



# PROJECT IDENTIFICATION FORM (PIF)

PROJECT TYPE: Medium-sized Project

TYPE OF TRUST FUND: GEF Trust Fund

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## PART I: PROJECT INFORMATION

Project Title:	Energy Efficient Low-carbon Transport in Malaysia		
Country(ies):	Malaysia	GEF Project ID: <sup>1</sup>	5741
GEF Agency(ies):	UNIDO (select) (select)	GEF Agency Project ID:	120309
Other Executing Partner(s):	Ministry of Energy, Green Technology and Water (KeTTHA), Malaysia Green Technology Corporation (MGTC), MIGHT, Ministry of Transport, MITI, SPAD, MOF, First Energy Network, AMDAC Sdn Bhd., Eclimo Sdn Bhd	Submission Date:	03/07/2014
		Resubmission Date:	04/16/2014
GEF Focal Area (s):	Climate Change	Project Duration (Months)	36 months
Name of parent program (if applicable):		Project Agency Fee (\$):	190,000
<ul style="list-style-type: none"> <li>• For SFM/REDD+ <input type="checkbox"/></li> <li>• For SGP <input type="checkbox"/></li> <li>• For PPP <input type="checkbox"/></li> </ul>			

### A. INDICATIVE FOCAL AREA STRATEGY FRAMEWORK<sup>2</sup>:

Focal Area Objectives	Trust Fund	Indicative Grant Amount (\$)	Indicative Co-financing (\$)
CCM-4 Promote energy efficient, low-carbon transport and urban systems	GEFTF	2,000,000	12,850,000
(select) (select)	(select)		
(select) (select)	(select)		
(select) (select)	(select)		
(select) (select)	(select)		
(select) (select)	(select)		
(select) (select)	(select)		
(select) (select)	(select)		
(select) (select)	(select)		
(select) (select)	(select)		
Total Project Cost		2,000,000	12,850,000

### B. INDICATIVE PROJECT DESCRIPTION SUMMARY

Project Objective: To catalyze and accelerate widespread use of electric vehicles (EVs) as part of energy efficient low-carbon transport and low-carbon cities initiatives of Malaysia						
Project Component	Grant Type <sup>3</sup>	Expected Outcomes	Expected Outputs	Trust Fund	Indicative Grant Amount (\$)	Indicative Cofinancing (\$)
1. Improvement of policy and regulatory frameworks for EV use and local manufacturing; strengthened capacity of concerned institutions and awareness raising.	TA	Enabling policies and regulatory framework, strengthened institutional capacity, and enhanced awareness catalyze and accelerate widespread use of	1.1. National policy and regulatory framework to catalyze and accelerate widespread use of EVs, both public and private: EV strategy and roadmap, business models, favorable tax/incentive schemes	GEFTF	600,000	1,200,000

<sup>1</sup> Project ID number will be assigned by GEFSEC.

<sup>2</sup> Refer to the reference attached on the [Focal Area Results Framework and LDCF/SCCF Framework](#) when completing Table A.

<sup>3</sup> TA includes capacity building, and research and development.

		EVs in Malaysia, resulting in GHG reductions, local manufacturing, job and income creation and environmental improvements.	for local manufacturing, safety standards, etc. improved or developed;  1.2. Institutional capacity built, and awareness on EV use raised.			
2. Development and demonstration of infrastructure for electric vehicles, and local EV manufacturing capacity.	INV	Adequate infrastructure and skilled personnel to locally manufacture EV parts and components facilitate widespread utilization of EVs.	2.1. At least 6 PV-based charging stations (fast and off-line) for EVs, also to be used for demonstration, designed, installed, and tested;	GEFTF	300,000	10,120,000
	TA		2.2. Enhanced standards and regulations for EV infrastructure, including charging stations, safety, and support applications, developed;  2.3. Local manufacturing of EV bus and motorcycle components supported through development of enabling support programmes; enhanced incentives and industry support to encourage Foreign Direct Investment in the sector developed;  2.4. Effective capacity building and technology transfer to enable EV manufacturing facilitated.		845,000	700,000
3. Monitoring & Evaluation.	TA	Adequate monitoring and evaluation mechanisms are in place, facilitating smooth and successful project implementation and sound impact.	3.1 Regular monitoring exercises conducted, PIRs prepared, tracking tools according to GEF requirements prepared;  3.2 Mid-term and final project evaluation conducted.	GEFTF	105,000	230,000
Subtotal					1,850,000	12,250,000
Project Management Cost (PMC) <sup>4</sup>				(select)	150,000	600,000
Total Project Cost					2,000,000	12,850,000

<sup>4</sup> To be calculated as percent of subtotal.

**C. INDICATIVE CO-FINANCING FOR THE PROJECT BY SOURCE AND BY NAME IF AVAILABLE, (\$)**

Sources of Cofinancing	Name of Cofinancier	Type of Cofinancing	Amount (\$)
GEF Agency	UNIDO	Cash	60,000
GEF Agency	UNIDO	In-kind	160,000
National Government	KeTTHA	Cash	500,000
National Government	KeTTHA	In-kind	3,000,000
National Government	MGTC	In-kind	500,000
Local Government	MOT	In-kind	300,000
Private	Industries	Cash	6,000,000
Private	Industries	In-kind	2,330,000
<b>Total Cofinancing</b>			<b>12,850,000</b>

**D. INDICATIVE TRUST FUND RESOURCES (\$) REQUESTED BY AGENCY, FOCAL AREA AND COUNTRY<sup>1</sup>**

GEF Agency	Type of Trust Fund	Focal Area	Country Name/Global	Grant Amount (\$ (a))	Agency Fee (\$ (b) <sup>2</sup> )	Total (\$) c=a+b
(select)	(select)	(select)				0
(select)	(select)	(select)				0
(select)	(select)	(select)				0
(select)	(select)	(select)				0
(select)	(select)	(select)				0
<b>Total Grant Resources</b>				<b>0</b>	<b>0</b>	<b>0</b>

<sup>1</sup> In case of a single focal area, single country, single GEF Agency project, and single trust fund project, no need to provide information for this table. PMC amount from Table B should be included proportionately to the focal area amount in this table.

