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Report No: 70250-PH

PROJECT APPRAISAL DOCUMENT

ON A

PROPOSED LOAN

IN THE AMOUNT OF US$110 MILLION

AND A

PROPOSED LOAN FROM THE CLEAN TECHNOLOGY FUND

IN THE AMOUNT OF US$25 MILLION

TO THE

REPUBLIC OF THE PHILIPPINES

FOR THE

CEBU BUS RAPID TRANSIT PROJECT

OCTOBER 5, 2012

Philippines Sustainable Development Unit
Sustainable Development Department
East Asia and Pacific Region

CURRENCY EQUIVALENTS

(Exchange Rate Effective {Date})

Currency Unit	=	
43 PHP	=	US$1
0.024 US$	=	1 PHP

FISCAL YEAR

January 1 – December 31

ABBREVIATIONS AND ACRONYMS

ADB	Asian Development Bank
AFD	French Development Agency
ANDAR	Alyansa sa Nagkahi-usang Driver-Operator Alang sa Reporma
APCPI	Agency Procurement Compliance and Performance Indicators
ATC	Area Traffic Control
BAC	Bids and Awards Committee
BAU	Business As Usual
BRT	Bus Rapid Transit
BRT-NPMO	Bus Rapid Transit-National Proram Management Office
BRT-NSC	Bus Rapid Transit National Steering Committee
CAS	Country Assistance Strategy
CITOM	City Traffic Operations Management
CITRASCO	Cebu Integrated Transport Service Multi-purpose Cooperative
COA	Commission on Audit
CTF	Clean Technology Fund
DBP	Development Bank of the Philippines
DED	Detailed Engineering Design
DOTC	Department of Transportation and Communications
DOTC-RTPD	Department of Transportation and Communications Road Transport Planning Division
DPWH	Department of Public Works and Highways
EE	Energy Efficiency
EMA	External Monitoring Agent
EST	Environmentally Sustainable Transport
GDP	Gross Domestic Product
GNP	Gross National Product
GHG	Greenhouse Gas
GoP	Government of the Philippines
IBRD	International Bank for Reconstruction and Development
IFRs	Interim Financial Reports
ITS	Intelligent Transport System
IVE	International Vehicle Emissions
LGUs	Local Government Units

LTFRB	Land Transport Franchising Regulatory Board
LTO	Land Transportation Office
MCDC	Metropolitan Cebu Development Council
MCLUTS	Metro Cebu Land Use and Transport Study
MCTOA	Metro Cebu Taxi Operators Association
NADSU	Nagkahiusang Drayber sa Sugbo
NESTS	National Environmentally-Sustainable Transport Strategy
NMPO	National Program Management Office
NTP	National Transport Plan
NTPF	National Transport Policy Framework
PIU	Project Implementation Unit
PPP	Public-Private Partnership
PUJs	Public Utility Jeepneys
TSC	Technical Support Consultant
UNFCCC	United Nations Framework Convention on Climate Change
VOC	Volatile Organic Compounds
VSL	Variable Spread Loan
VUDTRASCO	Visayan United Drivers Transport Services Cooperative

Regional Vice President:	Pamela Cox
Country Director:	Motoo Konishi
Sector Director:	John A. Roome
Sustainable Development Manager:	Ousmane Dione
Task Team Leader:	Ajay Kumar/Victor Dato

COUNTRY
Cebu Bus Rapid Transit Project

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PAD DATA SHEET

Philippines

Cebu Bus Rapid Transit Project

PROJECT APPRAISAL DOCUMENT

East Asia and Pacific Region

Philippines Sustainable Development Unit

Basic Information

Date:	October 3, 2012	Sectors:	Gen transport (40%), Pub admin-tran (40%), Gen finance se (20%)
Country Director:	Motoo Konishi	Themes:	Infrastr servi (25%), Gender (25%), Urb svcs/housi (25%), Climate change (25%)
Sector Manager/Director:	Ousmane Dione /John A. Roome	EA Category:	B - Partial Assessment
Project ID:	P119343		
Lending Instrument:	Specific Investment Loan (SIL)		
Team Leader(s):	Ajay Kumar/Victor Dato		

Joint IFC: No

Borrower: Government of the Philippines

Responsible Agency: Dept. of Transportation and Communications

Contact:	Mr. Rene Limcaoco	Title:	Undesecretary
Telephone No.:		Email:	Reneklimacaoco@yahoo.com

Project Implementation Period:	Start Date: 09-06-2013	End Date: 09-24-2018
Expected Effectiveness Date:	09-24-2013	
Expected Closing Date:	03-25-2019	

Project Financing Data(US$M)

[X] Loan	[ ] Grant	[ ] Other
[ ] Credit	[ ] Guarantee	

For Loans/Credits/Others

Total Project Cost :	212	Total Bank Financing :	110
Total Cofinancing :	102	Financing Gap :	0

Financing Source	Amount(US$M)
BORROWER/RECIPIENT	25
IBRD	110
CTF	25
AFD	52
Financing Gap	
Total	212

Expected Disbursements (in US$ million) IBRD

Fiscal Year	FY14	FY15	FY16	FY17	FY18	FY19
Annual	15.0	50.0	30.0	5.0	5.0	5.0
Cumulative	15.0	65.0	95.0	100.0	105.0	110.0
Expected Disbursements (in US$ million) CTF						
Annual	3.0	7.0	5.0	5.0	5.0	
Cumulative	3.0	10.0	15.0	20.0	25.0	

Project Development Objective(s)

The Project Development Objective (PDO) is to improve the over-all performance of the urban passenger transport system in the project corridor in Cebu City in terms of the quality and level of service, affordability, safety, and environmental efficiency and, in so doing, build support and capacity for BRT elsewhere in the Philippines.

Components

Component Name	Cost (USD Millions)
BRT Infrastructure and System	170.0
Traffic Engineering, Management, ATC, ITS	22.8
BRT Concept Dissemination and Development	5.0
Urban Realm Enhancements	3.0
Project Outcome Monitoring	5.0
Project Management	6.1

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

Description of Covenant

Team Composition

Bank Staff

Name	Title	Specialization	Unit	UPI
Ajay Kumar	Lead Transport Economist	Task Team Leader	EASIN	64209
Holly Krambeck	Transport Economist		EASIN	271635
Andrew Salzberg	Consultant		EASPS	361824
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Gia Mendoza	Program Assistant		EACPF	257819
Maria Luisa Juico	Program Assistant		EASIN	21194

Non Bank Staff

Name	Title	Office Phone	City
Jaime Leather (Asian Development Bank)	Principal Transport Specialist		Manila
Jack Reilly	Professor		Department of Civil and Environmental Engineering Rensselaer Polytechnic Institute

Locations

Country	First Administrative Division	Location	Planned	Actual	Comments

I. STRATEGIC CONTEXT

A. Country Context

1. **Despite rapid economic growth, the Philippines faces growing income inequality and unequal sectoral and regional distribution of growth.** The national economy averaged 4.9 percent annual growth between 1998 and 2008 and was one of the few economies that did not contract in 2009 as a result of the global financial and economic crises. Economic growth during the first half of 2010 was an impressive 7.9 percent with Gross National Product (GNP) per capita now over US$2,100; growth rates for 2011 and 2012 are projected at slightly over 5 percent per annum. Despite the economic growth, poverty incidence is not declining, having in fact increased from 30 to 33 percent between 2003 and 2006, and the situation since has not improved. The new administration has recognized that poor governance as a major constraint to sustained growth and poverty reduction and is seriously focused on weeding out corruption.

2. **The new administration has embarked on a new wave of Public-Private Partnership (PPP) projects to fill some important gaps in infrastructure and enhance efficiency in service delivery in a number of sectors.** With notable improvements in investor confidence in the Philippines over the past year, total investment is projected to grow by double digits per annum over the next few years. By utilizing private sector financial resources, PPP projects make more public funding available to directly support the poor. In addition, with the government's focus on improving governance, PPP projects can more efficiently contribute to poverty reduction indirectly through economic growth and rising incomes.

3. **The Philippines is ranked 39th in the world in terms of overall Greenhouse Gas (GHG) emissions with the power and transport sectors as principal sources.** The country has a population of 92 million and is amongst the fastest urbanizing country in East Asia. In view of an expected increase in fossil fuels for energy generation and a high growth rate of private vehicle ownership and use, the projected increase in GHG emissions in the Philippines will be substantial. The transport sector's contribution to GHG emissions in the country has increased by 6 to 12 percent per year since 1990[1], 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. Based on the current growth rates in motorization of about 6 percent per year and the projected increase in urban population by 35 million by 2030, emission contributions from road transport, estimated at 24 MtCO2e in 2007, are projected to increase to 37 and 87 MtCO2e by 2015 and 2030, respectively, under a business as usual (BAU) scenario.

B. Sectoral and Institutional Context

4. **Unmanaged growth and the absence of an efficient transport system have increased the cost of doing business.** Improved multi-modal urban transport is the key to increasing access to jobs, education, healthcare and other social activities and reducing logistics costs. In absence of an integrated transport-land use strategic planning, the average commuter spends an inordinate amount of time and money in travel both because of long trip lengths and slow commuting. The poor are most adversely impacted because of their dependence on public

[1] Six MtCO2e is based on the World Resources Institute's estimates, while 10 MtCO2e is based on the 2006 IPCC guidelines for estimating fuel emissions.

transport. An efficient transport system has the potential of promoting both economic development and low-carbon/green growth.

5. **Lack of integrated land use and transport planning and lack of satisfactory progress on public transport in Philippine cities has resulted in traffic congestion in urban areas** which translates to about 140 billion PHP (~2% of the country's Gross Domestic Product GDP) in 2008 in Metro Manila alone.[2] This economic cost is attributed to lost man-hours, additional fuel consumption, health costs, and lost investment opportunities. Apart from the negative environmental impact of transportation, the increase in road traffic accidents is another disbenefit--the national annual cost of traffic accidents is estimated to constitute 2.6 percent of the GDP of the Philippines in 2005, equivalent to about 105 billion PHP.

6. **Planning and regulation of public transport in the Philippines is under the jurisdiction of the national government.** Provincial, metropolitan and local government entities do not have the legal authority to make substantive progress. There is currently no entity within Local Government Units (LGUs) with a specific mandate and no formal framework for urban passenger transport. For example, in Cebu, the country's second largest metropolitan area (described in para 8 below),[3] the Metropolitan Cebu Development Council (MCDC) is mandated to formulate development plans, prepare programs and projects, and coordinate/monitor the implementation of programs and projects that address problems and concerns affecting Metro Cebu. MCDC is composed of the Provincial Governor of Cebu and the Mayors of the different cities and municipalities in the province. However, MCDC has no institutional or legal powers and resources and it defines the coverage of Metro Cebu for planning purposes only. There have been moves to institutionalize this metropolitan body through congressional legislation but this is yet to happen.

7. The institutional responsibilities in the transport sector are shown in **Table 1** below.

Function	**Responsibility**
Planning and regulation of public carriers Policy, planning, programming, implementing Economic regulation Safety regulation (including env. emission testing) Traffic management, local services	• DOTC and attached agencies • DOTC • LTFRB • LTO • Local Government Units (LGUs), e.g., Cebu City
Investment in and Operation of PT services	Private sector (except railway)
Infrastructure provision National Highway construction and maintenance Local streets	Public sector DPWH LGUs (e.g., Cebu City)

[2] Formulation of a National Environmentally Sustainable Transport Strategy for the Philippines, Department of Transportation and Communication, Department of Environment and Natural resources, Final Report (May 2011).
[3] Cebu City is one of the highly urbanized centers in the Philippines, other than Quezon City, Manila City, Caloocan City of National Capital Region, and Davao City in Southern Mindanao.

Cebu City Context

8. Metro Cebu[4] is a loosely defined term that relates to the conglomeration of several adjacent cities and municipalities that form the urban area of Cebu Province. Metro Cebu is the second largest metropolitan area after Metro Manila. Cebu City is one of the cities in Metro Cebu with a population of about 800,000 people. The City has a land area of 291 square kilometers with a population density of 2,700 inhabitants per square kilometer. The dense core area of the city with concentrations of national and provincial government offices, banks and corporate headquarters covers 23 square kilometers.

9. Cebu has historically been the regional, financial, and administrative capital of the Central Visayas Region (Gov. Philippines Region VII) and an important national maritime hub. Cebu is one of the oldest cities in the Philippines, with a strong tourism industry, because of natural attractions close to the city and the rich local culture. With its English speaking, well-educated population, the City is also becoming increasingly important as an international call center, as well as a rising international tourist destination.

10. **The City also lacks a comprehensive approach to integrated transport planning.** Over the past decade, there has been a shift from non-motorized and public transportation to private modes. The current trend in city transport is replacement of inefficient, low quality public transport by motorized 2-wheeled vehicles and subsequently 4-wheeled vehicles as household incomes rise. This has resulted in increased fossil fuel use, higher carbon emissions, local air pollution, noise (and related health impacts for inner-city inhabitants), increasing traffic accidents and increasing congestion. Congestion in Cebu City is particularly acute, with peak traffic speeds of 10 km per hour along the three major urban arterials in the core.

11. Key factors contributing to Cebu's congestion are:

(a) geographic constraints of mountains and sea confining travel to a limited number of corridors;
(b) the lack of a comprehensive hierarchical road and street network with sufficient arterial capacity and secondary street network coverage;
(c) inadequate traffic engineering, operations management and enforcement;
(d) limited protected pedestrian and bicycle facilities and safe roadway crossings;
(e) lack of a formal intra-city bus system;
(f) the large fleet of low-quality, informally operated public transport vehicles (jeepneys) which cause both congestion and safety issues out of proportion even to their large share of existing street traffic; and
(g) rapidly increasing private vehicle ownership and use.

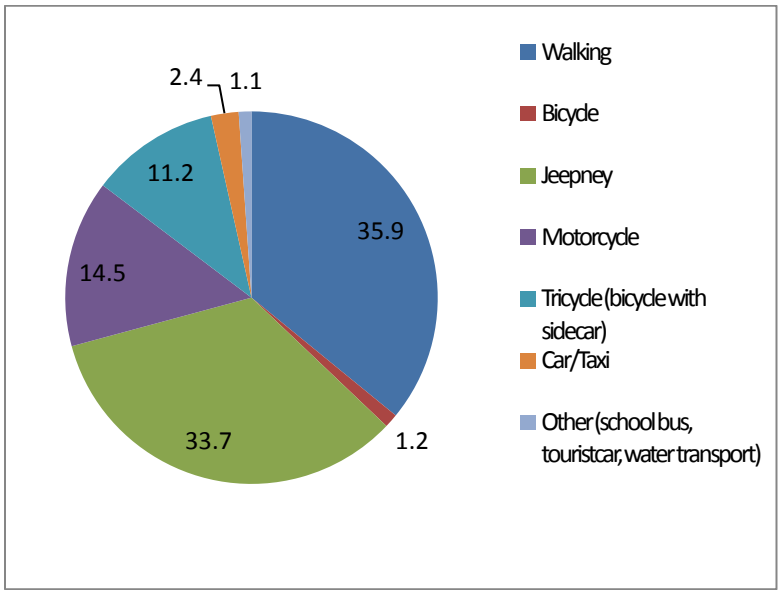
12. **Socio-economic and travel characteristics.** Over the past decade, the population of Cebu City has grown at about 1.5 percent annually. The average household size is 5.1 and the population is relatively young, with over 50 percent of residents less than 30 years of age. Relatively poor compared to Metro Manila, Cebu City's average household monthly income is

[4] "Metro Cebu" does not, however, officially or legally exist as a level of government.

estimated to be 14,300 PHP (~ US$330) while per capita disposable personal income is estimated at 9,300 PHP, with two-thirds earning less than 7,500 PHP.[5] Vehicle ownership is dominated by motorcycles, with over 18 percent of the households owning one or more; about 10 percent own a bicycle and less than 3 percent own a car. The average daily expenditure on transport for employed residents of Cebu City is 39 PHP. This leads to an estimate of the proportion of income spent on transport ranging between 13 percent and 16 percent.

13. Figure 1 shows person-trip mode share in Cebu City. Walking is the dominant travel mode but average walk distance remain quite short (less than 500m). Of the motorized travel, jeepneys are the dominant mode carrying over 50 percent of the motorized person trips. The past few years has witnessed emergence of motorcycles as a public transport mode (referred to as "*Habal-Habal*"), which account for over 20 percent of the motorized person trips. Travel by private car or taxis accounts for less than 5 percent of the motorized person trips.

Figure 1: Person-trip Mode Share



Source: Cebu BRT Feasibility Study, Final Report, The World Bank (August 2012)

14. Vehicle ownership has been growing at about 6 percent annually over the past two decades and is expected to accelerate over the next 10 to 15 years as incomes continue to rise. At the same time, the Metro Cebu's population is expected to grow by more than 35 percent by 2030.

15. In the absence of a coordinated response, the transport situation is likely to get worse as most of the economic and land development in Cebu City continues to occur at the city's

[5] Department of Transport and Communication, Household Interview Survey, Public Transportation Strategic Plan, 2011.

extremities at relatively low densities, particularly in the northeast. This sprawling pattern of urban development and the increased motorization that comes with increasing incomes will only exacerbate the current negative conditions if not promptly addressed. Meanwhile, high density development in concentrated areas in the centre (e.g. around Ayala Mall) with little addition to the access road network, and without any addition to the public transport supply (other than increased concentration of jeepneys and taxis) worsens the transport situation.

16. **Women make up 55% of public transport users in Cebu, and experience a unique set of challenges.** Project preparation has supported outreach targeted to understand and address the needs of women in accessing and using the existing public transport system. Studies revealed that women currently make up approximately 55% of public transport riders in Cebu, and that they face challenges above and beyond those described elsewhere. Women in Cebu, 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 overloading their vehicles. Moreover, cramped space inside the vehicle due to overloading provides opportunities for harassment.

17. **The BRT system was designed with specific features tailored to address these needs.** 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 vehicles will provide for more space for luggage or bags when compared with jeepneys, enabling more convenient shopping trips. Upgrades in sidewalks and walking infrastructure, paired with well lit stations, will provide for safer access to and from public transport. Finally, the provision of well organized public transport stations will reduce the conflict between vehicles and pedestrians, providing a safer environment for all Cebuanos, but children in particular – allowing parents to more easily using public transport when travelling through the city with children.

Public Transport in the Philippines and Cebu

18. In the Philippines, the three basic public transport functions--planning and regulation; operations; and provision and maintenance of supporting infrastructure--are dominated by the Central Government. Each will be described below in the context of the proposed project in Cebu.

19. **Planning and regulation.** There are three types of public transport regulations, for the most part issued and administered nationally:

(a) Economic Regulation. The Land Transport Franchising Regulatory Board (LTFRB) controls the number of public utility vehicles (jeepneys and buses) to be operated on each public transport route and who will be granted the authority to operate.[6] The LTFRB also prescribes route alignments and terminals or area of

[6] DOTC determines the routes (i.e. that a service will go from A to B, via C) and the overall capacity of the route (Route Measured Capacity). LTFRB then 'populates' the route by issuing franchises to applicant operators, up to the RMC determined by DOTC. These are the mandated roles. The extent to which LTFRB – or indeed the LGUs – do

operation and controls fare to be charged by operators.[7] Taxi franchising is also the responsibility of the LTFRB. The granting of business permits or franchises to tricycles which operate only on local streets is a Local Government Unit (LGU) function;

(b) Safety Regulation. The National Government's Land Transportation Office (LTO), through its 250 local offices inspects and registers public utility vehicles and issues PUJ driving licenses and permits; and

(c) Traffic Regulation and Management. LGUs have the power to regulate the use of local roads and coordinate and monitor traffic management plans. For Cebu City, traffic management regulation is carried out by one of its departments- the Cebu City Traffic Operations Management (CITOM). Key functions include maintenance of traffic signals and road signs, regulation of the use of any local road or street or thoroughfare.

20. **Operation of public transport services.** Cebu City's public transport is almost exclusively road-based and provided by the private sector. Public Utility Jeepneys (PUJs) form the backbone of public transport provision in Cebu[8]. There are estimated 8,329 PUJs, 5,788 taxis and 952 buses[9] and mini-buses operating in the City. PUJs currently serve as the main public transport mode for intra-city trips and are mostly operated by single vehicle companies (see below). Taxis are generally of high quality due to the city government's policy of phasing out taxi units more than 10 years old. There are some taxi and bus companies operating multiple vehicles.

21. Shorter trips within travel zones are served by tricycles or three-wheelers, which are regulated by the city government or LGU. They are prohibited by law from plying along national roads, although they are allowed to cross them. Most tricycle companies are single unit operators.

22. Jeepneys comprise less than 25 percent of the vehicle traffic stream on major Cebu corridors but their impact is much more in terms of their share of passenger car equivalent units. This is due to their constant weaving from the less congested median lanes to the curb lanes to stop and pick up and discharge passengers and their tendency to park where there are large

---

the groundwork to prepare proposals for routes for consideration by DOTC is not very clear and is not an exact science.

[7] In Cebu, CITOM determines the precise alignment and streets in which a route will operate. They do this under their mandate for traffic management. They issue a 'Travel Line' for each individual route. CITOM also introduced the numbering system for the PUJ routes in Cebu.

[8] Traffic surveys indicate that while PUJs constitute 22 percent of the average daily traffic and carry over 60 percent of the motorized person trips, private cars compose 30 percent of the daily traffic but carry less than 10 percent of the person trips.

[9] The buses do not operate any intra-city routes in Cebu but operate in Metro Cebu.

potential markets, often by pedestrian overpasses over major arterials, effectively reducing road capacity and causing accidents.

23. The 8,329 PUJs are operated by approximately 5,700 franchisees, serving 250 routes within and through Cebu city. About 90 percent of the franchises are for a single unit. There are two major organizations of PUJ operators: the Cebu Integrated Transport Service Multi-purpose Cooperative (CITRASCO) and the Visayan United Drivers Transport Services Cooperative (VUDTRASCO). However, less than 20 percent of the 5,000 opeartors belong to either of these two organizations, implying that more than 80 percent of all PUJ operators are not part of any representative structure. These operator associations are primarily representative and provide administrative support to their members (e.g. for franchise applications). They do not have capacity for the organization or management of PUJ operations and their financing capacity is minimal.

24. There is a single taxi association, Metro Cebu Taxi Operators Association (MCTOA), which caters exclusively to taxi operators (not for drivers). The operators are of different sizes, some having many units, some just one. There are about 12 taxi operators with large numbers of units which account for perhaps 60 percent of the total taxis in Cebu. In practice, MCTOA primarily represents the interests of these larger operators.

25. Current PUJ operations are done on a loosely regulated basis with few formal rules. Key characteristics of the PUJ operations are:

(a) Non-exclusive franchises are issued by LTFRB to operators wishing to operate PUJ services on a particular route, up to the vehicle needs estimated for the route by the LTFRB. The franchises are for specified vehicles, and normally have a five-year duration with possibilities for renewal;

(b) Local government endorsement in the form of "travel lines" issued by the CITOM is a requirement before PUJ operators can operate along their designated routes. Travel Lines are subject to renewal annually, based on CITOM's assessment as to whether or not the operator should be allowed to continue operating;

(c) PUJ operators determine their own days and hours of operation. The only constraint is that they must stick to the route on which they are organized, and are not permitted to end their trip partway along the route (trip cutting);

(d) PUJ operators or franchisees may or may not be the actual drivers of the vehicles they own. It is common practice for operators to rent out their vehicle to drivers who pay a daily boundary fee as vehicle rental. One or two drivers may take turns in renting a single PUJ from the operator; and

(e) The individual PUJs generally operate independently as a micro-business.

