United Nations Development Programme

Country: Philippines

PROJECT DOCUMENT

Project Title:	Promotion of Low Carbon Urban Transport Systems in the Philippines
UNDAF Outcome(s)/Indicator(s):	By 2018, strengthen national and local resilience towards threats, shocks, disasters and climate change.
Expected Outcome(s)/Indicator(s):	Outcome 4. Resilience towards disasters and climate change: Adaptive capacities of vulnerable communities and ecosystems will have been strengthened to be resilient toward threats, shocks, disasters, and climate change
Expected Output(s)/Indicator(s):	Sub-Outcome 4.3 Environment and Natural Resources Conservation and Protection: By 2018, capacities of national and local government officials and communities to conserve and sustainably manage the country's environment and natural resources, including biodiversity and sustainable energy sources will be enhanced
Expected CPAP Outcome(s):	By 2018, strengthen national and local resilience towards threats, shocks, disasters and climate change.
Expected CPAP Output (s)	Increased capacities of key duty bearers to provide an enabling environment for claim holders' improved access to an enhanced natural resources base, sustainable energy and a cleaner environment.
Executing Entity/Implementing Partner:	Department of Transportation[1], Government of the Philippines United Nations Development Programme (UNDP)
Implementing Entity/Responsible Partners:	Department of Transportation, Government of the Philippines

Brief Description

The objective of the Project is to create an enabling environment for the commercialization of low carbon urban transport systems (e.g., electric and hybrid vehicles) in the Philippines. This can be achieved through 1) effective enforcement of policies and support provided for the promotion of low carbon modes of transport; 2) adopting and implementing low carbon transport plans and/or programs in major cities; 3) increasing private sector participation in the widespread deployment and commercialization of low carbon transport systems; and 4) increasing private sector investment in low carbon transport systems. The GHG emission reduction of the Project is 69,013 tCO2e over the lifetime of the project investment.

Programme Period:	2017-2020
Atlas Award ID:	86135
Project ID:	93480
PIMS #	5304
Start date:	January 2017
End Date	December 2020
Management Arrangements	NIM
PAC Meeting Date	16 January 2017

Total resources required: US$ 25,079,705

Total allocated resources:

- GEF $ 2,639,726
- Government $ 9,749,979
- UNDP $ 90,000
- Private Sector $ 12,600,000

[1] Formerly the Department of Transportation and Communications (DOTC)

Agreed by (Government):

ROLANDO G. TUNGPALAN
Undersecretary, National Economic and Development Authority (NEDA)

NOV 16 2017

Date/Month/Year

Agreed by (Executing Entity/Implementing Partner):

ARTHUR P. TUGADE
Secretary, Department of Transportation (DOTr)

RRM

OCT 18 2017

Date/Month/Year

Agreed by (UNDP):

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28 NOV 2017

Date/Month/Year

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LIST OF ACRONYMS

AFV	Alternative Fuel Vehicles
AGT	Automated Guideway Transit
ASEAN	Association of Southeast Asian Nations
BRT	Bus Rapid Transit
CCC	Climate Change Commission
CCM	Climate Change Mitigation
CNG	Compressed Natural Gas
CO	Carbon Monoxide
CO2	Carbon Dioxide
COMET	City Optimized Managed Electric Transport
CPAP	Country Programme Action Plan
DBP	Development Bank of the Philippines
DENR	Department of Environment and Natural Resources
DILG	Department of Interior and Local Government
DOE	Department of Energy
DOST	Department of Science and Technology
DOTr	Department of Transportation
DOTC	Department of Transportation and Communications
e-jeepneys	Electric Jeepneys
EO	Executive Order
ERDT	Engineering Research and Development for Technology
ESITU	Environmentally Sustainable Initiatives in Transportation Unit
EST	Environmentally Sustainable Transport
E-trikes	Electric Tricycles
EV	Electric Vehicle
EVAP	Electric Vehicle Association of the Philippines
GDP	Gross Domestic Product
GEF	Global Environmental Facility
GFI	Government Finance Institution
GFZET	Green Frog Zero Emissions Transport
GHG	Greenhouse Gas
GIZ	German International Cooperation
GOCCs	Government Owned and Controlled Corporations
GoP	Government of the Philippines
iCSC	Institute for Climate and Sustainable Cities
JICA	Japan International Cooperation Agency
LCT	Low Carbon Transport
LECB	Low Emission Capacity Building
LGUs	Local Government Units
LNG	Liquefied Natural Gas
LPG	Liquefied Petroleum Gas
LTFRB	Land Transportation Franchising Regulatory Board
LTO	Land Transportation Office
M&E	Monitoring and Evaluation
MMDA	Metro Manila Development Authority

MMUTIS	Metro Manila Urban Transportation Integration Study
MtCO2e	Metric Tons CO2 Equivalent
NCTS	National Center for Transportation Studies
NEDA	National Economic and Development Authority
NGVPPT	Natural Gas Vehicle Program for Public Transport
NIP	National Implementation Plan
NOx	Nitrogen Oxide
NTP	National Transport Policy
PM	Particulate Matter
PNS	Philippine National Standards
PUB	Public Utility Bus
PUJ	Public Utility Jeepney
RA	Republic Act
R&D	Research and Development
SEC	Securities and Exchange Commission
SVPCF	Special Vehicle Pollution Control Fund
TCC	Transport and Climate Change
TESDA	Technical Education and Skills Development Authority
TWG	Technical Working Group
UNDAF	United Nations Development Assistance Framework
UNDP	United Nations Development Program
UNFCCC	United Nations Framework Convention on Climate Change
UP	University of the Philippines
UP-VRTL	UP-Vehicle Research and Testing Laboratory
VOC	Volatile Organic Compound

1. SITUATION ANALYSIS

Context and Global Significance

1. The energy consumption of Philippine transport sector is increasing. It is estimated that almost 37% of total national energy consumption of the country is from this sector. Road transport takes the largest share, which is about 80% of the total transport sector energy consumption. This is projected to grow at an annual average rate of 6.4%[2]. This situation is primarily attributed to the rapid urbanization and population increase that resulted to the increase in transportation demand. Transport planning model adopted by the Philippines prioritized the movement of cars and motorized vehicles to facilitate the growing demand for mobility of passengers and goods. Urban and inter-regional transport is dependent primarily on road-based transportation such as buses, cars, motorcycles and tricycles, *jeepneys*[3] and utility vehicles. Obviously, there has been an increasing preference for private fossil fuel based motorized travel. As a result, transportation accounts as the largest consumer of fossil fuels in the country, resulting in a highest share of CO_2 emissions.

2. The vehicle fleet continues to grow rapidly in the Philippines. In 2013, the total registered vehicles were 7.7 million units. This data is 4.7 times the number of vehicles registered in 1990. The classification of registered motor vehicles include cars, utility vehicles, sports utility vehicles, trucks, buses, motorcycles/tricycles and trailers. All types of vehicles have more or less steadily increased in the past 22 years as shown in Figure 1. The average growth per year from 1990-2012 is around 2.99% for cars, 5.01% for utility vehicles, 16.18% for sport utility vehicles, 4.54% trucks, 3.11% for buses, 11.47% for motorcycles/tricycles, and 3.53% for trailers. The number of vehicles per population also tripled over the span of 22 years.[4]

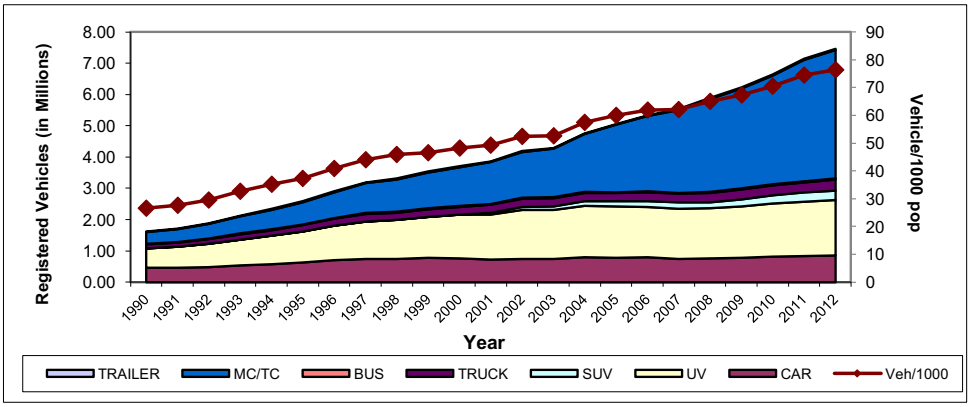


Figure 1. Vehicle registration and ownership in the last 22 years

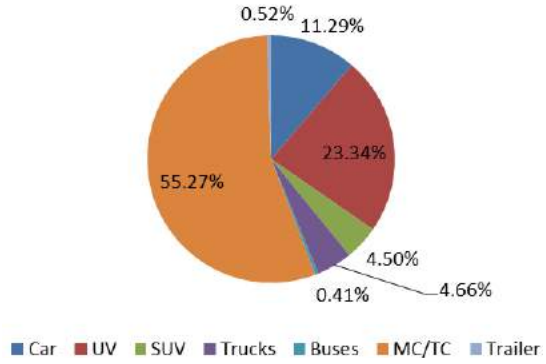
[2] World Bank 2010. A Strategic Approach to Climate Change in the Philippines: An Assessment of Low-Carbon Interventions in the Transport and Power Sectors. Accessed 25 March 2015 at http://siteresources.worldbank.org/INTPHILIPPINES/Resources/PH_Low_Carbon_Transport_and_Power.pdf

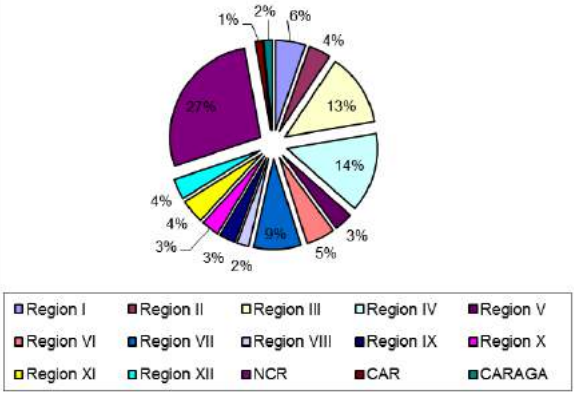
[3] Jeepneys are the most common and popular means of public transportation in the Philippines.

[4] LTO, 2013

Source: LTO, 2013

3. As shown in Figure 2.a hereunder, around 55% of the registered vehicles were motorcycles and tricycles. This is followed by privately owned vehicles comprising more than 39%, including the percentage of cars, utility vehicles and sport utility vehicles. Of these registered cars and utility vehicles, 50% are located in Metro Manila and adjacent regions as indicated in Figure 2.b.





2.a Vehicle registration per type in 2013 **2.b Vehicle registration per region in 2013**

Figure 2. Vehicle registration in 2013 (Source: Land Transportation Office)

4. The number of person-trips by private car in Metro Manila in 2012 increased by 15%, while there has been a 7% decrease in person-trips used by public transport (public utility jeepneys and public utility buses) compared to 1996.[5] However, the number of vehicle-trips of private transport increased by 69% and the number of public vehicle-trips increased by 41%. The rapid increase in private car traffic can be attributed to increase in private vehicle ownership and decrease in occupancies of cars and similar decline in public transport vehicle occupancies of buses and public utility jeepneys. Furthermore, the share of road-based public transport comprises major mode of inter-zonal travel (122,347,000 passenger-km) where 36% are by public utility jeepneys and 31 % are using public utility buses.

5. The Government of the Philippines (GoP) identified major issues in the road transport sector. These issues are outlined in the *National Implementation Plan (NIP) on Environment Improvement in the Transport Sector Low Pollution-Low Emission* of the Department of Transportation and Communication (DOTC)[6] and includes:
   - Increasing number of motor vehicles and ridership that lead to higher emissions.
   - High percentage (38%) of total greenhouse gas (GHG) emissions from transport sector and more than 90% air pollutant emissions such as volatile

[5] JICA and NEDA 2014. Roadmap for Transport Infrastructure Development for Metro Manila and Its Surrounding Areas (Region III & Region IV-A), Final Report, March 2014, ALMEC Corporation.

[6] DOTC 2012. National Implementation Plan on Environment Improvement in the Transport Sector. Accessed on 25 March 2015 at http://www.dotc.gov.ph/images/front/other_matters/nip.pdf

organic compounds (VOCs), CO, and NOx in Metro Manila are emitted by mobile sources.

- High share by road passenger trips (98.14%) from road transport sector and low share by railways (0.15%), leading to higher emission from transport sector.
- High level of congestion in Metro Manila resulting in slow travel speeds and long journey times. About 30% of trips are less than two kilometers in length and these trips are thought to be contributing to a large amount of congestion that leads to higher emissions aside from the limitation of the road capacity.
- Public use jeepneys (PUJs) are the major source of GHG (37% of the transport total), particulate matter (PM) and CO. Around 40% of person trips in Metro Manila is done by PUJs. Most of these have very old diesel-type engines. Since PUJs has no set of standards, there are many issues concerning the safety, comfort and emissions. PUJ second-hand engines are old, inefficient, consume more fuel and are high emitters of pollutants.
- Motorcycles and tricycles are major contributors of VOC. Motor vehicle inspection does not focus on operational performance and addressing pollution. Of the total motor vehicles registered in Metro Manila, more than 66% are gas-fed while the rest are diesel-fed.

6. The externalities of transport practices are obvious from increased urban air pollution and associated GHG emissions to traffic congestions, energy security, health and road safety issues as well as economic losses, reckoned to be about 4.6% of the gross domestic product (GDP). Considering these externalities and trend towards rising emissions, opportunities exist for low carbon urban transport development in the Philippines as a cost effective and efficient alternative to individual private modes for urban mobility. Investment in sustainable public transport and non-motorized transport like walking and cycling, and cleaner vehicles using alternative fuels such as compressed natural gas (CNG) and hybrid buses, auto-liquefied petroleum gas (LPG) jeepneys, electric vehicles (EVs) (vans, jeepneys, tricycles in selected cities) is imperative.

7. To date, the country's efforts in promoting and showcasing alternative and low emission vehicles technology has spanned from piloting electric jeepneys and tricycles to promotion of LPG and CNG vehicles. In the meantime, the Philippine transport planners and operators are paying serious attention to the rapid innovation in technologies and growing global trend towards the shift to new and advanced low emission vehicles such as hybrids and electric vehicles (EVs). Globally, the roll out of electric and hybrid vehicles for both public and private transportation purposes are ramping up rapidly as is evident from the total spending on electric vehicles (EVs) alone which is estimated at US$ 16 billion from year 2008 to 2014. Vehicle electrification has also gone multi-modal with 46,000 e-buses and 235 million e-bikes, globally. In the region, Japan and China have one of the highest EV roll-out with 16% and China 12% of global EV stock, respectively. China, however, has the highest electric vehicle supply equipment (EVSE) stock of 30,000 charging points followed by

Japan and India at 11,511 and 328, respectively.[7] Similarly, the number of hybrid vehicles in the region are also surging with a greater emphasis now shifting to plug in hybrids.

8. These latest developments have provided a strong motivation to pursue environmentally sustainable mobility choices. There is a growing recognition that the mass deployment of EVs and hybrid vehicles that rely on low greenhouse gas emission electricity generation has great potential to significantly reduce the consumption of fossil fuel. Propelled mainly by private sector investment, new advanced hybrid and EVs have already made an inroad in key urban areas of the country, although enabling conditions are not particularly encouraging. At present, a handful of manufacturers and suppliers have been engaged in developing and testing practical and cost effective solutions such as Fillipino made EVs. Others are exploring the launching of similar initiatives to serve interested customers. Likewise, the deployment of new low carbon mode of transport such as EVs and hybrids are accounted approx. at 70 EVs operating and 10 hybrid buses that are used for public transportation and is expected to grow in the next 5-10 years.

Barrier Analysis

9. The promotion and commercialization of the low carbon transport sector in the Philippines face a range of challenges that need to be strategically addressed to foster an investment friendly climate. Experience in the country and internationally suggest that there are no easy solutions to leverage the planning, delivery and quality of urban public transportation services in a manner that would also simultaneously lead to lower carbon footprint of the transport system. Key barriers include those related to policy, planning and institutional capacity, awareness and information, market and technology as well as investment and access to finance. Each of these have been discussed below.

Policy, planning and institutional capacity

10. Inadequate policies and programs that support low carbon transport, particularly emerging technologies in the Philippines such as EVs and hybrid vehicles, has been a big hurdle in their expeditious promotion and commercialization. This is aggravated by the lack of unified and strategic government framework for sustainable urban transport in the country. Although the NIP recognizes externalities attached to the transportation system including GHG emissions and underscores the legislatives action on the passage of Senate Bill 2856 and House Bill 5460, otherwise known as the “Alternative Fuel Incentive Bill” which calls for fiscal and non-fiscal incentives for the manufacture, assembly, conversion, and importation of electric, hybrid, and other cleaner transport options, there are no existing instruments to specifically address the planning and implementation of low carbon transport system. In 2014, SB 2151, a more elaborate bill - that includes incentives for the manufacturers, assemblers, importers and users

[7] EVI (2016)

as well as was the composition, duties and responsibilities of the coordinating mechanism – was submitted in the 16th Congress of the Philippines. Initially, the approval of the Bill was deferred to await more comprehensive "Fiscal Incentives Bill" by the Department of Finance[8] but more realistically it is anticipated to take longer till the next administration. Regional and international experiences suggest that countries which put in place strong national level policy to mobilize resources and set strategic directions also tend to have higher market share of EVs and Hybrid vehicles. It has been noted that governments use a mix of financial and non-financial incentives with direct subsidy being the most common followed by consumer purchase subsidies or tax-based measures such as taxes exemption and tax credits. Non-financial incentives also include driving lane access, free charging, expedited permitting process, etc. Barring a negligible tax exemption on the importation of parts by local manufacturers and assembly plants, there is a dearth of incentive policies to stimulate the uptake of EVs and Hybrid vehicles.

11. Likewise, areas in which policy and regulatory frameworks are lacking include: concrete roadmap, standards and certification, approval processes, and incentive policies. The pending National Transport Policy (NTP) also does not address instruments for the commercialization of low carbon provisions. Regulation on registration and franchising of low carbon vehicles remain largely missing due to which approval of new vehicle fleet has been a major barrier. For instance, there is no defined timeline from the Land Transportation Franchising Regulatory Board (LTFRB) on the approval and issuance of new franchise. Typically EV and hybrid operators are new entrants in the market and would therefore need a new franchise. Experiences of such operators indicate that it takes typically a year, if not longer, for the franchise to be issued after going through a tedious and uncertain processes, thus, deterring a potential low carbon fleet operator.

12. Multiple government agencies are involved in the planning and delivery of urban transport services, yet without a clear delineation of concerned agencies' jurisdiction, mandate and responsibilities on low carbon transport, as well as a systematic approach towards inter-agency coordination and collaboration. This has proven to be one of the fundamental hurdles for municipalities to make a quantum improvement in the quality of public transport they are able to offer. Under the Executive Order (EO) 43, government agencies have been organized to address key issues such as climate change adaptation and mitigation. Considering that this policy covers a broader spectrum of issues, it has not provided clear roles and responsibilities to concerned agencies on how to provide supportive policy signals and implement specific programs or projects that address low carbon transportation. Thus, agencies with mandate on public transportation are still vacillating, having no existing officially approved support systems and coordinating mechanisms that give legal mandate to champion and coordinate low carbon transport interventions.

13. The Philippines Alternative Fuels Roadmap 2013-2030 gears towards underscoring the need for private sector participation, policy formulation, research and development as well as capacity and awareness building. The roadmap although recognizes the

[8] With provisions to grant incentives and benefits to both foreign and local investors from all industries – not just automotive.

need for policies, coordination and market introduction of hybrid, by and large exerts greater emphasis on the promotion of LPG, CNG vehicles as well as electric three wheelers. Incidentally the adoption of the roadmap has been severely confined within the DOE and yet to be pursued by other agencies. The roadmap also calls for synchronization and complementation of agencies transportation initiatives (e.g., by the Department of Transportation (DOTr) and Metro Manila Development Authority (MMDA)) as well as to establish clear policies and regulations in the aspects of safety, national standards and issuance of franchise. But this is yet to be collectively agreed by concerned agencies and put into concrete action. Moreover, the roadmap does not present a concerted vision that also incorporates the commercialization and future expansion of EVs and hybrids that are slowly but gradually gaining market momentum. Diversification of the roadmap to simultaneously include emphasis on these emerging technologies makes sense for the Philippines.

Capacity, awareness and information

14. Limited capacity both in terms of knowledge and technical expertise is prevalent at central and municipal agencies to develop and implement appropriate mix of strategic interventions for low carbon transport planning including vehicle, fuel and infrastructure standards; assessment, evaluation and accounting of project impacts. A need exists to improve the local data availability and quality to facilitate performance measuring and develop transparency to hold agencies and officials accountable. There is no clear system for monitoring, gathering, analyzing and disseminating information on developments and progress of urban transport projects. Improved data can enable performance based expenditure of public funds and improve transport planning. Moreover, local capacity barriers exists in providing operations and maintenance (O&M) services for imported fleet of EVs and hybrid vehicles. Typically for such fleet, O&M services are provided by the manufacturers for a certain period of time, after which there will be no local technical presence on site to perform the needed functions. Capacity building of local technical is inadequate, hence, compromising sustainability.

15. A key barrier to broader adoption of low carbon vehicles is little interest, understanding and awareness of its multiple benefits among decision makers and broader public. This is compounded by the dearth of visible proof on the roads which is key to stimulate awareness and information. Much of the general public is either unaware or are not clear on key aspects of low carbon transport options, particularly EVs and hybrids vehicles. In addition, public support for the patronage of clean fuel in order to push the market in adopting clean fuel technologies is lacking. There is concern and lack of understanding among the public about health and safety issues from battery operated vehicles. Policy makers and experts also lack credible information and awareness needed to exude the confidence to encourage their local jurisdiction in the use of low carbon vehicles. There is also a lack of good and reliable information system to inform policy makers and investors on the market prospects including risk return profiles of investment, bankable business models and financing opportunities. This will continue till there is a solid demonstration on the ground and without the information on performance, technological development and results of ongoing actions internationally.

16. Wider use of low carbon transport requires an improved understanding of operators/passengers needs and desires, as well as passengers willingness to change travel behavior. Such market research and survey are either largely missing or guarded as corporate confidentiality. The industry needs to gain a better understanding of "early adopters" and such information is essential for the development of appropriate policies to overcome market barriers and increase the demand for electric-drive vehicles.

Market and technology

17. The cost, performance and reliability of EVs and hybrids are key barriers to their commercialization in the Philippines despite advancements worldwide. These vehicles are also not commercially competitive compared to their higher carbon intensive counterparts, often compounded by inadequately established business cases including service delivery models, domestic after sales services and weak product standards. There are not many credible and certified O&M providers who can support the users in a reliable manner and there is a general lack of confidence among early adopters in the local O&M capacity. This is seen to be distinctly pronounced in the case of lithium ion batteries which are relatively new in the Philippines and after sales service are reportedly not well established. Moreover, warranties are not robust enough to give confidence to the users that they will receive replacements for legitimate damages. Although a local EV manufacturing/assembly industry exists, lack of critical scale to reduce manufacturing costs; negligible fiscal and non-fiscal incentives and the inability to recognize the need to stimulate investments in technology development and manufacturing capacity are limiting factors.

18. Lack of technology validation issues, absent support infrastructure such as integrated charging solutions, perceived range anxiety vis-à-vis the costs involved, and problems of reduced battery life due to overheating have been a major adoption blocker in the case of EVs. Vehicles using lithium battery may suffer thermal runaway if overheated and/or overcharged, and in extreme cases may lead to combustion.9 There have been some isolated cases in Metro Manila which may have compromised the confidence on lithium ion batteries. In extreme cases such events may even lead to decline in market penetration of vehicles.

19. With regards to business viability, fleet operators have reported that the fare charged to passengers by EVs and hybrid operators are not reflective of either the higher investment and associated costs or the higher technology risks involved. Currently, there is no preferential tariff for commuters opting to take EVs or hybrids public vehicles. For instance, the fare charged by an electric van is the same as its conventional counterpart, which is essentially pegged to the price of oil. As the price of oil has recently dropped, the minimum fare has gone down to US$ 16 cents (PHP 7.50) from US$ 18 cents (PHP 8.50), as of the writing of this ProDoc. At this rate, the operation of the EV fleet is unfeasible due to the low returns on investment. Operators

[9] Spotnitz and Franklin (2003) Abuse behavior of high-power, lithium-ion cells. Journal of Power Sources, 113(1). 81-100.

have submitted a petition to LTFRB to create a new vehicle class from EVs in the public transportation sector with a proposed fare of at least US$ 26 cents (PHP 12.00) for the first four kilometers and US$ 2 cents (PHP 1.0) for the succeeding kilometers for operations to keep afloat. This has not been approved yet.

Investment and access to finance

20. Offering low carbon urban transport services require significant investments but access to upfront capital has been a persistent hurdle to operators, suppliers and manufacturers who have championed the cause of EVs and hybrid vehicles in the Philippines. Much of available financing, by and large, are more inclined to prioritizing road expansion and infrastructure development to facilitate increased motorization rather than striving for a comprehensive urban transport development. There is insufficient knowledge of the financial sector about emerging low carbon transport technologies and lack of capacity to evaluate related investment opportunities. Although, overall, there is an absence in dedicated loan facilities or financing instruments specifically created to facilitate low carbon transport solutions, some financial institutions are a little ahead. The Development Bank of the Philippines (DBP) is one such institution which maintains a Green Financing Program as the bank's umbrella program for the environment sector that supports the Philippine government's objective of a cleaner and healthier environment. DBP has allocated slightly over US$ 400m (PHP18.9 billion) for the program, which is designed primarily to assist industries and local government units (LGUs) in the integration of environmentally-friendly processes and technologies, including green transport. The fund is open for access by both the private and government sectors. DBP claims a US$ 230m (PHP 10.9 billion) in pipeline projects under this program. Similarly, the Land Bank of the Philippines has a programme called REWARD/Electric Vehicle Project. In spite of this, many low carbon fleet operators, suppliers and manufacturers are not clear on how to access the funds, eligibility requirements, modalities and procedures, etc. Those who have tried in the recent past have expressed concerns over stringent (collateral) requirements and high cost of financing owing to the real and perceived risks of new technology at its infancy stage in comparison to its IC counterparts; long drawn out procedures; capability of small borrowers to prepare and present required documentation. Tedious requirements to provide/release financing is primarily influenced by lack of confidence on the technology; perception that the sponsors and business models are unreliable; absence of standards for the technology; lack of technical expertise of financial institutions on appraising new technology and related value chain, and lack of track record/credibility of investors.

21. Dearth of proof of concept and demonstration of bankable business models also contribute to the fact that low carbon transport projects are not easily able to obtain equity investment from potential investors, nor debt requirements from commercial banks. Some of the key business actors that were consulted during the project formulation stage indicated that they had to use 100% equity financing from their own shareholders to purchase its initial fleet because of this phenomenon.

22. There are existing government funds including the Special Vehicle Pollution Control Fund (SVPCF) but the implementation procedures and requirements for fund

disbursement are still unclear and the scope of fund utilization based on operational manual is very limited. The SPVCF is one of the resources that the DOTr manages to sustainable transport initiatives including support the low carbon transport deployment. But SVPCF procedures and guidelines need to be more pronounced in considering low carbon solutions as one of its priority investments.

Stakeholder and Baseline Analysis

Stakeholders Analysis

23. The Stakeholders that will play a key role on the Project are listed in Table 1 below. The main stakeholder for the implementation of the Project is the Department of Transportation (DOTr). It is the executive department of the Philippine government responsible for the maintenance and expansion of viable, efficient, and dependable transportation and communications systems as effective instruments for national recovery and economic progress.

Table 1. Key Stakeholders

Name of the Agency/ Organization	Mandate	Role in the Project
Department of Transportation (DOTr)	DOTr is responsible for the maintenance and expansion of viable, efficient, and dependable transportation systems as effective instruments for national recovery and economic progress	DOTr will serve as the lead agency for the implementation of the Project and the chair of the PSC. DOTr will coordinate with UNDP and implementing partners, and relevant stakeholders regarding the activities of the Project. It will also provide administrative support, project management, monitoring, and financial management.
Department of Science and Technology (DOST)	DOST is responsible to formulate, adopt, and implement scientific and technological R&D strategies in areas identified as vital to the country's development.	DOST will be a member of the PSC. It will provide technical expertise on LCTs, solar charging station and technical documents that will be developed. The Project will also leverage on the activities that they co-implement with DOTr such as the work on fast charging station. DOST will also contribute in the development of LCT training curricula, guidelines, protocols and standards on LCTs.
Department of Energy (DOE)	DOE is mandated to prepare, integrate, coordinate, supervise and control plans, programs, projects and activities of the Government relative to energy exploration, development, utilization, distribution and conservation.	DOE will also serve as member of the PSC. DOE is expected to provide technical expertise on LCTs and supportive infrastructure such as solar charging station. It will also help in the development of training curricula guidelines, protocols and standards on LCTs and their supportive infrastructure. DOE will also share its experiences on the implementation of E-trikes and will closely coordinate Project activities relevant to E-trikes and alternative fuel.
Department of Environment and Natural	DENR is responsible for the conservation, management, development, and proper use of the	DENR will be part of the PSC. DENR will coordinate with DOTr and provide expertise on the development of

Resources (DENR)	country's environment and natural resources, as well as the licensing and regulation of all natural resources.	guidelines, policies and standards on LCTs and supportive infrastructures especially on environmental standards such as waste disposal of acid lead batteries for EVs, environmental compliance for LCT manufacturers and certification.
Climate Change Commission (CCC)	CCC serves as the Secretariat of the Climate Change Adaptation and Mitigation Cluster. Cabinet Cluster on Climate Change Adaptation and Mitigation according to EO 43 approved by the President to serve as a venue and mechanism for coordination, harmonization, complementation, and synergy among the Departments and other Government instrumentalities with the main purpose of attaining national development goals and objectives, as disaggregated into annual performance targets.	CCC will be part of the PSC. It will support the Project by providing a significant role on interagency coordination. It will also support the Project by endorsing the activities as well as promote the LCT initiatives in and outside the country. CCC will also contribute to the development of policies with special focus on climate change adaptation and mitigation.
Technical Education and Skills Development Authority (TESDA)	TESDA is the government agency tasked to manage and supervise technical education and skills development (TESD) in the Philippines. It was created by virtue of Republic Act 7796, otherwise known as the "Technical Education and Skills Development Act of 1994".	TESDA will support the Project by contributing to the development of the training curriculum on LCTs and its supportive infrastructures. It will also help in piloting the training activities and institutionalization of training that are not academic related and do not have a link to university course, vocational course. TESDA will coordinate closely with DOTr, DOST and DOE in the development of the training curricula. TESDA will certify institutions that are capable of giving/facilitating LCT and supportive infrastructure training. Moreover, TESDA will also certify the technicians.
Bureau of Product Standards (BPS)	BPS-DTI is the national standards body that formulates Philippine National Standards (PNS) through its Technical Committee Method and Fast Track Method. BPS ensures that the standards are in line with the	BPS-DTI will support the Project through the formulation of the Philippine National Standards LCTs parts, such as lithium ion batteries for vehicles, parts of EV chargers. It will also provide technical expertise on the development

	existing national and international standards.	of policies, standards, protocols and guidelines that will comply with national and international standards.
The Land Transportation Franchising Regulatory Board (LTFRB), Land Transportation Office (LTO)	Directly under DOTr, LTFRB is responsible in promulgating, administering, enforcing, and monitoring compliance of policies, laws, and regulations of public land transportation services. LTO is responsible for inspection, registration of motor vehicles, issuance of permits and licenses, and enforcement of land transportation laws, rules and regulations.	LTFRB and LTO will give substantial support on the review regulations on registration and franchising of LCTs. They will also support important studies such as the route rationalization, which will help identify available routes that will open for issuance for new franchises. It will also support and participate in the review on the registration policies/guidelines for LCTs.
National Grid Corporation of the Philippines (NGCP)	System operator of the Philippine power grid that balances the supply and demand of electricity to efficiently serve all customers including power generators, private distribution utilities, electric cooperatives, and government-owned utilities.	The Project will work closely with the NGCP in the grid impact assessment and identifying issues pertinent to integration of the charging process in the grid and reinforcing the grid for future EV uptake.
Private Sector		
Green Frog Hybrid Buses	Green Frog is an intercity bus company in the Philippines that uses hybrid buses (simultaneously propelled by an electric motor and a diesel engine).	Green Frog will support the Project by implementing a demonstration project that runs additional 15-20 hybrid buses.
Global Electric Transport	GET manufactures and operates the COMET EVs. It aims to provide sustainable, intelligent and inclusive transportation solutions, guided by the company's pillars: green mobility, smart technology and social enterprise.	GET will support the Project by implementing demonstration projects of 56 additional EVs in selected cities such as Angeles City and Cebu City.
Electric Vehicle Expansion Enterprises, Inc. (EVEE-I)	EVEE-I is a project proponent for the e-jeepney modernization program in the Philippines. It aims to replace ageing and dilapidated diesel powered jeepneys in the Philippines with e-jeepneys.	EVEE-I will support the Project by implementing demonstration projects of additional 40 e-jeepneys in Alabang, Muntinlupa City and Lancaster, Imus City.
Academe, Civil Societies and Non-Government Organizations		

University of the Philippines National Center for Transportation Studies (UP-NCTS)	The National Center for Transportation Studies is a research and training center. It is tasked to upgrade the capability of government personnel concerned with transportation through intensive and practical training in the fields of traffic engineering, planning and management. NCTS offer technical expertise on traffic engineering and transportation planning, and advocates environmentally sustainable transport (EST), including low carbon transport, road safety, and people-friendly transport infrastructure.	NCTS will support the project by providing technical expertise on the development of policies, protocols, guidelines and standards. NCTS can also assist in facilitating the training activities and carrying out technical researches such as route measurement capacity and feasibility studies.
Institute for Climate and Sustainable Cities (iCSC)	The iCSC is a non-profit group working on sustainable energy solutions and fair climate policy. iCSC is behind the Climate-Friendly Cities (CFC) initiative, which pioneered the e-jeepney revolution and the move to integrate sustainable transport with clean energy generation.	iCSC will support the Project by providing of feedback and technical expertise on EV guidelines policies, protocols and training curriculum. iCSC will also involve in workshops, meetings and field visits.
Electric Vehicle Association of the Philippines (EVAP)	EVAP aspires for the establishment of a national development program for electric vehicles that is anchored on the existing Motor Vehicle Development Program for the automotive industry.	EVAP will be involved in the development of policies and plans, guidelines and standards; particularly, on the manufacturing and operation of e-jeepneys.
Government Finance Institutions		
Development Bank of the Philippines (DBP) and Land Bank of the Philippines (LBP)	The GFIs are the country's major conduit of international funds from multilateral and bilateral institutions for official development assistance (ODA) programs and grants. Development thrusts on economic pump-priming and program-type lending to strategic sectors of the country. The Bank's development thrusts are primarily focused on four priority areas: production infrastructure, social infrastructure, distribution infrastructure, and	GFIs will support the Project by providing financial assistance to project developers. They will participate in workshop and meetings for the improvement of their guidelines on loans and other available funds. GFIs will also help in the formulation of financial strategies and barrier removal to increase investment in low carbon transport projects. Additionally, they will also be involved in the development of LCT guidelines, policies, programs, guidelines and standards.

	environmental management.	