<sup>2</sup> Indicate fees related to this project.

**E. PROJECT PREPARATION GRANT (PPG)<sup>5</sup>**

Please check on the appropriate box for PPG as needed for the project according to the GEF Project Grant:

	Amount Requested (\$)	Agency Fee for PPG (\$) <sup>6</sup>
• No PPG required.	-- 0--	--0--
• (upto) \$50k for projects up to & including \$1 million		
• (upto)\$100k for projects up to & including \$3 million	50,000	4,750
• (upto)\$150k for projects up to & including \$6 million		
• (upto)\$200k for projects up to & including \$10 million		
• (upto)\$300k for projects above \$10 million		

**PPG AMOUNT REQUESTED BY AGENCY(IES), FOCAL AREA(S) AND COUNTRY(IES) FOR MFA AND/OR MTF PROJECT ONLY**

Trust Fund	GEF Agency	Focal Area	Country Name/Global	(in \$)		
				PPG (a)	Agency Fee (b)	Total c = a + b
(select)	(select)	(select)				0
(select)	(select)	(select)				0
(select)	(select)	(select)				0
<b>Total PPG Amount</b>				<b>0</b>	<b>0</b>	<b>0</b>

MFA: Multi-focal area projects; MTF: Multi-Trust Fund projects.

<sup>5</sup> On an exceptional basis, PPG amount may differ upon detailed discussion and justification with the GEFSEC.

<sup>6</sup> PPG fee percentage follows the percentage of the GEF Project Grant amount requested.

## **PART II: PROJECT JUSTIFICATION<sup>7</sup>**

### **A. PROJECT OVERVIEW**

#### **A.1 Project Description. Briefly describe the project, including;**

##### **1) The global environmental problems, root causes and barriers that need to be addressed;**

Demand for mobility is growing rapidly, especially in developing countries, and the number of vehicles on the road is expected to triple by 2050, to over two billion. These more miles driven will come at a huge cost to the climate unless the decarbonizing of transport begins today, and will not only result in a significant increase in energy use, congestion and CO<sub>2</sub> emissions, but will also impact wider development ambitions.

Current global climate policy has failed to slow the alarming growth of greenhouse gas emissions from the transport sector. This needs to be addressed by scaling up sustainable transport strategies that simultaneously address health, safety, and economic development, while also cutting CO<sub>2</sub> pollution. While national commitments must be made, action will take place at the local and sub-national levels where the majority of cost effective opportunities to shift to low-carbon transport can be found.

The connection with cities is clear – more than 50% of the world’s population now lives in urban areas, the source of over 70% of emissions and passenger vehicles in general, and account for around 10% of energy-related carbon dioxide emissions. Transport will play an increasing role in curbing these as it is part of everyday life and thus everyone’s quality of life is affected by the choices available. However, global dependence on private motor vehicles persists, and according to an IEA study, will continue to increase significantly (2013). The transport sector in many developing countries has become the largest GHG emission sector of the economy, and these emissions are not only detrimental to the environment but also have serious negative health and socioeconomic impacts. In light of these issues, electric vehicles (EVs) present significant potential to reduce GHG emissions, in particular if the EVs are powered by renewable energy (RE) sources, and improve energy efficiency (EE). While there are many forms of clean vehicle technologies either currently under development or already in the market, EVs are one of the more promising alternatives for reducing oil consumption and emissions; EVs convert about 59–62% of the electrical energy input to power at the wheels while conventional gasoline vehicles only convert about 17–21% of the energy stored in gasoline to power at the wheels. Furthermore, increased use of EVs will interlink three industry sub-sectors: transport manufacturing, power generation and ICT.

However, while there are significant opportunities in the market, there are also many barriers preventing market acceptance of EVs. These include:

- Lack of the necessary policy, regulations and incentive programmes to encourage early market take-off and first-movers; high subsidization of fossil fuels;
- Lack of information about EVs and outreach programmes, hence low awareness within the public of the opportunities associated with EVs;
- Lack of the necessary supporting infrastructure: testing facilities, charging station networks and support applications, maintenance, etc.

These barriers, along with the relative ineffectiveness of current policies and investment programmes focusing on these issues, have been recognized by the Parties to the United Nations Framework Convention on Climate Change (UNFCCC) in their aim to reduce CO<sub>2</sub> and black carbon emissions from land transport.

The GEF, under its GEF6 cycle, will also very much focus on promotion of low-carbon transport. Program 3 of the GEF6 CC Mitigation Focal Areas will promote integrated low-carbon urban systems and sustainable transport and Program 1 will focus on development, demonstration and financing of low-carbon technologies.

##### **2) The baseline scenario and any associated baseline projects**

In the baseline scenario of Malaysia’s Second National Communication, GHG emissions are expected to grow at 3.7% per annum from 2000 to 2020, implying an increase in total emissions of 260 million tons of CO<sub>2</sub> equivalent (tCO<sub>2</sub>) in 2020, up from 223 million tCO<sub>2</sub> in 2000. Malaysia voluntarily aspires to the scenario of reducing GHG

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<sup>7</sup> Part II should not be longer than 5 pages.

emissions intensity of GDP by up to 40% of 2005 levels, by 2020<sup>8</sup>, i.e., from 0.62 kg CO<sub>2</sub> per unit of GDP to 0.37 kg CO<sub>2</sub>. This translates into emissions of only about 60% of 2005 emissions levels by 2020.

