



Integrated, Sustainable and Low Emissions Transport in the Maldives

Part I: Project Information

Name of Parent Program

Global Programme to Support Countries with the Shift to Electric Mobility.

GEF ID

10301

Project Type

MSP

Type of Trust Fund

GET

CBIT/NGI

CBIT

NGI

Project Title

Integrated, Sustainable and Low Emissions Transport in the Maldives

Countries

Maldives

Agency(ies)

UNEP

Other Executing Partner(s):

Department of Environment, Ministry of Environment

Executing Partner Type

Government

GEF Focal Area

Climate Change

Taxonomy

Focal Areas, Climate Change, Climate Change Mitigation, Sustainable Urban Systems and Transport, Influencing models, Demonstrate innovative approaches, Strengthen institutional capacity and decision-making, Transform policy and regulatory environments, Convene multi-stakeholder alliances, Deploy innovative financial instruments, Stakeholders, Civil Society, Non-Governmental Organization, Academia, Community Based Organization, Communications, Awareness Raising, Behavior change, Public Campaigns, Education, Type of Engagement, Participation, Consultation, Information Dissemination, Private Sector, Capital providers, Individuals/Entrepreneurs, Financial intermediaries and market facilitators, Large corporations, SMEs, Gender Equality, Gender results areas, Access to benefits and services, Gender Mainstreaming, Beneficiaries, Women groups, Capacity, Knowledge and Research, Capacity Development, Innovation, Knowledge Generation

Rio Markers**Climate Change Mitigation**

Climate Change Mitigation 2

Climate Change Adaptation

Climate Change Adaptation 0

Submission Date

4/27/2020

Expected Implementation Start

6/1/2021

Expected Completion Date

5/31/2024

Duration

48In Months

Agency Fee(\$)

164,371.00

A. FOCAL/NON-FOCAL AREA ELEMENTS

Objectives/Programs	Focal Area Outcomes	Trust Fund	GEF Amount(\$)	Co-Fin Amount(\$)
CCM-1-2	Promote innovation and technology transfer for sustainable energy breakthroughs for electric drive technology and electric mobility	GET	1,826,339.00	4,408,484.00
Total Project Cost(\$)			1,826,339.00	4,408,484.00

B. Project description summary

Project Objective

To mitigate greenhouse gas (GHG) emissions, promote energy security, and improve air quality through integrated, sustainable low-emissions transport systems in the Maldives

Project Component	Financing Type	Expected Outcomes	Expected Outputs	Trust Fund	GEF Project Financing(\$)	Confirmed Co-Financing(\$)
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Project Component	Financing Type	Expected Outcomes	Expected Outputs	Trust Fund	GEF Project Financing(\$)	Confirmed Co-Financing(\$)
Component 1: Institutionalization of integrated sustainable low-carbon transport and development of regulatory framework and policies	Technical Assistance	Outcome 1: Government establishes an institutional framework and policies to promote and support integrated sustainable low-emission transport, including electric mobility	<p>Output 1.1: Integrated policy framework, including battery reuse and recycling and elderly, women, children and differently able (EWCD) features for sustainable and low emission transport developed and submitted to Ministries (Environment, Transport, Urban Development, and Planning & Infrastructure) for adoption</p> <p>Output 1.2: Technical support provided to mandated Government authorities, Energy Department and NGOs for developing policy options including fiscal and non-fiscal policies, consideration of EWCD features, for sustainable urban low-emission transport planning</p> <p>Output 1.3: Low emission</p>	GET	367,648.00	530,700.00

Project Component	Financing Type	Expected Outcomes	Expected Outputs	Trust Fund	GEF Project Financing(\$)	Confirmed Co-Financing(\$)
Component 2: Short-term barrier removal and scaling-up investments through low-emission sustainable transport demonstrations	Investment	Outcome 2: Government and private sector use evidence from demonstration projects to plan new investments for scale-up of sustainable low-emissions transport, including electric mobility	<p>Output 2.1: Technical support provided to Ministry of Environment and Private Sector (in consultation with other Ministries/ Energy Department) for development of strategy to deploy electric vehicles (buses, bicycles, and 2-wheelers), including use of renewable based charging infrastructure, and financial mechanisms to support implementation (TA)</p> <p>Output 2.2: Technical support provided to identified Government authorities and Energy Department for enabling investments in solar powered e-Boats (TA)</p> <p>Output 2.3: Technical and financial support provided to Ministry of Transport, Maldives Transport &</p>	GET	1,004,087.00	3,009,484.00

Project Component	Financing Type	Expected Outcomes	Expected Outputs	Trust Fund	GEF Project Financing(\$)	Confirmed Co-Financing(\$)
Component 3: Preparing for scale-up, monitoring, awareness creation and replication of integrated sustainable low-emission transport	Technical Assistance	Outcome 3: Planners and users use new knowledge to develop and adopt integrated sustainable low emission transport solutions and options	<p>Output 3.1: Technical support provided to Ministry of Environment, Ministry of Transport and Maldives National University for preparing Measurement, Reporting, and Verification (MRV) framework for sustainable low emissions transport designed and operational, including establishment of GHG emissions, air quality and emissions inventories</p> <p>Output 3.2: Public awareness enhanced through awareness and advocacy campaigns on sustainable low-emissions transport supported by identified Government authorities and Civil Society Organizations (CSOs)</p> <p>Output 3.3: Training provided to Government officials/</p>	GET	291,604.00	476,500.00

Project Component	Financing Type	Expected Outcomes	Expected Outputs	Trust Fund	GEF Project Financing(\$)	Confirmed Co-Financing(\$)
Monitoring and Evaluation				GET	35,000.00	
Sub Total (\$)					1,698,339.00	4,016,684.00
Project Management Cost (PMC)						
	GET		128,000.00		391,800.00	
Sub Total(\$)			128,000.00		391,800.00	
Total Project Cost(\$)			1,826,339.00		4,408,484.00	

C. Sources of Co-financing for the Project by name and by type

Sources of Co-financing	Name of Co-financier	Type of Co-financing	Investment Mobilized	Amount(\$)
Recipient Country Government	Maldives Transport and Contracting Company (MTCC) / Ministry of Transport and Civil Aviation (MoTCA)	Public Investment	Investment mobilized	2,350,284.00
Recipient Country Government	Energy Department, Ministry of Environment	In-kind	Recurrent expenditures	170,000.00
Recipient Country Government	Ministry of Environment	In-kind	Recurrent expenditures	391,800.00
Recipient Country Government	Ministry of Environment	In-kind	Recurrent expenditures	1,188,000.00
Recipient Country Government	Male? City Council	In-kind	Recurrent expenditures	78,800.00
Private Sector	Housing Development Corporation (HDC)	In-kind	Recurrent expenditures	71,600.00
Civil Society Organization	Bike Maldives	In-kind	Recurrent expenditures	39,400.00
Others	Maldives National University	In-kind	Recurrent expenditures	82,600.00
Recipient Country Government	MTCC / MoTCA	In-kind	Recurrent expenditures	36,000.00
Total Co-Financing(\$)				4,408,484.00

Describe how any "Investment Mobilized" was identified

The Ministry of Transport and Civil Aviation, via Maldives Transport and Contracting Company (MTCC), has confirmed a leveraged finance component. They were planning to kick-start a project for implementation of public buses; however, the model was yet to be proven. This proposed project will

support use of e-buses in place of diesel buses and provide the necessary support to build up a business model that can further be scaled and replicated by MTCC, going forward.

D. Trust Fund Resources Requested by Agency(ies), Country(ies), Focal Area and the Programming of Funds

Agency	Trust Fund	Country	Focal Area	Programming of Funds	Amount(\$)	Fee(\$)
UNEP	GET	Maldives	Climate Change	CC STAR Allocation	1,826,339	164,371
Total Grant Resources(\$)					1,826,339.00	164,371.00

E. Non Grant Instrument

NON-GRANT INSTRUMENT at CEO Endorsement

Includes Non grant instruments? **No**

Includes reflow to GEF? **No**

F. Project Preparation Grant (PPG)

PPG Required

PPG Amount (\$)

32,000

PPG Agency Fee (\$)

2,880

Agency	Trust Fund	Country	Focal Area	Programming of Funds	Amount(\$)	Fee(\$)
UNEP	GET	Maldives	Climate Change	CC STAR Allocation	32,000	2,880
Total Project Costs(\$)					32,000.00	2,880.00

Core Indicators

Indicator 6 Greenhouse Gas Emissions Mitigated

Total Target Benefit	(At PIF)	(At CEO Endorsement)	(Achieved at MTR)	(Achieved at TE)
Expected metric tons of CO ₂ e (direct)	0	970	0	0
Expected metric tons of CO ₂ e (indirect)	0	891848	0	0

Indicator 6.1 Carbon Sequestered or Emissions Avoided in the AFOLU (Agriculture, Forestry and Other Land Use) sector

Total Target Benefit	(At PIF)	(At CEO Endorsement)	(Achieved at MTR)	(Achieved at TE)
Expected metric tons of CO ₂ e (direct)				
Expected metric tons of CO ₂ e (indirect)				
Anticipated start year of accounting				
Duration of accounting				

Indicator 6.2 Emissions Avoided Outside AFOLU (Agriculture, Forestry and Other Land Use) Sector

Total Target Benefit	(At PIF)	(At CEO Endorsement)	(Achieved at MTR)	(Achieved at TE)
Expected metric tons of CO ₂ e (direct)		970		
Expected metric tons of CO ₂ e (indirect)		891,848		
Anticipated start year of accounting		2023		
Duration of accounting		12		

Indicator 6.3 Energy Saved (Use this sub-indicator in addition to the sub-indicator 6.2 if applicable)

Total Target Benefit	Energy (MJ) (At PIF)	Energy (MJ) (At CEO Endorsement)	Energy (MJ) (Achieved at MTR)	Energy (MJ) (Achieved at TE)
Target Energy Saved (MJ)		41085100000.000000000		
		0		

Indicator 6.4 Increase in Installed Renewable Energy Capacity per Technology (Use this sub-indicator in addition to the sub-indicator 6.2 if applicable)

Technology	Capacity (MW) (Expected at PIF)	Capacity (MW) (Expected at CEO Endorsement)	Capacity (MW) (Achieved at MTR)	Capacity (MW) (Achieved at TE)
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Indicator 11 Number of direct beneficiaries disaggregated by gender as co-benefit of GEF investment

	Number (Expected at PIF)	Number (Expected at CEO Endorsement)	Number (Achieved at MTR)	Number (Achieved at TE)
Female		833		
Male		3,217		
Total	0	4050	0	0

Part II. Project Justification

1a. Project Description

1a. Changes in project design

The Objective and Component of the project remain the same as outlined in the Child Project concept submitted with the Programme Framework Document (PFD). The component titles are now more aligned with the component titles for the PFD but there is no substantive change to the deliverables of the components. There is one small re-alignment with the MRV framework establishment. This is included in Component 3, which was earlier included as part of Component 2. An additional change was to include e-boats as part of the project coverage, which was not envisaged in the Child Project concept. The inclusion of e-boats was based on the suggestions by the stakeholders due to the key role boats play in transportation in Maldives. The modification/ changes in the wording below are attributed based on the inputs and suggestions from the various stakeholder consultations in Maldives. The language on the outcomes has also been modified to more accurately reflect the state that is being attempted as a result of project intervention.

Child Project elements affected	Changes
Component 1: Policy framework for integrated, sustainable and low-emissions transport in Maldives	The Component has been reworded as: Institutionalization of integrated sustainable low-carbon transport and development of regulatory framework and policies
Component 2: Demonstrating low emissions technologies for transport and establishing the measurement, reporting, verification (MRV) framework for transport	The component title has been reworded as: Short-term barrier removal and scaling-up investments through low-emission sustainable transport demonstrations
Component 3: Knowledge management and public awareness campaign, and outreach for sustainable and low emissions transport	The component title has been reworded as: Preparing for scale-up, monitoring, awareness creation and replication of integrated sustainable low-emission transport
Outcome 1: Adequate regulatory and institutional framework and policies adopted for integrated transport and urban planning and low-emissions transport modes	Outcome 1 is reworded as: Government establishes an institutional framework and policies to promote and support integrated sustainable low-emission transport, including electric mobility
Outcome 2: The benefits and feasibility of low-emissions transport system for Maldives, including electric vehicles demonstrated and policies adopted nationwide	Outcome 2 reworded as: Government and private sector use evidence from demonstration projects plan new investments for scale-up of sustainable low-emissions transport, including electric mobility

Outcome 3: Increased public awareness on the benefits and affordability of low emissions transport options

Outcome 3 reworded as: 3. Planners and users use new knowledge to develop and adopt integrated sustainable low emission transport solutions and options

1b. Project Description

1) **Global environmental and/or adaptation problems, root causes and barriers that need to be addressed**

The Maldives, officially the Republic of the Maldives, is an island nation in the Indian Ocean-Arabian Sea region. The country is made up of 26 atolls between the Chagos Archipelago and Minicoy Island, 250 miles southwest of India. The Maldives consists of over 1,192 islands, spanning approximately 900 kilometers along the Indian Ocean. Only 187 of these islands are inhabited.

The Maldives is the smallest Asian country, both by land area and population. Its estimated population in 2019 is 530,953 and the total land area of just 298 square kilometers. The Maldives Islands have a high population density of 1,781 people per square kilometer, making it the 11th most densely populated country on earth. The largest city in the Maldives is Male, also its capital city, with an estimated population of 63,000. This is followed by Addu City (32,000) and Fuvahmulah (12,000). These are the only cities with a population surpassing 10,000 and only 19 other islands have populations exceeding 2,000 people.

The Gross Domestic Product (GDP) of Maldives is 4.7 billion US Dollars (USD) (2018), which is 11,890 USD per capita and growing at 6.1%. The GDP share in Maldives from major contributing sectors is as follows: Tourism (24.5%), Construction (6.7%), Transportation (5.4%) and Fisheries (4.31%). Its economy is expected to grow by 4.9% in 2018, driven primarily by the construction and tourism sectors. Maldives GDP per capita is USD 11.89 thousand, which ranks 155th in the world.

Maldives being an island nation with limited availability of natural resources, it depends on imports of fossil fuel to meet its energy demands. Due to the dispersed nature of the islands, Maldives does not have one single national grid. Each Island has its own electricity generation and distribution facility resulting in costly electricity. The cost of production of one unit of electricity is 20-22 cents as per current fuel prices in Male. In terms of energy mix, 97% of the energy demand was met by generation from fossil fuel and remaining 3% from renewable energy (mainly solar). Total installed capacity is 368 MW, of which the solar generation capacity stands at 11 MW. According to the statistics from Maldives customs, the nation imported 521 Metric Tonne of diesel in 2018, spending 5.38 billion Maldivian Rufiyaa (MVR), almost 7.4 % of its GDP. Shifting the dependency from fossil fuel, the current administration's mandate is to produce a minimum of 70% of daytime peak load (around 80 megawatts (MW)) of electricity in all inhabited islands from renewable energy sources by 2030. This target has been revised from its initial value of 30% of daytime peak.

The low elevation of the Maldivian islands makes the nation highly vulnerable to rising sea levels. Its Nationally Determined Contribution (NDC) under the Paris Agreement acknowledges the challenges it faces given its high population density, dispersed geography, and limited resources. Given the country's vulnerability, its NDC focuses on crucial actions to strengthen the country's resilience to climate impacts and prioritizes mitigation in energy, transport, and waste.

Global environmental problem:

A global transition to low- and zero- emission mobility is essential to meet international climate commitments, including the Paris Climate Agreement. The transport sector is currently responsible for approximately one quarter of energy-related carbon dioxide emissions, this is expected to grow to one-third by 2050. In addition, the transport sector is a leading contributor to short-lived climate pollution, especially black carbon.

The global vehicle fleet is set to double by 2050, and almost all this growth will take place in low- and middle-income countries. By 2050 two out of three cars will be found in developing countries. This means that achieving global climate targets will require a shift to zero emissions mobility in all countries, including low- and middle-income ones.

The Transport sector globally is one of the biggest growing contributors to the energy demand growth, in addition to power sector, industries (steel, cement, aluminium, etc.), forestry and others. Over the past decade, the global transport sector's GHG emissions have increased at a faster rate than any other energy using sector. The sector produced ~8.0 GtCO_{2e} of total emissions in 2016 (71% higher than 1990) and was responsible for approximately 25% of total energy-related CO₂ emissions.

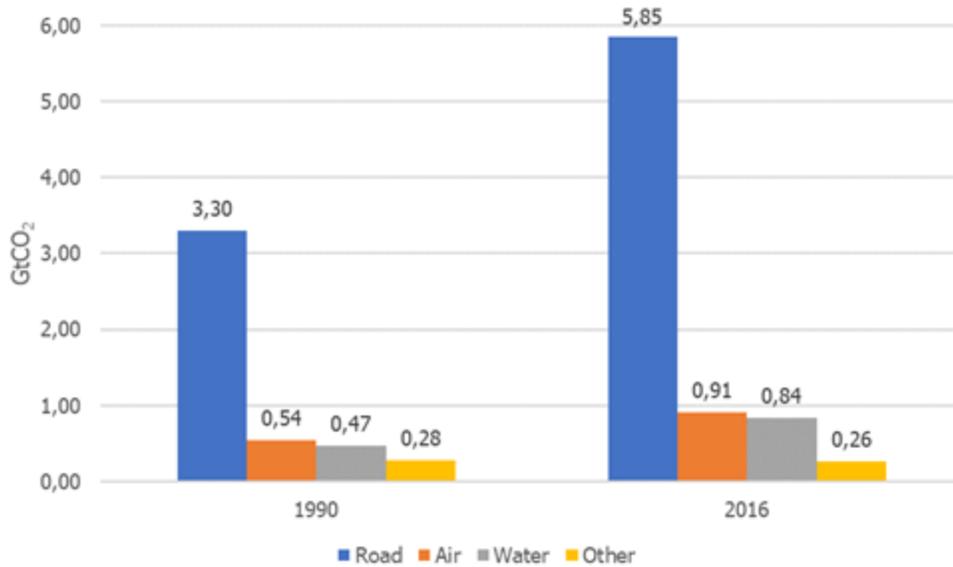


Figure 1. Global CO2 emissions by Transport sub-sector

Road transport accounts for about two-third of the transport emissions. The share of road transport emissions increased by two percentage points to 74%, while other modes of transport remained unchanged. Reducing these emissions is an important part of the climate change mitigation programs. Without implementing sustainable mitigation policies, transport emissions could increase at a faster rate than emissions from the other energy end-use sectors and reach around 12 GtCO₂e by 2050.

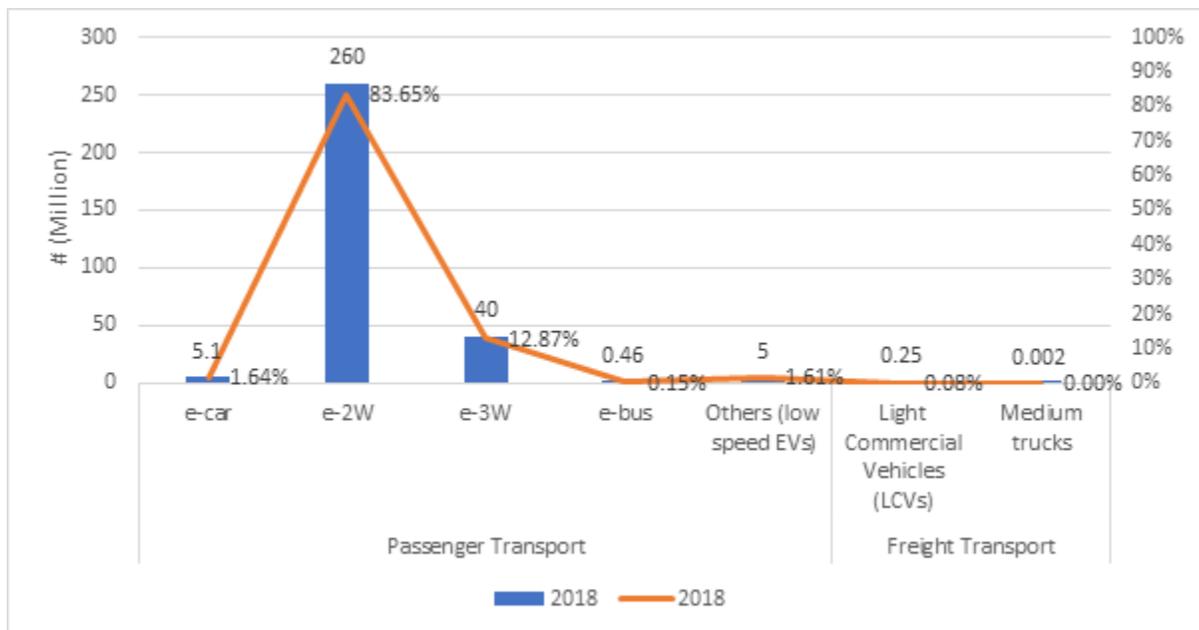


Figure 2. Global EV sales across vehicle segments

Electric Vehicles (pure electric, plug-in-hybrid) have emerged as good alternative to ICEs and there is rising deployment in last years. In 2018, there were nearly 310 million EVs (including 2Ws, 3Ws, cars, buses and trucks), of which electric - two wheelers (e-2W) formed ~84%, electric - three wheelers (e-3W) 13% and e-cars 1.6%. Various regions and countries like United States, European Union (EU), China, India, Canada, Japan, and others have built targeted EV Mission/Programs and driving increased EV adoption through policy, supply fiscal incentives, demand subsidies, standardisation, Govt. procurement, encouraging private investments and many other interventions.