Baseline Analysis

24. The development of low carbon transportation systems are being supported by a number of on-going and upcoming activities, projects and programme. In most cases the private sector and non-governmental organizations at the national levels have been at the forefront with significantly heightened public sector interest mostly from key ministries such as the DOTr, DOST and DOE. Although major low carbon transport related initiatives are mostly driven at the national level their impact has been fully dependent on the interest and capabilities of the local authorities. There is a growing recognition that a concrete package of policies and investments that simultaneously target key aspects of low carbon transport system is required to systematically reduce the carbon footprint of the transport sector in a sustainable and timely manner. Estimates suggest that the transport sector's GHG contribution can be reduced by over half through intensive and accelerated implementation of a diverse and integrated package of measures that promotes shifts to lower emitting transport modes, fuel efficiency improvements, and transport demand management. More specifically, technical vehicle improvements such as hybrid, EVs and biofuels have been identified as having high abatement potentials. In response, the Government of the Philippines has adopted a set of actions, which include improvement in the efficiency and quality of public transportation systems, as well as, a shift towards low emitting modes for urban mobility. Some of the targeted interventions towards this end that are considered as baseline projects to the GEF Project are as follows:

Table 2. Baseline Projects

Project Name & Implementer/Owner	Brief Baseline Description & Implementation Period	Linkage to GEF Project	Estimated Budget, USD
Department of Transport (DOTr) - Public Transport Modernization Programme and SVCPF supported projects on (a) vehicle emission testing and inspection; (b) environmentally sustainable transport; institutional capacity building and public transport development	The DOTr recently initiated comprehensive programme that aims to upgrade public transportation systems through a combination of actions while reducing energy consumption and pollution from road transport by promoting more efficient vehicle technologies and alternate fuel vehicles coupled with related policy and regulatory measures. The interventions address systematic improvement of vehicle emissions testing and inspection; advance traffic and pollution monitoring protocol and analysis frameworks; formulating transport related GHG emission factor; establish motor vehicle emission type approval system for light and heavy vehicles. DOTr is also planning a Bus Rapid Transit programme for key urban areas where detailed techno-economic feasibility assessment and corridor detailed engineering will be finalized with the aim of increasing mass rapid transit in the country. A techno-economic feasibility assessment has been planned with the intention of investigating the viability of low carbon buses (specifically hybrid and EVs) along the BRT corridor. The initiative is envisaged to be realized through public private partnership for which	The enhanced version of these baseline activities are envisioned to become part and parcel of the Project addressing the achievement of policies supportive of low carbon transport. Other baseline activities that will be subsumed or enhanced by the GEF project include vehicle testing guidelines, standards and regulations for EVs and hybrids; supportive incentive mechanisms; awareness and capacity development activities of enforcers, monitoring agents and inspectors on aspects related to low carbon vehicles; practical demos of low carbon vehicles in BRT; as well as parallel and series hybrid public utility vehicles; establishing modern planning tools, improved MIS with features to capture low carbon transport parameters in the registration and franchising; thereby facilitating easier analysis of vehicle registration and franchising statistics, which is helpful in planning and policy making purposes.	252,079,004

	private sector engagement framework, contract management guidelines will be formulated. Likewise, DOTr is finalizing the guidelines for the SVPCF implementation for supporting environmentally sustainable transport and prioritizing low carbon solutions. Efforts are also underway where the DOTr is engaging with government financial institutions such as Development Bank of the Philippines to investigate financial instruments in support of low carbon transport and to stimulate private sector participation. In addition DOTr in collaboration with DOST plan to design and implement practical demonstration projects on diesel electric parallel and series hybrid vehicle systems. In collaboration with DOST, the Bureau for Product Standards, Department of Trade and Industry (DTI) have developed preliminary standards on low carbon vehicles such as ISO 8714:2012 (reference energy consumption for vehicles) and IEC 61851-1:2012 (conductive charging system - general requirements). These existing standards and guidelines have been adopted from international standards. The Government plans to further refine them to appropriately respond to the local conditions and to make them mandatory. The work on development of standards and guidelines for emerging low carbon vehicles such as EVs and hybrids are work in progress. Institutional capacity development and information		

	campaign on safe, environmentally sustainable transport systems are at the core of DOTr's plan in the short term. Mass media and awareness campaigns, consultations, information drive and other promotional activities will be ramped up focusing on communicating economic and social benefits of using low carbon transport. Assistance on establishing and institutionalizing inter-agency coordination and collaboration will be provided to ascertain concerted action in the aspects of defining an overall vision, identifying targets, financing, deployment, etc. Technical capacity development will be strengthened on streamlining the approval and registration of franchise. A Management Information System has been planned for registration and franchising services that will be anchored within the Land Transportation Franchising and Regulation Board. The baseline activities started around 2013 and are ongoing.		
The Department of Science and Technology (DOST) - Advance transport program	The has been implementing the Advanced Transport Project since 2011 which is a comprehensive support program for mass transport that comprises of, among other activities, development and deployment of Passenger Coach Capacity Automated Guideway Transit (AGT) Systems. In collaboration with the University of the Philippines, it has successfully	These potential baseline activities will contribute to the GEF Project by supporting and demonstrating modal shift. The enhanced baseline will include travel demand studies and its environmental impact monitoring (i.e., GHG emission and non-GHG) along the planned route of the AGT; review of designs of Fast Charging Stations. Improvement on the designs	10,254,237

	completed and commissioned a prototype of a 60-passenger coach AGT system. The AGT System Passenger Station is being finalized and DOST has proceeded with the feasibility assessment of an additional 120 passenger capacity coach AGTs. Expansion plan of AGT at UP Diliman route (PhilCOA to UP Ayala Mall, Katipunan) will be undertaken. This is accompanied by formulation of design and investment proposals on supportive infrastructures such as expansion of the tracks and passenger stations. The plan is to replicate these initial demos to additional cities. Local government units have expressed initial commitments in demonstrating the technology in their constituencies. In collaboration with BPS, DOST has recently initiated efforts on reviewing international certification particularly on safety of the AGT systems. Separately, as its commitment towards the propagation of electric drive vehicles DOST will be rolling out of Fast Charging Station Network for Higher Reliability or Urban E-trike Operation (Charm 2). The implementation period is from 2011 and ongoing.	and technical specifications that will cater not only to E-trikes but other kinds of EVs will be investigated as well as feasibility of investment in solar charging stations. Guidelines, protocols and standards, as well as training curricula developed and extended to TESDA for trials and full-fledged execution.	

Department of Energy (DOE) – Alternative Fuel Vehicle Programme	DOE has a comprehensive programme that support for deployment and replication of low carbon vehicles such as natural gas vehicles (NGVs), compressed natural gas (CNG), LPG and electric vehicles use for mass and intermediate transit. Some of the ongoing and planned activities include the review and update of NGV and CNG-related standards; formulation and execution of Emergency Response Protocol for Alternative Fuel Vehicles; on-road performance testing capacity building for drivers and operators and project implementers; inspection of LPG and CNG vehicles; information and communication activities; design and construction of support infrastructure such as CNG modular stations; dispensing stations for LPG; EV charging locations Likewise, through its E-trikes project DOE aims to deploy 100,000 E-trikes (or three wheeler pedicabs) nationwide to replace traditional gasoline-fed tricycles; reduce the transport sector's annual petroleum consumption by 2.8% (equivalent to 89.2 million liters) per year and achieve 79% carbon dioxide (CO2) footprint avoidance. Its primary focus is procurement, deployment of e-trikes and technology demonstration targeting the 'last mile commuters'. Technical capacity development training will be provided enhance local O&M capacity for e-trikes. Implementation period is up to 2019	The linkage to the GEF project include evaluation of feasibility, formulation of guidelines, standards and business models on supportive infrastructures such as solar charging stations that could be located at the fueling stations for CNG and/or NGV and could cater to both e-trikes and other EVs such as commuter minivans; grid impact assessment; policy advocacy, public perception analysis, awareness and outreach activities. The Project will also establish collaboration and cooperation between DOTr and DOE in terms of streamlining support to the review of the existing technical training activities to integrate specific modules on EVs and Hybrids; and role in TESDA to extend the training as part of their training program. Additionally, the Project will closely coordinate with DOE on the development of a more comprehensive Master Plan of low carbon transport commercialization.	500,000,000

Private Sector Investments	Private sector is leading the market in terms of trialing business models and deployment of low carbon transport for public services. Ongoing and planned investments include 10 hybrid buses that are currently operating and has plan to expand its operation to 300 buses in the future. Global Electric Transportation Co. Ltd. (GET) is operating 28 units of electric shuttles also known by its commercial name COMET. It is planning to expand to additional 300 units in 9 cities across the country. EVEE-I is currently operating 20 e-jeepneys and planning to scale it up to 40 units to 2 locations. The implementation period is until 2022.	The ongoing and planned activities of these 4 private sector entities can be part and parcel of the GEF project as demonstrations. Considering their expressed interest to be partners of the GEF project, their current low carbon transport activities will be subsumed into the GEF Project and can be enhanced with the inclusion of expedited facilitate the regulatory approvals, route rationalization assessments; demonstrate business models and facilitate financing; commission the demos; install supportive ecosystem, monitor energy savings and GHG benefits and so on.	10,296,610
Industry partners such as the Institute for Climate and Sustainable Cities (ICSC) and Electric Vehicle Association of the Philippines (eVAP)	Their ongoing activities include policy advocacy to ramp up fiscal and non-fiscal incentives for local EV manufacturers, assembly, conversion and importation of electric, hybrid vehicles. This includes the contribution to the successful adoption of the pending legislation on Alternative Fuel Vehicle Incentives bill; awareness and capacity development of policy makers, EV industry participants, and the civil society for the widespread promotion and commercialization of low emission vehicles. The EVAP targets to roll out 1m EVs in the medium to long term.	The pertinent activities such as policy advocacy and support, awareness and capacity development activities are envisioned to be enhanced and expanded in the GEF Project.	

Baseline Scenario

25. In the “business as usual” (BAU) scenario, the Philippines will undertake more urban transport projects but with more predilection towards road expansion and large infrastructure to facilitate the increased motorization rather than striving for a more sustainable and comprehensive urban transport development. Conventional fossil fuel based vehicles will continue to be largely prioritized leading the country along an unsustainable development path to higher GHG emissions from the transport sector with marginal abatement from its ongoing activities. Motorization rate is anticipated to grow at about 6% per year with corresponding emissions from overall road transport projected to 87 MtCO2e by 2030.

26. As a part of its continuing activities the DOTr and other key agencies such as DOST and DOE will continue their contributions towards the implementation of the NIP on Environment Improvement in the Transport Sector Low Pollution-Low Emission. But the actions will be uncoordinated, fragmented and inadequate focus on EVs and hybrids solutions. The pace of NIP implementation progress will be insufficient to realize visible impacts. Transport policy and regulatory support for low carbon solutions will remain insufficient, unstable and incomplete. Incentive programme to encourage private sector participation will remain weak.

27. The Environmentally Sustainable Initiatives in Transportation Unit (ESITU) of the DOTr functions as a project management team and provides coordination support for all SVPCF funded projects. These projects are mainly categorized as clean fuel initiatives, vehicle technology and service rationalization and development studies on environmental protection. In the BAU scenario, owing to capacity constraints, ESITU will be unable to significantly ramp up its coordination support to EVs and hybrid related interventions among agencies.

28. In the absence of a robust coordinating mechanism, realizing the development of supportive policy framework and regulations to facilitate the uptake of low carbon transport options, formulation and adoption of low carbon transport Master Plan; and vision on supportive infrastructures (e.g. charging station locations, right-of-way); guidelines for low carbon vehicle owners and manufacturers; and review of the provision of National Transport Plan to incorporate low carbon solutions will hardly materialize. Coordinated policy-making such as development of institutional framework and investment plans that support low carbon vehicle development and commercialization, will be challenging.

29. International experiences have exhibited that robust support ecosystem (e.g. charging stations in the case of EVs) is absolutely necessary to influence market penetration of low carbon transport. Incentive systems alone will not be effective if support infrastructure are not in place. The development of support infrastructure in the baseline scenario will be slow paced and will not be keep up sustain the interest from project developers, operators and service providers. The formulation and institutionalization of modern planning tools (e.g. database on the vehicle registration,

licensing and monitoring) will not be prioritized. Route rationalization assessments to identify and delineate routes that will ultimately provide investment signals to the private sector will be missing.

30. Confidence in vehicle technology, durability and performance will continue to affect perception of public and policy makers alike. Low emission buses, vans, scooters will continue to be perceived as risky investments and an unknown alternative to fossil fuel vehicles for the daily commute. This will be more pronounced in the absence of systematic procedures for vehicle testing and vehicle standards; EV charging protocol; local operations and maintenance capacity, etc. Local authorities continue to be concerned about safety hazards particularly of EVs and lack specific safety procedures to address these concerns. This, in turn, will inhibit policy support as well as successful approval of new vehicles and impede demonstration plans, thus restricting uptake in space and time.

31. In the baseline scenario, the financial sector also remains unaware and doubtful of the business prospects and returns on investment from low emission vehicle technology. They will lack the expertise and necessary tools to evaluate projects and provide innovative financing solutions. Acquisition of fund will be one of the hurdles for project proponents, particularly small businesses and start-ups due to the voluminous documentation requirements and tedious process of application. Dedicated financing for individual purchase of low carbon vehicles will also be missing, in the absence of both availability and demand for vehicles as well as lack of financial sector interest. There will not be enough demonstration of bankable business models to establish the viability of vehicle operation, supply, assembly and manufacturing. As a result, investors will be reluctant to invest on new emerging ideas and increased private sector investment is unlikely.

32. Demonstration and showcasing of low carbon transport initiatives will remain few and far between with ineffective dissemination of lessons and best practices. Public awareness will remain very limited and not sufficient to influence passengers' preferences to make a switch from fossil fuel to low emission vehicles.

33. The GHG emission of BAU on the public transport will increase from 16.351 million tonnes CO_{2eq} in 2007 to 23.6 million tonnes CO_{2eq} in 2020 and 30.157 million tonnes CO_{2eq} in 2030 (Table 3). This is based on the growing number of vehicles in the country, which is estimated at more than 8.25 million vehicles in 2015 to at least 10.53 million and 15.96 million in 2020 and 2030, respectively. Majority of these vehicles are operated on fossil fuel internal combustion engines.

Table 3. GHG Emission Estimates

	2007	2015	2016	2017	2018	2019	2020	2030
BAU, $ktCO_{2eq}$	16,351	20,555	21,135	21,730	22,339	22,964	23,604	30,157
Number of vehicles,	5.22	8.25	8.68	9.12	9.57	10.04	10.53	15.96

million								

Source: Results from the GHG Analysis using the information from LTO (2013)

2. STRATEGY

Project Rationale and Policy Conformity

34. The GEF Project is in line with Government of the Philippines policies and measures, including the Clean Air Act (1999) and Renewable Energy Act (2008), on the propagation of environmentally sustainable transport; increased utilization of indigenous, renewable energy and assuring energy security to mitigate GHG emissions. The Project will contribute to the achievement of the Sustainable Development Goals (SDGs) - more specifically SDG 11 - specifically in providing access to safe, affordable, accessible and sustainable transport systems for all expanding public transport, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities and older persons; as well as reduction of per capita environmental impact of cities, including by paying special attention to air quality. It also contributes to SDG 13 - taking urgent action to combat climate change and its impacts; and SDG 17, especially on promoting the development, transfer, dissemination and diffusion of environmentally sound technologies.

35. The Project responds to the emphasis highlighted by the Second National Communication (SNC) and intended nationally determined contribution (INDC), on the role of sustainable transportation in achieving the country's GHG emission reduction aspirations. The Project addresses to the priority identified in the GEF National Portfolio Formulation and is aligned to the GEF 5 Climate Change Objective 4: Promote energy efficient, low-carbon transport and urban systems. It will contribute to the reduction of GHG emissions through the avoidance of CO_2 emissions by promoting the widespread commercialization of low carbon interventions in the transport sector.

36. The rationale of this Project takes into consideration the potential GHG and non-GHG benefits of new and advanced low carbon transport technologies such as electric and hybrid vehicles in reducing GHG emissions. The strategic choice of the technologies selected for the Project are informed mainly by the overall recognition by the Government of the Philippines as well as the technology focus of the ongoing and planned baseline projects. If current investments and interest, essentially from the private sector is any indication, there is already a growing momentum and support towards hybrid and electric vehicles which are making slow but gradual inroads in key urban areas. The Government envisions to build on this momentum and ramp up the support to commercialize these new, advanced technologies. Other low emission technologies such as CNG, LPG and biofuels are already being addressed through the existing alternative fuels programmes of the DOTr and DOE. The cities of Makati, Quezon, Angeles, Cebu, and Imus are envisioned to be covered by the Project.

37. UNDP Philippines is well-positioned to implement the proposed Project given its long standing experience working closely at the national and local levels and coordinating partnerships across public and private sectors.

Country Ownership: Country Eligibility

38. The Philippines ratified the United Nations Framework Convention on Climate Change (UNFCCC) on 2 August 1994 as a commitment to address the impacts of climate change. Subsequently, the GoP ratified the Kyoto Protocol on 20 November 2003 which was ultimately in effect on 16 February 2005.

39. Ever since, the government has formulated and started to implement mitigation strategies to limit its GHG emissions. The strategies are reflected in the various sectoral plans particularly those of energy, transport and agriculture sectors. In 19 May 2000, the Philippines submitted its Initial National Communication to UNFCCC[10] while Second Communication was submitted on 29 December 2014.[11]

Country Drivenness

40. The proposed Project is in line with the major national policies and programs and related issuances that include the following:

- RA No. 9729 (Climate Change Act of 2009).
  - The First National Communication of the Philippines recognizes the transport sector as the most significant source of GHG emissions with over 35% of the national total. The Project is in line with the priorities called upon by the Second National Communication, which stresses on stimulating greater private-led investments, aggressively promoting commercially viable market for sustainable low emitting modes of urban transport.
  - Clean Air Act of 1999 and Biofuels Act of 2006 also highlight the significance of shift to low emitting transport modes in the country.
  - The National Framework Strategy on Climate Change, the National Climate Change Action Plan and the Philippine Development Plan (2011-2016).
  - The National Framework Strategy on Climate Change (2010-2022) incorporates the National Environmentally Sustainable Transport (EST) Strategy for the Philippines and the NIP on Environment Improvement in the Transport Sector.

41. The country's enthusiasm and resolve to promote low carbon transport was adequately reflected during stakeholder consultations, focal group meetings and one on one consultation with key agencies that have been held in conjunction with the LFA exercise. Stakeholders' inputs were obtained on project related issues, concerns and barriers regarding the development and commercialization of low carbon transport such as EVs and hybrid vehicles.

[10] UNDP (1999) The Philippines Initial National Communication on Climate Change. Available at http://unfccc.int/essential_background/library/items/3599.php?rec=j&priref=2739#beg
[11] UNFCCC (2014) Second National Communication to UNFCCC. Available at http://unfccc.int/resource/docs/natc/phlnc2.pdf

Design Principles and Strategic Considerations

42. The objective of the Project is to create an enabling environment for the commercialization of low carbon urban transport systems (e.g., electric and hybrid vehicles and AGT systems) in the Philippines. This will be achieved through 1) effective enforcement of policies and support provided for the promotion of low carbon modes of transport; 2) adopting and implementing low carbon transport plans and/or programs in major cities; 3) increasing private sector participation in the widespread deployment and commercialization of low carbon transport systems; and 4) increasing private sector investment in low carbon transport systems. The Project specifically targets low carbon public transport vehicles such as electric and hybrid buses, electric commuter vans such as e-jeepneys, automated guideway transit vehicles (AGTs), for mass public transport. And in doing so aims to shift transport demand from privately owned and conventional fossil fuel operated ICE vehicles. It does not include support to private cars. The Project will be in place for an implementation period of 4 years to ensure a greater likelihood of the Government meeting its targets for GHG emission reduction by supporting the local authorities and private sector as key partners in this mission.

43. With a combination of investment finance and technical assistance, the Project will address the root causes and key barriers identified during project preparation in order to facilitate enabling investment climate for the commercialization of low carbon vehicles. The Project will strengthen the capacity of policy makers, financial sector and the industry to support low carbon transport development, whilst at the same time undertaking concrete actions that will deliver emission reductions during the life of the interventions. In some cases these will be funded by GEF support and identified co-financing, however the project aims to leverage additional resources where possible, especially from the private sector, towards delivering the Project objectives.

Alternative Scenario

44. Under the alternative scenario with the support of GEF, it is expected that the barriers identified in paragraphs 12 to 24 will be diminished. The Project broadly assists the GoP to deliver on the objectives of the NIP, by implementing measures to realize low carbon and low-polluting transport systems.[12] Additionally, it also contributes to the intended nationally determined contribution (INDC) of the Republic of the Philippines to the UNFCCC, which is to undertake GHG (CO_2e) emissions reduction of about 70% by 2030 relative to its BAU scenario of 2000-2030 where the reduction of CO2e emissions will come from energy, transport, waste, forestry and industry sectors[13].

45. Policies supportive of low carbon transport including the Master Plan are approved and policy makers committed on its effective implementation, thereby

[12] National Implementation Plan on Environment Improvement in the Transport Sector Low Pollution-Low Emission. Available at http://www.dotc.gov.ph/images/front/other_matters/nip.pdf

[13] Intended Nationally Determined Contributions of the Philippines. Available at http://www4.unfccc.int/submissions/INDC/Published%20Documents/Philippines/1/Philippines%20-%20Final%20INDC%20submission.pdf

sending a strong signal to the market. Improved incentive structure including non-fiscal incentives (such as preferential parking, right of way, etc.) will be in place to stimulate private sector action and scale up investments.

46. Key agencies and stakeholders coordinate effectively with clarified roles and responsibilities and map out concerted actions in the pursuit of development and commercialization of low carbon transport interventions.

47. Fleet operators are more capacitated in the maintenance of their own low carbon vehicles resulting in smooth and continuous operation. Additionally, strengthened technology standards and guidelines result in high performance, durable and reliable operations and services.

48. Support infrastructure are in place and number of EV charging stations are increased substantially. Solar charging station becomes available on substantial and growing scale. New and successful business models for charging infrastructure are exhibited.

49. More number of private sector project developers, service providers, manufacturers and value chain actors are able to access financing at attractive terms from financial institutions and investors. This is due to enhanced awareness of the financial sector, sound business plans and confidence in better risk-return profiles of low carbon transport ventures. Loan policies and procedures get more streamlined and straightforward. As a result of the improved availability of financing, businesses are able to scale up their investments and become more competitive in the market.

50. Extensive awareness and mass media campaigns make a substantial number of urban commuters and policy makers aware of low carbon transport and its benefits. Dissemination of impacts of low carbon transport and formal avenue for trainings are enhanced.

51. With the support that will be given by GEF, it is expected that there will be increase in investments from the private and public sectors in the roll out of low carbon transport in the Philippines. With the Project interventions in the alternate scenario the direct GHG emissions reductions by the end of project in 2021 will be 150,074 tonnes of CO_2eq. Subsequent direct GHG emission reductions after the project through to the lifetime of the investments are expected to provide about 375,186 tonnes of CO_2eq. More details can be seen in Annex II.

Project Objective, Outcomes and Outputs/Activities

52. The objective of is to create an enabling environment for the commercialization of low carbon urban transport system in the Philippines. This objective will be realized through the removal of the key barriers discussed in the Barrier Analysis section. The Project is structured into three components comprising:
    - Component 1: Policy support for the promotion of low carbon modes of transport

- Component 2: Awareness and institutional capacity development
- Component 3: Investment on low carbon transport systems

53. The expected outcomes of these components are:

- Outcome 1: Effective enforcement of policies and support provided for the promotion of low carbon modes of transport
- Outcome 2: Adopted and implemented low carbon transport plans and/or programs in major cities
- Outcome 3.1: Increased private sector participation in the widespread deployment and commercialization of low carbon transport systems
- Outcome 3.2: Increased private sector investment in low carbon transport systems

54. This section gives the details of these outputs and activities for the three components.

COMPONENT 1: POLICY SUPPORT FOR THE PROMOTION OF LOW CARBON TRANSPORT

55. The effective development and implementation of low carbon transport system relies on a strong policy level support and guidance from the national government emphasizing the imperative of sustainable transport solutions. While the complex and distributed nature in which GHG emissions are generated makes transport a particularly difficult sector to dramatically reduce emissions, there are nevertheless, appropriate mix of strategic options that national policy makers can adopt to reduce the carbon footprint. The successful delivery of the outputs from the activities under this component will contribute to effective enforcement of policies and regulatory frameworks on low carbon transport. In doing so, the component will address the planning and investment barriers discussed in the preceding section.

Outcome 1: Effective enforcement of policies and support provided for the promotion of low carbon transport

56. To achieve Outcome 1, the following Activities will be carried out to deliver each of the Outputs listed below.

Summary of expected outcomes, outputs and expected activities in Outcome 1

Outcome	Outputs	Activities
1: Effective enforcement of policies and support provided for the promotion of low carbon transport	1.1: Developed supportive policy framework and regulations to facilitate the uptake of low carbon transport systems	1.1.1 Review and analysis of existing national and international policies and regulations
		1.1.2 Amend existing and design new policies and regulations
		1.1.3 Lobby and consensus building with policy makers
		1.1.4 Implement policy pilots with monitoring, evaluation and dissemination of results
		1.1.5 Table the amended and new policies and regulations for adoption

	1.2: Established coordination mechanism among agencies involved in low carbon transport planning and development	1.2.1 Review and formulate inter-agency coordination mechanism.
		1.2.2 Conduct stakeholder consultations to solicit feedback, refine and endorse the coordination mechanism.
		1.2.3 Design and implement a monitoring plan to track and evaluate the results of the coordination structure.
	1.3: Developed Low-Carbon Transport Master Plan	1.3.1 Prepare draft low carbon urban transport Master Plan.
		1.3.2 Organize national consultations, build consensus and endorse the Master Plan
		1.3.3 Consensus building and adoption of the Master Plan
		1.3.4 Organize nationwide outreach and dissemination workshops to promote the Master Plan
		1.3.5 Preparation, consensus building and finalization of the roadmap on support infrastructure.
	1.4: Developed guidelines for local government units on the approval of related supportive infrastructures (e.g., charging station locations, right-of-way)	1.4.1 Design and finalize the guidelines for supportive infrastructures
		1.4.2 Capacity development of local governments on the streamlined processes to expedite the approval of supportive infrastructure
		1.4.3 Monitor the implementation and update the guidelines.
	1.5: Approved and implemented low carbon vehicle operators and manufacturers guidelines	1.5.1 Draft the guidelines for low carbon vehicle operators, facility managers and manufacturers
		1.5.2 Design and conduct capacity development trainings on the key features of the guidelines
		1.5.3 Design and conduct post training evaluation survey of the trainees

57. ***Output 1.1: Developed supportive policy framework and regulations to facilitate the uptake of low carbon transport systems***

The Output comprises the following activities:

- *Activity 1.1.1: Review and analysis of existing national and international policies and regulations.* At the national level, policies and regulations on climate change, environment, and land transport policies including Clean Air Act, Climate Change Act, and Land Transportation and Traffic Code and Department Order No. 93-693 will be reviewed. In order to enable commercialization of low carbon urban transport systems development and successful enforcement of a strong policy support is needed. Hence this review of existing policies will serve as basis of key policy elements to be selected and supported in this Project. Lessons from the implementation existing policies and plans will be taken into account, for instance, the challenges in the enforcement of the National Transport Policy (NTP) and implementation of the several plans such as Environmentally Sustainable Transport. Factors that were seen important towards

enforcement of policies will be taken into account to inform the drafting process in Activity 1.1.2. Similarly, existing international policies and regulations on low carbon transport will be reviewed and analyzed. For instance, China and Japan and South Korea have fairly matured incentive systems in place. Innovative policies that have been tried and tested in the other parts of the world but novel in the Philippines will be reviewed and considered. Based on these analyses, key policy elements will be identified and recommendations proposed for discussion among policy makers.

- *Activity 1.1.2 Amend existing and design new policies and regulations.* Based on policy review and analysis above, amendments and new policies will be designed in areas covering franchise application, exemption of Unified Vehicular Volume Reduction Program (UVVRP) or number coding scheme. Priority gaps - identified in Activity 1.1.1 - in existing polices and strategic plans for the promotion of low carbon transport will be addressed. This includes lack of fiscal and non-fiscal incentives and supportive infrastructures and their provisions in the NTP. Additionally, new incentive policies such as purchase subsidies, tax rebates, tax credits, exemption from taxes and charges, discounted tolls and parking fares as well as non-fiscal incentive such as access to priority lanes, preferential free parking spaces, priority in registration and issuance of plate numbers, charging infrastructures support and priority on new routes. The activity will also review and update of the Senate Bill 2151, which is an act providing incentives for the mainstream use, manufacture, assembly and conversion of electric, hybrid and other alternative fuel vehicles and for other purposes.

- *Activity 1.1.3 Lobby and consensus building with policy makers.* Organize advocacy and consultation workshops with policy makers, local governments and key stakeholders to solicit feedbacks and consensus on the draft policies. In amending existing and developing new policies and regulations for commercialization of low carbon transport, political will makes it a national priority, and champions who can clearly present and discuss with key legislators and implementers are needed to steer the process in the right direction. Transition of political figures from one to another, depending on their priorities, can break a significant legislative agenda. Hence, it is important that during its development, multi-stakeholders with their clear roles and responsibilities are engaged. Also Stakeholders' consensus on the policy type or form will be solicited. Local governments will be extensively engaged and agreements solicited for policy piloting in their jurisdiction.

- *Activity 1.1.4 Implement policy pilots with monitoring, evaluation and dissemination of results.* Implementation plan for the policy pilots will be formulated. At least two designed policies will be pilot tested which includes a vehicle operations and another in supportive infrastructures. Monitoring and evaluation plan will be prepared and implemented to document results and lessons learned based on which the draft policies will be adjusted and/or improved. The lessons derived from the pilots will feed in to Component 2 to inform the awareness activities. This activity will also closely coordinate with DOTr's Environmentally Sustainable Initiatives Transportation Unit (ESITU) ongoing activity whereby it is planning to formulate, in collaboration with GIZ, NAMA and associated MRV framework in the transport sector. Through the same platform the Project will also coordinate with the Cities – Environment – Transport

(CET) Project in the Philippines implemented by DOST and supported by GIZ on relevant interventions.

Activity 1.1.5 Table the amended and new policies and regulations for adoption. Based on the lessons derived from the pilots final draft of the policies and regulations will be prepared, discussed with stakeholders and tabled for adoption.

58. ***Output 1.2: Established coordination mechanism among agencies involved in low carbon transport planning, development and implementation***

The Output comprises the following activities:

- *Activity 1.2.1 Review and formulate inter-agency coordination mechanism.* This activity will review and assess best practices on coordination structure for transport planning, development and implementation and recommend options. The capacity and capability of agencies taking with critical roles will be assessed. Some of the agencies that will be included in the scope of assessment include DOTr, DOE, DOST, DTI, private sector, industry association and civil society. Roles and responsibilities as well as procedure for stakeholders' interaction will be clearly defined. Close consultations with key agencies will be an ongoing process during this activity to secure early buy in from agencies.

