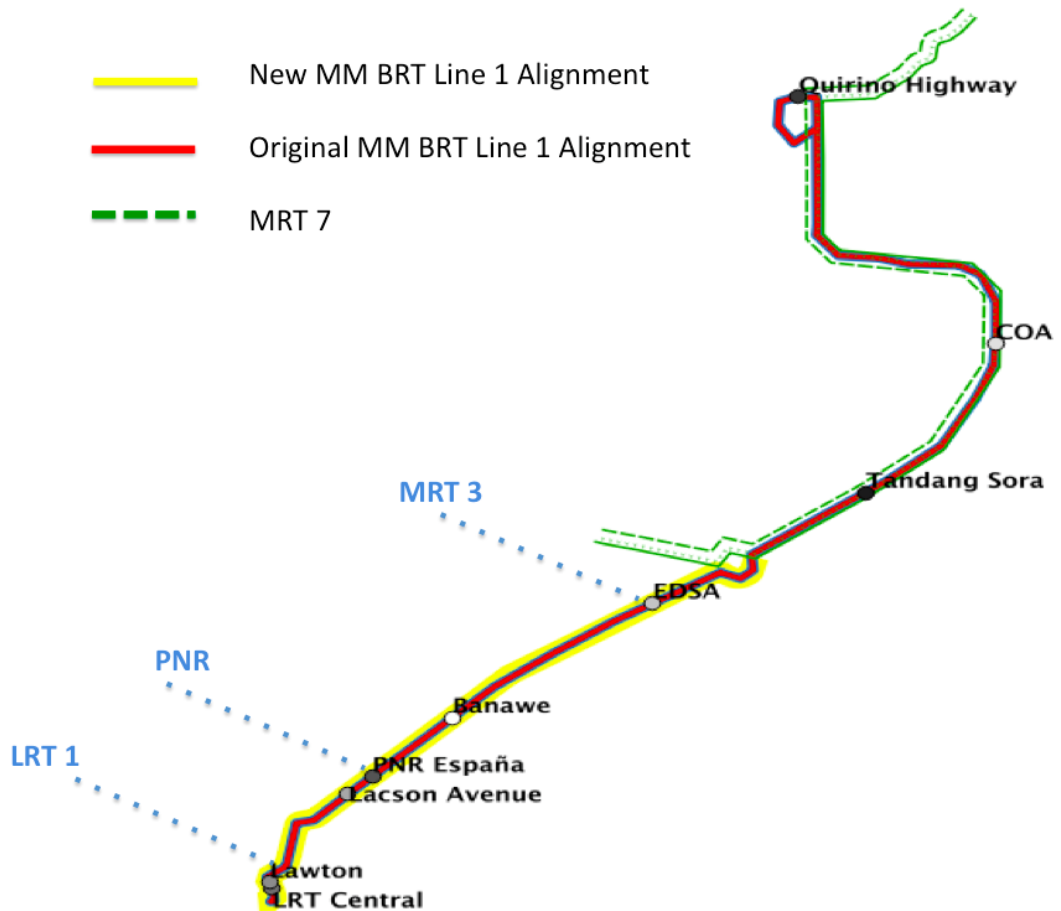
6. BRT station infrastructure: BRT stations provide an environment for the interface of public BRT passengers and vehicles. Station layouts are a fundamental product of the BRT planning and design process and many variables have been taken into account, including topography, accessibility, convenience of passengers, visibility, and current and future land uses.

7. Bus stations are placed at locations where demand is concentrated and where they can be built without land purchase. All station platforms will match the floor height of buses (280mm to 380mm) for passenger convenience and to reduce boarding/alighting time. Stations between Manila City Hall and Quezon Memorial Circle will be enclosed (i.e. considered as “Full” stations wherein passengers will primarily pay entry via Smartcard once DOTr smart ticketing has been procured).

8. Other features of the stations would be line identification poles, protection fences, solar panels to reduce dependence on the grid, use of LED lighting, tensile membrane roofing made out of recycled materials, and furnishings such as ticket stations, information systems and waste receptacles.

9. The total BRT corridor will consist of approximately 13 km with 11.5 km segregated bus lane between Manila City Hall - Quezon Memorial Circle. as shown in the following Figure A2.1

Figure A2.1: BRT Routes and Network



10. Bus Terminal: This sub-component will finance goods, works, and services to support:

- a. Public transport integration. Measures to improve physical integration among public transport modes (MRT, LRT, PNR and other proposed BRT lines) and between public transport and other access, or onward journey, modes.
- b. Bus terminal at Manila City Hall. The selected site sits on the same block where the Andres Bonifacio Shrine is situated. The block is bounded by Padre Burgos St. on the west, Antonio Villegas Rd. on the east, Natividad Almeda Lopez St. on the south and Cecilia Munoz Palma St. on the north. The proposed terminal will just be the platform itself – the property will not be delineated for the terminal’s use. Its total length will be approximately 60m, with a total area of 438 sq. m. The shape of the platform will be that of a symmetrical, hybrid saw-tooth to allow it to accommodate 4 buses at a time (two on each side).

The terminal will have two ticketing booths on its eastern edge along with 3-4 turnstiles. Otherwise, the terminal will also utilize the same design components used in other stations of the BRT line in order to maintain and strengthen the Metro Manila BRT's branding. Specifically, the terminal will also feature metal railings, protective fences, modular design, etc.

11. Bus Depots/Stations: This sub-component will finance goods, works, and services to support:
 - a. There are 14 pairs of stations and 3 separate stations between Manila City Hall and Quezon Memorial Circle that will service the forecast passenger demand;
 - b. Bus depots to service the bus route along the project corridor measuring approximately 3.2 Ha and 1.9 Ha respectively to provide parking accommodation, servicing, and maintenance facilities for vehicles and facilities for staff.
12. Land Acquisition and Resettlement: The sub-component will finance compensation for land acquisition for the proposed depot sites. The GoP will finance this sub-component.

Component 2 – System Management

13. This component will finance goods, works, and services to support traffic engineering, traffic management, the intelligent transport systems and the information management support.
14. Traffic Engineering and Management: The objective of this sub-component is to develop traffic management interventions that complement the development of BRT in Metro Manila by maximizing the passenger and vehicle carrying capacity of the road. As such, this sub-component would finance goods and works that would address some of the main causes of congestion in the traffic corridor: lack of parking management and u-turn slots.
15. The problem of parking management (cars being arbitrarily ushered to and from sidewalk parking lots) will be rectified with personnel training and a pre-implementation marketing campaign. Meanwhile, u-turn slots (which often cause the congestions of one or more lanes due to queuing vehicles) will be removed and will be integrated into signalized intersections.
16. Aside from adding signalized intersections, the operating system and design of existing signalized intersections will also be revamped and reconfigured to allow for bus priority via selective vehicle detection (SVD). Currently, the MMDA is proposing a city-wide implementation of the HERMES (High Efficiency Routes with Rerouting Methods) signal control system.
17. Intelligent Transport Systems (ITS): This sub-component will finance goods, works, and services to support:
 - a. BRT Control Center systems, including computer hardware (central server hosting databases, workstations for display of route, vehicle and bus-stop status, CCTV images, passenger information system, computers for database analysis), computer software (application for analysis of vehicle location and route conditions, application to support route, stop, on-bus and off-route information displays, application to

- manage the images and display from the CCTV units, application manage the real-time fault-reporting system, databases to store all information from these applications), and communication equipment;
- b. Vehicle Location systems and other related systems, which will be supported by on-bus General Positioning System (GPS) units, an Application Program Interface (API) to enable other ICT systems to receive the real-time location data of BRT buses, display screens
 - c. Communications system for three main communication strands: vehicles to/from control center, control center to/from supervisors, and control center to/from external agencies;
 - d. CCTV at the bus-stop areas; and
 - e. Closed Wireless Local Area Network at each bus stop.
 - f. Enhanced passenger information systems that would display four strands of information: pre-trip, stop, on-board vehicle and other information sources and data feeds. The delivery channels for these information will be in both non-digital (printed maps, signages, audible announcements) and digital forms (websites, social media, applications, APIs, SMS text service, information screens)

18. BRT System and Information Management Support: This subcomponent will finance the services for the IT and marketing functions of the system management, as well as technical support consultants and construction supervision.

Component 3 – Capacity Building and Concept Development and Dissemination

19. This component will finance studies, training, capacity building activities that will support the application of the BRT concept along other corridors in Metro Manila, including feasibility study and detailed design of another Manila BRT line. The component will also support the activities such as public communications and technical support for BRT NSC and NPMO, among others.

Component 4 – Accessibility and Urban Realm Enhancements

20. This component will finance goods, works, and services that would integrate land use with bus system along the corridor and improve pedestrian environment (site clearance, landscaping, sidewalks, street furniture, etc.) as well as measures to establish physical connections to stations and terminals and to major trip attractors and generators (pedestrian crossings, footbridges and elevators).

Component 5 – Project Outcome Monitoring

21. This component would finance technical assistance, equipment, and other operational support for data collection and analysis to include: (i) transport system supply, demand, and performance; and (ii) institutional, environmental, social and economic impact, and capacity building.

22. This would cover annual monitoring surveys and analysis during project implementation.

Surveys will include, but not limited to the following: household interviews, assessment of real estate prices, assessment of building permit applications, observational surveys, mystery traveler surveys, car journey time surveys, focus groups, satisfaction surveys, air / noise and emissions survey, traffic counts, accident data analysis.

Component 6 - Project Management

23. This component would finance training, technical assistance, equipment, vehicles, office equipment, and other operational support for management of implementation and supervision of BRT and related measures by the Project Implementation Unit through design, construction/ implementation phases. It will include application of a comprehensive communications outreach program focused on information dissemination through construction and preparation of the BRT operation and technical and procurement audit.

Annex 3: Implementation Arrangements

PHILIPPINES: Metro Manila BRT - Line 1 Project (P132401)

1. The implementation occurs at three levels:
 - a. A national framework for policy, proposal development and oversight of BRT in the Republic of Philippines, centered on the BRT-National Program Management Office (BRT-NPMO);
 - b. The implementation arrangements for specific projects, centered on the Project Implementation Unit (PIU); and
 - c. The operational arrangements for the systems implemented by the project, centered on the BRT system management entity.

I. BRT Design and Delivery Phase

2. The main authority is at the national government level. A Department Order has been issued by the DOTr to set up a BRT National Steering Committee (NSC) and a National Program Management Office (NPMO). Both NSC and NPMO have been established, supported by World Bank funded Cebu-BRT project.

3. The NSC provides policy guidance and has oversight of all BRT studies, projects and operational systems in the country. The NSC is:

- a. Chaired by the Secretary of the DOTr or his or her designated representative satisfactory to the Bank, and comprise, among others, representatives of the Department of Finance (DOF), Department of Public Works and Highways (DPWH), Department of Interior and Local Governments (DILG), Land Transport Franchising and Regulatory Board (LTFRB), MMDA, and representatives of local government units where BRT projects are being implemented or under study, and DOTr; and
- b. Responsible for, *inter alia*, (i) formulating the strategic directions and plans for developing BRT consistent with the national transport plan; (ii) setting policies, guidelines and procedures to facilitate the implementation of BRTs including the designation of segregated –right-of-way infrastructure, (iii) coordinating the formulation of rules and regulations to govern and regulate the operations of BRT projects, and (iv) monitoring, evaluating and reporting on the impact on BRT development

4. The NPMO is headquartered at DOTr central office. It is headed by an Undersecretary of the DOTr, and include as members relevant DOTr personnel and external experts as require. It is responsible for planning and evaluation, resource mobilization, implementation, operations, monitoring and reporting, and promotion and communication for the proper development and operation of BRT in the Philippines.

5. Technical Support Consultants (TSC). A TSC is being selected (under Cebu-BRT project) to support DOTr in implementation of both Cebu-BRT project and Metro Manila BRT Line 1 Project. The TSC would provide specialist staff in project management (including procurement, contract design and oversight of contractors), technical, including infrastructure, bus operations, traffic systems and technologies, and analysis, including planning, business models and data management, and safeguards. The TSC would be retained by DOTr on a 'one-stop service' basis to provide an agreed set of skilled staff, on full-time, short-term or retainer basis, as considered most appropriate for the individual skill areas and tasks.

Other National Agencies

6. LTFRB: Amendments to the regulations and practice for route development and franchising will be required to facilitate BRT systems. LTFRB will engage at two levels:

- a. At national level, through the BRT SC and in conjunction with BRT-NPMO to establish a framework within which BRT systems and services can be accommodated and smoothly processed; and
- b. At project level, to facilitate the applications and authorizations for specific BRT systems and services, and to handle the franchising issues arising both for the BRT services and any impacted PUB and PUJ services.

7. DPWH: The BRT schemes will operate on major urban roads, many of which are DPWH roads. The BRT infrastructure will be constructed on these DPWH assets and will need to be maintained and occasionally rehabilitated over a period of several decades.

II. BRT Project Implementation Framework

8. A Project Implementation Unit (PIU) will be set up at the NPMO to manage day to day project implementation works. Specifically, the PIU will be responsible for (a) developing the Annual Work Plans and Budgets for approval by the NPMO and NSC, (b) facilitating the administration and coordination of procurement, financial management, environmental and social management and other implementation arrangements, and (c) reporting to the NPMO and the Bank on all matters pertaining to the implementation of the Project and the use of the proceeds of the Financing.

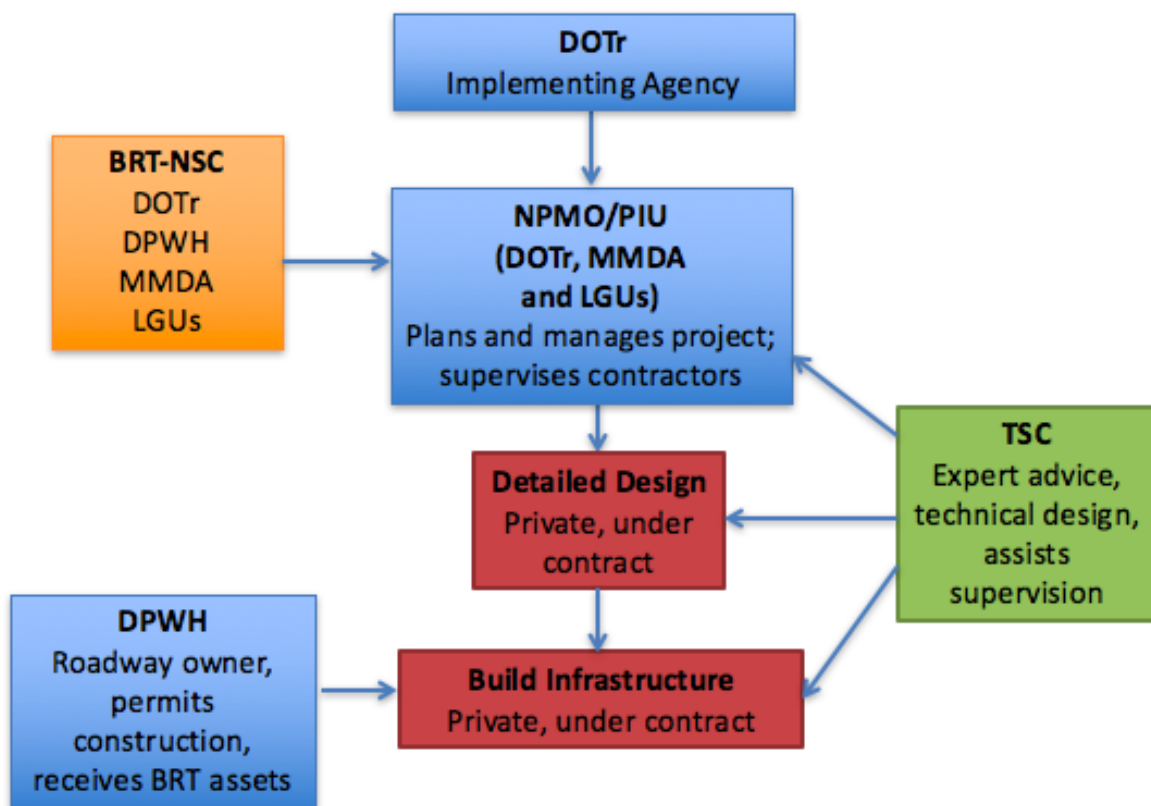
9. The PIU will be headed by a DOTr official and composed of representatives from, MMDA, the LGUs (Manila and Quezon City) and specialist consultants. The PIU will be under the aegis of the NPMO, and ultimately subject to the oversight of the NSC. The PIU will be supported by TSC and technical staff, some of them (particularly financial management and procurement specialists) from the PIU for Cebu-BRT project. The PIU will be formally established by negotiation.