IEA's 'New Policies Scenario' estimates global EV sales to reach 23 million by 2030 (excluding 2W and 3W), emitting roughly 230 MtCO_{2e}, but would be almost double, i.e. 450 MtCO_{2e} if the equivalent vehicle fleet were powered by Measurement, Reporting, and Verification (MRV) powertrains. In comparison, the 'EV30@30 Scenario', launched at the Eighth Clean Energy Ministerial (CEM) in 2017, estimates EV sales to reach to 43 million by 2030 (excluding 2W and 3W) emitting around 230 MtCO_{2e}, while an equivalent ICE vehicle fleet would emit about 770 MtCO_{2e}. Transport demand per capita in developing and emerging economies is far lower than in Organization for Economic Co-operation and Development (OECD) countries but is expected to increase at a much faster rate in the next decades due to rising incomes and development of infrastructure.

National Scenario

Maldives does not have a significant manufacturing industry, and most things are imported, including 100% of automobiles. Its total import outside fossil fuel stand at 0.039 billion dollars, which is around 1% of its GDP. Following the growth in population and urbanization, there has been a rapid increase in the number of vehicles imported into Maldives, both for land and marine transport. The total registered vehicles have increased more than 295% from 22,303 in 2007 to 65,932 in 2014. The majority (83%) of vehicles registered in the Maldives are motorcycles, followed by cars (6%). Furthermore, the total number of vessels registered has increased from 7,016 in 2005 to 11,913 in 2014 by approximately 70%. Energy consumption for sea transport in the atolls for passengers and goods has risen from 9 kilotons of oil equivalent in 2002 to nearly 50 kilotons of oil equivalent in 2009 and is one of the fastest growing emissions sectors in Maldives. Marine transport is estimated to contribute 67% of total transport related greenhouse gas emissions in Maldives and is the largest source of GHG emissions among the subcategories of the transport sector. Road transport emissions occur in congested urban areas, and are dispersed over a smaller area, but they contribute to around ~17% of total GHG emission from transport sector (See Figure 5 below).

In the Maldives, the analysis has shown that the major sources of greenhouse gases are also major sources of air pollutants. Electricity generation is the major source of CO₂ emissions as well as a major source of SO₂ and NO_x. Waste is the major source of methane emissions and is also a major source of many other air pollutants. Like air pollution, emissions of GHGs are also projected to grow substantially in the future due to increase in population, and demand for energy. Finally, substantial growth in marine and road transport emissions is expected, if mitigation measures are not applied.

Though the country has recognized the transport sector as a focus for addressing congestion, air pollution, and GHG emissions, due to root causes and barriers described below, private vehicles continue to grow in absence of well-developed public transport system and investments in alternative transport services.

Policy and Regulations: The policies and regulations^[1] for transport sector are primarily targeted to generate revenue from the import of vehicles, which are mainly personnel vehicles. One or two islands have a regulation on type of private vehicles that can be used otherwise there is no management of quality and technology of vehicles being imported. In recognition of air pollution issue, emission standards were developed recently in 2019 (as part of National Action Plan on Air Pollutants) but have not been effectively implemented. To give a few examples, there is no policy or regulation on efficiency of vehicles, age of vehicle, limiting number of vehicles being imported, etc. The import duty on electric vehicles has been eliminated, however, which does not seem enough to influence the type and age of vehicle or incentives to choose more environmentally friendly options. For example, the transport strategies aim to increase the share of biofuel vehicles but there is no policy framework to facilitate a shift to use of biofuels. Further there is no policy on the specification of biofuels, quality criteria, etc. This is further compounded by lack of Master Transport plan^[2] for the country let alone an integrated urban development and transport plan. There are no guidelines and policy framework to develop integrated transport plan that would enable considering environmental aspects into developing the transport systems.

Institutional coordination: Transport planning needs to take into account a number of interrelated issues such as urban development plan approach, environmental issues to be addressed in designing the transport systems, energy availability, forex reserves which in case of Maldives is very important as it imports all its fuel, budgetary resources available to provide incentives or investments, etc. This requires a good coordination among institutions with responsibility for these issues and a coordination mechanism. Such a coordination or coordination mechanisms is practically absent and most of policies and regulations are prepared independently among the mandated government institutions. Normally an urban integrated transport planning process allows some level of coordination but absence of such a planning mechanism in Maldives aggravates the matter. To compound it the Male region was managed by Central Government Ministries, it is only recently that Decentralization Act of Maldives established a local governance structure. These systems are still in development stage and hence this adds to the coordination challenge.

Institutional Capacity: Weak institutional coordination is compounded by weak capacities in the Institutions. The policy makers don't have adequate capacities for developing integrated transport plans, knowledge of policies and regulations to address the sustainable challenges that government would like to address, tools and approaches for financing transport projects, etc.

Information and awareness: The lack of information at the level of policy makers and end users is another challenge in shift towards sustainable low-emission transport system. The Policy makers lack access to information on latest tools and approaches for planning and designing policies and regulations, comparative analysis of various fuels/technologies, etc. There is also lack of information

on and tools to analyse the impacts of transport development on air pollution, fuel demand and its implication for forex, GHG emissions, etc. Similarly, citizens and end-users lack information on impacts of their transport choices, transport options and benefits of different transport options, etc. There are very limited demonstration projects for sustainable transport. Lessons are often not well communicated and there is lack of a consensus on best practices. Due to the highly dispersed nature of the islands, outreach can be a barrier especially at the local island community level.

Industrial sector perspective/supply chain/local manufacturing: The Maldives is disadvantaged by the small size of the domestic market as well being an archipelago, as such it is dependent on imports and landed value of material is very high. Local manufacturing and local supply chain creation is not viable thus benefit of this in reducing the cost of low emission transport options is non-existent. Further it limits competition and thus market forces have a limited influence on available options. This limits the import of high efficiency vehicles or alternative fuel vehicles or electric vehicles. Further, there is no e-charging infrastructure in the country. The lack of policies and incentives for low emission transport option to limits the investments in these options.

Financing / investment: The government is challenged in allocating budgetary resources towards creating public transport infrastructure or e-charging infrastructure. The lack of policies and incentives also inhibit the investments by private sector. Further, in absence of clear policy on non-motorized transport (NMTs) there is no incentive for investments in creating shared bike systems. The government lacks experience and awareness of business models for developing public-private partnership (PPP) projects to leverage budgetary resources for channelling private sector investments. There is lack of access to financing options for individual consumers to enable purchase of e-bikes or for private investors to invest in e-vehicle infrastructure. Fiscal policies and public financing mechanisms have no provision for prioritizing low emission options or in reflecting lifecycle costs. This is further exacerbated by inadequate financial incentives such as grants, tax incentives and concessional financing schemes.

In order to achieve the Nationally Determined Contributions (NDCs) the nation requires regulatory and policy level interventions with the following in place:

- 1) Comprehensive policies covering urban development and transport planning,
- 2) Transport master plan for the entire Greater Male? region,
- 3) Policy to ensure that vehicles imported to the country are cleaner or having zero emissions (fully electric),
- 4) Policies to limit the age of vehicles entering Male?,
- 5) Policies to limit the maximum number of vehicles in and around Male? region,
- 6) Fiscal policies and public financing mechanisms with provision for prioritizing low emission options or in reflecting lifecycle costs,
- 7) Financial incentives such as grants, tax incentives and concessional financing schemes.

These suggested policy measures can play a vital role in Maldives' achievement of its Climate change policy goals, the NDCs and the commitment to reduce GHG emissions by 24% by 2030.

2) Baseline scenario and any associated baseline projects

Maldives BAU Transport and Energy Landscape

With the growing trend of urbanization and population growth, there is a significant increase in the number of vehicles observed within the country. The total registered vehicles on road in the Maldives have increased more than 235% from 46,028 in 2010 to 1,08,532 at the end of 2018. Majority of the vehicles registered are motorcycle (83%), followed by car (6%) and pick-up (3%). Battery scooter and tricycle form 2% of total vehicles (1% each), while battery car (golf cart/buggies) and bicycle represent 0.25% and 0.14% respectively. There are hardly any bus public transport services in the island, with only few areas like Greater Male Region and Addu Atoll having limited Bus services. There are some limited private taxi services available, and it's a growing sector.

The total registered vessels (marine/sea) had increased ~200% from 7,016 in 2007 to 14,003 in 2018. Majority of the vessels registered are Dhoani (52%), Launch (26%), Bokkuraa (12%), Boat (4%) and others. Combining both (i.e. vehicles and vessels), the transport mix is shown below.

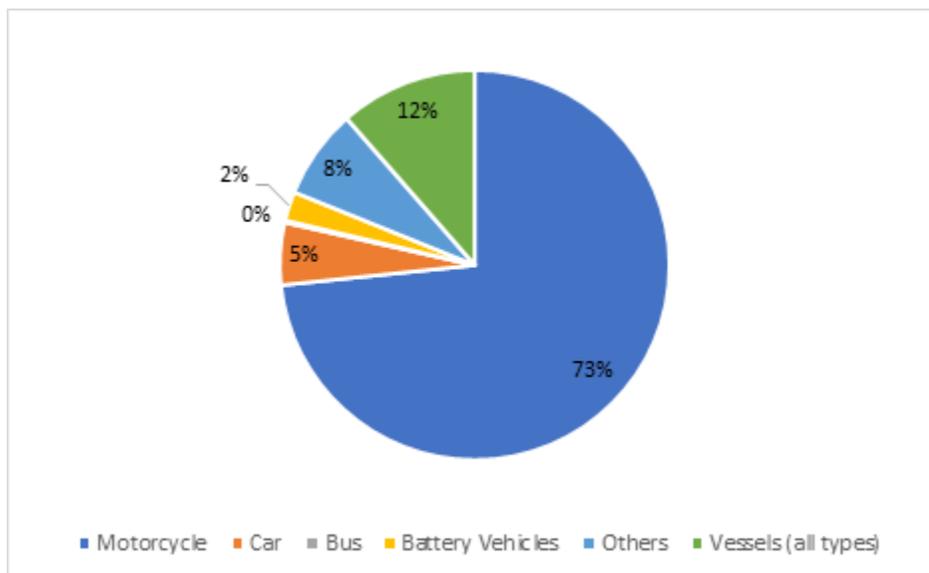


Figure 3. Transport mix (including vessels), 2018

Motorcycle, car and bus have grown at a Compounded Annual Growth Rate (CAGR) of 11%, 10% and 14% respectively from 2010 to 2018. Battery vehicles have grown at CAGR of 35% during the same period, and it also saw a significant increase in last 2 years.

Electricity access is almost 100% provided by a semi-public organization, State Electric Company Limited (STELCO), FENAKA (consolidating six utilities across the country), and via Island Development Committees on the smaller inhabited islands, with resort islands operating their own utility systems. Fenaka operates 148 powerhouses in inhabited islands and STELCO operates remaining 35 powerhouses. Total installed power generation capacity is 368 MW, with 214 MW in inhabited islands, 143 MW in resort islands and 11 MW of renewable.

According to the Maldives GHG inventory, the total emission from Maldives in 2011 was 1.2 MtCO_{2e}, which is about 0.003% of global emissions. Electricity generation (63.5%) and transport (21.5%) are the two predominant fossil fuel emitting sectors, followed by fisheries, Liquefied petroleum gas (LPG) use, others. Energy consumption for marine/sea transport in the atolls has immensely risen and is one of the fastest growing emissions sectors in Maldives.

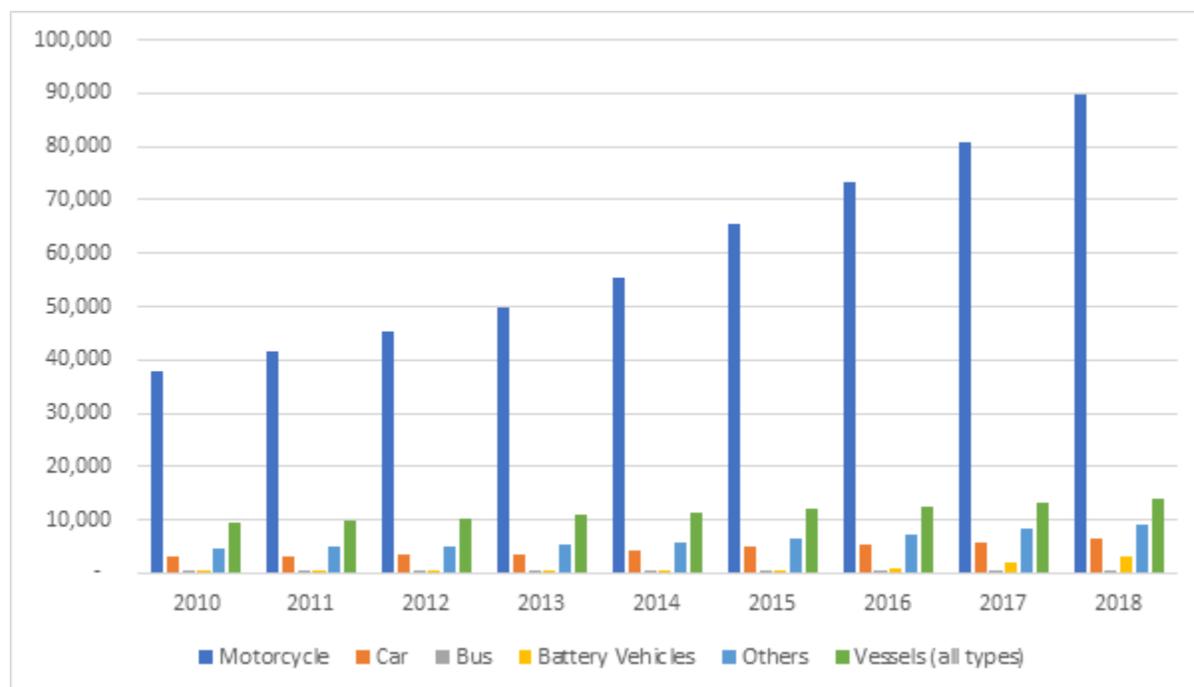


Figure 4. Year-wise Vehicle Growth

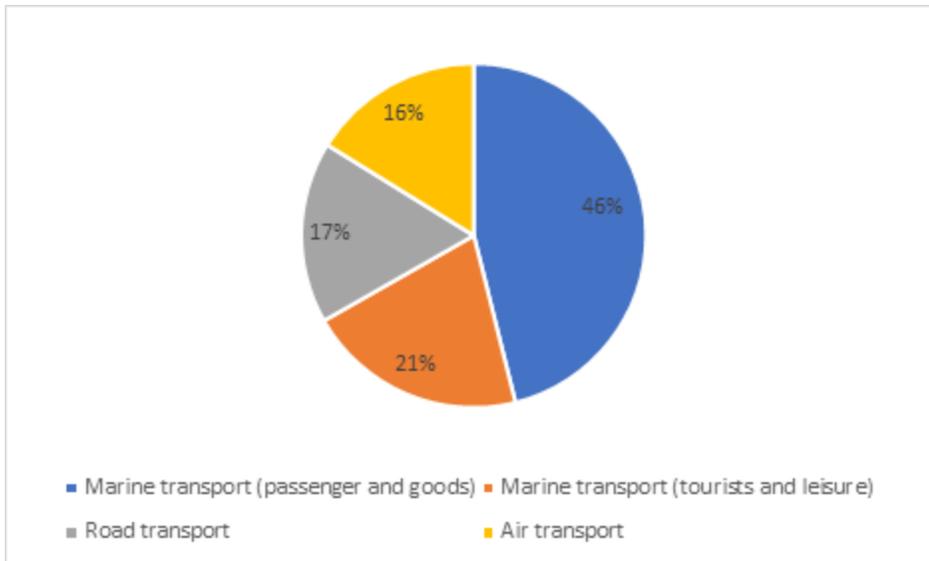


Figure 5. GHG emissions by transport sub-categories

Within transport, marine is the largest source of GHG emissions at ~67% (combination of passengers and goods & tourists and leisure), followed by road (17%) and air transport (16%). In BAU scenario, it is estimated that GHG emission will rise to 3.3 MtCO_{2e} by the year 2030.

Greater Male Region Transport and Energy Landscape

Malé, the main island, has an area of roughly 6.8 square kilometers with a population of 215,879 (2018). It is one of the islands with the highest population density in the world. It is completely built up with commercial and residential buildings that are on average 8-10 stories. There are no public bus transport services within the island, but there are private taxi/cab services available. The main mode of transport is by gasoline 2-wheelers, which accounts for about 80% of all trips in the island. The main roads are narrow with two lanes bi-directional traffic while narrower feeder roads are usually one way. Cars, 2-wheelers and other vehicles are parked on the curb contributing to more congestion. There are bicycles and electric bicycles as well in the vehicle mix.

The reclaimed land, Hulhumalé, has been developed adjacent to the Airport (Hulhulé island). Its first phase of development is completed and now has an estimated population of 30,000. Phase 2 development is under construction and is expected to open by late 2020. Phase 1 and Phase 2 development is estimated to accommodate 260,000 people according to the plans of the Housing Development Corporation (HDC), who is responsible for the development of both phases. There are currently buses that serve Hulhulé island and connects to Hulhumalé that serves passengers going to various resorts and hotels from the airport. The new 2.1 kms Sinamalé bridge inaugurated in 2018 connects Malé, Hulhulé and Hulhumalé and has led to road commute by vehicle types between the three islands. There is new intercity bus system using the bridge operated by Maldives Ports Limited (MPL) between Male and Hulhumale. This travels within the Hulhumale city, but not within Male, because of the road congestion within Male. The bridge interconnectivity has further increased floating population in Male adding to road congestion. There are plans to connect another 3 islands Villimale, Thilafushi

and Gaulhiflhu with Male through roads in next 4 years. There is no plan for an integrated transport system or road public transport system under discussion. It is expected that the interconnectivity among these islands will lead to shift in mode from ferry to personal transport resulting in increase in traffic flow along with increased fossil fuel consumption, GHG emissions and air pollution.

STELCO is the power generating and distributing utility for Greater Male region. Currently there are different grids in three islands, and there is project implementation happening to connect Male and Hulhumale grids by mid of 2020. Male city has generation capacity of some 80MW with peak load of 66MW during March to May time period. The load growth in capital city has been 8-10%. Hulhumale had 1.74MW generation and recently had 50MW commissioned, with another planned 50MW augmentation in next 2-3 years. Vilimale has generator capacity of 4MW with peak of 2MW. The typical Distribution Transformers ratings are 630/ 1000/ 1500 kVA, and all distribution cabling is underground.

Male city has some 700+kW of solar roof tops installed under Japan International Cooperation Agency

(JICA) project, feeding into the grid. STELCO had to earlier pay for this purchase of solar, and now it's free. There is 1.5MW solar installed under Accelerating Sustainable Private Investment in Renewable Energy (ASPIRE) project by World bank at Hulhumale and its operational. Bid for construction of another 5MW is in progress. The Asian Development Bank (ADB) project for Waste-to-Energy is expected to add 8MW into the grid additionally by 2020. By 2024, it is envisaged that Greater Male region will have one grid.

The Government has set a target of 70% peak power through Renewable energy by 2030. A number of projects and funds are supporting the increase in renewable energy (RE) as source of electricity. Thus, it is expected that RE based electricity will increase in share in the medium to long term.

Energy Department within the Ministry of Environment and Energy is responsible for making sector related policies, planning and seek resources to develop the sector. The Maldives Energy Authority is a regulatory authority within the Ministry of Environment and Energy and has the mandate to regulate the energy sector through the implementation of relevant regulations.