- *Activity 1.2.2 Conduct national stakeholder consultations to solicit feedback, refine and endorse the coordination mechanism.* Consultation meetings will be organized with the stakeholders to present the draft coordination structure, solicit feedback, build consensus and table for endorsement. It is envisioned that all key responsible parties will endorse the mechanism as an indication of their commitment and support towards making a concerted approach in achieving low carbon urban transport vision. Efforts will be made to secure a legal authority through an Executive Order (EO) that will provide a foundation to the coordination structure enshrined in the draft Senate Bill 2151.

- *Activity 1.2.3 Design and implement a monitoring plan to track and evaluate the results of the coordination structure.* The inter-agency mechanism will be trialed and tested on a pilot basis while waiting the EO approval. A monitoring plan will be prepared and executed to track the achievements, effectiveness, efficiency of the coordination structure. Lessons learned will be shared and used to further refine the structure, as necessary.

59. ***Output 1.3: Developed Low-Carbon Transport Master Plan***

The Output will be delivered through the following activities:

- *Activity 1.3.1 Prepare draft low carbon urban transport Master Plan*. The Master Plan will serve as a long-term strategic plan with the objective of promoting low carbon mobility and achieving commercialization of low carbon vehicles while reducing

energy consumption and GHG emissions from the transport sector. It will include comprehensive policies; collaborative approaches to encourage engagement from agencies, industry, private sector and civil society; key considerations on technology; support infrastructures and related value chain; implementation at local levels and financing with short, medium and long-term vision. The Master Plan is envisioned to cover electric drive including pure battery-electric vehicles (EVs); plug-in hybrid electric vehicles and non-plug-in hybrid vehicles. Other efficiency improvements in current ICE vehicles and alternate fuels such as biofules, CNG and LPG will be addressed under the existing Alternate Fuel Vehicle (AFV) roadmap. This scope will be reviewed in detail during project implementation and finalized upon in-depth national consultations. The purpose of the Master Plan is to help establish a holistic and big picture vision for the deployment of low carbon vehicles; set appropriate, feasible goals and milestones; and identify the steps to achieve them. The Master Plan will employ a balanced approach between technological advancements and changes in transport behavior. It will emphasize on the strategy to avoid unnecessary journeys and reduce trip lengths, shift demand to low carbon vehicles away from fossil fuel vehicles and improve the carbon intensity of vehicles. It also outlines the role for different stakeholders and describes how they can work together to reach common objectives. It will include appropriate metrics for energy use, emissions and safety standards, to address specific related issues. The Master Plan will be developed through extensive and in-depth consultations with key agencies, local governments and stakeholders. A technical working group (TWG) will be formulated to lead the process of, drafting the Master Plan, conducting development workshop, national consultations, local level lobbying and consensus building. The TWG is composed of planners with technical expertise to contribute in the development of Master Plan. DOTr will be take the lead with in cooperation with relevant stakeholders from different line agencies, private sector, civil society, development partners and other relevant organizations and partners as members that will support the development process. Organize planning workshops with policy makers, government agencies, local governments and key stakeholders to gather consensus and feedbacks on the Master Plan. Local government priorities will be identified and integrated to the Master Plan.

- *Activity 1.3.2 Organize national consultations, build consensus and endorse the Master Plan.* Planning workshops will be organized with policy makers, government agencies, local governments and key stakeholders to gather early inputs and solicit consensus on the key items of the Master Plan. Local government priorities will be identified and integrated too. Organization and conduct of national workshops on the Master Plan. At the national workshops, sessions will be held once the draft plan is ready to deliberate on key topics based on the components of the Master Plan in Activity 1.3.1. The workshop will attract attendance of key policy makers, local level officials and other relevant stakeholders hold substantial discussions that will lead to consensus building on, adoption of, and implementation of the Master Plan. In the end, the adopted Master Plan may will incorporate attendees' inputs solicited from the attendees of the national consultation. Buy-in from the local government will be secured.

- *Activity 1.3.3 Consensus building and adoption of the Master Plan.* Organize planning workshops with policy makers, government agencies, local governments and key

stakeholders to gather consensus and feedbacks on the Master Plan. Local government priorities will be identified and integrated to the Master Plan. Moreover, buy-in from the local government will be secured.

- *Activity 1.3.4 Organize nationwide outreach and dissemination workshops to promote the Master Plan.* Outreach and dissemination plans will be prepared and executed to enhance awareness and outreach nationwide to promote the Master Plan once it is adopted. This will supplement the national workshops and consultation workshops organized during planning and formulation of the Master Plan and will go a long way in enhancing its visibility and implementation.

- *Activity 1.3.5 Preparation, consensus building and finalization of the roadmap on support infrastructure.* The need for establishing regular charging infrastructure support is an integral part of an EV promotion programme. The availability of charging stations and uptake of EVs have strong and proven correlation. International experience suggests that it is one of the toughest technical, financial and organizational challenges to overcome. Therefore, it is strategic to formulate a roadmap that not only guides the immediate development and commissioning of support infrastructure in the short term but also provides an overall vision towards medium to long term planning and to be consistent with the pace of EV deployment. This is particularly relevant to EVs where Some of the considerations that the roadmap will cover include vision, uptake target, strategies, players, implementation timeline, availability of financing for support infrastructure operators, availability of cost effective and reliable equipment and services (e.g. EV chargers), in-depth assessments on charging standards (e.g. IEC, SAE, CHAdeMO, etc.) and determination on the adoption of a charging standard, determination of charger requirements and suitability for the Philippines power supply and user profile., ensuring grid, supply and utility readiness and network planning, setting targets for number of chargers, locations types etc., operations and maintenance personnel, business models for support infrastructure, etc. The infrastructure roadmap will be thoroughly consulted with relevant stakeholders, feedback gathered and addressed before finalizing.

60. ***Output 1.4: Developed guidelines for local government units on planning and approval of related supportive infrastructures (e.g., charging station locations, right-of-way)***

- *Activity 1.4.1 Design and finalize the guidelines for supportive infrastructures.* International experience so far suggests that policies and incentives are key to influence commercialization of low carbon transport but will not be effective unless support infrastructure is in place. Support infrastructure in this case has been considered to constitute charging stations for electric drive vehicles; dedicated passenger stops; infrastructure for parking and right of way, to name a few, for low carbon public fleet. These are necessary to help bolster market propagation and acceptance of low carbon drive. To achieve this, support and real action from local authorities is crucial. This activity will formulate guidelines that will assist local governments in planning and promoting low carbon vehicles in their jurisdictions. Some of the key considerations include technology requirements for charging

infrastructure, safety issues, feasible locations, cost considerations, appropriate parameters to monitor the effectiveness of the support infrastructure and more. Where applicable, international standards that have been adopted by the Bureau for Product Standards (BPS), Department of Trade and Investment (DTI) for EV infrastructure will be included in the guidelines (e.g., PNS IEC/TR 61851-1:2012 Electric Vehicle Conductive Charging System – Part 1: General requirements).

- *Activity 1.4.2 Capacity development of local governments on the streamlined processes to expedite the approval of supportive infrastructures.* The activity will assist local governments in preparing and streamlining approval processes for the deployment of support infrastructure such as publicly available charging stations and provisions for limited use of right-of-way for electric drive charging. Local governments of Angeles City, Cebu City, Imus City and Makati City have expressed their interest for collaboration as these are the authorities have ongoing and planned activities to support the establishment of support infrastructure. Post training evaluation survey on the impact of the training will be designed and conducted to ascertain the impacts of the training.

- *Activity 1.4.3 Monitor the implementation and update the guidelines.* Monitoring plan will be designed and executed to track the progress and outcome of the implementing the guidelines. Results such as challenges and lessons learned will be documented and used for revision and subsequent update of the guidelines.

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61. ***Output 1.5: Approved and enforced low carbon vehicle operators and manufacturers guidelines.***

The Output comprises the following activities:

- *Activity 1.5.1 Draft guidelines for low carbon fleet operators, facility managers and manufacturers.* This will include information on policies, incentives, approval processes and requirements. Information related to existing regulations and safety standards such as Toxic Substances and Hazardous and Nuclear Waste Control (1990), Occupational Safety and Health Standards (1989), fire protection, environmental regulations will also be included as fleet operators, assembly and manufacturers are expected to conform to these existing regulations. Best practices on electro-mechanical components; applicable operation and maintenance procedures of vehicles and infrastructure will be presented in easy to follow, user-friendly manner with specific focus on electric drive and hybrid vehicles. These guidelines will be prepared in consultation with and inputs from appropriate agencies, for instance, Bureau of Product Standards (BPS) for electro-mechanical components, operations and maintenance; EMB-DENR on environmental standards while Occupational Health and Center on OSH Standards. International experiences will be reviewed as a part of this process to inform the guidelines. The adoption and implementation of the guidelines will require a Department or Joint Administrative Order.

- *Activity 1.5.2 Design and conduct capacity development trainings on the key features and application of the guidelines.* Capacity development training modules will be

developed to deliberate on the key features, applicability and benefits of the guidelines among fleet operators and manufacturers.

- *Activity 1.5.3 Design and conduct post training evaluation survey of the trainees* to ascertain the usability and effectiveness of the guidelines as well as impact of the training. The survey will also solicit feedback from the trainees on the aspects of the guidelines and training modules that can they deem are crucial or deserves enhancement.

COMPONENT 2: AWARENESS AND INSTITUTIONAL CAPACITY DEVELOPMENT

62. At the heart of measures available to improve the quality and competitiveness of the urban transport lies a focus on institutions and the character of relationships among various related agencies involved in urban transport. Fragmentation of responsibilities among multiple government agencies usually has taken a toll on the management and quality of urban transport. Therefore, it is crucial to enhance their capacities for a better level of coordination. Moreover, fundamental realization of improved capacity of agencies to better plan, manage, operate and monitor performance of transport operations is equally imperative. The successful delivery of the outputs from the activities under this component will contribute to strengthening the institutional capacity of major stakeholders, consequently resulting in low carbon transport plans and/or programs being adopted in at least two cities. As such, the component will address barriers pertaining to the lack of information, awareness and institutional capacity.

Outcome 2: Adopted and implemented low carbon transport plans and/or programs in major cities

Summary of expected outcomes, outputs and expected activities in Outcome 2

Outcome	Outputs	Activities
2: Adopted and implemented low carbon transport plans and/or programs in major cities	2.1: Developed capacity of planning institutions and regulatory agencies on (a) coordinated policy making, investment planning and implementation of low carbon transport; and (b) modern planning tools, registration and licensing of low carbon vehicles	2.1.1 Conduct needs assessment of decision makers and mangers on low carbon transport policy, planning, implementation and management
		2.1.2 Design and execute capacity development workshops for policy makers, regulators, managers both at the central and local levels
		2.1.3 Design tools to plan and monitor registration and franchising of vehicles and fleet operators.
	2.2 Completed awareness and advocacy programme	2.2.1 Design and implement a project communications strategy to document and disseminate information on the results, impacts and lessons learned from the Project
		2.2.2 Design and completed public awareness and advocacy programme
	2.3: Established centers of excellence to support local capability and expertise for new applications/ services/	2.3.1 Develop guidelines and detailed plans for the establishment and operation of the center of excellence
		2.3.2 Establish regional centers of excellence

	products	
	2.4 Developed sufficient number of skilled local technicians	2.4.1 Commission needs assessment and identification of training institutions
		2.4.2 Develop training curricula for low carbon transport and deliver training of technicians
		2.4.3 Design and conduct post training evaluation survey

63. ***Output 2.1: Developed capacity of planning institutions and regulatory agencies on (a) coordinated policy making, investment planning and implementation of low carbon transport; and (b) modern planning tools, registration and licensing of low carbon vehicles***

- *Activity 2.1.1 Conduct needs assessment of decision makers and mangers on low carbon transport policy, planning, implementation and management*. The project will conduct a needs assessment of decision makers, regulators and mangers to identify knowledge gaps and specific training requirements on low carbon urban transport planning, policy, management and financing opportunities. Criteria will be developed to specifically shortlist decision-makers and managers who are appropriate to participate in and benefit from the training programmes. This will also be contextualized according to the government agencies to be engaged including whether these personnel, for example, are career or appointive officials, technical and/ or non-technical personnel and so on.

- *Activity 2.1.2 Design and execute capacity development workshops for policy makers, regulators, managers both at the central and local levels*. Following the needs assessment, capacity development workshop modules will be designed. The training will deliberate on basic concepts of low carbon vehicle technologies; policy, investment planning and decision making tools; international best practices and lessons; financing options and so on. It is envisioned that the capacity development workshops will also be accompanied by exposure field visits and study tours. [*GEF support is required for the technical and logistical services needed in the design, organization, conduct, and evaluation of the workshops*.]

- *Activity 2.1.3 Design tools to plan and monitor registration and franchising of vehicles and fleet operators.* This activity will conceptualize and design planning and monitoring tools for low carbon vehicle registration and franchising. Accordingly, in close cooperation with LTFRB, a Management Information System (MIS) will be developed that records and monitors the registration and licensing of all low carbon vehicles in the country. This output will complement the Road Transport Information Technology (IT) Infrastructure Project (Phase II). Consequently, a database with low carbon vehicle information will be developed and uploaded in the website of LTFRB. This activity will assist in strengthening the capacity of officials in effective planning, licensing processes and issuance. A monitoring tool will also be developed to assist transport authority in monitoring the services quality and performance of fleet operators. The adoption, maintenance and effective operations of the MIS will be embedded in the core planning and operations of the LTFRB/DOTr, thus, ensuring the overall sustainability of the system even after the Project ends. Further,

sustainability will be ascertained by capacitating the staff through trainings in system development, implementation, management and improvement support. This will be supplemented by demonstration of benefits of MIS as a decision making tool to DOTr managers and user departments for continued support. [*GEF support is for the technical services required for the design and development of the tools and online database*].

64. ***Output 2.2 Completed awareness and advocacy programme***

- *Activity 2.2.1 Design and implement a project communications strategy to document and disseminate information on the results, impacts and lessons learned from the Project*. A dedicated communications strategy specific to the Project will be prepared to guide a concrete set of actions for documenting and disseminating the deliverables, impacts and lessons learned from the Project. It includes preparation and dissemination of project case studies and knowledge products, etc. The communications strategy will seek to document the voices of project beneficiaries, demonstrate human interest stories and impacts from the project. At the end of the project (EOP) a project documentary will be produced and disseminated. This activity also comprises developing and updating of project website and issuance of biannual newsletter.

- *Activity 2.2.2 Design and complete public awareness and advocacy programme*. A public awareness and advocacy programme will be designed and completed to illustrate the multiple benefits and best practices of low carbon transport with the aim of enhancing awareness and garnering support from the general public. As a part of the programme, a mass media campaign will be designed and undertaken. Print, broadcast and digital media will be employed. The campaign will include regular preparation and dissemination of media releases including at least 3-4 public service announcements (PSAs), articles for newspapers, radio reports, and short documentaries for web and TV. Prime time airing of the PSAs will be considered. A regular social media presence will also be maintained and regular surveys of decision makers, practitioners and general public undertaken to assess impact of the campaign. [*GEF support is required for the technical services needed in the design and implementation of the media campaign*; *design, production, and dissemination of project documentary and knowledge products; design and establishment of the project website*.]

65. ***Output 2.3: Established center of excellence to support local capability and expertise for new applications/ services/ products***

- *Activity 2.3.1 Develop guidelines and detailed plans for the establishment and operation of the center of excellence*. The center of excellence will support local capability and expertise for new technology applications and services. Clear guidelines will be developed to serve as a framework for its operation and will include strategy, vision, mission goals and objectives and mandate, operational plan, clientele and sustainability. A detailed plan for the operation of the center will be developed. It will describe activities and programs, procedures for provision of

technical support, targets, funding, reporting, as well as M&E procedures and requirements. The sustainability strategy of the center, including financial sustainability will be elaborated in the plan. The functions of the centers of excellence include but not limited to (a) capacity development and technical assistance to cities to assist incorporating low-carbon transport goals within their local development plans; (b) act as focal entities in the development of sufficient skilled local technicians together with support from agencies such as TESDA, Bureau for Products and Standards (BPS), UP-Vehicle Research and Testing Laboratory and other vocational institutes; (c) assist local governments to successfully review and issue necessary approval and permits; assist operators in the preparation and review of technical documentations such as feasibility studies on low carbon vehicles, etc.; (d) assist in the validation and testing of low carbon vehicle technologies. *[GEF support is required for the development of the guidelines and operational plan].*

- *Activity 2.3.2 Establish regional centers of excellence*. Based on the guidelines developed in Activity 2.3.1 and discussions with potential hosts, the center of excellence will be established in Metro Manila and one additional region which for which initial hosts have been consulted with and will be finalized during Project implementation. The host agencies will be encouraged to provide facilities such as office space and basic equipment. At the initial stage, the centers are expected to be staffed part-time but as the usefulness of the centers is established and their activities increase, full-time staff will be considered. [*GEF support is required for partially supporting the technical assistance activities to be provided by the centers.]*

66. ***Output 2.4: Developed sufficient number of skilled local technicians***

- *Activity 2.4.1 Commission needs assessment and identification of training institutions*. In collaboration with Technical Education and Skills Development Authority (TESDA) existing vocational training institutes will be assessed and identified to develop and deliver technical training curricula for technicians on various aspects of low carbon transport and support infrastructure such as testing standards, protocols, operation and maintenance, etc. This activity will conduct a capacity needs assessment of transportation experts and technical personnel.

- *Activity 2.4.2 Develop training curricula for low carbon transport and deliver training of technicians*. Together with TESDA, Bureau for Products and Standards, UP-Vehicle Research and Testing Laboratory and identified vocational institutes, training curricula will be developed. It will include basic theories and concepts; technical details for development of technologies; and procedures and hands-on experience on development, operations and maintenance of technologies. The curriculum will be tested through regular training for technicians and adjusted as required. Training intakes will follow the regular schooling period or other regular short-term courses in the training institutions. The training will be for a period of few weeks to as long as six months depending on the topics of the courses and level of trainees. A report incorporating all training materials and curriculum as well as the evaluation for each training module will be prepared. The documentation of each training event will be consolidated to form part of the project deliverables. [*GEF support is required for*

technical services for the development and execution of the course on low carbon technology and supportive infrastructure.]

- *Activity 2.4.3 Design and conduct post training evaluation survey of the trainees*. A survey will be prepared to monitor the impacts of the training on the trainees. The survey will also gather information on the proportion of related jobs held my men and women after the successful completion of the training.

COMPONENT 3: INVESTMENT IN LOW CARBON TRANSPORT SYSTEMS IN THE COUNTRY

67. This component responds to the underlying technology, market and investment barriers. The component will ensure commercial uptake of light-duty EVs such as e-jeepneys and heavy duty vehicles such as electric and hybrid buses for mass public commute. The successful delivery of the outputs from the activities under this component will contribute to increased private sector participation and investments in the widespread deployment and commercialization of low carbon transport.

Outcome 3.1: Increased private sector participation in the widespread deployment and commercialization of low carbon transport systems

Summary of expected outcomes, outputs and expected activities in Outcome 3.1

Outcome	Outputs	Activities
3.1: Increased private sector participation in the widespread deployment and commercialization of low carbon transport systems	3.1.1: Completed public transport route rationalization assessment and feasibility studies	3.1.1.1 Review and update the methodology in determining routes for low carbon vehicles
		3.1.1.2 Design, conduct route rationalization studies and recommend existing and new routes for low carbon vehicles
		3.1.1.3 Assist investors and fleet operators to conduct feasibility and economic analysis for introducing low carbon vehicles on the identified routes
	3.1.2: Developed standard procedures for on-road and laboratory tests of new vehicle-fuel technologies	3.1.2.1 Identify priority gaps on existing procedures and guidelines for on-road and laboratory tests of new vehicle-fuel technologies and prospects investigated to adopt existing international standards
		3.1.2.2 Undertake consultations to deliberate on proposed procedures and guidelines by relevant officially-appointed committees
		3.1.2.3 Develop, promote, and approve testing and certification systems
		3.1.2.4 Design and conduct a survey of manufacturers and their products
	3.1.3: Established and approved EV charging protocol and standardization	3.1.3.1 Identify priority gaps on EV charging protocol and where plausible prospects investigated to adopt international standards
		3.1.3.2 Meetings on and deliberation of proposed standard protocol by relevant officially-appointed standards committees
		3.1.3.3 Develop, promote, and approve

		testing and certification system for charging infrastructure
		3.1.3.4 Design and conduct of a survey on charging infrastructures and facilities
		3.1.3.5 Develop, adopt and implement standard safety and fire protection regulations and procedures for charging infrastructure
		3.1.3.6 Conduct grid impact and power quality assessment

68. ***Output 3.1.1: Completed public transport route rationalization assessment and feasibility studies***

- *Activity 3.1.1.1 Review and update the methodology in determining routes for low carbon vehicles.* The activity will review, analyze and if necessary update methodology that is employed by DOTr and local governments in identifying potential routes that can be serviced by low carbon vehicles. This includes analyzing the basis and route capacity measurement formula which is key in determining the number and types of public fleet is used to service either existing or new routes.

- *Activity 3.1.1.2 Design, conduct route rationalization studies and recommend existing and new routes for low carbon vehicles.* The activity will include analysis of travel demand and distribution, investigation of transport modes route system, identification of trunk and feeder routes, assignment of low carbon fleet services to feeder routes, calculation of operating needs and allocation of resources, adjustment of operating characteristics and so on. The activity will draw lessons from completed route rationalization studies conducted by the World Bank and JICA of the public bus and BRT systems. Based on the outcome of the studies new and/or existing routes will be identified and recommended to be serviced by low carbon fleet. This activity will open up avenues for deployments of low carbon fleet in key locations across potential new cities such as Angeles, Cebu and Makati.

- *Activity 3.1.1.3 Assist investors and fleet operators to conduct feasibility and economic analysis for introducing low carbon vehicles on the identified routes.* Investment opportunities will be identified based on the results of the public transport route rationalization assessment. These opportunities will be presented to investors and fleet operators. Feasibility and economic analysis will be conducted to ascertain the technical and economic viability of introducing low carbon vehicles by prospective operators.

69. ***Output 3.1.2 Developed standard procedures for on-road and laboratory tests of new vehicle-fuel technologies***

- *Activity 3.1.2.1 Identify priority gaps on existing procedures and guidelines for on-road and laboratory tests of new vehicle-fuel technologies and prospects investigated to adopt existing international standards.* The government intends to have laboratories that tests all types of vehicles. The Project allows adding value to the intended design of the testing laboratories by developing guidelines for EVs and hybrid vehicles in

particular. The activity will be led by Bureau for Products and Standards (BPS) together with DOTr and DOST and other relevant agencies and stakeholders. Experts will review and analyze existing domestic and international test methods, procedures and guidelines. Based on the review, gaps will be identified and areas for revisions will be proposed to the relevant committees responsible for designing the procedures.

- *Activity 3.1.2.2 Undertake consultations to deliberate on proposed procedures and guidelines by relevant officially-appointed committees.* Based on recommendations from Activity 3.1.2.1, officially-appointed committees will coordinate and decide on the formation of new or update or adopt existing international test procedures and guidelines.

- *Activity 3.1.2.3 Develop, promote, and approve testing and certification systems*. Experts in each relevant area will review testing and certification needs, as well as international experience in these areas. Based on findings, experts will design or update or adopt existing testing and certification systems.

- *Activity 3.1.2.4 Design and conduct of a survey of low carbon vehicles manufacturers and their products*. The purpose of the survey is to determine and evaluate whether and how many of the products comply with new standards.

70. ***Output 3.1.3 Established and approved EV charging protocol and standardization***

- *Activity 3.1.3.1 Identify priority gaps on EV charging protocol and where plausible prospects investigated to adopt international standards.* The activity will be led by BPS together with DOTr and DOST. Existing international best practices on EV charging infrastructure will be reviewed and analyzed. Based on the review, critical areas that need to be addressed in the protocol will be identified including the prospect of adopting international standards

- *Activity 3.1.3.2 Meetings to deliberate on proposed protocol and guidelines by relevant officially committee*. Technical committee will be set up and convened for this purpose and recommendations generated from Activity 3.1.3.1 presented for deliberation. Where necessary, new technical guidelines and protocol for public charging infrastructure will be formulated. But where applicable internationally available guidelines and protocol will be adopted. Some most common charging standards for EVs include the International Electrotechnical Commission (IEC), Society of Automotive Engineers (SAE) of United States, and GuoBiao (GB) of China, CHAdeMO of Japan which will need to be modified to be consistent with the local context in the Philippines.

- *Activity 3.1.3.3 Develop, promote, and approve testing and certification system for charging infrastructure*. Prior to the development of the certification system that will be approved for use in the Philippines, international best practices will be reviewed. Where relevant, well established international testing and certification procedures will be modified and adopted. The activity will be undertaken in collaboration with BPS.

- *Activity 3.1.3.4 Design and conduct of a survey on charging infrastructures and facilities. This will be done to* determine and evaluate whether charging infrastructure conform to the standards. The survey will be conducted towards the EOP.

- *Activity 3.1.3.5 Develop, adopt and implement standard safety and fire protection regulations and procedures for charging infrastructure.* Experts will review safety and fire protection standards and regulations such as the Fire Code of the Philippines by Bureau of Fire Protection (BFP) as well as OSH standards by OSH-DOLE, and international experience as a part of this process. Based on findings, they will design recommendations for relevant government regulatory departments such as BPS and DOTr. The proposed measures will be tabled for adoption.

- *3.1.3.6 Conduct grid impact and power quality assessment. In coordination with National Grid Corporation of the Philippines (NGCP). A* grid impact assessment will be commissioned to investigate the possible effect of EV introduction in terms of energy generation, grid renewal and upgrade, energy losses, power quality and the need for improved IT networks for intelligent communication between the grid and the vehicles. This will assist the NGCP in fully understanding the integration of the charging process in the grid and reinforcing the grid for future EV uptake. This activity will be closely coordinated with DOE.

Outcome 3.2 Increased private sector investment in low carbon transport systems

Summary of expected outcomes, outputs and expected activities in Outcome 3.2

Outcome	Outputs	Activities
3.2: Increased private sector investment in low carbon transport	3.2.1: Completed and adopted viable business plan to support the wider application of low carbon vehicles	3.2.1.1 Assess the Philippine investment environment in relation to low carbon transport and identify investment opportunities
		3.2.1.2 Identify potential investors and key players from government, private sector, financing institutions and others
		3.2.1.3 Develop business models, plans and match potential investors with investment options
		3.2.1.4 Capacity development and training of the financial institutions on evaluation and appraisal of low carbon transport projects and streamlining of approval processes
	3.2.2: Installed standardized solar EV charging stations in pilot areas and cities	3.2.2.1 Conduct techno-economic viability assessments of solar EV charging stations
		3.2.2.2 Detailed design of solar EV charging systems
		3.2.2.3 Prepare of requests for proposals (RFPs) and procurement process
		3.2.2.4 Install, commission and operate solar EV charging systems
		3.2.2.5 Data collection, monitoring and evaluation of the performance
		3.2.2.6 Design and execute capacity

		development trainings on operation, maintenance and monitoring performance of solar charging facilities
	3.2.3: Introduced and operational at least 15-20 new hybrid or EVs for mass transit and AGT system	3.2.3.1 Finalize designs for pre-selected demo projects and identify additional demo projects
		3.2.3.2 Assist in raising capital and achieving financial closure of newly identified demo projects
		3.2.3.3 Design RFPs for the procurement of rolling stocks in the demo projects
		3.2.3.4 Deploy, test, commission the demo projects
		3.2.3.5 Design and execute capacity development trainings on operation, maintenance, monitoring and evaluation
		3.2.3.6 Monitor, evaluate, document and promote/disseminate results and lessons learned
		3.2.3.7 Design and initiate replication and scale up strategy
		3.2.3.8 Design and commission annual survey to get public feedback of low carbon vehicles and support ecosystem.

71. ***Output 3.2.1 Completed and adopted viable business plans to support the wider application of low carbon vehicles***

- *Activity 3.2.1.1 Assess the Philippine investment environment in relation to low carbon transport and identify investment opportunities.* The Project, in collaboration with Development Bank of the Philippines (DBP), and other funding agencies will assess investment needs and opportunities for low carbon transport in the country. The assessment will include the identification of options for investment, existing market/services, incentives for investors, among others. The PPG team has identified potential project ideas being floated that are ripe for investment, some of which have proof of concept that are in operation for a period of time. These project ideas in particular will be evaluated more closely and assessment results disseminated to potential investors. The information will also be an input to the business plan to be developed in Activity 3.2.1.3. DOTr, in collaboration with other key stakeholders, will lead in the dissemination to potential investors. *[Support from GEF is needed for the assessment of investment needs and opportunities in the Philippines.]*

- *Activity 3.2.1.2 Identify potential investors and key players from government, private sector, financing institutions and others.* The Project will identify potential investors and key financing institutions that will be listed in a database. A database of low carbon transport stakeholders will be developed to provide easy access to valuable information on related product/service providers, actors along the value chain and potential investors categorized by specific transport system. The database will include, but not limited to, the following details:
    - Name of individual/organization and the type of organization (e.g. funding agency, service/product provider, technical expertise, etc.)

- Contact details
- Primary products/services
- References
- Mandates, programs and activities involved
- Other relevant information

[GEF support is needed for identification of investors and the development and dissemination of investment database system.]

- *Activity 3.2.1.3 Develop business models, plans and match potential investors with investment options.* Bankable business plans for low carbon investment options in transport identified in Activity 3.2.1.1 will be developed. The business plan will be the main document that will be provided for obtaining investments from funding sources and encouraging investors to buy into the proposed investment opportunities. The business plan will include details on potential projects; financial and economic analysis; technical feasibility; investment structures, sources of funds, financial projections; risks and mitigation actions, among others. In the preparation of the business plan a study on the relevant business models will be conducted to map out suitable options in rolling out the business. There are possible business models that are currently being tried and tested in the market. The most straightforward is the ownership and operation of an EV and/or hybrid fleet in a franchise area where revenues come from passenger fares. In this business model, an added feature that could create customer loyalty and ease in usage is the use of a pre-payment scheme via a tap card or equivalent. Another possible model is to consolidate existing franchises of individual operators, replace the vehicles with modern EVs/hybrids and implement a fleet management system to ensure coordinated dispatching and higher utilization of vehicles per trip. This provides a pathway for small operators to modernize their operations and comply with any future government regulation regarding emission and age of vehicle without the need to invest. The operators will be paid a rental fee that is equivalent to their average daily income in exchange for their public transport license. Similarly, options for viable business models on establishing and operating charging facilities will be assessed. Once the business models are ascertained and the business plans completed, the fleet operator will be assisted in matching the investment opportunity with potential investors. This will be done through matchmaking platforms that will involve the project owners/operators, on one hand and the potential investors on the other hand. Projects that can be matched with investors will be supported and mentored via Activity 3.2.3.2 to achieve financial closure. *[GEF support is needed for the provision of technical assistance in business plan development and facilitating the matchmaking process].*

- *Activity 3.2.1.4 Capacity development and training of the financial institutions on evaluation and appraisal of low carbon transport projects and streamlining of approval processes.* This activity will help create awareness among project developers on available financing options. Forums will be organized where in funding agencies and potential investors will deliberate on their line/scope of programs and activities, the priorities of the fund, the eligibility requirements, and application procedures. As for the commercial and government financial institutions, it is acknowledged that because the low carbon transport solutions in the country is yet to be commercialized, the internal capability of the bank staff on due diligence for such projects is significantly limited.

Typically low carbon projects have certain features and specific risk profiles that are different from other conventional projects. In order for the loan officers to have a better understanding and grasp of the peculiarities of the projects, they will be capacitated specifically to enhance their skills and confidence in the evaluation and appraisal of new and emerging low carbon transport proposals. Long, cumbersome process for approval of loans from Government Financial Institutions (GFIs) is one of the barriers that have been identified by the private sector. Once the approval of the GFIs to streamline their loan processes is secured, experts will be engaged to assist in the review of the procedures and requirements. Whenever appropriate, these procedures and requirements will be amended accordingly. This activity will assist GFIs to streamline expedite their approval processes. [*GEF support is needed for capacity development and training of FIs, streamlining of loan approval processes].*

72. ***Output 3.2.2 Installed standardized solar EV charging stations in pilot areas and cities***

- *Activity 3.2.2.1 Conduct of techno-economic viability assessment of solar EV charging stations.* It will look into the different aspects of the proposed solar EV charging facilities to determine the most viable options. This will include the study of the different technological alternatives available in the market, comparison of their specifications and operational performance; logistical arrangements; general sizing parameters; reliability and safety aspects, and others. The assessment will evaluate the potential costs and revenues and determine the financial viability of the different systems being considered as possible options. *[GEF support is needed for the conduct of techno-economic viability assessment of solar EV charging stations.]*

- *Activity 3.2.2.2 Detailed design of solar EV charging systems*. Expert(s) will prepare the design, detailed technical specifications, siting location; configuration, sizing, among others. It is important that the technical specifications should not be left to the supplier to propose but should be determined and specified by the expert based on optimized solution according to the specific conditions of the selected project. Such specifications should include, but not limited to: type, sizing efficiency of solar panel; type and sizing of inverter; mounting and supporting structures; distribution and safety box, among others. Sub-activities will include adoption of appropriate of business model, assisting the proponent for loan application and securing financial closure, if required. *[GEF support is needed for the identification and design of solar EV charging systems.]*

- *Activity 3.2.2.3 Prepare of requests for proposals (RFPs) and procurement process.* Demo projects will be assisted to prepare RFPs for distribution to qualified suppliers. The RFPs will include requirements based on defined targets for cost, durability, and performance, among other desired criteria. The suppliers will be required to comply with these requirements in their proposals. The charging facility operators will be assisted in evaluating the bids and negotiation with shortlisted suppliers with the aim of selecting the most compliant and best technical and financial offer. The Project will furthermore assist in drafting the procurement/supply contract to ensure that legal and commercial terms are robust and aspects such as performance guarantees and liquidated damages are appropriately specified. *[GEF support is needed for evaluation of bids, negotiations in*

selecting the most compliant and best technical and financial offer, and drafting the procurement/supply contract.]