10. LTFRB: The PIU will require support from LTFRB to facilitate the applications and authorizations for the BRT trunk and feeder routes, and to handle the franchising issues arising from impacted PUJ and PUB services.

11. DPWH: The Metro Manila BRT PIU will require support from DPWH in relation to any DPWH roads on which the BRT is being constructed. This will include facilitating authorizations and approvals during the design and construction phase, and the ongoing maintenance agreements in the operational phase.

12. During the detailed design and infrastructure build stage, the delivery arrangements will be as shown in Figure 1.

Figure 1. Metro Manila BRT Line 1 Structure - Design and BRT Infrastructure Construction Stage



III. Operational Phase Framework

13. Delivery arrangements during the **operational phase (2018)** are shown in Figure 2.

14. **Summary.** DOTr or its designated entity (as System Owner) will enter into a single contract with a competent BRT System Manager (BRTSM), who will be responsible for all aspects of management of the BRT System. DOTr will be responsible for ensuring that bus operators are procured. Bus operators will be managed on a day-to-day basis by the BRTSM, both on the street and in terms of the respective contracts with the operators. All system revenue will accrue to DOTr, who will pay the BRTSM and directly pay the operating contractors for services provided which meets standards. The arrangement is detailed as follows:

A. **DOTr**

15. A small professional in-house unit is needed within the DOTr. The BRT-NPMO will perform this function, supplemented by a team of “staff extension” supported by Technical Support Consultants (TSC). It will have the following functions:

Design and implementation phase

- Develop and apply planning and other support tools and data bases including cost, cash flow, ridership and revenue models to finalize the initial BRT service plan in cooperation with other relevant units of DOTr, MMDA and the respective LGUs
- Based on the service plan and related financial analyses, establish the initial BRT business model in terms of fares and service levels, etc.
- Develop payment/incentive mechanisms and contract terms for hiring the BRT System Manager (BRTSM)
- Carry out the selection, procurement, negotiation and contract close for the BRT System Manager
- Ensure that bus operating contracts are procured (with technical assistance from the systems manager)
- Arrange LTFRB permits for selected operating contractors if they do not already have them
- Establish monitoring and analysis systems, establish the data flows and data management capacity, and embed the information requirements in the contract for the BRT System Manager and operating contractors

16. The above activities will require close liaison with the BRT Project Implementation Unit (PIU), also established under NPMO, which is tasked to deliver BRT infrastructure and facilities.

Operational Phase

- Assist the DOTr (as System Owner) in over-all BRT system management
- Assist the DOTr (as System Owner) in managing the contract of the BRT System Manager (BRTSM), including performance monitoring and application of any agreed payments, incentives or penalties
- Assist the DOTr (as System Owner) in managing BRT Bus Operator(s) contracts with support from the BRT system manager, including performance monitoring and application of any agreed to payments, incentives or penalties
- On an ongoing basis, gather and analyze information for the BRT system, including data provided by the BRT System Manager and, through it, from the operating contractors.
- Use system data and analysis tools to maintain the business model by making needed adjustments to routes, service levels and other operational or pricing parameters.
- Overall system performance monitoring and reporting to relevant stakeholders

17. To perform the later function, a monitoring capability will be established within DOTr (presumably at the NPMO) which will receive all data from the fare collection, operations

management and other BRT reporting systems. Both BRTSM and bus contract operators will be explicitly required in their contracts to make all such data available from the respective sources. This is primarily an automated process, with software processing the data and reporting it for performance monitoring. Data will be archived, and will also be available for other uses such as route planning. The monitoring function will require 1-2 technical specialists.

18. All system revenue will accrue to DOTr, who will pay the BRTSM and the Bus contract operators for the service they successfully provide. This means that DOTr is carrying the system financial risk. This is reasonable as DOTr will rightly control the main financial instruments – route alignments and terminals, the levels of service offered, service quality, fare levels– and can adjust them as required to reach acceptable fiscal outcomes or other objectives.

19. Professional competence within this unit is essential. The essential core skills are planning, business and contract management. The unit would be supported by competitively-procured Technical Support Consultants functioning as staff extensions at least through an initial period of operation.

B. BRT System Manager (BRTSM)

20. A private sector BRTSM will be engaged under a service contract for BRT Line 1. BRTSM will assist the DOTr or its designated entity (as System Owner) in procuring and supervising various BRT operation and maintenance services to be provided by private contractors, including the following:

- Station management, staffing and security;
- Fare collection, including staffing of kiosks and distribution to off-system points of sale;
- Revenue protection, banking;
- Customer support;
- Passenger information;
- Marketing;
- Bus dispatching and on-street operations supervision;
- Management of bus operator contracts and all other service providers;
- Station cleaning, maintenance;
- Data collection, IT and ITS management;
- Liaison with the infrastructure and facilities maintenance owners and contractor(s) for maintenance, repairs and rehabilitation.

C. BRT Bus Operating Contractors

21. The DOTr or its designated entity (as System Owner) will ensure that BRT operating contractors are procured according to a fair, transparent, and competitive procurement process, which would also take into account encouraging participation of the existing public transport operators on the corridor. The TSC will provide technical assistance with the procurement process, although the selection decision will rest with the DOTr or its designated entity (as System Owner) . The BRT bus operators will provide contract specified level of service in terms of vehicle Km, number of buses and drivers, etc.

22. BRT bus operators will be paid on the basis of performance standards and their contract durations will be approximately seven years. This reflects industry norms and provides a reasonable opportunity for the contractors to recover any up-front costs (e.g., for bus purchases, if so decided) and obtain financing for these costs. All bus operating contracts will be put to competitive tender at the end of the contract duration, regardless of performance.

D. LTFRB

23. The LTFRB will perform a new function for BRT. It will develop the legal mechanism that allows a company or companies selected by the DOTr to exclusively provide service on a given BRT route. This will be subject to the level of service and other terms of the company's contract with the DOTr. The operating company's vehicles, drivers, etc. will need to comply with LTO/LTFRB's roadworthiness, reporting and other applicable requirements. The LTFRB will continue to regulate the PUJs in the corridors impacted by BRT implementation.

E. MMDA and LGUs (Quezon City and Manila City Governments)

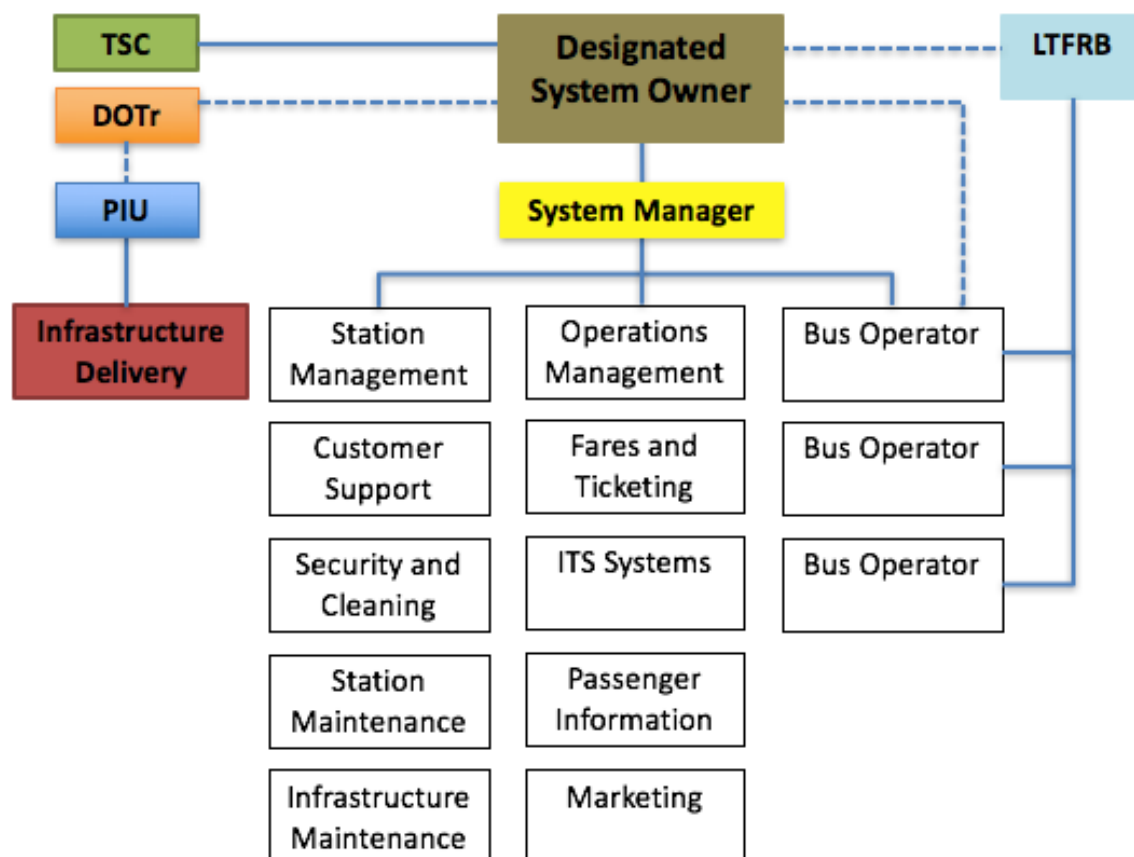
24. The MMDA and the LGUs shall sign a MoU with the DOTr for BRT, addressing the following areas:

- Long-term/perpetual allocation of lanes and other road space required for the BRT; any way leaves, easements etc., which are needed for BRT operation and/or maintenance;
- Traffic management measures, including traffic signals programming and operation, priority at junctions, road signage and markings, lane access, turning and parking restrictions, etc.;
- Daily operational support including enforcement, emergency response, incident and event management, diversions, etc.;
- Resettlements associated with construction of infrastructure and facilities

F. DPWH

25. The DPWH shall enter into a MoU with DOTr in relation to any national highway infrastructure and lanes that come under their control. In particular, agreement was reached on the use and maintenance of BRT infrastructure on national highway rights of way.

Figure 2. Metro Manila BRT Line 1 Operations Structure



Financial Management, Disbursements and Procurement

*Financial Management*⁷

26. Under the Bank’s OP/BP 10.0 with respect to projects financed by the Bank, the Borrower and the project implementing entities are required to maintain financial management systems — including budgeting, accounting, internal controls, financial reporting, and auditing systems — adequate to ensure that project funds will be used in an efficient and economical way to enable project development objectives to be met. The World Bank completed an assessment of the borrower’s financial management systems. The conclusion of the assessment is that the financial management systems at the DOTr meet the Bank’s requirements.

27. The financial management risk of the Project is assessed as Substantial. The proposed mitigating measures are described below.

⁷ The financial management assessment of the project was conducted in accordance with the “Financial Management Practices in World Bank Financed Investment Operations” issued by the Financial Management Sector Board on November 3, 2005 and as further rationalized in the “Principles-Based Financial Management Practice Manual” issued by the Board on March 1, 2010.

28. The risk identified includes DOTr's minimal experience in implementing World Bank financed project. The Cebu Bus Rapid Transit (Cebu BRT) that was declared effective in December 2014 is still in its early stage of implementation. The mitigating measures to be implemented to reduce risks associated with the current Financial Management system are: (i) finalize and adopt a PIP which include a section on FM to formalize control processes specific to the project; and (ii) maximize use of direct payments for large contracts. Brief FM orientation to key finance officers and staff will be conducted to ensure that they understand the FM requirements under the Project. DOTr submitted a status/progress of actions taken on the findings and recommendations of the Commission on Audit on the CY2013 audit of DOTr Department Proper.

29. **FM Implementation Arrangements.** DOTr's current financial management system will be used for the implementation of the project. It includes acceptable budgeting, accounting, internal controls, financial reporting, and auditing systems. DOTr will have a robust information system that will regularly report the progress of project implementation. DOTr shall designate an FM person who will: (a) facilitate the financial management processes within DOTr; and (b) coordinate the financial management requirements of the project with the PIU. The FM implementation arrangements for the Project are described in the financial management part of the Project Implementation Plan (PIP), which was finalized by DOTr and deemed satisfactory by the Bank.

30. **Budgeting Arrangement.** Budget proposals are prepared annually by DOTr and submitted to DBM. They are incorporated into the General Appropriations Act each year. The project will prepare an annual work and financial plan together with disbursement projection to be submitted to the Bank before 15th November for the following year.

31. **Accounting Arrangement.** The accounting records of the project shall be maintained by DOTr using the DOTr's computerized accounting system which is run in Oracle. The chart of accounts complies with the NGAS chart of accounts prescribed by the Commission on Audit. The DOTr Accounting Division under the Comptrollership Service shall maintain the accounting records in accordance with the country accounting procedures and policies. Processing and accounting of project transactions shall be mainstreamed. Hence, adequate staff resources of the Accounting Division shall be made available to ensure timely completion of the financial reports, monitoring of the Designated Accounts, and preparation of withdrawal applications. Separate books of account will be maintained for the project. There shall also be separate bank accounts (Designated Account) for the project.

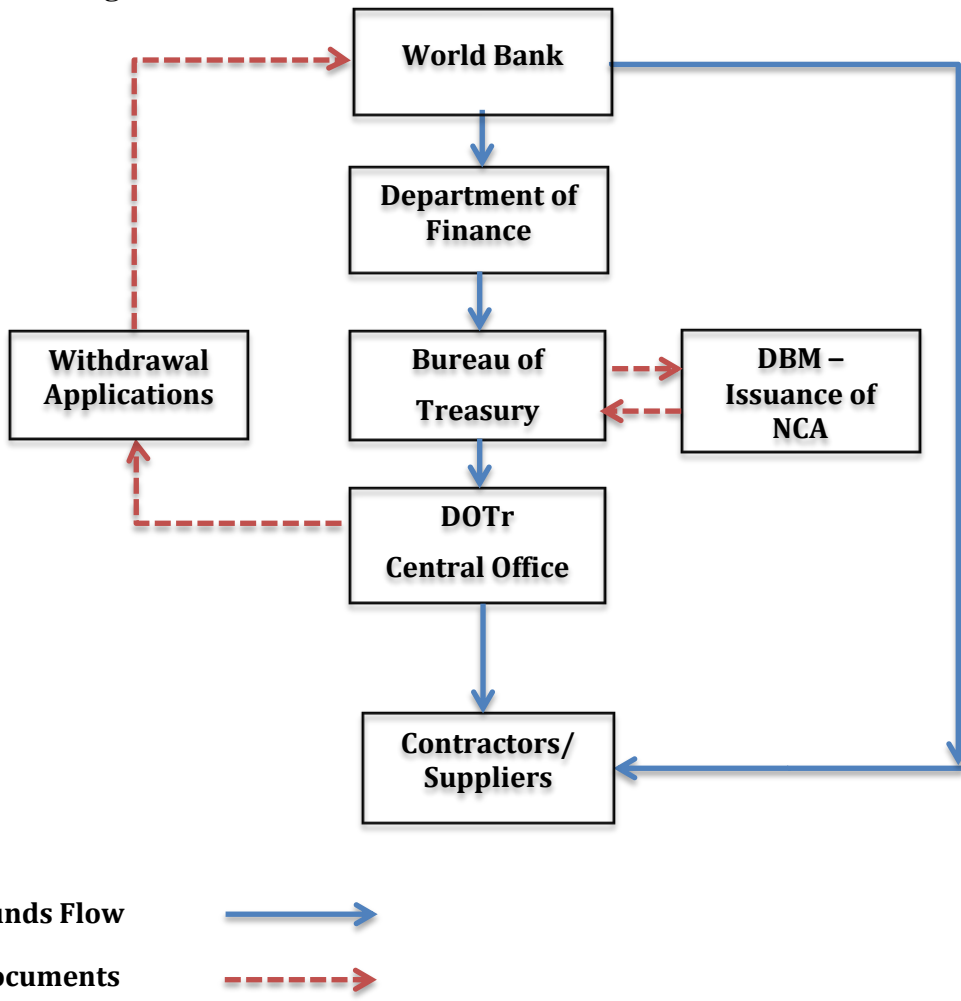
32. **Internal Control and Internal Auditing.** DOTr Finance and Comptrollership has sufficient staff and there is segregation of incompatible duties. The Finance and Management Service has two divisions; the Budget Division and the Management Division. The Comptrollership Service has also two divisions namely; Accounting Division and Treasury Division. The project will follow the internal controls and policies found in New Government Accounting System (NGAS), Government Audit and Accounting Manual, COA and DBM memoranda and circulars, and other laws and regulations. The Internal Audit function is performed by the Internal Audit Unit composed of twelve personnel headed by a Division Chief.