Maldives Transport Authority an independent regulatory organization affiliated to the Ministry of Transport and civil Aviation operating under the guidance of a governing board. The MTA is mandated for Connecting the country via land, sea and air and establish a safe, reliable and sustainable transport network domestically and internationally. To ensure the safety of land, sea and air transportation of the Maldives and that the transport connectivity is affordable, sustainable and supports the socioeconomic development of the country in order to enhance the living standard of the people of the Maldives.

There is no established department per say that is dedicated to exclusively Air pollution but the Environment Department (Environment Protection Agency), The Climate Change Department under the Ministry of Environment in tandem with the Ministry of Health combinedly regulate the Air Quality management and Air pollution related policies and standards.

INSTITUTIONAL ARRANGEMENTS AND COORDINATION MECHANISMS RELATED TO ENERGY, TRANSPORT AND AIR POLLUTION,

Maldives Transport and Energy related Policy and Action Plans

In 2009, Maldives had set a broader policy of becoming Carbon Neutral (CN) by 2020, joining a few other nations like Norway, Costa Rica, etc. Various policy documents, strategies, action plans, investment plans like The Strategic Action Plan (SAP) 2009-2013; Maldives National Strategy for Sustainable Development (NSSD); Maldives National Energy Policy and Strategy; and Maldives Scaling Up Renewable Energy Programme (SREP) Investment Plan, 2013-17?, etc. made reference of Carbon Neutrality, however these policies provides very little or no strategy covering the entire economy and all GHG emissions sources and sinks. Quantitative targets for emissions caps by sources or sectors were also not incorporated in these policies except for the energy and the transport sectors. While strong policy framework for environmental protection exists, legal framework needs to be strengthened with respect to air pollution.

The earlier government (from 2013-2018) diluted the approach to CN (also reflected in the Dec 2015 Intended Nationally Determined Contributions (INDC) Report), which led to the country not meeting the set goals. The new government is progressive and climate conscious and is taking steps to strengthen overall policy ecosystem and integrating climate, energy, transport and urban development. Some important climate and sustainable development policies and strategy reports are listed below:

Timeline	Regulation/ Policy/ Strategy	Key points related to low carbon emissions in Transportation and EVs
2009	Maldives National Strategy for Sustainable Development (NSSD)	<p>Published by the Maldives government in conjunction with UNEP, the NSSD identifies several goals relating to climate change due to transport sector as below:</p> <ul style="list-style-type: none"> ? Establish a carbon neutral transport system o Reduce CO₂ emissions from light vehicles ? the average car fleet should achieve CO₂ emissions of 140g/km by 2015 o By 2015 not less than 10% of transport fuel should consist of biofuels, as an indicative target, considering raising their proportion to 20% by 2020
2011	Climate Change Legislation	<ul style="list-style-type: none"> ? The government eliminated import duty on electric cars and motorcycles, while retaining a 200% tariff on petrol and diesel-powered vehicles ? The government also reduced the import duty from 25% to nil on solar and wind-powered ships and equipment, including sails
2014	Low Carbon Strategy for the Transport Sector	<p>This GHG mitigation strategies emphasizes on:</p> <ul style="list-style-type: none"> ? Introduction of Smaller and Smarter Vehicles Technologies (such as light-duty hybrids) ? Promotion of Hybrid Vehicles ? Promoting Electro-mobility (BEVs and FCVs) specifically in Male ? Development of Hybrid Vessels ? Promote the Use of Low Carbon Alternative Fuels ? Investment in Low Carbon Fuel Research
2014	Maldives Low Carbon Development Strategy	<p>As part of its GHG mitigation options, the strategy advocated following activities by 2020:</p> <ul style="list-style-type: none"> ? Promotion of hybrid vehicles ? Promotion of electric vehicles including electrical bicycles, and RE based charging stations

2015	The Maldives Climate Change Policy Framework	<p>This strategic paper focuses on listing strategic goals and creating a framework for adaptation and mitigation policies to be implemented between 2015 and 2025. The following policy goals / strategies has been identified:</p> <ul style="list-style-type: none"> ? Strengthen a low emission development future for Maldives o Ensure that transport systems meet society?s economic, social and environmental needs while minimizing their impacts on the economy, society and environment o Achieve a balance shift towards environment friendly transport modes in order to bring about a sustainable transport and mobility system
2015	Renewable Energy Roadmap	<p>This roadmap recommends</p> <ul style="list-style-type: none"> ? the use of renewable energy for electric vehicle charging for short driving distances ? import of biofuels for land and sea transport
2016	Maldives Energy Policy & Strategy	<p>It consists of revised policies derived from Maldives Energy Policy and Strategy 2010, which are:</p> <ul style="list-style-type: none"> ? strengthen the institutional and regulatory framework of the energy sector ? promote energy conservation and efficiency ? increase the share of renewable energy in the national energy mix ? improve the reliability and sustainability of electricity service and maintain universal access to electricity ? increase national energy security
2019	National Action Plan on Air Pollutants	<p>The Maldives Ministry of Environment has developed, compiled and quantified for the first time, the reductions in air pollutants for measures originally developed with the aim of reducing greenhouse gases in the country with focused sectors ? power generation, transport and waste.</p>

The National Action Plan on Air Pollutants (2019) outlines key interventions to curb emissions and air pollutants from transport and energy sector, whose implementation could reduce transport sector emissions by 21.53% and power sector emissions by 33% by 2030[3]³.

Strategies	Description	Implementation Target period	Requirement of financial resources (US \$)
Maldives' Nationally Determined Contribution (NDC)	<p>Maldives' long term climate goals, also known as the Nationally Determined Contributions (NDC) intends to unconditionally reduce 10% of its greenhouse gases for the year 2030 compared to a business as usual scenario; and that this 10% reduction could be increased up to 24% in a conditional manner, in the context of sustainable development, supported and enabled by availability of financial resources, technology transfer and capacity building.</p> <p>Total 22 mitigation measures / options are identified across renewable energy, waste-to-energy, energy efficiency and transport.</p>	2021 ? 2030	715,000,000
Revise and set vehicle emissions standards for land transport Responsible Agencies ⁴ : MEE, MTA, EPA	<ul style="list-style-type: none"> ? Collect primary & secondary data ? Build national vehicle emissions inventory, test emissions using PEMs ? Revise vehicle emission standards ? Propose enforcing mechanism and provide training to enforcers 	2020 ? 2030	95,000
Set fuel quality standards for Energy & Transport Responsible Agencies: MEE, MEA	<ul style="list-style-type: none"> ? Stakeholder meetings ? Detailed survey and/or analysis of imported fuel quality ? Develop fuel quality standards ? Develop roadmap 	2020 ? 2030	1,00,000

<p>Better maintenance of motorbikes / motorcycles (Transport / Conditional NDC measure)</p> <p>Responsible Agencies:</p> <p>MTA</p>	<p>? Explore best maintenance practices for motorbikes</p> <p>? Conduct an awareness campaign to promote benefits of improved maintenance of motorbikes</p> <p>? Establish maintenance service providers that are easily available in all parts of the country</p>	<p>2017 ? 2027</p>	<p>Information Not Available</p>
<p>Bioethanol blend (15%) in all gasoline</p> <p>Responsible Agencies:</p> <p>MEE, STO</p>	<p>? Explore financial scheme to finance bioethanol blend</p> <p>? Promote bioethanol fuel to use in transport instead of gasoline</p> <p>? Introduce mechanism for import and distribute bioethanol fuel</p>	<p>2020 ? 2025</p>	<p>Information not available</p>
<p>Biodiesel blend (20%) in diesel</p> <p>Responsible Agencies:</p> <p>MEE, STO</p>	<p>? Explore financial scheme to finance biodiesel blend</p> <p>? Promote biodiesel fuel to use in transport instead of diesel</p> <p>? Introduce mechanism for import and distribute biodiesel fuel</p>	<p>2020 ? 2025</p>	<p>Information not available</p>
<p>PVs with net metering</p> <p>Responsible Agencies:</p> <p>MEE, Utilities</p>	<p>? Conduct an awareness campaign target to households on the financial and environmental benefits of installing solar photovoltaics (PV) in homes</p> <p>? Explore and introduce financing mechanisms in households for installation of solar PV</p>	<p>2020 ? 2025</p>	<p>13,800,000</p>

PVs on resorts	<ul style="list-style-type: none"> ? Review related government policies ? Promote use solar PV through government policies and financial schemes 	2020 ? 2030	167,000,000
Responsible Agencies: MEE, MoTCA, resorts	<ul style="list-style-type: none"> ? Explore and introduce financing mechanisms for installation of solar PV ? Design and implement solar PV systems 		
Large solar water heaters	<ul style="list-style-type: none"> ? Conduct a detailed study on current water heaters used in hotels and resorts ? Create awareness on benefits of using solar water heaters ? Promote use of solar water heaters through government policies and financial schemes ? Develop and implement a plan to phase out or reduce conventional heaters with discussion among hotel and resort owners 	2017 ? 2025	670,000
Responsible Agencies: MoTCA			
20MW wind power and 25MW LNG	<ul style="list-style-type: none"> ? Explore financial scheme to finance (Liquefied natural gas) LNG and wind system ? Design and implement LNG and wind power system 	2020 ? 2025	97,000,000
Upgrades of system efficiencies in diesel power houses	<ul style="list-style-type: none"> ? Conduct a detailed study of power houses on the efficiency of the power houses ? Conduct an awareness campaign targeted to utilities on efficient operation of power houses ? Explore and introduce financing mechanisms for utilities for projects to improve efficiency in the power system 	2017 ? 2021	61,000,000
Renewable energy roadmap for the Republic of Maldives	? The government indicated a target to install renewable electricity generation that meets up to 30% of daytime peak load in all inhabited islands within the next four years (by 2019)	2015 ? 2019	Information not available

The government has realized the challenge of air pollution and GHG emissions from transport sector as demonstrated by above mentioned actions plans and strategies. The government though has been slow

in implementing these strategies due to a combination of factors as mentioned in root causes and barriers. On the renewable energy front there has been some progress largely due to bilateral and multilateral supported projects, though the pace has been very slow. On the transport sector the focus is still on improving efficiency of Internal Combustion Technology (ICT) vehicles and biofuels. Public transport is not mentioned as part of the strategy and there is little focus on Non-motorized transport (NMT) options. The e-vehicle does find mention but is not yet the focus of the government.

Though a number of policies and strategies have been developed or being developed, most of the outcomes have mostly been in terms of report and its implementation has been very limited. The only main outcome of these is introduction of duty exemption for electric vehicles, reduction in import duties for RE equipment. Presently there is not system in place to collect, investigate and monitor quantitative data on the interlinkage between urban emissions, climate change, health and economic costs to the society. As a results stakeholder lack the necessary tools and knowledge to make low investment initiatives.

This is further compounded by absence of a coordination mechanism among various ministries on issues related to sustainable transport. Energy department is responsible for setting the energy related strategies and policies that govern the imports of fuels for use in economy and on electricity generation. The Maldives Transport Authority is responsible is responsible for transportation policies within the islands and connecting the islands. Ministry of Environment has the responsibility to address the air pollution issues, which include air pollution from transport sector. Though the energy, transport and air pollution policies and action impact each other there is no formal mechanism of a co-development of policies to ensure synergy and consistency among them. Currently each of the ministry and departments does share its policies and strategies for feedback to other ministries and departments for comments, which is the process of all key issues in the government. Further the issues that are approved by Cabinet get considered by multiple ministries and departments. Thus an absence of more coordinated and co-development of sustainable transport among the 3 key actors hinders a more coherent energy, air pollution and transport policies and strategies. This limitation impedes the ability to steer investments in sustainable and environment friendly urban development activities, which perpetuates the current status of urban areas being a significant contributor of emissions in Maldives.

Maldives associated Baseline Projects

The following table summarizes the various initiatives that constitute baseline activities for this project:

Project Name	Description	Implementation Period	Available or Approved Budget, US\$

Project Name	Description	Implementation Period	Available or Approved Budget, US\$
<p>Climate and Clean Air Coalition to Reduce Short-Lived Climate Pollutants (CCAC)</p> <p>Implementing Partner-MEE</p>	<p>Supporting National Planning for Action on Short-Lived Climate Pollutants in the Maldives</p> <p>Baseline Activities:</p> <ul style="list-style-type: none"> ? Awareness and outreach on the impacts and mitigation strategies ? Regional and local actions by identifying barriers, enhancing capacity and technical assistance ? Promote and finance best practices and measures in agriculture, industries, solid waste management, household cooking and domestic heating, transport, etc. ? Part of the Urban Health Initiative of the CCAC 	2015 - ongoing	87,400
<p>Low Emission Climate Resilient Development</p> <p>Implementing Partner: MEE</p> <p>Funding Agency: Government of Denmark</p>	<p>The programme assists the Laamu Atoll and its islands to address low carbon and climate resilient development. It seeks to mainstream low carbon issues into local level development planning and service delivery for greater community level ownership and sustainability of programme benefits. The programme works in tandem with the local councils, civil society, private sector and stakeholders to establish improved coordination and enhanced participation in local planning; strengthen data and knowledge systems and improve learning by doing.</p> <p>Baseline Activities:</p> <ul style="list-style-type: none"> ? Formulate and promote partnership, coordination and participation platform for local low emission climate resilience planning and action ? Establish data and knowledge system to support evidence-based planning and policy development at the local levels ? Improved local level planning and management 	2013 - ongoing	9,200,000

Project Name	Description	Implementation Period	Available or Approved Budget, US\$
<p>Urban Ambient Air Quality Monitoring</p> <p>Implementing Partner ? Maldives National University</p>	<p>MEE has the existing mandate of developing policies and strategies related to pollution control including air pollution and GHG reductions. It has an ongoing programme on improving the air quality to safeguard human health and establish fully equipped Ambient Air Quality Monitoring Station in densely populated islands. It is planning to monitor emissions from point and mobile sources and establish standards for such pollution sources.</p> <p>Baseline Activities:</p> <ul style="list-style-type: none"> ? Improved understanding of the climate and health affecting urban population ? Install 2 monitoring stations in Mal? and Thilafushi ? Data collection and continuous monitoring of physical and chemical properties of aerosols and meteorological parameters ? Provision of research outputs for air pollution management in the Maldives ? Conducting training programmes to Improve technical capacity ? Dissemination of research outputs to academia, policy makers and the community 	2014 - ongoing	50,000

Project Name	Description	Implementation Period	Available or Approved Budget, US\$
<p>Landuse Zoning in the Greater Malé Region</p> <p>Implementing Partner - HDC</p>	<p>The project comprises of land-use planning and zoning. Malé is an unplanned city therefore enforcing zoning is a challenge. However, Hulhumalé as an up and coming satellite urban centre of Malé there is strict zoning of industrial work and residential areas that contribute to better air quality in residential areas. Villingili is the older suburb of Malé where use of motor vehicles is controlled and limited to only a few. Majority of public transport is on electric buggies, personal bicycles or other electric vehicles.</p> <p>Baseline Activities:</p> <ul style="list-style-type: none"> ? Formulation of Masterplan for Hulumale ? Formulation of Zoning plan Green parks and buffer zones development plan 	<p>2016 - ongoing</p>	<p>Information not available</p>

Project Name	Description	Implementation Period	Available or Approved Budget, US\$
<p>Preparing Outer Islands for Sustainable Energy Development (POISED)[5]⁵</p> <p>Implementing Partner ? FENEKA, MEE, MEA</p> <p>Funding Agencies: ADB, Climate Investment Funds, European Investment Bank</p>	<p>POISED will consist of the following projects:</p> <ul style="list-style-type: none"> ? Project 1: Small Power Station RE <ul style="list-style-type: none"> o 10 small power stations will be converted to full RE (approximately 2MW) using an optimum mix of wind and solar PV ? Project 2: Power System Rehabilitation <ul style="list-style-type: none"> o About 15 power systems that are least efficient will be replaced and made ready for RE installations ? Project 3: Implementation Support and Institutional Development <ul style="list-style-type: none"> o Support will be provided to FENEKA to design and implement these projects, to train FENEKA staff in operating and maintaining these systems, to monitor performance and to support planning for greater RE scale up on these islands 	On-going	40,150,000

Project Name	Description	Implementation Period	Available or Approved Budget, US\$
<p>Accelerating Sustainable Private Investments in Renewable Energy (ASPIRE)</p> <p>Implementing Partner ? MEE, FENAKA, MEA</p> <p>Funding Agency: Climate Investment Funds (CIF)</p>	<p>The ASPIRE Programme consists of the following projects:</p> <ul style="list-style-type: none"> ? Project 1: Renewable Energy Investments under a Feed-in Tariff <ul style="list-style-type: none"> o Greater Male? Region Solar PV investments ? 15MW of solar PV to be fed in the grid systems (11MW for Male and 4MW for Hulhumale) o Outer island solar & wind investments ? combined RE investments in solar PV and wind installation of about 3MW on medium to large electricity consuming island (>1GWh/year) ? Project 2: Utilization of Waste-to-Energy (WTE) Technologies in Outer Islands <ul style="list-style-type: none"> o WTE investments in islands (S.Hithadhoo, HDh. Kulhudhufushi and R. Vandhoo) to displace diesel used for electricity and water production ? Project 3: Implementation Support and Institutional Development <ul style="list-style-type: none"> o Technical requirements for successful deployment as well as developing standards for interconnection and performance monitoring 	On-going	72,010,000

Project Name	Description	Implementation Period	Available or Approved Budget, US\$
Thilafushi Waste-to-Energy (WTE) Funding Agencies: ADB and other financial institutions	The project comprises of implementation of the WTE facility to be part of a solid waste management system for the greater Male? region and the neighbouring resort islands. The overall system to include waste collection and transportation to Thilafushi, waste processing and disposal on Thilafushi (segregation, recycling, composting, gasification and inert waste disposal in the landfill); and an up to 4 MW WTE power generation facility to replace the existing diesel-based power generators on the island	On-going	20,000,000
Grid Interconnection between Male and Hulhumale Funding Agency: Government of Maldives	The project is another step forward in implementing environment friendly energy production, as it would increase the efficiency of diesel power generation.	2016-ongoing	369,000
Thilafushi-Gulhefallu-Villingili-Male bridge project	The project aims to meet the growing electricity demand on Male and other islands and to open up the possibility of supplying a number of islands from concentrated sources of renewable generation (i.e. solar, wind) that could be located on suitable uninhabited islands	Proposed Stage	Information not available

As is demonstrated from above projects, the major focus of the projects is on shift to renewable energy in the country. The efforts to increase renewable energy has been somewhat successful as witnessed from the increased renewable energy capacity from 2MW to 11MW over a period of last 6 years. This also lays the ground and justification for shift to e-mobility, rather than biofuels, given it address both air pollution and GHG emissions. The baseline projects on transport are part of larger strategy development and there are no specific projects or actions being taken (as seen on the ground also) to support a shift towards sustainable low emission transport in the country. Hence, there is no concrete evidence of any gains on sustainable transport. Most of the policies identified for implementation are not yet in place and in case of a few implemented, enforcement is lacking. As can be noticed, none of the strategies have yet started to focus on the biggest emitter, water based public transport system.

In the baseline it is expected that the country will increase its renewable energy plants by increasing the share of power supply through big solar based power plants. There is also a likelihood of wind power

being introduced. The government has set a target of 30% of peak power to be met by RE by 2030 and it is likely it may achieve this target.

In the transport sector the progress is expected to be slow and focused more on addressing air pollution through better emission standards and maintenance of vehicles. There are some efforts on introducing land based public transport but there are no concerted efforts, specially to have a more comprehensive public transport plan for the four islands which will be connected by Bridges. There are some efforts to introduce biofuels but given the issue of energy security and with no shift to import vehicles that can use biofuels, the likely shift to biofuels may not be significant. With practically no focus on e-mobility and NMT, in the baseline increasing share of transport demand will be met through private ICT vehicles and public taxi services. There is also a danger, especially in absence of any policy and regulations to prevent bad quality ICTs, with increasing e-vehicles being introduced in other countries, second hand used cars might end up in Maldives due to heavy price discount.

Gender Assessment^[6]:

The 2012 gender gap index puts Maldives in 95th place out of the 135 countries ranked, ahead of India at 105 but behind Sri Lanka at 39. The Maldives has particularly strong performance on female educational attainment, one of the four factors on which the index is based, but lags in the other three areas of economic participation and opportunities, health, and political empowerment^[7].

Following Islamic tradition, men are considered the heads of households and principal decision makers. Cultural norms link men with activities outside the home that would enable them to earn and support their families, such as fishing, construction, engineering, and mechanical jobs, as well as dealing with tourists and outsiders, among others. On the other hand, reproductive tasks such as childcare and household chores are seen as women's responsibilities. Time-consuming reproductive responsibilities can inhibit women's involvement in productive (paid) work, unless such activities are extensions of their reproductive roles, such as small-scale preparation and cooking of 'short eats', which they sell to their immediate communities.