In 2000, energy production in Malaysia was responsible for around 35% of total CO<sub>2</sub> emissions (167 million tCO<sub>2</sub>), with the transportation sector following with 21% of emissions;<sup>9</sup> fossil fuels (mainly natural gas and petroleum products) are the most used fuels for energy production and consumption. In this baseline scenario, CO<sub>2</sub> emissions would increase to 260 million tCO<sub>2</sub> by 2020, pushed upward by Malaysia's high economic growth rate of about 4.8% annually<sup>10</sup>. Since 2009, the transport sector has become Malaysia's largest GHG emitter sector, and the second-biggest driver of energy demand of the economy.

In recognition of the large impact of the transportation sector on the country's GHG emissions, and in order to meet the emissions reduction target, as well as creating jobs and income, the Government of Malaysia issued in January 2014 the **National Automotive Policy (NAP 2014)** with a vision to make Malaysia a regional hub for EVs with a vibrant, world-class industry, and to have EVs driven by electricity generated from RE sources to achieve truly sustainable transport with zero emissions. The revised NAP focuses on the development of a local manufacturing market, strengthening the entire value chain, for energy efficient vehicles (EEV), with the long-term goal of being an EEV Hub by 2020. While the Policy focuses primarily on market development and competitiveness, it has been developed in close collaboration with the private sector and could serve as input for Component 1 of the proposed project. Furthermore, the development of such a Hub could help ensure the sustainability of the project's impact beyond its life scope.

Under the Economic Transformation Program (ETP), the National Key Economic Area (NKEA) Electrical and Electronics identified Entry Point Project (E&E EEP) 18, **Enabling Electric Vehicle Component Manufacturing**, as the key enabler towards Malaysia becoming the regional hub for EV manufacturing, financing, and backend ecosystem.

To realize this vision, the Government and many institutions have developed policies, set up programmes and projects and taken measures to reduce the emissions originating from the transport sector. For example, the Government has continuously reduced the fuel price subsidy over the past years and one of the Economic Transformation Programmes focuses on collecting and consolidating funds to provide incentives for energy efficient appliances and vehicles. The Malaysian Investment Development Authority (MIDA) has many incentives schemes to promote Green Transport, for example, customized incentives for up to 10 years based on the merit of each project for the assembly or manufacture of hybrid and electric vehicles. Customized incentives for up to 5 years based on the merit of each project for manufacture of selected critical components supporting hybrid and electric vehicles are also available. The Sustainable Energy Development Agency (SEDA) has several programmes to promote RE, in particular photo-voltaic (PV), with feed-in-tariff (FIT) and fuel cell (FC) storage programmes.

In terms of policies, Green Tech Malaysia, commissioned by the Ministry of Energy, Green Technology and Water (KeTTHA), developed the EV Infrastructure Roadmap in July 2011 that envisioned the development of an EV roadmap, a national automotive policy, with initial EV sales in the second half of 2014, local production of E-motorcycles and E-buses, etc.

There are two key programmes on the promotion of EV use currently operating in Malaysia:

a) EV Car Pilot and Demonstration Program (target to be completed by the end of 2014)

More than 50 EVs are currently deployed in several pilot and demonstration programmes. In addition, more than 20 EV charging stations have been installed at various locations in Greater Kuala Lumpur. These EVs have clocked more than 200,000 km and have provided valuable data in terms of technology suitability and user preference. Two models are currently available for purchase; Mitsubishi I-MiEV since March 2013 and Nissan Leaf since November 2013, and local car manufacturer, Proton, is said to begin manufacture of electric vehicles in 2014.

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<sup>8</sup> Confirmed by the Prime Minister in Copenhagen during COP 15 in 2009

<sup>9</sup> CO<sub>2</sub> constituted 75% of the total GHG emissions in 2000, according to the 2<sup>nd</sup> National Communication

<sup>10</sup> Final energy demand would increase from 30 million tons of oil equivalent (MTOe) in 2000 to almost 80 MTOe by 2020

b) Programme on the promotion of E-buses:

There are also a number of programmes focusing on EV Buses, such as PEMANDU's NKEA E&E EPP that entails the development and introduction of EV buses in public transportation. The Malaysia Green Technology Corporation (MGTC) and the KeTTHA are jointly leading the EPP and aim to develop 2,000 electric buses by 2020. Pilot projects are planned for a Sunway Bus Rapid Transit (BRT) with an initial fleet of 15 electric buses. A Sustainable Mobility Fund for Public Transportation has been proposed in support of this EPP with the objective to re-direct diesel subsidies to the development of zero-carbon charging infrastructure for electric buses.

Green Township Malaysia and Low Carbon Cities Framework (LCCF): This project will provide assistance to cities, inter-alia, in identifying climate change mitigation strategies, collecting baseline data, and implementing pilot projects. It has endorsed the need for cities to focus on their urban transport as one of the significant areas where strategies and appropriate actions to reduce their GHG emissions should be identified and developed. While the LCCF project is very comprehensive, capacity building of the manufacturing sector is lacking, thus neglecting the supply side of the sector. The proposed project will seek to rectify this through the activities planned for implementation under Component 2, such as capacity building and technology transfer.

Development of EV Roadmap: This programme focuses on policies, assessments, implementation and reporting on the use of EVs in Malaysia. It targets 10% EVs in 2020, as well as the development of an Electric Mobility Blueprint.

Green Technology Financing Scheme: this programme, operated with a total budget of US\$1.6 billion, is managed by the MGTC, and covers energy (production as well as efficient utilization), building, **transport**, and water and wastewater management sectors. Under the scheme, a company can apply for a loan at a participating Malaysian commercial or development finance institution of which the government guarantees 30% of the loan amount or subsidizes 2% of the interest rate. This scheme could serve as a potential funding source for local manufacturers looking to invest in manufacturing capacity of either EVs themselves or the supporting infrastructure envisaged under this proposed project.