33. Specifically, the following requirements will be implemented for the project:

- a. Subsidiary records will be maintained for the Designated Accounts (DAs) and the related project peso accounts;
- b. Quarterly bank reconciliation statements will be required to be prepared and submitted to DOTr Comptrollership Service every 20th day after end of each quarter together with the trial balance; and
- c. Annual physical inventory count of fixed assets will be conducted and results reconciled with the accounting and property records.

34. Funds flow arrangements. The funds from the loans will flow from the World Bank to the account of the Bureau of Treasury at the Central Bank of the Philippines. After the issuance of the Notice of Cash Allocation (NCA) by the Department of Budget and Management (DBM), the funds will be credited to the Designated Accounts of the project maintained by DOTr Central Office.

Figure 3: Manila BRT-1 Funds Flow for IBRD and CTF Loan Proceeds



35. **Financial Reporting Arrangement.** DOTr will prepare and submit Unaudited Interim Financial Reports (IFRs) within 60 days after the end of each calendar quarter consisting of the: (a) financial reports on the project's: (i) statement of financial position; (ii) statement of sources and uses of funds which should include the current and cumulative data compared with plan &

by fund source; and (iii) bank reconciliation statements, both dollar and all peso project bank accounts; (b) physical progress report and (c) procurement status report. The physical accomplishment report must be linked to the financial report. The IFR should also be accompanied by a narrative explanation of the progress of the project and the significant variances between actual against planned and financial against physical accomplishments. The format of the IFR will be agreed before negotiation.

36. **External Audit Arrangement.** The audit of the Project Financial Statements (consisting of the statement of financial position, statement of financial performance, a statement of changes in net assets/equity, and a cash flow statement) will be conducted by the COA, the Philippines' Supreme Audit Institution. COA has extensive experience in auditing government agencies and World Bank-funded projects and is acceptable to the Bank. The audit will be conducted in accordance with International Standards on Auditing and the reports will be submitted to the Bank within six months after the end of each calendar year. Based on prior experience there is a risk that the audit may not be received within the period prescribed in the Loan Agreement. Finance staff shall work closely with COA to minimize the risk of late receipt of the audit report.

Disbursements

37. The disbursement of the loan will be in accordance with the financial plan of the project for the following categories:

Allocation of IBRD Loan Proceeds

Category	Amount of the Loan Allocated (expressed in USD)	Percentage of Expenditures to be financed (inclusive of Taxes)
(1) Goods, works, non-consulting services, consultants' services, Training and Workshops, and Incremental Operating Costs for Parts 1(a), and 1(b), 2(d), 4, and 6 of the Project	40,598,250	100%
(2) Front-end Fee	101,750	Amount payable pursuant to Section 2.03 of this Agreement in accordance with Section 2.07 (b) of the General Conditions
[(3)] Interest Rate Cap or Interest Rate Collar premium ⁸		Amount due pursuant to Section [2.08(c)] of this Agreement]
TOTAL AMOUNT	40,700,000	

⁸ Include bracketed withdrawal category ONLY if the Borrower has elected caps and collars **AND** requested to finance the premia out of the proceeds of the loan. The amount allocated to this category will be zero until premia is to be charged.

Allocation of CTF Loan Proceeds

Category	Amount of the Loan Allocated (expressed in USD)	Percentage of Expenditures to be Financed (inclusive of Taxes)
(1) Goods, works, non-consulting services, consultants' services, Training and Workshops and Incremental Operating Costs under Parts 1(a), 1(b), 2(d), 4 and 5 of the Project	23,900,000	100%
TOTAL AMOUNT	23,900,000	

38. The disbursement methods allowed under the project are (i) advance, (ii) direct payments, (iii) reimbursements; and (iv) special commitments. The project will maximize the use of direct payments for large contracts. The proposed minimum value of application for direct payments, reimbursements and special commitments is US\$400,000 for the IBRD loan and US\$200,000 for CTF loan.

39. Under the advance method, DOTr would open and maintain two DAs in US Dollars (for IBRD and CTF) at Land Bank of the Philippines, an authorized government depository bank acceptable to the Bank. The maximum ceiling for the DA shall be initially set at US\$4.0 million for IBRD and US\$1.0 million for CTF. DOTr would withdraw funds from the Bank through the submission of duly signed Withdrawal Application and Statement of Expenditures (SOEs) and Summary Sheets. The frequency for reporting eligible expenditures paid from the DA will be quarterly or as need arises. The project will be granted a four-month grace period to report these eligible expenditures incurred on or before the closing date.

40. **Retroactive Financing.** No withdrawals shall be made for payments made prior to the date of countersignature of the Loan Agreement by the Borrower, except that withdrawals up to an aggregate amount not to exceed US\$2,000,000 from IBRD Loan may be made for payments made prior to the countersignature of the Loan Agreement but on or after September 1, 2016.

Procurement

A. General

41. Procurement for the Project would be carried out in accordance with the World Bank's "Guidelines: Procurement of Goods, Works, and Non-consulting Services under IBRD Loans and IDA Credits and Grants by World Bank Borrowers" dated January 2011 and revised July 2014; and "Guidelines: Selection and Employment of Consultants under IBRD Loans and IDA Credits and Grants by World Bank Borrower" dated January 2011 and revised July 2014, and the provisions stipulated in the Legal Agreements. While the Philippine Procurement Law (RA 9184) is in reasonable harmony with the Guidelines at the NCB level, the Procurement Schedule

of the Loan Agreement will include a provision in Schedule 2 detailing procedures that are not acceptable to the Bank and provisions that apply when NCB is used. The general descriptions of various items under different expenditure category are described below.

42. **Procurement of Works.** Works procured under this project, would include transit ways, stations/stop buildings and terminals and BRT control center, depot and ancillary NMT facilities, land development, etc. The applicable method of procurement (ICB, NCB, Shopping for each specific contract and the Bank's review requirements (prior or post review) will depend on the nature, value and risk of each contract and will be specified in the procurement plan approved by the Bank.

43. **Procurement of Goods.** Goods procured under this project would include various operating systems such as Area-wide Traffic Control (ATC) and Intelligent Transport System (ITS), BRT support equipment, vehicles, information technology and other office equipment, etc. The applicable method of procurement (ICB, NCB, Shopping, Direct Contracting) for each specific contract and the Bank's review requirements (prior or post review) will depend on the nature, value and risk of each contract and will be specified in the procurement plan approved by the Bank.

44. **Selection of Consultants.** Consulting firms and individual consultants would be required for technical assistance and operational support, capacity building and various surveys and studies for project implementation and monitoring, feasibility study and detailed engineering design, information, education, communication and advocacy activities. The applicable method of selection (QCBS, QBS, LCS, SSS for firms, and competitive or SSS for individuals) for each specific contract and the Bank's review requirements (prior or post review) will depend on the nature, value and risk of each contract and will be specified in the procurement plan approved by the Bank.

B. Assessment of the agency's capacity to implement procurement

45. An assessment of the capacity of the Implementing Agency to implement procurement actions for the project has been carried out by the Designated Procurement Staff for the Project in April 2014, updated in May 2014, and November 2016. The assessment reviewed the organizational structure for implementing the project and the interaction between the various offices responsible for delivering procurement results.

46. Procurement activities will be carried out by DOTr. The Bids and Awards Committee (BAC) will carry out the procurement specifically from the pre-procurement conference to handling the actual bidding process up to the award of contracts. The BAC will be supported by regular (administrative) secretariat unit and an ad hoc technical working group whose membership depend on the nature of contract to be procured. These offices are staffed with people familiar with the local procurement rules in varying degrees. DOTr has been doing procurement regularly including large ones for works, goods and consultancy using local and foreign funds; however, DOTr is new in implementing Bank-financed projects. A PIU will be set-up to provide overall coordination and guidance and initiate procurement activities, among others. Recent experience under the Cebu-Bus Rapid Transit project indicates extensive delay in the selection of the key TSC consultant and procurement specialist, which in turn has delayed

start of the procurement process for the civil works and adversely affected overall project implementation.

47. Procurement risk for the project is assessed as “substantial.” Some of the identified weaknesses in DOTr procurement systems relate to: 1) inadequate experience on the Bank’s Procurement Guidelines and Processes; 2) inadequate information available on the annual procurement plan; 3) timeliness of procurement process; 4) notification of procurement results; and 5) timely release of payments. The following measures were agreed to mitigate the gaps/risks:

- a. Project Implementation Unit to be set-up by DOTr with a focal person in procurement to be provided with continuous relevant training on procurement and to be supported by Procurement Specialist with relevant experience in the Bank procurement procedures - by Appraisal.
- b. A Project Implementation Plan with a specific Procurement Section detailing, among others, the procurement arrangement based on the Loan Agreement and processing timelines within DOTr and standard procurement documents including SBDs and PBDs acceptable to the Bank will be prepared by the PIU - by Appraisal.
- c. A Procurement Plan detailing the identified contract packages for works, goods and consultancy has been prepared by the PIU and will be updated at least on an annual basis or as the need arises to reflect current circumstances, and cleared with the Bank – updates at least once a year.
- d. Advance procurement of key consultant contracts will be initiated during project preparation – by Appraisal.
- e. A performance monitoring mechanism will be established in DOTr to enable systematic tracking and regular reporting of procurement and contract implementation progress against the approved Procurement Plan and government’s time standards for procurement processing, and also to monitor compliance with the requirement for publication of procurement opportunities and contract award information in PhilGEPS – by Appraisal.
- f. DOTr will ensure annual procurement audit (within six months after each fiscal year), alongside the financial audit, is performed by COA following the Guide in the Audit of Procurement. The Bank will ensure that findings are discussed and appropriate measures are put in place to align and enhance the procurement process involving the project on a continuing basis.

C. Procurement Plan

48. The Borrower developed a Procurement Plan for project implementation which provides the basis for the procurement methods and prior review thresholds. This plan was agreed between the Borrower and the Project Team, finalized during negotiation, and will be available

at the PIU-DOTr. It will also be available in the Project's database and in the Bank's external website. The Procurement Plan will be updated in agreement with the Project Team annually or as required to reflect the actual project implementation needs and improvements in institutional capacity.

D. Frequency of Procurement Supervision

49. In addition to the prior review supervision to be carried out from Bank offices, the capacity assessment of the Implementing Agency has recommended two per year supervision missions to visit the field to carry out post review of procurement actions. The post review sample size will not be less than 20% of the contracts subject to post review.

50. Contracts eligible for retroactive financing. Procurement of goods and works and Selection of consultants in advance the date of signature of the Loan Agreement for their financing shall follow the Bank's Procurement and Consultants Selection Guidelines to be eligible for retroactive financing under the proposed loan.

Environmental and Social (including safeguards)

51. An Environmental and Social Impact Assessment (ESIA) was developed in conformity with the Bank's safeguard policies to evaluate environmental and social issues associated with direct and indirect impacts of the project during the planning, construction, and operational phases. The ESIA includes detailed alignment sheets showing the potential impacts and the concomitant mitigating measures as a basis for the analysis of alternatives for the BRT infrastructure sites and system technologies that will generate the least environmental and social impacts. The ESIA also includes an Environmental and Social Management Plan (ESMP) to manage the potential economic displacement of PUV drivers and support crew. A Resettlement Policy Framework (RPF) was also developed to address potential involuntary resettlement issues particularly for the construction of bus depots. The PIU will engage social and environmental safeguard specialists to supervise updating and disclosure of the plans during the detailed design phase and their implementation and monitoring. For civil works that require an RP, PIU certification that the RPs have been successfully implemented will be required before the works are started. The Bank will also monitor safeguards implementation through its regular missions and through support to be provided by the Task Team's social and environmental safeguard specialists.

52. Other than land acquisition, a major social risk facing the project is the potential loss of employment by some jeepney and bus drivers and their support crew operating along the BRT corridor.

53. Livelihood restoration for affected Public Transport service providers. Efforts have been made to avoid and minimize negative impacts on the existing public transport service providers on the Project Corridor during project preparation. However, the project would cause economic displacement of some jeepney and bus operators and drivers currently operating on the project corridor. Information on jeepney and bus operators and drivers affected by the BRT operation was obtained from LTFRB. There are about 6,384 jeepney and bus drivers, conductors, and support staff who are working on PUJ and PUB routes on the project corridor, and the project is

likely to affect one third of them as the project design seeks to minimize the impact on the existing jeepney and bus operations. The PUV drivers are considered more vulnerable to economic dislocation than the operators, particularly PUJ drivers. Their capacity to adapt to this reform in the public transportation sector is potentially hampered by low levels of education (elementary and high-school levels) and lack of alternative skills. Such a situation could translate to widespread displacement of this sector and render their families vulnerable to negative socio-economic consequences.

54. Various options for livelihood restoration of affected jeepney drivers, helpers and operators have been developed during the feasibility study and the ESIA, including a vulnerability analysis of affected jeepney operators and drivers. The options as well as the institutional and financial arrangements for restoring livelihood of affected jeepney drivers, helpers and operators are addressed in the Social Management Plan, which was developed under the ESIA. The options presented to the affected PUJ drivers and operators include: (a) route relocation, modification and truncation; (b) co-existence with the BRT or remain on their route, despite the impact of the Metro Manila BRT Line-1 Project; (c) scrapping or wholesale purchase of old PUJ units by the government; (d) formation of concessionaire group among operators to become part of the BRT consortium/investors; and (e) provision of alternative livelihood/TESDA training/preferential hiring to affected drivers/personnel and/or members of affected households. The preferred option of the drivers is route relocation, modification or truncation.

55. **Participation/Consultation/Communication Mechanisms.** There has been significant public and private sector participation in the planning and design process through a variety of communications mechanisms. These provided a good opportunity for the concerns and views of multiple stakeholders to be mainstreamed into project preparation and implementation. Some of the channels include:

- a. The formation of a Citizens' Advisory Board during the design and construction of the BRT is envisioned to provide information and feedback mechanism to various stakeholders;
- b. Conduct of public consultation meetings and hearings at key milestones during various stages of planning and preparation; focus group discussions at local barangays and a quantitative 'hall test' survey of a representative sample of 500 citizens;
- c. Development of a citizen's report card and BRT Information Center;
- d. A crowd sourcing initiative for infrastructure is being introduced in Metro Manila using mobile phone application that allows the public to articulate concerns, comment or transmit views on a particular topic;
- e. Development of a series of communication tools, including a study website, social media communications (Facebook and Twitter), poster/flyers, promotional materials, exhibition banners and workshops; and

- f. The project will establish a grievance mechanism and dispute resolution measures where project affected persons can seek to redress for grievances related to adverse environmental and social impacts.