26. There is no co-ordinated operation of the PUJs on the individual routes, with each operator working more or less independently. There is no formal route associations, no formal

terminals for intra-Cebu routes, and no dispatchers as there are in other countries where the informal sector dominates public transport. The terminals at SM and Ayala Mall are provided, organized and managed by the Mall owners, who charge the PUJs for use.

27. The details noted above demonstrate that there is an extreme degree of fragmentation of operation. For the PUJ drivers who will be serving the BRT feeder routes, this indicates a possible need for helping them to organize themselves as BRT feeder services in the form of:

(a) Assistance in the creation of BRT feeder route-specific drivers' associations or other competent entity that will implement a dispatching or queuing system;

(b) Identification of possible terminal locations for specific BRT feeder routes; and

(c) Capability building for the members of the drivers association on safe driving practices, passenger courtesy, vehicle maintenance, organizational skills, and the like.

28. PUJ drivers/operators could also participate in BRT by assistance in forming entities that might become an operating company for BRT services. In addition, it is likely that a small number may continue to operate in corridor if they conform to certain quality standards. These options would be developed in greater detail through ongoing consultation informed by knowledge of the potential number of affected PUJs and size of labor force upon finalization of the service plan.

29. **Provision and maintenance of supporting infrastructure and facilities.** Major roadways and bridges where, for the most part, PUJ's and buses ply, are planned and implemented as national highways by the Government of the Philippines Department of Highways and Public Works. Local and Barangay streets and bridges are provided and maintained by local governmental units.

30. **Vulnerability of low income groups, people with disabilities, and women.** Low-income residents who are unable to afford taxis or private transport are particularly vulnerable to the security, safety and environmental risks posed by jeepney travel. Focus group survey of women and the elderly has revealed specific concern about safety and security (for details see para __)**.**

C. Higher Level Objectives to which the Project Contributes

31. The project will contribute to two Strategic Objectives in the 2010-2012 Country Assistance Strategy (CAS) for the Philippines. Under Improved Investment Climate, it will contribute to increased and improved delivery of infrastructure (Outcome 1) and enhanced regulatory and policy frameworks and institutional capacity relating to private participation in local infrastructure (Outcome 2). Under Reduced Vulnerabilities, it will contribute to reduced emissions (Outcome 2). The project is also expected to contribute to strengthened local government performance for more effective service delivery under the Good Governance theme. Also consistent with the CAS, this activity will contribute to the knowledge agenda by helping

the Government of the Philippines and Cebu City plan and implement the country's first BRT line, thus building capacity for subsequent lines in Cebu and other cities.

32. The Government of Philippines has developed a National Environmentally Sustainable Transport (EST) strategy in 2009 with the objective to:

(a) Reduce the annual growth rate of energy consumption and associated green house gas (GHG) and air pollutant emissions from the transport sector especially in urban areas of the country; and

(b) Enhance sustainable mobility through the development of a viable market for environmentally sustainable transport of 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.

33. One element of the EST strategy specifically targets the replacement of jeepney vehicles with modern BRT buses. While the former 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 Cebu.

34. The project is expected to reduce transport system fuel consumption, carbon intensity and local air emissions in a number of ways. It will carry more passengers on fewer, larger vehicles, reducing over-all vehicle-km. It 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.

35. BRT will also reduce overall vehicle travel by inducing modal shifts from much more energy and emissions intensive private passenger modes, such as motorcycles, to buses. Finally, by inducing more transit-oriented mixed use development, BRT implementation should result in fewer and shorter motorized trips of any kind.

D. Rationale for CTF Involvement

36. Urban transport represents one of the fastest-growing sources of GHG emissions in the Philippines. To address this and other related problems, 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.

37. **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.

38. **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 2009, 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.

39. **CTF Involvement will address these challenges both through direct project benefits as well as the broader strategic promotion of the BRT concept in the Philippines.** These benefits are described in turn below.

40. **The project will directly support the reduction of emissions from Cebu's transport sector.** A detailed GHG inventory and forecast were undertaken as part of project preparation. Based on these forecasts, implementing the BRT-ATC scenario in Cebu City would yield annual savings across Cebu City (in reference to a BAU baseline scenario) of 115,000 tons/year of CO2e by the year 2020 and 192,000 tons by 2025 (equivalent to 24 percent and 41 percent of the current total annual GHG emissions from urban transport in Cebu respectively). For reference, this 2015 estimate is approximately half 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). The project would save a cumulative total of 3,867,000 tons of CO_2 over a 20 year period from 2015 by comparison with the baseline scenario - the equivalent of saving over eight times the current total annual GHG emissions from urban transport in Cebu.

41. **In addition to these direct GHG savings, the 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. When successfully implemented, the Cebu BRT will provide an on-the-ground demonstration of BRT in practice, an ideal disseminator of best practice in both technical and institutional knowledge for decision makers in other cities, both in the Philippines and beyond. The project explicitly recognizes the importance of this dissemination impact by including a component designed to propagate 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.

42. **Environmental co-benefits**. The CTF investments would also result in a number of co-benefits (for details see Annex 9, para 37-46), including:

(a) Air quality improvements and health benefits;
(b) Increased public transport user satisfaction for women;

(c) Reduced number of road accidents;
(d) Reduced share of income spent on transport;
(e) Accelerated urban development along BRT corridor;
(f) Improved capacity of planning and regulation;
(g) Improvements in city wide accessibility;
(h) Support to local economy; and
(i) Opportunity for improved private service delivery.

43. Specific investments to be funded by CTF are: bus stations (US$8.3 million), system management/marketing (US$0.9 million), Area Traffic Control (ATC) (US$10.9 million), and project outcome monitoring (US$3.0 million).[10]

44. Area Traffic Control system would improve BRT operations as well as improve traffic flow throughout the city. The need for public transport priority at intersections through which BRT passes is recognized together with the deficiencies of the existing SCATS Area Traffic Control system in providing that priority. This component would have a significant impact on reducing GHG emissions (for details see ____).

45. 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 Cebu BRT 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. As a first step, detailed collection of project baselines and inventories as well as year by year plans and sources for data collection are provided in the Baseline Monitoring Report, available in the project files.

46. The CTF will also finance station infrastructure and system management. Although stations are the most prominent symbol of a BRT system, past experience has shown many instances where insufficient attention was paid to the details of station infrastructure. Financing stations using CTF financing will allow for stations to develop their full potential as the public 'face' of the project, developing a positive image of BRT in Cebu, as well as ensuring that all proper facilities for disabled access are incorporated into the design.

II. PROJECT DEVELOPMENT OBJECTIVES

A. PDO

47. The Project Development Objective (PDO) is to improve the over-all performance of the urban passenger transport system in the project corridor in Cebu City in terms of the quality and level of service, affordability, safety, and environmental efficiency.

B. Project Beneficiaries

[10] The remaining portion of the US$25 million finances price and physical contingencies.

48. Table 2 provides a list of beneficiaries and possible benefits derived by each of them from implementation of this project.

Table 2: Beneficiaries and Project Benefits

Beneficiaries	Project benefits
Government Departments/ Agencies	Development of institutions to enable them to fulfill their statutory duties in the urban transport domain;
Passengers	Faster and more reliable service; time and cost savings for the large proportion of travelers who depend on public transport; higher user satisfaction; Reduced accidents;
General traffic	Reduced congestion and accidents,
Pedestrians	Improved walkability, safety
Residents of corridor	Reduced noise and local air emissions; improved mobility and accessibility, especially for women, the young and old and travelers with disabilities;
Women	Upgrade in the passenger experience from jeepneys – which can include harassment of female passengers – to a modern professionally managed public transport service.
PUJ drivers/operators	Improved job opportunities in the formal sector with better working hours and conditions in a regulated environment; greater job security and income reliability; Greater security and improved opportunities to recover investments and make profits.
Vehicle supply industry	Opportunities for supply of higher specification vehicles and maintenance to higher standards.
Private sector	Improved access to current business centers and retail enterprises; Potential opportunities for investment in land development adjacent to stations and terminals; development of innovative organization and finance mechanisms for the sector that will have a broader application.

C. PDO Level Results Indicators

Performance Indicators[11]:

49. The project comprises a number of different interventions, including:

(a) BRT demonstration corridor from Bulacao to Ayala Mall;
(b) upgrade to the city-wide ATC system;
(c) traffic management (intersection, parking and jeepney terminal) improvements away from the BRT route;
(d) reform of jeepney operations; and
(e) studies, proposals, and designs for BRT systems elsewhere in the Philippines.

[11] As appropriate for criterion, these are measured against a "trend-line" counterfactual.

50. The BRT element of the project will have its greatest impact on travel along the corridor. The other elements (b through e) will have more widespread impact and it is therefore appropriate to divide the selected indicators to cover "core" and "wider impacts" impacts. The core indicators are listed from a) through f) and will be measured in the formal project indicators (for details please see Annex 1). The wider impact benefit indicators are listed from g) through k) and will be measured as part of a supplemental ongoing program of monitoring evaluation included as part of project preparation and implementation.

(a) Increase in the share of public transport users in the project corridor;
(b) Number of Cebu city residents along the corridor able to access city hall by public transport in 60 minutes;
(c) Greater public transport user satisfaction (segregated by gender);
(d) Share of income spent on public transport (by lowest quintile);
(e) Reduced number of road accidents; and
(f) Reductions in the greenhouse gas intensity of transport.

The indicators below will not be included as formal project indicators but will be monitored as part of an ongoing program of monitoring and evaluation during project implementation*:*

(g) Improved mobility for Cebu City residents, workers and visitors;
(h) A financially viable quality public transport system including BRT;
(i) Reduced delay for Cebu road users;
(j) Revitalization in Cebu City's core along BRT corridor; and
(k) Improvements in local air quality.

III. PROJECT DESCRIPTION

A. Project Components (for details please see Annex 2)

51. **Component 1 – BRT Infrastructure and System (Total cost: US$157.1 million; WB: US$89.8 million, CTF: US$9.2 million; AFD: $33.9 million; GoP: US$24.2 million).** This component will finance goods, works, and services for detailed design, construction and supervision of BRT infrastructure and systems, including segregated busway, highway rehabilitation, intersection improvements, station, depots, terminals, and system management and marketing. The land acquisition and resettlement cost will be financed by GoP.

52. **Component 2 – Traffic engineering, management, ATC, ITS (Total cost: US$18.7 million, CTF: US$10.9 million, AFD: US$7.8 million).** This component would finance goods, works, and services for: a) traffic engineering, management, and safety, including intersection improvements on tributary routes used by BRT and other vehicles, provision of at-grade, signal controlled, pedestrian crossing at key locations; b) Area wide traffic control for Cebu City, in part to replace the existing and obsolete SCATS traffic control system using modern area traffic control technologies; and c) Intelligent Transport system (ITS) operational support system and corridor traffic control system acquisition and installation.

53. **Component 3 – BRT concept dissemination and development (Total cost: US$5 million, WB: US$2.0 million, AFD: US$3.0 million).** This component would finance a) studies, training, and capacity building to build support and capacity for the BRT concept in the Philippines; and b) feasibility and detailed design of all project components including infrastructure, facilities, systems, traffic control and management to support the proposed Metro Manila BRT application.

54. **Component 4 – Urban Realm Enhancements (AFD: US$3.0 million).** This component would finance goods, works, and services to foster integration of land development with the new BRT system through establishing physical connections from stations and terminals to major trip attractors and generators.

55. **Component 5 – Project outcome monitoring (Total cost: US$5.0 million, WB: US$2.0 million, CTF: US$3.0 million).** This component would finance technical assistance, equipment, and other operational support for monitoring project progress and, on an ongoing basis, transport system supply, demand and performance; institutional performance, project outcome monitoring in terms of transport (including safety), environmental impact, social, and capacity development indicators.

56. **Component 6 – Project management (WB: US$6.1 million).** This component would finance technical assistance, equipment, vehicles, office equipment, and other operational support for management of implementation of BRT and related measures by the Project Implementation Unit through design, construction/implementation. It will include the application of a comprehensive communications, outreach, program focused upon information through construction and preparation of the city for BRT operation.

B. Project Financing

1. Lending Instrument

57. The lending instrument for this project will be a Specific Investment Loan (SIL).

58. The CTF financing of US$25 million is offered with a service charge of 0.75 percent per annum and 20-year maturity, including a 10-year grace period.

2. Project Cost and Financing

59. The project will be financed by a World Bank loan (US$110 million) and CTF loan (US$25 million). The project will also be co-financed by AFD loan (US$52.0 million) and GoP (US$24.3 million) (Table 3). The World Bank loan will be a US dollar-denominated, LIBOR-based, commitment-linked, Variable Spread Loan (VSL) with customized repayment of the principal. The loan will have a maturity of 25 years, including a grace period of 5 years. A front-end fee of 0.25 percent will be applied and capitalized through the loan.

60. The CTF financing of US$25 million is extended under hard concessional terms for a maturity of 20 years, including a grace period 10 years, MDB fee 0.18 percent, and service charge 0.75 percent.

61. Loan proceeds will flow the World Bank to the Bureau of Treasury account 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 DOTC.

Table x: Project Cost (US$ million)

	TOTAL COST	IBRD	CTF	AFD	GoP
1. BRT Infrastructure and system	158.0	89.8	9.2	33.9	25.0
2. Traffic engineering, management, ATC, ITS	18.7		10.9	7.8	
3. BRT concept dissemination and development	5.0	2.0	-	3.0	
4. Urban Realm enhancements	3.0			3.0	
5. Project outcome monitoring	5.0	2.0	3.0		
6. Project management	6.1	6.1			
Base Cost Total	**196.0**	**99.8**	**23.1**	**47.7**	**25.0**
Price contingency	7.0	4.3	0.8	1.8	
Physical contingency	9.1	5.7	1.1	2.4	
TOTAL	**212.0**	**110.0**	**25.0**	**52.0**	**25.0**

C. Lessons Learned and Reflected in the Project Design

62. Factors seen as critical to the successful functioning of urban transport systems in the long term, that are reflected in the project design are:

(a) During preparation and implementation, focus on planning principles, which are: **comprehensive** (multi-modal), **continuous** (plans, planning data and tools are updated on a regular basis), **cooperative** (all stakeholders participate through an aggressive, well-designed communications process), **connected** (capital projects are consistent with adopted long range plans), **championed** (support at the highest political levels, broad ownership), **phased** (allows for incremental development that scales-up successful interventions and allows flexibility in design), and **coordinated** across institutions and levels of government and the private sector;

(b) There is no single BRT system prescription:

(i) use transportation analysis and planning to develop the most appropriate BRT system package;
(ii) begins with market analysis; and
(iii) match markets with a comprehensive, integrated public transport service plan, designs for running ways, vehicles, stations, etc.

(c) Adequate governance and regulatory structures are as important as resolving all the technical details when aiming to create effective bus-based transport systems; and

(d) Focus early on communication and engagement with key stakeholders and user education during the preparation and design phase, and continue the consultation process through construction and operation phases.

IV. IMPLEMENTATION

A. Institutional and Implementation Arrangements

63. The project will be implemented by DOTC, which will have the overall responsibility for its coordination and management. The DOTC 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 in Cebu city for the day-to-day project implementation (for details, see Annex 3):

(a) The BRT National Steering Committee (BRT-NSC) would provide policy guidance and have oversight of all BRT studies, projects and operational systems in the country. The Committee will have representation from DOTC, LTFRB, Local Government, DOF, and others;

(b) The National Program Management Office (NPMO) will have the primary function of supporting the mandate of the BRT National Steering Committee and overseeing the implementation of all BRT plans, policies, standards, regulations, and projects nationwide. The BRT-NPMO responsibilities include planning and evaluation, resource mobilization, implementation, monitoring and reporting, promotion and communications, secretariat, coordination, and other related activities assigned by the BRT-NSC that are necessary to ensure the proper development and operations of BRT in the country;

(c) A Project Implementation Unit (PIU) has been set up by DOTC in Cebu city to carry out day-to-day project implementation. The key tasks will include project management, financial management, procurement, reporting, monitoring, and environmental and social safeguards; and

(d) To support project preparation and implementation, NPMO/PIU will be supported by a Technical Support Consultant (TSC). The TSC would provide specialist staff in the following areas, as required, during the project: a) project management, including procurement, contract design and oversight of contractors; b) technical, including infrastructure, bus operations, traffic systems, and technologies; and c) analysis, including planning, business modeling, and data management. The TSC would also focus on building capacity in NPMO and PIU.

64. Implementation will be carried out on the basis of an Annual Work Plan and Budget prepared by the NPMO/PIU. A Project Implementation Manual (PIM) will be prepared for: (a) institutional coordination and day-to-day execution of the project; (b) disbursement and financial management; (c) procurement; (d) environmental and social guidelines; (e) monitoring, evaluation, reporting and communication; and (f) such other administrative, financial, technical

and organizational arrangements and procedures as may be required for implementing the project.

B. Results Monitoring and Evaluation

65. A result framework has been developed (see Annex 1) and will provide the basis for monitoring and evaluating the project to make sure investments are on track. The project includes a comprehensive monitoring and evaluation component based on qualitative and quantitative performance indicators for each subcomponent. These include transport, social, environmental, and capacity development indicators. This data would be used, in turn, to estimate project-related GHG emission reductions.

66. Public oversight of the project will be ensured by crowd sourcing, smart phone applications, and web tools to better respond to network conditions and public transport service. In addition, civic engagement platform will be established to improve the public's participation in transport network management issues.

C. Sustainability

67. **Once constructed, the BRT system is expected to be financially sustainable over its operating life.** Crucially, projections for revenue and cost indicate that as of its opening in 2015, the BRT system will be able 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 managers, control centre personnel, terminal staff, fare collection cost, infrastructure maintenance, rapid response vehicles). Once constructed, the scheme is thus expected to be financially sustainable over its operating life, without considering repayment of initial capital costs.

68. In addition, the project addresses issues of sustainability by directly supporting policies that advance broad societal interests over the long term. These interests include:

(a) Provision of mobility and access for Cebu City residents, workers and visitors irrespective of income, gender, age or physical ability;
(b) Making transport safer, more, environmentally friendly;
(c) Revitalizing areas in the City's core along the BRT corridor;
(d) Providing a model for financially sustainable, quality public transport;
(e) Developing National Government and Cebu City institutional capacity in disciplines critical to rapidly growing urban economies such as integrated land use and transport planning, traffic management and public transport;
(f) Strengthening public awareness of the importance of more environmentally friendly urban transport; and
(g) Building political support for public transport sectoral and institutional reforms.

69. Another key to BRT's long term sustainability in Cebu City is to make sure that the project's larger social goals are met while mitigating any possible adverse impact on the current PUJ industry. This will require support from elected officials, the media, and the Civil Service Organizations.

V. KEY RISKS AND MITIGATION MEASURES

70. The key risks and mitigation measures are presented in Annex 4. The overall risk of the project is rated **Substantial**. Key risks and mitigation measures are:

(a) **Resistance from current jeepney operators to the project and associated reforms.** These are the public transport sectoral risks that have been the most difficult for officials preparing BRT systems in other cities to overcome. Franchisee's ("owners") of licenses to operate in the informal public transport sector has a huge vested interest in continuing current industry arrangements because of their investments in vehicles and facilities and almost guaranteed sources of income. Discussions have revealed a number of concerns among the current jeepney operators as a result of the proposed reforms, mainly focused on: reduced passenger volumes, possible cancellation of jeepney routes along the BRT route, dislocation of drivers and operators, and possible demise of existing transport cooperatives.

Any project that threatens this jeepney group will have significant political difficulty in getting implemented. To mitigate this risk, an aggressive two-way communications program has been part of the project planning and preparation process in Cebu since the beginning. This has highlighted specific concerns of operators and drivers and given the sector confidence that its interests will be protected. It has also provided the basic information that will be needed to develop a reform and organizational framework that will provide most operators and drivers with alternative, potentially better income and employment opportunities and a path to compensation for others.

Helping to mitigate the risks associated with this sector is the fact that it is having increasing financial difficulty because of growing congestion and fuel costs and competition from low cost, more nimble motorcycle taxi's (*Habal- Habal*). BRT reform can be promoted as a way of "formalizing" the informal sector and returning it to financial sustainability. Alternatives for the potentially displaced drivers and operators have been identified as follows:

- Restructure route to serve as BRT feeder service. There will be no outright deletion of routes so as not to totally displace drivers and operators. The 90 passenger jeepney routes are covered by 1,310 authorized jeepneys and 2,620 drivers (assuming two drivers for every jeepney). The jeepney routes will be restructured and shortened to perform feeder service to the BRT rather than directly compete for passengers;
- Seek a franchise elsewhere and operate new routes. The planned restructuring of routes will coincide with CITOM's plan to open new routes into areas currently not being served by public transport. Since 2006 no new travel lines have been opened as per the city ordinance;

- Cancel PUJ franchise and apply for open franchises of other transport services, such as trucks-for-hire or school service;
- Sell their vehicle and exit the PUJ industry;
- Employ PUJ drivers and operators in various aspects of BRT operations after the needed training and re tooling; and
- In addition, almost 40 percent of the current jeepney franchises are up for renewal in January 2013. The LTFRB together with CCG is developing an approach to renegotiate with the franchisees an arrangement to best serve their interests.

(b) **Institutional and organizational weaknesses may prevent successful project implementation.** There are a number of institutional risks to successful project preparation and implementation. The first risk is that many of the activities to be undertaken in pursuit of Cebu BRT have never been done before in the Philippines. There are some overlapping responsibilities at the national government level while Cebu City has not been involved in public transport in general or projects of this type in particular. These risks should be mitigated by the proposed structure which combines a National Program Management Office (PMO) with a Cebu-based Project Implementation Unit (PIU).

A second institutional risk is that certain critical functions (for example, procurement, financial management, operations planning, bus route structuring, etc) are assigned to agencies without sufficient staff resources in terms of both numbers and expertise to provide decision support information and implement decisions in a timely fashion. Mitigating this risk is the agreed project management and preparation approach whereby a comprehensive project preparation/ implementation consultant team with skills in all the requisite technical and administrative areas will be hired to assist the PIU (and NPMO) in moving the project forward.

A third risk is the institutional fragmentation, whereby a number of national Departments and local agencies are involved in urban transport planning, management, and implementation with weak coordination. This risk is mitigated at the national level by setting up a Steering Committee for coordinating the planning, implementation, management, regulation, and monitoring of BRT policies, plans, and projects. It has representatives from all key Departments, including DOTC, DILG, DOF, and LTFRB. The Mayor of the city is also represented on the Committee. In addition, representatives of the private sector and transport sector are also represented.