While these incentives have been effective in increasing sales of efficient vehicles in the short-term e.g. the sale of hybrid vehicles (fully hybrid, not plug-in hybrid) increased by 84% from 2010 to 2012 with 15,355 units sold in 2012, there is still limited penetration in the market<sup>11</sup>. Apart from the 50 EVs of the EV Car Pilot and Demonstration Program discussed above, and one e-bus provided by a Chinese manufacturer for real-world testing purposes, there are no EVs, including plug-in hybrid vehicles, being used in Malaysia. Furthermore, market growth is highly dependent on incentive schemes such as the import duty exemption that expired in December 2013, and currently lacks the capacity and scale to gain traction in the market on its own. Limited demand also persists for locally produced e-motorcycles due to the same barriers mentioned above. As a result, and limited support programmes for manufacturers, there is little incentive for local manufacturers to invest in these innovative technologies and become first-movers in the market. The proposed project will seek to mitigate this problem by focusing on both the demand and supply aspects of the market, as well as the policy frameworks, thus taking a long-term approach.

**3) The proposed alternative scenario, with a brief description of expected outcomes and components of the project;**

To address the above barriers and facilitate the implementation and coordination of the above baseline programmes and projects, the Government of Malaysia has requested UNIDO to develop this project proposal in cooperation with the relevant stakeholders. UNIDO will provide the required technical expertise by using the services of international and local consultants, as well as UNIDO's in-house technical and managerial expertise and global knowledge network to assist Malaysia in achieving their target of 10% of all vehicles being EVs by 2020.

The main objective of the project is to catalyze and accelerate increased use of EVs, by promoting local manufacturing of parts and components for EVs and EV assembly, as well as the manufacturing of parts and components for charging stations, including PV-based, installation and operation. This approach is in line with the Malaysian government's objective to strengthen the market for and local manufacturing of EVs, as outlined in the NAP, 2014. The long-term impact of the project will create income and jobs for the people of Malaysia, while also

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<sup>11</sup> [http://www.btimes.com.my/Current\\_News/BTIMES/articles/MCAR/Article/](http://www.btimes.com.my/Current_News/BTIMES/articles/MCAR/Article/)

significantly reducing air and noise pollution, particularly in large cities. Furthermore, to link into global networks and maximize GHG reductions, the project will consider and incorporate the concept of integrated urban planning and sustainable city initiatives.

The project has two substantive components; the first on policy, institutional capacity building, and awareness raising, and the second on technology transfer for infrastructure development and demonstration, as well as capacity building to enhance EV manufacturing capability and capacity for adequate supply to the market. These will mutually promote EV and solar energy utilization in order to create a strong market demand for EVs and further reduce GHG emissions as compared to conventional fuel-based electricity. The project will be hosted by MGTC that will act as the local project executing agency. The PPG phase of this MSP will be used to narrow the focus of the project to focus on specific sectors/regions based on assessments, consultations and reviews conducted in the preparatory phase of the project that will gauge the specific needs of Malaysia in this area.

Malaysia and South Africa are the first two countries to request to work with UNIDO to develop a project for the promotion of early take-off and use of EVs. These two countries have taken the lead among developing countries with very bold targets and intensive programmes for the promotion of EVs and through UNIDO, the project counterparts of the two countries have already communicated intensively to share experience and knowledge.

**Component 1: Improvement of policy and regulatory frameworks for EV use and local manufacturing; strengthened capacity of concerned institutions built and awareness raising.**

This component will focus on the promotion of the early adoption of EVs, and has two key outputs:

*Output 1.1 National policy and regulatory framework to catalyze and accelerate widespread use of EVs, both public and private: EV strategy and roadmap, business models, favorable tax/incentive schemes, safety standards, etc. improved or developed.*

Policies, regulations, incentive and support programmes, etc. are necessary to catalyze and accelerate widespread use of EVs, for the fast establishment of a local industry leading to a spillover effect of a local market with sufficient demand for and supply of EVs, and adequate EV infrastructure, testing, maintenance, and education.

During the PPG phase, detailed assessments and consultations will be carried out with all concerned stakeholders, incorporating best relevant practices from around the world, for example from Denmark, France, Germany, the US, Japan, etc. as well as developing countries such as China. This will seek to identify the need for the further development of policies, strategies, roadmaps, business models, and incentive and support programs (e.g. tax incentives) that will be developed during the project main phase. The proposed project will also pay attention to the promotion of e-motorcycles and e-buses for public transport. International and local consultants will be recruited to work alongside local partners and concerned institutions.

The policy and regulatory framework to be developed will encourage and facilitate investment in infrastructure manufacturing, development and maintenance, as well as in the maintenance facilities and human resources. This will seek to enhance partnerships, pool available resources and generally streamline the concerns associated with such investment, thus reducing the perceived investment risks. The policy framework will also facilitate the development of PV-based infrastructure to reduce the consumption of fossil fuels and other GHG-intensive energy sources.

*Output 1.2 Institutional Capacity built and Awareness on EV use raised.*

To ensure the sustainability and impact of the project's activities, this Output will focus on capacity building of the Malaysian institutions directly involved in this field. Once the above policy and regulatory framework is approved or adopted, the project will assist in setting up a new institutional structure and/or strengthening the existing one. Currently, the Green Technology section of KeTTHA is the national authority responsible for EV development; other supporting institutions are the MGTC, the Malaysia Automotive Institute (MAI), MIDA, Ministry of Industry and International Trade, Ministry of Science, Technology and Innovations, Ministry of Transport (MOT), various universities, Malaysia EV Association (MEVA), etc. Several options have been proposed for a new structure, such as the formation of a national EV Steering Committee, and a central one-stop center for EV development. During the PPG phase and project implementation, the project will support the Government to choose the most relevant structure for the national context, through workshops, seminars, and study tours to learn from the experiences of other countries, and incorporate the views of local and international experts, as well as from stakeholders. The coordinating function of all stakeholders will be assumed by the project at the beginning of implementation and will

gradually be transferred to the Green Technology section of KeTTHA and MGTC as the project progresses. The project's training modules will focus on on-the-job training for officers and staff of the participating institutions, while working closely with the international and local consultants under Output 1.1. The strengthened institutional capacity development will not only ensure the sustainability of the project's impact, but will also help to attract and retain investment in this relatively new market. Furthermore, the built capacity will help to ensure the institutionalization of the policies and strategies developed under Output 1.1.