56. The ESMP which contains the mitigating measures and monitoring and reporting requirements will be updated, implemented and reported by the contractor on a monthly basis to the Project Implementation Unit (PIU). An Environmental Compliance Monitoring report will be prepared by the PIU and submitted to DENR and the World Bank on a semi-annual basis.

57. Monitoring of safeguards implementation will also be done through the Bank's regular missions and through support to be provided by the Task Team's social and environmental safeguards specialist.

Monitoring & Evaluation

58. **Source of data for the project's outcome and results indicators.** During operations, qualitative and quantitative data will be collected annually relating to passenger numbers and fleet performance. These will be collected, collated and reported in the first year of operation (ex-post) as a function of the BRT System Manager. Other data sources include user questionnaires, user surveys, traffic and movement data and other collected records. The data collected will be the basis for the evaluating project's progress against PDO and reporting on key performance indicators outlined within this document. The ex-ante data was collected as part of project preparation providing a baseline from which project outcome and results can be assessed.

59. **Capacity to undertake data collection.** Data collection and monitoring will be undertaken and coordinated initially by the Project Implementation Unit and thereafter by the BRT System Management. The need to monitor and evaluate will be specified within the function of both units.

60. Survey protocol including forms and analysis methodology has been specified as part of project preparation. This extends local knowledge of basic data collection to incorporate that of system impact analysis. If required, the PIU/BRT System management capability will be strengthened by the Technical Support Consultant.

61. **Costs to support M&E activities.** The project will finance monitoring and evaluation of project components on a regular basis (refer to Annex 1). These costs assume that external support will be required and include the cost of enumerators and analysis/evaluation.

Annex 4: Implementation Support Plan

PHILIPPINES: Metro Manila BRT - Line 1 Project (P132401)

Strategy and Approach for Implementation Support

1. The strategy for implementation support plan has been developed based on the risk assessment. The following risk categories have been rated as “Substantial”: (i) stakeholder; (ii) sector strategies and policies; (iii) institutional capacity for implementation and sustainability; (iv) social and environmental; and (v) fiduciary.

2. **Stakeholder.** The proposed strategy is to provide all the necessary technical support to the DOTr (as the System Owner), which is in charge of preparing and implementing the project through the strategic deployment of consultants as well as the Bank’s Team supervision. In addition, periodical capacity building activities will be conducted through project preparation and implementation. With regards to ensuring local cooperation, a public communication and consultation strategy will be devised and carefully implemented.

3. **Sector Strategies and Policies.** As a complement to the technical support and capacity building provided through preparation and implementation, risks concerning the unclear delineation of roles in the sector will be mitigated by the formation of a National Steering Committee (NSC) composed of DOTr, DPWH, MMDA, and the concerned LGUs responsible for road transport services along the Metro Manila BRT Line 1 Corridor. The steering committee will be tasked with supervising project development and ensuring efficient coordination among the different agencies and stakeholders involved in the project. The DOTr will be chaired by the DOTr Secretary and will include senior officials from relevant agencies and LGUs.

4. **Institutional Capacity for Implementation and Sustainability.** The project will provide a comprehensive capacity building program, including: (i) training activities to the PIU by World Bank technical, procurement, financial management, and safeguard specialists; (ii) a peer learning program, sending key NSC and PIU staff to visit other World Bank project cities to learn from their experiences; and (iii) capacity building activities to the MMDA and LGUs, especially focusing on planning and operation of a modern public transport system and modern methods for traffic management and improving road safety. In addition, the capacity building activities and technical assistance will be offered to the bus companies, traffic police, and PIU will be planned to facilitate quality of delivery as well as the project’s long term sustainability.

5. **Social and Environmental.** Social and environmental risks will be mitigated through the development of EIA/EMP and RAP (and if necessary RPF), devised by qualified and experienced consultants. The Bank social and environmental safeguard specialists will ensure that the required safeguard documents are specific and comprehensive yet practical and achievable. Complementary, the Team will make sure that sufficient training on safeguards issues are conducted, and that adequate resources will be allocated for implementation of the EMP/RAP and monitoring.

6. **Fiduciary.** Given DOTr has minimal experience in World Bank projects, the Bank will provide training to relevant staff at the local and national-level on FM and procurement.

7. Implementation Support Plan

Primary Focus of Implementation Support

<i>Time</i>	<i>Focus</i>	<i>Skills Needed</i>	<i>Resource Estimate</i>	<i>Partner Role</i>
<i>First twelve months</i>	<ul style="list-style-type: none"> • TOR preparation • Project design • Procurement • Safeguards 	<ul style="list-style-type: none"> • Technical (public transport planning and operations, TOD, NMT, ITS) • Safeguards • Financial management • Procurement 	8 staff, two trips per staff per year	
<i>12-48 months</i>	<ul style="list-style-type: none"> • Procurement • Project implementation • Monitoring and supervision 	<ul style="list-style-type: none"> • Technical (public transport planning public transport operations, TOD and NMT, ITS) • Safeguards • Financial management • Procurement 	6 staff, two trips per staff per year	

Skills Mix Required

<i>Skills Needed</i>	<i>Number of Staff Weeks</i>	<i>Number of Trips</i>	<i>Comments</i>
Public transport planning and operations	1 staff members: 9 weeks	4	
TOD and NMT	1 staff member: 4 weeks	4	
ITS	1 staff member: 5 weeks	4	
Safeguards	1 staff member: 4 weeks	2x2	
Financial Management	1 staff member: 4 weeks	2	
Procurement	1 staff member: 4 weeks	2	

8. **Location of Staff Expertise.** Team leadership, safeguards, financial management, and procurement contributions will be provided by the Bank's country office-based staff. Additional technical expertise will be provided by Bank Headquarter-based staff.

Annex 5: Economic and Financial Analysis

PHILIPPINES: Metro Manila BRT - Line 1 Project (P132401)

Background

1. A financial analysis was conducted to determine the viability of the project from a business and commercial perspective, i.e. whether bus operations along the BRT route could be profitable as a business opportunity. A detailed economic analysis was conducted for investments in public transport system (including infrastructure, ITS, and ATC), traffic engineering, management and safety, land use improvements and project management, which together account for over 95 percent of the total project cost. Financial costs (including investments) were converted to economic costs by eliminating taxes and price contingencies, applying shadow prices to foreign exchange component and unskilled labor and reflecting costs in 2014 prices. A project life of 28 years starting operation in year 2019 was assumed.

Methodology

2. The approach entails determining the incremental costs and benefits or the difference in demand and traffic conditions between the with the project (“do something”) and the without project (“do nothing”) scenarios. The analysis utilized the Cube Transportation Model to forecast daily ridership and capture the impact of traffic diversion or abstraction onto or away from adjacent roads. An estimate of future trip growth was derived through the forecasted population growth in the area, increase in economic activity (GDP) and income, and evolution of car ownership. The constraints of the existing transport network have been taken into account in establishing growth estimates.

3. The capital cost includes construction of BRT running lanes, rehabilitation of carriageway, stations, terminals, depots, Area Traffic Control, and land acquisition and resettlement. The operating cost includes bus financing cost and cost associated with running BRT services, including driver wages, maintenance staff, fuel, tires, material, and insurance and licensing.

Passenger Demand Forecasting

4. **Approach.** The passenger forecasting establishes two scenarios. The without project scenario includes no infrastructure improvements to the existing network with travel demand increasing with no additional capacity is provided. The with project scenario estimates passenger demand with the BRT running ways, stations and services as well as any intersection alterations specified in the outline engineering designs.

5. **Without BRT scenario.** With no increase in network capacity the result is rapid deterioration in traffic speeds, from around 20.3km/h in 2012, to just 3.8 km/h in 2040. Despite efforts within the model to relate the growth in trips to available capacity, it is deemed that the low speeds forecast represent an unrealistic situation as additional interventions such as demand

management, highway improvements, public transport improvements, among others, would need to be introduced in the short to medium term.

6. **With BRT scenario.** In light of the growing congestion, there is a clear need for transport interventions along the corridor. The results of the forecasting model show time savings arising from the more efficient public transport provision and less network congestion vis-à-vis the without project scenario.

Table 5-1. Journey time (in minutes) during AM peak (Opening Year)

	Without Project	With Project
Travel Mode	Bus/Jeep	BRT
Travel Time	90 mins	43 mins
Travel Cost	PhP 35	PhP 20

7. **Ridership forecast for BRT.** Using the CUBE modeling software, demand forecasts for the BRT system were produced for an opening year of 2018, and future design years of 2020, 2025, 2035 and 2040 for economic and financial appraisal. Future year forecasts took full account of growth in the demand for travel and population growth. Patronage in the opening year is forecast to be 23,600 in the AM peak hour on a typical weekday. Key model outputs are summarized below:

Table 5-2. Ridership forecast, 2018-2040

Year	Daily Ridership (Based on Cube Output)
2018	291,563
2020	352,162
2025	472,578
2030	941,233
2035	1,202,724
2040	1,518,226

Cost and Revenue Summary⁹

8. **Capital Cost.** Preliminary engineering cost for the project (including infrastructure, equipment and project management costs) has been estimated at PhP 4.79 billion (US\$ 109.41 million) or a total expenditure of about PhP 368.39 million (US\$ 8.42 million) per km.

9. **Operating Cost.** Total operating cost per annum is estimated at PHP 2.3 billion (US\$ 52.5 million):

- a. Direct operating cost is estimated at PHP 1.63 billion per annum (US\$ 43.2 million), which include expenditures on driver and maintenance specialist wages, fuel, tires,

⁹ The NEDA prescribed exchange rate of USD = PhP 43.77 was used for this section.

- infrastructure maintenance, materials and license, and insurance costs.
- b. System management and operational costs is estimated at PHP 242 million per annum comprising of BRT operational control center, communication charges, maintenance, BRT operation managers, control center staff, terminal dispatchers, mobile maintenance unit.
 - a. Annual repayment for the vehicle fleet is estimated to cost PHP 300 million assuming a lease finance arrangement terms of 10 years at 12% interest rate. A fleet size of 151 vehicles in the opening year 2018 is required to serve demand levels during peak hours.
 - b. Technical support consultants estimated at PHP 72.78 million.

10. **Revenue Forecast.** Farebox revenue is a function of demand and the fare levels. The BRT system is estimated to attract approximately 300,000 passengers per day journeys, with different applicable fares, ranging from PHP 10 to PHP 20. Assuming a fare rate of PHP 10 and 15% fare collection leakage costs, the estimated revenue is PHP 2.5 billion in the first operating year, 2018. After tax, ticket revenue is approximately PHP 1.5 billion. Farebox revenues account for 92% of the expected total revenue of the BRT system.

11. Advertisements on the buses, bus stops and stations are also potential source of income. Revenues from advertising is estimated at PHP 145 million at the opening year (2018) or about PHP 101 million after tax.

Financial Evaluation

12. The financial appraisal is focused on assessing the project's viability as a commercial venture. It assesses the ability of system revenues to cover operating costs and other elements of ongoing costs including operational control, system management and potentially also system infrastructure maintenance, to establish whether (after taxes) an operator is able to make a profit, and an appropriate level of financial return on investment. A Weighted Average Cost of Capital (WACC) of 14.6% was assumed, in line with GoP use for its own approval process.

13. **Net Financial Benefit.** The project is financially viable from a business and commercial operations point of view with the following results:

- a. A Financial Net Present Value (FNPV) of PHP 2,065 million indicating the total NPV of commercial benefits exceeds the NPV of commercial costs.
- b. A Financial Benefit Cost Ratio (FBCR) of 1.08, indicating that every one peso expended on the project as commercial costs will yield 1.08 pesos in commercial benefits. An FBCR value greater than 1.00 is indicative of a financially feasible project;
- c. From the perspective of the operator (not incurring the infrastructure costs), the project has a Financial Internal Rate of Return (FIRR) of 271%, higher than the 14.6% WACC. The FIRR is very high, as there are very few years in costs exceed revenues (principally due to the leasing of vehicles) and the size of the loss in the loss-making years is small compared to the profits made upon the system becoming profitable. If such high FIRR is confirmed during implementation, the operations of the BRT will incorporate mechanism for revenue sharing in order to reduce the financial return and

generate revenue to invest in public transportation/maintenance.

14. The financial appraisal also assesses the overall financial viability of the system, taking into account the infrastructure outlays of the government. The project (including infrastructure) is not financially viable without Government support (in this case through the provision of infrastructure) based on the resulting after tax NPV of positive PHP 9 billion and a corresponding FIRR of 11.8%, which is below the WACC of 14.6% adopted by GoP for private sector investment.

15. Once implemented, the improved bus system is expected to be financially sustainable over its operating life. Total annual recurring costs (including direct operating cost, system management, bus purchase, infrastructure maintenance, and technical support consultants) are expected to be PHP 2.3 billion (about US\$ 51 million). Revenues from bus fares and commercial revenue (advertising) in the opening year are projected to be PHP2.5 billion, of which 92 percent is derived from fares (estimated at PHP 10 per passenger per trip). Revenues are expected to grow as passenger demand grows in the following years. Fares on the new BRT system are assumed to be the same as currently charged on the PUJs (ranging from PHP10 to PHP 20), despite the service standards being higher.

Economic Evaluation

16. Economic benefits for the BRT scheme generally take three forms: consumer surplus, producer surplus and externalities.

17. **Consumer surplus** is derived from lower costs incurred by travelers either from financial (fare reduction) or reduced time costs in the various components of generalized time (e.g. in-vehicle time, waiting time, interchange penalty, access time, egress time etc.) due to faster journey times, a lower number of interchanges, or enhanced comfort and reliability. Monetary values of these savings or reduced time costs are estimated by using Value of Time (VOT) factor. The analysis differentiates between user and non-user benefits, wherein travelers who take public transport are considered as ‘users’ and other road users (private car, taxi) are considered as ‘non-users’.

18. **Producer Surplus** accrues to transport operators as a result from either a reduction in their costs or an increase in their revenues. This may be driven for example by improvements in operating conditions resulting from less congestion.

19. **Externalities** are benefits accruing to society in general rather those directly involved as either users or producers. Examples of externalities include lower GHG emissions and reduction in accidents. An effort was made to monetize these benefits and include in the estimation of economic benefits. The Social Value of Carbon (starting at US\$30 in 2015 and increasing to US\$80 in real terms by 2050) was included in the analysis.

20. The project will also likely bring reduction in emission along the corridor through the conversion of largely sub-EURO vehicles to Euro IV. This reduced emissions from vehicle conversion however is difficult to quantify and was not included in the estimation of economic

benefits.

21. Expected reduction in fatalities, serious injuries, slight injuries and property damage caused by vehicles per km were converted into monetary values based on the Value of Life/Value of Serious Injury/Value of Minor Injury or in Value per Property Damage, respectively.

22. **Incremental analysis.** In calculating the economic benefits of the project, only the estimated change (incremental) in consumer and producer surplus and externalities were considered. The estimated benefits and costs from 2018 to 2045 (the final year of the financial appraisal period).

23. **Economic appraisal assumptions** include:

- a. All costs are based on real costs at 2013 prices
- b. Discount rate of 15% was applied
- c. All project costs were expressed in factor prices by excluding of taxes and using shadow prices as prescribed by NEDA (i.e. 60% for unskilled labour and foreign exchange is 120%).

24. **Net Economic Benefits.** An Economic Net Present Value (NPV) of 1.6 million pesos indicating the total NPV of economic benefits exceeds the NPV of economic costs. An NPV value greater than zero is indicative of an economically feasible project.