(c) **Insufficient attention to service and operations planning and weak technical design may adversely impact project delivery**. This risk should be minimized because of the superior quality of the planning and preparation process based on good understanding of the local situation and international best practice. An in–depth, analysis was made of travel patterns, on-street traffic and public transport

management and operations issues and customer and PUJ industry concerns before any design decisions were taken. The results of this analysis were used to develop the service plan and the fundamental design criteria that drove the preparation process.

(d) **Delays in land acquisition may adversely impact project delivery.** Dedicated transitways are only being proposed for those corridor segments where right of way is sufficient to avoid major resettlement and other issues. The basic conceptual design principle of having BRT services extend beyond the dedicated BRT transitway has provided the flexibility to deal with right of way difficulties without either holding up the project or significantly degrading performance and passenger attractiveness by forcing transfers.

VI. APPRAISAL SUMMARY

A. Economic and Financial Analyses

71. A detailed economic analysis was conducted for investments in public transport system (including BRT, 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.

72. The approach is based on establishing two baseline scenarios: the existing and future 'do-nothing'. From the future scenario, predicted BRT demand is forecast based on abstraction of trips from other modes.

73. The capital cost includes construction of BRT running lanes, rehabilitation of carriageway, stations, terminals, depots, Area Traffic Control, and land acquisition and resettlement. The total capital cost of the project investments subjected to financial and economic evaluation is $195 million.

74. **Once constructed, the BRT system is expected to be financially sustainable over its operating life.** Total recurring costs (including direct operating cost, system management, bus purchase, infrastructure maintenance, and technical support consultants) per annum are expected to be 854.5 million PHP (US$19.9 million) in the opening year of 2015. In contrast, total revenues from bus fares and commercial revenue (advertisement) are projected to be 881.6 million PHP (US$20.5 million), of which 92 percent is derived from fares and the remainder from advertisement.

75. The economic evaluation is based on savings in travel time, reduction in vehicle operating costs, and quantified external benefits including greenhouse gas reductions and traffic accident reductions. Table 4 summarizes the results of economic evaluation.

Table 4: Economic Evaluation Summary (all monetary units mil 2012 PHP)

Sensitivity Test	Economic Appraisal Indicators		
	EBCR	ENPV	EIRR
NO SENSITIVITY	8.0	81,439	39%
20 % Reduction in Time Savings	6.4	63,447	36%
Time Savings Constant from 2025	2.8	20,479	33%
10% Patronage Reduction	8.0	81,439	39%
10% Revenue Reduction	8.0	81,420	39%
10% Infrastructure Cost Increase	7.6	80,864	38%
Excluding CTF investments on ATC	3.4	27,700	28%
20% Reduction in Time Savings and Remaining constant from 2025 & 10% Revenue Reduction & 10% Recurrent Cost Increase & 10% Infrastructure Cost Increase	2.1	13,541	27%

76. The environmental benefits are significant and in line with international BRT experience. A detailed GHG inventory and forecast were undertaken as supplements to the FSR. Based on these forecasts, implementing the BRT-ATC scenario in Cebu City would yield annual savings across Cebu City (in reference to a BAU baseline scenario) of 115,000 tonnes/year of CO2e by the year 2020 and 192,000 tonnes by 2025 (equivalent to 24% and 41% of the current total annual GHG emissions from urban transport in Cebu respectively). The project would save a cumulative total of 3,867,000 tons of CO_2 over a 20 year period from 2015 by comparison with the baseline scenario - the equivalent of saving over eight times the current total annual GHG emissions from urban transport in Cebu.

77. The impact of excluding CTF investments on the economic rate of return was also estimated. Implementation of the BRT service will require an efficient and effective traffic control system that allows priority to be given to BRT vehicles while minimizing any consequent delays to other vehicles on the Cebu road network. In addition, traffic management interventions proposed throughout the city's road network will be optimized through ATC. As a result, investments in ATC would benefit savings in travel time and reduction in vehicle operating costs not only for the BRT operations but also for traffic throughout the city. Not surprisingly, therefore, ATC investments account for over half the expected benefits, with just a fraction of the cost. Excluding the benefits resulting from ATC investments significantly reduces rate of return (from 39 percent to 28 percent), though the project remains economically viable even without investments in ATC.

B. Technical

78. **Conceptual Design.** The BRT line's infrastructure and facility designs were based on an understanding of the current and expected public transport market. Service plans, operating and physical requirements and financial plans were developed from that understanding.

79. Key elements of the BRT line's design are:

(a) A segregated busway between Bulacao and Ayala Mall, 10 km in length (BRT running lane width of 3.5m, overtaking lane: 3.5 m, sidewalk: 2.0 m, physical segregation between BRT and general traffic lane: 0.3m);

(b) BRT overtaking lanes at all transitway stations;

(c) Stations and terminals along the segregated busway route (station platform length of at least 4.0m);

(d) A depot for overnight, off-street overnight bus parking, bus servicing and maintenance;

(e) An area Traffic Control (ATC) system to facilitate BRT priority at signals in the corridor and provide improved traffic flow benefits city-wide;

(f) A service plan where BRT services operate beyond Ayala Mall to Talamban even though dedicated BRT transitway infrastructure is physically limited to the segment between Bulacao and Ayala Mall because of right of way constraints (in mixed traffic segments, BRT bus passage will be facilitated by signal and other priority measures at intersections and where otherwise achievable within the confines of the roadway);

(g) Traffic management measures to improve traffic flow outside of the corridor that are seen to complement the BRT and maximize its impact;

(h) Parking management measures to similarly complement BRT and improve traffic flow;

(i) Interchange improvements to offer enhancement to the level of service received by all public transport passengers irrespective of whether they use BRT or not; and

(j) Urban planning improvements consisting of public realm enhancements [and enhanced integration of transport and land use).

80. The guiding principle for designing accessible BRT follows the Bank guidelines[12] with the objective to ensure accessibility for people with disabilities.

[12] *Bus Rapid Transit Accessibility Guidelines*, World Bank 2007.

C. Financial Management[13]

81. Under the Bank's OP/BP 10.02 with respect to projects financed by the Bank, the borrower and the project implementing agency are required to maintain financial management systems — including accounting, financial reporting, and auditing systems — adequate to ensure that they can provide the Bank with assurance that funds will be used in an efficient and economical way to enable project development objectives to be met. The conclusion of the assessment is that Philippines DOTC and Cebu City Government's financial management systems meet the Bank's requirements provided the recommended mitigating measures are incorporated, and there is sufficient basis to place reliance on the country systems for all financial management aspects of this Project.

82. The assessed financial management risk of the Project before the mitigating measures is considered substantial but could be reduced to moderate after the proposed and existing mitigating measures described in the Financial Management Section of the PAD (Annex 3) are implemented and have shown effective impact.

83. The key financial management arrangements proposed for the Project are:

(a) Separate books of accounts shall be maintained by the project. Resolutions of issues on the project financial statements shall be required to be acted upon or resolved within 12 months from the issuance of the report;
(b) Two Designated Accounts (DAs) shall be maintained for the Project where all loan proceeds released from the Bank and the CTF are credited;
(c) Capacity building on financial management conducted for finance staff who will be involved in the Project. Brief FM orientation to key finance officers and staff shall be conducted to ensure that they understand the FM requirements under the Project;
(d) Quarterly Interim Financial Reports submitted to the Bank no later than 45 days after the end of each calendar quarter; and
(e) Annual project audited financial statements submitted to the Bank no later than 6 months after the end of each calendar year. The audit of the financial statements of the Project shall be carried out by the Commission on Audit (COA).

D. Procurement

84. The World Bank has carried out a procurement assessment on both the DOTC and the CCG. The World Bank/Philippine Government Procurement Policy Board report on Agency Procurement Compliance and Performance Indicators (APCPI) Assessment for DoOC was also taken into consideration. While both agencies have been doing procurement regularly including large ones for works, goods and consultancy using local and foreign funds, this will be the first time in many years that DOTC will be implementing a Bank-financed project while CCG has not implemented one.

[13] 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 Manuel" issued by the Board on March 1, 2010.

85. Procurement for the Project would be carried out in accordance with the World Bank's "Guidelines: Procurement under IBRD Loans and IDA Credits" dated January 2011; and "Guidelines: Selection and Employment of Consultants by World Bank Borrower" dated January 2011, and the provisions stipulated in the Legal Agreement. The Project Implementation Manual with specific section on Procurement will provide details of the procurement methods and procedures acceptable to the Bank.

86. **Risks and Mitigation Measures.** Procurement risk for the project is assessed as "substantial". Some of the identified weaknesses in DOTC and CCG procurement systems relate to: 1) the lack of 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) A Project Implementation Unit is to be set up by DOTC with a focal person in procurement to be provided with continuous relevant training on procurement and supported by Procurement Specialist from a Technical Support Consultant team by Appraisal.

(b) A Project Implementation Manual with a specific Procurement Section detailing, among others, the procurement methods and procedures and processing timelines acceptable to the Bank will be prepared by the PIU by Appraisal.

(c) On the basis of the Loan Agreement, DOTC will ensure annual procurement audit, among others, 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 Cebu-BRT project on a continuing basis.

(d) A Procurement Plan detailing the identified contract packages for works, goods and consultancy will be prepared by the PIU and updated on an annual basis or as the need arises to reflect current circumstance, and cleared with the Bank. The Procurement Plan will be made available on PhilGEPS, DOTC and CCG websites and would be strictly followed especially in ensuring that procurement timelines and dissemination requirements on procurement opportunities and results conform to the Bank and government standards.

E. Social (including Safeguards)

87. **Land Acquisition and Resettlement**. The project will entail use of public land and acquisition of private land for bus depot, terminals, road widening, expansion of pedestrian sidewalks, geometric improvement at the junctions, turnaround improvement at junctions, and bays for jeepneys for passenger access.

88. The project will require an estimated 7 hectares of land (70,300 square meters). A significant portion of this land is government owned such as the site for the depot in the North

Reclamation area; in certain portions, road widening and geometric improvement will be done within the 30-meter road right of way.

89. The project is expected to impact an estimated 439 structures used for residential, commercial, industrial, and institutional purposes. The project would avoid taking of fixed assets as much as possible followed by minimization and re-organization of the affected structures – informal or formal -- within the existing lot. Additionally, civil works for the project will entail removal or relocation of utility and public infrastructure such as electricity poles, water and sewerage pipes, telephone boxes, waiting sheds, street lamps and poles for traffic lights. The project will coordinate with the utility companies and concerned government agencies to ensure minimal service interruption and inconvenience to the public.

90. Other than land acquisition, the major social risk facing the project is the potential loss of employment by some jeepney operators and drivers operating along the BRT corridor. The options as well as the institutional and financial arrangements for restoring livelihood of affected jeepney drivers, helpers and operators will be covered in the Social Management Plan.

91. **Impact on women, children, people with disabilities (PWD), and the elderly:** The proposed project will benefit women, the elderly, and the physically challenged by responding to their needs. Consultations with barangays and focus group discussions revealed the following key concerns by women and people with disabilities:

(a) Physical harassment by other passengers and operating personnel possible because of overloading;
(b) Inadequate security in access, egress and on public utility jeepneys; and
(c) Difficulty of travelling with children and luggage, which often requires taxi travel at a much higher cost.

92. **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 (for details, see Annex 8, para 23).

F. Environment (including Safeguards)

93. Environmental Assessment (EA) has been undertaken to evaluate environmental issues associated with direct and indirect impacts of the proposed BRT project during the planning, construction, and operational phases. The EA includes detailed alignment sheets and has been submitted to the Bank for review and approval. An Environmental Management Plan (EMP) has been developed and includes direct and indirect impact on houses and businesses, potential hot spots for pedestrian safety, school areas, hospitals, economic activities, etc. An initial identification of mitigation measures is provided in the EMP. A Community Relations and Participation Plan (CRPP) is also developed to identify procedures and mechanisms for information dissemination and community access.

94. **Impact on Physical Cultural Resources.** The EIA did not find potential impacts on physical cultural resources and do not expect that the construction or operation of the corridor to

have any negative impact on cultural heritage or historic buildings. Nevertheless, procedures to handle chance finds will be addressed in the EMP. A clause to address chance finds will be included in the Bid documents and General Contractor Works contract.

G. Other Safeguards Policies Triggered *(if required)*

Annex 1: Results Framework and Monitoring

PHILIPPINES: Cebu Bus Rapid Transit Project

1. The measureable project objectives are listed below. Outcomes a) through e) will be measured in the formal project indicators, while f) through j) will be measured as part of a supplemental ongoing program of monitoring evaluation included as part of project preparation and implementation.

(a) Increased public transport mode share in the project corridor;
(b) Greater public transport accessibility to key destinations;
(c) Greater public transport user satisfaction;
(d) Lower share of income spent on transport; Improved transport safety; and
(e) Reductions in the greenhouse gas intensity of travel.

The indicators below will not be included as formal project indicators but will be monitored as part of an ongoing program of monitoring and evaluation during project implementation:

(f) Improved mobility for Cebu City residents, workers and visitors;
(g) A financially viable quality public transport system including BRT;
(h) Reduced delay for Cebu road users;
(i) Revitalization in Cebu City's core along BRT corridor; and
(j) Improvements in local air quality.

A. Greater public transport accessibility to key destinations

2. A GIS based model was prepared using Accession software to estimate the number of people within Metro Cebu living within 30, 45 and 60 minutes by public transport of four key destinations. Further information on this analysis can be found within the BRT Corridor / SRP Accessibility Final Report. The four destinations for which accessibility was modeled are: Ayala mall, City Hall, SM mall, and the SRP. The results for all 4 destinations are presented in the Evaluation Approach & Baseline Monitoring Report and in Table 1 below; only the numbers for city hall are retained here as an official project indicator, since this location is centrally located and can serve as a reasonable proxy for the other locations.

Table 1: Number of Residents with Different Time Thresholds by Public Transport

Destination	Travel Time by Public Transport (min)	No of Residents
Ayala	30	610,013
	45	828,317
	60	993,510
City Hall	30	559,457
	45	797,710
	60	984,996

SM Mall	30	628,375
	45	895,231
	60	1,054,832
SRP	30	378,227
	45	676,817
	60	922,575

3. The table above presents the number of people residing with 30, 45 and 60 minutes of the four key destinations in 2012. This is the base case scenario, against which modeled accessibility outputs using the same Accession model should be used to enable a comparison of the before and after case to understand the impact of the BRT demonstration corridor on accessibility to key destinations.

B. Greater Public Transport User Satisfaction

4. In addition to quantitative findings to determine whether mobility and access have improved for Cebuanos, qualitative research methods will be used to provide supplemental evidence of project success. The long term success of the Project will largely depend on the views and perceptions of people who live and work in Cebu City, and of those who visit it. Therefore, qualitative research methods to understand people's perceptions of how their mobility has changed can provide valuable insights that not only provide evidence of the impact of the interventions against the objective(s), but also enable the longer term viability and sustainability of the interventions to be evaluated.

5. Accordingly, qualitative focus groups and/or user surveys were undertaken to understand people's perceptions of the interventions and how they affect mobility in and around Cebu. This base data will require an after survey to be carried out following BRT implementation in order to evaluate the effects of the BRT demonstration corridor. 1003 household interviews were carried out within the 14 Barangays that will be served by the proposed BRT corridor.

C. Lower Share of Expenditures on Transport

6. An important metric regarding the benefit of improved transport to lower income groups is the share of income spent on transport, in particular for the lowest income quintile. Whilst a regular DOTC household interview collects information on income and the amount spent on transport, without access to the resulting database it is not possible to produce the cross tabulations that would allow responses to be broken down by income group. It was therefore necessary to undertake further surveys to collect this data.

7. Baseline information has been collected during household interviews carried out before implementation where respondents were asked their typical weekly income and the amount that they spend on transport, including jeepneys, motorcycle taxis and taxis during a typical week.

8. Household interviews will also be carried out following implementation and the same questions will be asked of respondents. In addition, the after surveys will also obtain information

on the frequency upon which BRT services are used by respondents to assess the effects of BRT on their spending on transport. Analysis of the results of these household surveys will include examining results by income group, therefore exploring the impact of the price of using public transport on the least wealthy members of society. Notably, the lowest income quintile is of particular interest. The baseline data collected during interviews with 1,000 households is presented in table 3 below.

Table 3: Proportion of Income Spent on Transport

Respondent's Average Weekly Income	Proportion of Income Spent on Transport
0-500PHP	16.94% to 33.88%
501-1000PHP	13.11%
1001-1500PHP	8.76%
1501-2000PHP	6.85%
2001-3000PHP	7.16%
3001-5000PHP	7.74%
5001-10000PHP	4.12%
10001PHP+	5.00%

D. Reductions in the Greenhouse Gas Intensity of Travel

9. Reductions in the greenhouse gas intensity of transport in Cebu is a crucial measure of project success. The GHG benefits of both the BRT corridor and the improvements to the ATC system will be measured. The general approach to model the impact on greenhouse gas emissions is based on the number of vehicle kilometers travelled and unit emission rates for the various types of vehicles across Cebu. A complete description of the GHG emissions modeling process is provided in the accompanying GHG report, located in the project file.

E. Improved Safety

10. Assessing the impact of the BRT corridor on the relative safety of road users will be carried out by monitoring the incidence of road accidents or crashes before and after BRT implementation. However more specifically, the following will be carried out:

(a) Using CITOM accident data, police records and hospital records, an analysis of accidents will be undertaken along the BRT corridor and a control corridor before and after BRT implementation and the implementation of ATC improvements. Particular attention would be paid to the number of accidents per 100,000 of the population to remove any influences due to changes in population. In addition, the severity of accidents would be closely monitored and the vehicle types involved in accidents would also be evaluated to understand the impact of the interventions on road safety.

11. The indicators below will not be included as formal project indicators but will be monitored as part of an ongoing program of monitoring and evaluation during project implementation.

F. Improved Mobility for Cebu Residents, Workers and Visitors

12. There are various methods for evaluating the impact of BRT, ATC and traffic management improvements and jeepney reforms to assess whether mobility levels have improved for people of Cebu. One of the key indicators for this is the change in travel times from a variety of trip origins to a variety of destinations. Many project evaluations used elsewhere show a preference for simple measurements of total journey time from station to station, along the BRT corridor and comparing the time it takes to travel from point A to point B before and after implementation. Given that this project envisions improvements to the city-wide ATC system and changes to the jeepney network to provide access to and from the BRT corridor, journey times from ultimate origin to destination (i.e., door-to-door and not just stop-to-stop) will also be measured and evaluated.

G. A Financially Viable Public Transport System Including BRT

13. BRT has the potential to increase the efficiency of public transport in the project corridor. This efficiency gain is the result of reductions in the service times and vehicle kilometers necessary to carry the same or a greater number of passengers. Supporting interventions of ATC improvements and PUJ reform will help to maximize these benefits. To evaluate whether BRT is viable and sustainable in the long term will require a variety of data, including:

(a) BRT and jeepney patronage and revenue; and
(b) BRT operating and maintenance costs.

14. BRT and jeepney patronage and vehicle service Km drive the financial indicators and these will be monitored for other purposes as well.

H. Air Quality

15. Benefits from the BRT project will not only result from GHG emission reductions, travel-time, operating cost savings or even increased land values, but also from air quality improvements leading to potential public health impacts. Adoption of CTF supported measures would result in reduction in exposure to airborne pollutants. International experience in implementation of BRTs has demonstrated that operation of well run and designed systems have the potential to reduce exposure to airborne pollutants and air toxics, and road accidents. This is made possible by: (a) improved technologies with better emission controls; (b) fewer stops than previous system, thus reducing major emissions during start-ups; (c) separate bus lanes and reduced generation of airborne pollutants in the area of influence of the corridor. These health benefits would be multiplied accordingly under the proposed project.

16. A study[14] to estimate health co-benefits of the Cebu BRT project revealed that:

(a) particulate matter (PM) savings from this project is around 0.52 to 0.75 tons/km/year. The Gold standard BRT in Asia (i.e. Guangzhou BRT of 22.5km) saves around 40 tons of PM over 10 years (i.e. 0.2 tons/year/km). [15] The Rio de Janeiro BRT saves around 0.1 to 0.3 tons /year/km.[16] The Jakarta BRT corridor saves around 0.8 tons/year/km.[17] The higher savings in Cebu when compared with Guangzhou and Rio de Janerio 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 1,160 to 1,665 tons or 4 to 5 tons/km/year. In comparison, the Guangzhou BRT saves around 20 tons/km/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). Rio de Janeiro BRT saves around 1 to 3 tons/year/km and Jakarta BRT corridor saves around 5.5 tons/km/year which is comparable to Cebu BRT;

(c) In terms of vehicle kilometer travel reductions, the project over its 20-year lifecycle removes 20,000 to 30,000 new cars from road, including removal of 600 to 1,000 2-stroke tricycles contributing to PM reductions, removal of 250 to 350 new pre-euro buses contributing to NOx reductions;

(d) The project over its lifetime saves more fuel and CO_2 emissions than one to two years of fuel consumed and CO_2 emissions produced by the transport sector in Cebu[18]; and

(e) 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. When impacts on land use are considered the total monetary savings is in the range of US$269-385 million.

I. Revitalization in Cebu's Core along BRT corridor

17. A variety of measurements will be used to evaluate the impacts of the BRT demonstration corridor in terms of revitalizing the area in the City's urban core along the corridor.

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[14] 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.

[15] http://www.itdp.org/documents/20110810-ITDP-GZBRTImpacts.pdf

[16] http://164.67.121.27/files/UP/Posters%202012/26%20Lupita%20Ibarra.pdf

[17] http://esci-ksp.org/wp/wp-content/uploads/2012/05/Energy-and-Environmental-Impacts-of-BRT-in-APEC-Economies.pdf

[18] http://www.climateinvestmentfunds.org/cif/sites/climateinvestmentfunds.org/files/Approval_by_Mail_CTF_Philippines_updated_investment_plan_Dec_2011.pdf

(a) Measuring the value of properties through real estate transaction prices before and after the implementation of the corridor. In order to isolate the impacts of the BRT system on values, a control area has been set up. This consists of a separate but comparable area of Cebu City (comparable in terms of type of properties and commercial activities that take place there) that will not benefit from BRT services. In both the study area(s) and the control area, a before and after analysis of real estate transaction sale prices will be carried out, subject to the data being available. Should actual transaction prices not be available, alternative sources of data would be real estate asking prices, which are typically considered to have a strong correlation with transaction prices;

(b) Monitoring the number of building permit applications made before and after implementation of the BRT corridor in areas around BRT stations compared to control areas. Several areas that will have a BRT station have been identified and monitored alongside control areas that show similar characteristics. As the BRT corridor has been relatively high profile within Cebu City, it is possible that speculators may have applied for permits already, so before and after assessment may not show the true extent of the number of building permit applications between Ayala Mall and Bulacao; and

(c) Observational surveys will be carried out to provide more qualitative data to illustrate the impact of the BRT corridor on land use. These surveys will be carried out in selected areas on the BRT corridor and in a control area away from the BRT corridor before and after BRT implementation.

Results Framework (TO BE COMPLETED DURING APPRAISAL)

Project Development Objective (PDO):

The Project Development Objective (PDO) is to improve the over-all performance of the urban passenger transport system in the project corridor in Cebu City in terms of the quality and level of service, affordability, safety, and environmental efficiency and, in so doing, build support and capacity for BRT elsewhere in the Philippines.