A back-up plan will be elaborated during the PPG phase for strengthening the capacity of the existing concerned institutions in the case that the policy and regulatory framework to be developed under Output 1.1 does not deliver the expected result. One option to be considered would be additional training for the relevant personnel of the existing institutions working on EV promotion.

Building on the strengthened and newly developed strategies, roadmaps, incentives and support programmes under Output 1.1, and the results of testing and demonstration under Component 2, the project will develop and implement an awareness raising programme on the opportunities and benefits (environmental, health, economic, etc.) associated with using electric vehicles combined with solar power.

### **Component 2: Development and demonstration of infrastructure for electric vehicles and local EV manufacturing capacity.**

This component aims at technology deployment and the demonstration of PV-based charging stations and built manufacturing capacity combined with the development of standards and regulations for EV infrastructure. It has four key outputs:

*Output 2.1 At least 6 PV-based charging stations (fast and off-line) for EVs, also to be used for demonstration, designed, installed and tested.*

The aim of this Output will be to assist in the design, purchase of necessary equipment, installation, operation and maintenance of at least 6 PV-based charging stations. During the PPG phase, consideration will be given to determining whether some of these PV-based stations will be used for the charging of e-buses. Currently, there is only one e-bus being tested with one charging station in Kuala Lumpur. These stations will also serve as input for testing and the collection of data and information for Output 2.2 and demonstration activities. The cost of each of the 6 PV-based fast charging stations, to be installed under this Output, is estimated between US\$200,000 and \$500,000. The cost will vary depending on whether the station will be used for EVs or e-buses, its location, its capacity, etc. A detailed cost analysis incorporating all these factors will be conducted during the PPG phase. The use of solar energy to power the EVs during the project will also seek to raise awareness amongst the public of emission-free EV options.

*Output 2.2 Enhanced standards and regulations for EV infrastructure, including charging stations, safety, and support applications, developed.*

The project will assist in the enhancement of current standards and regulations, covering the technical parameters of various types of charging stations, safe operation, maintenance, design of charging station networks, etc. Similar work is currently being carried out by a technical committee led by MGTC which, combined with the standards and regulations to be developed under this Output, will serve as input to and complement the policies and strategies developed under Component 1. Experience from other more advanced countries will also be shared to ensure maximum adoption of internationally accepted standards for EVs, thus simplifying compliance by manufacturers. Close attention will be paid, however, to adapting these to the specific conditions of Malaysia, e.g. weather, drivers' habits, etc. Close consultations with the private sector will be held to ensure that their requirements are also met, thus encouraging close cooperation between the public and private sectors, and reducing the perceived risk of investment in infrastructure.

*Output 2.3 Local manufacturing of EV bus and e-motorcycle components supported through development of enabling support programmes; enhanced incentives and industry support to encourage Foreign Direct Investment in the sector developed.*

This output will develop policies, regulations, support programmes, and adequate support facilities, as well as trained personnel, for the local manufacturing of e-buses and e-motorcycles, in order to encourage private sector investment into creating manufacturing capacity, thus stimulating supply in the market. Aiming to stimulate and encourage Foreign Direct Investment in Malaysia EV manufacturing capacity, this output will showcase Malaysia's EV



programs on a global platform to attract key industry leaders and subsequently couple them with enhanced incentive packages for EV manufacturing investments. This will help to develop a pool of global EV manufacturers operating in Malaysia and work towards Malaysia's aim to become a regional EV hub. Furthermore, increased investment into the manufacturing capabilities will expand capacity, utilizing the activities undertaken in Output 2.4 and leading to job creation and skills development in the manufacturing sector.

During the PPG phase, engagement with industry players will be carried out to determine the level of readiness, and conduct a gap analysis in terms of technology know-how and skills that would be addressed during project implementation.

*Output 2.4 Effective capacity building and technology transfer to enable EV manufacturing facilitated.*

This output will provide adequate training and skills improvement programmes to supply the required manpower to the EV manufacturing facilities. During the PPG phase, relevant universities and vocational schools will be identified to participate in the training and skill improvement programmes. FMM, MEVA, MAI, and other concerned institutions will be involved to identify the training needs. Adequate incentive mechanisms and monitoring programs, to be identified during the PPG phase, will be developed during the project implementation to encourage the transfer of key relevant technologies and attract the investment sought under Output 2.3 and required for the sufficient supply of locally manufactured EVs in Malaysia.

#### **4) Incremental/additional cost reasoning and expected contributions from the baseline, the GEFTE, LDCE/SCCF and co-financing;**

##### Incremental cost reasoning

In the case of no support from the GEF to assist Malaysia in removing the above-mentioned barriers, it is very likely that the transportation sector will continue to grow without taking into consideration its environmental impact and without exploiting its energy efficient growth potential. Consequently, many opportunities to reduce GHG emissions, strengthen partnerships with the private sector interested in investing in the e-mobility sector, and provide support to the government in developing policies to ensure an enabling environment, would go unrealized in Malaysia as well as other ASEAN countries. Indeed, under this project it has been planned that the experience of Malaysia could be shared with other developing countries and that the replication potential in ASEAN Region could be investigated.