25. The project exhibits an Economic Benefit Cost Ratio (BCR) of 1.19, indicating that every one peso expended, the project will yield 1.19 pesos in economic benefits. A BCR value greater than 1.00 indicates that the project is feasible.

26. The project has an economic internal rate of return (EIRR) of 15.4% indicating that NPV and BCR will remain above zero and unity, respectively, below discount rates of this value. The EIRR is higher than recommended World Bank discount rate of 12% indicating that the project is economically feasible.

Sensitivity Analysis

27. A sensitivity analysis evaluated (i) a capital cost increase of 10 percent; (ii) a decrease in benefits of 10 percent (e.g. increases in travel times and vehicle operating costs); and (iii) the combination of both capital cost increase and decrease in benefits. In all three scenarios, the EIRRs (ranges between 15.35% to 15.385) are above the social discount rate of 12 percent.

Annex 6: Clean Technology Fund

PHILIPPINES: Metro Manila BRT - Line 1 Project (P132401)

Key Indicators	CTF funding	Total Project Funding	Scaled-up Phase ¹⁰
Direct beneficiaries along the corridor (disaggregated by gender---women in parenthesis)	300,000 (150,000)		> 2 million (> 1 million)
Leveraging (US\$ million)	23.90	85.46	TBD
CTF investment leverage ratio	1:4		TBD
CO ₂ avoided <ul style="list-style-type: none"> • Tons per year (ton/year) • Lifetime (ton/20 years) 	<ul style="list-style-type: none"> 206,892 2,634,290 		<ul style="list-style-type: none"> > 800,000 >10 million
Cost effectiveness <ul style="list-style-type: none"> • CTF cost effectiveness [US\$CTF/tCO₂eq avoided over 20 years] • Total project cost effectiveness [US\$ Total Project/tCO₂eq avoided over 20 years] 	<ul style="list-style-type: none"> 9.09 41.53/tCO 		TBD
Environmental co-benefits in terms of avoided local pollution	Particulate Matter savings: 8-10 tons/year NOx savings: 65-80 tons/year average		
Other Co-benefits			
Increased Public Transport User Satisfaction for public transport users, particularly women	Improved, safer, and more secure street access, stations, and vehicles, efficient and safe boarding and alighting, more punctuate bus schedule, and reduced travel time		
Reduced road accidents	An estimated 5% reduction of road accidents on BRT corridors over 20 years BRT operation period.		
Improved facilities for pedestrians and NMT	Improvements in traffic and safety management and safety facilities (footbridges, signalized pedestrian crossing, refuge islands, etc.)		
Support land-use transport integration	Integration of land development along the corridor and fostering transit-oriented development adjacent to stations and interchange terminals.		
Support local economy	Increase in land values adjacent to stations		
Opportunity for improved private sector delivery	Mobilize private capital for bus procurement, mobilize private sector for infrastructure delivery		

¹⁰ The scaled-up phase is a hypothetical scenario for which the current CTF project will contribute to. It is proposed based on DOTr's plan to develop a BRT network in Metro Manila by 2025 that consists of at least four BRT lines with a total BRT operation length of about 90 km.

Introduction

1. Urban transport represents one of the fastest-growing sources of GHG emissions in the Philippines. To address this problem and other urban transport problems such as traffic congestion and local air pollution, there is a need to break from past transport enhancement practices that emphasized construction of new infrastructure capacity. There is growing recognition that to best promote environmentally sustainable transport (EST), there is a need to plan and implement integrated packages of improvements in public transport, footpaths and cycle ways, vehicular travel management, clean fuels and technologies, and road safety.

2. In the Philippines the need is even more acute than other countries. Emissions from mobile sources contribute 65 percent of air pollution emissions nationwide, much more than stationary sources. Mobile sources account for a large proportion of the particulate matter, carbon monoxide, nitrogen oxides, and volatile organic compounds (VOC) currently emitted in large Philippine cities. While air quality in these areas has continued to improve since 2003, concentrations of pollutants such as total suspended particles continue to be above the acceptable values set by the Clean Air Act.

3. Transport consumes more energy than any other sector. In 2008, the transport sector accounted for 36.5 percent of total national energy consumption. This increased to 37.7 percent in 2012, with road-based freight and passenger transport consuming about 80 percent of this share. It has also been estimated that the transport sector accounts for over 70 percent of the country's petroleum products consumption.

Philippine Investment Plan for the CTF

4. The Metro Manila BRT Line 1 project is derived from the Investment Plan (IP) approved by the CTF Trust Committee on December 2009 and revised in August 2012. The Clean Technology Fund (CTF)¹¹ Investment Plan is a “business plan” agreed among the Government of Philippines, the International Bank for Reconstruction and Development (IBRD), the Asian Development Bank (ADB) and the International Finance Corporation (IFC) that proposes \$250 million of CTF co-financing. Specifically, the original approved Investment Plan proposes CTF co-financing for (i) catalyzing private sector investment in distributed generation through renewable resources and increasing the number of viable off-takers (Electric Cooperatives) for such renewable energy (RE); (ii) investment support and risk mitigation for the private sector's entry into energy efficiency and cleaner production sectors; (iii) solar generation with net metering; and (iv) introduction of Bus Rapid Transit (BRT) systems in Cebu and Metro Manila. The CTF investments will mobilize financing of about US\$2.5 billion from the government, multilateral development banks, carbon finance and the private sector. The indicative financing plan as updated in August 2012 is shown in Table 7.1.

Table 6.1: Indicative Financing Plan After Reallocation in August 2012 (US\$ million)

¹¹ The Clean Technology Fund invests in projects and programs that contribute to the demonstration, deployment and transfer of low carbon technologies with a significant potential for long term greenhouse gas emission savings. The CTF Trust Fund Committee oversees the operations of the Fund. The World Bank (IBRD) is the Trustee of the Fund.

Financing Source	Renewable Energy (WBG)	Urban Transport (WBG)	Energy Efficient Electric Vehicles (ADB)	Solar Energy Development (ADB)	Total
CTF	75	50	105	20	250
GoP / DBP	180	50	99	20	349
IBRD Loans	250	180	0	0	430
IFC Loans	250	0	0	0	250
ADB Loans	0	0	300	80	380
Private sector	750	0	(tbd)	(tbd)	750
Other cofinancing	0	20	0	0	20
Total	1,505	300	504	120	2,429

Source: MDB teams

(tbd)=to be determined, WBG=World Bank Group, ADB=Asian Development Bank

Rationale for CTF involvement

5. CTF Involvement will deliver climate benefits directly through the project as well as through the broader strategic promotion of the BRT concept in the Philippines. These benefits are described below.

6. The project will directly support the reduction of emissions from the transport sector in Metro Manila. A detailed GHG inventory and forecast were undertaken as part of project preparation. Based on these forecasts, implementing the BRT-ATC scenario would yield a total saving of 2.6 million tons of CO₂e across the city of Manila (in reference to a BAU baseline scenario), over a 20-year appraisal period starting in 2016. The average annual saving is 206,892 tons, equivalent to 12 percent of the current total annual GHG emissions from urban transport in Metro Manila. For reference, this annual saving estimate is slightly lower than the annual GHG benefits recorded by Transmilenio system in Bogota, Colombia two years after opening in 2000 (250,000 tonnes/year) and double those recorded by the BRT system in Baranquilla, Colombia in recent years (61,000 tonnes/year).

7. In addition to these direct GHG savings, the project, together with Cebu BRT Project, will help deliver a strategic long term climate benefit through the demonstration and proof-of-concept of BRT in the Philippines. In practice, BRT remains less familiar in the Philippines as compared to other (often more expensive) mass transit modes such as light rail transit and metro rail transit. As of today, no BRT has been built and operated in the Philippines yet. The Cebu BRT project was approved in December 2014 but construction works have not yet started. It is likely the Cebu BRT and Manila BRT may start operation in the same year. As such, the Cebu BRT project and the Manila BRT Line 1 project together are expected to provide an on-the-ground demonstration of BRT in practice, disseminating both technical and institutional knowledge for decision makers in other cities, both in the Philippines and beyond. The Manila BRT Line 1 project explicitly recognizes the importance of this dissemination impact by including a component designed to continue, and more broadly, propagating the tools, technical knowledge, and institutional capacity to successfully implement BRT in other major cities of the Philippines. The potential climate benefit from this long term strategy is not explicitly calculated here, but has the potential to be significant. Finally, in addition to the Cebu BRT and Manila BRT Line 1, CTF is currently supporting several other simultaneous investments in BRT system implementation around the world, including Mexico and Cairo. The project will also seek to

foster cross-fertilization among supported projects to enable knowledge sharing of global best practice in BRT systems design, development, and operations.

Project Description

8. The project will be implemented along the España-Quezon Avenue corridor, which is a main strategic transport route cutting diagonally through the upper half of Metro Manila from Quezon City to Manila City. It is a corridor that is not currently served by any form of mass transit although the proposed MRT Line 7 would serve the northern half of the corridor between Fairview on the North end and Elliptical in the future. The corridor's total length is a 13 km long section between Manila City Hall and Quezon Memorial Circle, largely along Quezon Avenue. The corridor is located within high density commercial areas of north east Manila City and south west Quezon City. These areas also contain key institutional centers, a number of important medical facilities, and high density residential centers.

9. The Manila-Quezon corridor extends from the immediate area around Quezon Memorial Circle, in the north east; to the Andres Bonifacio Memorial area bounded by Padre Burgos, Natividad Almeda-Lopez, A Villegas and Cecilia Munoz-Palma in the south west – a length of 13.0 km. This section forms the core improvement corridor and will witness the insertion of comprehensive infrastructure at the median of the corridor to assist with bus priority. Quezon Memorial Circle

10. The project design seeks to manage implementation risk, particularly to reduce the need for land acquisition and impacts on the existing transport operations. Stations are placed relatively far apart, positioned where there is no land constraint that would require land purchase. During the life of the project, most existing Public Utility Jeepney (PUJ) services will continue to operate to provide additional service of intermediate locations. Infrastructure to support the proposed BRT Line 1 is defined to sit within the confines of the existing road right of way both negating the need for land acquisition and managing overall environmental impact.

11. Implementation of the project will be financed by combination of a World Bank IBRD loan, a CTF loan, and counterpart funds from Government of Philippines. In addition to co-financing BRT infrastructure, and accessibility and urban realm enhancements (including pedestrian crossings), the CTF loan will also finance project outcome monitoring activities such as data collection and analysis. The CTF additionality is discussed at the end of this annex.

Potential for GHG Emissions Savings

Emissions Reduction Potential of Investment:

12. The GHG appraisal is closely linked with other appraisal activities undertaken within the Feasibility Study for the project, including modelling of the impacts on traffic flows and conditions of the two future scenarios. The geographic boundary for the area in which implementation of the project will have an impact (the "impact area") was defined as part of the transport model development process. The impacts of interest are those from all road vehicles driving within and through the impact area.

13. The study appraisal methodology which was used for Cebu BRT Project is also used for this project. It follows a process of applying appropriate greenhouse gas emission factors (g/veh-km) to vehicle kilometres travelled by different vehicle types under current conditions and under the alternative future scenarios using the renown International Vehicle Emissions (IVE) model.¹² Particular attention was paid to deriving and using greenhouse gas (CO₂, N₂O and CH₄) emission factors that are as appropriate as possible to the local conditions in the impact area of Metro Manila, in terms of:

- a. The local vehicle fleet composition (breakdown by type, engine technology); and
- b. Driving conditions in the impact area of Metro Manila (stop-start conditions, average speed, speed variability, temperature, topography).

Current GHG Emission from the Project Impact Area

14. The adopted approach used the greenhouse gas emission factors for different vehicle types that were determined based on an extensive data collection exercise in Cebu in 2012. These were seen as transferable to the current situation in Metro Manila, on the basis that they:

- a. are based on a very recent in-depth data collection effort;
- b. are based on a vehicle engine technology mix (as surveyed) for a large Philippines city;
- c. are based on detailed drive cycle data collection in a congested Philippines city.

15. The current year greenhouse gas emission factors that we used for the six main current vehicle types are shown in Table 7.2. The final column of the table shows the overall greenhouse gas emission factor as “CO₂ equivalent” (or CO₂e) based on widely accepted values of the relative global warming power of each individual gas. Different values by road type are shown for cars, and these were each applied to the vehicle-km travelled on those road types, as determined through the transport model. Asian Utility Vehicles (AUVs) were assumed to have the same emission characteristics as cars/light vehicles for the greenhouse gas emission appraisal.

Table 6.2: Current greenhouse gas emission factors derived from IVE model

¹² The IVE model was developed by ISSRC, part of the project team leading the preparation of the Feasibility Study. It is a java-based stand-alone computer model that takes account of information on engine technology in the local vehicle fleet and on-road drive cycle characteristics (as well as other local characteristics) in determining locally appropriate emission factors. For more information see the GHG report in the project file.

Vehicle type	Road-type	Current Emission factors (g/km)			
		CO ₂	N ₂ O	CH ₄	CO ₂ equiv
Car / light vehicle	Highway	357.496	0.002	0.933	377.826
	Arterial	386.081	0.003	1.021	408.317
	Residential	466.568	0.003	1.244	493.648
Taxi		393.020	0.001	2.246	440.632
Jeepney		1563.799	0.008	0.000	1566.359
Bus		1876.469	0.014	0.000	1880.853
Motorcycle / tricycle		61.854	0.000	2.794	120.532
Truck		1164.752	0.008	0.000	1167.078

16. In essence, the approach follows the standard calculation process for emission estimation, with the number of vehicle-kilometers travelled by different vehicle types multiplied by appropriate emission factors for the greenhouse gases. The sophistication of the adopted approach lies in:

- (a) Using an up-to-date and validated new transport model of Metro Manila to derive the vehicle-kilometer and person-kilometer estimates for the current situation and future scenarios;
- (b) Using current emission factors from the International Vehicle Emissions (IVE) model that were derived from extensive data collection in a large city of the Philippines (Cebu) in 2012; and
- (c) Adjusting emission factors for future scenarios to take account of likely changes in traffic conditions and vehicle technology within the local fleet.

17. The details of how the inputs to these calculations were derived are described in more detail in the GHG report in the project file.¹³

18. The resulting greenhouse gas calculation for 2013 is provided in the following Table 7.3. This shows an initial estimate of 1.73 million tons of annual CO₂ equivalent emissions from some 3225 million vehicle-km of travel.

Table 6.3: Estimate of Annual GHG emissions from transport in impact area of Metro Manila for the year 2013

Vehicle type	Road Type	Emissions (tonnes) for 2013				
		Veh-km 2013	CO ₂	N ₂ O	CH ₄	CO ₂ equiv
Car / light vehicle	Highway	1,102,042,410	393,976	2.6	1029	416,380
	Arterial	444,149,728	171,478	1.1	454	181,354
	Residential	114,591,104	53,464	0.4	143	56,568
Taxi		340,544,237	133,841	0.5	765	150,055
Jeepney		348,260,151	544,609	2.9	0	545,500
Bus		84,370,849	158,319	1.2	0	158,689

¹³ Cebu City Greenhouse Gas Emissions Study, Final Report (July 2012), The World Bank

Motorcycle / tricycle		674,255,417	41,706	0.0	1884	81,269
Truck		116,527,658	135,726	0.9	0	135,997
Totals		3,224,741,554	1,633,118	9.5	4,274	1,725,812

Future Year GHG Emission Forecasts

19. **Changes in travel demand patterns.** Under the baseline (“business as usual”) future scenario, travel demand patterns in and around the Manila BRT corridor will change over time due to a number of factors. These include:

- a. Population growth in the area
- b. Increasing economic activity (GDP)
- c. Increasing income
- d. Increasing car ownership

20. The potential effect of these factors was calculated within the wider transport modelling and economic appraisal study activities.