PDO Level Results Indicators*	Core	Unit of Measure	Baseline	Cumulative Target Values**					Frequency	Data Source/ Methodology	Responsibility for Data Collection	Description (indicator definition etc.)
				YR 1	YR 2	YR3	YR 4	YR5				
Indicator One: Increase in the share of public transport users in the project corridor[19]	☐	%	55%				60%	65%	Bi-annually	See attached Table x	NPMO/PIU	See attached Table x
Indicator Two: Number of Cebu City residents able to access city hall by public transport in 60 minutes[20]	☐	Residents within 60 minutes by public transport	985,000				>10%	>15%	Bi-annually			
Indicator Three: Public transport user satisfaction (by gender)[21]	☐	Average % satisfaction for men and women on 6 variables	31.4%				65%	65%	annually			
Indicator Five: Share of Income Spent on Public Transport (by lowest quintile)	☐	% income spent on transport	13%				9%	9%	Bi-annually			
Indicator Six: GHG **i**ntensity of Transport	☐	CO2e emissions per person-km in project corridor	131.1 (2012)					75.2	Bi-annually			

[19] To be finalized during appraisal

[20] Measured using GIS modeling as defined in the indicator report. In the full monitoring and evaluation report, 4 large trip attractors will be monitored using this accessibility framework, measuring the residents within 45, 60, and 90 minutes by public transport.

[21] This is the average of satisfied/very satisfied female public transport riders across 6 variables: wait time, on-board comfort, speed, reliability, cost, and safety and security. The full monitoring report contains the details as well as a broader set of indicators to be measured as part of the project.

Indicator Seven: Reduced Number of Road Accidents[22]	☐	Annual accidents in city per 100,000 population	1290					< 15%	quarterly			
INTERMEDIATE RESULTS												
Intermediate Results:												
Establishment of a national PMO and Cebu based PIU for BRT	☐											
Set up TransCebu JV			none			Set up and staffed						
Construction of BRT running way	☐	km	none					16				
Establishment of a BRT control center	☐					Set up						
Installation of ATC system and upgraded signals	☐				Set up							

***Please indicate whether the indicator is a Core Sector Indicator (see further http://coreindicators)**
****Target values should be entered for the years data will be available, not necessarily annually.**

[22] The full monitoring report will monitor accidents at a city wide level as well as at X key intersections along the project corridor.

Use of Crowd Sourcing as a Monitoring Tool

18. Studies are under way to use smart phone applications in taxis to increase the amount of knowledge of transport network performance through greater data sets together with providing an automated data analysis and display tool. This greatly improves network knowledge leading to a better ability to manage the network both for system managers (CITOM) and network users (taxi drivers).

19. The web-based tools will include visualizations and analyses tools which display live and time-series databases of taxi crowd-sourced traffic data for Metro Cebu. This would be expanded to monitor the impacts of construction and BRT system testing and implementation. As well as providing traffic speed, journey time and congestion comparisons, transport network performance tools are also included so that CITOM's control room staff can place onto the live map information about traffic accidents and the intersections where they need to deploy traffic enforcers because the traffic control systems aren't working. In the longer term this could be used to measure the impact of fixing the ATC system in Cebu, to evidence the likely reduction in resources being deployed for this purpose, as well as its impact on traffic congestion.

20. The smart phone application and web tool would be expanded as part of project implementation for regulated BRT feeder services to enable better responses to network conditions to improve vehicle utilization, where the adoption of a route specific ITS control system is not financially feasible.

Civic engagement platform

21. Establishing the Civic Engagement platform improves the public's participation in transport network management issues. The adoption of text based fault reporting followed focus group discussions with local residents to determine the best means of communication. Barangay mapping was undertaken by groups of local people to increase local knowledge of highway maintenance issues.

22. The SMS text fault reporting system would be expanded to include fields for specific BRT issues (service delays, cleanliness of vehicles, faults at stops and stations, driver behavior, ticketing problems); as well as weekly themed 'crowd voting' surveys (ticket prices, service quality, operating hours etc). The latter would be tied into the longer term marketing, communications and branding of the BRT; since the SMS text responses from service users will provide insight into whether the BRT system is meeting passenger expectations in Cebu.

23. Further value within the technology trial currently being implemented is the development of inter-agency service level agreements to ensure that fault reporting is met with an appropriate response within an agreed timescale. For BRT, this will be a requirement between system operator and the maintainer of infrastructure.

Table 1: Complete List of Monitoring and Evaluation Program]

	Indicator	Information required	Sources of Data	Frequency of Data Collection
a)	**Increased public transport mode share in the project corridor.**	• Existing mode choice for journeys along BRT corridor	• Estimates could be made from transport model, but preferred approach is to ask about previous mode as part of post-implementation survey of BRT passengers	• Bi-annually
b)	**Greater public transport accessibility to key destinations.** Cebu residents within 30, 45 and, 60 minutes door-to-door by public transport of four key destinations – Ayala Mall, SM Mall, City Hall and SRP	• Population at barangay level • Public transport "network", including frequencies & journey times/speeds • Mystery traveller surveys • DOTC jeepney licence plate survey	• Census and population estimates • PUJ route data • Journey time surveys • Mystery traveller surveys • DOTC jeepney licence plate survey	• Bi-annually
c)	**Greater Public Transport User Satisfaction.**	• Quantitative measures of satisfaction with different components of travel by public transport • Disaggregated, as a minimum, by gender	• User satisfaction questions as part of household interview survey (sample of 1,000)	• Bi-annually
d)	**Lower Share of income spent on transport.**	• Household/personal income • Weekly/daily spend on transport	• Household interview survey (sample 100) including questions on socio-economic characteristics, income and transport spend	• Bi-annually
e)	**Improved Transport Safety**	• Accident numbers at key intersections on and away from BRT corridor • Per person accident rates across the City	• 2011 accident records from CITOM • Population estimates • Traffic counts • Analysis of 5 years' accident data at key intersections • Questionnaire interviews with 1,000 households asking for data on road traffic accidents	• quarterly
f)	**GHG emissions**	• Estimation of current GHG emissions	• Current year GHG emissions inventory being prepared by Cebu GHG Study	• annually

	Indicator	Information required	Sources of Data	Frequency of Data Collection
g)	**Improved mobility for Cebu City Residents**	• Jeepney journey times along BRT corridor and elsewhere • Car journey times long BRT corridor and elsewhere	• Mystery traveller surveys on selected routes serving sections of BRT corridor • GPS-based floating car surveys long BRT route • Limited GPS-based floating car surveys on other key routes • GPS data from GHG and crowd sourcing studies • Additional on-jeepney journey time surveys along BRT corridor • On-jeepney journey time surveys away from BRT corridor • Additional GPS-based floating car surveys away from BRT corridor	•
h)	**Financial Viability of BRT**	• Operating Costs and Revenues of BRT operation	• Financial Reports of Cebus JV	• Annually
i)	**Revitalised urban area along BRT corridor**	• Real estate asking/transaction prices in areas around BRT corridor and control area • Number of building permit applications in areas around BRT corridor and control area • Observations/land use surveys at selected locations along the corridor and in comparable control area	• Review of real estate asking/transaction prices • Review of the number of building permit applications • Observational surveys along the BRT corridor	•
j)	**Local air quality**	• Estimation of emissions of key local air pollutants • Local pollutant concentrations	• Emissions being estimated by Cebu Air Quality & Health study • Pollutant concentrations (air quality) at selected key sites need to be measured in accordance with the air quality monitoring plan being developed by Cebu Air Quality & Health study	•

Annex 2: Detailed Project Description

PHILIPPINES: Cebu Bus Rapid Transit Project

1. Table 1 below presents a summary of project costs by component. Each component is described in detail below.

Table 1: Total Project Costs (US$ million)

	TOTAL COST	WB	CTF	AFD	GoP
1. BRT Infrastructure and system	**158.0**	**89.8**	**9.2**	**33.9**	**25.0**
Segregated busway (Bulacao-Ayala)	13.6	-	-	13.6	-
Segregated busway (SRP)	3.3	-	-	3.3	-
Highway rehabilitation	68.6	68.6	-	-	-
Intersection improvements (Ayala-Talamban)	0.8	0.8	-	-	-
Stations (Bulacao-Ayala-Talamban)	28.7	20.4	8.3	-	-
Stations (SRP)	9.0	-	-	9.0	-
Terminals/Depot	8.0	-	-	8.0	-
Land acquisition and resettlement	24.3	-	-	-	25.0
System management IT/marketing	0.9	-	0.9	-	-
2. Traffic engineering, management, ATC, ITS	**18.7**		**10.9**	**7.8**	**-**
Traffic management	6.3	-	-	6.3	-
ATC, intersection signal control	10.9	-	10.9	-	-
ITS	1.5	-	-	1.5	-
3.BRT concept dissemination and development	**5.0**	**2.0**	**-**	**3.0**	**-**
BRT concept development in the Philippines	2.0	2.0	**-**	-	**-**
Detailed design of Metro Manila BRT	3.0	**-**	-	3.0	**-**
4. Urban Realm enhancements	**3.0**	**-**	**-**	**3.0**	**-**
5. Project outcome monitoring	**5.0**	**2.0**	**3.0**	**-**	**-**
6. Project management	**6.1**	**6.1**	**-**	**-**	**-**
Base Cost Total	**196.0**	**99.9**	**23.1**	**47.7**	**25.0**
Price contingency	7.0	4.3	0.8	1.8	-
Physical contingency	9.1	5.7	1.1	2.4	-
TOTAL	**212.0**	**110.0**	**25.0**	**52.0**	**25.0**

Component 1 – BRT Infrastructure and System (Total cost: US158.0 million; WB: US$89.8 million, CTF: US$9.2 million, AFD: US$33.9 million, GoP: US$25.0 million)

2. This component will finance goods, works, and services for detailed design, construction and supervision of BRT infrastructure and systems, including segregated busway, highway rehabilitation, intersection improvements, station, depots, terminals, and system management and marketing. The land acquisition and resettlement cost will be financed by GoP.

3. 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 Bulacao and Ayala Mall (BRT running lane: 3.5m, overtaking lane: 3.5 m, sidewalk: 2.0 m, segregation between BRT and general traffic lane: 0.3m);

(b) BRT overtaking lane at all stations;

(c) Stations and terminals along the segregated busway route (station platform: 4.0m minimum) and beyond (Guisano Country Mall in Talamban);

(d) Depot for the overnight parking and servicing of buses designated to operate BRT services;

(e) An open service plan that ensures that, whilst infrastructure is limited to that between Bulacao and Ayala, BRT services operate beyond Ayala Mall to Talamban (bus passage will be facilitated by bus priority measures at intersections and where achievable within the confines of the roadway);

(f) Interchange improvements to offer enhancement to the level of service received by all public transport passengers irrespective of whether they use BRT or not; and

4. The guiding principle for designing accessible BRT follows the Bank guidelines[23] with the objective to ensure accessibility for people with disabilities.

5. **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.

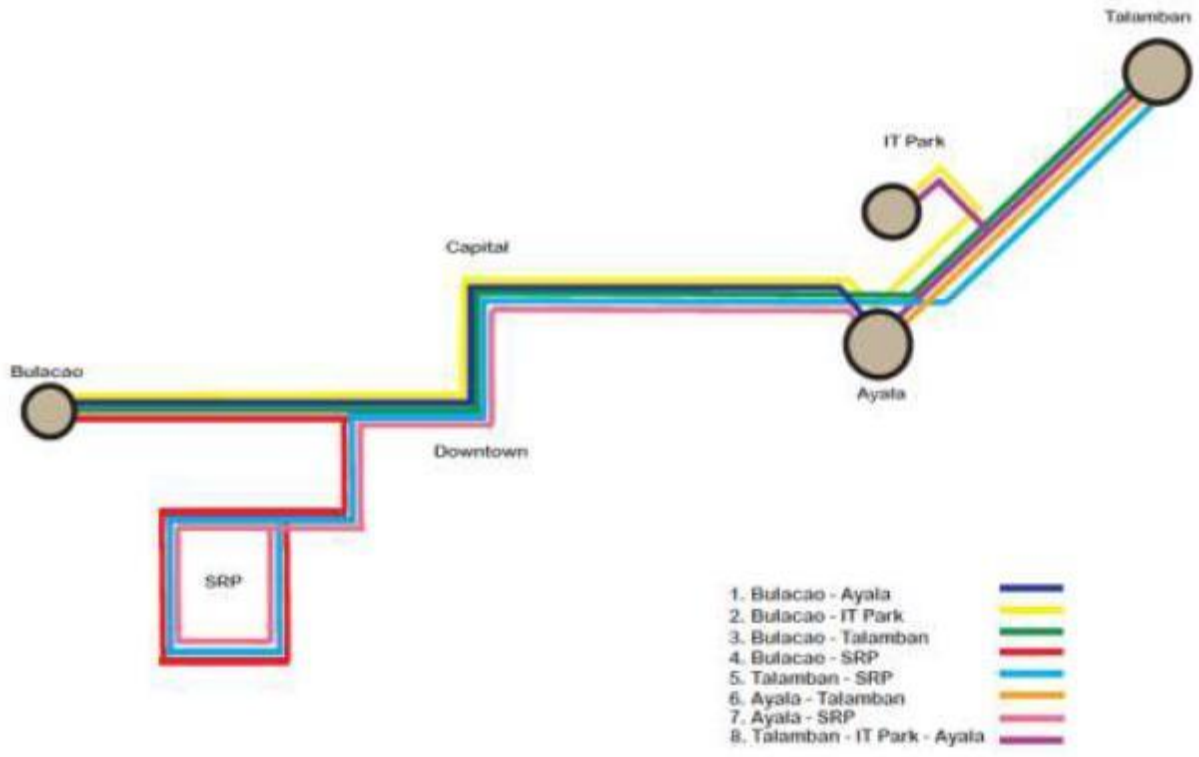
6. Key BRT planning design criteria include (Figure 1):

(a) Accommodate demand and the maximum required service frequencies;
(b) Maximum use of exclusive, designated transitways;
(c) Separation of BRT and "feeder" vehicles from passengers and non-passenger pedestrians;

[23] *Bus Rapid Transit Accessibility Guidelines*, World Bank 2007.

(d) Passing lanes at stations (except where vehicles are specifically mixed with general traffic i.e. inner CBD locations);
(e) Priority of public transport vehicles over other vehicles, most notably at traffic intersections;
(f) Minimum vehicle dwell times;
(g) Modern, safe, comfortable, convenient transit facilities and high quality passenger waiting environments for customers; and
(h) Full accessibility irrespective of traveler physical condition or age.

Figure 1: BRT Routes and Network



7. **Segregated busway (Bulacao-Ayala**). This sub-component will finance goods, works, and services to support:

(a) Segregated median running lanes, each measuring 7.0 m, segregation barrier to measure 0.3m;

(b) Construction of both warning and directional signage relating to the areas of interaction between BRT vehicles and other road users;

(c) Advanced directions signs, giving route/destination information;

(d) Highway (carriageway) markings to support operation of new traffic intersection to manage vehicle-pedestrian flow in a more efficient and safe manner.

8. **Segregated busway (SRP**). The introduction of BRT to the SRP from the outset of development occupation will be crucial in establishing travel habits for new residents, visitors, and employees at SRP. This sub-component will finance goods, works, and services for:

(a) Signalized intersection;

(b) Median stations along the western and northern boundaries to the Joint Venture development;

(c) Six stations within the SRP and nine new or upgraded signalized intersections;

(d) 2m sidewalks along the segregated BRT route within the SRP on both sides of the carriageway and a 2m landscaping strip to enable trees to be planted that offer shelter from the Sun; and

(e) Along one side of the carriageway a 2m wide cycleway is proposed which is expected to act as a precedent for more cycling infrastructure in the city.

9. Total BRT line will consist of approximately 23 kms as shown in Table 2 below.

Table 2: Cebu BRT: Total Corridor Length

	Segregated (kms)	Un-segregated (kms)	Total (kms)
Bulacao-Ayala[1]	10.55	0.51	11.06
Mamabling-SRP	4.26	0.74	5.0
Ayala-Cebu IT Park, Talamban[2]	0.10	6.8	6.9
TOTAL	14.91	8.05	22.96

Notes: [1] Un-segregated distance of 0.51 km based upon BRT using existing Mamabling flyover
[2] Segregated distance of 0.1 km based upon BRT only route into Cebu IT Park

10. **Highway rehabilitation**. The sub-component will finance goods, works, and services for rehabilitation of the existing carriageway and station envelopes to a high standard to support high frequency of BRT buses. It is proposed that the segregated busway is constructed with reinforced concrete. This form of rigid pavement has been already been applied elsewhere on the existing highway network (for example the highway widening project on Escario) to a high standard, and the raw materials, manufacturing and labor requirements can be locally sourced, therefore minimizing the need to import raw materials. In terms reconstruction of the general traffic lanes, the current use of a flexible (bitumen) pavement would be reinstated, with careful

application to ensure the wearing does not become unstable, and fail, due to the extremes of temperature. The cost for system design and supervision is also included in this sub-component.

11. **Intersection improvements (Ayala-Talamban**). This sub-component will finance goods, works, and services to support:

(a) Improvement of congested intersections at Gov. M. Cuenco Ave/Paradise Village Road and Gov. M. Cuenco Ave/M. L. Quezon Ave;

(b) Provision of high-quality bus stops at about ten locations, with adequate capacity for boarding passengers, sheltered waiting area, ticket selling kiosk;

(c) New at-grade pedestrian crossing facilities; and

(d) Provide bus-only access by construction of a new signal-controlled intersection on Gov. M. Cuenco Ave to provide access to Cebu IT Park (CITP) as a major employment and trip generator.

12. **Stations (Bulacao-Ayala-Talamban**). This sub-component will finance goods, works, and services to support:

(a) Over 15 station locations to service the forecast passenger demand. To accommodate the needs of the BRT service plan, and provide sufficient passenger capacity, the following dimensions have been adopted within the median station design:

- Overall station length (excluding entry and exit highway tapers, but including pedestrian access ramp, ticket office area / turnstiles and platform) = 73 meters;
- Length of pedestrian access ramp = 4metres, which provides a ramp at 1:14 to meet PWD requirements;
- Length of ticket office / payment area = 14 meters;
- Length of platform area = 52 meters (including offset distance of 4.0metres between turnstile area and boarding point at first bus bay);
- Width of platform area, including allowance for structural support = 4.0meters;
- Number of bus bays – bi-directional to accommodate vehicle up to 14 meters, and includes an inter-space distance between each bus bay of 20 meters (to allow for parallel platform docking);
- Bus bay width = 3.0meters;
- BRT Station bypass lane = 3.5meters;
- Provision of PUJ drop-off zone;
- Provision of u-turn facility for general motor traffic; and
- Provision of pedestrian crossings to enable at-grade access into the station area.

13. **Stations (SRP**). This sub-component will finance goods, works, and services to support:

(a) Kerbside stops along Mambaling flyover for passenger boarding and alighting;

(b) Stations to access SM development, pedestrian access via a pedestrian bridge;

(c) Station between SM development area and the Joint Venture development area to the West;

14. **Terminal/depot**. This sub-component will finance goods, works, and services to support:

(a) Public transport integration**.** The BRT will introduce a need to re-organize all public transport that provides service within or to/from the BRT corridor. This will involve some jeepney routes being terminated and others being turned back or diverted to new routes to complement the BRT. The level of quality in terms of access and interchange associated with BRT is inadequate. This sub-component would finance services, goods, and works to support measure to improve the physical integration between public transport modes and between public transport and other access, or onward journey, modes (walking NMT, tricycles). This will include feeder terminal and turn round facilities, improvements to the market area (primary PUJ focus), access and facilities for non motorized modes (tricycles, bicycles);

(b) Bus terminals at Bulacao, Ayala Mall, and Talamban; and

(c) Bus depot in the area of vacant industrial land, measuring approximately 3ha to provide parking accommodation, servicing, and maintenance facilities for vehicles and facilities for staff.

15. **Land acquisition and resettlement**. The sub-component will finance compensation for land acquisition and resettlement of project affected people.

16. **System management IT/marketing.** This sub-component will finance goods, works, and services associated with system management, planning, and specification. Specific investments will include: marketing, station hardware, control hardware, on-bus General Positioning System (GPS) units, software development, and BRT control center ICT equipment.

Component 2 - Traffic engineering and management with ATC and ITS (Total cost: US$18.7 million, AFD: US$10.9 million, AFD: US$7.8 million). This component will finance goods, works, and services to support traffic management, ATC, and ITS.

17. **Traffic management**. The objective of this sub-component is to develop traffic management interventions that compliment the development of BRT in Cebu, enhance the value of ATC implementation and increase the positive effects of the planned program of works within the City. This sub-component would finance goods and works for intersection improvements on tributary routes used by BRT vehicles and those currently operating sub optimally and imposing a disproportionate effect upon network performance. Specific investments include:

(a) **Intersection optimization.** Investments will include public realm improvements, widening of sidewalks, capacity improvements at intersections at four intersections: Osmeña Boulevard / Colon Street, V. Rama Avenue / M. Velez Street / R. Duterte, M.J. Cuenco Avenue / J. Luna Avenue, and Gorordo Avenue / Salinas Drive.

(b) **Parking management.** Cebu is experiencing traffic growth through both population increase and increases in car ownership. The existing car parking controls are loosely applied leading to erosion of available road capacity through unplanned and often indiscriminate parking. The BRT will require parking controls along its route and extracting the best value from ATC investment will require parking controls at least in the vicinity of intersections. This sub-component would finance services, goods and works to implement a coordinated approach to parking management.

(c) **Jeepney terminals.** Investments will include a new terminal facility in the Cebu downtown area, restructuring and rationalization of routes, improvements at SM mall terminal facility to include better seating, toilet maintenance, and improved disabled access to the shopping mall.

18. **ATC, Intersection Signal Control.** The need for public transport priority at intersections through which BRT passes is recognized together with the deficiencies of the existing SCATS Area Traffic Control system in providing that priority. This sub-component would finance services, goods, and works for capacity optimization at key intersections, for upgrading or replacing the obsolete SCATS traffic control system using modern area traffic control techniques to optimize the transport network across the whole of the Cebu transport network, including a new traffic control room, ICT equipment including new traffic controllers, on site detection and CCTV surveillance systems.

19. CITOM currently manages and operates SCATS (Sydney Coordinated Adaptive Traffic System) adaptive control system across Cebu city. This was first installed in 1991 and last updated in 2004. The Cebu SCATS ATC system controls 78 intersections throughout the city, a fraction of the city's total arterial to arterial intersections. The traffic control system has, for some time, operated sub-optimally in a number of respects:

(a) Non-signalized intersections: A number of T-junctions and cross roads in the city do not have traffic signals and currently operate as a 4-way stop;

(b) Many intersections operate on very long cycle times – often three minutes or more, leading to intersection "spill back"/blocking;

(c) Long cycle times impose significant wait upon pedestrians and cause public transport "bunching";

(d) Computer hardware is old and obsolete; the control centre uses old computers which are no longer supported by SCATS software systems suppliers;

(e) The current traffic control system cannot support bus priority features;

(f) Around 35% of the inductive loop detectors are non-functional; and

(g) The communications links between the regional SCATS computer and the local signal controllers often fail to work, again requiring use of a fallback (non-adaptive) mode of operation.