- *Activity 3.2.2.4 Install, commission and operate solar EV charging systems.* This will consist of procuring, installing of the selected systems and demonstrating their value, usage and benefits. GEF support will be provided to 5 charging stations in collaboration with co-financing partners such as GET/COMET and EVEE-I as potential hosts. Procurement of the systems must follow international standards and comply with ethical, transparency and good governance and practice principles of GEF, UNDP and DOTr. Operational standards and procedures will be documented in the operational manual that will be made accessible at all times to the charging operators and personnel. The operational performance of the system will be a demonstration that will showcase good practice and encourage replication in other sites and by other business operators. *[GEF support is needed for partial funding to procure and install up to 5 solar charging stations.]*

- *Activity 3.2.2.5 Data collection, monitoring and evaluation of the performance -* A design of the monitoring plan will be prepared and discussed with the charging facility operators and for faithful implementation and compliance. The monitoring plan will set out the guiding principles for monitoring and reporting including what to do, how to do, who should do it and when should it be done. It will provide description of the parameters which will be adequate to monitor the performance of the systems but simple enough for the operators to comply with. The parameters may include, but not limited to: a) For energy aspects: voltage (DC & AC), amperage, wattage, total and running watt-hours; b) For supplemental aspects: temperature of panels, temperature of inverters, operating time; c) For battery storage: energy stored, battery voltage, time to full charge, charge/discharge cycles, storage efficiency, useful life until disposal. The data and information compiled through the monitoring exercise will be analysed and results disseminated for early lessons. *[GEF support is needed for development of the data collection and monitoring plan to be used by charging facility operators.]*

- *Activity 3.2.2.6 Design and execute capacity development trainings on operation, maintenance and monitoring performance of solar charging facilities -* Trainings will be designed and conducted for operators of the installed solar charging stations and include operation and maintenance (O&M) as well as monitoring, evaluation and reporting aspects. Post training assessment test will be undertaken for trainees to determine whether they have the requisite skills on O&M, monitoring and reporting. Qualified trainees will be certified. Additionally, the Project will provide technical assistance to train, monitor and provide advice to other potential replicators, using the installed systems as case studies, so that they will be confident in the technology. Selection of the trainees will follow a criteria that will be prepared by the Project and special effort will be made to encourage equitable representation of both men and women technical personnel. A post-training evaluation survey will be conducted among the participants of the training to get a feedback on the usefulness of the training, both in theory and practice and how their capacity has been built by the said training. The survey will be designed in such a way to monitor the development impact of the training. E.g., gather information on the proportion of related jobs held by men and women after the completion of the training. The survey will be conducted towards end of project (EOP). A

report incorporating all training materials and curriculum, evaluation for each training module will be consolidated as a part of the project deliverable. *[GEF support is needed to design and conduct the trainings as well as design, undertake and analyse the post training surveys.]*

73. ***Output 3.2.3: Introduced and operational at least 15-20 new hybrid or EVs for mass transit and AGT system in pilot cities***

- *Activity 3.2.3.1 Finalize designs for pre-selected demo projects and newly identified demo projects in activity 3.2.1.1 and 3.2.1.2.* A plan on the roll out of new or higher generation low carbon vehicles will be prepared in cooperation with identified private sector partners. These will include, but not limited to, technologies comprising hybrid buses, electric minivans, e-jeepneys, and Automated Guideway Transit (AGT) of identified co-financing partners. The plan will include the expansion of AGT from within UP Diliman to a nearby city comprising a route starting from PhilCOA to UP Ayala Mall, Katipunan. This activity will contribute to the Project by modal shift, which is expected to enhance the sustainability of the city as commuters shift to this mass transport system from using either private cars or the more polluting diesel operated jeepneys. The plan that will be produced will be informed from other activities within the project as travel demand studies and route rationalization studies conducted in Activity 3.1.1.2. Planning in terms of routes, payment systems, passenger logistics, dispatch mechanisms and schedules, safety aspects, personnel matters, among others, will be considered as well. *[GEF support is needed for the preparation plan for the roll out of advanced, higher generation vehicles.]*

- *Activity 3.2.3.2 Assist in raising capital and achieving financial closure of newly identified demo projects.* Investment briefs, and if required, Investment Information Memorandum on pre-selected and additional, newly identified prospective business ideas in Activity 3.2.1.1 will be prepared and distributed to prospective investors/funders. The investment briefs will include the overview of the project; the project objectives and benefits; details on investment options and structures; projected cash flows; and returns on the investments. Assistance will be provided to business owners or local governments in structuring investment deals. Bilateral meetings with identified investors will be conducted to present the details of the projects. A Financial Assistance Team will be formed with the mandate to provide technical assistance in applying for financing; facilitating the preparation of aforementioned documents, submissions and liaising with investors/financial institutions to follow up on submitted, among others. It will assist the projects in preparing the Term Sheets, structuring the investment deals, drafting of MoUs, contract negotiation, and other support needed to attain financial closure. *[GEF support is needed for the structuring of investment deals, preparation of MoUs, and contract negotiations.]*

- *Activity 3.2.3.3 Design RFPs for the procurement of rolling stocks in the demo projects.* For the expansion projects where the systems to be procured consist of newer generation or more advanced, modern systems than the existing ones in the baseline scenario, RFPs may not be required. However, for new projects, they will be assisted to prepare RFPs for distribution to qualified suppliers. Similar to Activity 3.2.2.3, the RFPs will include requirements based on defined targets for cost, reliability, performance,

safety, and other desired criteria. It will also include stringent requirements for suppliers and dealers on battery collection, recycling, reuse and disposal for both lead acid batteries used in e-jeepneys and Lithium ion batteries in commuter minivans or COMET. The Project will ensure that the disposal and management of the batteries are in compliance with the existing regulations. The suppliers will be required to comply with these requirements in their proposals. The fleet operators will be assisted in evaluating the bids and negotiation with shortlisted suppliers with the aim of selecting the most compliant and best technical and financial offer. The Project will assist in drafting the procurement/supply contract to ensure that legal and commercial terms are robust and aspects such as performance guarantees and liquidated damages are appropriately specified. *[GEF support is needed for preparation of procurement/supply contract to ensure that legal and commercial terms are robust and other aspects such as performance guarantees and liquidated damages are incorporated.]*

- *Activity 3.2.3.4 Deploy, test, commission the demo projects.* The activity will consist of procurement, deployment of the rolling stocks and demonstrating their value, usage and benefits. Co-financing partners such as GET/COMET and EVEE-I have been identified as potential project proponents, where the Project will support 15-20 units of EVs as direct demonstration. Experts will be engaged by this Project and deployed to provide technical advice and monitoring support during the installation and commissioning stages. The experts, on behalf of the business owner will agree with the supplier on the mechanics and approval of testing, commissioning and handover process. *[GEF will provide partial funding as incremental investment to support the procurement of —the new vehicles, equipment and/or hardware that represent advanced, high performance technology, and support for providing technical advice and monitoring support during the installation and commissioning stages of hardware and equipment.]*

- *Activity 3.2.3.5 Design and execute capacity development trainings on operation, maintenance and monitoring*. Technical trainings will be designed and conducted for operators, technicians and drivers of the demo vehicles on operation and maintenance (O&M) as well as monitoring, evaluation and reporting, good driving practices, etc. Post training assessment test will be undertaken for trainees to determine whether they have the requisite skills on O&M, monitoring and reporting. Qualified trainees will be certified. Selection of the trainees will follow a criteria that will be prepared by the Project and special effort will be made to encourage equitable representation of both men and women technical personnel. A post-training evaluation survey will be conducted among the participants of the training to get a feedback on the usefulness of the training, both in theory and practice and how their capacity has been built by the said training. The survey will be designed in such a way to monitor the development impact of the training. E.g., gather information on the proportion of related jobs held by men and women after the completion of the training. The survey will be conducted towards end of project (EOP). A report incorporating all training materials and curriculum, evaluation for each training module will be consolidated as a part of the project deliverable. *[GEF support is needed to design the training modules and conduct the trainings as well as design, undertake and analyze the post training surveys.]*

  Activity 3.2.3.6 Monitor, evaluate, document and promote/disseminate results and lessons learned. The performance and implementation of the demo projects will be

monitored and evaluated. Monitoring framework will be designed and discussed with the fleet operators to solicit their feedback and commitment. The monitoring plan will set out the guiding principles for monitoring and reporting including what to do, how to do, who should do it and when should it be done. It will include applicable GHG and non-GHG indicators such as specific energy consumption; fuel mileage for hybrids; GHG, air and noise pollution; market share and diffusion of the technologies; development impacts (e.g., health impacts, employment generated, income savings, etc.). It will be ensured that the monitoring plan is adequate to monitor the performance of the vehicles but comprehensible and user-friendly for the operators to comply with. The data and information compiled through monitoring of the demo fleet will be analysed. Impacts and lessons from the demos will be documented and shared with potential investors, local governments and stakeholders. *[GEF support is needed for technical assistance on designing the monitoring plan and conduct monitoring, evaluation, documentation and promotion/dissemination of experience and lessons learned.]*

- *Activity 3.2.3.7 Design and initiate replication and scale up strategy*. Having a solid proof of concept is key in convincing key actors such as potential business owners, investors and bankers. A pathway for replication and scale up will be designed that will include adoption of advanced technology options and business models, expansion to other routes, locations and cities, or new participants. Key aspects, including success factors, barriers and challenges will be elaborated. Issues comprising funding, securing franchises, awareness and marketing, among others, will be addressed. *[GEF support is needed for the replication and scale up.]*

- *Activity 3.2.3.8 Design and commission annual survey to get public feedback of low carbon vehicles and support ecosystem*. It is important that the perception and experience of the public comprising early adopters, users and non-users of the low carbon transport solutions are captured. Besides policies and incentives, consumer preferences have strong influence on market penetration and commercialization of low carbon vehicles. The survey will reflect their attitudes, level of awareness and satisfaction, needs and preferences etc. Hence, a robust design and proper conduct of the annual survey is crucial. A competent entity with relevant extensive experience similar to the tasks required will be engaged by the Project for this purpose and international experiences on designing and executing such surveys will be reviewed and analyzed. *[Support from GEF will be required on the design and commissioning of annual survey to get public feedback of low carbon transport operations.]*

Key Indicators and Risks

Key Indicators

74. The detailed indicators according to outputs are provided in the Project Planning Matrix (Section 3) of this document. These indicators are summarized in the table below.

Indicators	Target Value
Project-Objective Level	

• Incremental direct CO_2 emissions reduced due to the Project over the technology lifetime, (tCO_2e)	• 69,013 tCO2e
Project-Outcome Level	
• Number of people gainfully employed in the low carbon transport sector [14]	• At least 222
• Number of daily users of new transport options using low carbon transport systems (AGT, EV, hybrid)	• At least 20% annual increase in ridership[15]
• Number of issued policies that support the promotion of low-carbon transport by Year 3	• 4[16]
• Number of standards promulgated for low-carbon vehicles by Year 3	• 3[17]
• Executive Order for interagency coordination on low-carbon transport system approved and adopted by EOP	• 1
• Number of cities capacitated by adopting and implementing low carbon transport plans and programs • Number of institutions certified to conduct low carbon vehicle technician training	• At least 4 • At least 2
• Number of entities involved in the deployment and commercialization of low carbon transport systems by EOP • Number of bankable business plans, supported by the Project, completed and funded by Year 3	• 5 • 2
• Number of additional investors who invested in low carbon transport solutions facilitated by the Project by EOP • Cumulative investment in new low carbon vehicle projects by EOP	• 3 • Approximately USD 20,000,000

Risks

75. Table 4 below lists down the risks that this Project faces and the mitigation measures that have been put in place to address these risks.

Table 4. Project Risks and their Mitigation

Risk	Level of Risk	Mitigation Measure
1. Market risks, low	Moderate	One of the Project's focus areas is considerable awareness, advocacy and information dissemination

[14] Estimates based on the Philippine practice in hiring employees of bus operations and gasoline stations.

[15] From the current daily ridership of 6,500 passengers

[16] 2 each newly developed and revised with low carbon transport provisions

[17] 1 newly developed for e-jeepneys; 1 newly developed for hybrid buses; 1 newly developed for AGT

social acceptance and inadequate capacity of the local industry to meet the demand		activities as well as demo projects to showcase the benefits of low carbon transport to the public (e.g. air and noise pollution, GHG emissions reduction, etc.) to reinforce social acceptance and consumer confidence particularly among "early adopters". Public feedback survey will be designed and commissioned annually (output 3.2.3) to gather and analyse data and information on the perception, preferences, satisfaction levels and experience of users/consumers. Additionally the project will ensure trained local experts are available to provide operations, maintenance and related market services. The lack of capacity of the local industry will be addressed through the establishment of the regional centers of excellence (Output 2.3), which will be the focal entities for development of sufficient number of skilled local technicians together with support from agencies such as TESDA, Bureau for Products and Standards, UP-Vehicle Research and Testing Laboratory and other vocational institutes.
2. Lack of interest from the private sector on low carbon investments in the transport sector	Moderate	The Project supports a model in which the government provides an enabling environment to spur private investment and the private sector provides innovative approaches to catalyze capital for low carbon investments in the transport sector. The Project will help prepare high quality assessments, feasibility studies, investment appraisals and business plans to facilitate decision making by financial institutions. It, in addition, facilitates public private dialogue and engage the private sector early on to solicit their perspectives and needs so as to enhance the attractiveness of low carbon transport investment.
3. Low level of awareness and appreciation of local chief executives on the benefits of vehicles using alternative transport fuels	Moderate	The Project will design and execute capacity development workshops and communications strategy (output 2.1 and 2.2) that targets decision makers, regulators, managers including local chief executives. Moreover, a public awareness and advocacy programme (Output 2.2) will be implemented using mass media to disseminate information that will create awareness and provide information support to decision makers on the benefits and issues related to the use of low carbon vehicles. The Project will provide knowledge products, good practices and lessons learned from the implementation of low carbon transport in the country and abroad along with the studies conducted in the key cities where viable low carbon transport options can be implemented. This will enhance the understanding of local chief executives on the benefits of low carbon transport.
4. Inadequate human resources to successfully	Moderate	Institutional capacity development is a priority to the Project. Comprehensive capacity building activities have been designed to enhance capacities of local

implement the projects		human resources. These include areas covering: streamlining of local government processes (Output 1.4); training on guidelines for low carbon vehicle operators, facility managers and manufacturers (Output 1.5); planning and policy making at the central and local levels (Output 2.1); theories and hands-on technical aspects for technicians (Output 2.4); as well as evaluation and appraisal of low carbon transport projects by financial institutions (Output 3.2.1).
5. Technology risk regarding quality, reliability, efficiency, and maintainability	Moderate	The Project prioritises the propagation of technology know how and ascertain that most appropriate technologies are selected taking into consideration the socio-economic profiles and local market conditions. Sound selection and regulation of technologies, product standards are important for long term market development both for the vehicle units and charging in the case of EVs. In collaboration with partners such as Bureau of Products and Standards, DOTr and DOST, the Project will assist in the development of standard procedures, guidelines for testing, quality control and assurance as well as safety of vehicles, charging technologies, related parts and components (output 1.5 3.1.2 and 3.1.3). This will be supplemented with technical trainings and capacity development of local technical personnel, vehicle operators, manufacturing and assembly facilities. In particular, the project demos will apply stringent quality control and performance monitoring measures at all levels with regular data collection, monitoring and evaluation for improved performance.
6. Climate Change impacts of low carbon transport systems	Moderate	According to the first national communication of the Philippines, the adverse impacts of climate change are linked to high concentration of population, resources and infrastructure. The 2nd national communication underscore that transport remains the biggest energy-consuming sector with a 36.8% share of the total final energy demand. A growing national population necessarily leads to greater use of transportation. Adequate emphasis will be placed to enhance the resilience of the low carbon transport infrastructure to extreme climate variability. Such thinking will be incorporated into all stages of project implementation. The Project will work closely with adaptation teams and experts in the Department of Environment and Natural Resources as well as the Climate Change Commission to help authorities identify such risks and integrate appropriate response measures in the mitigation actions.
7. Low level of commitment from relevant authorities in adopting/	Moderate	The project will initially implement the policies and guidelines in the pilot cities to gauge their effectiveness. This will assist the relevant government authorities in the finalization, approval and effective enforcement. Besides, UNDP has a

approving/ enforcing the recommended policies. Passage of national level policies on alternative fuel vehicles may be hampered by changes in administration and legislative priorities		track record of successfully engaging with the authorities on energy, sustainable infrastructure and transport projects. The risk can be effectively mitigated through continued provision of the on-going assistance, technical backstopping and communication to encourage commitments from the authorities.
8. Political risk change in leadership and priorities	Moderate	The Project secured commitments from key departments and dealt with committed and career employees who are not affected by recent change in national administration. Key agencies such as the DOTr and DOST have issued letters of support with co-financing, which shows their continued commitment to the objectives of the Project. Additionally, the new leadership will be oriented about the Project and their commitments secured during Project inception.
9. Power outages during charging of batteries for EVs	Moderate	There are two types of risks related to this – one is the risk that power is not available at the time that batteries need to be charged due to outages, and the other is the risk that outages could occur due to spikes in power demand when EVs charge simultaneously. The first risk is mitigated through battery swapping scheme where charging of batteries is done in a managed program to account for the possibilities of outages. Output 1.4 will include the design of the charging scheme and the infrastructure that will go with it. Moreover, the concept of implementing solar charging stations (Output 3.2.2) is aimed at demonstrating the use of independent and renewable sources of power, thereby minimizing the burden on the grid. The second type of risk happens when an imbalance occurs between power supply and demand caused by sudden charging of EVs without proper response from the system operator. This could create voltage drop and increase in current leading to system breakdown and power outages. The use of solar charging stations that are independent from the grid as mentioned above could mitigate this risk. Proper planning of EV deployment, which includes coordination with the grid operator is important. Since EV deployment is in an initial stage in the Philippines and is anticipated to be in a phased manner, massive impact of EV load on the grid is less likely in the short to medium term. Nevertheless, the Project in collaboration with NGCP will commission a grid impact study and

		investigate the possible effect of EV introduction in terms of energy generation, grid renewal and upgrade, energy losses, power quality and the need for improved IT networks. This will assist the NGCP in reinforcing the grid for future EV uptake.

76. The overall project risk is moderate.

77. Although all possible efforts have been made in the Project design to mitigate perceived risks, there are residual risks that are inevitable which should be carefully monitored and managed to ensure the success of the Project. The most significant risk identified during the project formulation is the lack of interest from the private sector on low carbon investments in the transport sector. Recommended mitigation measures are provided in detail in the "Offline Risk Log" in Annex I.

Cost Effectiveness and Benefits

Cost Effectiveness

78. The GEF contribution of USD 2.6 million will result in a direct emission reduction of 18,994 tCO2e by EOP from the approval of the number of units committed by the private sectors in the Project. The estimated lifetime emission reduction during the service life is 69,012 tCO2e. This results to a GEF abatement cost of USD 38.25 per tCO2eq. This is a highly conservative estimate as it does not include the secondary direct emissions attributable to the Project, i.e., 346,537 tCO2e over the technology lifetime.

79. The incremental support from GEF, is envisioned to make a fundamental difference in supporting "leapfrogging" to new and advanced vehicle technologies and improving the sustainability of the public transport system. Through a combination of barrier removal interventions, the project will buttress the commercialization process of electric drive vehicles as viable public mobility option in the Philippines in a much more advanced manner than in countries in the region with similar socio-economic status. Although the abatement cost of Project seems to be relatively higher than other mitigation interventions such as RE and EE, there are several benefits that can be derived from the Project. It will, among others, serve as a pioneering and holistic initiative for the commercialization of low carbon transport with significant and active participation and commitment from the private sector. National level policy will be in place to lead the effort by setting strategic directions, providing incentives and mobilizing resources. GEF intervention through the project will provide the much needed confidence to local operators, service providers and manufacturers to expand their business operations. The enabling environment that will be facilitated by the Project will assist to realize the alternative scenario wherein a significant proportion of vehicle population in the near is foreseen to include low carbon options. These will be supported and invested by local and foreign investors and not just highly subsidized and supported through public coffers. With the facilitated market transformation from using conventional internal combustion engine to low carbon

vehicles, significant energy savings and energy cost savings from the transport sector will be realized, as will be the co-benefit of reduced negative environmental and health impacts.

Benefits

80. Global benefits: The global environment benefits are apparent in terms of the direct GHG emission reduction of 69,012 tCO2e within the technology lifetime and indirect GHG emission reduction of 414,076 tCO2e and 556,059 tCO2e in bottom up and top down respectively. Additionally, the Project will result in the reduction of fossil fuel consumption, Common Air Pollutants and Volatile Organic Compounds as well as short lived pollutants which contribute to global warming.

81. National benefits: Overall, this Project will contribute towards the attainment of the Philippines' goals on sustainable development, according to guidance stipulated in the Philippine Agenda 21 and building from the 1987 Philippine Strategy for Sustainable Development (PSSD). The Project has a number of benefits such as:
    - The promotion and utilization of low carbon vehicles that use alternative and cleaner fuels will significantly reduce GHG emissions along with local air pollution. EVs can have very low to zero GHG emissions when they operate on renewable energy. Moreover, increase in the use of low carbon transport leads to concomitant reduction in Common Air Pollutants and other Volatile Organic Compounds, consequently, reducing public health risks
    - The widespread use of low carbon vehicles for public transportation is expected to help achieve various further planning objectives including reduction of noise pollution, congestion reduced traffic and parking congestion, public infrastructure and service cost savings, consumer savings and affordability – particularly savings targeting lower-income households, increased safety and security, and improved mobility options for non-drivers. Improved reliability of travel times for will also contribute substantially to the attractiveness of living and the ease of doing business in urban areas.
    - The utilization of renewable energy such as solar for charging infrastructure of the EVs will increase the demand for solar power generation in the country. Moreover, use of indigenous renewable energy resources in EV charging and overall reduction in consumption of imported fossil fuel in the transport sector will lead to improved energy security.
    - Less dependence of the economy on liquid fossil fuel import and reduce the country's exposure to external price stocks of fossil fuels. Transportation has the largest energy demand in the country.
    - It is expected that the project will lead to increase in employment opportunities and generation of green jobs for local manpower including the urban poor in the deployment, operation and maintenance of low carbon vehicles, support infrastructure, manufacturing and related value chain;
    - Increased private sector participation and growth of local business enterprises that manufacture and supply technologies and services related to EVs, hybrid buses, etc. Increase in local investment opportunities for Small and Medium value chain enterprises and in the promotion of foreign direct investment.

- The Project is designed in a way that it caters to both men and women in general. Gender benefits are expected primarily through the provision of equal employment and capacity development opportunities to both women and men, particularly as drivers of low carbon vehicles, charging station operators, O&M technicians, monitoring personnel, etc. The project demo vehicles will be equipped with surveillance/CCTV cameras that would also ensure the safety of commuters and record abuses/harassments. In addition, driving behavior will be closely monitored while on the road. Special fares and discounts seats, priority queueing lanes will be encouraged in project demos especially for disabled, children and elderly. The ridership and public perception surveys will gather and analyse gender related data, preferences and impacts on men and women passengers which will feed into the policies, strategies that the Project will formulate and support.

Innovativeness, Sustainability and Replicability

Innovativeness and Sustainability

82. The Project is focused on the promotion of low carbon technologies for public transport as a solution to decreasing air quality that results in adverse impact to human health, productivity, and contributes to climate change. The Project is envisaged to create an investment-friendly environment by institutionalizing a comprehensive approach of enabling policies, planning measures and strategic investment options to stimulate the quality and competitiveness of low carbon urban transport systems. By employing bankable market models that fit the local situation, the Project intends to demonstrate commercial viability of such investments. The Project will allow for an increased uptake of low carbon vehicle by designing and implementing effective and innovative approaches that include the following: coordination among agencies involved in low carbon transport planning and development; regional centers of excellence that will coordinate with local training institutes to deliver high quality and up-to-date training programmes; standardized procedures for quality control and assurance of new vehicle-fuel technologies and charging infrastructure, including safety regulations and procedures; and support to businesses to access finance. These are distinct features that have not yet been tried in earnest in the Philippines before.

83. The sustainability of Project results will be ensured, first of all, by laying a foundation for strong policy level support from the national government. Credible and supportive policy framework combined with enhanced institutional capacity among policy makers will pave way for scaling up investments and further replicate the Project results across more cities in the country. The adoption of the Master Plan as an overall strategic vision on low carbon transport will go beyond the duration of the Project. A robust regime of capacity building activities instilled by the Project will enhance capacities of policy makers to introduce and enforce relevant policies and regulations; provide planning and monitoring tools for registration and franchising of vehicles and fleet operators; build capacities of local governments on the streamlined processes to expedite the approval of supportive infrastructures; train sufficient

number of local technicians on operation, maintenance, monitoring and evaluation; engage financial institutions for increased access to capital. This comprehensive suite of capacity enhancement runs through a gamut of stakeholders whose participation is critical in low carbon transport planning, financing and implementation. This will ensure sufficient capable personnel in the whole spectrum of the sector who have competence, knowledge and practical experience to continue delivering on the objectives of the Project into sustainability.

84. Another strong assurance of sustainability is the commitment of the private sector operators to implement successful demonstrations through public private partnership models to provide infrastructure, components, vehicles and related services. Beyond that, sustainability of Project results will be ensured through DOTr's guarantee fund. Envisioned to be capitalized with approx. US$ 12 million, the fund will be managed by the Development Bank of the Philippines, as loan facility for drivers and transport operators for retrofitting, re-fleeting and increased use of EVs and hybrid vehicles in the mass transport system. The Project will support the development of the fund's diversification strategy and mechanisms to leverage additional financing from public and private sources.

Replicability

85. In terms of potential for scaling up, the project will initially focus on demonstration of low carbon vehicle operations in the three cities of Alabang, Imus and Quezon. These cities will serve as the demonstration sites for the development and application of the low carbon transport infrastructure. When these cities are able to successfully demonstrate the results and viability of operating low carbon transport systems, other cities are expected to replicate the investment of similar systems. Discussions with additional cities such as Angeles City and Cebu City have already been initiated, who are keen to replicate the Project activities to reinforce their image of being environmentally friendly and ecologically sustainable. As the Project generates credible evidence of successful financial closure, reliable technology, and streamlined regulatory process, the confidence of these and other cities to replicate the demonstration cases into long-term commercial ventures will be boosted.

86. The Project will leverage additional investments in increased number of low carbon vehicles by enhancing private sector confidence through positive policy impacts and supporting a competitive business environment for the application of low carbon transport. Private fleet operators who have put in their own investment to test and operate some EV/hybrid units on the road plan to scale up investments once demo projects that will be supported by the Project will start yielding impacts and positive returns supplemented by bullish policy signals. Anticipating the success of the project demos, the project proponents have devised a roll out plan and have committed to invest in the long-term roll out of low carbon fleet that will extend beyond the duration of the Project. Moreover, documentation and dissemination of success stories, key information and results will enhance the replication process. A replication and scaling up strategy will be formulated to ensure that the barriers do not recur over time.

3. PROJECT RESULTS FRAMEWORK:

This project will contribute to achieving the following Country Programme Outcome Indicators:
• Outcome 4. Resilience towards disasters and climate change: Adaptive capacities of vulnerable communities and ecosystems will have been strengthened to be resilient toward threats, shocks, disasters, and climate change. • Sub-Outcome 4.3 Environment and Natural Resources Conservation and Protection: By 2018, capacities of national and local government officials and communities to conserve and sustainably manage the country's environment and natural resources, including biodiversity and sustainable energy sources will be enhanced.
Primary applicable Key Environment and Sustainable Development Key Result Area (same as that on the cover page, circle one):
1. Mainstreaming sustainable environment and energy
Applicable GEF Strategic Objective and Program: GEF 5 Climate Change Objective 4: Promote energy efficient, low-carbon transport and urban systems
Applicable GEF Expected Outcomes: Sustainable transport and urban policy and regulatory frameworks adopted and implemented, increased investment in less-GHG intensive transport and urban systems, and GHG emissions avoided.
Applicable GEF Outcome Indicators: Number of cities adopting sustainable transport and urban policies and regulations; volume of investment mobilized and tonnes of CO_2 equivalent avoided

Strategy	Objectively Verifiable Indicator			Means of Verification	Critical Assumptions
	Description	Baseline	Target		
Project Objective: **Creating an enabling environment for the commercialization of low carbon urban transport systems (e.g., electric and hybrid vehicles) in the Philippines**	Incremental direct GHG emissions reduced due to the Project over the technology lifetime, (tCO2e)	• 16,054 tCO_2e[18]	• 69,013 tCO_2e[19]	• Project final and M&E report • GHG emissions reduction estimates based on demo and pilot monitoring reports	• Strong support from relevant government agencies
	Number of people gainfully employed in the low carbon transport sector [20]	• 50	• At least 222	• Project survey	
	Number of daily users of new transport options using low carbon transport systems	• 6,500	• At least 20% increase per year	• Project survey • Operator records	
Component 1: Policy support for the promotion of low carbon modes of transport					

[18] GHG emission reduction in the baseline that is contributed by 28 EVs and 20 e-jeepneys within the useful life of 15 years.

[19] Incremental GHG emission reduction from additional unit of 56 EVs and 40 e-jeepneys within the useful life of 15 years.

[20] Estimates based on the Philippine practice in hiring employees of bus operations and gasoline stations.