21. Under the BRT-based future scenario, these same changes in overall travel demand will apply. However, people’s choice of travel mode will show a different pattern due to the availability of the new transport mode – BRT. This was brought out in the transport modelling exercise and reflected in the vehicle-km and average speed figures output by the transport model.

22. **Future year emission factors.** Emission factors for the future year forecasts were adjusted from the current year values to take account of likely changes in:

- a. The engine technology make-up of the vehicle fleet and improvements in fuel quality; and
- b. Traffic conditions on the future network.

23. Adjustment of emission factors to take account of changes in engine technology and fuel quality was done by re-running the IVE emissions model with different input values for the vehicle fleet technology breakdown and fuel quality. These issues were researched in some detail for the World Bank funded Cebu City BRT Feasibility Study in 2012, and the same assumptions were used on how technology and fuel quality will change for the Manila study.

24. Another significant influence on future emission factors will be the change seen in traffic conditions under the alternative future scenarios. Since it is not possible to fully model future detailed drive cycles (the most detailed representation of traffic conditions), we adopted an approach of adjusting the current year emission factors according to the change in average vehicle speeds between the current year and the future forecast years. These changes in average speed were obtained from the output of the Manila transport model.

25. As for the 2012 Cebu study, the appropriate adjustments to the emission factors were derived using a spreadsheet model that embedded the average speed-related emission curves from the well-known COPERT4 emissions model. These curves were used to show that an X%

decrease in average speeds from those observed in the current situation would lead to a Y% increase in the CO₂ emission factor.

26. The forecast of greenhouse gas emissions under the baseline scenario is provided in the following Table 6.4.

Table 6.4: Forecast greenhouse gas emissions (tons CO₂e) for 2016-2035 (baseline)

Vehicle type	Road Type	2016	2020	2025	2035
Car / light vehicle	Highway	508,003	777,747	1,107,181	1,653,832
	Arterial	223,807	366,440	548,073	864,660
	Residential	68,001	106,866	158,208	238,990
Taxi		184,547	265,834	360,284	435,069
Jeepney		468,158	474,692	481,802	478,888
Bus		161,809	167,788	202,424	235,265
BRT		0	0	0	0
Motorcycle / tricycle		91,735	114,938	86,888	255,476
Truck		135,062	163,370	227,470	280,355
Totals		1,841,123	2,437,674	3,172,331	4,442,535

27. The forecast of greenhouse gas emissions under the BRT (With Project) scenario is provided in the following Table 6.5.

Table 6.5: Forecast greenhouse gas emissions for 2016 – 2035 tons CO₂e (BRT scenario)

Vehicle type	Road Type	2016	2020	2025	2035
Car / light vehicle	Highway	511,013	786,759	1,067,405	1,493,437
	Arterial	232,452	387,619	545,353	784,818
	Residential	70,989	116,105	161,194	223,630
Taxi		188,817	277,619	362,113	439,914
Jeepney		451,175	442,951	444,962	408,895
Bus		139,965	137,918	164,952	191,590
BRT		9,797	13,351	19,646	45,928
Motorcycle / tricycle		93,387	119,500	82,563	211,899
Truck		137,329	168,589	229,310	285,178
Totals		1,834,923	2,450,409	3,077,499	4,085,288

28. Table 6.6 shows the annual urban transport greenhouse gas emissions across the modelled impact area for the current year (2013) and the modelled years of 2018 (target first year of operation), 2020, 2025 and 2035. These are shown for the baseline (“business as usual”) scenario and for the ‘with project’ scenario, together with the impact of implementing the ‘with project’ scenario. Table 6.7 shows the corresponding figures for emissions per person-km across the modelled impact area.

Table 6.6: Annual GHG emissions and impact of ‘with project’ scenario

Year	Annual GHG emissions (tonnes CO ₂ e)		
	Baseline scenario	BRT scenario	Impact of BRT
2013	1,725,812		
2018	1,841,123	1,834,923	-6,200
2020	2,437,674	2,450,409	12,735
2025	3,172,331	3,077,499	-94,833
2035	4,442,535	4,085,288	-357,246

Table 6.7: Annual GHG emissions and impact of ‘with project’ scenario

Year	GHG emissions per person-km (g/pkm CO ₂ e)		
	Baseline scenario	BRT scenario	Impact of BRT
2013	143		
2018	145	140	-5
2020	179	174	-6
2025	221	201	-20
2035	268	213	-55

29. The figures in Table 6.6 show that the ‘with project’ scenario would give a small decrease in total GHG emissions in 2018, with a small increase apparent by 2020. However, in terms of GHG emissions per person-km (Table 6.7), in 2020 the ‘with project’ scenario continues to deliver small benefits. This suggests that the increase in overall GHG emissions shown in Table 6.6 is due to the ‘with project’ scenario allowing people to travel more than would otherwise be possible.

30. As travel demand grows significantly from 2020 through 2025 to 2035, much larger GHG benefits are forecast for the ‘with project’ scenario, in terms of both total emissions and emissions per person-km. It should be noted, however, that by 2035 the transport model outputs suggest that the network will be very highly congested, with average speeds as low as 3 to 4 km/hr. At this point, both transport and emission models tend to become unstable and less reliable as indicators of likely outcomes.

31. Adopting assumptions that total annual greenhouse gas emission savings from project implementation follow a linear trend between the modelled years, and that they remain at the 2035 level after 2035, the total forecast GHG emission saving over a 20-year appraisal period starting in 2016 was calculated. This showed a total saving of 2.6 million tonnes over 20 years, or an average of 206,892 tonnes per year.

Cost-effectiveness (Incremental impact of CTF Financing)

32. The CTF financing forms US\$23.95 million of the total financing for the BRT and associated package. It is a critical and integral financing element, without which the overall project could not proceed as envisaged. It is therefore reasonable to conclude that the

cost-effectiveness of the CTF financing in terms of unlocking the greenhouse gas emissions is US\$9.07 per ton of CO₂ equivalent saved based on 20-year appraisal period.

33. The cost estimate of implementing the BRT Line 1 in Metro Manila, together with the upgraded adaptive area traffic control system and other associated measures is US\$113.11 million. The total, undiscounted cost per ton of CO₂ equivalent saved is therefore approximately US\$41.53 based on 20-year appraisal period.

34. Marginal Abatement Cost. In October 2013, the CTF Trust Fund Committee suggested providing information on the estimated marginal abatement cost (MAC) for projects for which the marginal abatement cost is likely to exceed US\$100 per ton of CO₂ equivalent. This decision draws from the CTF criteria which specifies that CTF co-financing will not be available for investments in which the marginal cost of reducing a ton of CO₂ equivalent exceeds US\$200.

35. Preliminary calculations confirm that the MAC for the project will not exceed the aforementioned US\$200 threshold value per ton of CO₂eq. In fact, the MAC for the project should be lower than US\$41.53 per ton of CO₂ once all economic benefits are included to estimate the Net Present Value (NPV).

$MAC = \frac{NPV}{LCO_2}$, where NPV stands for Net Present Value and LCO₂ stands for Lifetime CO₂ emissions savings.

Demonstration Potential at Scale

36. As described above, the Metro Manila BRT Line 1 has a cumulative GHG emissions abatement potential of over 2.6 Mt CO₂e over 20 years. This is the second proposed BRT system in the Philippines whose potential emissions reductions have been analyzed in detail to date. The demonstration effect of the Cebu BRT and the Metro Manila BRT Line 1 could impact on many other cities in the Philippines, including cities within the National Capital Region, and emerging metropolitan areas, such as Metro Davao, Naga, Bacolod, Iloilo and Cagayan de Oro that have been identified as potential sites for future projects. Although the emissions reductions of projects have not been studied in detail, many have urban development patterns and sizes similar to Cebu, Manila, and Quezon City, and at an aggregate level would be expected to deliver benefits of the same order of magnitude.

37. The crucial ingredient that will enable this broader adoption in the Philippines is an operational example of a successful BRT system in the local context. Both Cebu BRT and Metro Manila BRT Line 1, as the first generation of BRT systems to be developed in the country, hold the potential to be the catalyst for this broad national change. Although the benefits of BRT for the growing cities of the Philippines are evident in theory – travel time savings and economic benefits for users, modernization of the public transport system and operators, upgraded urban development along corridors – having a working model of a system ‘in country’ will naturally help spur the further development of further systems. This project also explicitly recognizes this demonstration impact by including a US\$12 million component, with funding from the French Development Agency, for further dissemination of the BRT concept and experiences to be

generated through the first two BRT projects, capacity building, and design of BRT systems in other cities.

Development Impact and Expected Co-Benefits

38. The BRT project is seen as a catalyst for change. With the help of CTF resources, the project would support the National Environmentally Sustainable Transport Strategy (NESTS), whose overall development objectives are: (i) reduction of annual growth rate of energy consumption and associated GHG and air pollutant emissions from the transport sector, and (ii) enhance sustainable mobility through the development of a viable market for environmentally sustainable transport (EST) goods and services, which involves, among others, the promotion of transportation systems of low carbon intensity and shift towards the use of more sustainable transport modes. Further, and perhaps more importantly, the use of CTF will help realize the co-benefits associated with such investments, including improvements in urban air quality, improved transport safety, and an upgrade in the design and walkability of the urban area. These co benefits are described below.

39. **Environmental co-benefits.** According to the Department of Environment and Natural Resources (DENR), particulate matter (PM₁₀) levels in Metro Manila ambient air in 2008 exceeded the recommended national guideline values for annual exposure as well as WHO guideline values. Moreover, a 2002 World Bank study estimated the health costs of particulate matter (PM₁₀) exposure in Metro Manila, Baguio City, Cebu City and Davao City to be over US \$430 million per year, equivalent to 0.6 percent of the country's national gross domestic product.¹⁴

40. Adoption of CTF supported measures would result in reduction in exposure to these airborne pollutants. This will be made possible by: (a) improved vehicle technology with better emission controls; (b) bus operation with fewer stops than existing jeepneys, reducing the large emissions that occur during start-ups; (c) separate bus lanes for smoother operation. It will carry more passengers on fewer, larger vehicles, reducing over-all vehicle-km. The BRT system will use vehicles with more advanced and better maintained propulsion systems that require fewer liters of fuel for moving a given number of passengers over a given distance. These vehicles will operate a less fuel intensive drive cycle that minimizes unnecessary stops due to congestion by taking public transport out of general traffic and giving it signal priority.

41. A study¹⁵ to estimate health co-benefits of the Cebu BRT project revealed that:

¹⁴ Results of an air quality monitoring project in 2002 identified the downtown area having the highest concentration of pollutants and pointed to the high and medium traffic density as a most likely source of NO_x in Cebu City. The air quality monitoring project also indicated how Cebu City's air quality is affected by pollution from nearby cities since "wind rose pattern reveals most of the time, wind coming from the northeast (where Mandaue and Lapu-lapu cities are situated) is blown towards the city of Cebu." (Kitakyushu Initiative, 2003). Based on the DENR Environmental Management Bureau-Region 7 last emissions inventories of air pollution sources for the Central Visayas region (Cebu City included), conducted in 2008, mobile sources contribute to 64% of air pollution, compared to 21% for industrial sources and 15% for area sources (PIA, 2011).

¹⁵ A study was undertaken during January-May, 2012 to estimate the health co-benefits of the Cebu BRT project (linked to the reduction of pollutants from mobile sources), define an air quality monitoring action plan and strengthen air quality management in Cebu city (including by promoting public participation) to reverse the growing air pollution associated with transport increase.

- a. Particulate matter (PM) savings from this project are estimated at around 8-10 tons/year. For reference, the Gold standard BRT in Asia (i.e. Guangzhou BRT of 22.5km) is estimated to save approximately 4 tons/year.¹⁶ The higher savings in Cebu when compared with Guangzhou is due to a large modal shift from jeepneys to the BRT and high number of pre-euro vehicles which still ply the roads of Cebu City. The PM savings are conservative because the analysis assumed that tighter vehicle emission standards would be enforced during the BRT's operation resulting in a much cleaner fleet in Cebu; this results in PM savings of 167 to 239 tons not attributable to the BRT;
- b. Total nitrogen oxides (NOx) savings is in the range of 65-80 tons/year. In comparison, the Guangzhou BRT saves around 450 tons/year. The high savings in Guangzhou is due to inclusion of the increase in mixed traffic speed parameter and high efficient buses being introduced as BRT buses (Euro IV);
- c. The city-wide analysis shows: Total monetary savings ranging from US\$94-135 million from reduction of premature mortality, adult chronic bronchitis, child acute bronchitis, respiratory hospital admissions, cardiac hospital admissions, emergency room visits, asthma attacks, restricted activity days, and respiratory symptom days.

42. **Qualitative impact on public transport user satisfaction.** The active communications and consultation program implemented during the conduct of the Metro Manila BRT Feasibility Study has revealed the expectations for an increase in the quality of transport as one of the major future benefits of the system. Projected benefits include:

- a. Improving quality of service. The level of service by current jeepneys is considered low, with unreliable waiting and travel times, difficult boarding and alighting, vehicle overloading, and PUJ drivers frequently refusing to pick up elderly passengers. Taxis, on the other hand, are comfortable but expensive, and thus do not offer a viable public transportation option for most commuters. The project will address this quality of service issues while remaining affordable to the average commuter. With a fare structure similar to the existing PUJ rates, riders will enjoy more reliable, faster, and safer travel. In addition, the replacement of jeepney vehicles with modern BRT buses would improve service quality. While the former PUJs are aging, inefficiently operated, unreliable, and operate in congested, mixed traffic, the latter operate in dedicated busways with off-board fare collection, traffic signal priority and real time passenger information. Combined, these improvements have the potential to significantly upgrade both the quality and efficiency of public transport operations in Metro Manila.
- b. Efficient and safe boarding and alighting for elderly and persons with disabilities. One of the most cited transportation problems in Metro Manila are related to improper boarding and alighting of PUJs. Consultations with commuters revealed that PUJ drivers follow a double standard when loading and unloading passengers; drivers refuse to stop on demand when requested by a passenger for disembarking, insisting on only stopping in proper loading and unloading areas. However, when it comes to allowing passengers to board (and thus collect a fare), drivers are happy to stop anywhere, even at areas where

¹⁶ <http://www.itdp.org/documents/20110810-ITDP-GZBRTImpacts.pdf>

loading and unloading are prohibited. In addition, both the elderly and people with limited mobility have difficulty boarding jeepneys. This difficulty in boarding is further compounded by drivers who begin to move the jeepneys forward before the passengers are properly seated. With the implementation of the Manila BRT Line 1, the danger of falling off the vehicle while boarding or alighting will be eliminated with buses stopping at designated stations only. Moreover, the design of the Manila BRT Line 1 is based on national and international guidance on design for people with limited mobility. The principle of at-grade access has been generally adopted in system design, except where this presents an adverse effect upon safety or an unacceptable compromise upon capacity. Where at-grade access is not possible alternative provision will be made for the mobility impaired. Access between station and bus will be step-less benefiting all users.

- c. Safe access to the BRT stations. Children below 15 years old are considered to be the most vulnerable road users as far as road accidents are concerned; they are often too small to be seen by drivers while playing or crossing the street. The BRT system will carefully design access facilities around stations to reduce the possibilities for conflict between children and vehicles that sometimes occurs with existing jeepney operations.
- d. Provision of transport supportive of women. Women in Metro Manila, in general, perform a multitude of tasks in their travels during the day, including ferrying young children to and from school and other activities, as well as grocery shopping. Taking public transportation poses a challenge due to the limited space in PUJs and the frequent practice of PUJ drivers to overload their vehicles. Moreover, cramped space inside the vehicle due to overloading provides opportunities for harassment. The BRT system will be designed for ease of boarding and alighting with buses and stations at the same level, making it easier to load and unload strollers. Where necessary, drop down ramps may also be provided. In addition, the BRT stations and vehicles will also provide for space for luggage or bags.