20. The overall picture is of a traffic control system that is not fit for its current purpose. At any time, large parts of it are either not operating at all or not operating to full potential. Traffic control staff is using fallback modes of operation for most of the time. While they are expending considerable effort in trying to produce updated signal timing plans for these fallback modes, in many instances signal timings inevitably do not reflect traffic demand patterns and flows, resulting in significant inefficiency in the network. For the future, the current system lacks some key features (such as bus priority) which will be essential for a network that includes BRT.

21. Two options were considered to upgrade the ATC system:

(a) Upgrade and improve the existing SCATS ATC system; or

(b) Replace the ATC system with one based on any of the other adaptive traffic control system products.

22. The options were evaluated in terms of its ability to: a) include additional intersections within the signalized Cebu network; b) address the issue of long cycle times; c) address the pedestrian needs; and d) produce best value for money and attain operational efficiency in terms of upgrading the current system or implementing a different ATC software package such as SCOOTS; e) provide bus priority feature.

23. A review of these two options suggests that either could potentially provide an ATC solution for the future, and that the potential cost differences are small relative to the overall cost. The final specifications will be established during the detailed design stage to allow open competition between alternative system suppliers.

24. **Intelligent Transport Systems (ITS).** This sub-component will finance goods, works, and services to support:

(a) BRT Control Centre systems, including computer hardware (central server hosting databases, workstations for display of route, vehicle and bus-stop status, CCTV images, passenger information system), computer software (application for analysis of vehicle location and route conditions, application to support route, stop, on-bus and off-route information displays), and communication equipment;

(b) Vehicle location devices on all the buses using the BRT;

(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.

Component 3 – BRT Concept dissemination and development (Total Cost: US$5 million, WB: US$2.0 million, AFD: US$3.0 million)

25. This component would finance a) studies, training, and capacity building to build support and capacity for the BRT concept in the Philippines; and b) detailed design to support the proposed Metro Manila BRT application, including infrastructure, facilities, systems, traffic control and management.

Component 4 – Urban Realm Enhancements (Total cost: US$3.0 million, AFD US$3.0 million)

26. This component would improve relationship between transport and land use development through establishing physical connections to major trip attractors and generators. The Fuente Osmeña Circle will be designed to accommodate the different functions performed including, leisure space, focal point for commercial activity, and pedestrian crossing. In particular, the component would finance goods, works, and services to support the provision of reconfigured north-east quadrant of Fuente Circle, including a pedestrian / BRT only zone, enabling improved and safer pedestrian access to the recreational area of Fuente Circle as well as additional landscaping along the BRT corridor.

Component 5 – Project outcome monitoring (Total Cost: US$5.0 million, IBRD: US$2.0 million, CTF: US$3.0 million)

27. This component would finance technical assistance, equipment, and other operational support for monitoring project progress and, on an ongoing basis, transport system supply, demand and performance; institutional performance, project outcome monitoring in terms of transport (including safety), environmental impact, social, and capacity development indicators.

28. This would cover annual monitoring surveys, over a 5 year period after project implementation. Surveys would include the following: Household Interviews, Assessment of Real Estate Prices, Assessment of Building Permit Applications, Observational Surveys, Mystery Traveller Surveys, Car Journey Time Surveys, Focus Groups, Satisfaction Surveys, Air / Noise and Emissions Survey, Traffic Counts, Accident Data Analysis. Cost for the component also includes subsequent analysis and reporting. A preliminary list of studies and their timing is provided in Table 2 below.

Table 2: Project Outcome Monitoring Studies

	2014	2015	2016	2017	2018	TOTAL
Household interviews/surveys	-	500,000	-	-	500,000	1,000,000
Real Estate price assessment, Building permit applications	100,000	50,000	50,000			200,000
Surveys (mystery traveller, car journey time)	-	50,000	50,000	100,000	100,000	300,000

On-board surveys		50,000	50,000	50,000	50,000	
Focus group discussions	50,000	50,000	50,000	50,000	50,000	250,000
User satisfaction surveys	-	50,000	50,000	50,000	50,000	200,000
Emission and air/noise surveys		75,000	75,000	75,000	75,000	300,000
PUJ driver and operator training	100,000	150,000	100,000			350,000
Development and monitoring of a Citizen's report card	100,000	100,000	100,000	100,000	100,000	500,000
Use of Crowd Sourcing to monitor the impact of BRT and ATC/ITS; expansion of web based tools	100,000	100,000	100,000	100,000	50,000	450,000
Traffic counts		100,000	100,000	150,000	150,000	500,000
Accident data analysis		50,000	50,000	50,000	50,000	200,000
Reporting	25,000	25,000	25,000	25,000	75,000	175,000
Communication and consultation	75,000	75,000	75,000	75,000	75,000	375,000
TOTAL	**550,000**	**1,425,000**	**875,000**	**825,000**	**1,325,000**	**5,000,000**

Component 6 - Project management (Total cost: US$6.1 million, IBRD: US$6.1 million)

29. This component would finance training, technical assistance, equipment, vehicles, office equipment, and other operational support for management of implementation of BRT and related measures by the Project Implementation Unit through design, construction/implementation. It will include application of a comprehensive communications, outreach, program focused upon information through construction and preparation of the city for BRT operation (for details, please see Table 3).

Table 3: Project Management Studies

	2014	2015	2016	2017	2018	TOTAL
BRT Information center	25,000	25,000	25,000	25,000	25,000	125,000
Incremental operating costs	100,000	100,000	100,000	100,000	100,000	500,000
Financial and technical audit	-	100,000	100,000	100,000	100,000	400,000
Support to TransCebu	100,000	100,000	100,000	100,000	100,000	500,000
Support to NPMO/PIU	150,000	150,000	150,000	150,000	150,000	750,000
Technical support consultants	400,000	400,000	250,000	250,000	100,000	1,400,000

Capacity building	150,000	150,000	150,000	150,000	150,000	750,000
Support to National and city departments and agencies	100,000	100,000	100,000	100,000	100,000	500,000
Other support (to be confirmed at appraisal)	300,000	300,000	200,000	200,000	175,000	1,175,000
TOTAL	**1,325,000**	**1,425,000**	**1,175,000**	**1175,000**	**1,000,000**	**6,100,000**

Annex 3: Implementation Arrangements

PHILIPPINES: Cebu Bus Rapid Transit Project

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 permanent BRT system management entity.

BRT Design and Delivery Phase (2012-2015)

1. National Framework

2. The main authority is at the national government level. A Department Order has been issued (dated ____) by the DOTC to set up a BRT Steering Committee, a National Program Management Office (NPMO) and a satellite office in the Cebu City.

3. The BRT Steering Committee (SC) would provide policy guidance and have oversight of all BRT studies, projects and operational systems in the country.

4. The BRT National Program Management Office (NPMO) would have its headquarters at DOTC central office, and be under the supervision and control of Undersecretary of Planning, DOTC. The BRT-NPMO would be staffed by assigned DOTC personnel, and may be supplemented by external experts as required. The BRT-NPMO would deal with matters at national level and would prepare new proposals. Over time, as experience with BRT is gained and multiple cities pursue BRT systems, the BRT-NPMO could evolve into a BRT Agency, or a BRT Authority.

5. A satellite office would be set up by DOTC in Cebu city to implement the project as a Project Implementation Unit (PIU). The PIU will be under the aegis of the NPMO, and ultimately subject to the oversight of the BRT Steering Committee.

Other National Departments

6. LTFRB: Amendments to the regulations and practice for route development and franchising will be required to facilitate BRT systems. Legal experts have been engaged to review the requirements and what amendments are required. This is expected to report by July 2012.

7. LTFRB will engage at two levels:

(a) At national level, through the BRT Steering Committee 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.

8. DPWH: The BRT schemes tend to operate on major urban roads, many of which are DPWH roads. The BRT infrastructure will be constructed on these DPWH assets and will require to be maintained and occasionally rehabilitated over a period of several decades. This raises issues of ownership, access, responsibilities, liabilities and financing. DPWH will engage with the BRT at two levels:

(a) At national level, through the BRT Steering Committee and in conjunction with BRT-NPMO to establish the principles for BRT infrastructure on DPWH roads, covering issues of asset ownership, lane allocation and access, maintenance and responsibility for costs; and

(b) At project level, to facilitate authorizations and approvals for specific BRT systems at the design and construction phase, and for the ongoing maintenance agreements in the operational phase.

2. City BRT Project Implementation Framework

9. The project implementation framework is illustrated in Figure 2.

10. Cebu City Government Technical Working Group (TWG): The City Mayor has issued an Executive Order (dated____) setting up the TWG as an interface between the Project and the City Government. The TWG review designs, proposals, requests and progress reports arising from the Project and provide responses and feedback on behalf of CCG as required. This has three main roles:

(a) It ensures that the CCG Administration and Council are fully informed of the design, progress and issues arising, and can be fully engaged with the Project;

(b) It provides the channel for CCG to consider, prepare and secure any City Development Council and Regional Development Council resolutions, approvals, orders, etc. required by the project; and

(c) It provides authorization and guidance for CCG personnel assigned to work within or supporting Cebu BRT PIU, and to support them for any information or resources they require.

11. **PIU**: A Project Implementation Unit (PIU) will be established by DOTC/CCG in Cebu City to work in coordination with NPMO. The PIU will be staffed by personnel assigned/seconded from DOTC and CCG, and supported by TSC.

12. DOTC will prepare the structure, staffing plan, work plan and budget for the PIU, and include it within the project work plan and budget.

13. Cebu BRT PIU will be located in Cebu City, so that it remains close to the project, maintains direct oversight of all contractors and works, and remains engaged with the Project stakeholders. The PIU will require in-house skills in the following areas and will be assisted by the Technical Support Consultants:

(a) Project Management;
(b) Infrastructure and associated works;
(c) Operations;
(d) Institutional and regulatory matters; and
(e) Safeguards.

14. LTFRB: Cebu BRT 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 services.

15. DPWH: Cebu 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.

Technical Support Consultants (TSC):

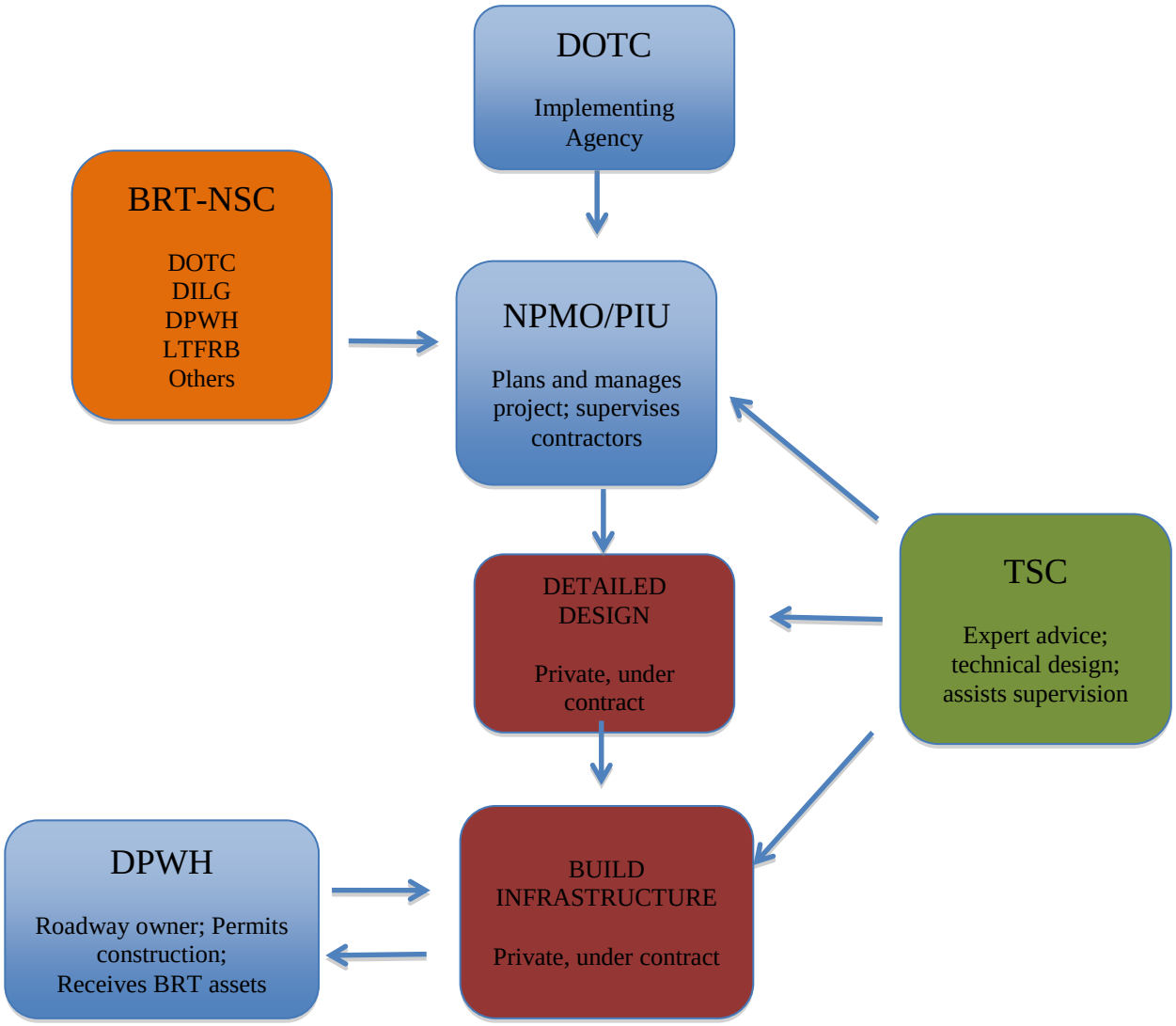
16. It is proposed to engage a Technical Support Consultant (TSC) to support project preparation. The TSC would provide specialist staff in the following areas, as required over the life of the Project:

(a) Project Management, including procurement, contract design and oversight of contractors;
(b) Technical, including infrastructure, bus operations, traffic systems and technologies;
(c) Analysis, including planning, business models and data management; and
(d) Safeguards.

17. The TSC would be retained by DOTC 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.

18. During the detailed design and infrastructure build stage, the delivery arrangements will be as shown in Figure 2.

Figure 2: Phase 1- Design and Build the BRT Infrastructure (2012-2015)



3. Operational Phase Framework

BRT Operational Phase (2015-2035+)

19. Delivery arrangements during the **operational phase (2015+)** are shown in Figure 3.

20. TransCebu JV will be established to manage the business and the operations of Cebu BRT on a self-sustaining basis under a long-term agreement with DOTC. DOTC and LTFRB would authorize the JV to operate the BRT and its services in Cebu, through a combination of an

agreement and route permits. This would include assigning the ongoing use and responsibility for the BRT-related assets developed within the Project. DOTC will designate the routes associated with Cebu BRT, and LTFRB will assign all franchises associated with these routes to TransCebu on an exclusive basis. TransCebu JV will enter into agreements with CITOM for traffic management, traffic signals and enforcement facilities and services. TransCebu JV is the focal point for all agreements, contracts and authorizations required to operate BRT in Cebu.

21. All transportation, customer-facing and support services will be performed by the private sector under contract. The JV will be responsible to manage the contractors through performance agreements. TransCebu JV will retain only core business, monitoring, coordination and supervisory functions. All system revenue will accrue to TransCebu JV. Bus services will be provided by private sector operator(s) who will acquire, finance, operate and maintain their own buses. Bus operators will be paid on the basis of per-kilometer and availability payments. All other support and maintenance services will be provided by private sector suppliers, and will be based on availability payments. TransCebu JV is the focal point for all contracts and supply of services relating to the ongoing operations of Cebu BRT.

22. The TransCebu JV would be established as a legal entity by December 31, 2013 so that it can be a party to any contracts and agreements, but would not be staffed until about 6 months before BRT services launch. Core staff would work within PIU and then transfer to the JV at the appropriate time.

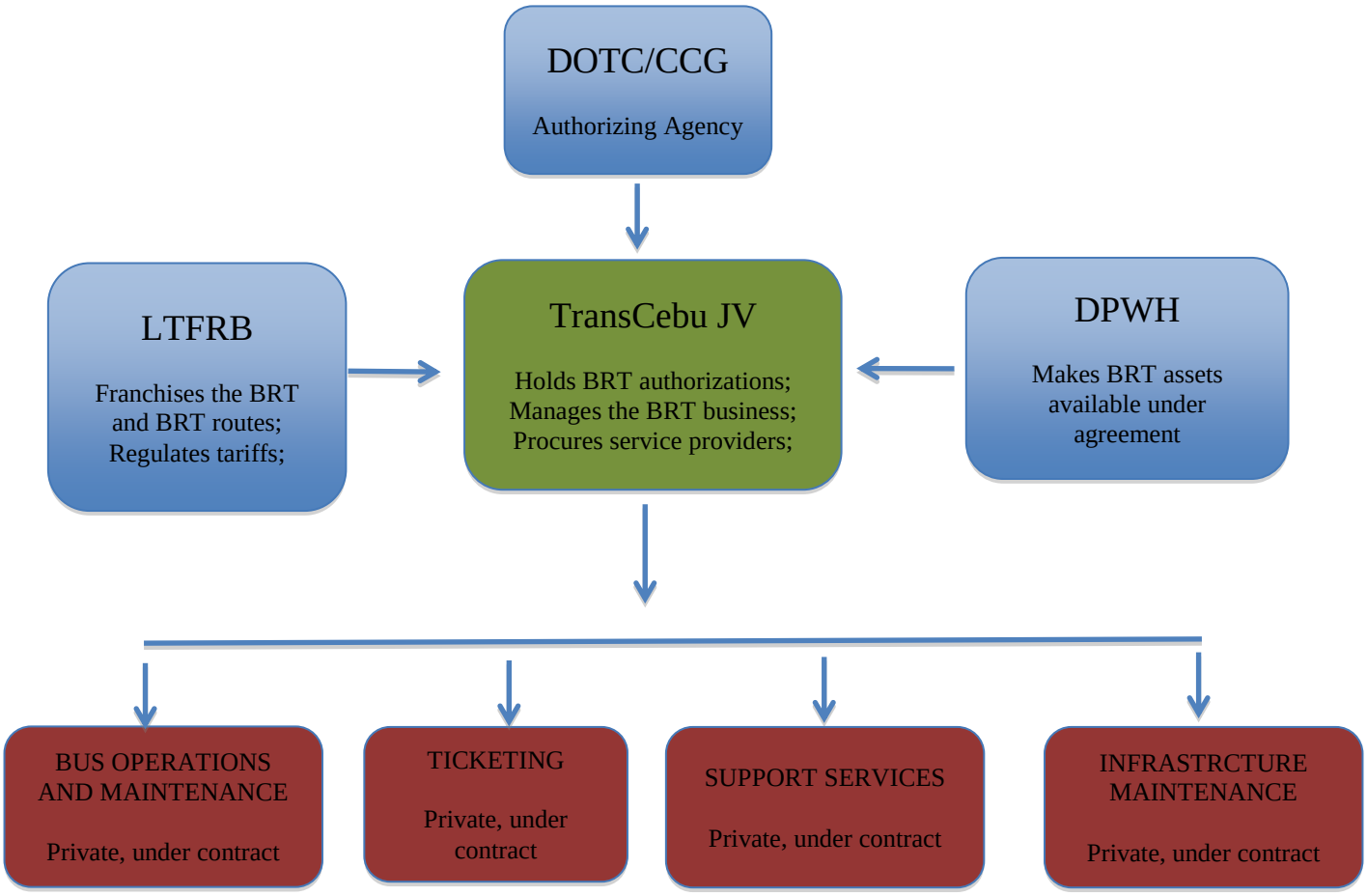
23. CITOM is the traffic management unit within Cebu City Government, and is responsible for the traffic signals, traffic management and enforcement. The responsibility for the operation and maintenance of the ATC system and assets will be passed to CITOM. CITOM will manage the traffic management facilities and measures as per the current arrangements. It will be responsible for the enforcement aspects of the BRT infrastructure (e.g. violation of the running ways, obstructions), traffic management aspects, and will work together with the JV in dealing with foreseen and unplanned disruptions, diversions, events, etc.

24. LTFRB: Cebu BRT will be subject to regulation by LTFRB, as any other land passenger transport. It will be regulated according to such regulations as are developed for BRT.

25. Cebu City Government: Cebu City Government will participate in the operational phase as a shareholder of the JV for the BRT, and as line manager of CITOM for ATC and traffic manager.

26. DOTC: DOTC will participate in the operational phase as a primary shareholder of the JV for the BRT. DOTC will also have oversight of the Cebu BRT as an operational system, through the BRT Steering Committee and BRT-NPMO.

Figure 3: Phase 2- Operate the BRT in Cebu (2015-2030+)



Financial Management, Disbursements and Procurement

Financial Management

27. The Financial Management assessment of the **Cebu Bus Rapid Transit (BRT) Project** was carried out 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. Under the Bank's OP/BP 10.02 with respect to projects financed by the Bank, the borrower and the project implementing agency are required to maintain financial management systems — including accounting, financial reporting, and auditing systems — adequate to ensure that they can provide the Bank with assurance that funds will be used in an efficient and economical way to enable project development objectives to be met. The conclusion of the assessment is that the financial management systems at the Department of Transportation and Communications (DOTC) and Cebu City Government (CCG) meet the Bank's requirements, provided the recommended mitigating measures are incorporated, and there is sufficient basis to place reliance on the country systems for all financial management aspects of this Project.

28. The financial management risk of the Project before the mitigating measures is assessed as Substantial but could be reduced to Moderate after the proposed mitigating measures described below are implemented and have shown effective impact.

29. The mitigating measures to be implemented to reduce risks associated with the current Financial Management system are: (i) finalize and adopt a Project Operations Manual that includes FM Section to formalize control processes specific to the project including liquidation of funds transferred to the CCG and disbursement of funds; (ii) transfer of funds to CCG to support capacity development shall be based on an approved work and financial plan and Memorandum of Agreement; (iii) maximize use of direct payments for large contracts; and (iv) DOTC to address the remaining findings of the Commission on Audit (COA) yet to be implemented on the 2011 financial statements of DOTC and report progress to the Bank. DOTC has designated the Director of the Comptrollership Service to be the focal FM person who will: (a) facilitate the financial management processes within DOTC; and (b) coordinate the financial management requirements of the project with the PIU and CCG.

FM Implementation Arrangements

30. DOTC and CCG's current financial management system will be used for the implementation of the project. It includes acceptable budgeting, accounting, reporting, internal controls including internal audit and staffing. DOTC will have a robust information system that will regularly report the progress of BRT implementation.

Budgeting Arrangement

31. Budget proposals are prepared annually by DOTC and submitted to DBM and which after review are incorporated into the General Appropriations Act each year. The project shall

prepare an annual work and financial plan together with disbursement projection to be submitted to the Bank before the start of each fiscal year.