The notion of 'appropriate gender roles' and the gender division of labor gives rise to

gender issues in the following areas:

- 1) **Employment:** While women's participation rate in the Maldivian human resource work force across sectors has gone up in the past few years, it is still considerably lower than that of men. In case of labor force, ratio of employability is 59% women compared with 79% men. There are only 4 women out of 87 members of Parliament elected in 2018, and only 3 (17.6%) women ministers out of 17

ministers (See table 1) . There were only 14 women compared with 84 men among legislators, senior officials, and managers[8]⁸. The reasons for this could be attributed to the below factors:

- ? Gender disparity in labor force participation rate and unemployment rate
- ? Gender differences, including gender income gaps, in employment by industry (See table 2)
- ? Gender gaps in government employment
- ? Gender gap in participation in public office

Occupation	Women?s earnings (rf)	Men?s earnings (rf)	Women?s earnings as % of men?s earnings (%)
Legislators, senior officials, and managers	11,277	15,271	74
Professionals	7,342	9,848	75
Technicians and associate professionals	7,257	9,701	75
Clerks	5,794	6,289	92
Service workers, and shop and market sales workers	6,102	8,087	75
Skilled agricultural and fishery workers	5,000	12,433	40
craft and related trades workers	4,581	7,510	61
elementary positions	4,646	7,603	61

Source: Department of National Planning (Statistics Division). 2012. Household Income and Expenditure Survey 2009?2010. Mal?. p. 53.

	Industry/sector	Women Working in the sector (%)	Women's monthly income (rf)	men's monthly income (rf)	Gender income Gap [(Wm?Wf)/Wm] x 100a (%)
Women-dominated industries	agriculture and forestry	60	5,000	22,517	77.79
	Manufacturing	66	4,618	6,607	30.10
	education	73	5,635	7,685	26.67
	Health and social work	72	8,302	10,747	22.75
	financial intermediation	56	9,172	12,376	25.89
	Private households employing persons	88	2,366	na	?
Men-dominated industries	fishing	0	?	9,098	?
	quarrying	0	?	1,200	?
	electricity, gas, and water	3	na	8,925	?
	construction	5	6,314	9,958	36.59
	Wholesale and retail trade	35	4,686	9,339	49.82
	Hotels and restaurants	30	9,785	11,280	13.25
	transport, storage, and communication	14	6,454	9,041	28.61
	real estate, renting, and business activities	25	9,185	9,689	5.20
	Public administration and defense	32	7,435	10,958	32.15
	other community, social, and personal services activities	46	5,861	7,402	20.82
	extraterritorial organizations and bodies	49	11,400	10,500	(8.57)
Source: Department of National Planning (Statistics Division). 2012. Household Income and Expenditure Survey 2009?2010. Mal?. pp. 38, 51.					

2) **Economic participation and benefits:** Women have low level of ownership of economic and productive assets such as vehicles, land and housing limit their economic opportunities and choices. Traditionally, women were part of the fishing industry, mainly in post harvesting activities such as washing and cleaning, filleting, sun drying etc. With largescale commercial fishing and mechanized processing became the Maldives' major income earner, women have been eased out of their traditional roles. some attributed reasons could be:

? Gender discriminatory laws on property ownership, inheritance, marriage, and political leadership. For e.g. (Polygamy remains legal, most divorces are initiated by men[9]⁹, In cases of divorce, legal guardianship of children remains with the father, While both men and women have equal rights to be awarded family plots, ownership is often vested on the men, who can sell such property even without the wife's consent[10]¹⁰)

3) **Education:** While gender parity in access to primary education has been achieved, limited access to upper secondary and tertiary education remains a major concern. While net enrollment at the primary level was 93.7% for boys and 93.6% for girls in 2012, at the lower secondary level it was 83.0% for boys and 79.3% for girls?that is, almost the same number of girls and boys through classes 1?10, after which participation of both girls and boys drops sharply. This could be attributed to:

? Gender gap in access to secondary and tertiary education

? Higher secondary is that schools are located on just 14 islands. Access to tertiary education is even more limited as higher education institutions are located only in Mal?.

4) **Health:** While access to health services is almost universal in the Maldives, the 2009 Demographic and Health Survey identified several subgroups of women who face constraints in accessing health services. These were (i) older women, (ii) women with more children, (iii) women who are no longer married, (iv) women who are employed but not for cash, (v) those who live in rural areas, (vi) those who live in the North Central region, (vii) women with no formal education, and (viii) women from the poorest households. Some of the reasons cited were related to distance to the health facility; availability of health providers, especially female health providers; and lack of drugs and other facilities. Rural women and divorced women face these constraints more than other subgroups of women

Key Gender Issues and the Transport Sector[11]¹¹

- **High transport costs** can mean transport is beyond the means of the poor. Female heads of households are particularly affected as most of them have low incomes.

- **Women have specific concerns related to safety and convenience:** The designs for jetties and ferry boats rarely consider the safety needs of passengers (mostly women) who travel with children, who are disabled or elderly, or who carry household shopping. These ferries are not equipped with basic facilities such as separate toilets for men and women as travel time may include long trips between certain atolls and Male.

- **Predominant and prevailing social norms are increasing constraints to accessing transport:** In some parts of the country, especially in remote islands, it is becoming more difficult for women to use public marine transport due to increasing conservatism about the mobility and dress of women. For example, it is socially difficult for women to share crowded boats with mainly male riders.

- **Limited women involved in transport planning, Policy and decision making:** This situation increases the challenge of ensuring that women's perspectives are taken into account in the formulation and implementation of transport sector policies and regulations that affect passenger services, such as transport fares, schedules, or the safety features of transport vehicles and transport platforms.

3) Proposed alternative scenario with a description of project components, outcomes, outputs and deliverables

The objective of the project is to promote an integrated, sustainable and low-emissions transport system and reduce GHG emissions and air pollution from the transport sector as well as address energy security by reducing fossil fuel imports. The project will address the roots causes and underlying barriers as explained in section 1b.1 above. The project will result in an integrated urban and transport plan for the four islands that leads to enhanced coordination among various government stakeholders and development of projects to enhance mobility for the residents of these four islands with public and low emission transport infrastructure. The visibility of demonstration of the projects for e-buses and e-bike sharing schemes backed with the campaigns to create awareness of users, the benefits for sustainable low-emission transport options is expected to create a buy-in among policy makers and stakeholders to scale of investments in sustainable low emission transport options. The project will support development of measurable, reportable, and verifiable (MRV) system to measure emissions and reduction. This system will track and assess the benefits/ impacts of sustainable low-emissions transport options. This increased information and its tracking on use of sustainable low-emission

transport will create greater awareness of benefits in policy makers and users. to continuously integrate new and emerging sustainable and low-emission transport options.

information from demonstration projects and tracking of information on use of sustainable low-emission transport will create greater awareness of benefits in policy makers and users

The proposed project is structured across three components, which are necessary to address the barriers and facilitate the successful implementation of the baseline efforts to achieve an integrated, sustainable, and low-emissions transport system:

- Component 1: Institutionalization of integrated sustainable low-carbon transport and development of regulatory framework and policies
- Component 2: Short-term barrier removal and scaling-up investments through low-emission sustainable transport demonstrations
- Component 3: Preparing for scale-up, monitoring, awareness creation and replication of integrated sustainable low-emission transport

Component 1 address the issue of institutional capacity and coordination as well as policy gaps to create the necessary policy and institutional framework to enable the government develop transport sector focused on sustainable low-emission options. Component 1 also supports the government to develop a low-emission transport and e-mobility plan for Male region to guide the development of transport sector enhancing mobility experience of commuters. Component 2 complements Component 1 through feasibility study for boats in using renewable based e-boats, through demonstration of e-bus based public transport system, as well as e-bike sharing scheme to showcase the sustainable low-emission transport options. Further, the component will also develop e-mobility strategy including financing mechanisms for integrated EV Transport system (e-Bus, e-Bikes and associated charging infrastructure). Component 3 is focused on addressing the challenge of information and awareness to create a better understanding of the sustainable low-emission transport among the stakeholders to influence their behavior.

Details on outcomes, outputs and activities of each component are discussed in the following section.

Component 1: Institutionalization of integrated sustainable low-carbon transport and development of regulatory framework and policies

Outcome 1: Government establishes an institutional framework and policies to promote and support integrated sustainable low-emission transport, including electric mobility

The component will address barriers of institutional capacity by providing technical support to develop and adopt regulatory and institutional framework and policies that enables the country to develop integrated transport and urban plans and scale up low-emissions transport modes in the country. This

framework will include specific fiscal and non-fiscal policies to support a shift towards low-emissions vehicles in the country and provide for a public transport system in the Male region. To establish such framework and policies the project will undertake a comprehensive review of the existing laws, regulations, strategies, and fiscal policies related to transport. Further, the policy review will also assess the fuel subsidies as well as emission taxes on carbon fuels to create a level playing field for low-carbon technologies in the economy. The outcome will enable operationalization of policy and institutional framework to promote integrated sustainable low-emission transport, including electric mobility. To ensure inclusive development of sustainable transport sector, at the onset of the project a Gender strategy, both for implementing the project as for sustainable transport development including a baseline assessment of situation, needs of various social groups (elderly, women, handicapped, etc.) will be developed to guide the project implementation and ensure all project outputs address the issues. A key challenge for Maldives in considering e-vehicle technology is its environmental impacts, specially the re-use and re-cycling of the batteries. Project will support development of strategic framework to address this concern. This is will include sellers responsibilities for collecting and disposing the batteries. This outcome will be achieved through the following outputs and deliverables:

Output 1.1 Integrated policy framework, including battery reuse and recycling and EWCD features for sustainable and low emission transport developed and submitted to Ministries (Environment, Transport, Urban Development, and Planning & Infrastructure) for adoption

Deliverables

- Gap Assessment of existing policies of transport and its interaction with urban planning, environment, energy, and finance
- Gender Strategy for gender sensitive development of sustainable low-emission transport system
- Strategic Framework for National Mobility Plan, to drive integrated, sustainable and low emission transport adoption and used batteries collection and reuse.
- Interdepartmental National Mobility Task Force (comprising of stakeholders from Environment, Transport, Urban Development, Planning & Infra, Energy, Finance, other relevant departments/agencies) for implementation of National Mobility Plan

Output 1.2. Technical support provided to mandated Government authorities, Energy Department and NGOs for developing policy options including fiscal and non-fiscal policies, consideration of EWCD features, for sustainable urban low-emission transport planning

Deliverables

- Policy recommendation covering fiscal and non-fiscal policies, such as tax regulations and incentives on transport, eco-labelling of vehicles, public transport, cycling and walking, land-use plan and ordinances on sustainable urban and transport planning developed

- Updated integrated Transport Master Plan (including intermodal integration, digitalization and common access/payment card, eco-system for non-motorized transport)
- Updated National Development Plan (for Regional integrated Transport and urban infrastructure)
- e-Mobility road map as part of National Mobility Plan to drive electric vehicles adoption

Output 1.3: Low emission Transport and e-Mobility Plan for Malé Region (Malé and Hulhumalé) inclusive of EWCD features developed and submitted for adoption by Ministry of Environment and Male City Council

Deliverables

- Integrated Transport Master Plan to Male Region with focus on improved control interventions and policies on Vehicles, Traffic and Parking
- e-Mobility Road Map to Male Region for specific interventions, including integration of electric

Buses, 2-wheelers and cars deployment

Transport related policy studies with interrelation to urban planning, environment, energy and finance will be conducted to recommend potential fiscal and non-fiscal interventions to support implementation of priority low emission actions. For fiscal policies, this will include tax regulations and incentives for low-emission vehicles like electric buses, 2-wheelers (scooters, and bicycles) and cars, and eco-labelling for 2-wheelers and cars. Non-fiscal policies will include a plan for integrating and improving cycling and walking facilities in urban areas. This may include revision of land-use plans, provisioning of right (paid) parking, and related development of local ordinances. In addition, the project will support the establishment of Interdepartmental National Mobility Task Force (comprising of stakeholders from Environment, Transport, Urban Development, Planning & Infra, Energy, Finance, other relevant departments/ agencies) which will also steer this project implementation.

Technological options will be identified and reviewed including its impacts on emissions and cost-effectiveness. Marginal Abatement Cost Curves (MACC) for all priority technologies and applications will be developed using standardized approaches in line with international best practices. Consultative workshops will be conducted with government and local experts to review analysis and recommendations from MACCs. Based on the discussions, selection criteria for prioritization of the most cost-effective measure will be developed and employed.

This component will also include the review and development of policies to encourage the use of cleaner fuels and renewable energy sources for transport in the country. For example, the new vehicle emission standards and associated improved fuel quality will be implemented. For renewable energy, a scheme to encourage the use of solar energy to power electric vehicles will be developed. This may be through offsetting electric vehicle used electricity with remote or captive net metering solar plant at the charging stations. This will reduce demand of electricity for transportation from diesel generators. National regulations on batteries and its management will be developed in the Maldives.

The project will use the outputs of policy analysis and recommendations to integrate the sustainable low-emission transport into work being undertaken by the government, such as, National Development Plan undertaken by Ministry of Planning and Infrastructure, Transport Master Plan by Ministry of

Transport, and Vehicle Emissions and Standards by Ministry of Environment. National Mobility Plan for Maldives shall be structured and developed which shall include above analysis and policy interventions for integrated, sustainable and low-emission transport. This shall include national level e-mobility road map with targets, timelines and deployment strategy.

This component will undertake a development of gender strategy for integrating gender related aspects in planning, development and implementation of sustainable low-emission transport system. The strategy would be based on the assessment of the current transport system from gender perspective and assessment of preference and issues faced by different genders.

The work of the component will use the global project knowledge products to support policy making and investment decisions will be used to guide the development of outputs in this component as relevant.

The e-mobility demonstration projects shall be based out of Greater Male Region (Male city and Hulhumale), and accordingly further specificity and localization of planning shall be carried out.

Component 2: Short-term barrier removal and scaling-up investments through low-emission sustainable transport demonstrations

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Outcome 2: Government and private sector use evidence from demonstration projects to plan new investments for scale-up of sustainable low-emissions transport, including electric mobility

The component addresses the absence of experience with sustainable low-emission transport options through demonstration projects as well as supporting government to develop investment plans, including financing mechanisms for scaling up investments in these options. This component complements the outputs of component 1 by demonstrating the impacts of integrated sustainable transport options. The component supports use of e-vehicles for 2 major public transport mode bus and ferries. The component also demonstrates the use of non-motorized transport through e-bike sharing scheme to complement the public transport system and address the last mile connectivity. The component will also support development of financing plan for scale up of investments in e-boats

The component will create condition through demonstration of technical, financial and environmental sustainability of e-mobility and public transport options to enable scale-up of sustainable low-emissions transport, including electric mobility. The Gender strategy developed, which covers elderly, disabled, etc., in component 1 will guide the work of component 2 and the development of demonstration projects. Further, the projects will assess the cultural and socio-economic risks of demonstration projects and include mitigation measures. The project will specifically record the costs incurred by the demo projects in integrating gender related features in the design. This will be achieved through following outputs and deliverables:

Output 2.1: Technical support provided to Ministry of Environment and Private Sector (in consultation with other Ministries/ Energy Department) for development of strategy to deploy electric vehicles (buses, bicycles, and 2-wheelers), including use of renewable based charging infrastructure, and financial mechanisms to support implementation

Deliverables

- Detailed Project Report (DPR) for deployment of e-Buses within the Male city together with appropriate charging infrastructure, sourcing of solar power, and business models.
- Detailed Project Report (DPR) for deployment of pedal assisted e-Bikes in sharing mode in the Male region together with appropriate charging infrastructure, sourcing of solar power, business models, and integrating with the public bus system.

Output 2.2: Technical support provided to identified Government authorities and Energy Department for enabling investments in solar powered e-Boats (TA)

Deliverables

- Detailed Project Report (DPR) for e-boat (solar powered), including development of suitable technical specifications and required charging infrastructure and business models
- Expression of Interest (EOI) for procurement of e-boat and services to support discovery of global suppliers and prices
- Green Climate Fund (GCF) funding proposal to seek funding for scaling up investment for deployment of e-Boats.

Output 2.3: Technical and financial support provided to Ministry of Transport, Maldives Transport & Contracting Company and Male City Council for facilitating investments in integrated EV Transport system combining intra city e-Buses, shared (pedal assisted) e-Bikes, and associated charging infrastructure (INV)

Deliverables

- ? Bid documents prepared and launched for procurement of finalized EVs and related services.
- ? Deployment and operations monitoring for e-buses, e-bikes and e-cars.

The first output will lead to development of detailed implementation plan for deployment of: electric buses within Male city to improve public transportation, including use of solar energy for charging facilities; pedal assisted electric bikes for both Male and Hulhumale cities, including use of solar

photovoltaic for charging facilities. Detailed project reports will be prepared to enable this and will assist in facilitating investments through the design of appropriate RFPs and procurement support. to deploy electric vehicles (buses and pedal assisted bikes) at Male Region (Male and Hulhumale) will be developed including use of solar photovoltaic for charging facilities.

The Male Transport Corporation has undertaken a pre-feasibility report of implementing e-Bus system with zero emission shall help clean air focus of Male city. The Buses will be owned and operated by the MTCC.

e-Bus	? Total 15 e-Buses (12 in daily route operations, while 3 in reserve fleet) ? Bus Size: 6.53 ? 2.23 ? 2.8 m ? 16+1 seat capacity ? Low floor and Air Conditioned (AC)
Battery	? 68 kilowatt-hour (kWh), Lithium-ion (LFP)
Charging Infra	? Total 4 chargers ? 150 kW DC Fast charger ? Location: Main Depot ? <1.5 hours charging time for full charge ? Type of charging: Night charging at Depot
Depot, Bus stops	? 15,000 sq. ft. Depot at Hulhumale (as no space in Male city) ? 23 Bus stops on 2 Routes
Route details	? 2 routes (R1 and R2) identified (as shown in diagram below) ? Route length: R1 - 4.78 kilometres (kms); R2 - 3.34 kms ? No. of trips per day: R1 ? 80 trips with 6 buses; same for R2 <i>* Trip length, battery size, charger location will require more than one time charging for Route R1 e-Buses. This aspect to be further detailed later before procurement.</i>
Bus Service Hours	? 5:30am to Midnight 0:00

The proposed two e-Bus routes in Male city (See Fig. 6) go through the main road, interconnecting the two ferry terminals that joins Villimale and Hulhumale, and also intercity bus terminal that connects Hulhumale to Male city. The routes cover major schools, hospitals, and offices from end-to-end in

Male city to ensure good capture of passenger commute needs. The bus stop locations also have been identified.

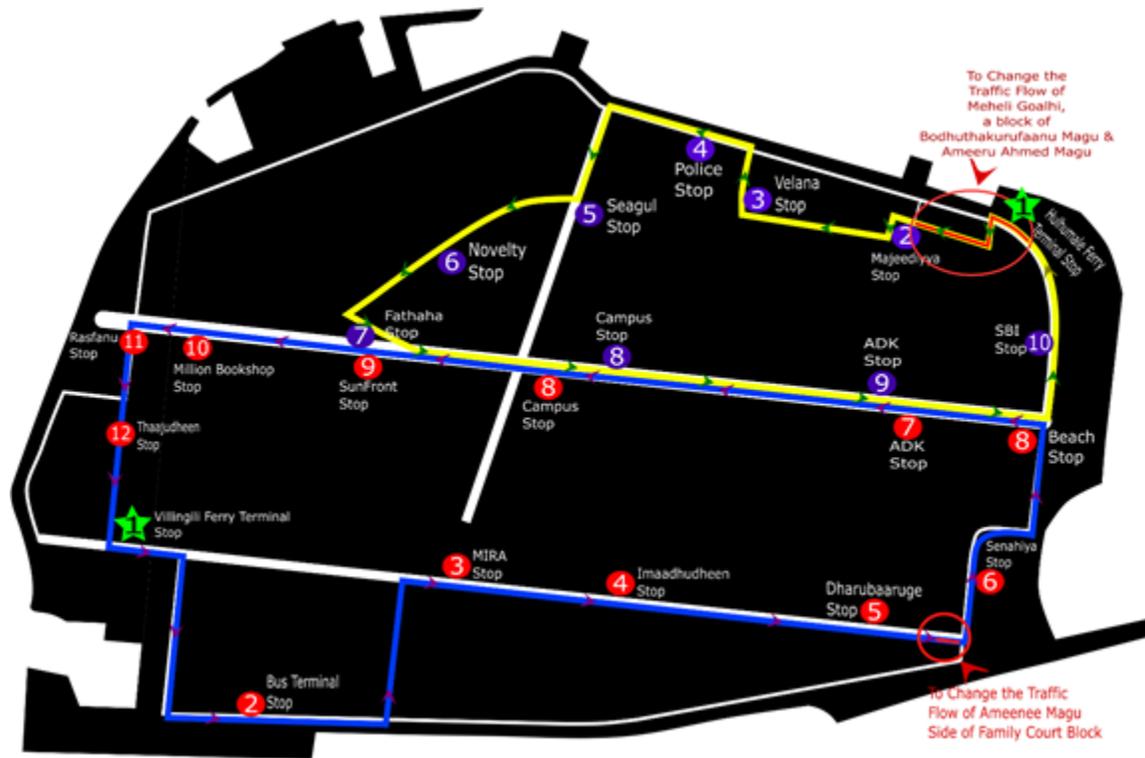


Fig6: Proposed e-Bus routes in Male

The project will support MTCC in undertaking detailed feasibility report and refining the implementation plan including Bus information system, bus stops infrastructure design, common bus payment card (possibly integrated with other public mode of travels within Male region). The project will provide support for developing request for proposals (RFP) for e-buses and provide financing support for procuring e-buses complementing the financing by the government.