43. **Improved facilities for pedestrians.** The project will result in improved walking environment for pedestrians through the construction of sidewalks along the segregated BRT route on both sides of the carriageway and a 2m landscaping strip to enable trees to be planted that offer shelter from the sun. Safe pedestrian crossings will also be provided at all bus stations and all road junctions.

44. **Safety improvements.** In terms of accident fatalities, the project over its twenty years lifecycle will save around 727 lives, a number roughly as high as the Philippines current annual traffic fatalities. In terms of monetized savings derived from accident reduction, in the opening year savings from accident reduction are expected to be PHP130 million (US\$3 million), and through the life of the project net present value of savings is expected to be PHP1,800 million (US\$44 million).

45. **Improve integration between transport and land use development.** The project will support integration of land development along the corridor, including supporting activities to foster transit oriented development adjacent to stations and interchange terminals, improved access to major trip attractors and generators. In the long term, BRT will provide a context, and be a catalyst, for more effective land use planning structure around public transport. Mechanisms

are proposed to secure, where appropriate, additional BRT capacity in advance of known future development.

Implementation Potential

Country/sector strategies

46. Under the aegis of the NESTS, the country is committed to identify, promote and undertake EST strategies and initiatives. The Philippines has undertaken various programs and activities towards achieving sustainable development and addressing climate change since its signing of the United Nations Framework Convention on Climate Change (UNFCCC) Agreement in Rio de Janeiro in 1992. These activities eventually led to the formulation, legislation and implementation of Republic Act No. 8749 or the “Philippine Clean Air Act of 1999,” which provides for EST through harmonization of national emission standards with international standards.

47. The Philippines is a signatory to the Manila Statement of 2004 that welcomes, among others, the initiatives of the United Nations Centre for Regional Development (UNCRD) in extending assistance to the countries of the region, especially developing countries, in preparing national strategies and action plans to promote environmentally sustainable transport, and to facilitate annual high-level meetings and expert group meetings. The Philippines is also a signatory to the Aichi Statement of 2005 that recognizes the need for both national and local level governments to develop and adopt integrated policies, strategies, and programs incorporating key elements of environmentally sustainable transport.

48. The Government of Philippines has developed a NESTS following the Administrative Order (No. 254) by the President of the Philippines dated 30 January 2009, which mandated the Department of Transport and Communications (now renamed Department of Transportation or DOTr) to lead the formulation of an EST strategy. The formulation of the national strategy is primarily intended for the identification of priority challenges in the context of EST that would need to be addressed through the formulation of strategies. These strategies will have specific targets, incorporate multi-sector commitments, and recommend measures for the promotion of EST in Philippines. The overall goal of the strategy is the following:

- a. Reduction of the annual growth rate of energy consumption and associated GHG and air pollutant emissions from the transport sector in urban areas of the country; and
- b. Enhance sustainable mobility through the development of a viable market for EST goods and services, which involves, among others, the promotion of transportation systems of low carbon intensity and a shift towards the use of more sustainable transport modes.

49. **Institutional arrangements.** The project will be implemented by DOTr, which will have the overall responsibility for its coordination and management (for details, please see Annex 3). The DOTr has set up a framework at the national level for the overall policy formulation and oversight of the BRT in the Philippines and a satellite project implementation unit for the day-to-day project implementation. Details of the implementation arrangements can be found in Annex 3 of this document.

50. **Partnership Arrangements.** The CTF funded activities will complement World Bank funding and foster reduction of GHG emissions from the urban transport sector by making direct investments on the BRT and removing barriers at local and national level to promote and implement more sustainable and efficient transport systems.

51. **Support private sector participation.** The delivery model of the Metro Manila Line 1 is initially proposed as a PPP model with the public sector responsible for the delivery of infrastructure as well as planning, regulating, operating and controlling the system. The Metro Manila BRT Line 1 will be managed by DOTr (as System Owner), which will be supported by a competent System Manager. The System Manager will assist the DOTr (as System Owner) in managing the day-to-day operation of the BRT system, including contracting out the BRT operations (including operation and maintenance of buses to be brought in by operators, stations and terminals, depots, fare collection systems, etc...) to private operators through competitive contracting, as well as in monitoring and supervising the performance of the entire system. The feasibility study examined the potential revenue that a BRT system would generate and indicated that a PPP arrangement could potentially be developed for the private sector to procure buses, operate the BRT and provide support services (fare collection, maintenance of support infrastructure, etc...). The different options for the scope of services and incentive mechanisms for the private sector will be assessed more in details during implementation.

Sustainability: Evidence of Commitment and Ownership

52. The NEDA Board's Cabinet-level Infrastructure Committee has identified an ambitious CTF Investment Plan that focuses its interventions in laying out the foundations for a transformation of the transport sector to support EST, as described above. BRT projects form an essential element of these strategies and have high replication potential in the Philippines as there is low technology risk and substantial demand and private sector interest.

CTF Additionality

53. The operation of BRT Line is expected to be financially sustainable – in other words, revenue from fares is expected to be able to cover the cost of bus operations, system administration, and costs related to the maintenance of the running way and stations after the start of operations. Over the long run, this will help ensure that once in place, the system has the financial capacity and momentum to maintain the positive impact of the project over time.

54. However, the system is not expected to be able to repay or cover the cost of the initial infrastructure investment. The public sector will need to carry the primary burden of making this significant capital outlay. Given that BRT systems are relatively unknown inside the Philippines¹⁷, this large investment for a relatively new concept naturally carries with it a fair degree of risk for public sector decision makers. CTF concessional financing, directed towards these capital investments, makes a significant contribution to lowering the cost of this capital investment – and hence in lowering the financial risk for the public sector in pursuing the project. This lower capital investment hurdle has been crucial to the development of the project.

¹⁷ The Cebu BRT project was approved by the World Bank in October 2014, but construction of the Cebu BRT system has not yet started.

55. The proposed CTF loan will be blended with a World Bank IBRD loan to fund construction of the BRT infrastructure, including BRT stations, terminals, bus depots, bus lanes, as well as traffic and safety management facilities, as well as a series of other investments that will enhance the benefits of the project as a whole but have been known to be overlooked in other similar BRT investments. Those complementary investments include construction of walkways and safe pedestrian crossings, and improvements of sidewalks and street environment.

56. In particular, the CTF loan will finance a Project Outcome Monitoring component. Proper monitoring and evaluation of the myriad benefits of an integrated BRT system is a challenging, complex, and often costly task, and is thus often give short shrift by local project implementing agencies whose natural focus is on delivering the project itself. Given both the CTF and the Metro Manila BRT Line 1 project objectives of promoting the emissions savings potential of BRT in the Philippines and around the world, careful monitoring and evaluation of project benefits will be crucial. To that end, a specific component with dedicated budget has been established to support this activity over the life of the project.

Implementation Readiness

57. A technical study was undertaken to assess the technical, economic and financial feasibility of the project. By the time the Metro Manila BRT Line 1 project is implemented, DOTr would have started the implementation of the Cebu BRT and gained relevant experience in the setting up of the PIU and other mobilization activities. It is also expected that the Cebu BRT TSC is in place and can provide support to DOTr in the implementation of the Metro Manila BRT Line 1.

Annex 7. Summary of Environment and Social Impact Assessment

PHILIPPINES: Metro Manila BRT - Line 1 Project (P132401)

1. An environmental and social impact assessment was undertaken for the proposed Metro Manila Bus Rapid Transit (BRT) Line 1 Project of the Department of Transportation (DOTr), the project's executing agency. The Metro Manila BRT Line 1 project is the first BRT in Metro Manila and second in the Philippines, next to the Cebu BRT project. Relative to the significance of impacts and risks, Metro Manila BRT Line 1 project falls under Project Category A as defined under Operating Policy (OP) 4.01 of the World Bank (WB). This environmental assessment study was carried in accordance with pertinent WB's safeguards policies including OP 4.01, Environmental Assessment, and OP 4.12, Involuntary Resettlement.

2. The Environmental and Social Management Plan (ESMP) has taken cognizant of the policy, legal, and administrative frameworks relevant to environmental assessment of transport-related projects in the Republic of the Philippines, the WB social and environmental safeguards as provided in its applicable operating policies, and international standards addressing issues and concerns related to vulnerable stakeholders, including women, persons with disabilities (PWDs), and the elderly. For environmental impact assessment, of particular importance are the following laws and regulations: (i) PD 1586 - Establishing the Philippine Environmental Impact Statement System, (ii) Republic Act No.9275 - Philippine Clean Water Act of 2004, (iii) RA 6969 -Toxic substances & Hazardous & Nuclear Waste Control Act of 1990, (iv) RA 8749 - Philippine Clean Air Act of 1999, and (v) RA 9003 - Act Providing for an Ecological Solid Waste Management Program, (v) Batas Pambansa (BP) Blg. 344 s. 1983 (Accessibility Law), (vi) Republic Act 9994 s. 2010 (Expanded Senior Citizens Act of 2010), (vii) RA 9710 or the Magna Carta on Women, (viii) Republic Act No. 8974 (2000), (ix) DOTr Department Order No. 2009-18. For social impact assessment, general policies and laws on land transportation, accessibility and PWDs, elderly and senior citizens, gender and land acquisition and resettlement were considered.

3. *Project Description.* The DOTr, in collaboration with various government and multilateral agencies ventures, plan to develop solutions and alternatives to help eliminate traffic congestion in Metro Manila and other metropolis in the country. In 2013, a Detailed Technical Study (DTS) was undertaken to examine the feasibility of developing a Bus Rapid Transit (BRT) System along España - Quezon Avenue – Commonwealth Avenue corridor dubbed as Metro Manila BRT Line-1 Project. The España-Quezon-Commonwealth Avenue corridor is a main strategic transport route cutting diagonally through the upper half of Metro Manila. It is not currently served by any form of mass transit system. The corridor's strategic importance and its connections with LRT1, MRT3 and the Philippine National Rail lines, together with its high volume of travel, would suggest that the corridor has justification as a form of mass transit route. The DTS revealed that the project is technically, financially, and economically feasible. It has the capacity of decongesting traffic flow, resulting in increased vehicular speed along the corridor, improved public mass transportation convenience, reduced travel time, decreased vehicle operating costs, savings in greenhouse gas emissions and reduced transport accident occurrences. The government has approved the implementation of the BRT1 corridor, from

Manila City Hall to Quezon Memorial Circle. The DOTr may still extend the BRT corridor from Quezon Memorial Circle to Fairview, after the WB-assisted project has been completed.

4. The BRT corridor will have an approximately 13 km long corridor extending from Manila City Hall to Quezon Memorial Circle in Quezon City. The estimated construction period is three (3) years. BRT services would be supplemented by jeepneys operating in a “feeder” mode and providing lateral access/egress to/from adjacent communities. At full build-out, there will be three major passenger interchange terminals (Quirino Highway, EDSA and Lawton) and 28 other terminal stations and bus stops. The project would incorporate footpaths, both parallel and penetrating the neighborhoods in the corridor as well as improved street lighting. During the BRT operation, the project will employ substantial Intelligent Transportation Systems (ITS), in order to provide real time passenger information, assist in managing and operating public transport services, collect fares, and manage general traffic.

5. The project shall include a segregated busway between Quezon Memorial Circle and Manila City Hall; (ii) stations and terminals along the segregated busway route; (iii) depots for the garaging of buses designated to operate as BRT services; (iv) an Area Traffic Control System (ATCS) to facilitate priority run times within the corridor and give citywide benefits of improved traffic flow; (v) an open service plan that ensures BRT services between Quezon Memorial Circle in Quezon City and Manila City Hall; (vi) traffic management measures to improve traffic flow outside of the corridor that are seen to complement the BRT and maximizes its benefits; (vii) parking management measures that will similarly complement BRT and improve traffic flow; and, (viii) urban planning improvements consisting of public realm augmentations, and enhanced integration of transport and land use. The estimated construction period is three (3) years.

6. Environmental and Socioeconomic Conditions. The proposed BRT corridor is within highly urbanized sections of Metro Manila which characterizes the socioeconomic baseline condition of the corridor. These urbanized sections are predominantly of residential, institutional and business commercial uses. Major public transportation modes along the corridor are Public Utility Jeepneys (PUJs), Public Utility Buses (PUBs), and Asian Utility Vehicles (AUVs). In terms of environmental conditions, the proposed BRT corridor is currently experiencing localized air pollution from huge numbers of public and private vehicles that are spewing air pollutants from exhaust emissions. During construction phase, the Project implementation is expected to cause environmental impacts due to air pollution emissions from construction equipment and vehicular service, wastewater generation from construction activities, ground contamination from construction hazardous materials and supplies, nuisance, disturbance and reduction in road mobility due to road construction works, and solid waste generation. These impacts shall be managed through the implementation of appropriate and site specific ESMP.

7. During operation phase, the Project shall implement the use of Euro 4 fuel to comply and reduce emissions to Euro 4 standards. Euro 4 fuel is known to have low sulfur content of only about 50ppm compared to currently utilized Euro 2 fuel having sulfur content of 500ppm thus lower levels of particulate and gaseous emissions from BRT buses are expected. At the depot and bus terminal sites, built in pollution control measures shall be provided to avoid and manage solid wastes, treat wastewater, and prevent water pollution and groundwater contamination. With

ESMP in place and implemented, the impacts of BRT are eliminated or reduced at acceptable levels.

8. Along the proposed BRT corridor, there are a number of PUJ and PUB routes that may be affected by the Project operation. Social impacts on livelihood and income displacement for PUJ and PUB drivers, operators and workers may range from income reduction to franchise cancellation or deletion to give way to BRT operation. As part of the social management plan, these PUV operators/drivers/employees will be provided with a menu of options that will mitigate and minimize social impacts such as rerouting or modification of franchises and provision of skills training and livelihood replacement, among others.

9. Impacts, ESMP and SMP. Screening for environmental impacts is made through a review of the parameters associated with bus rapid transport system against the existing mode of public transport in Metro Manila, which are dominated by full-sized buses, jeepneys, mini-buses and shuttle services, AUVs, and taxis to as small as tricycles, multi-cabs and pedicabs. Jeepneys comprise more than 50 percent of the vehicle traffic stream on major roadway corridors.

10. The introduction of the proposed BRT project can be considered as an enhancement of the existing transport system to highly developed landscapes of the proposed BRT corridor and in Metro Manila in general. The issue on impacts and risks during construction to the surrounding natural environment and the BRT's highly urbanized proposed corridor is anticipated to be limited and manageable.

11. The social benefits that are expected from the Metro Manila BRT Line 1 Project are (a) more efficient and safer public transport alternative; (b) safer orderly loading and unloading system, particularly for the vulnerable stakeholders; (c) creation of direct employment as a result of BRT construction and operation; (d) enhanced land use along the corridor due to the resulting efficient transportation service; (e) improved public transport regulations; and (f) provision of transport supportive of women. Economic benefits include reduced travel time and cost savings, reduced vehicle operating costs, savings in GHG and CO2 emissions, and reduction in accident occurrences.

12. The most pressing social impact is the economic dislocation of PUV drivers, operators and workers due to perceived loss of livelihood. This is a result of (1) reduced passenger volume for Public Utility Vehicles (PUV); (2) cancellation of the present PUV routes that are along the projected corridor; and (3) dislocation of PUV drivers, operators and workers. In addition, there are commercial establishments that are within the proposed limits of BRT stations. They may not be dislocated but they may potentially be blocked by the proposed BRT stations by losing their frontage, customer access, parking space, or display areas. These physical restrictions might have a negative impact on the livelihood of the owners and their employees.