Accounting Arrangement

32. The accounting records of the project shall be maintained by DOTC using the eNGAS financial management system. The DOTC Accounting Division under the Comptrollership Service shall maintain the accounting records in accordance with the country accounting procedures and policies. As accounting of the project transactions shall be mainstreamed, adequate staff resources of the Accounting Division (currently 47 staff) shall be made available to ensure timely completion of the financial reports, monitoring of the Designated Accounts, and preparation of withdrawal applications. Due to the adverse opinion by COA on the 2007 to 2009 consolidated financial statements of the DOTC, separate books of account shall be maintained for the project. DOTC Central Office has already addressed most of the COA findings on the 2011 audited financial statements. DOTC shall be required to address the remaining COA findings yet to be implemented on the 2011 audited financial statements. There shall also be separate bank accounts (Designated Accounts) for the project.

Internal Control and Internal Auditing

33. DOTC Finance and Comptrollership has adequate segregation of duties. The Finance and Management Service has two divisions; the Budget Division (with 10 staff) and the Management Division (with 12 staff). The Comptrollership Service has also two divisions namely; Accounting Division (with 47 staff) and Treasury Division (with 17 staff). The project shall follow the internal controls and policies found in 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. It was proposed that the Internal Audit Unit should be headed by at least a Director Level. Specifically, the following requirements shall be implemented for the project:

(a) Subsidiary records shall be maintained for the Designated Accounts and the related project peso accounts;

(b) Quarterly bank reconciliation statements shall be required to be prepared and submitted to DOTC Comptrollership Service every 20th day after end of each quarter together with the trial balance; and

(c) Annual physical inventory count of fixed assets shall be conducted and results reconciled with the accounting and property records.

Funds flow arrangements

34. The disbursement of the loan and the grant shall be in accordance with the financial plan of the project for the following categories:

Allocation of Loan Proceeds

Category	**Amount of the Loan (Expressed in Dollars)**	**% of Expenditures to be Financed**
Goods, Consultants' Services, Trainings and Workshop, Civil Works, Incremental Operating Costs		100%
Unallocated		
Front-End Fee	287,500	
TOTAL		

Allocation of CTF Loan Proceeds

Category	**Amount of the Loan (Expressed in Dollars)**	**% of Expenditures to be Financed**
Goods, Consultants' Services, Trainings and Workshop, Incremental Operating Costs	25,000,000	**100%**
TOTAL	25,000,000	

35. The funds from the loan and grant proceeds will flow from the World Bank to the Bureau of Treasury account 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 DOTC. DOTC shall open and maintain two Designated Accounts (DAs) in Dollars at Land Bank of the Philippines, an authorized government depository bank acceptable to the Bank. The maximum ceiling for the DA for the loan shall be initially set at US$22.0 million and US$700 thousand, respectively. The DA ceilings shall be reviewed by DOTC in consultation with the Bank's Task Team from time to time to assess its reasonableness and adequacy.

36. DOTC shall withdraw funds from the Bank through the submission of duly signed Withdrawal Application and Statement of Expenditures (SOEs) and Summary Sheets. Disbursements under the project shall comply with the Bank policies and procedures on

disbursements and financial management as reflected in the Bank's Disbursements Handbook and Financial Monitoring Report Guidelines. All replenishments to the DAs shall only be for eligible expenditures based on the agreed eligibility/financing percentage in the Loan and Grant Agreements and shall have adequate supporting documents. Attachments of supporting documents to the Summary Sheets for withdrawal applications shall be based on threshold limits specified in the Disbursement Letter. Other disbursement mechanisms such as direct payments, reimbursements and special commitments shall also be available for this project. *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 20% of the outstanding DA balances. The frequency for reporting eligible expenditures paid from the DA will be quarterly or as need arises.

37. DOTC will transfer funds to CCG based on an approved work and financial plan and Memorandum of Agreement to support capacity development under Component 4. Fund requirements for at least one quarter shall be downloaded to CCG subject to liquidation every month. Detailed requirement on downloading and liquidations shall be incorporated in the Project Operations Manual (i.e. subsequent quarter requirement shall be downloaded once liquidation has reached 80% of the previous fund transfer. For succeeding quarter requirements, liquidation should include 80% of the previous quarter and the remaining 20% of the first quarter download).

38. To allow the submission of Withdrawal Applications and supporting documentation, for expenditures *incurred* on or before the Closing Date, the project will be granted a four-month grace period to report these eligible expenditures.

Financial Reporting Arrangement

39. DOTC will prepare and submit Unaudited Interim Financial Reports (IFRs) within 45 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 and shall be included in the Project Operations Manual. The IFR shall include information for both the loan and the grant.

External Audit Arrangement

40. 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 Philippines Commission of Audit (COA) who is the auditor for all government agencies in the Philippines. COA has extensive experience in the auditing government agencies and World Bank funded projects and is an auditor 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 the financial year. Based on prior experience there is a substantial risk that the audit may not be received within the period prescribed in the Loan and Grant Agreements. Finance staff will be advised to work closely with COA to minimize the risk of late receipt of the audit report. COA shall provide separate audit report for the loan and the grant.

Financial Management Action Plan

41. The actions to be taken to strengthen DOTC's financial management system and reduce the fiduciary risks are the following:

Table 3.1: Action plan to strengthen DOTC's Financial Management

	Action	***Date due by***	***Responsible***
1	DOTC shall address the remaining findings of the Commission on Audit (COA) yet to be implemented on the 2011 financial statements of DOTC and provide status to the Bank.	March 31, 2013	*DOTC*
2	DOTC to designate a focal FM person at the Comptrollership Service to (i) facilitate the financial management processes within DOTC and (ii) coordinate the financial management requirements of the project with the PIU and CCG.	July 31, 2012 (Done. Focal person is Director of Comptrollership Service)	*DOTC*
3	Project Operational Manual to be issued to formalize processes specific to the project including eligibility and disbursement.	Prior to Negotiation	DOTC
4	Capacity building on financial management conducted for finance staff who will be involved in the Project. Brief FM orientation to key finance officers and staff shall be conducted to ensure that they understand the FM requirements under the Project.	After loan effectiveness	DOTC/ Bank

Procurement

A. General

42. Procurement for the Project would be carried out in accordance with the World Bank's "Guidelines: Procurement under IBRD Loans and IDA Credits" dated January 2011; and "Guidelines: Selection and Employment of Consultants by World Bank Borrower" dated January 2011, and the provisions stipulated in the Legal Agreement. The general descriptions of various

items under different expenditure category are described below. For each contract to be financed by the Loan, the different procurement methods or consultant selection methods, estimated costs, prior review requirements, and time frame are agreed between the Borrower and the Bank project team in the Procurement Plan. The Procurement Plan will be updated at least annually or as required to reflect the actual project implementation needs and improvements in institutional capacity.

43. **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. Contracts estimated to cost the equivalent of $5.0 million or more will be procured following International Competitive Bidding (ICB) method and will use the Bank's Standard Bidding Documents (SBD). Contracts to be procured following National Competitive Bidding (NCB) method, which are estimated to cost the equivalent of less than $5.0 million, will use the Harmonized Philippine Bidding Documents (PBD), in accordance with the provisions of paragraphs 3.3 and 3.4 of the Procurement Guidelines. Shopping for works, following paragraph 3.5 of the Procurement Guidelines may also be used for small item contracts estimated to cost the equivalent of $100,000 or less.

44. **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), vehicles, information technology and other office equipment, etc. The procurement will be done using the Bank's Standard Bidding Documents for ICB contracts estimated to cost the equivalent of $1.0 million or more. Limited International Bidding following paragraph 3.2 of the Guidelines could be used regardless of the value of the contract. Contracts estimated to cost less than $1.0 million will be procured following NCB method, using the Harmonized PBD, in accordance with the provisions of paragraphs 3.3 and 3.4 of the Procurement Guidelines. Shopping will also be used for small item procurement for contracts estimated to cost the equivalent of less than $100,000, in accordance with the provisions of paragraph 3.5 of the Procurement Guidelines. Direct Contracting may be used following paragraphs 3.7 and 3.8 of the Procurement Guidelines.

45. **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. Shortlists of consultants for services estimated to cost less than $200,000 equivalent per contract may be composed entirely of national consultants in accordance with the provision of paragraph 2.7 of the Consultant Guidelines. Quality and Cost Based Selection will be the preferred mode while the following may also be used, as appropriate for the contracts: Quality-Based Selection, Consultants' Qualification Selection, Single Source Selection and Individual Consultants by competition and sole source.

46. **Incremental Operating Costs.** Activities relating to managing the project, including staff travel and office utilities and supporting the project operations will be provided in accordance with existing government prescribed limits and procedures acceptable to the Bank.

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

47. Procurement activities will be carried out mainly by DOTC with some small procurement by CCG. The Bids and Awards Committee (BAC) of both agencies 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 is 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. Both DOTC and CCG have been doing procurement regularly including large ones for works, goods and consultancy using local and foreign funds; however this will be the first time in many years that DOTC will be implementing a Bank-financed project while CCG has not implemented one. Hence, a PIU will be set-up to provide overall coordination and guidance and initiate procurement activities, among others.

48. An assessment of the capacity of the Implementing Agencies to implement procurement actions for the project has been carried out by the Designated Procurement Staff for the Project in April 2012. The assessment reviewed the organizational structure for implementing the project and the interaction between the various offices responsible for delivering procurement results in both DOTC and CCG.

49. Procurement risk for the project is assessed as "substantial". Some of the identified weaknesses in DOTC and CCG procurement systems relate to: 1) the lack of experience for both agencies 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 DOTC staffed with people from DOTC and CCG with a focal person in procurement to be provided with continuous relevant training on procurement and to be supported by Procurement Specialist from a Technical Support Consultant team by Appraisal.

(b) A Project Implementation Manual with a specific Procurement Section detailing, among others, the procurement methods and procedures and processing timelines and standard procurement documents including SBDs and PBDs acceptable to the Bank will be prepared by the PIU by Appraisal.

(c) On the basis of the Loan Agreement, DOTC will ensure annual procurement audit, among others, 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 Cebu-BRT project on a continuing basis.

(d) A Procurement Plan detailing the identified contract packages for works, goods and consultancy will be prepared by the PIU by Appraisal and updated on an annual basis or as the need arises to reflect current circumstance, and cleared with the Bank. The Procurement Plan will be made available on PhilGEPS, DOTC and CCG

websites and would be strictly followed especially in ensuring that procurement timelines and dissemination requirements on procurement opportunities and results conform to the Bank and government standards.

C. Procurement Plan

50. The Borrower, at appraisal, will develop a Procurement Plan for project implementation which provides the basis for the procurement methods. This plan will be agreed between the Borrower and the Project Team by the end of appraisal and will be available at the PIU-DOTC. 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

51. 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.

ATTACHMENT 1

(TO BE UPDATED DURING APPRAISAL)

Details of the procurement arrangement involving international competition

1. Goods and Works

(a) List of contract Packages which will be procured following ICB and Direct Contracting:

1	2	3	4	5	6	7	8	9
Ref. No.	**Contract (Description)**	**Estimated Cost (US$)**	**Procurement Method**	**P-Q**	**Domestic Preference (yes/no)**	**Review by Bank (Prior / Post)**	**Expected Bid-Opening Date**	**Comments**
	Transit ways/BRT corridors (Lots 1-6)	80m	ICB	no	no	prior	Sept 2013	
	Terminals and BRT Control Ctr	8.5m	ICB	no	no	prior	Sept 2013	
	Stations/ Stop Buildings	37m	ICB	no	no	prior	Mar 2014	
	Traffic Mngt Eqpt	13m	ICB	no	no	prior	Sept 2013	

(b) All ICB Contracts, first NCB contract and all Direct contracting will be subject to prior review by the Bank.

2. Consulting Services

(a) List of Consulting Assignments with short-list of international firms

1	2	3	4	5	6	7
Ref. No.	**Description of Assignment**	**Estimated Cost**	**Selection Method**	**Review by Bank (Prior / Post)**	**Expected Proposals Submission Date**	**Comments**

	Detailed Engineering Design (DED) and Supervision	15m	QCBS	prior	Nov 2012	
	FS for Metro Manila BRT	1m	QCBS	prior	June 2013	
	DED for Metro Manila BRT	4m	QCBS	prior	Nov 2013	
	Household Interviews and Surveys	0.5m	QCBS	prior	Jan 2015	

(b) Consultancy services estimated to cost US$100,000 and above per contract and all Single Source selection of consultants (firms) will be subject to prior review by the Bank.

(c) **Short lists composed entirely of national consultants**. Short lists of consultants for services estimated to cost less than US$200,000 equivalent per contract may be composed entirely of national consultants in accordance with the provisions of paragraph 2.7 of the Consultant Guidelines.

Environmental and Social (including safeguards)

52. Social and environmental consultants have been engaged to prepare Environmental Assessment, Environmental management Plan, Resettlement Action Plan, and Social Management Plan in conformity with the Bank's safeguard policies. When completed, these plans will be disclosed electronically in the Bank's Infoshop, the website of DOTC and CCG, and in paper copies in selected sites such as barangay offices and the Knowledge Development Center at the University of San Carlos City. The Resettlement Action Plan (RAP) and Social Management Plan (SMP) will be updated by a property appraiser, social development specialist, and resettlement specialist during the detailed design stage to meet O.P.4.12 requirements for eligibility and the use of replacement cost for valuation of affected assets. The PIU will engage social and environmental safeguard specialists to supervise updating and disclosure of the plans during the detailed design phase and the implementation of the RAP and SMP. Finally, the project will finance procurement of an External Monitoring Agent (EMA) during the detailed design phase. Before civil works is authorized to proceed, this EMA will certify that the RAP has been successfully implemented. This EMA will also monitor the implementation of SMP and conduct annual monitoring during the civil works to flag any resettlement and other social issues for the PIU to address. 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 safeguard specialist.

53. Other than land acquisition, a major social risk facing the project is the potential loss of employment by some jeepney drivers operating along the BRT corridor.

54. Loss of Livelihood for Transport Service Providers: The project would cause economic displacement of some jeepney operators and drivers operating on the proposed BRT corridor. Information on jeepney operators and drivers affected by the BRT operation was obtained from LTFRB:

(a) Along the Bulacao to Ayala Center section, 49 jeepney routes would be affected, which would impact 657 jeepney operators and 1200 drivers; and

(b) Along the Ayala to Talamban section, five jeepney routes would be affected, which would impact 71 operators and 115 drivers. The number of ancillary personnel such as conductors is not known but they are mostly employed by inter-city jeepneys.

55. The options for livelihood restoration of affected jeepney drivers, helpers and operators have been developed as part of the preparation studies. The study includes 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 covered in the Social Management Plan.

56. **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 Cebu 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 Cebu 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.

57. The Environmental Management Plan (EMP) 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 Cebu City Project Implementation Unit (PIU). An Environmental Compliance Monitoring report will be prepared by the PIU and submitted to DENR and the WB on a semi-annual basis.

58. 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 safeguard specialist.

Monitoring & Evaluation

59. **Where will the data for the project's outcome and results indicators come from?** When operating, routine data will be collected relating to passenger numbers and fleet performance. This will be collected, collated and reported as a function of the BRT System Manager. In addition a project monitoring and evaluation methodology has been developed as part of the project preparation. This annual activity is based upon the evaluating against PDO's 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 impacts can be assessed. Table ___ outlines, in summary form, indicators and data collection issues.

60. Data consists of both qualitative and quantitative data to support defined KPI's. Data will be collected annually commencing in the first year of operation (ex post) to be compared with collected ex ante data sets. Data originates from user questionnaires, user surveys, traffic and movement data together with collected records.

61. **What capacity is available to collect data? If limited, how will it be strengthened**? It is anticipate that data collection and monitoring will be undertaken and coordinated initially by the Project Implementation Unit and thereafter by the 'BRT System Management entity'. The need to monitor and evaluate will be specified within the function of both units. Table XX indicates various LGU departments as data sources. This refers to existing functionality that, with respect to BRT, might be transferred to the PIU/BRT System management.

62. 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.

63. **What additional costs will be required to support M&E?** Table XX identifies potential annul costs that will be incurred in providing monitoring and evaluation. These costs assume that external support will be required and include the cost of enumerators and analysis/evaluation.

64. **How will data be used assess the project's effectiveness during implementation?** Whilst measures will be put in place to minimize adverse effects, project implementation will involve disruption to all road users along the BRT corridor. This disruption will be manifested in increased journey time, limited accessibility and noise. The effects will be felt by those living and working within the corridor and roads accessing the corridor as well as those living and

working on routes used as an alternative to the BRT corridor. In addition there will be effects upon businesses that rely upon the corridor for access. During construction these effects will be monitored using qualitative surveys of users and affected parties, quantitative data on vehicle movement and journey time surveys.

Role of Partners

65. The French Development Agency (AFD) and Clean Technology Fund (CTF) are co-financing project components.

Annex 4A: Operational Risk Assessment Framework (ORAF)[1/]

PHILIPPINES: Cebu Bus Rapid Transit Project

Appraisal and Post Appraisal Package Version[24]
(ATTACHED AS A SEPARATE NOTE)

Project Development Objective(s)	
PDO Level Results Indicators:	1.
	2.
	3.
	4.
	5.

Risk Category	Risk Rating	Risk Rating Explanation	Risk Description	Proposed Mitigation Measure	Status C= completed O = ongoing NYD = Not yet Due N/A = Not Applicable	
1. Project Stakeholder Risks						

[24] This is the version that should be used for Appraisal stage for Track 2 as well as for seeking clearance by management for Track 1 to move forward with negotiations.

1.1 Stakeholder						
2. Operating Environment Risks						
2.1 Country						
2.2 Institutional Risk (sector & multi-sector Level)						
3. Implementing Agency Risks (including FM & PR Risks)						
3.1 Capacity						
3.2 Governance						
3.3 Fraud & Corruption						
4. Project Risks						
4.1 Design						
4.2 Social & Environmental						
4.3 Program & Donor						
4.4 Delivery Quality						
4.5 Other (max 2)						

A - Proposed Rating before Decision Meeting[25]:

Project Team	Risk Rating: Preparation	Risk Rating: Implementation	Date	Comments
Overall Risk				

B - Review by IL Risk Team for Decision Meeting:

Risk Team	Risk Rating: Preparation	Risk Rating: Implementation	Date	Comments
Overall Risk				

Final Decision Meeting Rating:

Appraisal Decision Chair	Risk Rating: Preparation	Risk Rating: Implementation	Date	Comments
Overall Risk				

[25] For Track II Operations only.

Annex 4B: Operational Risk Assessment Framework (ORAF)

PHILIPPINES: Cebu Bus Rapid Transit Project

Negotiations and Board Package Version[26]

Project Development Objective(s)	
PDO Level Results Indicators:	1.
	2.
	3.
	4.
	5.

Risk Category	Risk Rating	Risk Description	Proposed Mitigation Measures
Project Stakeholder Risks			
Implementing Agency Risks			
Project Risks			
• Design			
• Social and Environmental			

[26] This is the version that should be used for Negotiations and submission for Board Approval.

• Program and Donor			
• Delivery Quality			

Overall Risk Rating at Preparation	Overall Risk Rating During Implementation	Comments

Annex 5: Implementation Support Plan

PHILIPPINES: Cebu Bus Rapid Transit Project

I. Technical Issues

Strategy and Approach for the Implementation Support Plan

1. During implementation, the following detailed design contracts will be procured:

   (a) Engineering and architectural design and construction contract supervision
   (b) Area Traffic Control design implementation and training
   (c) Operating support systems (Information and Communications Technology)
   (d) Bus operator and vehicle
   (e) Fare collection and handling

2. The contract will be let and supervised by the Project Implementation Unit (Figure 2) with management and performance monitoring undertaken by that Unit. The World Bank will support the PIU by providing direct support focused through a *Technical Support Consultant* on call to the Project Implementation Unit. It is intended that this consultancy support would be provided by, and through the National Center for Transport Studies Foundation (NCTSF), part of the University of the Philippines. The NCTSF also has its worldwide support networks drawn from international transport consultancy specializing in BRT development.

Implementation Support Plan

3. Figure 2 (Annex 3) outlines the project implementation structure placing the Cebu BRT PIU as the controlling/coordinating organization responsible for letting contracts for procurement for scheme development and of supportive services. The PIU will be formed through joint venture between DOTC and CCG with input from other governmental organizations as required to ensure implementation minimizing implementation risk. In forming this structure it is recognized that this is the first BRT project implemented in the Philippines and that whilst component skills that make up the BRT requirements might exist in country and within the public sector organizations making up the PIU the specific skills relating to BRT implementation that would reduce delivery risk and ensure full exploitation of the potential of BRT in meeting PDO are not present. The implementation support plan focuses upon two support areas:

   (a) Oversight and monitoring; and
   (b) Project integration and skill gap repair

Oversight and monitoring

4. Oversight and monitoring refers to the need to follow World Bank guidelines and procedures, in particular relating to social impact/mitigation/resettlement and environmental management and monitoring. Whilst DOTC has appointed Social and Environmental consultants to independently assess impacts and develop mitigation and management strategies,

the responsibility for implementation will lie with the implementing authority. Whilst there exists within both Cebu City Government and National Government (through DPWH) experience in right of way acquisition and environmental impact mitigation there is a history of under compliance that has led to a mistrust between the general public, land use developers and the public sector. The success of this project and its adherence to PDOs lies within efficient management of project impacts and delivery risk would be significantly reduced through clear and timely articulation of World Bank compliant procedures and following implementation of these procedures. The World Bank would provide overarching support to locally drawn teams.

Project integration and skill gap repair

5. The contracts required to move from Feasibility Study to implementation are identified in Section XX each individual contract includes its own technical complexities and uniqueness in relation to implementation of BRT in Cebu. While technical competency exists, the implementing agency is un familiar with the application of that competence in the context of BRT in what is a challenging environment both physically and politically. In addition the contracts to be commissioned cannot be considered in isolation but must be integrated and managed effectively. As a minimum the management structure that monitors and integrates should achieve compliance although performance over and above compliance is, under the right conditions, readily achievable. This is outlined in relation to specific project issues below.

(a) Land use and transport integration. There is significant research that mass transit implementation is able to positively influence land use change and enhance land values. The BRT stations are placed in areas of largely informal development and the Bulacao and Talamban terminals are in locations of significant development potential. Cebu City is a fast developing environment with significant investors who are fully aware of the relationship between quality public transport and land value and watchful of the progress of BRT. The Philippines has a weak history of public sector control of land use development and an even weaker history of placing an expectation upon the private sector to mitigate its own transport impact. It is considered that there is significant potential, through careful management, to reduce scheme cost and maximize scheme benefits through public-private partnerships (developer agreements) to develop at least some stations and terminals.

(b) Conceptual definition. Much effort has been expounded in developing a BRT concept from the user perspective whereby infrastructure matches operational requirements. This is evident in station design, ticketing, information, the use of materials and the relationship between BRT and the public realm through urban design principles. There is much world wide experience of instances whereby design consultants have designed important aspects of conceptual detail by not realizing their true value. The risk of this occurring increases when the IA is not experienced in BRT development. There is therefore a clear skill gap within the IA in terms of the management of design contracts that adhere to the BRT principles developed through feasibility.