The MTCC conducted first feasibility study has estimated total capex of USD 26,36,384 and monthly opex of USD 1,05,069.

	Qty	Rate	Total	
		USD	USD	
e-Bus - C6 Bj6650 Foton	15	1,06,800	16,02,000	61%
Chargers - 150kW	4	72,500	2,90,000	11%

Paving and Steel Canopy	1	2,20,000	2,20,000	8%
Bus Depot	1500	58	87,549	3%
Grid Installaton	1	3,89,105	3,89,105	15%
Bus Stand	23	2,075	47,730	2%
Total Project Capex			26,36,384	100%
GEF Contribution (INV)			2,86,100	11%
Remaining for co-Financing			23,50,284	89%

The investment fund from GEF shall be used for procurement of two of total fifteen e-Buses, and one of four charging stations, amounting to 11% of total project capex. The Govt. of Maldives through Ministry of Transport will develop appropriate financing mechanism to support acquisition for remaining assets, and that shall be their co-financing contribution. The project will also explore the possibility if GEF funds could be used to provide core of the funds for alternative models of financing rather than purchase of two buses.

In Maldives, vessels are one of the principal means of transport between atolls (i.e. between islands). The existing different types of vessels/ boats registered at the end of 2018 are as follows:

Category	Number (2018)	Total MTCC Fleet quantity	Current Carrying Capacity	Cost (in MVR) ? current owned fleet
Dhoani	7,246	44	Min. 74 ? max. 210	3,000,000 ? 6,000,000
Launches	3,693	10	Min. 30 ? max. 100	2,500,000 ? 5,000,000
Bokkuraa	1,716			
Boat	498			
Safari Vessel	223			
Others (combination of 10+ types)	627			
TOTAL	14,003			
- No sufficient data				

Regular and frequent ferry service is organized between Male and two nearby islands that are inhabited by the population in Male, the islands of Villingili (Villimale) and Hulhumale. The ferry service between these islands and Male is the means of transport for people who commute daily for work, school and other purposes. This ferry service is operated by the public company, the Maldives Transport and Contracting Company plc (MTCC). The MTCC which formed in December 1980 has been the first public company in the Maldives. The MTCC also operates occasion based launch ferry services to other parts of the country in addition to launches for hire.

Some island communities, particularly few closer to Male, operate privately-owned regular ferry services for their commuting needs, such as trade, shopping, and health care. These island ferry services are usually scheduled once or twice a week. On a public private partnership basis, a transport network was initiated recently where interested operators were invited. Thus, a ferry transport system operating separately in each atoll was started in 2009/2010 by different operators. However, due to several management and other resource lags, the inter-island ferry services could not continue as intended. Only a few atolls currently operate the service.

The travel between atolls is mostly privately organized and made available for hire and at the owner's convenience. Private boat owners operate the cargo-cum-passenger boats for travel between a particular atoll and Male. These travelling arrangements are quite popular and due to high demand it is found to be routine and frequent for larger islands. Based on demand and the population size, these operators make arrangements to stop over at other atolls along the route.

The other major operators of ferries and boats are private resort owners but these are for the limited purpose of ferrying resort guests.

The services in and around Male for passenger are managed by MTCC. This is funded by the government and operated on a tariff paid by passengers. The private sector operators are licensed by the government to operate. Government doesn't provide any subsidies by the government. The private sector operations are too on commercial basis of payment by tariff set by the operators.

During stakeholder consultations, the Maldives government had expressed its keen interest to explore options and feasibility to shift to e-boat. Hence as part of GEF-7, a technical and financial feasibility study will be conducted for potential e-boat system, including defining its technical specifications, resource requirements and inviting expression of interest to discover procurement price. The focus in the initial phase is on converting ferries owned by MTCC for transport around Male to e-boats. The GEF Project will support developing concept note for seeking funds for piloting from bilateral donors including partial funding from the government. The category of boat that is initially thought for transition to e-boat is Dhoani, as it uses diesel fuel engine and also given its highest share amongst boat categories. If the pilot project is successful, then it has high potential for replication and large-scale transition to e-boats. As the boats are operated by private owners and also resorts. consultations will be carried out with the private owners and resorts in eliciting their interest in using e-boats and participating in the pilots. The project will also support government to leverage funding for piloting e-boats. The experience and lessons learned from the use of e-boat pilot will be used to support development of GCF funding project for scaling up investment in e-boats.

The demonstration project for shared electric bikes will be designed for Male and Hulhumale.. Acquisition of these vehicles will be included in this project. Possible projects may include an electric pedal assisted bike sharing scheme in Hulhumale, a shared electric pedal assisted bike scheme in Male used for first and last mile connectivity to public transport, and/or an electric scooter fleet replacement scheme for government offices. The actual design of the demonstration will be undertaken in close

cooperation with relevant authorities. The government is exploring the possibility of tendering out the operation and maintenance of the e-bike system. This will be part of the development of pilot during the project implementation. The GEF project will support establishing of the system and financing the procurement of 200 electric pedal assisted bikes for an e-bike sharing scheme.

Such, electric bikes and additionally, non-motorized transport such as bicycles and walking will be promoted through potential delineation of bike lanes and energy efficient lighting and other safety features for bike lanes and pedestrian ways and enhancing NMT facilities, which will be funded by regular government budget. GEF support will be provided to establish information system for the joint public transport system, training of drivers to improve driving practices, provision of bike racks, etc. Below is top level of technical specifications for the battery swap e-bike system:

e-Bike	? 200 e-Bikes Pedal Assisted + Throttle ? >250 W brushless Direct Current (DC) motor (Brushless DC motor) ? Top speed: <30 kmph ? Driver + Back seat
Battery	? >500 Wh, Lithium-ion ? >40 kms range
Dock station	? 25 docking stations (12 at Male city and remaining at Hulhumale) with individual capacity to host min. 8 bikes ? Locking docks for min. 8 bikes per docking station
Battery Swapping and Charging Infra	? Bulk Battery charging and swapping rack of 32 chargers ? <1.5 hour full charging time per charger ? Location: could be Main Depot of e-bus ? Type of charging: Night charging at Depot (or day time if required)

Swapping Logistics	<p>? All batteries communicate its location and Standard operating Conditions (SOC)</p> <p>? Manual collection of batteries together at night time from dock stations</p> <p>? Batteries to be charged in batch of 32 taking <1.5 hours per batch</p> <p>? All swap batteries replaced before morning service hour time into e-Bikes at docking stations</p> <p>? If usage increase and there is demand for battery swap in day time, then it can be supported</p>
Information Technology (IT) backend system	<p>? Strong IT backend system to manage and monitor usage, battery and bike movements, battery swap and charging, customer communication app etc.</p>
e-Bike Service Hours	<p>? 6:00am to Night 10:00pm</p>

The sharing system is to be designed in such way that it provides first and last mile connectivity from public e-Bus system to users in the Male city. The docks can be positioned at each bus stop and strategic locations around the city, so that it can provide connectivity seamlessly.

The bike sharing can be integrated with an app, through which the commuters can located nearest docks, no of available e-bikes in the dock, pay and unlock the bikes from the docks. The bikes can be rented based on no of kms travelled using the bikes. The app will also ensure proper usage of the Bike by the commuter, as there will be a deposit to access the bike.

A system of 200 sharing e-Bikes (pedal assisted + full throttle) with swappable battery system is estimated to require capex of USD 138,900. This capex includes additional 20% Lithium-ion swap batteries, bulk charger, solar system for offsetting charging electricity units, docking stations, and required IT backend system.

GEF shall make all investment in setting up this pilot. MTCC is looked upon as potential operator to setup and manage this e-Bike system, as for Maldives they can then become integrated public transportation operator for fleet, e-bus and e-bike systems. The government will own and allocate resources for operating the maintaining the system in its budget. The GEF investment through its demonstration as well as by providing the technical details of designing and implementing such schemes is expected to leverage further public/private investments in the expansion of the scheme. Its further extension with monitoring successful adoption and results can come from Govt. of Maldives, MTCC or any other third party. A CSO will be engaged with the operation and promotion of the bike sharing scheme with the objective of building within society a buy-in for expanding the scheme beyond the project. Following investment plan and GEF contribution:

Estimated Total Cost	USD 1,85,000
GEF investments (Procurement)	USD 1,85,000 (100%)

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Component 3: Preparing for scale-up, monitoring, awareness creation and replication of integrated sustainable low-emission transport

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Outcome 3: Planners and users use new knowledge to develop and adopt integrated sustainable low emission transport solutions and options

Component 3 primarily address the lack of information and awareness among policy makers and users of the benefits of sustainable low-emission transport (SLET) options. The demonstration projects will be one basis of developing the information for sharing with policy makers and users. The outcome will, both, put in place a monitoring system to track the shift and assess the benefits of the shift and support air pollution monitoring efforts in Maldives. The latter will help generate information on impact of shift on reduction in air pollution and thus help create the buy-in from policy makers and users. Increased information from demonstration projects and tracking of information on use of sustainable low-emission transport will create greater awareness of benefits in policy makers and users. The increased awareness will create a greater buy-in and support for accelerating the shift to sustainable low-emission transport in Maldives. The increased buy-in is expected to lead to greater investment in these transport options.

The global programme, with an objective to promote innovation and technology transfer for sustainable energy breakthroughs for electric drive technologies and electric mobility, will develop a suite of tools, policy best practices, training materials and strategies to foster large-scale market introduction of electric mobility in low- and middle-income countries worldwide.

The Maldives Child project will use the materials developed by the global programme, to put in place conditions enabling this transformation. Further, the child project will participate in the thematic working groups, through the regional support and investment platforms in Africa, Asia and the Pacific, and Latin America and the Caribbean, for exchange of knowledge and experience on a South-to-South, North-to -South and Peer-to-Peer basis. The learnings will be disseminated to all the involved stakeholders, for betterment of the project.

The outcome will be achieved through the following outputs and related deliverables.

Output 3.1: Technical support provided to Ministry of Environment, Ministry of Transport and Maldives National University for preparing MRV framework for sustainable low emissions transport

designed and operational, including establishment of GHG emissions, air quality and emissions inventories

Deliverables

? System for tracking progress on impacts of investments in sustainable low-emission transport (GHG emissions and other sustainable co-benefits), including key performing indicators (KPIs), methodologies for assessing impacts (including health benefits), process for collecting data for monitoring.

● Air Quality Monitoring System to regularly track air pollution and reporting to public.

Output 3.2: Public awareness enhanced through awareness and advocacy campaigns on sustainable low-emissions transport supported by identified Government authorities and Civil Society Organizations (CSOs)

Deliverables

? Gender segregated Impact assessment of existing transportation system on people and the environment and benefits from sustainable and low emissions transport

? Impact assessment of EV deployment demonstration project on Male region

? Gender sensitive strategy and materials for conducting public awareness and advocacy

? Knowledge Management repository to support information dissemination and advocacy campaigns

Output 3.3: Training provided to Government officials/ institutions, NGOs, Technicians, Health experts, etc. on wider adoption of sustainable and low-emissions transport and consideration of gender mainstreaming and EWCD considerations in the e-Mobility sector.

Deliverables

? Training workshops for Male region government officials on policies and tools for evaluating and developing sustainable low-emission transport system, including consideration of gender aspects.

● Information sharing and Trainings Workshops for government officials of other islands to drive wider adoption of sustainable low-emissions transport systems (including knowledge dissemination and adoption of tools from the global project)

● Training of technicians for maintenance and repair of e-vehicles

An MRV framework is necessary for ensuring credibility and accountability of a project's estimated emission reductions. Having a good MRV framework in place is likely to facilitate national planning, learning good practices, promote coordination and communication amongst emitting sectors and increase the likelihood of gaining international support and visibility. A measurable, reportable, and verifiable (MRV) system to measure emissions and reduction will be developed as part of this project. Key indicators will be monitored as part of a broader approach to MRV that includes indicators and metrics on specific energy consumption, GHG emissions, air quality parameters that are relevant to the transport, particularly on the shift to electric vehicles. Criteria on sustainable development or non-energy benefits will be considered such as improved health, income generated, employment created, gender considerations, and so on. The MRV system will also feed into the National Communications prepared by the country, and support monitoring of the Nationally Determined Contributions (NDCs) for emissions reduction. The project will also work closely with the Capacity Building Initiative for Transparency (CBIT) project which is expected to initiate implementation in early 2021. In addition, emissions profile for GHG and air pollutant will be prepared indicating future trends and projects. At least two continuous ambient air quality monitoring station will be established in Male and supplemented by low-cost air quality monitors and passive monitoring. Eventually with the collected and analyzed data ambient air quality standard is envisioned to be formulated.

A public awareness and advocacy program will be designed and completed to illustrate detrimental effects of GHG and air quality emissions on human health. The program will also highlight multiple benefits and best practices of low carbon development with the aim of enhancing awareness and garnering support from the general public. This will include important communication messaging to shift users to sustainable low-emission transport system. As a part of this program, 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 television. Prime time airing of the PSAs will be considered. A regular social media presence will also be maintained. Surveys before the campaign and pilot programs or policy adoption will be conducted with decision makers, practitioners and general public undertaken to assess impact of the project. The public awareness and advocacy program will be partly based on a study that will be conducted to assess the impact of climate change and air quality on health and the environment in the Maldives. MRV & Air Quality Monitoring Systems (AQMS) are very important aspects in terms of setting right output templates, processes for regular reporting and for communication to public.

Documentation of findings from the operation and monitoring of the demonstration projects will be prepared. At least two case studies of all demonstration projects will be prepared. These documents will cover both technical results of demos as well as results of the development impact surveys conducted by the project. The learnings and results from Male region focused demonstration projects shall be expanded with suitable context and mapping to other islands and developed as tool kit to support mapping of e-Mobility solutions to their specific needs. Project will manage all the knowledge generated and make it available through Ministry website and link it up to some other key website in Maldives for wider access. These findings will be presented and shared through the training workshops planned under 3.3 with the objective that this forms the basis for further development of similar sustainable transport plans and projects for other atolls.

Training of policy makers will be undertaken based on the knowledge products and awareness material generated in the project. Training will focus on tools and approaches to consider the environmental and sustainable planning and development of sustainable low-emission transport systems. Project resources will be allocated to support the participation from Maldives in regional and/or global events to ensure Maldives gets access to the trainings, toolkits and best practices compiled by the global project for countries. It is envisaged that each year two annual events will be coordinated by the global program - one regional and one thematic. The capacities created will enable to replicate the efforts in other atolls.

Focused Trainings and dissemination workshops shall be conducted for identified 2-3 Atolls that can benefit from direct learnings from the Male region e-Mobility projects and pursue implementation. The outcome of the trainings is to develop the roadmap for similar e-Mobility deployment plans at other atolls including resources requirement and sources for funding the plans. The program shall also be expanded as capacity building training for health experts, government institutions and NGOs to result in improved enforcement and compliance of regulations on air pollution. Training will also be developed and executed for technical staff on data collection, establishment and operation of the inventory system. The training modules will emphasize on practical training to ensure that the relevant agencies and its technical staff will be able to perform the necessary tasks.

National banking sector will also be engaged through the training and awareness raising workshops to enable their engagement in financing residential and commercial loans for procurement e-vehicles.

4) Alignment with GEF Focal Area and/or Impact Program strategies

The overall objective of the project is to promote an integrated, sustainable and low-emissions transport system and reduce fossil fuel consumption, GHG emissions and air pollution from the transport sector. The proposed project is structured across its components, outcomes and activities in such a way that it is in tandem with the GEF's overall and global focus areas.

This programme is aligned with Objective 1 of the Climate Change Focal Area to "Promote innovation and technology transfer for sustainable energy break-throughs", through CCM 1-2 - Promote innovation and technology transfer for sustainable energy breakthroughs for electric drive technologies and electric mobility.

5) Incremental/additional cost reasoning and expected contributions from the baseline, the GEFTF, LDCF, SCCF, and co-financing

Brief Summary of Baseline Section

The total registered vehicles in Maldives have increased by more than 200% in the last decade. These vehicles are mostly ICE motorcycles (nearly 80%) and there are hardly electric vehicles. Electricity access is almost 100%, however renewable energy integration is very limited (nearly 2%). The total emission from Maldives in 2011 was 1.2 MtCO_{2e}, which is about 0.003% of global emissions. Of these, Electricity generation and Transport are the two predominant fossil fuel emitting sectors. Within transport, marine is the largest source of GHG emissions at ~67%, followed by road (17%) and air transport (16%). In BAU scenario, it is estimated that GHG emission will rise to 3.3 MtCO_{2e} by the year 2030. There are efforts being made by Government to reduce air pollution and increase in shift to renewable energy (detailed in baseline section through various projects/ regulations/ policies), however the progress is quite slow.

Brief Summary of Alternative Scenario

The project will address the barriers/ existing issues (detailed in baseline section) and will result in an integrated urban and transport plan for the four islands, leading to enhanced coordination among various government stakeholders. The project will also support demonstration projects for e-buses and e-bike sharing schemes, including of use renewable based charging infrastructure. These will be supported by campaigns/ awareness and create opportunities for new investments and scale-up of sustainable low-emission transport. The project will support development of measurable, reportable, and verifiable (MRV) system to measure, track and assess the benefits/ impacts of these transport options. This increased information and its tracking on use of sustainable low-emission transport will create greater awareness of benefits in policy makers and users to continuously integrate new and emerging sustainable and low-emission transport options.

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 sustainable low-emission transport system. The GEF finances will support barrier removal interventions, strengthen the commercialization process of electric drive vehicles as viable public mobility option in the Maldives in a much more advanced manner than in countries in the region with similar socio-economic status. The GEF support will used to establish National level policy to lead the effort by setting strategic directions, providing incentives and mobilizing resources, private and public.

GEF support through demonstration 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 emission options (public e-buses, NMTs, etc.). The demonstration and enabling policy framework will de-risk the investments and encourage private sector participation These will be supported and invested by local and foreign investors and not just highly subsidized and supported through public funds. 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.

In addition, the project is supported by the global project. The global knowledge management component and the regional platform approach seek to bundle demand in the region and thus reduce the incremental costs:

- Generic tools are produced at global level, disseminated though regional support and investment platforms and adapted to the needs in the country at the country level ? thus return on investment for development of tools and methodologies is maximized.
- investment risk for demand side ? bundling demand for e-vehicles for demonstration in a certain region can lead to lower vehicle prices.

● technology risk for supply side ? through adequate training of vehicle operators and exchange

between numerous projects, the industry is less likely to face misuse of technology.

The project will also be getting supported by partners in the form of Co-financing (In-kind and otherwise). The summary of the secured co-financing through the endorsement from the partners is shared in the table below.