13. The social management plan (SMP) options presented to the affected PUV drivers and operators include (1) route relocation, modification and truncation; (2) co-existence with the BRT or remain on their route, despite the impact of the QC-Manila BRT; (3) scrapping or wholesale purchase of old PUJ units by the government; (4) formation of concessionaire group among operators to become part of the BRT consortium/investors; and (5) provision of

alternative livelihood/TESDA training/preferential hiring to affected drivers/personnel and/or members of affected households. Commercial establishments that will be affected close to the BRT stations are entitled to protection and benefits enshrined in social safeguards policies of the Philippine government and the World Bank. The project architects and engineers will, based on meaningful consultations with the affected people, integrate innovative approaches and solutions during the detailed architectural and engineering design stage of project implementation, in order to prevent any disturbance or any negative impact to these establishments. In the event that negative impacts cannot be avoided, these establishments are entitled to receive compensation as a full replacement cost for the physical structures to be affected by the project and loss of income in accordance with compensation guidelines under Philippine laws and the WB social safeguard policies.

14. The most pressing concerns for women in the Public Transport (PT) sector are (1) the harassment that they encounter in over-crowded PT vehicles; and (2) difficulty in boarding and alighting. Women employees are also not well-represented in the PT sector where drivers and conductors are predominantly men. Integrating these concerns in the implementation of the Metro Manila BRT-Line 1 project requires the following action plans: (1) the BRT system shall be designed for ease of boarding and alighting with buses and the stations at the same level; (2) the system shall address the issue of encumbrances of passengers, including over-crowding by provision of sufficient space passengers and cargo; and (3) creating a policy environment that promotes equal employment opportunity for women in the BRT system.

15. The BRT system shall integrate appropriate public transportation design standards that will address safety and accessibility for persons with disabilities, elderly, and students based on existing laws and policies of the Philippine government and international covenants and standards. Students, senior citizens, and PWDs shall be afforded discounted fares based on applicable regulations on passenger fares.

16. During detailed design and pre-construction phase, potential nuisances and problems to the public during construction shall be addressed by inclusion in the tender documents of specific provisions addressing these issues. Although there are no anticipated issues related to historical and cultural assets, a precautionary measure shall be taken by inclusion of provisions in tender and construction contract documents requiring the contractor to immediately stop excavation activities, and promptly inform the National Commission of Culture and Arts (NCCA) and the concerned Local Government Units (LGU), if archaeological and cultural assets are discovered.

17. Environmental impacts during pre-construction phase may be addressed by preliminary engineering works that could be incorporated in the Final Design of the project. Among the important issues that require attention are (i) disturbance of vehicular traffic and pedestrians; (ii) Interruption to power, water, telecom and other utility systems and services; (iii) removal of affected structures; and, (iv) removal of trees and other vegetation.

18. Environmental impacts during construction are temporary and can easily be mitigated. There will be no massive construction activities that can damage the environment. BRT carriageway construction is a low impact construction activity. Typical construction issues are manageable with the implementation of the ESMP and site management plan for: (i) air and

water pollution due to solid and liquid wastes, hazardous wastes and excavations spoils generations (ii) soil erosion and disturbance of existing land features or landscape, (iii) noise and vibration, and, (iv) traffic congestion, disturbance and public hazards.

19. Environmental problems due to operation of proposed project can be avoided by incorporating the necessary measures in the design and use of appropriate operational procedures.

20. Social impacts include economic dislocation of PUV drivers, operators and workers due to routes cancellation and reduced passenger volume due to shift in passenger patronage from PUV to BRT. Economic displacement is likewise anticipated to few commercial establishments which are situated within the proposed bus stations. Impact during land acquisition for the BRT depots is also anticipated. To negate these social impacts, a menu of social impact management plan options are offered to the affected stakeholders to ensure their rightful entitlements under applicable Philippine laws and WB safeguard standards.

21. An Environmental and Social Management Plan (ESMP) is developed to effectively manage the environmental and social issues and concerns. The plan includes (i) mitigating measures to be implemented; (ii) required monitoring associated with the mitigating measures; and (iii) implementation arrangement. Institutional set-up discusses the requirements and responsibilities during pre-construction, construction, and operation phases. The plan includes tabulated information on (i) required measures for each environmental impact that requires mitigation; (ii) locations where the measures apply; (iii) associated cost; and (iv) responsibility for implementing the measures and monitoring.

22. Summary costs for Capacity Building, ESMP and Communication Plan are as follows:

Particulars	Details	Implementation Period	Amount (US Dollars)
1. Capacity Building	Includes capacity building on ESMP, SMP and monitoring	During construction and operation phases	44,000/year
2. Environmental Monitoring	Includes monitoring works for air, water and noise	During construction and operation phases	25,000/year
3. EMP	Cost is to be shouldered by the Contractor (during construction phase)	During construction phase	Part of the Contractor's Cost;
	Cost to be shouldered by the SPC during operation phase	During operation phase	Part of the SPC's O&M Cost
4. SMP	Various activities at different project phases; except for ROW and relocation cost (if there is any), cost is to be shouldered by the Contractor.	During construction and operation phases	697,720.00 Additional cost shall be earmarked by the SPC during operation phase

5. Communication Plan	To be shouldered by DOTr; Estimates are provided in the Stakeholder Communications Plan, Responsibilities and Cost	During pre-construction, construction and decommissioning phases	Part of the cost per activity to be prepared by the Safeguard Officers and GO and to be approved by DOTt.
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23. Consultation and Participation. Project planning and the subsequent impact assessment document preparation for the proposed project recognized the need for public consultation and participation as central to effective environmental safeguard. Within the context of “meaningful consultation”, DOTr initiated a process of consultation during project preparation, and then intend to continue it during the construction phase.

24. During the DTS phase, face-to-face meetings were conducted with representative from the local governments of Manila City and Quezon City, officers of the public utility jeepneys operators and drivers’ associations on the nine (9) routes that were initially identified to be potentially affected by the implementation of the project, and special interest groups.

25. During the environmental and social impact study phase, DOTr and CPI Total Corporation (CPITC) conducted a total of 20 public consultation meetings. Majority of these meetings targeted the affected PUV drivers, operators and workers that are plying along the proposed BRT corridor. This includes a public consultation done after the completion of the ESIA attended by 70+ persons. In terms of consultation coverage for affected PUVs, almost all PUV organizations and associations were invited and attended the public consultation meetings. All PUJ organizations and one PUB company were represented in these consultations. However, only three PUJ organizations participated in the preparation of appropriate social management plan. During these meetings, information disclosure with affected stakeholders was done by providing them with details of the project and their views to minimize and mitigate environmental and social impacts, among others, were solicited and discussed. In general, these project stakeholders expressed support to the proposed project provided that DOTr will address their expressed concerns during implementation.

26. Project disclosure activities were also done during the conduct of the DTS from January 2013 to August 2013. A series of meetings were participated in by representatives from various public transport groups, special interest groups, and the Local Government Units of Manila and Quezon City. During detailed design, DOTr will again conduct public consultations and information disclosure initiatives. DOTr shall keep records of environmental and social complaints received during consultations, field visits, informal discussions, and/or formal letters, together with the subsequent follow-up and resolutions of issues.

27. For future public consultations and public disclosures, a Stakeholder Communications Plan (SCP) was prepared. SCP listed the activities to be undertaken during pre-construction, construction and O&M phases, the timing of each activity and the responsible entities to execute the SCP.

28. Grievance Redress Mechanism (GRM). Communities and individuals who believe that they are adversely affected by a World Bank (WB) supported project may submit complaints to existing project-level grievance redress mechanisms or the WB's Grievance Redress Service (GRS). The GRS ensures that complaints received are promptly reviewed in order to address project-related concerns. Project affected communities and individuals may submit their complaint to the WB's independent Inspection Panel which determines whether harm occurred, or could occur, as a result of WB non-compliance with its policies and procedures. Complaints may be submitted at any time after concerns have been brought directly to the World Bank's attention, and Bank Management has been given an opportunity to respond. For information on how to submit complaints to the World Bank's corporate Grievance Redress Service (GRS), please visit <http://www.worldbank.org/GRS>. For information on how to submit complaints to the World Bank Inspection Panel, please visit www.inspectionpanel.org.

29. DOTr shall disclose the proposed GRM during public consultations. Low to medium grievances about environmental and social performance of the project during the construction phase is proposed to be handled by the Grievance Officer (GO) while highly sensitive grievances will be handled by the Grievance Redress Committee (GRC). Both GO and GRC are expected to provide expeditious resolutions of complaints. Complaints during operation phase can be brought to the attention of the BRT operator or SPC. SPC/DOTr shall address promptly, at no costs to the complainant and without retribution, any complaints and concerns. GRC shall be chaired by DOTr with members from multi-sectoral organizations. Creation of GRM and its operationalization shall be included in appropriate sections of the project's civil works contract.

30. Aggrieved parties or complainants may also submit their complaints to DENR-EMB. EMB is mandated by PD 1586 to act on complaints about environmental and social performance of projects issued with environmental compliance certificates (ECC).

31. Conclusion and Recommendation. The BRT project is essential for Metro Manila's economic development as it will address the Metro's sustainable urban transport development. Once the project is implemented, Metro Manila BRT Line-1 project will serve as a catalyst in the development of an efficient and seamless public transport system, not only in Metro Manila but in the entire country, where it will service more commuters and eventually encourage the modal shift to efficient low-carbon emissions public transport system.

32. With the undertaking of a comprehensive ESIA and the subsequent identification of significant environmental and social impacts, the recommended ESMP will help reduce and mitigate these adverse environmental and social impacts arising from the location, design, construction, operation, and maintenance of the proposed BRT project. For socially affected stakeholders, a menu of highly feasible SMP shall be implemented to mitigate and address the needs of affected stakeholders. The proposed SMP measures to address economic dislocation in the PUV sector includes, among others, relocation or modification of franchises and provision of TESDA skills trainings. Concerns of interest groups such as from the PWD, elderly and women's group sectors relevant to the project are also addressed in the SMP. The proposed ESMP implementation follows the hierarchy of mitigation measures, such as: (1) mitigation/elimination through design; (2) site / technology choice; and (3) application of best practice.

33. The ESMP is doable which include tailor-made environmental protection measures and social impact mitigating measures for all potential environmental and social adverse impacts. It also designates each relevant organization to fully implement environmental protection responsibilities and the planned social impact mitigating measures. The ESMP ensures implementation of the environmental and social mitigation measures and monitoring during construction and operation stages of BRT. Therefore, the Project can be implemented in an environmentally sound and socially acceptable manner.

34. The Social Management Plan (SMP):

a. Options Addressing Economic Dislocation in the PUV Sector

35. The PUV drivers are considered more vulnerable to economic dislocation than the operators, particularly PUJ drivers. Their capacity to adapt to this reform in the public transportation sector is potentially hampered by low levels of education (elementary and high-school levels) and lack of alternative skills. Such a situation could translate to widespread displacement of this sector and render their families vulnerable to negative socio-economic consequences.

36. The options presented to the affected PUJ drivers and operators include:

- a. Route relocation, modification and truncation;
- b. Co-existence with the BRT or remain on their route, despite the impact of the Metro Manila BRT Line-1 Project;
- c. Scrapping or wholesale purchase of old PUJ units by the government;
- d. Formation of concessionaire group among operators to become part of the BRT consortium/investors; and
- e. Provision of alternative livelihood/TESDA training/preferential hiring to affected drivers/personnel and/or members of affected households.

37. Preferred Option: Route relocation, modification or truncation. The operators showed preference for the options on route relocation, modification, and truncation. Three participating associations such as the Tropang Tsuper, HEQFAJODA, and Commonwealth Transport Service Cooperative have worked with the Project Team to map new PUJ routes to where they can transfer operation. Some of the routes will serve as feeder routes to the BRT Line-1 system. Presentation of custom-made social management plans or solutions for these three associations are presented below.

b. Desire for flexibility to co-exist with the BRT

38. Despite that they are willing to relocate their operation to the new routes they have identified, the operators wish to keep the option of remaining on their existing franchise routes until it is no longer economically viable for them to operate. They wish to be given the chance to compete in the new public transportation environment. They will offer the commuting public an alternative mode of transportation by continuing using the PUJs in the advent of the BRT system.

This flexibility will allow them to find new viable modes to operate along the BRT route where their existing franchises overlap.

39. This is a test for the BRT system to operate in a competitive market environment. Preferences of public transportation users will serve as a measure of the BRT's efficiency. If it is indeed the more efficient PT alternative, commuters will definitely be abstracting from riding PUJs/PUBs, and there is a wholesale shift from PUJ/PUB use to the BRT system among the commuting public that may be anticipated.

c. Scrapping or wholesale purchase of old PUJ units by the government

40. Some PUJ operators have expressed that they are willing to forego their old jeepneys (at least 14 years old) if the government is willing to purchase them as scraps at an agreeable price. Scrap values that came up during the discussions put the values of these old PUJs from PhP 80,000 to PhP 150,000. The government will also have to re-purchase the franchises from them at a price that equates the actual cost of getting a franchise in the black market.

41. The proceeds from these scraps may be used by members to participate in the BRT system by investing as a cooperative or as a transport organization. This is an incentive considered by DOTr to those who are investing their proceeds in the BRT system, so that their respective organizations may be able to pool enough financial resources to make a meaningful investment participation.

d. Participation in the BRT System as Investors

42. The PUB operators are deemed to have higher absorptive capacity for this option, compared to the PUJ operators. The latter will have to rely on their federations/organizations to pool resources adequate for participating in the System Company. The options for the drivers are more limited: either continue driving PUVs in restructured routes or undergo re-training for employment with the Metro Manila BRT Line-1 Project or elsewhere. DOTr may provide bonus points to bidders who are bringing in or may make it mandatory to bidders to bring in as part of their bidding consortium transport cooperatives or organizations whose membership in general are PAPs.

e. Provision of alternative livelihood/TESDA training to and preferential of affected drivers/personnel and/or members of affected households

43. Opportunities may be explored through the Technical Education and Skills Development Authority (TESDA) which offers three- to six-month courses under the Technical-Vocational Education and Training (TVET) program for unemployed persons who are actively looking for work and would want to improve their chances of landing into jobs that are in-demand. This will include displaced workers because of closure of establishments, retrenchments or laying off due to economic or other related reasons. It was estimated that the total cost for training one person is PhP 15,000. To facilitate the reallocation of displaced drivers who choose to be re-trained, it is important that:

- a. Clear guidelines for qualifying for the program be developed;
- b. Easy registration system be available;
- c. identification of employment placement after the training; and
- d. Phased Program for shifting from public utility driver to new employment

44. PUJ and PUB drivers and support personnel identified and listed among the PAPs should be given preferential considerations in the hiring of manpower for the BRT construction, whenever practical, and for the BRT operation. This preferential hiring may be extended to one qualified member of a PAP household. Employment opportunities exists for various positions where most of PAPs or their family members may qualify including, among others, the following:

- a. Bus drivers
- b. Mechanics
- c. Helper Mechanics
- d. Electricians
- e. Janitors
- f. Ticketing Attendants
- g. Customer Service Representatives
- h. Office Support Personnel
- i. Security Guards
- j. Company Drivers
- k. Facility Maintenance Staff

45. Summary of Public Consultations Conducted

- a. During DTS
 - Consultation meeting with LGUs of Manila and Quezon City
 - Consultation meeting with officials of PUJ operators and drivers associations of nine (9) routes initially identified
 - Information disclosure about the project was done from January 2013 to August 2013
- b. During ESIA
 - Conducted 20 public consultation meetings with identified affected PUV drivers, operators, workers
 - Conducted public scoping which was attended by 87 attendees of PAPs including the general public and commuters (May 27,2015)
 - Information disclosure about the project and its potential environmental and social impacts was done from November 2014 to May 2015
- c. After ESIA
 - Conducted 1 public consultation with 70+ PAPs attending. Held on November 3, 2016 at the DOTr office.
 - A public announcement was published in the Philippine Star 2 weeks before the consultation.

- The safeguards documents, ESIA, RPF were made available to the public two weeks before the consultation.