(c) Stakeholder expectation. Feasibility studies have involved close liaison with a variety of stakeholder organizations ranging from those that focus upon historical preservation to those who represent persons with limited mobility. A common theme has been noted of mistrust that the Government (local or national) will adhere to principles relating to historical reference, cultural preservation or measures to enhance the mobility of the most vulnerable in society. It is not accepted that there would be a willingness to ignore these principles but, consist with the comments re concept definition, above many of the detail design principles developed through feasibility might be lost within the development of design detail. This would lead to further disenfranchisement of vulnerable sectors of society and further mistrust on Government. The skills in BRT implementation that relate to vulnerable and specific interest groups is not present within the implementation agency.

(d) Communications. The feasibility study has followed a consultation and communications plan that has both developed the trust of consulted groups/individuals and given relevant and timely information. The feasibility study has further defined an on-going consultation plan that continues to work with these groups and widens the scope of consultation as the project progresses. The need for comprehensive and detailed consultation intensifies during implementation. International experience suggests that effective consultation considerably reduces project delivery risk. Whilst CCG have a significant consultation capability and consultative network, it is without detailed technical knowledge and reference to experience from elsewhere where BRT has been implemented. Technical support would need to be provided to facilitate the consultation process.

6. These issues are addressed within the project implementation arrangements through a *Technical Support Consultant* on call to the Project Implementation Unit.

Monitoring & Evaluation

7. When operating, routine data will be collected relating to passenger numbers and fleet performance. This will be collected, collated and reported as a function of the BRT System Manager. In addition a project monitoring and evaluation methodology has been developed as part of the project preparation. This annual activity is based upon the evaluating against PDO's 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 impacts can be assessed. The table below outlines, in summary form, indicators and data collection issues.

II. Social Safeguards

8. **Implementation Strategy**: For the first twelve months, the focus will be on procurement of the required specialists to update the RAP produced prior to appraisal. This updated RAP will be based on the final detailed design. The other focus for the first twelve months will be the staffing of the Project Management Office (PMO) with safeguard specialists and preparation for implementation of the RAP and the Social Management Plan. The latter will

involve the constitution of the safeguard implementation structures and the manning of these structures.

9. At the second stage (12-48 months), the focus will be on safeguards implementation and completion, monitoring, and evaluation.

10. Time spent and other resources for the Bank's social safeguard/development specialist/s will be extensive and intensive in these two stages. As the first stage, coordination with the task team's procurement specialist and the relevant PMO staff will be important as well as capacity development and advisory services to the PMO. The second stage tasks are weighted in the direction of monitoring and evaluation, trouble shooting, coordination, and conflict resolution. When civil work starts, inputs in terms of time and resources to social safeguards implementation are expected to diminish.

Table xx:

Time	Focus	Skills Needed	Resource Estimate	Partner Role
First 12 months	1. Updating of the Resettlement Action Plan and the Social Management Plan based on the final detailed design phase 2. Contracting of social development specialist within the Project Management Office to supervise resettlement specialist and property appraiser in the updating of the RAP; 3. Constitution of the Resettlement and social development and implementation mechanisms ROW Acquisition team identified who will be authorized to make offers of compensation; initiate expropriation proceedings for problematic lands and property owners choosing this option. 4.Contracting of External Monitoring Agent for Resettlement	1. Parcellary mapping, Property appraisal, and Resettlement Specialist 2. Supervisory and coordination skills; understanding of Bank policies, experience in community develop-ment, grievance handling, conflict resolution 3.Negotiation skills; familiarity with Bank policies; legal expertise and experience in expropriation proceedings; grievance receipt and handling. Monitoring and evaluation		1. The implementing agency (IA) will contract the property appraiser and resettlement specialist as part of the detailed design team. Bank social safeguard specialist to assist in drafting terms of reference and supervision. 2. The IA will hire social development specialist. Bank social safeguard specialist to provide training. 3.The IA will constitute the team. Bank social safeguard specialist to provide orientation on Bank policies and receive reports. Provide training on grievance handling. 4.Partner (DOTC or CCG) will procure this. Bank social safeguard specialist to review and finalize TOR, review cost estimates, recommend clearance, and monitor procurement process.
12-48	5. Implementation of the RAP and SMP.	Negotiation skills and legal expertise;		The IA will do this with the support of the Bank

months		Project management; expertise in enterprise development		social safeguard specialist. The IA partner will implement. Bank social safeguard specialist to monitor progress, monitor grievance.

III. Environmental safeguards

Phase	What (Is the parameter to be monitored?)	Where (Is the parameter to be monitored?)	How (Is the parameter to be monitored?)	When (Define the frequency / or continuous?)	Why (Is the parameter being monitored?)	Cost (if not included in project budget)	Who (Is responsible for monitoring?)
During activity **preparation**							
During activity **implementation**							
During activity **supervision**							

II. Skills Mix Required

Skills Needed	Number of Staff Weeks	Number of Trips	Comments

III. Partners

Name	Institution/Country	Role

Annex 6: Team Composition

PHILIPPINES: Cebu Bus Rapid Transit Project

World Bank staff and consultants who worked on the project:

Name	Title	Unit
Ajay Kumar	Task Team Leader/Lead Transport Economist	EASIN
Holly Krambeck	Transport Economist	EASIN
Andrew Salzberg	Consultant	EASIN
Minneh Kane	Lead Counsel	LEGES
Manush Hristov	Senior Counsel	LEGAM
Victor Dato	Infrastructure Specialist	EASPS
Maya Villaluz	Senior Operations Officer	EASPS
Dominic Reyes Aumentado	Senior Procurement Specialist	EASR1
Tomas JR. Sta. Maria	Financial Management Specialist	EASFM
Simon Peter Gregorio	Consultant	EASPS
Joan Toledo	Financial Analyst	CTRLN
Sam Zimmerman	Consultant	EASCS
Pramod Agrawal	Consultant	EASIN
Gia Mendoza	Program Assistant	EACPF
Maria Luisa Juico	Program Assistant	EASIN
Peer Reviewers		
Om Prakash Agarwal	Senior Urban Transport Specialist	TWITR
Arturo Ardila Gomez	Senior Urban Transport Specialist	LCSTR
Shomik Raj Mehndiratta	Lead Urban Transport Specialist	LCSTR
Mauricio Cuellar	Senior Transport Specialist	LCSTR
Georges Darido	Senior Transport Specialist	LCSTR
Jaime Leather (Asian Development Bank)	Principal Transport Specialist	
Jack Reilly, Professor	Department of Civil and Environmental Engineering	Rensselaer Polytechnic Institute

Annex 7: Economic and Financial Analysis

PHILIPPINES: Cebu Bus Rapid Transit Project

1. **Background.** A detailed financial and economic analysis was conducted for investments in public transport system (including BRT, ITS, and ATC), traffic engineering, management and safety, land use improvements and project management, which together account for over 90 percent of the total project cost. Both costs and benefits reflect 2012 prices and a project life of 30 years is assumed. Financial costs have been converted to economic costs by elimination of price contingency, taxes, and customs duty on imported materials.

2. **Methodology.** The approach is based on establishing two baseline scenarios: the existing and future 'do-nothing'. From the future scenario, predicted BRT demand is forecast based on abstraction of trips from other modes. An estimate of future trip growth has been derived through consideration of future population growth forecasts, historical trends in travel growth and a study on evolution of car ownership and trip rates by mode. The constraints of the existing transport network have been taken into account in establishing future 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, tyre, material, and insurance and licensing.

4. **Summary of Results:** The total capital cost of the project investments subjected to financial and economic evaluation is US$195.0 million.

5. Total recurring costs (including direct operating cost, system management, bus purchase, infrastructure maintenance, and technical support consultants) per annum are expected to be 854.5 million PHD (US$19.9 million) in the opening year of 2015. In contrast, total revenues from bus fares and commercial revenue are projected to be 881.6 million PHD (US$20.5 million), of which 92% is derived from fares. In the project's opening year, revenues are thus sufficient to cover all recurring costs including bus purchase or lease cost, vehicle operating costs (fuel, drivers, service personnel, maintenance, tyres etc), and the costs of management of the BRT system (system managers, control centre personnel, terminal staff, fare collection cost, infrastructure maintenance, rapid response vehicles). Once constructed, the scheme is thus expected to be financially sustainable over its operating life. However, the scheme cannot recover its initial capital costs.

6. The economic evaluation is based on savings in travel time and reduction in vehicle operating costs. The impact of "externalities" – monetized impact of lower GHG emissions and reduction in accidents is also included in the computation of economic benefits. Table 1 summarizes the results of economic evaluation.

Table 1: Economic Evaluation Summary (all monetary units mil 2012 PHP)

Sensitivity Test	Economic Appraisal Indicators		
	EBCR	ENPV	EIRR
NO SENSITIVITY	8.0	81,439	39%
20 % Reduction in Time Savings	6.4	63,447	36%
Time Savings Constant from 2025	2.8	20,479	33%
10% Patronage Reduction	8.0	81,439	39%
10% Revenue Reduction	8.0	81,420	39%
10% Infrastructure Cost Increase	7.6	80,864	38%
Excluding CTF investments on ATC	3.4	27,700	28%
20% Reduction in Time Savings and Remaining constant from 2025 & 10% Revenue Reduction & 10% Recurrent Cost Increase & 10% Infrastructure Cost Increase	2.1	13,541	27%

Passenger demand Forecasting

7. **Approach.** The passenger demand forecasting establishes two baseline scenarios: the existing and future 'do-nothing'. The existing scenario is derived through the observed travel patterns collected in the travel surveys undertaken on the study corridor. This represents demand levels and travel patterns in 2009. The future scenario considers how travel levels would evolve into the future, both in terms of level and of trip distribution. From this future scenario, predicted BRT demand is forecast based on diversion of trips from other modes.

8. **Existing Scenario.** The existing scenario is based on the travel trends and demand levels observed through the primary data collection undertaken on the corridor. This data provides insight not only into the levels of observed demand along the corridor but also the way in which travelers use the corridor in terms of modal choice, interchange requirements and origins and destinations. Other datasets which provide further insight into travel in Cebu, particularly at a citywide level beyond the confines of the study area, have also been used to inform this analysis.

9. **Future Do Nothing (without BRT) Scenario.** An estimate of future trip growth has been derived through consideration of future population growth forecasts, historical trends in travel growth and a study on evolution of car ownership and trip rates by mode.

10. **Land Use Change.** Changes in development patterns and the consequent changes in future travel demand and travel flows has been accounted for within the model, with a specific focus on developments along Southern Reclamation Project area.

Future BRT Scenario

11. Ridership on the BRT system has been forecast using a Cube model developed for the purposes of project evaluation. BRT demand estimates in the opening year of 2015 are given in Table 2.

Table 2: BRT Demand Characteristics 2015

Statistic Forecast (2015)	
AM peak passengers	26,100
Daily passengers	330,000
AM peak link loading (pphpd)	5,300

Capital Cost Summary for Financial Analysis

12. **Preliminary engineering costs have been calculated for the infrastructure works required for** implementation. The total project cost subject to financial analysis is US$195.0 million.

Operating Cost Estimates:

13. **Direct operating costs** including driver and maintenance specialist wages, fuel, tyres, infrastructure maintenance, materials and license and insurance costs are approximately US$10.0 million per annum.

14. **System management costs**, including BRT control center, communication charges, maintenance, BRT operations manager, control center staff, terminal dispatchers, mobile maintenance unit are estimated to be US$2.8 million per annum.

15. **Annual repayment for vehicle fleet** is computed assuming a total vehicle fleet size of 176 units required to service the forecast demand level in the opening year of 2015. The annual repayment capital required to purchase vehicles, with recurring costs every 7 years as new vehicles replace old (an allowance is made for residual value), is estimated to be (assuming $100,000 per bus) US$4.9 million.

16. Total operating cost per annum is expected to be US$17.7 million.

Revenue Forecast

17. Farebox revenue is driven by demand and by fare levels. The demand levels applied to calculate revenue are derived from the low case growth assumption.

18. **Fare levels**. Current public transport fares are regulated, with travelers paying a minimum fare for even the shortest of journeys, after which fares increase by a fixed amount for each additional distance increment beyond a certain threshold. Currently, the minimum PUJ fare is 7 pesos. The mystery traveler surveys recorded fares of between 9 and 14 pesos for the longer trips along the corridor between Talamban and the CBD and between Bulacao and the CBD.

19. The fare levels are set at a level same as the existing PUJ fares; a small annual increase in bus fares is assumed to maintain the real price by applying a 1.7 percent increase per annum throughout the project period.

20. *System Revenue.* Based on the above, the fare revenue is shown in Table 3:

Table 3 Patronage and Revenue, 2015 (where applicable Peso values in 2012 Prices)

Patronage and Revenue	Value
Patronage / Demand (per day)	331,000
No. paying single fare (per day)	315,000
No. paying double fare (per day)	16,000
Total No. of ticket purchases (per day)	347,000
Fare rate (Pesos)	9.0
Fare collection and Leakage	15.0%
Ticket Revenue (Pesos per annum)	837,705,000
Ticket Revenue (Pesos per annum) (after taxes)	**812,574,000**

21. Assuming advertising revenue is a revenue generating option for the operating entity, conservative estimates of place the sum at approximately 78,464,000 PHP/year in 2015, approximately 7% of fare revenue. The VAT would apply to this revenue, so the total after tax revenue from advertising is projected at 69,048,000/year. The total project revenue projected for 2015 is presented in table 4 below.

Table 4 Total System Revenue, 2015 (2012 Prices)

Total Revenue	BENEFIT (PHP)
Ticket Revenue	812,574,000
Advertising Revenue	69,048,000
TOTAL	**881,622,000**

Financial Performance of Scheme

22. The operating costs shown in Table 6 represent an aggregation of the annual repayment for vehicle purchase, vehicle operating costs (fuel, drivers, service personnel, maintenance, tyres etc.) and the costs of management of the BRT system (system managers, control centre personnel, terminal staff, rapid response vehicles.

II. Economic Evaluation

23. As in other major public transport investments, the annual operational surplus anticipated will not be able to cover the full costs (including the capital cost of construction) of the project. As elsewhere, a public subsidy to cover this cost is justified on the basis that there are significant wider economic benefits to the city that are not 'priced' or financially captured by the project.

These economic benefits generally take three forms: consumer surplus; producer surplus and externalities.

Table 5: Annual Operating Costs and System Revenue, 2015 (2012 prices)

Opening Year Revenue and Costs	BENEFIT
Revenue Item	
Ticket Revenue	812,574,000
Advertising Revenue	69,048,000
TOTAL REVENUE	**881,622,000**
Recurring Cost Item	
Direct Operating Costs (inc. Vehicle Costs)	- 638,656,000
Net	**242,966,000**
Operational Control Costs	- 111,233,000
Net	**131,734,000**
Systems Management	- 10,200,000
Net	**121,534,000**
Technical Support Consultancy	- 8,600,000
Net	**112,934,000**
Infrastructure Maintenance	- 86,081,000
TOTAL Net	**26,853,000**

24. Consumer surplus is derived from lower cost incurred by passengers. In the absence of fare changes, this is driven purely by lower time costs. For previous PUJ passengers, the full sum of total time savings is allocated to project benefits because such patronage is an abstraction. However, the time savings derived from (previous) car, taxi and motorcycles passengers are now additional (or generated) to the bus industry, and therefore, the sum of the time savings are applied to the principle of the 'Rule of Half'.

25. Under the "BRT Scenario" and in the absence of a change in revenues, the producer surplus is mainly derived from the reduction of vehicle operating costs by displacing passengers from PUJs to more efficient BRT vehicles- this value represents the efficiency gain by the BRT operators.

26. In addition to savings in vehicle operating costs and reduction in travel times, the impact of "externalities" – monetized impact of lower GHG emissions and reduction in accidents is also included in the computation of economic benefits

27. The appraisal period for modeled benefits and costs is 2012 – 2042.

(a) All costs and benefits are presented in 2012 prices;
(b) Discount rate of 12 percent is applied; and

(c) all costs are expressed in factor prices – the first process involves stripping out all taxes as these are recycled back within the economy, the second process involves conversion factors using shadow costs.

Consumer Surplus

28. In the opening year, the scheme will provide approximately 5 million hours saved in generalized time – this equates to an NPV of 940 million PHP. Throughout the appraisal period the scheme will save approximately 13.5 billion hours of generalized time. This equates to approximately an NPV of 150 billion PHP (see Table 6 for details).

29. In terms of generalized time saved, approximately 45 percent of time saved is benefitted to car users and 40 percent to Jeepney users. About 7 percent of generalized time saved is taxi, 5 percent for motorcycle and 2 percent for trucks.

Table 6 Consumer Surplus for Appraisal Period (2012- 2042)

Period	Generalaised Hours Saved	Vehicle Operating Cost Savings (Millions of Peso)	Consumer Surplus (Millions of Pesos) (Non discounted)	Consumer Surplus (Millions of Pesos) (Discounted - 12%)
2015	4,818,399	491	1,319	939
2020	26,510,553	668	3,679	1,486
2025	109,991,268	960	13,130	3,009
2030	596,688,845	1,432	71,684	9,322
2035	1,083,386,422	2,353	136,536	10,075
2040	888,214,555	1,658	118,942	4,980
2015 to 2042	**13,421,310,291**	**35,611**	**1,707,242**	**149,690**

Producer Surplus

30. In the opening year, the scheme will provide approximately NPV 60 million PHP of discounted benefits. Over the appraisal period, the scheme will provide NPV 820 million PHP. The producer surplus benefits fall entirely on the business (public transport) sector.

Greenhouse Gas Emissions

31. Please see Annex __ for details on Green House Gas emission savings.

Accident Reduction

32. Table 7 presents the estimated accidents reduction impact of the scheme. Throughout the project period it is estimated that the scheme will reduce the number of fatalities by approx. 80, the number seriously injured by approximately 150, the number slightly injured by approximately 360 and the number of properties damaged by approximately 230.

Table 7: Accident Reduction Impact over Project Period (2012 – 2042)

Period	No of lives saved	Reduction in seriously injured	Reduction in slightly injured	Reduction in accidents causing property damage
2015	1.4	2.6	6.2	4.0
2020	1.7	3.3	7.8	5.0
2025	2.3	4.3	10.4	6.7
2030	3.4	6.5	15.7	10.1
2035	4.6	8.7	21.0	13.5
2040	2.9	5.6	13.5	8.7
2015 to 2042	**77.5**	**148.6**	**356.5**	**229.8**

33. Table 8 presents the monetized savings derived from accident reduction. In the opening year accident reduction impacts will be approximately NPV 130 million PHP. Throughout the project period it is estimated that the scheme will provide approximately NPV 1,800 million PHP derived from accident reductions.

Table 8: Monetised Impacts of Safety Benefits over Project Period (2012 – 2042)

Period	Monteised Value of Safety Benefits (Millions of Pesos) (Non-discounted)	Monteised Value of Safety Benefits (Millions of Pesos) (Discounted 12%)
2015	186	132
2020	234	94
2025	311	71
2030	469	61
2035	626	46
2040	404	17
2015 to 2042	10,639	1,827

Project Costs

34. The total costs amount to approx NPV 15,000 million. In non-discounted value, the vast majority of costs are due to the recurring costs (87 percent), however, in NPV terms, the split is relatively more even with approximately 40 percent of total costs derived from initial infrastructure costs and the remaining 60 percent derived from recurring costs.

Net Economic Benefits

35. The investments are expected to result in a BCR of 8.0 and IRR of 39 percent. This suggests the high economic return on the investments.

Sensitivity Analysis

36. To test the sensitivity of the economic analysis different combinations of a 20 percent reduction in time savings, flat growth in time savings after 2025, a 10 percent reduction in

patronage; a 10 percent increase in capital costs; a 10 percent revenue reduction; and a 10 percent increase in recurring costs have been carried out and are presented in Table 1 above.

Environmental and Health Benefits

37. Benefits from the BRT project will not only result from GHG emission reductions, travel-time, operating cost savings or even increased land values, but also from air quality improvements leading to potential public health impacts. Adoption of CTF supported measures would result in reduction in exposure to airborne pollutants. International experience in implementation of BRTs has demonstrated that operation of well run and designed systems have the potential to reduce exposure to airborne pollutants and air toxics, and road accidents. This is made possible by: (a) improved technologies with better emission controls; (b) fewer stops than previous system, thus reducing major emissions during start-ups; (c) separate bus lanes and reduced generation of airborne pollutants in the area of influence of the corridor. These health benefits would be multiplied accordingly under the proposed project.

38. A study[27] to estimate health co-benefits of the Cebu BRT project revealed that:

(a) Particulate matter (PM) savings from this project is around 0.52 to 0.75 tons/km/year. The Gold standard BRT in Asia (i.e. Guangzhou BRT of 22.5km) saves around 40 tons of PM over 10 years (i.e. 0.2 tons/year/km). [28] The Rio de Janeiro BRT saves around 0.1 to 0.3 tons /year/km.[29] The Jakarta BRT corridor saves around 0.8 tons/year/km.[30] The higher savings in Cebu when compared with Guangzhou and Rio de Janerio 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 1,160 to 1,665 tons or 4 to 5 tons/km/year. In comparison, the Guangzhou BRT saves around 20 tons/km/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). Rio de Janeiro BRT saves around 1 to 3 tons/year/km and Jakarta BRT corridor saves around 5.5 tons/km/year which is comparable to Cebu BRT;
(c) In terms of vehicle kilometer travel reductions, the project over its 20-year lifecycle removes 20,000 to 30,000 new cars from road, including removal of 600 to 1,000 2-stroke tricycles contributing to PM reductions, removal of 250 to 350 new pre-euro buses contributing to NOx reductions;

[27] 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.
[28] http://www.itdp.org/documents/20110810-ITDP-GZBRTImpacts.pdf
[29] http://164.67.121.27/files/UP/Posters%202012/26%20Lupita%20Ibarra.pdf
[30] http://esci-ksp.org/wp/wp-content/uploads/2012/05/Energy-and-Environmental-Impacts-of-BRT-in-APEC-Economies.pdf

(d) The project over its lifetime saves more fuel and CO_2 emissions than one to two years of fuel consumed and CO_2 emissions produced by the transport sector in Cebu[31]; and
(e) 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. When impacts on land use are considered the total monetary savings is in the range of US$269-385 million.

31 http://www.climateinvestmentfunds.org/cif/sites/climateinvestmentfunds.org/files/Approval_by_Mail_CTF_Philippines_updated_investment_plan_Dec_2011.pdf

Annex 9: Clean Technology Fund

PHILIPPINES: Cebu Bus Rapid Transit Project

Key Indicators	**CTF funding**	**Total Project funding**	**Scaled-up Phase**
Increased access to low carbon public transport (daily person-trips)[32]	Increase from 985,000 to 1,200,000		N/A
Leveraging (US$ million)	25	212	500
CTF investment leverage ratio	1:8		1:20
CO_2 avoided - Tons per year (ton/year) - Lifetime (ton/20 years)	193,000 3,867,000		N/A
CTF Investment cost effectiveness (US$ per ton of CO_2 avoided)	6.46	54.56	N/A
Environmental co-Benefits	- Particulate Matter (PM) savings: estimated 8-10 tons/year average over 20 year life - NOx savings: estimated 65-80 tons/year average over 20 year life		
Other Co-benefits			
Gender: Increased Public Transport User Satisfaction for Women	Improved customer satisfaction for women travelers through easy and more secure street access, easy luggage carrying facilities, efficient and safe boarding and alighting for children		
Reduced number of road accidents	An estimated reduction of approximately 700 traffic fatalities over the project 20 year life		
Improved facilities for pedestrians and NMT	Improvements to the urban area surrounding the BRT system, including sidewalks, bikeways, etc which ultimately support an increase in overall NMT mode share		
Support land use-transport integration	Integrating major new urban development plan (SRP) into BRT scheme		
Support to local economy (increase in land values)	Increase in land values adjacent to stations		
Opportunity for improved private sector delivery	Mobilize private capital for bus procurement, mobilize private sector firms for infrastructure delivery		

[32] See Annex 1 for other project specific indicators

Introduction

1. Urban transport represents one of the fastest-growing sources of GHG emissions in the Philippines. To address this and other related problems, 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 2009, 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 Cebu City BRT 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)[33] 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 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 major change proposed in August 2012 is to restructure CTF funding implemented in partnership with ADB to focus on an Energy Efficient Electric Vehicles project and a revised Solar Energy Development project. It is proposed that $105 million be allocated to the ADB EEEVs project and $20 million to the solar energy development project, as shown in Table 1.