Outcome 1: Effective enforcement of policies and support provided for the promotion of low carbon modes of transport	• Number of issued policies that support the promotion of low-carbon transport by Year 3	• 0	• 4[21]	• Official Gazette, • Project monitoring reports	• Proposed changes in policy and inter-agency coordination are supported by the responsible agencies • The regulations on the vehicle inspection is in place through the PNS
	• Number of standards promulgated for low-carbon vehicles by Year 3	• 0	• 3[22]	• DTI-BPS report • Approval memos	
	• Executive Order for interagency coordination on low-carbon transport system approved and adopted by EOP	• 0	• 1	• Official Gazette • Project monitoring reports	
Component 2: Awareness and institutional capacity development					
Outcome 2: Adopted and implemented low carbon transport plans and/or programs in major cities	• Number of cities capacitated by adopting and implementing low carbon transport plans and programs • Number of institutions certified to conduct low carbon vehicle technician training	• 1 • 0	• At least 4 • At least 2	• Evaluation reports • Government documents • Project survey	• DOTr have been mandated to implement EST nationwide which LCTs can be promoted nationwide.
Component 3: Investment in low carbon transport systems in the country					
Outcome 3.1: Increased private sector participation in the widespread deployment and commercialization of low carbon transport systems	• Number of entities involved in the deployment and commercialization of low carbon transport systems by EOP • Number of bankable business plans, supported by the Project, completed and funded by Year 3	• 3 • 0	• 5 • 2	• Market survey • Project monitoring reports • Project activity report	

[21] 2 each newly developed and revised with low carbon transport provisions

[22] 1 newly developed for e-jeepneys; 1 newly developed for hybrid buses; 1 newly developed for AGT

Outcome 3.2 Increased private sector investment in low carbon transport systems	• Number of additional investors who invested in low carbon transport solutions facilitated by the Project by EOP • Cumulative investment in new low carbon vehicle projects by EOP	• 0 • Approximately USD 7,500,000	• 3 • Approximately USD 20,000,000	• Market research survey • Project activity report • Project monitoring report	

4. TOTAL BUDGET AND WORKPLAN

Award ID:	86135	Project ID(s):	93480
Award Title:	Promotion of Low Carbon Urban Transport Systems in the Philippines		
Business Unit:	PHL10		
Project Title:	Promotion of Low Carbon Urban Transport Systems in the Philippines		
PIMS no.:	5304		
Implementing Partner (Executing Agency)	Department of Transportation (DOTr)		

Total Budget

GEF Outcome/Atlas Activity	Responsible Party/ Implementing Agent	Fund ID	Donor Name	Atlas Budgetary Account Code	ATLAS Budget Description	Amount Year 1 (USD)	Amount Year 2 (USD)	Amount Year 3 (USD)	Amount Year 4 (USD)	Total	See Budget Note:
Outcome 1: Effective enforcement of policies and support provided for the promotion of low carbon modes of transport	**DOTr**	**62000**	**GEF**	71200	International Consultants	30,000	33,900	37,500	37,500	138,900	1
				71300	Local Consultants	40,000	40,000	25,000	25,000	130,000	2
				71400	Contractual Services – Individual	20,000	27,000	17,000	17,000	81,000	3
				72100	Contractual Services – Companies	42,000	46,000	41,000	31,000	160,000	4
				71600	Travel	5,000	11,800	12,200	9,000	38,000	5
				74100	Professional Services	-	-	10,000	10,000	20,000	6
				75700	Training, Meetings & Workshops Costs	12,500	18,300	16,000	10,200	57,000	7
					Sub-total of Outcome 1	**149,500**	**177,000**	**158,700**	**139,700**	**624,900**	
Outcome 2: Adopted and implemented low carbon transport plans and/or programs in Major cities	**DOTr**	**62000**	**GEF**	71200	International Consultants	10,000	40,000	20,000	20,000	90,000	8
				71300	Local Consultants	30,000	-	15,000	-	45,000	9
				71400	Contractual Services – Individual	24,000	4,000	4,000	4,000	36,000	10
				72100	Contractual Services - Companies	10,000	25,000	10,000	10,000	55,000	11
				71600	Travel	1,550	8,000	7,500	6,700	23,750	12
				74100	Professional Services	20,000	25,000	5,000	5,000	55,000	13
				72400	Communication and Audio Visual Equip	5,000	5,000	5,000	5,000	20,000	14
				74200	Audio-Visual & Print Production Costs	16,000	6,000	16,000	6,000	44,000	15
				75700	Training, Meetings & Workshops Costs	1,600	10,800	9,600	9,600	31,600	16
					Sub-total of Outcome 2	**118,150**	**123,800**	**92,100**	**66,300**	**400,350**	
Outcome 3.1:	**DOTr**	**62000**	**GEF**	71200	International Consultants	20,000	40,000	40,000	30,000	130,000	17

Increased private sector participation in the widespread deployment and commercialization of low carbon transport systems				71300	Local Consultants	10,000	13,000	13,000	8,000	44,000	18
				71400	Contractual Services – Individual	20,000	20,000	-	15,000	55,000	19
				72100	Contractual Services – Companies	25,000	50,000	50,000	15,000	140,000	20
				71600	Travel	3,200	4,000	4,000	2,600	13,800	21
				75700	Training, Meetings & Workshops Costs	6,000	4,800	4,800	3,600	19,200	22
				Sub-total of Outcome 3.1		**84,200**	**131,800**	**111,800**	**74,200**	**402,000**	
Outcome 3.2: Increased private sector investment in low carbon transport systems	**DOTr**	**62000**	**GEF**	71200	International Consultants	35,000	65,000	30,000	18,000	148,000	23
				71300	Local Consultants	15,000	5,000	11,476	5,000	36,476	24
				71400	Contractual Services – Individual	-	15,000	10,000	22,500	47,500	25
				72100	Contractual Services – Companies	30,000	15,000	12,500	12,500	70,000	26
				72200	Equipment	300,000	300,000	150,000	-	750,000	27
				71600	Travel	1,200	4,200	4,200	4,200	13,800	28
				75700	Training, Meetings & Workshops Costs	1,800	4,800	6,400	8,000	21,000	29
				Sub-total of Outcome 3.2		**383,000**	**409,000**	**224,576**	**70,200**	**1,086,776**	
Project Management	**DOTr and UNDP**	**62000**	**GEF**	71300	Local Consultants and Local Staff	19,800	19,800	19,800	19,800	79,200	30
				71600	Travel	1,050	1,400	1,400	1,400	5,250	31
				72800	Information Technology Equipment	3,000	-	1,500	-	4,500	32
				75700	Training, Meetings & Workshops Costs	2,600	-	-	2,600	5,200	33
				72500	Supplies	1,200	600	600	600	3,000	34
				74200	Audio-Visual & Print Production Costs	300	300	300	300	1,200	35
				74100	Professional Services	3,750	3,750	3,750	3,750	15,000	36
				74500	UNDP Support Services	2,500	2,500	2,500	2,500	10,000	37
				74500	Miscellaneous	700	550	550	550	2,350	38
				Sub-total of Project Management Costs		**34,900**	**28,900**	**30,400**	**31,500**	**125,700**	
					PROJECT TOTAL	**769,750**	**870,500**	**617,576**	**381,900**	**2,639,726**	

Summary of Funds

Source of Funds	Amount Year 1	Amount Year 2	Amount Year 3	Amount Year 4	Total
GEF	**769,750**	**870,500**	**617,576**	**381,900**	**2,639,726**
Co-financing	**5,609,995**	**5,609,995**	**5,609,995**	**5,609,994**	**22,439,979**
DOTr (in-cash)	1,237,500	1,237,500	1,237,500	1,237,500	4,950,000
DOTr (in-kind)	400,000	400,000	400,000	400,000	1,600,000
DOST (in cash)	792,749	792,749	792,749	792,749	3,170,996
DOST (in kind)	7,246	7,246	7,246	7,245	28,983
UNDP (cash)	5,000	5,000	5,000	5,000	20,000
UNDP (in-kind)	17,500	17,500	17,500	17,500	70,000
GET-COMET (in-cash)	2,250,000	2,250,000	2,250,000	2,250,000	9,000,000
GET-COMET (in-kind)	750,000	750,000	750,000	750,000	3,000,000
EVEE-I (in-cash)	125,000	125,000	125,000	125,000	500,000
EVEE-I (in-kind)	25,000	25,000	25,000	25,000	100,000

Budget Notes:

1. This includes contractual services for the International Transport Policy Planning Expert for policy formulation including Master Plan and Support Infrastructure Roadmap at least 4 weeks each in Years 1 & 2 (Output 1.1 and 1.3); International low carbon transport (LCT) Expert on for at least 4 weeks in Years 2, 3 & 4 (Output 1.5); and an International Evaluation Specialist (IES) for 2 weeks at the beginning of Year 3 and 2 weeks towards the end of Year 4 to conduct the MTR and TE.
2. Allocation for local consultant services including National Policy and Planning Expert for the development of supportive policy framework and regulations to facilitate the uptake of low carbon transport systems (Output 1.1 and 1.3) for 12 weeks each in Years 1 and 2, 6 weeks each in Years 3 and 4; National Expert to support the establishment coordination mechanism among agencies involved in LCT (Output 1.2) for 12 weeks each in Years 1 to 4; National Evaluation Specialist (NES) for 2 weeks at the beginning of Year 3 and 2 weeks towards the end of Year 4 to assist the IES in conducting the MTR and TE; and other local consultants required for coordination with key agencies and stakeholders; development of training modules and delivery of capacity development training for local governments, vehicles operators and manufacturers on guidelines, policies and regulations. This also includes Gender Expert for design of gender strategy and undertake gender analysis in Y1 and Y2; monitoring and evaluation specialist to design M&E plan for development impacts in Y1.
3. Contractual Services – Individual: Technical assistance services are needed to conduct the design of M&E plan and its implementation in all years (Output 1.1 and 1.3); development, review of guidelines for supportive infrastructures in Years 1 & 2 (Output 1.4); and conduct of training of LGU officials responsible for the approval of supporting infrastructures in Years 2, 3, & 4 (Output 1.5)
4. Contractual Services – Companies: TA services from companies will be procured for development of guidelines for inter-agency coordination for LCTs, pilot testing and design of monitoring plan in all years (Output 1.2); preparation of the draft LCT Master Plan, infrastructure roadmap, and conduct of workshop in Years 1, 2 & 3 (Output 1.3); capacity building trainings of LGU on the streamlined processes to expedite approval of supportive infrastructures, including monitoring plan in Years 2, 3 & 4 (Output 1.4).
5. Travel costs associated with consultations of key stakeholders, policy advocacy meetings, local travel for data collection and meetings.
6. Professional services will be hired to conduct necessary surveys and undertake periodic monitoring of development impacts in Y2 and Y4; conduct post-evaluation survey of training activities to be executed in Years 3 & 4.
7. Workshops and training sessions including training venue and associated costs for training tools, etc.
8. Services of International Transport Planning Expert will be procured to design tools for planning and monitoring of registration and franchising of vehicles and fleet operators, including MIS (Output 2.1) in Years 2, 3 & 4; International Transport Capacity Building Specialist for the assessment of training institution and development of training curricula for LCTs, including delivery of training (Output 2.4) to be conducted in Years 1 to 4.
9. Local Communications Specialist to design and implement the Project's communications strategy, tools and activities; impact publications and their dissemination; developing and maintaining project website; producing project documentary at EOP, etc. (Output 2.2).
10. Contractual Services – Individual: This allocation will be for the preparation and production of biannual newsletter (Output 2.2) 2 weeks in a year in all years; assistance in the preparation and monitoring of

development impacts of the project; development of criteria, guidelines and detailed plan for establishment of centers of excellence (Output 2.3) in Year 1.

11. Contractual Services – Companies: a team will be hired to support in the delivery of Output 2.1, which is the development of capacity of planning institutions and regulatory agencies on (a) coordinated policy making, investment planning and implementation of LCT with broader urban development; and (b) modern planning tools, registration and licensing of low carbon vehicles to be conducted in Years 1 to 4; needs assessment and design and execution of training will be included.
12. Travel costs associated with the conduct of capacity building activities for both trainers and sponsored participants and going to and from various meetings and workshops.
13. Professional services required for the establishment of the regional center of excellence (Output 2.3) in Years 1 & 2; design and conduct post training evaluation survey (Output 2.4) to be executed in Years 2, 3 & 4.
14. Communications and audio visual equipment allocation for the implementation of communications strategy and advocacy programmes (Output 2.2) to be procured each year for all years.
15. Design and implementation of the media campaign in Years 1 & 3 and Production and publication of media products (Output 2.2) in all years.
16. More than 20 workshops and meetings are planned to be conducted in all years for awareness and advocacy programmes, establishment of centers of excellence, consultations of key stakeholders, policy advocacy meetings, local travel for data collection and capacity building of institutions and local technicians.
17. International Transportation Technology Expert with experience in economic analysis will be needed to conduct the feasibility and economic analysis for introducing low carbon vehicles on the identified routes (Output 3.1.1) in Years 2, 3 & 4, and to review the EV charging protocols and standards existing in other countries and Grid Impact Assessment (Output 3.1.3) in Year 1 and final review in Year 4.
18. Local Transportation Engineering consultant will assist the international consultant in the conduct the feasibility and economic analysis; he/she will review and update the methodology in determining routes for low carbon vehicles (Output 3.1.1) in Years 1, 2 & 3; local consultant will also be needed to design and conduct of a survey of LCT manufacturers and their products (Output 3.1.2) in Years 2, 3 & 4.
19. Contractual Services – Individual: identification and prioritization of suitable vehicle-fuel technologies and corresponding on-road and laboratory test standards (Output 3.1.2) in Years 1 & 2; development, adoption and enforcement of standard safety and fire protection regulations and procedures for supportive infrastructure in Years 1 & 2 and design and conduct of a survey on supportive infrastructure (Output 3.1.3) in Year 4.
20. Contractual Services – Companies: services of firms with relevant experience will be procured to conduct studies on public transport route rationalization will be done in key cities (Output 3.1.1) in Years 1 to 4; development, promotion, and approval of testing and certification system for LCTs (Output 3.1.2) in Years 2 & 3; and development, promotion, and approval of testing and certification system for EV charging stations (Output 3.1.3) in Years 1, 2 & 3.
21. Travel required to and from various meetings and events.
22. Meetings with the private sector and institutions to deliberate and have the proposed standard EV charging protocol approved by relevant officially-appointed standards committees.
23. This covers for the professional time of the International Finance and Investment Expert(s) for services related to the development of business plan and matching of potential investors with investment options (Output 3.2.1) in Years 2, 3 & 4, and assistance to operators in raising capital and achieving financial closure (Output 3.2.3) in Years 1 & 2; International Transportation Technical Expert(s) will also be required to deliver Output 3.2.2 through the conduct of techno-economic viability assessments of solar EV charging stations in Year 1, identification and design of solar EV charging projects in Year 2, and preparation of RFPs and evaluation of bids in Years 1 & 2.
24. Local consultant services to support the International Finance and Investment Expert in the preparation of the business plan and particularly in conducting the assessment of the Philippines investment environment in relation to LCT (Output 3.2.1) in Year 1; Services from local consultants will also be needed for the design and execute GHG monitoring framework and plan; GHG analysis; design of training modules and conduct of training activities as well as design and conduct of post training surveys and design and initiation of plan for replication and scale up (Output 3.2.3) in Years 2, 3 & 4.
25. Contractual Services – Individual: capacity development and training of FIs, streamlining of loan approval processes (Output 3.2.1) in Years 2, 3 & 4; design of monitoring plan and data collection of the performance of EV charging stations (Output 3.2.2) in Year 4; conduct of yearly GHG monitoring and GHG analysis; monitoring, evaluation, documentation and promotion/dissemination of experience and lessons learned regarding the new hybrid or EVs for mass transit and AGT demonstration systems (Output 3.2.3) in Years 2 & 4.
26. Contractual Services – Companies: identification and assessment of investment options and development of database (Output 3.2.1) in Year 1; design and conduct of training activities concerning the operation, maintenance and monitoring performance of solar charging facilities database (Output 3.2.2) in Years 3 & 4; preparation of RFPs and evaluation of bids for the demo projects (Output 3.2.3)

in Years 1 & 2; design and conduct of annual survey to get public feedback of LCT operations (Output 3.2.3) in Years 2, 3 & 4.

27. Contractual services, procurement, setup and commissioning of demonstration equipment comprising EV solar charging systems within Output 3.2.2 and EV units within Output 3.2.3; these will be disbursed in Years 1, 2 & 3; co-financing partners from the private sector are expected to provide contributions in the procurement, commissioning of the demo units and the eventual roll-out of the systems.
28. Travel required to and from various meetings and workshops.
29. Meetings and workshops will be conducted to support the activities that will help Increase the private sector investment in low carbon transport.
30. Professional time for the Project Manager (24 person-months in 4 years) and Project Assistant (16 person-months in 4 years).
31. Total travel for project management.
32. Total budget for information technology equipment including software for the project management unit operation.
33. Budget for Project Inception and Launching Workshop at the commencement of the Project and Dissemination Workshop at the EOP.
34. Total budget for office equipment and supplies including to support for the project management unit operation.
35. Print Production Cost including total printing for project management is to support promotional materials by the PMU.
36. Professional Services includes Professional Services is for financial audit fees, financial management services, representing project management and coordination for the PMU.
37. DPC costs for provision of support services (UNDP CO Cost Recovery Charges) for recruitment, procurement, financial payment and travel arrangement (USD 10,000).
38. Total miscellaneous expenses for project management mainly used to balance the budget by a small amount (USD 2,350).

5. MANAGEMENT ARRANGEMENTS

87. The Project will be implemented over a period of four (4) years and will be executed under UNDP National Implementation Modality (NIM). The lead Implementing Partner for the Project will be the DOTr.

88. The Project will be implemented in close coordination with Responsible Partners, which will provide the technical and operational support to the Project, and assist in liaising with the local authorities and Stakeholders in the target cities and districts. These Responsible Partners will consist of, but not limited to, the following government ministries:

- Relevant agencies within DOTr
- DOE
- DOST

89. The graphical presentation of the implementation arrangement and linkages among participating institutions is shown in Figure 3.

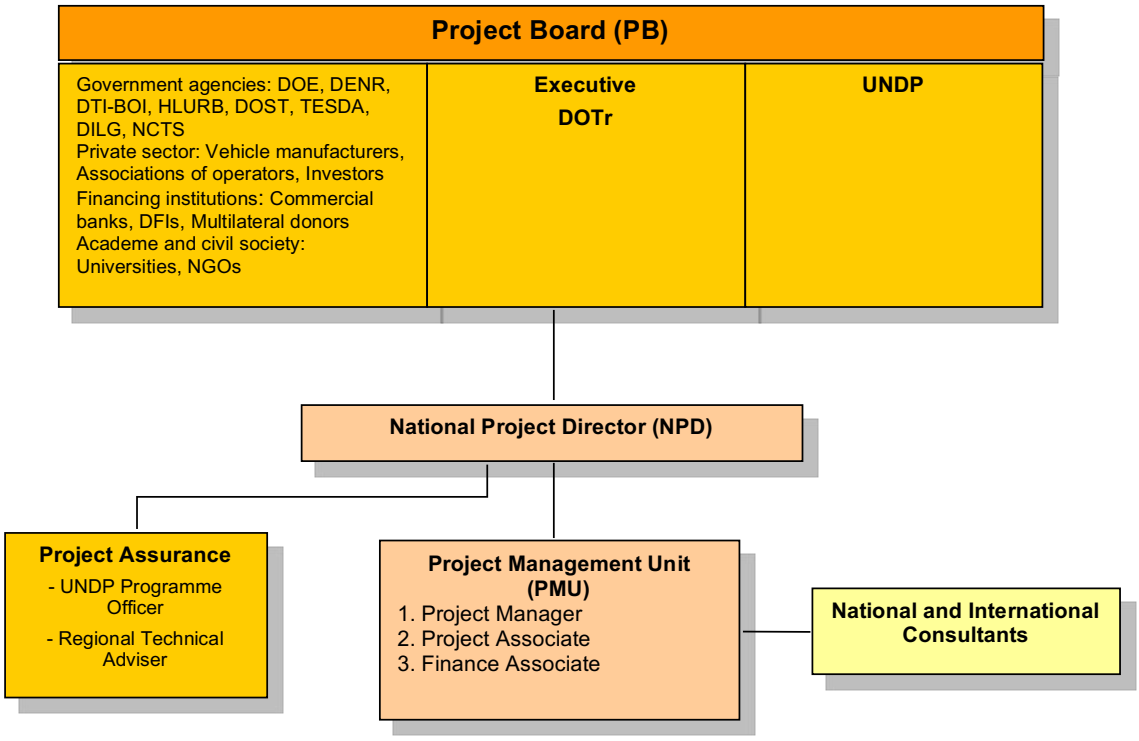

Figure 3. Implementation arrangement and institutional linkages

90. A **PMU,** which will be established and hosted within DOTr, will play the key role in Project execution. The composition of the PMU and the organizational structure of the Project are given in Figure 3. The PMU will be composed of:

- Project Director
- Project Manager
- Project Associate
- Finance Associate

- Team Leaders of Components 1, 2, 3
- Short-term experts

91. The PMU will meet every three (3) months for the following functions:

- Provide technical and operational guidance to the Project
- Approve on the quarterly execution plan for the activities of the Project
- Monitor and evaluate the progress of the activities
- Discuss and address technical issues arising during the Project implementation

92. The Project will receive high level guidance and oversight from the **Project Steering Committee (PSC),** which will be chaired by the Secretary of the DOTr, as the home ministry for the Lead Executing Agency. The PSC will be responsible for making management decisions on a consensus basis for the Project when guidance is required by the Project Director, including approval of Project revisions. Project assurance reviews will be made by the PSC at designated decision points during the execution of a Project, or as necessary when raised by the Project Manager. The Terms of Reference (TOR) of the PSC and of the key personnel of the Project are presented in Annex IV.

93. The PSC will be responsible for making management decisions for the Project, in particular when guidance is required by the Project Manager. The PSC will play a critical role in Project M&E by quality assuring these processes and products, and using evaluations for performance improvement, accountability and learning. It will ensure that required resources are committed and will arbitrate on any conflicts within the Project or will negotiate a solution to any problems with external bodies. In addition, it will approve the appointment and responsibilities of the Project Director and any delegation of its Project Assurance responsibilities. Based on the approved Annual Work Plan (AWP), the PSC can also consider and approve the quarterly plans (if applicable) and also approve any essential deviations from the original plans.

94. In order to ensure UNDP's ultimate accountability for the Project results, the PSC decisions will be made in accordance to standards that shall ensure management for development results, best value for money, fairness, integrity, transparency and effective international competition. In case consensus cannot be reached within the PSC, the final decision shall rest with the UNDP Task Manager.

95. Potential members of the PSC will be reviewed and recommended for approval during the UNDP Project Appraisal Committee (PAC) meeting. Representatives of other Stakeholders may be included in the PSC as appropriate. The PSC Meeting will be held every six (6) months.

- Project Director: The Project Director (PD) will be seconded from DOTr and will be engaged with the Project on a part-time basis. He/she will provide operational direction to the PMU team and will be accountable to the PSC for the performance of the Project. The PD will have the authority over the Project on a day-to-day basis on behalf of the Implementing Partner within the constraints laid down by the PSC. The detailed TOR of the PD is given in Annex IV.
- Project Manager: The Project Manager (PM), whose TOR is provided in Annex IV, will be a hired by the Project and will work on a full-time basis. The PM's prime responsibility is to ensure that the project produces the results specified in the Project document, to the required standard of quality and within the specified constraints of time and cost.
- Project Administrative Assistant: A Project Administrative Assistant (PAA) will be hired within the Project and will provide project administration, management, accounting and, if appropriate, technical support to the Project Manager. The PAA will be the point of contact with, and will support, the external experts on administrative matters.

- Short-term External Experts: Both international and local short-term experts (STEs) will be engaged to provide technical assistance to support the different activities and aspects of the Project implementation. The selection and hiring of STEs will be done through competitive offers and in accordance with UNDP and the GoP requirements.
- Component Team Leaders: DOTr will be in-charge of the Component 1 of the Project, while Components 2 and 3 will be co-managed by DOST and DOE. The operation of these components will be led by Component Team Leaders provided by these three agencies.

Audit Arrangements

The Government will provide the UNDP Resident Representative with certified periodic financial statements, and with an annual audit of the financial statements relating to the status of UNDP (including GEF) funds according to the established procedures set out in the programming and finance manuals. The audit will be conducted by the legally recognized auditor of the Government, or by a commercial auditor engaged by the Government.

6. MONITORING FRAMEWORK AND EVALUATION

96. The Project will be monitored through the following M&E activities. The M&E budget is provided in Table 8 below.

Project start:

97. A Project Inception Workshop will be held within the first two months of Project start among those with assigned roles in the Project organization structure, the UNDP Country Office and, where appropriate/feasible, regional technical policy and program advisors as well as other Stakeholders. The Inception Workshop is crucial to building ownership for the Project results and to plan the first year AWP.

98. The Inception Workshop will address a number of key issues including:

a) Assist all partners to fully understand and take ownership of the Project. Detail the roles, support services and complementary responsibilities of the UNDP CO and the UNDP Regional Center vis-à-vis the Project team. Discuss the roles, functions, and responsibilities within the Project's decision-making structures, including reporting and communication lines, and conflict resolution mechanisms. The Terms of Reference for Project staff and STEs will be discussed again as needed.
b) Based on the Project Results Framework and the relevant GEF Tracking Tool, finalize the first AWP. Review and agree on the indicators, targets and their means of verification, and recheck assumptions and risks.
c) Provide a detailed overview of reporting, M&E requirements. The M&E work plan and budget should be agreed and scheduled.
d) Discuss financial reporting procedures and obligations, and arrangements for annual audit.
e) Plan and schedule PSC meetings. The roles and responsibilities of all Project organization structures should be clarified and meetings planned. The first PSC meeting will be held within the first six (6) months following the Inception Workshop.

99. Following the Project Inception Workshop, an Inception Workshop Report will be prepared and shared with participants to formalize various agreements and plans decided during the meeting.

Quarterly:

- Quarterly coordination meetings will be held between members of the PMU.
- Progress made will be monitored in the Quarterly Progress Reports (QPR), itemized costs sheets and FACE-forms submitted to the UNDP CO by the Team Leaders through the Project Manager.
- Based on the information recorded in ATLAS, a Project Progress Report (PPR) will be generated in the Executive Snapshot.
- Based on the initial risk analysis submitted, the risk log will be regularly updated in ATLAS.
- Other ATLAS logs will be used to monitor issues, lessons learned, etc.

Annually:

- Annual Work Plans will be prepared by the PMU and endorsed by DOTr, UNDP and the Chairman of the PSC.

- Annual Project Review/Project Implementation Reports (APR/PIR): This key report will be prepared by the Project Manager in consultation with the Team leaders and with support from UNDP to monitor progress made since Project start and in particular for the previous reporting period. The APR/PIR combines both UNDP and GEF reporting requirements.

  The APR/PIR will include, but will not limited to, reporting on the following:
  - Progress made toward Project objective and Project outcomes - each with indicators, baseline data and end-of-project targets (cumulative)
  - Project outputs delivered per Project outcome (annual)
  - Lessons learned/good practice
  - AWP and other expenditure reports
  - Risk and adaptive management
  - ATLAS QPR
  - Portfolio level indicators (i.e., GEF focal area tracking tools), where appropriate.

Periodic monitoring through site visits:

100. The UNDP CO will conduct visits to project sites based on the agreed schedule in the Project's Inception Report/Annual Work Plan to assess first hand progress of the projects. Other members of the PSC may also join these visits. A Field Visit Report/BTOR will be prepared by the CO and will be circulated no less than one month after the visit to the Project Team and PSC members.

Mid-term of project cycle:

101. The Project will undergo an independent Mid-Term Evaluation (MTE) at the mid-point of project implementation (i.e., 24 months after the start of project implementation). The MTE will determine progress being made toward the achievement of outcomes and will identify course correction if needed. It will focus on the effectiveness, efficiency and timeliness of project implementation; will highlight issues requiring decisions and actions; and will present initial lessons learned about Project design, implementation and management. Findings of this review will be incorporated as recommendations for enhanced implementation during the final half of the Project's term. The organization, Terms of Reference and timing of the MTE will be decided after consultation between the parties to the Project document. The Terms of Reference for this MTE will be prepared by the UNDP CO based on guidance from the Regional Coordinating Unit and UNDP-GEF. The management response and the evaluation will be uploaded to UNDP corporate systems, in particular the UNDP Evaluation Office Evaluation Resource Center (ERC). The relevant GEF Focal Area Tracking Tools will also be completed during the MTE cycle.

End of Project:

102. An independent Final Evaluation (FE) will take place three months prior to the final PSC meeting and will be undertaken in accordance with UNDP and GEF guidance. The FE will focus on the delivery of the Project's results as initially planned (and as corrected after the MTE, if any such correction took place). The final evaluation will look at impact and sustainability of results, including the contribution to capacity development and the achievement of global environmental benefits/goals. The Terms of Reference for this evaluation will be prepared by the UNDP CO based on guidance from the Regional Coordinating Unit and UNDP-GEF.

103. The FE should also provide recommendations for follow-up activities and requires a management response, which should be uploaded to PIMS and to the UNDP Evaluation Office Evaluation Resource Center (ERC). The relevant GEF Focal Area Tracking Tools will also be completed during the FE.

104. During the last three months, the Project Team will prepare the Project Terminal Report. This comprehensive report will summarize the results achieved (objectives, outcomes, outputs), lessons learned, problems met and areas where results may not have been achieved. It will also lay down recommendations for any further steps that may need to be taken to ensure sustainability and replicability of the Project's results.

Learning and knowledge sharing:

105. Results from the Project will be disseminated within and beyond the Project intervention zone through existing information sharing networks and forums. The Project will identify and participate, as relevant and appropriate, in scientific, policy-based and/or any other networks, which may be of benefit to Project implementation through lessons learned. The Project will identify, analyze, and share lessons learned that might be beneficial in the design and implementation of similar future projects. Finally, there will be a two-way flow of information between this Project and other projects of a similar focus.

Table 5. M&E Work Plan and Budget

Type of M&E Activity	Responsible Parties	Budget (in USD) *(Excluding project team staff time)*	Timeframe
Inception Workshop and Report; Dissemination Workshop	▪ Project Manager/Project Director ▪ UNDP CO, UNDP GEF	Budgeted cost: USD 5,200	Within first two months of Project start up; End of Project
Measurement of Means of Verification of project results.	▪ UNDP GEF RTA/Project Director will oversee the hiring of specific studies and institutions, and delegate responsibilities to relevant team members.	To be finalized in Inception Phase and Workshop.	Start, mid and end of project (during evaluation cycle) and annually when required.
Measurement of Means of Verification for Project Progress on *output and implementation*	▪ Oversight by Project Director ▪ Project Manager/ Project team	To be finalized as part of the Annual Work Plan preparation	Annually prior to ARR/PIR and to the definition of annual work plans
ARR/PIR	▪ Project Manager and team ▪ UNDP CO ▪ UNDP RTA	None	Annually
Periodic status/ progress reports	▪ Project Manager and team	None	Quarterly
Mid-term Review	▪ Project Director ▪ Project Manager and team ▪ UNDP CO ▪ UNDP BRH ▪ MTR consultant	Budgeted cost: USD 40,000	24 months after the start of project implementation
Final Evaluation	▪ Project Director ▪ Project Manager and team ▪ UNDP CO ▪ UNDP RTA	Budgeted cost: USD 40,000	At least three months before the end of project

Type of M&E Activity	Responsible Parties	Budget (in USD) *(Excluding project team staff time)*	Timeframe
	▪ FE consultant		implementation
Project Terminal Report	▪ Project Director ▪ Project Manager and team ▪ UNDP CO ▪ Local consultant	None	At least three months before the end of the project
Audit	▪ UNDP CO ▪ Project Director ▪ Project Manager and team	USD 15,000	For four years of project implementation
Visits to field sites	▪ UNDP CO ▪ UNDP RCU (as appropriate) ▪ Government representatives	For GEF supported projects, paid from IA fees and operational budget	Yearly
TOTAL indicative COST Excluding project team staff time and UNDP staff and travel expenses		**USD 100,200**	

7. LEGAL CONTEXT

This project document shall be the instrument referred to as such in Article 1 of the Standard Basic Assistance Agreement between the Government of the Philippines and UNDP, signed on 21 July 1977. All references in the SBAA to "Executing Agency" shall be deemed to refer to "Implementing Partner."

This project will be implemented by the Department of Transportation (DOTr) ("Implementing Partner") in accordance with its financial regulations, rules, practices and procedures only to the extent that they do not contravene the principles of the Financial Regulations and Rules of UNDP. Where the financial governance of an Implementing Partner does not provide the required guidance to ensure best value for money, fairness, integrity, transparency, and effective international competition, the financial governance of UNDP shall apply.

8. RISK MANAGEMENT

1. Consistent with the Article III of the SBAA [or the Supplemental Provisions to the Project Document], the responsibility for the safety and security of the Implementing Partner and its personnel and property, and of UNDP's property in the Implementing Partner's custody, rests with the Implementing Partner. To this end, the Implementing Partner shall:
   a) put in place an appropriate security plan and maintain the security plan, taking into account the security situation in the country where the project is being carried;
   b) assume all risks and liabilities related to the Implementing Partner's security, and the full implementation of the security plan.

2. UNDP reserves the right to verify whether such a plan is in place, and to suggest modifications to the plan when necessary. Failure to maintain and implement an appropriate security plan as required hereunder shall be deemed a breach of the Implementing Partner's obligations under this Project Document.

3. The Implementing Partner agrees to undertake all reasonable efforts to ensure that no UNDP funds received pursuant to the Project Document are used to provide support to individuals or entities associated with terrorism and that the recipients of any amounts provided by UNDP hereunder do not appear on the list maintained by the Security Council Committee established pursuant to resolution 1267 (1999). The list can be accessed via http://www.un.org/sc/committees/1267/aq_sanctions_list.shtml.

4. Social and environmental sustainability will be enhanced through application of the UNDP Social and Environmental Standards (http://www.undp.org/ses) and related Accountability Mechanism (http://www.undp.org/secu-srm).

5. The Implementing Partner shall: (a) conduct project and programme-related activities in a manner consistent with the UNDP Social and Environmental Standards, (b) implement any management or mitigation plan prepared for the project or programme to comply with such standards, and (c) engage in a constructive and timely manner to address any concerns and complaints raised through the Accountability Mechanism. UNDP will seek to ensure that communities and other project stakeholders are informed of and have access to the Accountability Mechanism.

6. All signatories to the Project Document shall cooperate in good faith with any exercise to evaluate any programme or project-related commitments or compliance with the UNDP Social and Environmental Standards. This includes providing access to project sites, relevant personnel, information, and documentation.

7. The Implementing Partner will take appropriate steps to prevent misuse of funds, fraud or corruption, by its officials, consultants, responsible parties, subcontractors and sub-recipients in implementing the project or using UNDP funds. The Implementing Partner will ensure that its financial management, anti-corruption and anti-fraud policies are in place and enforced for all funding received from or through UNDP.

8. The requirements of the following documents, then in force at the time of signature of the Project Document, apply to the Implementing Partner: (a) UNDP Policy on Fraud and other Corrupt Practices and (b) UNDP Office of Audit and Investigations Investigation Guidelines. The Implementing Partner agrees to the requirements of the above documents, which are an integral part of this Project Document and are available online at www.undp.org.

9. In the event that an investigation is required, UNDP has the obligation to conduct investigations relating to any aspect of UNDP projects and programmes. The Implementing Partner shall provide its full cooperation, including making available personnel, relevant documentation, and granting access to the Implementing Partner's (and its consultants', responsible parties', subcontractors' and sub-recipients') premises, for such purposes at reasonable times and on reasonable conditions as may be required for the purpose of an investigation. Should there be a limitation in meeting this obligation, UNDP shall consult with the Implementing Partner to find a solution.

10. The signatories to this Project Document will promptly inform one another in case of any incidence of inappropriate use of funds, or credible allegation of fraud or corruption with due confidentiality.

    Where the Implementing Partner becomes aware that a UNDP project or activity, in whole or in part, is the focus of investigation for alleged fraud/corruption, the Implementing Partner will inform the UNDP Resident Representative/Head of Office, who will promptly inform UNDP's Office of Audit and Investigations (OAI). The Implementing Partner shall provide regular updates to the head of UNDP in the country and OAI of the status of, and actions relating to, such investigation.

11. UNDP shall be entitled to a refund from the Implementing Partner of any funds provided that have been used inappropriately, including through fraud or corruption, or otherwise paid other than in accordance with the terms and conditions of the Project Document. Such amount may be deducted by UNDP from any payment due to the Implementing Partner under this or any other

agreement. Recovery of such amount by UNDP shall not diminish or curtail the Implementing Partner's obligations under this Project Document.