##### Co-financing

The total co-financing of the project is equivalent to US\$12.85 million and ample consultations have been carried out with strong support and commitment secured from the project's partners: the Government of Malaysia and the transport sector's key players consider this project an opportunity to accelerate the implementation of the other interconnected national initiatives that would otherwise be delayed or neglected; as well as being a suitable platform for coordination, dialogue and policy engagement with regard to e-mobility and more generally in support of the promotion of low-carbon transportation. The detailed breakdown and description of the various contributions will be detailed throughout the PPG phase.

Co-financing by the private sector has been discussed with relevant local companies, such as those in the automotive manufacturing sub-sectors, the batteries manufacturing business, high-tech and innovative companies, transport supporting industry sub-sector, etc. Specific private sector companies that have been approached at this stage include First Energy Network, AMDAC Sdn. Bhd., Eclimo Sdn. Bhd. and DFRAN. Discussions have also been conducted with concerned government authorities and institutions to develop support programmes and financing schemes to support the private sector in this EV development programme. During the PPG phase, more work will be carried out together with MEVA, FMM and other chambers of commerce and industries to secure the commitment of the private sector to the project.

#### **5) Global environmental benefits (GEFTE, NPIF) and/or adaptation benefits (LDCE/SCCF);**

As discussed earlier, the transportation sector in Malaysia is a significant contributor to country GHG emissions. Its exhaust gases and the dust and noise created not only have an impact on climate change, but also pollute the environment, and therefore have negative health and socioeconomic impacts, particularly in big cities. This project will provide significant opportunities for reductions in GHG emissions, other exhaust gas emissions and noise from the transport sector of Malaysia. A detailed estimation of GHG emissions reductions, as well as other environmental

and socioeconomic benefits, will be carried out during the PPG phase of this project, based on the GEF Manual for Calculating GHG Benefits of GEF Transportation Project<sup>12</sup>. At this stage, it is estimated that about 400,000 to 1 million tons of CO2 eq. will be reduced as an accumulative, direct and indirect, project result, thus giving an abatement cost of around US\$ 2/ton to US\$ 5/ton CO2 eq from the GEF grant.

Currently, there are no EVs available on the Malaysian market and only one e-bus; a rough estimate is that by end-2017, when the project will be completed, Malaysia will have 10,000 EVs and 20 e-buses, of which 4,000 EVs and 10 e-buses are attributed to the incremental result of the project. In addition, 100 EVs of these 4,000 EVs, and 10 e-buses will be charged by the PV-based stations installed under Output 2.1. It is assumed that the annual average travel mileage of each EV and e-bus is 15,000 km, with a life time of 10 years; the emission factor for a car is 0.304 kg CO2 eq/km, and for a bus, 1.337 kg CO2 eq/km, as suggested by the GEF Manual. It is also assumed that an EV will emit about half of what an internal combustion car would. Furthermore, it is expected that this project will also have a regional impact on other ASEAN countries, in particular after the establishment of an ASEAN community in 2015.

#### **6) Innovativeness, sustainability and potential for scaling up;**

As the EV market is relatively new and the technologies involved are continuously being improved and developed, the project presents a multitude of innovative opportunities for Malaysia and the project’s stakeholders. While the project itself will not develop innovative technologies, its interventions in the policy framework and supporting infrastructure will help to create an enabling environment for the introduction and adoption of EV-related technologies.

The successful adoption of these innovative technologies in the market will require sustainable interventions. The project will seek to achieve this under Component 1 with a focus on capacity building within the relevant institutions and policy development. A comprehensive policy framework will ensure that the enabling environment persists beyond the project’s 3 year scope and the built capacity will ensure that institutions are able to effectively use the developed tools to develop and support the EV market in Malaysia.

As the EV market is still at the nascent stage, there is significant opportunity for scaling up. The enhanced policy and regulatory framework, the institutional and manufacturing capacity built, and the created infrastructure development plan and standards will lead to large implementation programmes by the private sector, both local and foreign, and by the national Government and local authorities. These opportunities will be taken advantage of through demonstration projects to encourage investment and implementation by the private sector and the development of new projects based on the experiences of the proposed one. These could include, for instance, the design, development and implementation of different business models and EV infrastructure in large cities, or municipalities such as Petaling Jaya, Melaka, and Iskandar region. This will allow project stakeholders to assess where additional opportunities lie and take full advantage of them with the newly developed policies and capacity. Finally, the close cooperation with the private sector presents significant opportunities to expand into a number of geographical regions and sectors beyond this project’s scope.

#### **A.2. Stakeholders. Identify key stakeholders (including civil society organizations, indigenous people, gender groups, and others as relevant) and describe how they will be engaged in project preparation:**

<b>Stakeholder and mandate</b>	<b>Envisaged role in the project</b>
<b>Malaysian Green Technology Corporation (MGTC)</b>	MGTC will be the local executing agency of the proposed project and responsible for the coordination of the work to be carried out by other local project partners.  MGTC will work on regulation, incentives, support programmes, etc. to promote EV use and PV-based charging stations.
<b>Ministry of Energy, Green Technology and Water</b>	KeTTHA will be the Chair of the Project Steering

<sup>12</sup> [http://www.thegef.org/gef/sites/thegef.org/files/publication/GEF\\_CalculatingGHGbenefits\\_webCD.pdf](http://www.thegef.org/gef/sites/thegef.org/files/publication/GEF_CalculatingGHGbenefits_webCD.pdf)