[33] 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.

Table 1: Indicative Financing Plan After Reallocation (US$ million)

Financing Source	Renewable Energy (WBG)	Urban Transport (WBG)	Energy Efficient Electric Vehicles (ADB)	Solar Energy Development (ADB)	Total
CTF	75	50	105 [a]	20 [a]	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) [b]	(tbd) [b]	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
Notes to Table 1:
[a] For the EEEVs project, a CTF grant of US$1 million is requested for fine-tuning of technology options, technology transfer, local industry support and capacity building (implementation support, including monitoring and evaluation activities will be financed by the ADB loan). For the Solar Charging Stations component a CTF grant of US$4 million is requested; [b] Private sector entities will participate in project implementation via supply of goods and services. For the EEEVs project, private sector investment is expected during replication and scale-up, and as such no private sector co-financing is shown. Private sector co-financing for the solar energy development project has yet to be determined

Rationale for CTF involvement

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

6. The project will directly support the reduction of emissions from Cebu's transport sector. A detailed GHG inventory and forecast were undertaken as part of project preparation. Based on these forecasts, implementing the BRT-ATC scenario in Cebu City would yield annual savings across Cebu City (in reference to a BAU baseline scenario) of 115,000 tons/year of CO2e by the year 2020 and 192,000 tons by 2025 (equivalent to 24 percent and 41 percent of the current total annual GHG emissions from urban transport in Cebu respectively). For reference, this 2015 estimate is approximately half 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). The project would save a cumulative total of 3,867,000 tons of CO2 over a 20 year period from 2015 by comparison with the baseline scenario - the equivalent of saving over eight times the current total annual GHG emissions from urban transport in Cebu.

7. In addition to these direct GHG savings, the 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. When successfully implemented, the Cebu BRT will provide an on-the-ground demonstration of BRT in practice, disseminating practice of both technical and institutional knowledge for decision makers in other cities, both in the Philippines and beyond. The project explicitly recognizes the importance of this dissemination impact by including a component designed to propagate 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, 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 Cebu BRT project consists of the design and construction of BRT transitways, stations, terminals, a depot, and ancillary NMT facilities along Bulacao-Ayala Mall-Talamban corridor, including physical measures to improve integration between BRT and other public transport modes.

9. In addition, the project would finance goods, works, and services for traffic engineering, management, and safety, including intersection improvements on tributary routes used by BRT and other vehicles; the provision of new, at-grade, signal controlled, pedestrian crossing at key locations; **area wide traffic control for all of Cebu City, in part to replace the existing and obsolete SCATS traffic control system using modern area traffic control technologies; and d) an Intelligent Transport system (ITS) operational support system and the acquisition and installation of a corridor traffic control system.** The project would also include financing for project management, project outcome monitoring, and streetscape improvements. A full description is found in Annex 2 of this document.

10. Specific investments to be funded by CTF are: bus stations (US$8.3 million), system management/marketing (US$0.9 million), Area Traffic Control (ATC) (US$10.9 million), and project outcome monitoring (US$3.0 million).[34] The importance of these components as contributors to climate benefits is described under CTF Additionality at the end of this annex.

Potential for GHG Emissions Savings

Emissions Reduction Potential of Investment:

11. The study appraisal methodology 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 International Vehicle Emissions (IVE) model.35 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 Cebu, in terms of:

(a) The local vehicle fleet composition (breakdown by type, engine technology); and

(b) Driving conditions in Cebu (stop-start conditions, average speed, speed variability, temperature, topography).

[34] The remaining portion of the US$25 million finances price and physical contingencies.

[35] 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.

12. The boundary for all future numbers and calculations in this annex are taken as the whole of the emissions from all vehicles driving within and through Cebu City (including the BRT corridor).

Current GHG emissions from transport in Cebu

13. Greenhouse gas emission factors for the six main current vehicle types were taken from the IVE emissions model based on the analysis of current driving conditions in Cebu, as shown in Table 2. The final column of the table gives the overall greenhouse gas emission factor as "CO_2 equivalent" based on widely accepted values of the relative global warming power of each individual gas.

Table 2: Current greenhouse gas emission factors derived from IVE model

Vehicle type	Road-type	Current Emission factors (g/km)			
		CO_2	N_20	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

14. 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 Cebu City to derive the vehicle-kilometer estimates for the current situation and future scenarios;

(b) Using local data on current on-road drive cycle characteristics (reflecting traffic conditions and local topography) in Cebu to calculate the applicable current emission factors using the International Vehicle Emissions (IVE) model; and

(c) Adjusting emission factors for future scenarios to take account of likely changes in traffic conditions and vehicle technology within the local fleet.

15. The details of how the inputs to these calculations were derived are described in more detail in the GHG report in the project file[36].

16. The resulting greenhouse gas calculation for 2012 is provided in Table 3. This shows an initial estimate of 475 thousand tons of annual CO_2 equivalent emissions from some 892 million vehicle-km of travel.

Table 3: Estimate of 2012 greenhouse gas emissions from transport in Cebu City

Vehicle type	Road-type	Cebu City				
			Emissions (tonnes) 2012			
		Veh-km 2012	CO_2	N_20	CH_4	CO_2 equiv
Car / light vehicle	Highway	121,774,573	43,534	0.3	114	46,010
	Arterial	155,628,103	60,085	0.4	159	63,546
	Residential	69,424,019	32,391	0.2	86	34,271
Taxi		128,735,201	50,596	0.2	289	56,725
Jeepney		128,045,077	200,237	1.1	0	200,565
Bus		2,827,079	5,305	0.0	0	5,317
Motorcycle / tricycle		254,801,966	15,761	0.0	712	30,712
Truck		31,658,857	36,875	0.2	0	36,948
Totals		**892,894,876**	**444,783**	**2.4**	**1,360**	**474,093**

Emissions under the Baseline future scenario

17. Social and economic factors are likely to significantly influence greenhouse gas emissions from transport in future years. Taking into account population forecasts, an increase in demand for vehicle ownership and a corresponding increase in vehicle-km, increases in freight travel demand, and annual growth in GDP, initial forecasts of vehicle-km in future years were obtained for 2015, 2020, 2025 and 2035.[37]

18. The forecast of greenhouse gas emissions under the baseline scenario is provided in table 4.

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

37 Future technology changes in the vehicle fleet were estimated based on the timeline for introduction of the Euro standards in other Asian countries and then made conservative assumptions on a further delay in those vehicles infiltrating the fleet in Cebu, given the relatively slow fleet turnover. In doing this, the team paid particular attention to the Chinese implementation dates for emission standard since China is likely to play an increasingly dominant role in the Asian vehicle market in future years. A full description of these assumptions is available in the GHG report.

Table 4: Forecast greenhouse gas emissions (tons CO2e) for 2015-2035 (baseline)

Vehicle type	Road type	2015	2020	2025	2035
Cars & light vehicles	Highway	55,750	90,726	142,707	253,061
	Arterial	77,231	128,399	207,943	398,689
	Residential	41,558	71,736	121,621	242,572
Taxis		66,511	97,095	139,499	178,665
Jeepneys		197,848	238,574	302,376	386,866
Inter-urban buses		1,630	1,654	1,218	796
BRT buses		0	0	0	0
Motorcycles		33,051	38,406	27,422	72,436
Trucks		38,813	53,735	86,609	137,739
Total		**512,391**	**720,325**	**1,029,394**	**1,670,825**

Emissions under the BRT + ATC (With project) future scenario

19. Under the scenario in which BRT and an upgraded adaptive area traffic control system are implemented in Cebu, two key traffic impacts would result:

(a) Smoothing of traffic flows and reduction in delays / improvement of journey times from implementation of the improved area traffic control system; and

(b) Reduction in vehicle-km across all motorized modes resulting from transfer of trips to the new BRT system.

20. First, for emissions reductions from the ATC system, a review of international experience reveals:

(a) 16 percent reduction in fuel consumption when signals were coordinated (using "green waves");

(b) Up to 15 percent fuel savings through adaptive signal coordination in comparison to an uncoordinated network[38]; and

(c) Carbon savings of between 3 percent and 8 percent using the SCOOT adaptive traffic control system[39].

21. Based on this evidence, it is assumed that a good adaptive traffic control system would achieve at least 5 percent GHG emissions saving across the network. The reduction is applied to half of the emissions from the baseline future scenario to take account of this element of the project (BRT+ATC) scenario.

22. Emissions savings from BRT assume the system enters operation in 2015. The initial fare for the BRT was set at 9PHP, plus an additional 9PHP for journeys over 8km. These fares would subsequently rise in real terms at 1.7% per annum. This was based on an analysis of historical changes in jeepney fares.

[38] Robertson, D. I., C. F. Lucas and R.T. Baker (1980) Coordinating traffic signals to reduce fuel consumption, *TRRL Laboratory Report LR934*, TRRL (Transport and Road Research Laboratory), Crowthorne, United Kingdom.
[39] Robinson J and G Jackson (2009). Innovative SCOOT benefits analysis: Quantifying emissions and travel time reductions. Proceedings of ITS World Congress, Stockholm, 2009

23. The introduction of BRT would have an impact on the jeepney network, and it is expected that changes would be made to jeepney routes to support the BRT. To reflect this in the transport model, a number of amendments were made to the jeepney network. Analysis of the current travel patterns suggests that 24 existing jeepney routes would need to be deleted, 10 would be curtailed to connect with the BRT route and a further 11 would be re-routed to avoid direct competition with the BRT corridor.

24. Other assumptions on transport infrastructure and development would be the same as those used for the baseline scenario:

(a) Non-BRT transport infrastructure would generally remain as it is today, with the exception of the impending widening of M J Cuenco Avenue between the Gen. Maxilom Avenue intersection and the J Luna Avenue intersection; and

(b) The main shopping mall at SRP would be completed and operational before 2015, together with 50% of the remaining planned development. The remaining 50% of the planned development would be in place before 2020.

25. **Changes in travel demand patterns.** Changes in overall travel demand due to population growth and economic growth are expected to be the same as for the baseline scenario. However, people's choice of travel mode will change (as indicated by the transport model outputs) due to the availability of the new system. This is reflected in the vehicle-km figures presented in the following paragraphs.

26. Table 5 presents the forecast vehicle-km travelled within Cebu City (the analysis boundary) by different vehicle types under the BRT-ATC scenario, based on the transport modeling outputs. For reference, the BRT ridership in the 'with' scenario is approximately 330,000 daily passengers in the opening year of 2015, with approximately 95% of ridership derived from former jeepney passengers.

Table 5: Forecasts of annual vehicle-km travelled in Cebu City under BRT-ATC scenario

Vehicle type	Road type	2015	2020	2025	2035
Cars & light vehicles	Highway	155,669,793	214,378,235	270,972,985	423,018,638
	Arterial	187,483,176	265,256,743	347,066,720	557,407,988
	Residential	82,442,184	119,929,158	165,932,176	289,842,984
Taxis		133,365,811	154,304,791	178,894,613	224,969,440
Jeepneys		103,454,119	113,085,514	126,508,068	125,786,213
Inter-urban buses		5,303,829	5,231,342	4,418,941	1,089,345
BRT buses		5,858,496	7,582,271	9,047,639	20,402,234
Motorcycles		270,139,194	308,373,997	355,326,614	435,936,289
Trucks		36,572,585	47,029,301	58,283,866	88,889,401
Total		**980,289,186**	**1,235,171,354**	**1,516,451,621**	**2,167,342,531**

27. Taking the forecast vehicle-km figures along with the GHG emissions factors, Table 6 gives the forecast of greenhouse gas emissions under the "with project" (BRT+ATC) scenario for years 2015, 2020, 2025, and 2035.

Table 6: Forecast greenhouse gas emissions for 2015 – 2035 tons CO2e (BRT+ATC scenario)

Vehicle type	Road type	2015	2020	2025	2035
Cars & light vehicles	Highway	54,198	86,132	129,247	225,223
	Arterial	70,525	115,145	178,881	320,699
	Residential	37,486	62,940	103,403	201,627
Taxis		59,571	84,720	118,496	152,239
Jeepneys		136,245	154,657	188,708	197,246
Inter-urban buses		8,648	8,322	7,871	2,056
BRT buses		6,620	9,046	11,862	27,605
Motorcycles		31,806	35,780	24,204	62,393
Trucks		36,061	48,582	74,517	117,994
Total		**441,160**	**605,325**	**837,189**	**1,307,084**

28. Over a 20 year period from 2015, the forecast total greenhouse gas savings that would result from the BRT-ATC scenario compared with the baseline scenario would be 3,867,000 tons of CO2e, averaging 193,000 tons per year. As an indication of the overall magnitude of these savings, this is the equivalent of saving over eight times the current total annual GHG emissions from urban transport in Cebu (Table 7).

Table 7: Annual greenhouse gas savings from BRT-ATC scenario (tons CO_2e)

Annual savings (tonnes CO2e)		
Year	Cebu City	BRT corridor
2015	71,230	41,237
2020	115,000	55,926
2025	192,205	72,227
2035	363,741	100,431

29. **Cost-effectiveness (Incremental impact of CTF Financing):** The CTF financing forms $25 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 $6.46 per ton of CO_2 equivalent saved.

30. The cost estimate of implementing the BRT system in Cebu, together with the upgraded adaptive area traffic control system and other associated measures is $211 million. The total, undiscounted cost per ton of CO_2 equivalent saved is therefore approximately $55**.**

Demonstration Potential at Scale

31. As described above, the Cebu BRT system has a cumulative GHG emissions abatement potential of over 3.8 Mt CO2e over twenty years. This is the only proposed BRT system in the Philippines whose potential emissions reductions have been analyzed in detail to date. However, in addition to the Manila BRT system that already forms a part of the CTF investment plan, the

demonstration effect of the Cebu BRT system could affect cities beyond the capital region. Emerging metropolitan areas such as Metro Davao, Naga, Bacolod, Iloilo and Cagayan de Oro 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, and at an aggregate level would be expected to deliver benefits of the same order of magnitude.

32. 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. Cebu, as the first system to be developed in the country, holds 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 $5 million component, with funding from World Bank and French Development Agency, for concept dissemination, capacity building, and design of BRT systems in other cities, notably Metro Manila.

Development Impact and Expected Co-Benefits

33. The BRT project is seen as a catalyst for change. One of the objectives of this first BRT project in the country is to improve passenger mobility in the project's corridors by providing an alternative that is fast, comfortable, cost-effective, efficient, and generates fewer emissions reducing both local and global pollution. 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.

34. **Environmental co-benefits:** According to the Department of Environment and Natural Resources (DENR), particulate matter (PM_{10}) levels in Cebu City's 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.[40]

[40] 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 NOx 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

35. 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.

36. A study[41] to estimate health co-benefits of the Cebu BRT project revealed that:

(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. [42] 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.

37. **Qualitative impact on customer satisfaction.** The active communications and consultation program implemented during the conduct of the Cebu 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 Cebu BRT will address these 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.

(b) Efficient and safe boarding and alighting for elderly and persons with disabilities. One of the most cited transportation problems in Cebu City are related to improper boarding and alighting of PUJs. Consultations with commuters revealed that PUJ

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).

[41] 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.

[42] http://www.itdp.org/documents/20110810-ITDP-GZBRTImpacts.pdf

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 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 Cebu BRT, 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 Cebu BRT 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 Cebu, 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.

38. **Improved facilities for pedestrians and non-motorized transport.** The project will result in improved walking environment for pedestrians through the construction of sidewalks along the segregated BRT route within the SRP on both sides of the carriageway and a 2m landscaping strip to enable trees to be planted that offer shelter from the Sun. For cyclists, a 2m wide cycleway is proposed along one side of the SRP carriageway which is expected to act as a precedent for more cycling infrastructure in the city**.**

39. **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 P130 million (US$3 million), and through the life of the project net present value of savings is expected to be P1,800 million (US$44 million).

40. **Improve integration between transport and land use development.** The project would support land use-transport integration through establishing physical connections to major trip attractors and generators.

(a) The Fuente Osmeña Circle, in particular, will be designed to accommodate the different functions performed including, leisure space, focal point for commercial activity, and pedestrian crossing. The investments would support the provision of reconfigured north-east quadrant of Fuente Circle, including a pedestrian / BRT only zone, enabling improved and safer pedestrian access to the recreational area of Fuente Circle as well as additional landscaping along the BRT corridor.
(b) Where specific major urban developments of significant scale are known, account has been taken. This includes SRP, the extension to Ayala Shopping Mall, and the Gaisano Country Mall redevelopment. BRT is planned specifically to accommodate the forecast public transport trip generation of these known developments and accommodate general growth in trip making. Anticipating travel demand in these areas provides an opportunity to develop BRT as a genuine viable alternative to the private car in these areas.
(c) 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

41. Under the aegis of the National Environmental Sustainable Transport Strategy (NESTS), the Philippines is committed to identify, promote and undertake Environmentally Sustainable Transport (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 environmentally sustainable transport through harmonization of national emission standards with international standards.

42. 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.

43. The Government of Philippines has developed a National Environmental Sustainable Transport Strategy (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 (DOTC) 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 green house gas (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 environmentally sustainable transport (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.

44. **Institutional arrangements.** The project will be implemented by DOTC, which will have the overall responsibility for its coordination and management (for details, please see Annex 3). The DOTC 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 in Cebu city for the day-to-day project implementation:

(a) The BRT National Steering Committee (BRT-NSC) would provide policy guidance and have oversight of all BRT studies, projects and operational systems in the country. The specific functions will include: formulation of strategic directions for BRT development, setting policy and guidelines, evaluating proposals, and formulating rules and regulations. The Committee will have representatives from DOTC, LTFRB, Local Government, DOF, and others;

(b) The National Program Management Office (NPMO) will have the primary function of supporting the mandate of the BRT National Steering Committee and overseeing the implementation of all BRT plans, policies, standards, regulations, and projects nationwide. The BRT-NPMO responsibilities include planning and evaluation, resource mobilization, implementation, monitoring and reporting, promotion and communications, secretariat, coordination, and other related activities assigned by the BRT-NSC that are necessary to ensure the proper development and operations of BRT in the country;

(c) A Project Implementation Unit (PIU) has been set up by DOTC in Cebu city to carry out day-to-day project implementation. The key tasks will include project management, financial management, procurement, reporting, monitoring, and environmental and social safeguards. The PIU will have staff seconded from both DOTC and CCG; and

(d) To support project preparation and implementation, NPMO/PIU will be supported by a Technical Support Consultant (TSC). The TSC would provide specialist staff in the following areas, as required, during the project: a) project management, including procurement, contract design and oversight of contractors; b) technical, including infrastructure, bus operations, traffic systems, and technologies; and c) analysis, including planning, business modeling, and data management. The TSC would be retained by DOTC 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.

45. **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. AFD is co-financing this project and is focusing its support on traffic engineering and management, integration with land use, and BRT concept dissemination and development.

46. **Support private sector participation.** The BRT delivery model in Cebu is 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 private sector is responsible for procuring and operating buses, as well as providing support services (fare collection, maintenance of support infrastructure, etc). The maintenance of the transitway is expected to be contracted to the private sector based on long-term performance based contract. For the Cebu BRT, the feasibility study examined the potential revenue that a BRT system would generate and the costs involved in building, operating, and maintaining it. What this study found was that, assuming fares similar to those of the existing jeepneys, revenue generation would be sufficient to cover all operational costs, loan repayment on buses and return a reasonable profit. Private sector procurement of buses is expected to inject roughly $5 million of capital into the Cebu BRT project.

Sustainability: Evidence of Commitment and Ownership

47. 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

48. As described elsewhere, BRT operations are 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.

49. 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 Philippines, 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.

50. In terms of specific components, CTF financing has been directed to enhance elements of the project will deliver significant benefits but have been known to be overlooked in other similar BRT investments. These include: BRT stations, system management/marketing, Area Traffic Control, and project outcome monitoring. The importance of each and its additional benefit to the project are described below.

51. First, station infrastructure and system management/marketing. Although stations are the most prominent symbol of a BRT system, past experience has shown many instances where

insufficient attention was paid to the details of station infrastructure. Financing stations using CTF financing will allow for stations to develop their full potential as the public 'face' of the project, developing a positive image of BRT in Cebu, as well as ensuring that all proper facilities for disabled access are incorporated into the design.

52. Area Traffic Control (ATC) system will improve BRT operations as well as improve traffic flow throughout the city. The need for public transport priority at intersections has been recognized by the city, and the existing SCATS Area Traffic Control system is unable to provide that priority. Implementation of the BRT service will require an efficient and effective traffic control system that allows priority to be given to BRT vehicles while minimizing any consequent delays to other vehicles on the Cebu road network. In addition, other improvements targeted at traffic management interventions proposed throughout the city's road network will be optimized through the use of the modernized ATC system. As a result, investments in ATC will benefit savings in travel time and reduction in vehicle operating costs not only for the BRT operations but also for traffic throughout the city. Not surprisingly, therefore, ATC investments account for over half the expected benefits, with just a fraction of the cost. Excluding the benefits resulting from ATC investments significantly reduces rate of return (from 39 percent to 28 percent), though the project remains economically viable even without investments in ATC.

53. Finally, 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 Cebu BRT 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, supported by CTF financing. As a first step, detailed collection of project baselines and inventories as well as year by year plans and sources for data collection are provided in the Baseline Monitoring Report, available in the project files.

Implementation Readiness

54. The project is at an advanced stage of readiness.

(a) From an institutional perspective, following actions have been taken:

i. The project has been technically approved by NEDA
ii. The project has been approved by the City Council
iii. Department Orders have been issued by DOTC creating National Steering Committee, National Project Management Office and Cebu based Project Implementation Unit. Full-time staff has been assigned and has commenced work

(b) From an operational perspective,

i. DOTC has commenced procurement of consultants for detailed design
ii. Detailed operations and service plan has been prepared

iii. As part of the procedural Budget Hearings for the 2013 Budget of the Republic of the Philippines, an amount of 975 million PHP (US$24 million) has been included for the Cebu BRT project in the 2013 DOTC Agency budget;

iv. Resettlement Action Plan (RAP), Social Management Plan (SMP), Environmental Impact Assessment (EIA) have been prepared and submitted to the Bank for approval.