No.	Co-finance partner	Nature of co-finance	Total in US\$	Description of co-finance contributions <i>(in line with co-finance letters received from partners)</i>
	Name	Type		
1	Ministry of Environment	Other	391,800	The Ministry of Environment will provide this as in-kind support attributed to the costs incurred for setting up and housing Project Management Unit, which will manage and ensure the timely and satisfactory execution of the project's implementation, starting early 2020
2	Ministry of Environment	In-Kind	1,188,000	Additional to setting up of PMC, this in-kind will support all the outputs under this project and specifically in the following components: ? Component 1: Policy framework for sustainable and low-emissions transport in Maldives ? Component 2: Demonstrating low emissions technologies for transport and establishing the measurement, reporting, verification (MRV) framework for transport
3	MTCC / MoTCA	Other	2,350,284	The Ministry of Transport will provide the investment for 13 E-buses, 3x150 kW chargers, grid installation costs, 23 bus stops, and one bus depot

4	Energy Department, Ministry of Environment	In-Kind	170,000	<p>The Energy Department will provide this in-kind support towards equivalent solar panels for generating required charging electricity for demonstration projects, including 2 e-Buses and 200 shared e-bikes (pedal assisted).</p> <p>This co-financing contribution is supported by Ministry of Environment's POISED project, which is focused on deploying renewable energy systems (primarily solar) in Maldives.</p>
5	Bike Maldives	In-Kind	39,400	Bike Maldives will provide this in-kind support in Component 3: Knowledge management and public awareness campaign for sustainable and low-emissions transport
6	Maldives National University	In-Kind	82,600	MNU will provide this in-kind support in Component 2: Demonstrating low emissions technologies for transport and establishing the measurement, reporting, verification (MRV) framework for transport
7	HDC	In-Kind	71,600	<p>HDC will provide this in-kind support in the form following contributions:</p> <ul style="list-style-type: none"> ? Urban Planning and Transportation expertise consultation time and support towards design and review of different changes in policies undertaken through this project, including National Mobility Plan, National Development Plan, Integrated Transport Master Plan with customization for Hulhumal? region and others ? Provide support in localization of e-Mobility Road Map to Mal? Region for specific interventions, including the deployment of the electric 2-wheelers demonstration project and associated charging infrastructure

8	Male City Council	In-Kind	78,800	<p>The contributions of Mal? City Council will take several forms, such as:</p> <ul style="list-style-type: none"> ? Urban Planning and Transportation expertise consultation time and support towards design and review of different changes in policies undertaken through this project, including National Mobility Plan, National Development Plan, Integrated Transport Master Plan with customization for Mal? region and others ? Provide support in localization of e-Mobility Road Map to Mal? Region for specific interventions, including the deployment of intracity electric buses, shared electric 2-wheelers and electric car fleet demonstration projects and associated charging infrastructure ? Support with road de-congestion, parking management and other required urban planning and construction for effective deployment of intracity e-buses in Mal? ? Design review, development, and dissemination of different public awareness campaigns on sustainable and low-emissions transport through different channels for Mal? city ? Promote and propagate co-benefits such as better health, better air quality, reduced traffic congestion, reduced fossil fuel imports, improved city management, etc. arising from the adoption of shared electric bike model for Greater Mal? region
9	MTCC / Ministry of Transport	In-Kind	36,000	Ministry of Transport will provide this in-kind support towards use of its resources in the deployment and implementation of the 15 E-buses, 4x150 kW chargers, grid installation costs, 23 bus stops, and one bus depot.
Total			4,408,484	

6) Global environmental benefits (GEFTF) and/or adaptation benefits (LDCF/SCCF)

According to the Maldives GHG inventory, the total emission from Maldives in **2011 was 1.2 MtCO_{2e}**, which is about 0.003% of global emissions. Electricity generation (63.5%) and transport (21.5%) are the two predominant fossil fuel emitting sectors, followed by fisheries, LPG use, others Energy consumption for marine/sea transport in the atolls has immensely risen and is one of the fastest

growing emissions sectors in Maldives. Within transport, marine is the largest source of GHG emissions at ~67%, followed by road (17%) and air transport (16%). **In BAU scenario, it is estimated that GHG emission will rise to 3.3 MtCO₂e by the year 2030.**

The results of the pilot demonstration project (i.e. 75 e-scooters, 200 e-bikes and 15 mini e-buses) is expected to generate **970tCO₂e of Direct GHG emission reductions**. It is estimated they will be made operational during year 2021, and benefits are accounted until year 2024.

Furthermore, the project is expected to generate **Indirect GHG emission reductions** through the country's market shift to low-emission transports and with assumed changes in the transport modal mix. These global environmental benefits assume that, starting in 2021, the share of electric 2-wheelers gradually increases from 3% to 37% by 2030; buses are low-emissions and the share of fully electric increases to 69% by 2030 from 8% in 2021, cars (light-duty vehicles) from 4.5% in 2021 to 36% by 2030 and vessels (passenger transport vehicles) from 1% in 2021 to ~30% by 2030. It is also assumed that about 20% of all private motorized trips have shifted to buses, and 10% have shifted to walking from motorized scooters to walking. These estimates also consider that the electricity grid of the country considerably improves reflecting future investments in solar charging stations. This scenario would lead to a cumulative total of **891,848 tCO₂e Indirect GHG emission reductions** over the 2021-2035 period (still considering a 20% causality factor).

7) Innovativeness, sustainability and potential for scaling up

Innovativeness: _

This is a highly innovative project that aims to introduce electric vehicles into Maldives. The biggest innovation is that the e-mobility is based within the larger sustainable transport concept for the country and not as a technology project. The project will support capacities within the government and awareness among users of better sustainable low-emission transport system that enhance mobility experience and reduces air pollution, congestion etc. E-mobility is but one of the tools within the larger system. The project is also innovative as it introduces public transport system along with the last mile connectivity solution. The project will support implementation of public land transport (e-buses) alongside a bike-sharing scheme using e-bikes planned in an integrated manner.

The project addresses a big share of public transport important to Maldives ? boat-based transport system, by supporting feasibility assessment of introducing e-boats. An innovation adopted is the GEF funded study will be used to raise pilot funding from bi-lateral/multi-lateral donors. Further, it will also support developing a scale up project using the feasibility study and pilot experience, including from GCF.

As mentioned earlier the innovation of the project is to base the e-mobility strategy in the sustainable integrated transport plan. Further, the project innovates by using the integrated plan to bring in and establish an inter-departmental National Mobility Task force to provide an institutional home for coordination which so necessary for sustained focus on transformation.

The project will engage a local NGO ?Bike Maldives? in developing the bike sharing scheme as well as in the awareness campaigns to promote use of e-bikes and public transport system. To provide

continuous stream of information for public awareness campaigns the project will establish an MRV framework to track GHG emissions and other socio-economic benefits of the transformation to sustainable low-emission transport system. In this the project will engage with the Maldives National University.

Environmental Sustainability

The project will focus on implementation of low carbon mobility options including electric buses and electric bike sharing system. This will displace the use of ICT vehicles run on conventional fuel, resulting in a reduction in dependency on the fossil fuel imports and GHG emissions and betterment of air quality. This project will also explore synergies with other ongoing/planned projects around clean energy generation (there are ongoing projects funded by the World Bank and ADB, on clean energy generation, especially Solar and Waste to Energy), which can feed to the energy requirements for electric vehicles.

Secondly, this project will also build capacity of key stakeholders like the Maldives National University and the Environmental Protection Agency-Ministry of Environment and the Ministry of Health on air quality monitoring and management, leading to possible reduction in deterioration of air quality. It aims to establish an National E- Mobility Task force, consisting of the key members from the Ministry of transport, Ministry of Planning and Infrastructure Development and Ministry of Housing and Urban Development to ensure an conducive and sustainable future for E- mobility in the Maldives on the urban planning front further strengthening the Institutional capacity for achieving environmental sustainability.

Lastly, the project will ensure public awareness through effective campaigns towards the aim of promotion and public acceptance of the low carbon/ electric mobility, building an affinity of the Maldivian public towards environmental sustainability. The project aims to set up the momentum for a behavioral shift in the people of Maldives, attracting them towards a low carbon/ clean energy powered public or shared transport rather than private vehicle ownership.

Sustainability of market development after the project:

The key to sustainability of efforts beyond project is that it addresses two key political priorities of the country: reducing fuel import bill as it affects the budgetary stability; and increasing air pollution. This has been the main driver of the project to seek solutions and the sustainable low-emission transport system addresses the key concerns. The project by addressing the three fundamental root causes that affect transformation to sustainable low-emission transport system ? Lack of institutional capacity and coordination to plan and develop such a system; lack of exposure to such systems and e-mobility; lack of public knowledge on the benefits of the systems ? enables a sustained transformation. The project will establish Interdepartmental National Mobility Task Force (comprising of stakeholders from Environment, Transport, Urban Development, Planning & Infra, Energy, Finance, other relevant departments/ agencies) to sustain the implementation of transport plan and e-mobility solutions within beyond the project. This will be complemented by a comprehensive policy and regulatory framework covering emission standards, fiscal and financial incentive policies, transport plan that will be adopted by the government.

A significant part of the project resource is directed towards demonstrating the sustainable low-emission transport options in terms of e-buses bases public transport system. The government has already committed to investing approximately 2 million USD to complement the GEF resources. Further, a e-bike sharing system will be developed and operationalized to displace the use of ICT 2-wheelers and complement the public e-bus system. The demonstration projects would provide the necessary visibility to these options to end-users. The demonstration and the public awareness campaign around the demonstration projects is aimed at creating higher buy-in and behavior change. This is building of public support will create the demand for sustaining and scaling up these actions post project.

Another important element supporting sustainability is the establishment of air pollution monitoring system and an MRV system. The Air pollution monitoring system will provide public display of air pollution level and use the information collected to be disseminated through media channels to highlight the issue and improvements that will occur through project interventions. The MRV system will provide the necessary data to track the progress in transformation which will help evidence based planning as well as for using the impacts achieved in public awareness activities. These will be integrated with the Knowledge Management Repositories to support a wider access to information.

Finally, as explained in the private sector engagement the project will engage the private sector through demonstration as well as through trainings (such as training of car servicing units) to create private sector interest in the transformation which will help sustain the activities post project.

Potential for scaling-up:

The focus of the project intervention is in the Male region, both, through demonstration project and development of sustainable low-emission transport plan. These experiences have the potential to be scaled up through replication in other islands of the country. The project includes specific activity on training the decision makers in other islands on the experience and lessons from project work in Male. Further, the public awareness campaign will target populace of other islands to build up public support for transformation supporting the scale up.

In a more direct way the project is supporting scale up of e-mobility in water based public transport. The boats contribute 70% of transport related emissions. The project will facilitate feasibility of e-boats and raising resources for a pilot. The project will also support development of financing plan for financing large scale intervention for scaling up e-boat use. One of the targets for financing will be GCF.

The Island experience of Maldives will be very relevant for out Small Island Developing Countries. UNEP will use its reach and projects as well as through the Global Programme to disseminate the lessons and experience.

[1] The policies and regulations reviewed are outlined in the Table below in the Baseline Section.

[2] Ministry of Transport and Civil Aviation is still in process of developing a Master Transport plan.

[3] [National Action Plan on Air Pollutants, June 2019](#)

[4] MEE ? Ministry of Environment and Energy, MTA ? Maldives Transport Authority, EPA ? Environmental Protection Agency, MEA ? Maldives Energy Authority, STO ? State Trading Organizations

[5] [Maldives SREP Investment Plan 2013 - 2017](#)

[6] Understanding Gender in Maldives: Toward Inclusive Development; World Bank Group; 2016

[7] World Economic Forum. 2012. The Global Gender Gap Report 2012. Geneva. Tables 3a?3b.

[8] World Economic Forum. 2012. Global Gender Gap Report 2012. Geneva. p. 47.

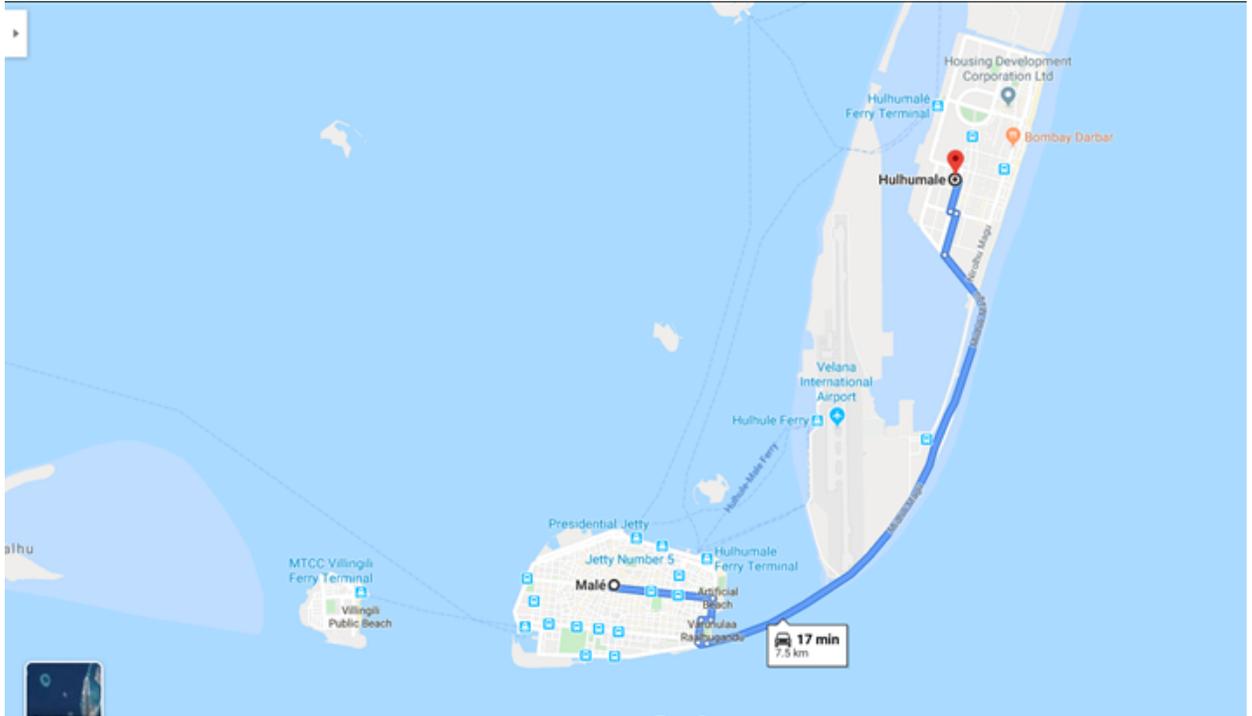
[9] The Family Act (2004) stipulates that a man must provide proof of financial capacity to support his wives and other dependents and application for more than one marriage must be found to be consistent with Shari?ah and reviewed and approved by the Registrar of Marriages.

[10] A. Velezinee. 2012. Maldives Gender Review: Provisions for a Gender Equality Law. Unpublished.

[11] Maldives- Gender Equality Diagnostic of Selected Sectors; Asian Development Bank; 2014

1b. Project Map and Coordinates

Please provide geo-referenced information and map where the project interventions will take place.



Coordinates:

Location	Latitude	Longitude
Male	4.175496	73.509346
Hulhumale	4.173730	73.503960

1c. Child Project?

If this is a child project under a program, describe how the components contribute to the overall program impact.

The current project is hosted under the 'Global Programme to Support Countries with the Shift to Electric Mobility', led by UNEP.

The Global Programme to Support Countries with the Shift to Electric Mobility was submitted (June 2019 GEF Council) with child projects in Antigua and Barbuda, Armenia, Burundi, Chile, Costa Rica, India, Cote d'Ivoire, Jamaica, Madagascar, Maldives, Peru; Seychelles, Sierra Leone, Saint Lucia, Togo, Ukraine, Uzbekistan, as well as a global child project. For each child project, a concept note was prepared including national background, policy status, baseline scenario and description of individual national components.

The Global Programme is divided into 4 components:

- ? Component 1: Global thematic working groups and knowledge materials
- ? Component 2: Support and Investment Platforms
- ? Component 3: Country project implementation
- ? Component 4: Tracking progress, monitoring and dissemination

The Global Programme has put in place the monitoring framework below to track progress both globally and at the level of the country child projects. 10 indicators have been designed for this purpose: 4 relying on global level information (highlighted in blue) and 6 relying on country level information (highlighted in green).

The global project will report against this framework on an annual basis, using (1) the global level data from the Global Thematic Working Groups and from the Support and Investment Platforms, and (2) country level data provided by each country project during their annual Project Implementation Review (PIR) process.

For this purpose and whenever applicable, the global level indicators highlighted in green are translated into a country-level indicator in the Project Results Framework located in Annex A of the present CEO Endorsement Document. During project implementation, the Ministry of Environment will be

requested to report against the indicators of the country Project Results Framework (Annex A) on an annual basis, during the PIR process.

Linkages with Global Program

The proposed project will be bridging the links to the 'GEF 7 Global Project' and enable Maldives to participate in the following Global Thematic Working Group: 1) The global working group on electric heavy duty vehicles, 2) The global working group on electric vehicle charging, grid integration and renewable power supply and batteries. The Project will also benefit and receive support from the Investment Platform for Asia, established by the Global Project. The table below provides the summary of the linkages between the specific Global outputs and Maldives child project outputs.

Global thematic working groups (Global project outputs)	Maldives Project Outputs	Support and Investment Platforms (Global project outputs)
<p>1.1.2 The global working group on electric heavy duty vehicles is operational and a toolbox is developed, exchange and network opportunities are organized and training materials for use in the regional support and investment platforms are created.</p>	<p>Output 2.1: Technical support provided to Ministry of Environment and Private Sector (in consultation with other Ministries/ Energy Department) for development of strategy to deploy electric vehicles (buses, bicycles, and 2-wheelers), including use of renewable based charging infrastructure, and financial mechanisms to support implementation (TA)</p> <p>Output 2.3: Technical and financial support provided to Ministry of Transport, Maldives Transport & Contracting Company and Male City Council for facilitating investments in integrated Electric Vehicles (EV) Transport system combining intra city e-Buses, shared (pedal assisted) e-Bikes, and associated charging infrastructure (INV)</p> <p>Output 3.3: Training provided to Government officials/ institutions, NGOs, Technicians, Health experts, etc. on wider adoption of sustainable and low-emissions transport and consideration of gender mainstreaming</p>	<p>2.1.2: The support and investment platform for Asia is established and operational and knowledge products from the global thematic working groups are disseminated, regional communities of practice and e-mobility market places are created, training courses to country and city stakeholders are delivered, communities of practice are established, technical support to countries and cities is provided and replication of GEF and EC Solutions Plus country project experiences to other countries and cities is</p>

<p>1.1.3: The global working group on electric vehicle charging, grid integration and renewable power supply and batteries is operational and a toolbox is developed, information exchange and network opportunities are organized and training materials for use in the regional support and investment platforms are created.</p>	<p>and EWCD considerations in the e-Mobility sector</p>	<p>supported.</p>
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2. Stakeholders

Please provide the Stakeholder Engagement Plan or equivalent assessment.

The Stakeholder Identification and Engagement for the proposal development went through a series of meetings and workshops which are as follows:

- 7 Aug 2019

- Stakeholder Consultation Workshop was conducted as part of development of GEF-7 CEO Endorsement Document to gather views and feedback on the proposed structure from diverse range of stakeholders. Some of the stakeholder groups, present at the workshop are:
 - i. Government Departments and Agencies consulted: Energy Department, Ministry of Environment, Environmental Protection Agency (EPA), Maldives Transport & Contracting Company (MTCC) / Maldives Port Ltd (MPL), Housing Development Corporation, Maldives Energy Authority (MEA), Male City Council
 - ii. Power Distribution Company: State Electricity Company Ltd. (STELCO)

iii. Civil Society: Bike Maldives

iv. Academia: Maldives National University

- Meetings conducted with Cabinet Ministries: Ministry of Environment, Ministry of Gender, Family and Social Services, Ministry of Health/ Health Protection Agency, Ministry of National Planning and Infrastructure, Ministry of Transport & Civil Aviation
- Meetings conducted with private stakeholders: Taxi/Cab Aggregator (AVAS Ride), ILAA Maldives Pvt. Ltd., ICE 2-Wheeler Distributor (LITUS)
- 31st Oct 2019
 - A stakeholder validation workshop was conducted with all stakeholders to present the draft project proposal developed with consideration of the inputs received from the stakeholders and local beneficiaries.
- August 2018-Oct 2018
 - There were several different iterations of a PIF immediately following the 6th GEF Assembly and launching of GEF 7. A number of stakeholder meetings were conducted during this period, with Ministry of Environment, Ministry of National Planning and Infrastructure, Ministry of Transport & Civil Aviation private sector industry associations and non-government organizations (NGOs)

The above-mentioned stakeholders will be consulted on a frequent basis, through project steering committee meetings, technical working group meetings and stakeholder consultation workshops and meetings.