Stakeholder and mandate	Envisaged role in the project
<p><b>(KeTTHA)</b></p> <p>The role of KeTTHA is to facilitate and regulate the electricity sectors in the country, to ensure affordable energy is available to consumers throughout the country (by reviewing tariffs imposed by the utilities and monitoring standards of the utilities), to monitor energy programmes and to promote energy efficiency and renewable energy. The Ministry, in coordination with the Economic Planning Unit (of the Prime Minister’s Office), provides the general direction, and strategies in the energy sector. KeTTHA is also responsible for the promotion, innovation in and application of green technologies and for the water sector.</p>	Committee (PSC).
<p><b>Energy Commission (Suruhanjaya Tenaga, ST)</b></p>	Responsible for safety of electrical components in the charging infrastructure
<p><b>Ministry of Industry and International Trade (MITI)</b></p>	MITI will work on policy, regulation, incentives, support programmes, etc. to promote local manufacturers of EVs and parts, and also the parts required for the infrastructure to be developed.
<p><b>Ministry of Transport (MOT) and the Land Public Transport Commission (SPAD)</b> are responsible for developing transport related policies, and planning and regulating trains, buses and taxi services within Malaysia, with a specific focus on integrated and sustainable public transport.</p>	MOT and SPAD will work on safety standards and regulation; road tax relief, licensing, etc.
<p><b>Ministry of Natural Resources and Environment, MNRE</b> is the GEF Focal Point of Malaysia its major areas of focus include: (i) Natural resource management; (ii) Conservation and management of environment and shelters; and (iii) Management of land survey and mapping administration</p>	MNRE will work on the policy component and acts as the GEF Focal Point of Malaysia.
<p><b>Industries:</b> The industry comprises of EV manufacturers: multi-national corporations and 2 local companies for car production and those for e-motorcycles and e-buses; charging station manufacturers and network developers and operators.</p>	Industries will focus on the technology transfer and local manufacturing of EVs, parts and components, and EV infrastructure.
<p><b>Civil Society Organizations (CSOs)</b></p>	The relevant CSOs will be invited to participate during project implementation, specifically in the selection of target areas and the maximization of social economic benefits.
<p><b>Gender Dimensions</b></p>	Relevant women entrepreneurs, associations, and gender focal points will be invited to participate in project development and implementation. Efforts will also be made to include ministerial gender focal points in project steering committee meetings where possible.

**A.3 Risk. Indicate risks, including climate change, potential social and environmental risks that might prevent the project objectives from being achieved, and, if possible, propose measures that address these risks to be further developed during the project design (table format acceptable):**

<b>Risk</b>	<b>Rating</b>	<b>Mitigation</b>
Management priorities in the participating public and private sector organizations change over time, before and during project implementation, resulting in reduced participation or even termination of collaboration.	Low	This will be mitigated by the signing of a Terms of Reference contract before the commencement of the project (where possible, participating organizations will be legally bound to participate until project completion).
The general public opposes the execution of the proposed project, due to a lack of understanding and perceived danger of the technology.	Low	Public awareness and advocacy activities under Components 1 and 2 will seek to mitigate this risk. In addition, demonstrations undertaken under Component 2 will showcase the technology in a visible manner to present the opportunities and benefits of the proposed technologies. In particular, relevant university courses and/or summer school initiatives will serve to inform the general public and educate a new generation of sustainable energy engineers from a technical and safety point of view.
Delays in the proposed improvements to the institutional and regulatory framework by public institutions.	Medium	Close cooperation of the project partners in the PSC will be sought, and the project document will indicate in detail the roles and responsibilities of each project partner. Capacity building of the various relevant institutions will also create awareness and a better understanding of the project's interventions, thereby creating ownership among the local counterparts.
Incentives and the financial support system are insufficient.	Low	The private sector's involvement in the development of the policies and strategies under Component 1 will help ensure that the policy framework and financial mechanisms are in line with the needs of investors and manufacturers.
Technology failure	Low	This risk can be considered low, as EVs and the associated required equipment are now commercially and widely available.
Project interventions are not sustained beyond the project life span.	Medium	Relevant public bodies' agreement will be secured in order to guarantee the project continuation after the end of the GEF funding period and the built capacity and policies will support this continued implementation.
Infrastructure developed is vulnerable to climate change risks.	Low	While the infrastructure to be developed under the proposed project could potentially be vulnerable to climactic disruptions (e.g. charging stations in coastal areas), sufficient due diligence will be undertaken in the PPG phase as to the location of such infrastructure to mitigate this risk.

**A.4 Coordination: Outline the coordination with other relevant GEF financed and other initiatives:**

The project will be closely coordinated with the on-going GEF-UNIDO Cleantech Programme for SMEs in Malaysia and the GEF-UNIDO Industrial Energy Efficiency for the Malaysian Manufacturing Sector (IEMMS) projects. The GEF-UNIDO "GHG Emissions in Targeted Industrial Sub-Sectors through EE and Application of Solar Thermal Systems in Malaysia" project is currently under development and provides cooperation opportunities, particularly in the policy and capacity building components for the utilization of solar energy.

In particular during the project development and implementation phases, very close consultations will be

maintained with KeTTHA, MGTC and UNDP to avoid overlap and create synergies with the GEF-UNDP project on Green Technology Application for the Development of Low Carbon Cities (GEF 5329). The focus of each project will continue to be based on the comparative advantages of each agency; for example, the UNDP project will focus more on the promotion of business models and financing of public transport, which will gradually lead to the use of more e-buses, while the UNIDO project will focus on promotion of PV-based charging station manufacturing, installation and operation, and the manufacturing of e-buses, e-motorcycles, and EVs.

The proposed project will also closely coordinate with the other UNDP-GEF project under the climate change (CC) Focal Areas in Malaysia, the Building Energy Efficiency Improvement Project as well as with projects coordinated by the other relevant projects of UNIDO in Malaysia, in particular with those relating to the Montreal Protocol Branch and Environmental Management Branch. The proposed project will also closely liaise with other initiatives implemented in the country with regard to the fostering of a green industrial sector and the transition toward a green economy.