12. Each contract issued by the Implementing Partner in connection with this Project Document shall include a provision representing that no fees, gratuities, rebates, gifts, commissions or other payments, other than those shown in the proposal, have been given, received, or promised in connection with the selection process or in contract execution, and that the recipient of funds from the Implementing Partner shall cooperate with any and all investigations and post-payment audits.

13. Should UNDP refer to the relevant national authorities for appropriate legal action any alleged wrongdoing relating to the project, the Government will ensure that the relevant national authorities shall actively investigate the same and take appropriate legal action against all individuals found to have participated in the wrongdoing, recover and return any recovered funds to UNDP.

14. The Implementing Partner shall ensure that all of its obligations set forth under this section entitled "Risk Management" are passed on to each responsible party, subcontractor and sub-recipient and that all the clauses under this section entitled "Risk Management Standard Clauses" are included, *mutatis mutandis*, in all sub-contracts or sub-agreements entered into further to this Project Document.

9. ANNEXES

Annex I. Risk Analysis

OFFLINE RISK LOG

Project Title: Promotion of Low Carbon Urban Transport Systems in the Philippines	Award ID: 86135	Date:

#	Description	Date Identified	Type	Impact & Probability[23]	Countermeasures / Management response	Owner	Submitted, updated by	Last Update	Status (compared with previous evaluation)
1	Market risks, low social acceptance and inadequate capacity of the local industry to meet the demand		Operational Organizational Social	The risk would prevent the project from delivering on its objectives for Outcome P = 3 I = 5	One of the Project's focus areas is considerable awareness, advocacy and information dissemination activities as well as demo projects to showcase the benefits of low carbon transport to the public (e.g. air and noise pollution, GHG emissions reduction, etc.) to reinforce social acceptance and consumer confidence particularly among "early adopters". Public feedback survey will be designed and commissioned annually (output 3.2.3) to gather and analyse data and information on the perception, preferences, satisfaction levels and experience of users/consumers.	Project manager	Submitted by Project Proponent updated by Project Manager		

[23] In the rating of 1-5, 1 being the lowest and 5 being the highest.

					Additionally the project will ensure trained local experts are available to provide operations, maintenance and related market services. The lack of capacity of the local industry will be addressed through the establishment of the regional centers of excellence (Output 2.3), which will be the focal entities for development of sufficient number of skilled local technicians together with support from agencies such as TESDA, Bureau for Products and Standards, UP-Vehicle Research and Testing Laboratory and other vocational institutes.				
2	Lack of interest from the private sector on low carbon investments in the transport sector		Financial Regulatory Strategic	The risk would prevent the project from delivering on its objectives for Outcome P = 3 I = 5	The Project supports a model in which the government provides an enabling environment to spur private investment and the private sector provides innovative approaches to catalyze capital for low carbon investments in the transport sector. The Project will help prepare high quality assessments, feasibility studies, investment appraisals and business plans to facilitate decision making by financial institutions. It, in addition, facilitates public private dialogue and engage the private sector early on to solicit their	Project manager	Submitted by Project Proponent updated by Project Manager		

					perspectives and needs so as to enhance the attractiveness of low carbon transport investment.				
3	Low level of awareness and appreciation of local chief executives on the benefits of vehicles using alternative transport fuels		Political	The risk would prevent the project from delivering on its objectives for Outcome P =3 I = 3	The Project will design and execute capacity development workshops and communications strategy (output 2.1 and 2.2) that targets decision makers, regulators, managers including local chief executives. Moreover, a public awareness and advocacy programme (Output 2.2) will be implemented using mass media to disseminate information that will create awareness and provide information support to decision makers on the benefits and issues related to the use of low carbon vehicles. The Project will provide knowledge products, good practices and lessons learned from the implementation of low carbon transport in the country and abroad along with the studies conducted in the key cities where viable low carbon transport options can be implemented. This will enhance the understanding of local chief executives on the benefits of low carbon transport.	Project manager	Submitted by Project Proponent updated by Project Manager		
4	Inadequate human resources to		Operational	The risk would prevent the project from	Institutional capacity development is a priority to	Project manager	Submitted by Project		

	successfully implement the project		Technical	delivering on its objectives for Outcome P=3 I= 3	the Project. Comprehensive capacity building activities have been designed to enhance capacities of local human resources. These include areas covering: streamlining of local government processes (Output 1.4); training on guidelines for low carbon vehicle operators, facility managers and manufacturers (Output 1.5); planning and policy making at the central and local levels (Output 2.1); theories and hands-on technical aspects for technicians (Output 2.4); as well as evaluation and appraisal of low carbon transport projects by financial institutions (Output 3.2.1).		Proponent updated by Project Manager		
5	Technology risk regarding quality, reliability, efficiency, and maintainability		Technical	The risk would prevent the project from delivering on its objectives for Outcome P=4 I= 4	The Project prioritises the propagation of technology know how and ascertain that most appropriate technologies are selected taking into consideration the socio-economic profiles and local market conditions. Sound selection and regulation of technologies, product standards are important for long term market development both for the vehicle units and charging in the case of EVs. In collaboration with partners such as Bureau of Products and Standards, DOTr and DOST, the Project will assist	Project manager	Submitted by Project Proponent updated by Project Manager		

					in the development of standard procedures, guidelines for testing, quality control and assurance as well as safety of vehicles, charging technologies, related parts and components (output 1.5 3.1.2 and 3.1.3). This will be supplemented with technical trainings and capacity development of local technical personnel, vehicle operators, manufacturing and assembly facilities. In particular, the project demos will apply stringent quality control and performance monitoring measures at all levels with regular data collection, monitoring and evaluation for improved performance.				
6	Climate Change impacts on low carbon transport systems		Environmental	The risk would prevent the project from delivering on its objectives for Outcome P=2 I=3	According to the first national communication of the Philippines, the adverse impacts of climate change are linked to high concentration of population, resources and infrastructure. The 2nd national communication underscore that transport remains the biggest energy-consuming sector with a 36.8% share of the total final energy demand. A growing national population necessarily leads to greater use of transportation. Adequate emphasis will be placed to enhance the resilience of the	Project manager	Submitted by Project Proponent updated by Project Manager		

					low carbon transport infrastructure to extreme climate variability. Such thinking will be incorporated into all stages of project implementation. The Project will work closely with adaptation teams and experts in the Department of Environment and Natural Resources as well as the Climate Change Commission to help authorities identify such risks and integrate appropriate response measures in the mitigation actions.				
7	Low level of commitment from relevant authorities in adopting/ approving/ enforcing the recommended policies. Passage of national level policies on alternative fuel vehicles may be hampered by changes in legislative priorities		Political	The risk would prevent the project from delivering on its objectives for Outcome P=2 I= 3	The project will initially implement the policies and guidelines in the pilot cities to gauge their effectiveness. This will assist the relevant government authorities in the finalization, approval and effective enforcement. Besides, UNDP has a track record of successfully engaging with the authorities on energy, sustainable infrastructure and transport projects. The risk can be effectively mitigated through continued provision of the on-going assistance, technical backstopping and communication to encourage commitments from the authorities.	Project manager	Submitted by Project Proponent updated by Project Manager		
8	Political risk change in leadership and		Political	The risk would prevent the project from delivering on its	The Project secured commitments from key departments and dealt with				

	priorities			objectives for Outcome P=3 I= 4	committed and career employees who are not affected by recent change in national administration. Key agencies such as the DOTr and DOST have issued letters of support with co-financing, which shows their continued commitment to the objectives of the Project. Additionally, the new leadership will be oriented about the Project and their commitments secured during Project inception.				
9	Power outages during charging of batteries for EVs		Operational Technical	The risk would prevent the project from delivering on its objectives for Outcome P=2 I=4	There are two types of risks related to this – one is the risk that power is not available at the time that batteries need to be charged due to outages, and the other is the risk that outages could occur due to spikes in power demand when EVs charge simultaneously. The first risk is mitigated through battery swapping scheme where charging of batteries is done in a managed program to account for the possibilities of outages. Output 1.4 will include the design of the charging scheme and the infrastructure that will go with it. Moreover, the concept of implementing solar charging stations (Output 3.2.2) is aimed at demonstrating the use of independent and renewable sources of power, thereby	Project manager	Submitted by Project Proponent updated by Project Manager		

					minimizing the burden on the grid. The second type of risk happens when an imbalance occurs between power supply and demand caused by sudden charging of EVs without proper response from the system operator. This could create voltage drop and increase in current leading to system breakdown and power outages. The use of solar charging stations that are independent from the grid as mentioned above could mitigate this risk. Proper planning of EV deployment, which includes coordination with the grid operator is important. Since EV deployment is in an initial stage in the Philippines and is anticipated to be in a phased manner, massive impact of EV load on the grid is less likely in the short to medium term. Nevertheless, the Project in collaboration with NGCP will commission a grid impact study and investigate the possible effect of EV introduction in terms of energy generation, grid renewal and upgrade, energy losses, power quality and the need for improved IT networks. This will assist the NGCP in reinforcing the grid for future EV uptake.				

Annex II: GHG Emission Reductions Assessment

The approach and methodology used in calculating the GHG reductions of the Project are based on the ***Manual for Calculating GHG Benefits of Global Environment Facility Transportation Projects (GEF-STAP, 2011),*** henceforth, referred to as the "manual."

A summary of GHG emission reductions estimated attributed due to the Project are presented below:

Table 1: Annual Direct GHG Emission Reductions due to the Project, till EOP

Emissions (tCO_2e)	2017	2018	2019	2020
Business as Usual	4,756	4,773	4,749	4,716
Project Scenario	0	0	0	0
Total Emission Reductions	4,756	4,773	4,749	4,716

Table 2: Lifetime Direct Project Emission Reductions (2017- 2031)

Emissions	TOTAL (tCO_2e)
Annual Average Emission Reduction	4,601
Average useful lifetime of investment (year)	15
Lifetime Direct Reductions	69,013

Table 3: Lifetime Direct Secondary GHG Emission Reductions

Emissions	(tCO_2e)
Average annual reduction	23,102
Average useful lifetime of investment (year)	15
Lifetime Direct Secondary Reductions of GHG emissions (2017-2031)	346,537

Table 4: Summary of GHG Emission Reductions

Emissions	**TOTAL (tCO_2e)**
Direct Project Emission Reductions by EOP	18,994
Lifetime Direct Reductions (2017-2031)	69,013
Lifetime Direct Secondary Reductions (2017-2031)	346,537
Total Indirect Project Emission Reductions (BU)	414,076
Total Indirect Project Emission Reductions (TD)	957,115

The estimate of indirect impacts uses the BU and TD approaches as per the manual. The summary of calculations are presented below.

Table 5: Total Indirect Project Emission Reductions (BU and TD)

Emissions (tCO_2e)	TOTAL
Direct Project Emission Reductions by EOP	18,994
Replication factor, RF	6
Total Indirect Project Emission Reductions / CO_2 indirect BU	414,076
Technical and economic potential GHG savings, P10	926,765
GEF causality factor, CF	60%
Total Indirect Project Emission Reductions / CO_2 indirect TD	556,059

Underlying explanation, assumptions and key variables of data used in the calculation

Types of Impacts

GEF transportation projects can yield results in three general areas as per the manual:

Types of GHG Impacts of Projects

Type	Description[24]	Remarks
Direct	Reductions in GHGs that are achieved by the investments that are directly part of the results of the project	The direct impacts accrue from the technical assistance and investments provided through GEF and co-financed investments to the demo projects. Direct secondary impacts were also estimated as discussed in section II.C.2.
Direct post-project	Emission reductions achieved through those investments that are supported by GEF-supported revolving financial mechanisms still active after the project's conclusion	Excluded in the analysis as financial mechanism is not a part of the core outputs of the Project, hence, not applicable in this case.
Indirect	Achieved through market facilitation and development	The potential for the wider adoption of low carbon, particularly in the public transport sector (i.e. public buses primarily) were estimated through the top-down approach. The bottom-up estimates were computed by multiplying the direct impacts with a replication factor (based on local consultations). These are explained in detail in section II.C.4.

- Direct Impacts. Direct emission reductions are reductions that are attributable to the GEF investments made within the boundaries of the project which is defined in the project logical framework and reflected in the Project outputs in the planning matrix.[25] The impacts are projected and totalled over the lifetime of the investments considered as 15 years (during and post implementation of the Project).

[24] Sourced from page 3 of the GEF-STAP Manual.

[25] This includes project activities and investments whose outputs are tracked in the project logframe.

This analysis follows the rule in the GEF manual that even if a project component's impact is included in the log frame, its impacts may not be accounted for under the direct impacts category if there is no reliable way to quantify the impacts on the emissions.

The GEF methodology categorizes how GEF transportation projects can influence the GHG emissions from the sector. The table below explains how the calculations are treated in the case of this Project for each of these impact categories.

Impact Categories

Impact Categories	Impacts of the GEF Investments
Vehicle fuel efficiency	The adoption of the low carbon demo vehicles will yield higher fuel efficiencies as compared to the baseline vehicles (i.e. diesel operated internal combustion engine) and will result in lower emissions intensities per vehicle-kilometer.
GHG intensity of the fuel used	The envisioned demos include electric drive vehicles such as electric commuter minivans, e-jeepneys, AGT systems. . The emissions intensity per vehicle-kilometer will be reduced because of improved fuel efficiencies. The electric power consumption by the vehicles are reflected in the calculations and the emissions from the source power grid in the currently operating EVs in the baseline are also considered.
Amount of transport activity	A conservative approach is taken in the calculations by assuming that the transport activity in the GEF scenario is assumed to be the same as the baseline scenario, since the low carbon vehicles are envisioned to shift transport activity from existing internal combustion engine (ICE) vehicles.
Mode of transport chosen	The baseline and the GEF scenario utilizes buses and commuter minivans, jeepneys as the modes of transport of concern. The main difference is that the low carbon vehicles are used in the GEF scenario versus the existing standard fossil fuel operated ICE vehicles in the baseline scenario. The analysis determines that Project supported EVs will gradually and ultimate replace existing fleet of conventional fossil fuel operated ICE vehicles by shifting demand to low carbon vehicles. The analysis also recognises that additional low carbon vehicle units will be rolled out in new routes being identified by DOTr and LTFRB.
Amount of capacity/occupancy used	The low carbon vehicles are expected to have the same occupancy with the existing jeepneys.

- Direct Secondary Impacts: Direct secondary impacts refer to those impacts that accrue from the secondary effects of the GEF and co-financed investments such as the effects of supportive policy reforms that are catalysed by the GEF investments (e.g., policy support and support for investment facilitation). A GEF causality factor is applied to reflect the degree of influence of the project in creating the GHG impact. The table below depicts how the analysis reflects the direct secondary impacts in relation to the intended outcomes of the Project.

Impact Categories

Outcomes	Description of the Potential Direct Secondary Impact
Outcome 1: Effective enforcement of policies and support provided for the promotion of low carbon modes of transport	Increased usage of low emission vehicles for public transport resulting from improved legal and regulatory framework that facilitates penetration of low emission vehicles.
Outcome 2: Adoption and implementation of low carbon transport plans and/or programs with improved awareness of benefits of low carbon transport (by national, local, general public and stakeholders)	Not included in the direct impact assessment.
Outcome 3: Increased investments and private sector participation in low carbon transport systems	Demo project shall influence the adoption of similar investments in the country. GHG emissions reduction from the AGT demo has been included in the direct secondary impact estimates since the AGT will benefit from the technical assistance but does not require capital investment from GEF funds. Co-financing contributions provide the capital investment of the AGT system.

Indirect Impacts. The Project strives to facilitate replication of investment in low carbon transport by establishing an enabled climate, setting up policies, standards and developing capacity and awareness. The reductions in GHG emissions that would result from the replication are accounted for as indirect impacts. These are impacts that have indirectly resulted from the activities in the Project, but are outside the project logframe. The GEF transport manual recognizes that the process for estimating indirect impacts heavily relies on expert judgement and informed assumptions as there are a lot of factors related to the potential of the market, as well as the Project attributes (including project design, implementation, supporting activities), that may influence replicability.

Indirect GHG impacts are estimated using two approaches as defined in the table below as per the GEF manual:

Methods for Estimating Indirect Impacts

Method	Description[26]
Bottom-up	• Estimates the likely effectiveness of a project's potential power to inspire and catalyse similar projects • Provides lower, more conservative estimates than the top down approach • Estimated by multiplying the direct impacts of the project by the number of times that a successful investment under the project is likely to be replicated after the project activities have ended • Requires expert judgement on the degree to which a project is likely to be replicated within its sphere of influence
Top-down	• Generally used to find the highest extent in the range of potential indirect impacts. • It estimates the combined technical and economic market potential for

[26] Sourced from page 4 of the GEF-STAP Manual.

	the project type within the 10 years after the project lifetime. • Uses the maximum realizable market size further implies that there would be no baseline changes over considerable periods of time and that all emission reductions in the sector can be attributed entirely to the GEF intervention.

Equations and Assumptions

- Project Boundary: The Project boundary considered for the GHG analysis includes project demos that have been supported through direct technical assistance and investments from the Project and co-financed investments from partners. These include the deployment and operation of 56 EV commuter minivans, 40 e-jeepneys and an AGT system. These vehicles are envisaged to shift daily trips and overall transport demand away from the conventional diesel operated ICE vehicles in Metro Manila. In addition, the Project boundary also includes GHG emission reductions attributed from the installation and operation of solar PV charging stations which are envisaged to replace grid electricity for charging purposes.
- Direct Impacts. An analysis of the emissions impacts of the project investments in Metro Manila was undertaken. The tool used in the calculation of the GHG emissions impacts is the GEF-approved TEEMP Model. The TEEMP models are recommended by the GEF GHG Manual to be used in calculating the emissions impacts of transport related project applications funded through GEF. The TEEMP tool was selected among the tools as it captures the changes in the calculation parameters and can reflect the shifting of trips towards the low carbon transport. The tool uses a BRT scorecard which is basically a scoring system that will evaluate a BRT system vis-à-vis the BRT Standard (ITDP, 2014). The scores are translated by the tool into a ridership bonus factor which theoretically reflects the additional attracted trips to the system due to the quality of the BRT system. In this Project, the scores utilized in the scorecard are set at zero whenever appropriate and negates the ridership bonus factor and thus limits the scope of the analysis to the changes brought about by changing the conventional vehicles into LCT.

  This analysis uses TEEMP excel file as more detailed information was used to come up with robust estimates (as opposed to the sketch model which uses very basic assumptions). The analysis utilizes a basic equation for the calculation of the direct emission impacts as given below:

$$Direct\ CO2\ Impact = (CO2_{BAU} - CO2_{LCT}) \quad (1)$$

Where:

Direct CO_2 Impact	= CO_2 emissions difference between the BAU and LCT scenarios (tons)
CO_{2BAU}	= CO_2 emissions generated in the BAU scenario (tons)
CO_{2LCT}	= CO_2 emissions generated in the operation of the project demos as per the GEF pilot project specifications (tons)

$$CO2_{BAU} = \left(\left(\frac{VKT_D}{EE_D} \right) * EF_{diesel} \right) \qquad (2)$$

Where:

CO_{2BAU} = CO_2 emissions generated in the BAU scenario (tons/year)
VKT_D = vehicle activity that would have been performed by diesel vehicle in the absence of the LCT (i.e. EV commuter vans and e-jeepneys) (vehicle-km/year);
EE_D = energy efficiency of the diesel vehicles (vehicle-km/liter)
EF_{diesel} = emission factor of diesel fuel ($kgCO_2$/liter)

The GHG emission of low carbon transport comes from 3 technologies which are COMET EV commuter vans (lithium ion battery) and e-jeepneys (lead acid battery).

The tables below shows the summary of the assumptions for project demos used in the calculation of the direct GHG impacts of the investments to be realized under the Project.

Assumptions for EV Commuter Vans

ID	*Variable (Baseline)*		*Unit*	*Values*	*Notes/Source*
a	Fuel efficiency -baseline vehicles		vkm/liter	5.71	GIZ, 2015
b	Fuel efficiency -baseline vehicles		liter/vkm	0.18	1/a
c	Fuel density -baseline fuel		kgfuel/liter fuel	0.85	DOE
d	Specific fuel consumption-baseline vehicles	SFCi	gram fuel/vkm	147.96	b*c*10^3
e	Net calorific value-baseline fuel	NCV	J/g	43,000.00	IPCC
f	Emission factor-baseline fuel	EFBL,i	gCO2/J	0.0000741	IPCC
g	Technology improvement factor-baseline	IRt	dimensionless	0.99	CDM AMS IIIC
h	Emission factor-baseline vehicle	EFbl,km,i	gCO2/km	466.74	d*e*f*g
i	Vehicle activity - project vehicles		vkm/unit/day	168.00	Comet
j	Operating days per year		operating days/year	365	
k	Vehicle activity - project vehicles	DDi,y	vkm/year/unit	61,320.00	i*j
l	Number of project vehicles	Ni,y	number of vehicles	56.00	Comet
m	Baseline emissions	BEy	tCO2	1,602.76	h*k*l*10^-6

ID	*Variable (Project)*		*Unit*	*Value*	*Notes/Source*
n	Energy efficiency - project vehicles		km/kWh	3.39	Biona, J.B (2015) and GIZ, 2015
o	Specific energy	SECPJ,	kwh/vkm		1/n

	consumption - project vehicles	km,l,y		0.29	
p	Emission factor - energy source of project vehicles	EFelect, y	kgCO2/kWh		solar
q	Transmission and distribution losses	TDLy	%		
r	Emission factor - project vehicles	EFPJ,km,i,y	tCO2/vkm	0.00000	o*p/(1-q)/10^3
s	Vehicle activity	DDi,y	vkm/year/unit	61,320.00	see k
t	Number of project vehicles	Ni,y	number of vehicles	56.00	see l
u	Project emissions	PEy	tCO2	-	r*s*t

Assumptions for e-jeepneys

ID	*Variable (baseline)*		*Unit*	Value	*Notes/Source*
a	Fuel efficiency -baseline vehicles		vkm/liter	5.71	GIZ, 2015
b	Fuel efficiency -baseline vehicles		liter/vkm	0.18	1/a
c	Fuel density -baseline fuel		kgfuel/liter fuel	0.85	DOE
d	Specific fuel consumption-baseline vehicles	SFCi	gram fuel/vkm	147.96	b*c*10^3
e	Net calorific value-baseline fuel	NCVBL,j	J/g	43,000.00	IPCC
f	Emission factor-baseline fuel	EFBL,i	gCO2/J	0.0000741	IPCC
g	Technology improvement factor-baseline	IRt	dimensionless	0.99	CDM AMS IIIC
h	Emission factor-baseline vehicle	EFbl,km,i	gCO2/km	466.74	d*e*f*g
i	Vehicle activity - project vehicles		vkm/unit/day	358.40	EEVE-i
j	Operating days per year		operating days/year	365	
k	Vehicle activity - project vehicles	DDi,y	vkm/year/unit	130,816.00	i*j
l	Number of project vehicles	Ni,y	number of vehicles	40.00	EEVE-i
m	Baseline emissions	BEy	tCO2	2,442.30	h*k*l*10^-6

ID	*Variable (project)*		*Unit*	2016	*Notes/Source*
n	Energy efficiency - project vehicles		km/kWh	3.39	GIZ, 2015
o	Specific energy consumption - project vehicles	SECPJ,km,l,y	kwh/vkm	0.29	1/n
p	Emission factor - energy source of project vehicles	EFelect,y	kgCO2/kWh		solar
q	Transmission and	TDLy	%		

	distribution losses				
r	Emission factor - project vehicles	EFPJ,km,i,y	tCO2/vkm	0.00000	o*p/(1-q)/10^3
s	Vehicle activity	DDi,y	vkm/year/unit	130,816.00	see k
t	Number of project vehicles	Ni,y	number of vehicles	40.00	see l
u	Project emissions	PEy	tCO2	-	r*s*t

Assumptions for Switch to Solar Charging Stations

ID	*Variable (Baseline)*		*Unit*	Value	*Notes/Source*
bb	Energy efficiency of the electric vehicles included in the baseline		km/kWh	3.39	see n
cc	Specific energy consumption of the electric vehicles in the baseline	SECPJ,km,l,y	kwh/vkm	0.29	1/bb
dd	Emission factor of the electricity grid	EFelect,y	kgCO2/kWh	0.53	grid
ee	Transmission and distribution losses	TDLy	%	10.5%	World bank data
ff	Emission factor -electric vehicles in the baseline	EFPJ,km,i,y	tCO2/vkm	0.00017	cc*dd/(1-ee)/10^3
gg	Vehicle activity	DDi,y	vkm/year/unit	130,816.00	see k
hh	Number of electric vehicles in the baseline	Ni,y	number of vehicles	18.00	see l
ii	Baseline emissions - electric vehicles in the baseline	BEy	tCO2	410.86	r*s*t

ID	*Variable (Project)*	*Variable*	*Unit*	Value	*Notes/Source*
jj	Energy efficiency of the electric vehicles included in the baseline		km/kWh	3.39	see n
kk	Specific energy consumption of the electric vehicles in the baseline	SECPJ,km,l,y	kwh/vkm	0.29	1/jj
ll	Emission factor - energy source of project vehicles	EFelect,y	kgCO2/kWh	-	solar
mm	Transmission and distribution losses	TDLy	%		
nn	Emission factor - electric vehicles in the baseline running on solar	EFPJ,km,i,y	tCO2/vkm	0.00000	kk*ll/(1-mm)/10^3
oo	Vehicle activity	DDi,y	vkm/year/unit	130,816.00	see k
pp	Number of electric vehicles in the baseline	Ni,y	number of vehicles	18.00	see l
qq	Project emissions - electric vehicles in the baseline running on solar	PEy	tCO2	-	r*s*t

Direct GHG Reductions

Emissions (tCO_2e)	2017	2018	2019	2020	2031
Business as Usual	4,755.51	4,772.86	4,749.03	4,716.23	4,395.42
Project Scenario	-	-	-	-	-
Total Emission Reductions	4,755.51	4,772.86	4,749.03	4,716.23	4,395.42

Direct GHG Emission Reductions by EOP

	TOTAL (tCO2e)
Average annual reduction	4,748
Project timeline (years)	4
Direct GHG Reductions by EOP	18,993

Lifetime Direct Project Emission Reductions of CO_2

	TOTAL (tCO2e)
Average annual reduction	4,601
Average useful lifetime of investment (year)	15
Lifetime Direct Reductions	69,013

- Direct Secondary Impacts. The direct secondary GHG impacts of the GEF projects are accounted for in this analysis since these impacts are targeted by the project through its other components, particularly the ones on the support to policy development and enforcement and support to increased investments in LCTs. The analysis took into consideration the changes in the scenarios from 2020-2030 as the policies and supporting activities for the increased investments in LCT are estimated to start taking effect from 2020 onwards.[27]

  The calculation of the direct secondary GHG impacts requires an analysis of the state and trajectories of the road passenger transport emissions in the country. This is necessary as the policies intended to be developed and enforced will not only affect Metro Manila but the country as whole.

  The approach taken in estimating the direct secondary impacts of the project is consistent with the equations and framework of the GEF manual,[28] as well as the TEEMP tools (unfortunately, there is no TEEMP tool in the GEF suite that can be used for capturing the direct secondary impacts of this Project and thus a separate tool was devised in order to simulate the impacts).

  Historical data (2007 to 2013) on vehicle registration was collected from LTO and was processed and analysed to reflect the vehicle types relevant to the analysis:

[27] The GEF Manual allows for the inclusion of direct secondary impacts up to 20 years.

[28] Page 12 of the Manual states that estimations can use the ASIF framework (Emissions = Activity x Structure x Intensity x Emission Factors).

Vehicle Segments

Vehicle Type	Description
Car	All passenger cars (1600 to 2300 kgs) including locally manufactured utility vehicles, pick-ups, vans and wagons
Motorcycle	All motorcycles and tricycles except for tricycles for hire
Tricycles for hire	Public transport tricycles
SUV	Sports utility vehicles
Taxi	Taxicabs
Public UV	Utility vehicles that are granted taxi franchises
Truck/bus	Refers to buses with passenger capacity of 18 and above (except public buses)
Public bus	This has been segregated from the "truck/bus" as it is a priority vehicle type in relation to the project
UV-Private	Private utility vehicles (utility vehicles whose gross vehicle weight shall not exceed 4,500 kg)
PUJ	Public utility jeepneys

Note: The segments mimic the official segmentation of the vehicles as per the LTO classification

Historical vehicle-km values were estimated by using vehicle-km/year/vehicle assumptions. These are transformed into historical passenger-km values using average occupancy values for the different vehicle types. The % distribution of the passenger-km per vehicle type were then projected based on the historical trends.

The total historical passenger-km values were transformed into passenger-km per capita values using historical population estimates. Future passenger-km per capita values were then projected using the historical values. Total passenger-km estimates were projected by multiplying the projected passenger-km/capita values with the population projections. The total projected passenger-kms are then distributed to the different vehicle types using the projected % distribution as mentioned in the earlier paragraph. These are converted into projected vehicle population numbers by dividing the total passenger-km per vehicle type by the product of the assumed vkt/vehicle type and the average occupancy of the vehicle.

$$H.PKM_{Total,y} = \sum(H.Veh_{a,y} * VKM_{a,y} * O_{a,y}) \qquad (6)$$

Where:

$H.PKM_{Total,y}$ = Historical total passenger-kilometers for all the vehicle types in year y (pkm/year)

$H.Veh_{a,y}$ = Historical number of vehicles for vehicle type a in year y (vehicles/year)

$VKM_{a,y}$ = Vehicle kilometre per year average for vehicle type a in year y (vkm/year)

$O_{a,y}$ = Average occupancy for vehicle type in year y (pkm/vkm)

The historical vehicle registration data is given below.

Number of Vehicles

Vehicle Type	2007	2008	2009	2010	2011	2012	2013
Car	714,646	722,198	738,859	765,746	793,615	815,152	835,165
Motocycle	2,056,320	2,377,764	2,577,305	2,858,071	3,222,994	3,458,015	3,603,113
Tricycle for hire	591,254	596,238	623,663	624,078	658,466	658,675	647,554
SUV	192,972	197,253	221,980	261,213	284,099	299,611	346,396
Taxi	34,040	33,158	37,501	39,246	31,321	34,143	29,608
Public UV	13,893	12,245	11,091	12,000	15,839	16,420	21,328
Truck/bus	8,892	8,523	10,524	12,346	11,429	9,092	11,445
Public Bus	21,267	21,188	22,509	22,591	23,049	24,494	20,220
UV	1,387,805	1,379,029	1,428,192	1,485,904	1,520,393	1,552,176	1,587,048
PUJ	200,944	202,285	204,595	202,891	212,170	202,713	186,196

Source: LTO

$$H.SharePKM_{a,y} = H.PKM_{a,y}\, H.PKM_{Total,y} \quad (7)$$

Where:

$H.SharePKM_{a,y}$ = Historical share of the total pkm for vehicle type a in year y (%)
$H.PKM_{a,y}$ = Historical pkm estimates for vehicle type a in year y (pkm/year)
$H.PKM_{Total,y}$ = Historical total passenger-kilometers for all the vehicle types in year y (pkm/year)

$$P.SharePKM_{a,y} = SharePKM_{a,y-1} + (SharePKM_{a,y-1} * H.Growth.SharePKM_a) \quad (8)$$

Where:

$P.SharePKM_{a,y}$ = Projected share of the total pkm to be performed by vehicle type a in year y (%)
$SharePKM_{a,y-1}$ = Share of vehicle type a in the total pkm in year y-1 (%)
$H.Growth.SharePKM_a$ = Calculated growth rates for the share of the total pkm by vehicle type a based on historical data (%)

$$H.PKMcap_y = \frac{H.PKM_{Total,y}}{H.Pop_y} \quad (9)$$

Where:

$H.PKMcap_y$ = Historical pkm per capita in year y (pkm/year)
$H.Pop_y$ = Historical population in year y (number of people/year)

$$P.PKM_{Total,y} = P.Pop_y * (PKMcap_{y-1} + (H.Growth.PKMcap * PKMcap_{y-1})) \quad (10)$$

Where:

$P.PKM_{Total,y}$ = Projected total passenger-kilometers for all the vehicle types in year y (pkm/year)
$P.Pop_y$ = Projected population in year y (number of people/year)
$PKMcap_{y-1}$ = PKM per capita in year y-1 (pkm/year)
H.Growth.PKMcap = Calculated growth rate for population growth based on historical data(%)

$$P.PKM_{a,y} = P.PKM_{Total,y} * P.SharePKM_{a,y} \quad (11)$$

Where:

$P.PKM_{a,y}$ = Projected PKM for vehicle type a in year y (pkm/year)
$P.PKMTotal_{,y}$ = Projected total passenger-kilometers for all the vehicle types in year y (pkm/year)
$P.SharePKM_{a,y}$ = Projected share of the total pkm to be performed by vehicle type a in year y (%)

$$P.Veh_{a,y} = \frac{P.PKM_{a,y}}{(VKM_{a,y} * O_{a,y})} \quad (12)$$

Where:

$P.Veh_{a,y}$ = Projected number of vehicles under vehicle type a in year y (vehicles/year)
$VKM_{a,y}$ = Vehicle kilometer per year average for vehicle type a in year y (vkm/year)
$O_{a,y}$ = Average occupancy for vehicle type in year y (pkm/vkm)

Once the baseline vehicle numbers have been established, calculation modules for estimating the emissions for the BAU and the GEF scenario were constructed. As with the direct GHG impacts, the basic equation for calculating the direct secondary emission reductions is the same as Equation 1.