The **Project Steering Committee (PSC)** will be led by Ministry of Environment, Ministry of Transport, Ministry of Planning and Infrastructure, Ministry of Housing and Urban Development, Ministry of Finance, President Office Representation, UNEP and Special Invitees. Comprising of senior level representatives from key stakeholders will meet every 6 months to provide strategic guidance and direction to the project. Also, PSC will approve the annual workplans and budget

The **Technical Working Group (TWG)** will constitute of Energy Department under Ministry of Environment, Transport Authority under Ministry of Transport, MTCC, Male City Council, HDC, STELCO, Maldives National University (MNU), Bike Maldives, Other Invitees. The department level representatives from key stakeholders will also meet every 6 months to ensure the coordination required for effective implementation of the project.

On similar lines, the proposed **Project Management Unit (PAU)** ? housed at Executing Agency will coordinate with key stakeholders on an individual basis to ensure the support required across the respective components, for the implementation of the project.

Additionally, as part of the proposed work plan and the activities/deliverables, various key stakeholders (including Private Sector and Civil Society) will be consulted and engaged through stakeholder consultation workshops and meetings.

Below is a description of the main stakeholders to be involved as well as their expected contributions to the project?s components/outputs:

Stakeholder main group	Stakeholder name	Existing activities with potential to be leveraged	Content engagement, contributions to the project (identified by Component)
Government	Ministry of Environment	The Ministry would be playing the dual role of being the nodal agency for the project and the executing partner with the Ministry of Transport. It will also be providing technical inputs, support and information on the demo planning, design as well as policy inputs to the Project Document	MEE will be the executing agency of the project. The Ministry will also be the key beneficiary of the MRV outputs as it is the focal point for Climate Change Convention reporting. Further, it is responsible for tracking and reporting on air pollution thus will actively participate in component 3 for establishing air pollution tracking system.
Government	Ministry of Gender, Family and Social Services	Responsible for the protection and promotion of the rights of vulnerable groups in the Maldives; with main responsibilities of Women?s Rights & Empowerment, Gender Equality, Child Rights & Family Well-being, Elderly Rights & Well-being, Disability Rights and Well-being and Social Protection Services	Will be contributing across the Components to incorporate gender related considerations. Will be part of the technical working group.
Government	Energy Department, Ministry of Environment	Is responsible for monitoring energy statistics and research with assistance of utility companies. Provide support and inputs to policies, planning, measurement and development of renewable energy capacity and RE grid integration for the charging infrastructure and other energy efficiency actions.	Will be contributing to Component 3 of the GEF project as per the following: ? Output 1.3: Low emission Transport and e-Mobility Plan for Mal? Region (Mal? and Hulhumal?) developed for adoption by authorities

Stakeholder main group	Stakeholder name	Existing activities with potential to be leveraged	Content engagement, contributions to the project (identified by Component)
Government	Environmental Protection Agency (EPA)	It will be involved closely in the project design and provide inputs on policy and regulatory aspects pertaining to the GHG and air pollution emissions, adaptation actions of the implementation of the NDCs, environmental data for the Monitoring, reporting and verification (MRV); policy related to waste including disposal of batteries used for storage.	<p>Will be contributing to Component 3 of the GEF project as per the following:</p> <p>? Output 3.1: Technical support provided for preparing MRV framework for sustainable low emissions transport designed and operational, including the establishment of GHG emissions, air quality and emissions inventories</p> <p>? Output 3.2: Public awareness enhanced through awareness and advocacy campaigns on sustainable low-emissions transport</p>
Academia	Maldives National University	Currently monitoring the air quality across Maldives on a pilot basis.	<p>Will be contributing to Component 2 of the GEF project as per the following:</p> <p>? Output 3.1: Technical support provided for preparing MRV framework for sustainable low emissions transport designed and operational, including the establishment of GHG emissions, air quality and emissions inventories</p>

Stakeholder main group	Stakeholder name	Existing activities with potential to be leveraged	Content engagement, contributions to the project (identified by Component)
Government	Maldives Transport Authority, Ministry of Transport & Civil Aviation	Currently the Transport Authority is seeking for an online public transport booking application (only cabs as a pilot) for Maldives. Also, it is in the process to develop a national level transport master plan and specific traffic decongestion strategy for Male city.	<p>The Ministry is the direct beneficiary of the project interventions and will be involved closely with the execution of all project outputs.</p> <p>It will also be providing technical inputs, support, and information on the demo planning, design as well as policy inputs on low-emissions transport modes.</p> <p>Will also be contributing to Component 1 of the GEF</p> <p>? Output 1.2: Technical support provided for developing policy options including fiscal and non-fiscal policies, for sustainable urban and low-emission transport planning</p> <p>? Output 1.3: Low emission Transport and e-Mobility Plan for Mal? Region (Mal? and Hulhumal?) developed for adoption by authorities</p>
Private	Cab Aggregator (AVAS Ride), ILAA Maldives Pvt. Ltd., ICE 2-Wheeler Distributor (LITUS)	The private sector stakeholders currently come from different segments from the transport and EV related ecosystem, such as Equipment manufacturers, private cab aggregators, vehicle dealerships and can play a significant role in EV scale-up, as of now EV is not a major focus.	<p>Will be contributing to Component 1 of the GEF project as per the following</p> <p>? Output 2.1: Technical support provided for the development of a strategy to deploy electric vehicles (buses, bicycles, and 2-wheelers), including use renewable-based charging infrastructure, and financial mechanisms to support the implementation</p> <p>? Output 2.3: Technical and financial support provided for facilitating investments in integrated EV Transport system combining Intracity e-Buses, shared (pedal-assisted) e-Bikes, and associated charging infrastructure</p>

Stakeholder main group	Stakeholder name	Existing activities with potential to be leveraged	Content engagement, contributions to the project (identified by Component)
Government	Maldives Transport & Contracting Company (MTCC) / Maldives Port Ltd (MPL)	The two, both under government stakeholder ship, currently operate diesel bus services in Male and Hulhumale. MTCC also operates ferry in 6 out of the 7 zones.	Will be responsible for running the programs across the categories i.e. e-Buses, and e-Bike system.
Government	State Electricity Company Ltd. (STELCO)	It is responsible for power generation and distribution in 35 individual islands currently. The power generation currently is mostly diesel based but the company also owns and plans to scale renewable energy generation capacity. Out of the total 186 diesel powerhouses in Maldives, STELCO operates 35 of them.	Will be contributing to Component 1 of the GEF project as per the following: ? Output 1.3: Low emission Transport and e-Mobility Plan for Mal? Region (Mal? and Hulhumal?) developed for adoption by authorities
Government	Housing Development Corporation	HDC currently handles public housing for Hulhumale region. HDC also prepared the Master Transport Plan for Hulhumale, including bike route master plan.	Will be contributing to Component 1 of the GEF project as per the following: ? Output 1.3: Low emission Transport and e-Mobility Plan for Mal? Region (Mal? and Hulhumal?) developed for adoption by authorities
Government	Maldives Energy Authority (MEA)	Will be the regulatory body on the production and use of energy - Establishing tariffs, issuing guidelines and regulations to ensure the reliability, security of the grid.	Will be contributing to Component 1 of the GEF project as per the following: ? Output 1.3: Low emission Transport and e-Mobility Plan for Mal? Region (Mal? and Hulhumal?) developed for adoption by authorities)

Stakeholder main group	Stakeholder name	Existing activities with potential to be leveraged	Content engagement, contributions to the project (identified by Component)
Government	Ministry of Health/ Health Protection Agency	Although the ministry hasn't endorsed the National Action Plan on Air Pollutants, but they are working with the Maldives National University (MNU) on air quality management.	<p>Will be contributing to Component 2 of the GEF project as per the following:</p> <p>? Output 3.1: Technical support provided for preparing MRV framework for sustainable low emissions transport designed and operational, including the establishment of GHG emissions, air quality and emissions inventories</p>
Government	Ministry of National Planning and Infrastructure	The Ministry is developing a National Development Plan for Maldives with Urban centres across atolls which would be connected through a reliable, affordable, comfortable public transport system.	<p>Will be contributing to Component 1, 2, 3 of the GEF project as per the following:</p> <p>? Output 1.1: Integrated policy framework for sustainable and low emissions transport developed and submitted to authorities for adoption</p> <p>? Output 2.3: Technical and financial support provided for facilitating investments in integrated EV Transport system combining Intracity e-Buses, shared (pedal-assisted) e-Bikes, and associated charging infrastructure</p> <p>? Output 3.2: Public awareness enhanced through awareness and advocacy campaigns on sustainable low-emissions transport</p>

Stakeholder main group	Stakeholder name	Existing activities with potential to be leveraged	Content engagement, contributions to the project (identified by Component)
Government	Male City Council	Will be providing support on regulatory and institutional framework and policies adopted for integrated transport and urban planning.	<p>Will be contributing to Component 1, 2, 3 of the GEF project as per the following:</p> <p>? Output 1.2: Technical support provided for developing policy options including fiscal and non-fiscal policies, for sustainable urban low-emission transport planning</p> <p>? Output 2.3: Technical and financial support provided for facilitating investments in integrated EV Transport system combining Intracity e-Buses, shared (pedal-assisted) e-Bikes, and associated charging infrastructure</p> <p>? Output 3.2: Public awareness enhanced through awareness and advocacy campaigns on sustainable low-emissions transport</p>
Civil Society	Bike Maldives	As civil society, Bike Maldives will provide in kind support in awareness generation and outreach activities for the shared E-bike and bicycle model and E vehicle promotion. Other CSOs will be engaged in consultations for outputs prepared for Component 1 and 2 and actively involved in awareness raising and capacity building activities under component 3.	<p>Will be contributing to Component 1 of the GEF project as per the following</p> <p>? Output 3.2: Public awareness enhanced through awareness and advocacy campaigns on sustainable low-emissions transport</p>
Beneficiaries	Local Communities Consumers		<p>Will be contributing to Component 1 of the GEF project as per the following</p> <p>? Output 3.2: Public awareness enhanced through awareness and advocacy campaigns on sustainable low-emissions transport</p>

The successful implementation of this project relies on the leadership of the MEE and Ministry of Transport who will implement the project. MEE will be the executing agency of the project, and

Ministry of Transport will co-execute the project across all project components, particularly in Components 1 and 2. UNEP will also carry out monitoring and evaluation of the project. In addition, key stakeholders identified in the table above will be involved from the beginning of the implementation with established roles in order to successfully implement the various components of the project.

In addition, provide a summary on how stakeholders will be consulted in project execution, the means and timing of engagement, how information will be disseminated, and an explanation of any resource requirements throughout the project/program cycle to ensure proper and meaningful stakeholder engagement.

Please refer to the section above.

Select what role civil society will play in the project:

Consulted only;

Member of Advisory Body; Contractor;

Co-financier; Yes

Member of project steering committee or equivalent decision-making body; Yes

Executor or co-executor;

Other (Please explain) Yes

One specific CSO, Bikes Maldives, will be engaged with the designing and advocacy of the e-bike sharing scheme. The Civil society organization will be engaged in the public awareness programmes. Also the CSO will be invited into the training programmes.

3. Gender Equality and Women's Empowerment

Provide the gender analysis or equivalent socio-economic assesment.

Gender analysis:

As the ocean accounts for 99% of its territory, the Maldives requires an extensive national maritime transport system to connect the 200 inhabited islands. Until recently, an interisland shipping service was operated largely by the private sector, while the government provided essential infrastructure such as harbors and regulatory functions such as maritime safety. Transport services were based ?on demand,? that is, passenger and cargo transport services were often not regular and schedules were flexible. This was particularly true in the outer atolls.

Gender Role in the Transport Sector

Ownership, operation, and maintenance of transport vehicles (of all types) is dominated by men. As evident in the table below, only 6% of motorcycles are registered to women and only 15% of cars. (the imbalance in ownership is marked in both Mal? and the atolls.) Cargo and passenger vessels are also mostly owned by men. In air transport, there are only six female pilots currently employed in the aviation industry, according to the Civil Aviation Authority, under the Ministry of National Defense Force, as of 2 April 2014.

Proportion of Vehicles Registered to Men Compared with Women, for the Maldives, Mal?, and Atolls, 2012 (%)

Type of Vehicles	Maldives Overall		Mal?		Atolls	
	Men	Women	Men	Women	Men	Women
Battery-powered scooter	81	19	90	10	73	27
Car	57	43	82	18	11	89
Motorcycle	90	10	94	6	84	16
Other vehicles	56	44	43	57	66	34
All vehicles	82	18	86	14	76	24

Source: Ministry of Transport and Communications. Transport Authority. Data as of 1 April 2014.

Table X: Proportion of vehicles Registered to men Compared with Women, for the Maldives, Mal?, and atolls, 2012 (%)

Due to differences by gender in household and economic activities, women and men may differ in their perspectives on transport priorities, in their transport needs, and in their abilities to access transport. However, there has been limited research to date on gender and transport in the Maldives. The only data available are on vehicle ownership and on employment in the sector.

The gender action plan that is integrated as an initiation activity of the project. A Gender Expert who will be associated throughout the project is budgeted and would be responsible for ensuring that all activities and outputs of the project integrate the gender aspects. Further, a baseline study will be undertaken at the beginning and an end of project assessment to measure the impact of project interventions. We will try and integrate in context the information available and also highlight in the text the persons with disabilities should be considered

The project will include an assessment of the impact of the current transport system on women, children, elderly and the people with disabilities, including impacts on health and safety. Further, the project will undertake assessment of gender preferences for mobility and perspective on effective

mobility. Further, a baseline study will be undertaken and the beginning and an end of project assessment to measure the impact of project interventions. The proposed **Gender Action Plan (GAP)** is integrated as an initiation activity of the project. A Social and Gender Specialist who will be associated throughout the project is budgeted and would be responsible for ensuring that all the proposed activities and outputs integrate the gender aspects.- The project will disaggregate data collection in order to make sure to capture gender-based differences in trip patterns and other characteristics and make an appropriate analysis on gender and transport issues in the country. For effective integration of gender aspects to the project implementation, the Ministry of Gender, Family and Social Services (the nodal agency for the protection and promotion of the rights of vulnerable groups in the Maldives; with main responsibilities of Women's Rights & Empowerment, Gender Equality, Child Rights & Family Well-being, Elderly Rights & Well-being, Disability Rights and Well-being and Social Protection Services) is added to the stakeholder group and also will be included in the Project Implementation structure.

Presently, bicycles, scooters, and motorcycles are the common modes of transport in all islands. Four wheelers are mostly found in Male. Small islands are connected through using the marine transport. The use of electric scooters is increasing in big islands and in Male. The project will include assessment on the pros and cons of the use of electric scooters as private transport and public transport concerns of women. The gender assessment undertaken will input into the development of policy/regulatory frameworks, as well as towards developing a plan for integration of gender issues in transport planning. The project will provide technical support to the Ministry of Transport in preparation of the plan. Gender issues will be included in the agendas of stakeholder consultations, meetings and workshops organised by the project and the Ministry of Environment and Ministry of Transport.

The proposed integrated, sustainable and low-emissions transport system in the Maldives will include focussed activities to improve transport access and safety of women and children. The policies and measures to be developed will include aspects of promoting a transport system that is safe for all genders and ages.

The project will focus on the following key areas:

1. Costs of transport for women and impact on their life
2. Personal safety of women and children while using the proposed transport systems or using public transports
3. Role of women in decision making about transport planning and use of various modes of transport
4. Social norms for using public transport and sharing the transport systems with men
5. Increased employment opportunities for women

This project will focus on improving the transport systems to improve the quality of life of women in small and big islands of Maldives through:

- ? Providing improved access to transport services considering gender aspects.
- ? Improving mobility for women who ride two wheelers, which constitute the large majority of Scooter riders
- ? Ensure women participation in awareness generation and knowledge sharing related to benefits of low emission transport including EVs and shared bike model, also improving the two-wheel service and value chains, allowing them to diversify income sources.
- ? Participation of women in consultation on in the design of the e-bike sharing system
- ? Integration of gender aspects in Male Region Transport Plan and e-mobility strategy.

Implementation Plan

Implementation of the gender baseline and action plan has been embedded within the project structure as follows:

? The alignment of the low emissions public transport services with women's priorities and needs is addressed within component 1, outcome 1. The electric mobility system proposed to be developed within the project is expected to influence future transport requirements, and internal procedures within transport companies to look for clean and low emission options. Although there is no evidence on the priorities identified by men and women regarding public transport quality in Maldives, information from other countries suggests that women are more concerned about safety, personal security and cleaner source; furthermore, women tend to have less access to different transport options, and tend to have multiple purposes in their trips, many times during off-peak hours, to accommodate the conflicting needs of work, household and childcare. Transport quality? related topics of high relevance for women probably include clean mode of transport, off?peak service quality, convenient transfers, and good coverage of key destinations by the network beyond the traditional radial lines serving commuting trips. The outputs of Component 1 will take into account gender perspective to ensure the transport development is gender sensitive.

? Demonstration projects in component 2 will be designed considering the gender aspects. This will ensure that the public transport system and the bike sharing schemes will provide easy access, safety and comfort to all genders. The surveys to assess the impact of demonstration schemes will specifically focus on ensuring equal gender participation. This will enable capture the benefits to all genders. This information will be shared with policy makers and integrated into the policy/regulation as well as transport system development. In component 3 the awareness material and training components will both focus on ensuring gender representative participation as well as the material will be

developed considering the gender aspects. Specially the training on development of integrated transport plan and development of public transport system will integrate gender related factors to be considered.

All the above gender-oriented actions will be ensured by a dedicated Social and Gender Specialist, budgeted in the project.

It is worth noting that at this stage, we have not undertaken a thorough assessment of gender situation and plan for activities to institute the same in the project design. But the project design does consider the importance and, hence, a Social and Gender Specialist (National) will be available to the project throughout the period. The Social and Gender Specialist, as explained in the Terms of Reference (TOR), will:

Prepare a gender action plan for gender inclusive planning, implementing and monitoring of project activities.

- ? Conduct a detailed analysis to support the mainstreaming of gender issues, particularly emphasizing on the issues in the sustainable low-emission transport development.
- ? Assess and identify potential measures and actions for inclusion in the Male Transport plan and E-mobility strategy.
- ? Identify and recommend appropriate actions to strengthen gender equality and social inclusion in the implementation of demonstration project.
- ? Mainstream gender in various training and sensitization program carried out under the Project, and
- ? Mainstream gender and highlight gender aspects while developing training materials, manuals, documentation of case studies and lessons learnt.

The key deliverables for the Social and Gender Specialist will be:

- ? Gender Action Plan (GAP)
- ? Gender related elements of the policies and plans developed under the project
- ? Gender related elements for training material, awareness campaign and capacity building workshops
- ? Gender inclusion and friendly elements for demonstration projects
- ? Coordinate with the local government departments, Non-Governmental Organisations (NGO?s) and other stakeholders to promote interventions to address gender-based discrimination.

The Gender Action Plan will aim to integrate gender equality aspects within the development of national EV policies. Targets for participation of women are included in awareness raising for end-users, skill training, institutional capacity building of women staff; and towards promoting gender

inclusion in institutions, i.e., Ministry of Environment and Ministry of Transport. The project will explore to better understand gender specific drivers and barriers to the adoption of electric mobility and mobility needs of women and girls. Sex-disaggregated data and information will be collected and compiled to better understand issues and preferences of women.

The proposed Gender Action Plan (to be developed during the start of the implementation stage), is expected to have following key features:

? Gender Considerations in Policy- The project will ensure that the gender considerations are included while preparing the EV policy framework; and in Island Low emission Transport and e-Mobility Plan. Efforts will be made to work on prevailing issues in the sector and include elderly, women, children and disabled (EWCD) features in the EV policy framework; and in Island Low emission Transport and e-Mobility Plan. For example, the policy may encourage gender inclusive design features in the new variants of the buses, bicycles and 2-wheelers. Similarly, the e-Mobility plan can include measures such as well-lit parking areas, facilities/waiting areas for women and display boards with information on women specific schemes, and women empowerment and helplines numbers within the premises.

? Design of electric vehicles- Efforts will also be made to include gender considerations while developing the strategy to deploy electric vehicles (buses, bicycles, and 2-wheelers) and in associated charging infrastructure. The design will include EWCD design features. EWCD design features may include (but not limited to) provisions of customized safety belts, alarms, child locks, elderly and disabled friendly seats and wheelchair friendly design features.

? Sex disaggregated data -System and provisions will be put in place through the Project Management Information System (MIS) to collect and maintain sex disaggregated data for all human related parameters including on number of women and men as end-users, project staff, consultants, construction workforce, labor and participants in project related trainings and workshops.

? Women's participation in awareness raising activities- Awareness raising on the benefits of electric mobility is one of the main components of the program. It will include targeted campaigns aimed specifically at women and mobility needs for families. At community level, awareness programs for customers and end-beneficiaries will ensure at least 40% women participation.