## **B. DESCRIPTION OF THE CONSISTENCY OF THE PROJECT WITH:**

### **B.1 National strategies and plans or reports and assessments under relevant conventions, if applicable, i.e. NAPAs, NAPs, NBSAPs, national communications, TNAs, NCSAs, NIPs, PRSPs, NPFE, Biennial Update Reports, etc.:**

A number of relevant legislation and policies exist in Malaysia with which the objectives of the proposed project are closely in line. Malaysia's 2<sup>nd</sup> **National Communication (2011)** has highlighted the importance of developing the public transport system of Malaysia, specifically noting that only 10% of Kuala Lumpur is directly served or within the transit catchments of the existing stations. Recognizing the large impact that the transportation sector has on the environment and the high growth levels, the National Communication lays out two key strategies with which the proposed project is closely aligned; capacity building and awareness raising of the public institutions and the larger populous, and improving the regulatory environment. The interventions of this project, under Component 1, are closely in line with these objectives and will serve to support the objectives of the Government of Malaysia.

Urban Public Transport is one of the six National Key Result Areas (NKRAs) identified under the **Government Transition Programme (GTP)**, launched in 2010. It specifically highlights the importance of the development and improvement of bus networks, and connecting outlying areas with metropolitan cities, such as Kuala Lumpur.

The **Land Public Transport Commission (SPAD)** was established in 2010 under the Land Public Transport Act and is responsible for developing transport related policies, and planning and regulating trains, buses and taxi services within Malaysia, with a specific focus on integrated and sustainable public transport.

Focusing on the more general development of green technologies, the **National Green Technology Policy**, implemented by KeTTHA, is built around 4 pillars; energy, environment, economy and society. The Policy specifically identifies the transportation sector as one of its four focal areas, highlighting the importance of incorporating green technology into supporting infrastructure and public road transport. The proposed project is directly in line with these objectives, and close cooperation with KeTTHA has already taken place at the development stage of this project.

### **B.2. GEF focal area and/or fund(s) strategies, eligibility criteria and priorities:**

The objective of the project is fully consistent with the goal of the Climate Change Mitigation Focal Area, which supports developing countries and economies in transition toward a low-carbon development path, and in particular with Objective 4 of CC Focal Area, namely: Promote energy efficiency, low-carbon transport and urban systems.

### **B.3 The GEF Agency's comparative advantage for implementing this project:**

UNIDO has successfully implemented a significant number of GEF projects. In particular, UNIDO, with GEF support, already has a number of ongoing climate change projects in implementation and under development in Malaysia. UNIDO has, therefore, developed a strong level of expertise, trust and a large network of national counterparts involved in this space.

UNIDO's mandate is, inter-alia, to promote technology transfer, technology development and deployment in developing countries. One of the current three thematic priorities of UNIDO programme is sustainable energy and environment. At the Rio+20 Event, UNIDO launched the Green Industry Platform.

UNIDO's Energy Strategy aims at helping developing countries and countries in transition to achieve the following objectives:

- Increase the competitiveness of their industries by reducing the dependence on fossil fuels;
- Reduce their impact on climate change by decreasing the carbon emissions of their industries and by promoting renewable energy technologies;
- Increase the viability of their enterprises, particularly in rural areas, by augmenting the use of locally available renewable energy sources.

UNIDO has been working for several years in Southeast Asia, Thailand and Vietnam and other countries around the world, such as in South Africa, Russia, India, Serbia, etc. to assist their automotive sectors to increase their competitiveness, and reducing their negative impact on the environment. UNIDO has, therefore, developed a strong level of expertise, trust and a large network of international consultants involved in this field. Under the ICHET project in Turkey, UNIDO assisted the design, manufacture, operation and maintenance of a Hydrogen FC van powered by solar energy for emergency situation, and a fleet of tri-wheelers in New Delhi based on Hydrogen combustion. As a result, UNIDO has proven experience and expertise in the transportation sector, specifically in the manufacturing processes of energy efficient vehicles, charging stations, including PV-based ones, and the development of charging infrastructure for EVs.

UNIDO has considered in 2013 to establish a strategic approach to a sustainable transport sector centred around three areas of intervention: 1) low carbon transport promotion and development; 2) energy efficiency in vehicle manufacturing and supply chain; and 3) sustainability in the transport lifecycle. The proposed project will also closely liaise with other initiatives implemented in the country with regard to the fostering of a green industrial sector and the transition toward a green economy.



UNIDO will contribute US\$60,000 in cash and US\$160,000 in-kind to the project as their co-financing contribution to project activities.

**PART III: APPROVAL/ENDORSEMENT BY GEF OPERATIONAL FOCAL POINT(S) AND GEF AGENCY(IES)**

A. **RECORD OF ENDORSEMENT OF GEF OPERATIONAL FOCAL POINT (S) ON BEHALF OF THE GOVERNMENT(S):** (Please attach the [Operational Focal Point endorsement letter\(s\)](#) with this template. For SGP, use this [OFP endorsement letter](#)).

NAME	POSITION	MINISTRY	DATE (MM/dd/yyyy)
Dr. Lian Kok Fei	GEF Operational Focal Point Undersecretary of Environmental & Climate Change Division	MINISTRY OF NATURAL RESOURCES AND ENVIRONMENT (MONRE), MALAYSIA	13 DECEMBER 2013

B. **GEF AGENCY(IES) CERTIFICATION**

<b>This request has been prepared in accordance with GEF/LDCF/SCCF/NPIF policies and procedures and meets the GEF/LDCF/SCCF/NPIF criteria for project identification and preparation.</b>					
Agency Coordinator, Agency name	Signature	DATE (MM/dd/yyyy)	Project Contact Person	Telephone	Email
Philippe Scholtès, Officer in Charge, Programme Development and Technical Cooperation Division (PTC)  UNIDO GEF Focal Point		04/16/2014	Khac-Tiep Nguyen, Energy and Climate Change Branch, UNIDO  	+43-1-26026-3086	k.nguyen@unido.org