The emissions for both the BAU and the GEF scenarios are calculated using the equation below:

$$CO2_y = \sum((Veh_{a,y} * FuelSplit_{a,i,y} * VKM_{a,j,y} * EE_{a,j,y} * EF_j)/10\text{^}3) \quad (13)$$

Where:

CO_2y = CO_2 emissions in year y (tons)
Veha,y = Number of vehicles under type a in year y
FuelSplitea,j,y = % distribution of vehicle type a into fuel type j in year y
VKMa,j,y = Vehicle-km per year per unit of type a in year y
EEa,j,y = Energy efficiency of a unit of type a vehicle with fuel type j (km/unit of
Consumption of energy e.g. liter or kwh)

EFj = CO_2 Emission factor of fuel j ($kgCO_2e$/unit of consumption)
10^6 = Conversion factor from kg CO_2 to tCO_2

The electricity grid emission factors are calculated using the equation below:

$$GridEF_{CO2,y} = \sum(EG_{i,y} * HR_i * CF * CEF_i * FCO_i * 44/12) / \sum EG_{i,y} \quad (14)$$

Where:

$Grid_{CO2}$ = CO_2 emissions per fuel type i (tCO_2/MWh)
EGj,I,y = Electricity generation by plant type j in year y (kwh)
HRi = Heat rate (BTU/kwh) of fuel i
CF = Conversion factor from BTU to TJ (BTU*1055.559/10^12)
CEF = Carbon emission factor (tC/TJ) of fuel type i
FCOi = Fraction of Carbon oxidized during the burning of fuel type i (%)
44/12 = Carbon to CO_2 conversion factor
EG = Electricity generation per fuel type (MWh) in year y

The generation of the grid (% composition from different fuel types) were sourced from the projections by DOE. The heat rates were also sourced from DOE. Default values from the IPCC were used for the other parameters in the equation. The targets on the installation of solar charging stations as per the project logframe were also accounted for in the calculations.

The calculation of the direct secondary emissions takes into consideration the incremental changes in the investments in LCT and the targets in terms of actual vehicle numbers as set forth in the project planning matrix. The summary of the assumptions in terms of the number of vehicles for the different LCTs are given in the table below:

Main Assumptions for the Direct Secondary CO_2 Impacts of the Non-Investment Components of the Project

ID	*Variable*		*Unit*	*Notes/Source*	Value
a	Fuel efficiency -baseline vehicles		vkm/liter	based on sample	1.45
b	Fuel efficiency -baseline vehicles		liter/vkm	1/a	0.69
c	Fuel density -baseline fuel		kgfuel/liter fuel	DOE	0.85
d	Specific fuel consumption-baseline vehicles	SFCi	gram fuel/vkm	b*c*10^3	586.21
e	Net calorific value-baseline fuel	NCVBL,j	J/g	IPCC	43,000.00
f	Emission factor-baseline fuel	EFBL,i	gCO2/J	IPCC	0.0000741
g	Technology improvement factor-baseline	IRt	dimensionless	CDM AMS IIIC	0.99
h	Emission factor-baseline vehicle	EFbl,km,i	gCO2/km	d*e*f*g	1,849.15
i	Vehicle activity - alternative		vkm/unit/day	based on	

	vehicles			sample	72.22
j	Operating days per year		operating days/year		365
k	Vehicle activity - alternative vehicles	DDi,y	vkm/year/unit	i*j	26,361.11
l	Occupancy		pkm/vkm		40.00
m	Occupancy of alternative vehicles		pkm/vkm		60.00
n	Number of alternative vehicles	Ni,y	number of vehicles		1.00

ID	*Variable (Project* - AGT*)*		*Unit*	*Notes/Source*	Value
q	Energy efficiency		km/kWh	see "other data 2"	1.30
r	Specific energy consumption	SECPJ,km,I,y	kwh/vkm	1/n	0.77
s	Emission factor	EFelect,y	kgCO2/kWh	grid	0.53
t	Transmission and distribution losses	TDLy	%		10.5%
u	Emission factor	EFPJ,km,i,y	tCO2/vkm	r*s/(1-t)/10^3	0.00046
v	Vehicle activity	DDi,y	vkm/year/unit	see i	26,361.11
w	Number of alternative vehicles	Ni,y	number of vehicles	see n	1.00

The direct secondary emissions impacts were multiplied with the GEF causality factor which discounts the impacts of the GEF intervention as it cannot claim full credit for the changes due to the influence of other factors. The Table below shows the guidelines for the application of the GEF causality factor as per the manual:

$$DS\ CO2 = (CO2_{BAU} - CO2_{LCT}) * CF \qquad (15)$$

Where:

DS CO_2 = Direct secondary CO_2 impacts of the Project
CO_2BAU = Total CO_2 emissions in the BAU scenario[29]
CO_2LCT = Total CO_2 emission in the LCT scenario, where the GEF interventions have influenced the adoption of LCTs in public transport in the country
CF = GEF Causality factor

GEF Causality Factors

Level	Description	GEF Causality
Level 5	The GEF contribution is critical and nothing would have happened in the baseline	100%

[29] As mentioned before, the analysis only takes into consideration 2020-2030 emission changes to be conservative.

Level 4	The GEF contribution is dominant, but some of this reduction can be attributed to the baseline	80%
Level 3	The GEF contribution is substantial, but modest indirect emissions reductions can be attributed to the baseline	60%
Level 2	The GEF contribution is modest, and substantial indirect emission reductions can be attributed to the baseline	40%
Level 1	The GEF contribution is weak, and most indirect emission reductions can be attributed to the baseline	20%

This analysis utilizes level 3 (60%) as the causality factor for the calculation the direct secondary impacts. The policies to be developed under the project, as well as the support in facilitation of investments in the sector are seen to be substantial and are much needed. However, it can also be argued that the positive changes towards LCT adoption in the country can partially be attributed to the baseline scenario. Taking level 3 as the causality factor is deemed to be conservative.

Direct Secondary Impacts

Parameters	2020	2025	2031
Baseline (tCO_2)	9,240.34	97,761.27	164,144.29
GEF Scenario (tCO_2)	3,793.96	37,309.13	76,134.60
Cumulative Savings (tCO_2)	5,446.37	60,452.15	88,009.69
Causality factor			60%
GEF Direct Secondary Impacts (tCO_2e)			52,806

Lifetime Direct Secondary Reductions of GHG Emissions

	TOTAL (tCO2e)
Average annual reduction	23,102
Average useful lifetime of investment (year)	15.00
Lifetime Direct Secondary Reductions of CO2	346,537

Indirect GHG Impacts

The indirect impacts are calculated using both the bottom-up and top-down methodologies as proposed by the GEF manual.

- Bottom-Up. The indirect GHG impacts using the bottom-up approach are calculated using the following equation.

$$Indirect\ CO2\ impact_{BU} = Direct\ CO2\ Impact * RF \quad (16)$$

Where:

Indirect CO_2 impact = Indirect CO_2 emission reduction estimates using the bottom-up approach (tons)

Direct CO_2 impact = estimated direct emission reductions (to avoid double-counting, direct secondary GHG impacts were excluded from the analysis)
RF = replication factor

The replication factor is set at 2 as there are only two cities in the country that can potentially replicate the hybrid bus investments in the foreseeable future (Cebu and Davao). These cities are major cities in the Visayas and Mindanao regions and are currently looking into sustainable transport options.

- Top-Down. The top-down indirect emission reduction is calculated by estimating the difference between the scenario for the estimation of the direct secondary impacts and the top down scenario and multiplying the resulting cumulative impacts by a causality factor to discount the impacts of the Project as it cannot claim full influence to the savings in the GEF scenario. The top down scenario depicts a maximum penetration (reasonable) of LCT vehicles. The incremental change vis-à-vis the scenario used for the calculation of direct secondary impacts was used in order to avoid double counting.

$$Indirect\ CO2\ impact_{TD} = TEP * CF \qquad (17)$$

Where:

Indirect CO_2 impact TD = Indirect CO_2 emission reduction estimates using the top down approach (tons)
TEP = technical and economic potential GHG savings with the respective application
CF = GEF causality factor

The GEF causality factor levels are provided in Table below. To uphold the concept of conservativeness, a level 2 causality factor (40%) is used in the calculations of the top-down indirect impacts. The table below explains the assumptions utilized in the "top-down" scenario vis-à-vis the baseline scenario and the scenario that was used in the estimation of the direct secondary impacts.

GEF Causality Factors

Scenario	Vehicle	Fuel	2015	2020	2025	2030	Remarks
Baseline	Tricycles for Hire	Electric	500	3000	8500	50000	It is assumed that the publicized target for 2015 will only be realized in 2020 (3,000 units). The original 2013 target (under the CTF) of 17,000 units is assumed to be reached by 2025 and only half of the total target (originally 2015 target) is assumed to reached by 2030 (50,000).
GEF-direct	Tricycles for Hire	Electric	500	6500	53250	100000	Target of ADB-DOE (100,000) is achieved by 2030 and that by

secondary							2020, 6,500 units have been rolled out. Solar charging will penetrate and will serve 100% of the electric trike population by 2030.
Top-down	Tricycles for Hire	Electric	500	6500	78250	150000	A target of 150,000 e tricycles by 2030 is used and this is still conservative as this represents only 17% of the tricycles. Solar charging will penetrate and will serve 100% of the electric trike population by 2030.
Baseline	Public bus	Electric	1	1	1	1	The baseline is that only the current AGT system will be continued and no additional electric buses will be added to the fleet (as diesel will still be attractive)
GEF-direct secondary	Public bus	Electric	1	3	3	3	In the Alternative scenario, the target of 3 AGT systems is envisioned.
Top-down	Public bus	Electric	1	3	18	100	An assumed target of 100 electric buses was used in the top down approach for indirect emissions estimation.
Baseline	Public bus	Hybrid	11	36	86	136	Increments of 5 hybrid buses are assumed as per the discussions with GFZET up to 2020, 10 buses per year up to 2030.
GEF-direct secondary	Public bus	Hybrid	11	65	235	408	A target of 3x the investment (by 2030) vs the baseline was assumed as per the Project planning matrix; the increase is assumed to happen after 2020.
Top-down	Public bus	Hybrid	11	65	2740	5411	A maximum 25% hybrid share of the public bus fleet is the most optimistic estimation that can be used as per the consultations with the private sector.
Baseline	PUJ	Electric	70	500	1154	1860	COMET has publicly announced a target of an additional 500 electric jeepneys by 2015, but in the baseline scenario, this will only be achieved in 2020, projections were made based on the additional jeepneys/year from 2015 to 2020.
GEF-direct secondary	PUJ	Electric	70	500	1670	5580	A target of 3x the investment (by 2030) vs the baseline was assumed as per the Project planning matrix; the increase is assumed to happen after 2020.
Top-down	PUJ	Electric	70	500	3820	29132	A maximum 25% hybrid share of the public bus fleet is the most optimistic estimation that can be used as per the consultations with the private sector.

The results of the indirect GHG emission reduction are presented below.

Bottom Up: The bottom-up estimate for the indirect GHG emissions takes into consideration the direct GHG emissions of the project demos and a replication factor of 6 as explained in the earlier section. The bottom-up indirect GHG emission reduction of the project amounts to 414,076 tCO_2e.

Total Indirect GHG Emission Reductions (Bottom-Up)

Indicators	Value
Total Direct Project Emission Reductions (tCO_2)	69,012.71
Replication factor	6
Bottom-up Indirect GHG impacts	414,076.26

Top-Down: The Project indirect top down GHG emission reductions are given below. The technical and economic potential savings of GHG is 926,765 tCO_2e. Multiplying this by the aforementioned causality factor (60%), the indirect top down up GHG emission reduction is **556,059 tCO_2e**.

Total Indirect GHG Emission Reductions (Top-down)

Parameters	TOTAL (tCO2e)
Technical and economic potential GHG savings	926,765
GEF causality factor, CF	60%
Total Indirect Project Emission Reductions / CO_2 indirect TD	**556,059**

Result: The analysis reveals that the Project shall lead to both global benefits (CO_2) as well as local benefits (reduction of air pollutant emissions and fuel consumption reduction). Moreover, the analysis shows that the direct secondary impacts and indirect impacts in terms of global benefits can be substantial.

Annex III:

STANDARD LETTER OF AGREEMENT
BETWEEN UNDP AND THE GOVERNMENT
FOR THE PROVISION OF SUPPORT SERVICES
FOR THE
Promotion of Low Carbon Urban Transport Systems in the Philippines Project
(ATLAS Award 00086135, Project ID 00093480)

21 March 2017

Dear Secretary Tugade,

1. Reference is made to consultations between officials of the Government of The Philippines (hereinafter referred to as "the Government") and officials of UNDP with respect to the provision of support services by the UNDP country office for nationally managed programmes and projects. UNDP and the Government hereby agree that the UNDP country office may provide such support services at the request of the Government through its institution designated as UNDP's Implementing Partner (IP) in the relevant programme support document or project document, as described below.

2. The UNDP country office may provide support services for assistance with reporting requirements and direct payment. In providing such support services, the UNDP country office shall ensure that the capacity of the IP is strengthened to enable it to carry out such activities directly. The costs incurred by the UNDP country office in providing such support services shall be recovered from the administrative budget of the programme/project.

3. The UNDP country office may provide, at the request of the IP, the following support services for the activities of the programme/project:

   (a) Payment, disbursements and other financial transactions;
   (b) Recruitment of project and programme personnel, including engagement of consultants;
   (c) Organization and facilitation of training activities, conferences, workshops, fellowships, study tours and other events;
   (d) Procurement of goods and services, including disposal of assets;
   (e) Travel arrangements, visa processing, ticketing and issuance of DSA; and
   (f) Shipment, customs clearing, vehicle registration and insurance.

4. The delivery of all of the abovementioned support services shall be carried out by the UNDP country office in accordance with the appropriate UNDP regulations, rules, policies and procedures. Support services described in paragraph 3 above shall be detailed in an annex to the programme support document or project document, in the form provided in the Attachment 1 hereto. If the requirements for support services by the country office change during the life of a programme or project, the annex to the programme support document or project document is revised with the mutual agreement of UNDP and the IP.

5. The relevant provisions of the Agreement between the Government of the Philippines and the United Nations Development Programme signed on 21 July 1977 and duly ratified on 12 December 1977, also known as the Standard Basic Assistance Agreement (SBAA), including the provisions of the Convention on Immunities and Privileges, shall apply to UNDP's performance of such support services. The Government shall retain overall responsibility for the nationally managed programme or project through its IP. The responsibility of the UNDP country office for the provision of the support services described herein shall be limited to the provision of such

support services detailed in the annex to the programme support document or project document.

6. Any claim or dispute arising under or in connection with the provision of support services by the UNDP country office in accordance with this letter shall be handled pursuant to the relevant provisions of the SBAA.

7. The manner and method of cost-recovery by the UNDP country office in providing the support services described in paragraph 3 above shall be specified in the annex to the programme support document or project document.

8. The UNDP country office shall submit progress reports on the support services provided and shall report on the costs reimbursed in providing such services, as may be required.

9. Any modification of the present arrangements shall be effected by mutual written agreement of the parties hereto.

10. If you are in agreement with the provisions set forth above, please sign and return to this office two signed copies of this letter. Upon your signature, this letter shall constitute an agreement between your Government and UNDP on the terms and conditions for the provision of support services by the UNDP country office for nationally managed programmes and projects.

Yours sincerely,

Signed on behalf of UNDP
Titon Mitra
Country Director

For the Government
Department of Transportation (DOTr)
Arthur Tugade
Secretary

DOTr-OSEC OUTGOING 17-01434

Attachment 1

DESCRIPTION OF UNDP COUNTRY OFFICE SUPPORT SERVICES

1. Reference is made to consultations between the Department of Transportation (DOTr), the institution designated by the Government of the Philippines and officials of UNDP with respect to the provision of support services by the UNDP country office for the nationally managed GEF-5 Project, "Promotion of Low Carbon Urban Transport Systems in the Philippines (ATLAS Award ID 00086135 and Project ID 00093480)"

2. In accordance with the provisions of the Letter of Agreement signed on _____ and the programme support document, the UNDP country office shall provide support services for the Programme as described below.

3. The support services to be provided and their corresponding costs are as follows:

Support services	Amount and method of reimbursement by UNDP from IP (as of 2017 prices)
Payment, disbursements and other financial transactions;	US$ 34.48 per transaction
Vendor profile only	US$ 18.04 per transaction
Recruitment of project and programme personnel (selection/recruitment process; HR & benefit administration and Management	US$ 709.39 per transaction
Recurrent personnel management services: staff payroll & banking administration & management (payroll validation, disbursement; performance evaluation; extension, promotion, entitlements; leave monitoring)	US$ 401.28 per transaction
Consultant recruitment	US$ 205.96 per transaction
Issue/renew IDs	US$ 34.18 per transaction
Organization of Events (trainings, conferences, workshops, fellowships,	US$ 475.27 per transaction involving CAP – and/or ITB, RFP requirements)

study tours, etc.);	US$ 192.05 per transaction (not involving CAP – low value procurement)
Procurement of goods and services including engagement of individual consultants;	US$ 475.27 per transaction involving CAP – and/or ITB, RFP requirements) US$ 192.05 per transaction (not involving CAP – low value procurement)
Physical inventory of assets;	Actual cost of staff time, travel costs and travel entitlements of UNDP staff (*except for inventory undertaken as part of financial closing of the project*)
Disposal of assets;	$241.68 per lot
Travel-related transactions (visa processing, ticketing, issuance of passport, DSA, terminal expenses);	US$ 59.22
Shipment, customs clearing, vehicle registration and insurance.	Actual cost of staff time, travel costs and travel entitlements of UNDP staff

4. The costs incurred by the UNDP Country Office in providing such support services shall be recovered from the project funds, and may be effected by UNDP Country Office on the basis of the Letter of Agreement, for later review of the IP;

• Recruitment, HR management and administration, and salary payments:	US$ 3,000
• Payments, disbursements and other financial transactions:	US$ 3,000
• Procurement of goods and services:	US$ 3,000
• Travel arrangements:	US$ 1,000
	US$ 10,000

5. The functions and responsibilities of the parties involved shall be as follows :

NEDA

a) Work closely with UNDP Country Office, as the National Coordinating Agency, in assessing and monitoring programme outputs and achievements towards the desired development outcome;
b) Provide technical assistance and technical support jointly with UNDP to ensure quality assurance and support the efficient and effective programme management and implementation by strengthening and instituting appropriate mechanisms and processes;

c) Within the framework of results management, provide technical assistance and oversight jointly with UNDP to assess the contribution towards achieving the programme's outcomes; and
d) Approve refinements jointly with UNDP in the AWPs including possible budget realignments and modifications of activities and corresponding budget revisions, as necessary.

UNDP

a) Perform oversight functions to ensure the proper and judicious use of financial resources and in meeting programme goals and objectives;
b) Provide technical assistance and technical support jointly with NEDA to ensure quality assurance and support the efficient and effective programme management and implementation by strengthening and instituting appropriate mechanisms and processes;
c) Within the framework of results management, provide technical assistance and oversight jointly with NEDA to assess the contribution towards achieving the programme's outcomes;
d) Ensure the timely submission of reporting requirements prepared in accordance with UNDP accounting and reporting procedures;
e) Approve refinements jointly with NEDA in the AWPs including possible budget realignments and modifications of activities, and corresponding budget revisions, as necessary; and
f) Undertake cash transfers and provide any or all of the abovelisted support services at the request of the IP and, in the course of rendering such services, UNDP shall ensure that capacity of the IP is strengthened to enable it to carry out such activities directly.

Implementing Partner (Department of Transportation)

a) Maintain overall responsibility for the achievement of the programme outputs, while ensuring proper and judicious use of resources in accordance with the National Implementation Guidelines;
b) Assume substantive and administrative responsibility for the conduct of all annual activities whether implemented by it, or in partnership with another organization/agency ("Responsible Partners") on its behalf, including the responsibility for ensuring the adequacy of the overall supervision and management of the activities of the project;
c) Ensuring that all funds allocated are utilized according to the activities indicated in the approved AWP;
d) Provide UNDP with periodic technical and financial reports in accordance with UNDP's accounting/financial management standards and reporting requirements; and
e) Designate an official with substantive planning, programming and technical expertise as National Programme Director of the programme/project, who shall be primarily responsible for ensuring the achievement of all of the foregoing responsibilities.

Republic of the Philippines
DEPARTMENT OF TRANSPORTATION AND COMMUNICATIONS

January 28, 2016

Mr. Ola Almgren
Resident Representative
United Nations Development Programme
30th Floor, Yuchengco Tower, RCBC Plaza
6819 Ayala Avenue, 1226 Makati City, Philippines

Subject: Proposed Co-Financing for Global Environment Facility (GEF) Project "Promotion of Low Carbon Urban Transport Systems in the Philippines"

Dear **Mr. Almgren:**

This is in reference to the above subject matter.

We are pleased to confirm that the **Department of Transportation and Communications (DOTC)** supports the UNDP/GEF project on "Promotion of Low Carbon Urban Transport Systems in the Philippines" (PHIL LCT). I understand that the Project aims at creating an enabling environment for the commercialization of low carbon urban transport systems (e.g., electric and hybrid vehicles) in the Philippines, which will reduce greenhouse gases in the transport sector in the country.

DOTC agrees to provide co-financing in the amount of **US4,950,000.00** in cash for baseline activities that **DOTC** will be implementing relevant to reaching the objectives of the PHIL LCT project during the period of the project implementation. These baseline activities have been identified and indicated in the Project document. In addition, **DOTC** will also provide an equivalent of **US1,600,000.00** of in-kind contribution.

Regarding the Department's cash contribution, we intend to use the Special Vehicle Pollution Control Fund (SVPCF) for such contribution. The use of funds is subject to the SVPCF guidelines and Road Board approval. We hope to discuss the timelines with the project team to enable us to obtain the necessary approvals in a timely fashion.

We look forward to working in close collaboration with UNDP Philippines in successfully implementing the PHIL LCT project.

Sincerely yours,

SHERIELYSSE R. BONIFACIO
Assistant Secretary for Planning and Finance

THE COLUMBIA TOWER
BRGY. WACK-WACK, ORTIGAS AVENUE
TELEFAX: (632) 723-49-25
TRUNKLINE (632) 727-79-60 TO 79

Republic of the Philippines
Department of Science and Technology
PHILIPPINE COUNCIL FOR INDUSTRY, ENERGY AND EMERGING TECHNOLOGY RESEARCH AND DEVELOPMENT (PCIEERD)

26 APR 2016

MR. OLA ALMGREN
Resident Representative
United Nations Development Programme (UNDP)
30th Floor, Yuchengco Tower,
RCBC Plaza, 6819 Ayala Avenue,
1226 Makati City Philippines

Dear ***Mr. Almgren:***

This has reference to your letter dated 23 March 2016 requesting to confirm the support of the Department of Science and Technology (DOST) through the Philippine Council for Industry, Energy and Emerging Technology Research and Development (PCIEERD) to co-finance the Global Environment Facility (GEF) project entitled, ***"Promotion of Low Carbon Urban Transport Systems in the Philippines (PHIL-LCT)"***.

We understand that the Project aims at creating an enabling environment for the commercialization of low carbon urban transport systems such as electric and hybrid vehicles in the Philippines, which will reduce greenhouse gases in the transport sector in the country.

In this regard, we are pleased to inform you that DOST through PCIEERD confirms its support to the above said project through the DOST S&T Transportation Program, which contains priority programs to be pursued by the DOST and this Council from 2016-2019.

DOST through PCIEERD agrees to provide co-financing in the amount of US$ 3,170,995.67 for four (4) years in cash for baseline activities that DOST through PCIEERD will be implementing relevant to reaching the objectives of the PHIL LCT project during the period of the project implementation (see attached budget estimate and breakdown). These baseline activities have been identified and indicated in the Project document. In addition, DOST through PCIEERD will also provide an equivalent of US$ 28,983.66 of in-kind contribution in the form of staff salaries, office space, administrative costs, among others. PCIEERD's cash contribution will come from Council's S&T Transportation Program.

As we have discussed during the meeting last 16 March 2016, we would like to collaborate in the UNDP-GEF project in relation to the safety certification requirement of the Automated Guideway Transit (AGT) System. A safety certification from a third party is required in order for it to be deployed commercially, and at present there are no local certifying body for these systems. Support will also be required for awareness outreach, training and capacity building on operation and maintenance, among others.

4th and 5th Levels, Science Heritage Bldg., Science Community Complex, Gen. Santos Ave., Bicutan, Taguig City 1631
Tel. Nos.: 837-2935; 837-7516; 837-0071; 553-8637; 837-2071 locs. 2100-2109; 2020-2121
Fax: (632) 837-6154

We look forward to working in close collaboration with UNDP Philippines and its implementing agency, which is DOTC, in successfully implementing the UNDP-GEF Low Carbon Transport Project.

Thank you.

Very truly yours,

CARLOS PRIMO C. DAVID, Ph.D.
Executive Director

eustdd/transport/I-16-0328-27 and I-16-0408-24

GLOBALELECTRICTRANSPORTATION

April 7, 2016

Mr. OLA ALMGREN
Resident Representative
UNITED NATIONS DEVELOPMENT PROGRAMME
30th Floor, Yuchengco Tower, RCBC Plaza
6819 Ayala Avenue, 1226 Makati City, Philippines

Proposed Co-Financing for Global Environment Facility (GEF) Project
"Promotion of Low Carbon Urban Transport Systems in the Philippines"

Dear Mr. Almgren:

This is to confirm that **Global Electric Transport (GET)** supports the UNDP/GEF project on "Promotion of Low Carbon Urban Transport Systems in the Philippines" (PHIL LCT). I understand that the Project aims to create an enabling environment for the commercialization of low carbon urban transport systems (e.g., electric and hybrid vehicles) in the Philippines, which will reduce greenhouse gases in the transport sector in the country. GET is a revolutionary, sustainable, and environment-friendly transport solution that uses intelligent and innovative technology to deliver a safe, reliable and convenient commuting experience for Filipinos. GET has taken advantage of recent technology breakthroughs and innovative business thinking to create a new business model that is anchored on the maximization of three basic principles, namely:

- GREEN MOBILITY: GET's attention to the environment delivers a sustainable product
- CLOUD TECHNOLOGY: GET's expertise in technology results in intelligent solutions
- SOCIAL ENTERPRISE: GET's focus on people creates an inclusive ecosystem

GET expects to participate in, and benefit from, the activities of GEF Project. As part of its participation and investment in baseline activities, GET will earmark approximately US$9,000,000 for the acquisition of an additional 300 units of COMETs (electric Jeepneys) and batteries, and an equivalent of US$ 3,000,000 in employee and overhead costs. GET's support to the project is consistent with the details in the Project Document and associated budget. We assume that all of its direct costs associated with delivering outputs described in the Project Document qualify as the project's co-financing. GET is willing to cooperate with UNDP-GEF and the Department of Transportation and Communications (DOTC) and other partners to assign any resulting investment as co-funding outputs of the GEF Project.

The GEF Project activities are expected to stimulate private sector investment in low carbon transportation systems. Particularly, GET expects to collaborate with the GEF Project in conducting the following activities together: (i) a Social Preparation and Pre-Deployment Study; (ii) Acquisition of COMET units and government permits; (iii) Infrastructure Development; (iv) a Market Research and Community Impact Study.

COMPONENT 1: SOCIAL PREPARATION & PRE-DEPLOYMENT STUDY

Activity 1: a **Route Study** that includes (i) foot traffic count, (ii) identification of passenger sources and destinations, (iii) operating expenses of existing jeepney units, (iv) a listing of key community transport leaders and stakeholders, and (v) focused discussions with existing jeepney drivers and operators.

Activity 2: Creation of a **Route Development Plan** that recommends the number of COMET units to be deployed, location of terminals, depot, charging stations and designated stops, financing options for existing operators, etc.

Activity 3: **Community Buy-in.** Presentation and planning with key stakeholders, especially with local government leaders, jeepney operators and drivers that will soon lead to the creation of a local transport consortium that will manage the day-to-day operation of the COMETs.

COMPONENT 2: ACQUISITION OF COMET UNITS AND GOVERNMENT PERMITS

Activity 1: **Financing/ Procurement Program** for Jeepney Owners and submission of requirements for LTO, LTFRB registration and franchise acquisition/ substitution

Activity 2: **Manufacturing** of COMET units, batteries and charging units

Application 3: **Application of necessary government permits**: LGU endorsements, Business Permits, franchise acquisition/ substitution

COMPONENT 3: INFRASTRUCTURE DEVELOPMENT

Activity 1: **Construction** of depot, terminals, charging stations, designated stops. Programming and installation of vehicle monitoring and media devices

Activity 2: **Training and hiring** of drivers, fleet managers and staff, service technicians and mechanics. A Test run of COMET units and operational dry run will also be conducted prior to the launch date

Activity 3: **Booking of advertisers** and GETpass sellers and re-loaders.

COMPONENT 4: MARKET RESEARCH & COMMUNITY IMPACT STUDY

Activity 1: Development of a **Community Marketing Plan** to increase ridership and improve efficiency in service. A Community Impact Assessment will also be conducted to evaluate impact of EV technology on ridership behavior and carbon mapping.

Activity 2: Development and **publication of standards on road safety and operational guidelines**. Develop a repository of incident reports, lessons-learned and best practices for continuous R&D work. This will be coupled with continuous testing of new technologies to fit to the demands of the community.

Activity 3: **Partnerships and knowledge sharing with planning institutions** and regulatory agencies on (a) coordinated policy making, investment planning and implementation of LCT with broader urban development; and (b) modern planning tools, registration and licensing of low carbon vehicles.

Furthermore, GET plans to collaborate with key industry stakeholders and government partners in deploying COMET units and operating LCTs in the following strategic locations:

a. NCR- Quezon City (30 units)
b. NCR- Pasay City (30 units)
c. NCR- Makati City (30 units)
d. Region 3- Angeles City (60 units)
e. Region 3- Malolos City (30 units)
f. Region 4A- Cavite (30 units)
g. Region 7- Cebu City (30 units)
h. Region 7- Mandaue City (30 units)
i. Region 10- Cagayan De Oro City (30 units)

We look forward in working with the UNDP/GEF in this noble endeavor.

Sincerely,

ANTHONY A. DY
Country Head and Managing Director

Electric Vehicle
Expansion Enterprises, Inc.

Date: 29 January 2016

To: Mr. Ola Almgren
Resident Representative
United Nations Development Programme
30th Floor, Yuchengco Tower, RCBC Plaza
6819 Ayala Avenue, 1226 Makati City, Philippines

Subject: Proposed Co-Financing for Global Environment Facility (GEF) Project "Promotion of Low Carbon Urban Transport Systems in the Philippines"

Dear Mr. Ola Almgren:

This is to confirm that the *Electric Vehicle Expansion Enterprises, Inc. (EVEE-I)* supports the UNDP/GEF project on "Promotion of Low Carbon Urban Transport Systems in the Philippines" (PHIL LCT). I understand that the Project aims at creating an enabling environment for the commercialization of low carbon urban transport systems (e.g., electric and hybrid vehicles) in the Philippines, which will reduce greenhouse gases in the transport sector in the country. EVEE-I's business is to provide basic transportation services for the workers and residents in Filinvest City Alabang, through the use of electric mini-buses or Jeepneys. In 5-10 years, EVEE-I expects to roll out 40-100 electric Jeepneys and 2 battery swapping stations within Filinvest City Alabang and its neighboring villages.

EVEE-I expects to participate in, and benefit from, the activities of GEF Project. As part of its participation and investment in baseline activities, *EVEE-I* will earmark approximately *US$ 500,000* for the acquisition of additional electric Jeepneys and construction of battery swapping stations, and an equivalent of *US$ 100,000* in employee and overhead costs. *EVEE-I*'s support to the project is described in detail in the Project Document and associated budget. We assume that all of its direct costs associated with delivering outputs described in the Project Document qualify as the project's co-financing. *EVEE-I* is willing to cooperate with UNDP-GEF and the Department of Transportation and Communications (DOTC) and other partners to assign any resulting investment as co-funding outputs of the GEF Project.

The GEF Project activities are expected to stimulate private sector investment in low carbon transports. Particularly, *EVEE-I* expects to collaborate with the GEF Project in conducting together the following activities: (i) Construction of the first solar-powered battery swapping station in the Philippines; (ii) Conduct Route Measurement Capacity (RMC) studies in existing and future routes; (iii) Provide a credit enhancement scheme and/or credit guarantee to EVEE-I to help it access commercial loans at a competitive rate; and (iv) Develop an operations manual to ensure alignment with technical standards and industry best practices.

Sincerely yours,

Charles Navarro
Director, EVEE-I

United Nations Development Programme

Empowered lives.
Resilient nations.

25 February 2016

CERTIFICATION

The United Nations Development Programme commits to provide parallel co-financing amounting to USD90,000 to support the implementation of the GEF -5 Project " Promotion of Low Carbon Urban Transport System in the Philippines" . Of this amount, USD20,000 will be available as cash co-financing.

Yours sincerely,

Titon Mitra
Country Director

UNDP in the Philippines
30/F Yuchengco Tower, RCBC Plaza, 6819 Ayala Avenue cor Sen. Gil Puyat Avenue, Makati City 1226 Philippines
P.O. Box 7285 DAPO, 1300 Domestic Road, Pasay City, Philippines
Tel: (632) 901-0100 Fax: (632) 901-0200; 8897177 registry.ph@undp.org *www.undp.org.ph*

Annex IV: Terms of Reference

1. Project Steering Committee

The PSC will consist of high level representatives from DOTr, DOST, DOE, and UNDP. It will be chaired by DOTr. The primary roles of the PSC are: (i) to provide overall guidance to the implementation of the project, (ii) to ensure good coordination among participating agencies, sectors among others. The PSC will meet at least every six (6) months, to discuss the progress of the project and provide future guidance.

2. Project Management Unit

The DOTr is the executing partner. DOTr will be accountable to GoP and UNDP/GEF for ensuring: (i) the substantive quality of the project, (ii) the effective use of allocated international and national resources, (iii) the availability of time for national contributions to support project implementation, and (iv) the proper coordination among all project Stakeholders, in particular national parties. DOTr will be responsible for the achievement of the project objectives, projects reporting, including the submission of work plans and financial reports. As executing agency, DOTr will ensure the delivery of the project outputs through the Project activities.

DOTr will create a PMU responsible of the overall operational and financial management and reporting of the UNDP funds in accordance with the rules and regulations for nationally executed projects. The PMU will manage day-to-day operations of the Project, and will be based at the premises of DOTr. The PMU will comprise the following personnel:

- Project Director
- Project Manager
- Project Administrative Assistant
- Team Leaders of Components 1, 2, 3
- Short-term experts

In addition, a number of subcontractors and international experts will support the PMU as and when needed to undertake the project activities. The PMU will prepare quarterly progress reports to review achievement in the previous quarter, prepare financial report and develop work plan and budget for next quarter. All such documents would be endorsed by the Project Director.

The PMU will hold regular meetings with UNDP representative to discuss a quarterly progress report and any other relevant issues. It will also produce annual progress reports, which must be submitted to the PSC at least two weeks before the end of the year PSC meeting. At the end of the Project, the PMU will produce the terminal report, which is to be submitted to the PSC at least two weeks before the final meeting.

3. National Project Director

The Project Director will be appointed by the DOTr and will work on a part-time basis. The PD's overall role is to ensure the successful execution and implementation of the Project toward achieving project results. The PD represents DOTr and is accountable to the GoP and UNDP for the substantive quality of the Project and for the proper use of Project resources.

The PD is responsible for mobilizing all national and international project inputs in a timely manner, supporting project management and implementation, organizing project activities in accordance with the Project work plan, and reporting to DOTr and UNDP the progress and the financial status of the Project.

Qualifications

- Minimum of University degree in Science or Engineering and post-graduate Master Degree in Management or a Master in Business Administration or related field

- Minimum 15 years of experience in the environmentally sustainable transportation sector and minimum 10 years in managing a regional transportation-related organization/agency or program
- Extensive knowledge of sustainable and/or low carbon transportation sector, regulation and reform, transport policy and environmentally sustainable transport issues in the Philippines
- Evidence of published books or journal articles on transport sector, regulation and reform, transport policy, social issues etc.
- Knowledge of UNDP/GEF facility as well as associated GEF Climate Change Mitigation Program priorities, project preparation and implementation mechanisms would be an advantage
- Knowledge and experience in working with GoP, academe, NGOs and operators and private sector in the Philippines
- Widely traveled in the region, with good contacts in key institutions including regulatory bodies, private transport companies, government agencies etc.
- Demonstrated ability in managing a multi-disciplinary team
- Experience in regional cooperation and networking/cooperation with government officials, financiers, NGO representatives and private sector executives.
- Excellent oral and written communication skills in English and Filipino
- Proficient in Microsoft Office Suite (Word/Excel/Power Point/Project)

Responsibilities

- Overall coordination, management, oversight as well as monitoring of key Project experts, staff members and sub-contractors
- Review of key outputs of the Project, including market survey and assessment studies, business plans
- Responsible for reporting to Co-implementing Agencies (UNDP/GEF) and as well as to PSC
- Provides direction and overall leadership to the Project Office
- Take overall responsibility for the organization and execution of the Project
- Ensure that the activities are carried out according to the Project design and the outcomes and outputs/deliverables are achieved within the approved timeframe and budget
- Participate in the Steering Committee as well as provide regular reports to the PSC on the progress and plans of the Project

4. Project Manager (project – hired**)**

Qualifications

- Minimum of University degree in Engineering or Science and post-graduate degree in Management, Business Administration Qualifications on project management and financing would be an advantage.
- Minimum 10 years of experience in the environmentally sustainable transportation sector and minimum 7 years in managing a regional/local environmentally sustainable transportation-related organization/agency or program
- Extensive knowledge of transportation sector, regulation and reform, energy and transport policy issues in the Philippines.
- Evidence of published books or journal articles or reports on energy and transport sector, regulation and reform, energy and transport policy, social issues etc.
- Knowledge of UNDP/GEF facility as well as associated GEF Climate Program priorities, project preparation and implementation mechanisms as well as hands on experience on GHG accounting and data analysis would be an advantage
- Knowledge and experience in working with government, NGOs, academe, financial institutions and private sector (related to transport and energy) in the Philippines
- Good contacts in key institutions including regulatory bodies, private transport and energy companies, government agencies, financial institutions, academe and NGOs.

- Demonstrated ability in managing a multi-disciplinary team
- Excellent oral and written communication skills in English and Filipino
- Willingness to travel at short notice
- Analytical skills and proficiency in Microsoft Office Suite (Word/Excel/Power Point/Project) required.

Responsibilities

- Overall management as well as review of activities and monitoring of key project consultants, staff members and sub-contractors.
- In-charge of coordination the compilation and updating of annual reports, half yearly reports and financial reports
- Review and provide key input of key outputs of the project, including market survey and assessment studies, business plans
- Responsible for reporting to UNDP and as well as to steering committee
- Provides direction and overall management to the project Office
- Take overall responsibility for the management and execution of the project
- Ensure that the activities are carried out according to the project design and the outcomes and outputs/deliverables are achieved within the approved timeframe and budget
- Help in organizing of training programs, ensure adequate participation and quality of reports

5. Project Assistant (project – hired**)**

Qualifications

- Minimum of University degree in Management, Business Administration and other closely related fields. Qualifications on project management and financing would be an advantage.
- At least 3 years of experience of technical assistance and administration and support to management, planning and programming;
- Excellent oral and written communication skills in English and Filipino
- Proficiency in Microsoft Office Suite (Word/Excel/Power Point/Project) required.
- Excellent drafting and analytical skills;
- Experience in dealing with different government and private agencies;
- Previous working experience with a UN agency an asset.

Responsibilities

Provides effective technical and administrative support to the management of the Project Specifically:

- Assists in the review of documents, provides substantial comments to results framework and evaluates financial tables and annual budget breakdowns;
- Provides inputs and assists in evaluating reports and outputs by key government partners under the Project;
- Actively participates in project - related activities such as table-top exercises, technical consultations in identified project areas;
- Supports in the organization of meetings, seminars and workshops, missions and other project-related activities and coordinating logistics with relevant units whenever necessary;
- Assists in preparing letters for transmitting legal and relevant documents which are for signature. Keeps fully signed copies in file for future reference;

- Supports procurement for purchase of goods or recruitment of consultants, following up to ensure that contracts are issued and payments are made on time;
- Prepares background information and documentation, updates relevant program areas' background and compiles IEC materials for the Project;
- Generates and assists in evaluating and monitoring the Project's technical and financial reports.
- Actively supports the PMU and DOTr in knowledge management and knowledge networking;
- Participates in meetings and conferences as may be assigned;

5. Part-time Staff Members and Consultants

5.1 Technical Working Groups

The Technical Working Groups will be established to provide implementation direction and share working knowledge on key program activities including fund commitments on the activity level. The TWG will consist of senior representatives from the relevant departments of DOTr, DOST, DOE as well as academe, NGOs, operators and transport associations. The TWG will meet regularly during the Project implementation.

5.2 TORs for Consultants

The Project will be implemented for a period of 4 years. At the start of the Project, a detailed project implementation plan will be formulated. It is expected that short-term consultants will be required to provide technical assistance and provide expertise in the different aspects of the Project execution. The implementation of any Project activity will go through following steps:

- Preparation of the work plan
- Development of the TOR for consultants
- Recruitment of consultants
- Verification of the outputs quality
- Documentation, printing of the output
- Dissemination

6. Consultant/s on Planning and Policy Issues

His/her specific tasks would be:

- Assist in identifying relevant participating agencies and setting up of the technical working group for development of supportive policy framework and regulations
- Review of related policy and regulations both in and outside the country as basis for drafting the supportive policy framework and regulations
- Assist and contribute in TWG workshops discussion, formulation/revision and finalization of supportive policy framework and regulations
- Assist endorsement of formulated supportive policy framework and regulations
- Work with transportation planning experts in the formation of inter-agency coordination mechanism intended for LCT related efforts
- Compile guidelines for inter-agency coordination for LCTs
- Compile EO for inter-agency coordination on LCTs in Consultation with relevant GoP organizations
- Compile and finalize LCT master plan and infrastructure roadmap in consultation with TWG
- Participate and take discussion notes of TWG meetings for development of LCT master plan
- Revise Master Plan and infrastructure roadmap according to TWG feedbacks
- Conduct a survey on the mandate(s) of relevant institutions on LCT development and commercialization
- Develop of a logical, coherent and institutional framework based on results of survey on the mandate(s) of relevant institutions on LCT development and commercialization

- Revise the institutional framework according to feedback of multi-stakeholder consulted for review and approval of the developed institutional framework including roles and responsibilities of institutions involved
- Develop draft EO for the endorsement of the established institutional framework

7. Consultant/s on Traffic Engineering, Transportation and Urban Planning Issues

His/her specific tasks would be:

- Carry out study on route rationalization, traffic analysis, travel demand modelling, transportation aspect of the feasibility studies
- Develop of guidelines on right-of-way
- Provide technical expertise during the development and review of NTP, Master Plan, among others
- Work with a policy and planning experts in developing LCT Master Plan in consultation with TWG
- Participate and take discussion notes of TWG meetings for development of LCT master plan
- Revise master plan according to TWG feedback

8. Consultant/s on LCT Technology and Standards

His/her specific tasks would be:

- Develop draft guidelines for low carbon vehicle owners and manufacturers in consultation with Stakeholders
- Revise and finalize the guidelines according to feedback from Stakeholders and lessons learned by owners and manufacturers
- Assist in the identification of groups, individuals and/or institutions to comprise the TWG for the development of guidelines for the approval of related supportive infrastructures
- Conduct a comprehensive study on the regulations and technical information on LCT supporting infrastructure
- Assist in identifying training needs and details for LGU officials responsible for the approval of supporting infrastructures
- Assist training facilitators during the training of LGU officials responsible for the approval of supporting infrastructures
- Assist in developing monitoring and evaluation (M&E) mechanism for the implementation of the guidelines
- Revise the guidelines according to feedback from M&E
- List of institutions involved in developing and setting norms and standards, contact persons in relation to the project, and a detailed description of the state development of norms and standards (including performance, environmental aspects, testing methods, etc.) under development at each institution and subsequently, report with a detailed analysis of gaps and inconsistencies in the area.
- Identification of additional testing facilities required if any and identification of skills which needs to be upgraded
- Recommendations with regard to options towards harmonization
- Analysis of financing required to comply with proposed levels of quality and effective testing
- Training needs assessment and following consultation with members of the testing laboratories, comprehensive training curriculums and materials to be used during training workshops
- Developing training material and imparting training on testing and standards evaluation issues.
- Proposing a system of testing for quality parameters for LCTs

9. Consultants on Training and Capacity Building Activities

His/her specific tasks would be:

- Conduct situational analysis and needs assessment on the capacity building activities relevant to Low-Carbon Transport
- Assist in the development of a plan for the implementation of capacity building activities
- Develop training curriculum and schedule according to training needs on LCTs identified.
- Facilitate training courses on LCTs to be conducted assisted by a technology and standards expert as needed
- Prepare training materials, summary and evaluation of conducted training
- Provide advice on preparations by trainees, and organizers, whenever needed
- Design and periodically conduct surveys after each training programme to gather information on the impact of the training on the participants.

10. Consultant on Finance and Investment Issues

His/her specific tasks would be:

- Develop business plans for LCT
- Develop financial models for LCT implementation
- Review Project financial aspects of the feasibility studies
- Develop guidelines for LCT investments
- Develop investment procedures for LCT implementation
- Prepare investment briefs of LCT projects
- Assist LCT borrowers in accessing green funds
- Support GFIs in streamlining lending procedures for green funds
- Provide capacity building for borrowers and GFIs in investment and financing aspects of LCT projects

11. Consultant/s on Communications, Promotion and Marketing Issues

His/her specific tasks would be:

- Carry out a market study on LCT market, and main providers together with key contact persons, key capital links, and commercial indicators as well as strategies for market transformation for efficient lighting and provide a full understanding of the dynamics of this market, based on discussions with market parties and producers
- Propose a communication plan for PMU, including proposed draft schemes and key decision points for the promotion of LCT based on discussion of Stakeholders
- Design of marketing campaign and develop a media plan
- Recommend strategies to evaluate the effectiveness of marketing campaign
- Develop IEC materials for LCT promotion and implementation
- Coordinate with relevant agencies/organizations on information needed, if any

12. Consultant/s on Charging Infrastructure and Network

His/her specific tasks would be:

- Conduct in-depth technical and economic feasibility assessment to determine the most appropriate charging infrastructure for the Philippines
- Conduct techno-economic assessment of renewable energy including solar PV charging infrastructure. This includes all tasks related to Activity 3.2.2.1 and assist in the determination of the most viable options.
- Prepare detailed design of charging systems including solar PV charging stations. This includes all tasks related to Activity 3.2.2.2
- Assessment of types of charging, available standards,
- Prepare technical specifications and prepare RFP for procurement of charging stations in Activity 3.2.2.3
- Assist in the installation, testing, commissioning and operation of the solar PV charging systems

- Prepare data collection, monitoring and evaluation framework in cooperation with the GHG Expert
- Conduct grid impact assessment in Activity 3.1.3.6
- Assist in the design and execution of related capacity development activities including technical trainings on O&M and monitoring of the charging stations
- Assist in the preparation of bankable business models on charging infrastructure.

13. GHG Analysis Consultant

His/her specific tasks would be:

- Design data collection and survey methodologies to collect data and information on parameters such as fuel efficiency, specific fuel consumption, emission factors, vehicle activities, ridership, trip lengths, etc. required to estimate GHG emissions reductions in the baseline and project scenarios.
- Collect data and information both through primary and secondary sources, analyse and calculate baseline and project GHG emissions reductions per the GEF and STAP Manual for Calculating GHG Benefits of Transportation Projects and relevant CDM methodologies.
- Formulate monitoring framework and plan for GHG emissions from the project demos. The monitoring plan should include non-GHG parameters including on air and noise pollution. Conduct periodic monitoring per the monitoring plan including quality assurance and verification of monitored data and parameters.
- Furnish yearly data and underlying calculations on the Objective indicator (GHG emissions reduced by the Project) included in the project planning matrix. This data will be provided each year in time to feed into the PIR. Prepare GHG TT yearly.
- Assist in the design and execution of related capacity development activities including GHG analysis and monitoring framework.

14. Consultant/s for Gender Mainstreaming

- Draft a gender strategy for the project. Ensure gender considerations are mainstreamed into all relevant components of the project document. The strategy should include a gender action plan with indicators, targets and time bound outputs to advance women's empowerment and promote gender equality.
- Develop a participatory gender analysis examining the different needs, roles, access to and control over resources of women and men impacted by the project within the local context; collect gender responsive baseline data relevant to project planning and monitoring; identify the share of female and male direct beneficiaries.
- Provide inputs to the project indicators. Ensure that all applicable indicators are disaggregated by sex and other relevant, intersecting forms of identity.
- Provide inputs to the UNDP Social and Environmental Screening Procedure including assessing potential negative impacts of the project on gender equality and specific activities to mitigate and/or minimize them.

14. Consultant/s for M&E of Development Impacts

- Formulate monitoring and evaluation plan to track and report sustainable development impacts including on gender, health, employment, income savings, and others.
- Conduct periodic monitoring per the monitoring plan including quality assurance and verification of monitored data and parameters.
- Provide inputs to the project baseline, indicators, targets in the project planning matrix.
- Provide inputs to the UNDP Social and Environmental Screening Procedure including assessing negative impacts of the project and specific activities to mitigate and/or minimize them.

Annex V: UNDP Social and Environmental Screening Procedure (SESP)

Project Information

Project Information	
1. Project Title	Promotion of Low Carbon Urban Transport Systems in the Philippines
2. Project Number	5304
3. Location (Global/Region/Country)	APR/Philippines

Part A. Integrating Overarching Principles to Strengthen Social and Environmental Sustainability

QUESTION 1: How Does the Project Integrate the Overarching Principles in order to Strengthen Social and Environmental Sustainability?
Briefly describe in the space below how the Project mainstreams the human-rights based approach

The Project promotes the use and commercialization of low carbon transport, access and scale up efforts to increase the use of environmentally friendly modes of transportation in the Philippines. Access through mode of transportation is a fundamental human right. Enabling access to modern, modes of transportation is an essential enabler of inclusive development and poverty reduction. By ensuring access to reliable, affordable and clean transportation, the Project is envisaged to uphold the basic human rights of the peoples of the Philippines through the delivery of interrelated positive consequences – such as improved living standards, livelihoods opportunities, enhanced human health, improved education and reduced level of GHG emissions and environmental degradation. Promotion and utilization of EVs, hybrid buses, and other modes that use clean fuels will significantly reduce the source of air pollution. EVs can have very low to zero emissions of GHGs when they run on renewable fuels. Moreover, increase in the use of low carbon transport that leads to minimized pollution levels will also lead to reduced health risks.

Overall, this project will contribute towards the attainment of the Philippines' goals on sustainable development, according to guidance stipulated in the Philippine Agenda 21, and building from the 1987 Philippine Strategy for Sustainable Development (PSSD). The Project has the potential to generate green jobs through the installation of solar-PV charging stations and increasing visibility and use of electric powered vehicles in the country. The growth in demand on LCT and renewable energy options, with increased partnership and involvement of the private sector that will result to the growth of business enterprises that produce the technologies such as EVs, hybrid buses, etc. Growing businesses will generate employment that will allow even the high percentage of urban poor people to access to green jobs.

Briefly describe in the space below how the Project is likely to improve gender equality and women's empowerment

The Project, by virtue of providing widespread access to modern and reliable modes of transportation services, will deliver multiple development benefits including improved impacts on gender and women such as opportunity to engage in productive activities thereby enhancing income generation; access to better health facilities, improved living conditions, safer streets, to name a few.

Briefly describe in the space below how the Project mainstreams environmental sustainability

Environment sustainability is at the heart of the Project as it explicitly focuses on the implementation of low-carbon technologies as a solution to decreasing air quality in urban areas in the country resulting to adverse impact to human health and productivity, and climate change.

In line with the Philippine government approved Renewable Energy Act of 2008 (RA 9532), in support of the goal to achieve greater energy independence at the same time helping mitigate global climate change, the Project can generate the use of clean fuels such as the electricity generated from solar-PV sources. With increasing use of these low carbon modes of transport such EVs ad hybrid buses, the demand for solar-PV electric generation will also escalate.

Part B. Identifying and Managing Social and Environmental Risks

QUESTION 2: What are the Potential Social and Environmental Risks?	**QUESTION 3: What is the level of significance of the potential social and environmental risks?**	**QUESTION 6: What social and environmental assessment and management measures have been conducted and/or are required to address potential risks (for Risks with Moderate and High Significance)?**
Note: Describe briefly potential social and environmental risks identified in Attachment 1 – Risk Screening Checklist (based on any "Yes" responses). If no risks have been identified in Attachment 1 then note "No Risks Identified" and skip to Question 4 and Select "Low Risk". Questions 5 and 6 not required for Low Risk Projects.	*Note: Respond to Questions 4 and 5 below before proceeding to Question 6*	

Risk Description	*Impact and Probability (1-5)*	*Significance (Low, Moderate, High)*	*Comments*	*Description of assessment and management measures as reflected in the Project design. If ESIA or SESA is required note that the assessment should consider all potential impacts and risks.*
Climate change impacts of low carbon transport systems	I = 5 P = 3	**Moderate**	This applies to the operations of LCTs in urban areas where rapid surge of flood waters is evident.	The Project will assist in the planning and design processes for LCT demonstration projects that account for risks due to climate change and mitigate its negative consequences to the operations LCT demonstration projects as well as LCT deployment which are not part of the project.
Risks related to occupational health and safety due to physical hazards during Project construction and operation	I = 5 P = 1	**Low**	LCT and battery charging operations may pose potential occupational health and safety risk due to physical hazards.	The Project will ensure that all issues related to safety of EVs are taken cared. The risks can be managed through compliance with the safety standards for lithium ion batteries. Training for EV drivers, technicians and operators will have a significant focus on the safety of EV operation.
Pollution risk related to the Project potentially result in the generation of waste (both hazardous and non-hazardous)	I = 2 P = 2	**Low**	This is relevant to the disposal of acid lead batteries which has environmental significant environmental impacts.	The Project will ensure that all issues related to minimizing environmental and social impacts are managed according to EMB-DENR regulations stipulated in RA 6969 which is the "Toxic Substances and Hazardous and Nuclear Wastes Control Act of 1990".

QUESTION 4: What is the overall Project risk categorization?

Select one (see SESP for guidance)		Comments
Low Risk		
Moderate Risk	☒	From the above analysis, the level of significance of the likely social and environmental risks associated with the baseline projects are considered as low. The baseline projects are required to strictly comply with the social and environment safeguards regulations of the Government of the Philippines. In pursuing a more conservative and precautionary measure, the Project categorizes the overall risk as "Moderate" with the intention that the probable risks will be monitored closely and evaluated during annual project review and mid-term review.
High Risk	☐	

	QUESTION 5: Based on the identified risks and risk categorization, what requirements of the SES are relevant?		
	Check all that apply		**Comments**
	Principle 1: Human Rights	☐	
	Principle 2: Gender Equality and Women's Empowerment	☐	
	1. Biodiversity Conservation and Natural Resource Management	X	
	2. Climate Change Mitigation and Adaptation	☒	The Project will ensure designs can operate within the wider range of climatic conditions resulting from climate change.
	3. Community Health, Safety and Working Conditions	X ☐	The Project will ensure that workers on site (during construction and operations) are fully protected for their occupational health, safety and working conditions.
	4. Indigenous Peoples	X	

Final Sign Off

Signature	*Date*	*Description*
QA Assessor Floradema Eleazar, UNDP Philippines	31 August 2016	UNDP staff member responsible for the Project, typically a UNDP Programme Officer. Final signature confirms they have "checked" to ensure that the SESP is adequately conducted.
QA Approver Rakshya Thapa, UNDP Bangkok Regional Hub	31 August 2016	UNDP senior manager, typically the UNDP Deputy Country Director (DCD), Country Director (CD), Deputy Resident Representative (DRR), or Resident Representative (RR). The QA Approver cannot also be the QA Assessor. Final signature confirms they have "cleared" the SESP prior to submittal to the PAC.
PAC Chair Titon Mitra, UNDP Country Director	16 Jan 2017	UNDP chair of the PAC. In some cases PAC Chair may also be the QA Approver. Final signature confirms that the SESP was considered as part of the project appraisal and considered in recommendations of the PAC.

SESP Attachment 1. Social and Environmental Risk Screening Checklist

Checklist Potential Social and Environmental Risks	
Principles 1: Human Rights	**Answer (Yes/No)**
1. Could the Project lead to adverse impacts on enjoyment of the human rights (civil, political, economic, social or cultural) of the affected population and particularly of marginalized groups?	No
2. Is there a likelihood that the Project would have inequitable or discriminatory adverse impacts on affected populations, particularly people living in poverty or marginalized or excluded individuals or groups? [30]	No
3. Could the Project potentially restrict availability, quality of and access to resources or basic services, in particular to marginalized individuals or groups?	No
4. Is there a likelihood that the Project would exclude any potentially affected stakeholders, in particular marginalized groups, from fully participating in decisions that may affect them?	No
5. Is there a risk that duty-bearers do not have the capacity to meet their obligations in the Project?	No
6. Is there a risk that rights-holders do not have the capacity to claim their rights?	No
7. Have local communities or individuals, given the opportunity, raised human rights concerns regarding the Project during the stakeholder engagement process?	No
8. Is there a risk that the Project would exacerbate conflicts among and/or the risk of violence to project-affected communities and individuals?	No
Principle 2: Gender Equality and Women's Empowerment	
1. Is there a likelihood that the proposed Project would have adverse impacts on gender equality and/or the situation of women and girls?	No
2. Would the Project potentially reproduce discriminations against women based on gender, especially regarding participation in design and implementation or access to opportunities and benefits?	No
3. Have women's groups/leaders raised gender equality concerns regarding the Project during the stakeholder engagement process and has this been included in the overall Project proposal and in the risk assessment?	No
3. Would the Project potentially limit women's ability to use, develop and protect natural resources, taking into account different roles and positions of women and men in accessing environmental goods and services? *For example, activities that could lead to natural resources degradation or depletion in communities who depend on these resources for their livelihoods and well being*	No
Principle 3: Environmental Sustainability: Screening questions regarding environmental risks are encompassed by the specific Standard-related questions below	
Standard 1: Biodiversity Conservation and Sustainable Natural Resource Management	
1.1 Would the Project potentially cause adverse impacts to habitats (e.g. modified, natural, and critical habitats) and/or ecosystems and ecosystem services? *For example, through habitat loss, conversion or degradation, fragmentation, hydrological changes*	No
1.2 Are any Project activities proposed within or adjacent to critical habitats and/or environmentally sensitive areas, including legally protected areas (e.g. nature reserve, national park), areas proposed for protection, or recognized as such by authoritative sources and/or indigenous peoples	No

[30] Prohibited grounds of discrimination include race, ethnicity, gender, age, language, disability, sexual orientation, religion, political or other opinion, national or social or geographical origin, property, birth or other status including as an indigenous person or as a member of a minority. References to "women and men" or similar is understood to include women and men, boys and girls, and other groups discriminated against based on their gender identities, such as transgender people and transsexuals.

	or local communities?	
1.3	Does the Project involve changes to the use of lands and resources that may have adverse impacts on habitats, ecosystems, and/or livelihoods? (Note: if restrictions and/or limitations of access to lands would apply, refer to Standard 5)	No
1.4	Would Project activities pose risks to endangered species?	No
1.5	Would the Project pose a risk of introducing invasive alien species?	No
1.6	Does the Project involve harvesting of natural forests, plantation development, or reforestation?	No
1.7	Does the Project involve the production and/or harvesting of fish populations or other aquatic species?	No
1.8	Does the Project involve significant extraction, diversion or containment of surface or ground water? *For example, construction of dams, reservoirs, river basin developments, groundwater extraction*	No
1.9	Does the Project involve utilization of genetic resources? (e.g. collection and/or harvesting, commercial development)	No
1.10	Would the Project generate potential adverse transboundary or global environmental concerns?	No
1.11	Would the Project result in secondary or consequential development activities which could lead to adverse social and environmental effects, or would it generate cumulative impacts with other known existing or planned activities in the area? *For example, a new road through forested lands will generate direct environmental and social impacts (e.g. felling of trees, earthworks, potential relocation of inhabitants). The new road may also facilitate encroachment on lands by illegal settlers or generate unplanned commercial development along the route, potentially in sensitive areas. These are indirect, secondary, or induced impacts that need to be considered. Also, if similar developments in the same forested area are planned, then cumulative impacts of multiple activities (even if not part of the same Project) need to be considered.*	No
Standard 2: Climate Change Mitigation and Adaptation		
2.1	Will the proposed Project result in significant[31] greenhouse gas emissions or may exacerbate climate change?	No
2.2	Would the potential outcomes of the Project be sensitive or vulnerable to potential impacts of climate change?	Yes
2.3	Is the proposed Project likely to directly or indirectly increase social and environmental vulnerability to climate change now or in the future (also known as maladaptive practices)? *For example, changes to land use planning may encourage further development of floodplains, potentially increasing the population's vulnerability to climate change, specifically flooding*	No
Standard 3: Community Health, Safety and Working Conditions		
3.1	Would elements of Project construction, operation, or decommissioning pose potential safety risks to local communities?	No
3.2	Would the Project pose potential risks to community health and safety due to the transport, storage, and use and/or disposal of hazardous or dangerous materials (e.g. explosives, fuel and other chemicals during construction and operation)?	No
3.3	Does the Project involve large-scale infrastructure development (e.g. dams, roads, buildings)?	No
3.4	Would failure of structural elements of the Project pose risks to communities? (e.g. collapse of buildings or infrastructure)	No
3.5	Would the proposed Project be susceptible to or lead to increased vulnerability to earthquakes, subsidence, landslides, and erosion, flooding or extreme climatic conditions?	No
3.6	Would the Project result in potential increased health risks (e.g. from water-borne or other vector-	No

[31] In regards to CO_2, 'significant emissions' corresponds generally to more than 25,000 tons per year (from both direct and indirect sources). [The Guidance Note on Climate Change Mitigation and Adaptation provides additional information on GHG emissions.]

	borne diseases or communicable infections such as HIV/AIDS)?	
3.7	Does the Project pose potential risks and vulnerabilities related to occupational health and safety due to physical, chemical, biological, and radiological hazards during Project construction, operation, or decommissioning?	Yes
3.8	Does the Project involve support for employment or livelihoods that may fail to comply with national and international labor standards (i.e. principles and standards of ILO fundamental conventions)?	No
3.9	Does the Project engage security personnel that may pose a potential risk to health and safety of communities and/or individuals (e.g. due to a lack of adequate training or accountability)?	No
Standard 4: Cultural Heritage		
4.1	Will the proposed Project result in interventions that would potentially adversely impact sites, structures, or objects with historical, cultural, artistic, traditional or religious values or intangible forms of culture (e.g. knowledge, innovations, practices)? (Note: Projects intended to protect and conserve Cultural Heritage may also have inadvertent adverse impacts)	No
4.2	Does the Project propose utilizing tangible and/or intangible forms of cultural heritage for commercial or other purposes?	No
Standard 5: Displacement and Resettlement		
5.1	Would the Project potentially involve temporary or permanent and full or partial physical displacement?	No
5.2	Would the Project possibly result in economic displacement (e.g. loss of assets or access to resources due to land acquisition or access restrictions – even in the absence of physical relocation)?	No
5.3	Is there a risk that the Project would lead to forced evictions?[32]	No
5.4	Would the proposed Project possibly affect land tenure arrangements and/or community based property rights/customary rights to land, territories and/or resources?	No
Standard 6: Indigenous Peoples		
6.1	Are indigenous peoples present in the Project area (including Project area of influence)?	No
6.2	Is it likely that the Project or portions of the Project will be located on lands and territories claimed by indigenous peoples?	No
6.3	Would the proposed Project potentially affect the human rights, lands, natural resources, territories, and traditional livelihoods of indigenous peoples (regardless of whether indigenous peoples possess the legal titles to such areas, whether the Project is located within or outside of the lands and territories inhabited by the affected peoples, or whether the indigenous peoples are recognized as indigenous peoples by the country in question)? *If the answer to the screening question 6.3 is "yes" the potential risk impacts are considered potentially severe and/or critical and the Project would be categorized as either Moderate or High Risk.*	No
6.4	Has there been an absence of culturally appropriate consultations carried out with the objective of achieving FPIC on matters that may affect the rights and interests, lands, resources, territories and traditional livelihoods of the indigenous peoples concerned?	No
6.5	Does the proposed Project involve the utilization and/or commercial development of natural resources on lands and territories claimed by indigenous peoples?	No
6.6	Is there a potential for forced eviction or the whole or partial physical or economic displacement of indigenous peoples, including through access restrictions to lands, territories, and resources?	No

[32] Forced evictions include acts and/or omissions involving the coerced or involuntary displacement of individuals, groups, or communities from homes and/or lands and common property resources that were occupied or depended upon, thus eliminating the ability of an individual, group, or community to reside or work in a particular dwelling, residence, or location without the provision of, and access to, appropriate forms of legal or other protections.

6.7	Would the Project adversely affect the development priorities of indigenous peoples as defined by them?	No
6.8	Would the Project potentially affect the physical and cultural survival of indigenous peoples?	No
6.9	Would the Project potentially affect the Cultural Heritage of indigenous peoples, including through the commercialization or use of their traditional knowledge and practices?	No
Standard 7: Pollution Prevention and Resource Efficiency		
7.1	Would the Project potentially result in the release of pollutants to the environment due to routine or non-routine circumstances with the potential for adverse local, regional, and/or transboundary impacts?	No
7.2	Would the proposed Project potentially result in the generation of waste (both hazardous and non-hazardous)?	Yes
7.3	Will the proposed Project potentially involve the manufacture, trade, release, and/or use of hazardous chemicals and/or materials? Does the Project propose use of chemicals or materials subject to international bans or phase-outs? *For example, DDT, PCBs and other chemicals listed in international conventions such as the Stockholm Conventions on Persistent Organic Pollutants or the Montreal Protocol*	No
7.4	Will the proposed Project involve the application of pesticides that may have a negative effect on the environment or human health?	No
7.5	Does the Project include activities that require significant consumption of raw materials, energy, and/or water?	No