? Gender considerations in Information, Education and Communication (IEC) material- The IEC material will be developed for conducting customer awareness and promotion campaigns which will include gender sensitive elements and discourage any form of gender stereotypes.

? Developing skills of women- the project will conduct skills training for women for potential employment opportunities in the sector. A total of 100 women will be trained in relevant skills such as drivers, service technicians, and in operations and maintenance work of EV fleets in the selected region.

? Strengthening technical capacities of women project staff- The project will encourage participation of women project staff in all knowledge events, and training and capacity building

activities. This will enable the women staff to enhance their technical skills which would be crucial for their future career growth.

? Building gender capacities of project staff ? Trainings and orientation workshops will be conducted with project staff of Ministry of Environment and Ministry of Transport to build capacities of project staff on gender issues in the sector, and strategies and good practices for gender mainstreaming. Project staff will be oriented on gender-based violence and prevention of sexual harassment at workplace.

? Monitoring and Reporting on gender activities- A training and capacity building expert will be mobilized to prepare the training and capacity building plan and IEC material. The social and gender specialist will be responsible to support implementation of the gender actions. Additionally, a senior officer in the project management unit (PMU) would be designated as gender focal point to oversee implementation, monitoring and reporting of gender action plan. An agency will be engaged to conduct the community/end-user awareness programs (Agency for Public Awareness and Advocacy Programs ? budgeted within the project).

Gender action plan progress will be monitored regularly and reported every quarter with the project progress reports.

Thus, the outputs of the project will be taking full cognizance of gender aspects and ensures these will be integrated into all actions and outputs of the project. The gender strategy to be prepared at the beginning of the project will enable identify specific indicators to track the gender integration, which as mentioned in the project document will be continuously monitored and reported in the project.

Does the project expect to include any gender-responsive measures to address gender gaps or promote gender equality and women empowerment?

Yes

Closing gender gaps in access to and control over natural resources;

Improving women's participation and decision making Yes

Generating socio-economic benefits or services or women Yes

Will the project's results framework or logical framework include gender-sensitive indicators?

Yes

4. Private sector engagement

Elaborate on private sector engagement in the project, if any

Historically, private sector participation has been very limited in the Maldives. The small size of market makes it unviable for many private sector interventions. This along with other historical factors have resulted in larger role of state-owned enterprises (SOEs) in the economic field. Limited markets and presence of SOEs further crowd out the private sector. This is further aggravated by unfavorable

policies and incentives, and relatively high cost of doing business in the Maldives. However, governments have recognized that privatization increases efficiency and accelerates growth. As part of that, many SOEs are already a joint-venture company with either local or foreign private sector companies, indicating a trend of gradual privatization. In the last decade or so, the government has placed a strong emphasis on need/inclusion of Public-Private Partnerships (PPP) across key sectors energy, transport, health, etc. to move towards low carbon, sustainable and socio-economic growth. There are various policies and projects like 'Strategic Action Plan 2009-2013', 'Low Carbon Strategy for the Transport Sector' 2014, 'Maldives SREP Investment Plan 2013-2017', Accelerating Sustainable Private Investments in Renewable Energy (ASPIRE), Maldives Energy Policy & Strategy 2016, etc. which envisages higher private sector participation in the transport and energy sector (especially RE).

During Mission visit as part of Project Preparation Grant (PPG), Maldives leadership 'Minister of State' and 'Permanent Secretary' also reiterated that the private sector agencies and companies could play a significant role in designing and implementing the sustainable transport interventions in Male and all over the Maldives. The private sector consultations were also carried out with some of the key companies in the Maldives to understand their existing work and potential role in the broader EV ecosystem/deployment across the value chain. Some of these companies are ILAA (engineering and services company), LITUS (authorized dealer for Honda and Yamaha 2Ws), AVAS (cab/fleet aggregator), Existing automobile owners/shops, etc. These kinds of similar companies and other types of private players like capital providers (e.g. VCs, Pension funds, etc.), financial facilitators (banks, financial advisory services, etc.), entrepreneurs, etc. could be engaged as a potential partner for EV ecosystem in the proposed demonstration projects across the vehicle segments. The private sector would not only reduce the burden of financing for development or expansion of infrastructure but also bring other managerial skills like technology, expertise/knowledge, innovation, efficient operating processes, technical know-how, access to markets, capacity building and training, etc. Their engagement strengthens partnerships and makes strong contributions to environmental and developmental solutions.

The public transport projects such as public buses and boats are funded by the government as due to small size of country private sector engagement in such investments are limited. Most of such financing is done through multilateral banks or grants/loans from other national governments along with national budget. For e-boats bilateral and multilateral banks including GCF will be engaged to finance further expansion of investments in public transport. The national banking sector mostly finances residential or commercial sector loans and will be an actor in financing purchase of e-bikes and electric 2 wheelers. National Banking sector will be engaged in awareness raising and capacity building to enable them better understand the technology and its advantages.

Establishment of a low-carbon, sustainable, safe and well-connected nation-wide transport system is a priority for the Maldives. The government have an essential role to play in influencing private sector engagement and provide an enabling environment for establishing strong partnerships between the public and private sectors. Mechanisms to leverage private investment shall result in improved long-term environmental performance, if an adequate enabling policy, the regulation environment exists in the country. To scale-up proposed demonstration/pilot project cases to programmes or sustainable

market level, it is crucial to adopt a holistic approach to private sector engagement on climate change and sustainable development. This approach involves supporting a range of policy reforms and regulations to promote mitigation and adaptation and improved environmental performance ? the enabling policy environment for private climate investments along with the use of limited public finance for mechanisms to leverage private investment.

5. Risks to Achieving Project Objectives

Elaborate on indicated risks, including climate change, potential social and environmental risks that might prevent the project objectives from being achieved, and, if possible, the proposed measures that address these risks at the time of project implementation.(table format acceptable):

Risk description	Main categories	Risk level rating	Risk Mitigation Strategy and Safeguards	By Whom / When?
Negative perceptions about the mobility technology and the impacts this will bring to society and industry.	Environmental	Medium	The proposed project plan includes workshops with stakeholders and communication activities that will reduce this risk in two main ways: first, integrating the views of stakeholders into the planning process; second, providing more in-depth explanations of the actual impacts of the measures to be taken (which are generally positive for all stakeholders in the long run). It has been proven in other similar situations that these activities reduce the level of opposition to a project.	PMU through all the project output
Leadership change: change in leadership and priorities in the government	Political / Institutional	Medium	The proposed component/outcomes/outputs are developed to address the key environmental and transport challenge perceived by a range of stakeholders. The components on embedding policy and regulatory framework in existing national strategies ensure continuity of policy across political regime. Further, component 3 of creating awareness and buy-in among wider stakeholders. This is also enhanced by engagement of CSO in project demonstration. Further, PMU will ensure that key activities are completed and demonstration, which is key to buy in, are finalized before next elections.	PMU

GHG savings achieved are limited in countries with a more carbon-intensive grid	Environmental	Low	The proposed project will accelerate the adoption of electric vehicles (which have benefits over the conventional vehicles); However, this is planned to be further augmented with electricity procurement for these vehicles to be coming from renewable sources. Hence, GHG savings will be significant.	PMU
The higher upfront cost of electric vehicles may pose a barrier to the implementation and scale-up of activities	Economic	Medium	Through the GEF grant, this project is likely to establish viable business models, which could further accelerate the adoption of electric vehicles, removing the initial barrier to implementation.	PMU
Insufficient human resources within country to support the transformation	Capacity / Technical	Low	As part of the project international expertise is provided to support the national human resources. Further, training component is included to strengthen capacity among policy makers and private sector to ensure capacities are created for sustaining the transformation. The materials will be developed and anchored in Maldives National University to give it permanence.	PMU, International Experts
A time lag of results: Major results of the project may not be seen before the end of the project period.	Political	Low	A survey is planned and budgeted towards the end of this project, which can give an indication of the kind of expected results. Secondly, in the alternative section, it is shown in a detailed manner, that this project will not only have benefits on the GHG reduction front but on triggering the other projects aimed for GHG reduction and improvement in air quality	PMU, Subcontractor for Surveys
Lack of interest or participation from market players/private sector.	Economic	Medium	This was addressed during the stakeholder meetings as well. The involved entities are very much keen to take this up, considering the larger benefits to the country. Also, the industry is very much aware of the impact of climate change and GHG emissions and is keen to incorporate changes.	PMU, Ministry of Transport and Civil Aviation

Lack of linkages with available funding/financing for EVs fleets.	Financial	Medium	This project will explore the possibilities of mixing and matching the existing available funding/financing for EVs fleets. One example is the co-financing coming from the Ministry of Transport and Civil Aviation (via MTCC), they were planning to do something in this area; however, they were reluctant to put forward the initial funding. Through GEF finance, those initial barriers have been removed.	PMU, MEE, MoTCA
Inadequacy of the exit strategy and lack of ownership of the program after the end of the GEF funded activities and inability to source resources to continue the program's activities in the medium/long term (including thematic working groups and support and investment platforms).	Political / Financial	Low	The project activities and outputs are aligned with the Mandate of the MoE and MoTCA as well as based on the key issue of air pollution and traffic congestion perceived as key issue with wide range of stakeholders. Further, the products will be developed and integrated into the policy/regulatory framework of the key Ministries with related mandate.	PMU, MEE, MoTCA

<p>Impacts of Risk on Project Implementation</p>	<p>Health/Financial</p>	<p>Low</p>	<p>As described in the assessment below the worst on COVID is nearly past and Maldives is slowly returning back to normally. It is anticipated by the time of project start situation would have further improved.</p> <p>Further, as can be seen in analysis policy priority list for the next two years was developed, called 'The National Resilience and Recovery (NRR) Plan 2020-2022' focuses on transport sector and this project will contribute to it. The policies selected for this list will be given a special priority for national implementation and budgeting. The NRR Plan includes prioritizing low emission and sustainable transport systems, thereby completely aligning the GEF project with the national COVID recovery plans over the next two years.</p> <p>The NRR plan also supports Maldives in achieving the SDGs by maximizing the UN's value additions based on the building back better principle, with focuses including:</p> <ul style="list-style-type: none"> ? De-couple growth from carbon emissions and unsustainable consumption. ? Accelerate commitment to environmental sustainability. ? Nature-based solutions, climate action, and low carbon development; by utilizing international UN mechanisms and climate financing through multilateral platforms such as the Paris Agreement, COP, Rio Conventions, and Samoa Pathways; by advocating for SIDS positions. 	<p>TM and PMU</p>
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<p>The Climate Change related impacts on the infrastructure created by the project</p> <p>(See detailed actions in climate risk assessment below)</p>	<p>Climate risk</p>	<p>High in the long-term</p>	<p>The project is promoting a sustainable transport infrastructure based on e-mobility, public transport and non-motorized transport. The impact of climate risks on the project created infrastructure is the same as those on other built environment infrastructure in the Maldives. The GoM has, as defined in climate risk assessment, in place policy and strategic framework to reduce the climate vulnerability of infrastructure which will be the basis of designing the infrastructure in the underlying projects. The country also has in place Disaster Management Act (2015) which integrates climate change induced disasters as well in disaster management plans. The DMC address vulnerability reduction as an integral part of the disaster risk management. The SNAP of 2010-2020 manifests political commitment to optimize disaster risk reduction (DRR) and climate change adaptation (CCA) countermeasures, and mainstreams these into the planning and budgeting process. The government has also heavily invested in capacity building, disaster education, and regional assessments. The private sector had given considerations for DRR fund allocations, and the largest insurance company of the country had begun working with National Disaster Management Center to establish disaster sensitive insurance schemes .</p> <p>The project will also undertake an assessment on the climate risks to the project created infrastructure and assess capacities in the sector to understand and integrate these risks in the project design. Further, the project infrastructure design will integrate climate resilience measures to reduce the negative impacts of climate risks.</p>	<p>PMU, MEE</p>
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COVID Risk Assessment

As of present the situation in Maldives is much better than in other countries. The current test positivity dropped to 2%. Most of the impact is faced in Greater Male? region.

? Travel restrictions. Maldives government has opened up International travel for tourism in tourist resort islands with necessary health management practices to ensure safe tourism as of August 2020. Though travel to greater Male for professional work is allowed the possession of negative COVID-19 tests, quarantine upon arrival are required.

? Restrictions with regards to meetings and meeting size. The greater Male has put some restriction on in-person group meetings and working in office is allowed with safety guidelines that allows a percentage of staff to ensure safe distancing at office..

? Shift of government priorities. The COVID-19 related restrictions have had and will continue to have severe impacts on the Maldivian economy due to its dependence on Tourism income. This has impacted the revenues of the government. Government has already allowed tourism sector to open and this is ameliorating the situation to some extent but full flow of tourism is not expected before Mid 2021.

Following the impact, total government revenue is expected to see a 49 percent reduction in 2020, a drop by approximately US\$1 billion, reducing the revenue for 2020 to US\$990 million. With the increased spending to mitigate from COVID-19 impact, the budget deficit for 2020 is projected at US\$841 million. As the spending on health sector increases, the government is taking numerous measures to decrease the overall spending (refer to page 20 of the "COVID-19 socio-economic response and recovery framework developed by the UN in Maldives" for all national responses). According to the data collected 54 percent of the impacted employees were from tourism sector, followed by 14 percent in the transportation sector. Amongst those terminated, most are young people age 15-20. Since not all workers who are impacted are registered at Jobcenter.mv, the total number is expected to be higher. Some of these measures are welcomed, including delaying major public sector infrastructure projects, a freeze on new hires, and cutting the salary of political appointees and parliament members, all of which are helping to curb recurring expenses. These measures have allowed fiscal space to address the immediate health emergency and economic stimulation, pledging US\$97 million for health and US\$162 million for economic relief. However, the revised financial requirement for 2020 is US\$964 million, of which US\$296 million has been secured through external financing, thereby lowering the financing gap to US\$395 million. An additional US\$ 273 million is needed within the next two quarters from multilateral financing institutions to ease the immediate budgetary constraints.

With the Vaccines being available and the ramp up of production being planned it is anticipated that by Mid 2021 situations might start returning towards normal. The project is expected post approval by February 2021. The timelines for agreements and constituting of PMU would take it to second quarter of June. At this point most of the restrictions are likely to be removed internally allowing activities to go on. The ministry has gained experience during this year on conducting business digitally and that has enabled reducing delays in implementing activities.

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Climate Risk Assessment

The geography, natural setting, small size of the coral islands of the Maldives makes the entire population and the build infrastructures in close proximity to the shorelines. Any impacts due to climate change,

extreme events and natural disasters makes people and the infrastructure most vulnerable to these effects. The economic activities too are based on marine and coastal resources; hence any impact on these both makes Maldives economy as one of the most vulnerable.

Key findings of future climate projections from the downscaled models as reported in the Second National Communication are:

- ? Increase in rainfall over northern and central regions and a decrease in the southern region for the years 2021-2050, while an overall increase in rainfall is shown from 2082-2100 years
- ? Mean temperature increases by 1.8°C from baseline (1981-2000) by mid- (2021-2050) .
- ? Maximum sea surface height is projected to increase between 0.40 to 0.48m by 2100.
- ? SST has a rising trend in all four geographic zones in the selected (IPCC Special Report on Emissions Scenarios) SRES scenarios.

Disaster Risk Profile of Maldives by UNDP (2006a) identified the following natural disasters as the major risks to Maldives.

- ? Low risk to Earthquakes and Tsunamis
- ? Low risk to Cyclones/Thunderstorms
- ? Floods (due to rain) - Floods due to rain are the most frequent natural events in the Maldives. Future climate projections indicate that the extreme flooding events are likely to become more frequent in the future with changing climate. The return period of a daily rainfall of 150 mm for the northern region expected to change from 300 years to and 23 years by the end of the century.
- ? Swell and tidal waves also cause flooding in the Maldives islands, causing extensive damages to critical infrastructure, properties, household goods, saltwater intrusion to groundwater aquifer, coastal erosion and livelihood. The swell wave of April 1987 was one of the most destructive causing economic losses of over MVR 90 million (Edwards, 1989). Strong winds and associated rough seas have also caused damage to sea and some air transport. While gust-winds of 50 miles per hour is almost an every year event, winds of 60 mph have return periods of 2-3 years and 4-7 years respectively in the central and southern atolls.

The Second National Communication assessed the vulnerability to climate change and two aspects related to the project with vulnerability are:

- (i) Land loss, Beach Erosion and Human Settlements - With about 80% of islands being lower than one metre above the mean sea level, the islands of the Maldives are extremely vulnerable to climate change and its associated impacts, particularly sea level rise. The severity and frequency of observed erosion incidents have increased. The case study islands for the assessment show an overall land loss between 0.81- 3.66 ha during the observation periods. Both climate change and anthropogenic modification of coastal

environments are attributed as causes of this erosion. Inundation analysis of case study islands showed there is high risk of flooding with significant damage to human settlements and infrastructure.

(ii) Critical Infrastructures such as utility services, hospitals, transport and communication Infrastructures and waste management centres are located within very close proximity to coastline. These infrastructures are exposed to coastal hazards such as sea swells, storm surges and related coastal flooding. This vulnerability was highlighted in 2004 Indian Ocean Tsunami where one of the most significant impacts of the tsunami was the complete shutdown of the only international airport for several days. The increasing

To address the natural disasters and climate change vulnerabilities the GoM has taken a number of steps. This includes Safer Island Development Strategy, National Adaptation Programme of Action (NAPA, 2007) Strategic National Action Plan (SNAP, 2011), Coastal protection guideline (2015, and Maldives Climate Change Policy Framework (MCCPF, 2015). These strategies and guidelines provide the framework for infrastructure development to address climate change and disasters.

The project is promoting a sustainable transport infrastructure based on e-mobility, public transport and non-motorized transport. The impact of climate risks on the project created infrastructure is the same as those on other built environment infrastructure in the Maldives. As mentioned above the low-lying islands of Maldives are vulnerable to sea level rise, flooding due to heavy rains and sea swell from heavy winds and tidal waves. The GoM has, as defined in climate risk assessment, in place policy and strategic framework to reduce the climate vulnerability of its infrastructure which will be the basis of designing the infrastructure in the underlying project. To protect the islands the GoM has been investing in soft measures and hard measures. Soft coastal measures practiced in the Maldives include beach nourishment, preservation of coastal ridge, temporary seawalls/revetments, land use controls/setbacks, coastal vegetation, raised ridges and artificial reefs. Commonly used hard engineering solutions in Maldives are near shore and foreshore coastal protection methods, land reclamation and land elevation. Government has estimated that protection of all inhabited islands, using these measures, would cost up to USD 8.8 billion and is in the process of raising funds for implementing these measures which will also benefit and protect the infrastructure created by the government. The country also has in place Disaster Management Act (2015) which integrates climate change induced disasters as well in disaster management plans. The DMC address vulnerability reduction as an integral part of the disaster risk management.

(i) How will the project's objectives or outputs be affected by climate risks over the period 2020 to 2050, and have the impact of these risks been addressed adequately?

The project is promoting a sustainable transport infrastructure based on e-mobility, public transport and non-motorized transport. The impact of climate risks on the project created infrastructure is the same as those on other built environment infrastructure in the Maldives. As mentioned above the low-lying islands of Maldives are vulnerable to sea level rise, flooding due to heavy rains and sea swell from heavy winds and tidal waves. The GoM has, as defined in climate risk assessment, in place policy and strategic framework to reduce the climate vulnerability of its infrastructure which will be the basis of designing the infrastructure in the underlying project. To protect the islands the GoM has been investing in soft measures and hard measures. Soft coastal measures practiced in the Maldives include beach nourishment, preservation of coastal ridge, temporary seawalls/revetments, land use controls/setbacks, coastal vegetation, raised ridges and artificial reefs. Commonly used hard engineering solutions in Maldives are

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(ii) Has the sensitivity to climate change, and its impacts, been assessed?

As mentioned above the sensitivity to climate and its impacts are undertaken by Govt of Maldives related to climate change and its impacts on Maldives. As reported above the key impacts are as follows:

? Low risk to Earthquakes and Tsunamis

? Low risk to Cyclones/Thunderstorms

? Floods (due to rain) - Floods due to rain are the most frequent natural events in the Maldives. Future climate projections indicate that the extreme flooding events are likely to become more frequent in the future with changing climate. The return period of a daily rainfall of 150 mm for the northern region expected to change from 300 years to and 23 years by the end of the century.

? Swell and tidal waves also cause flooding in the Maldives islands, causing extensive damages to critical infrastructure, properties, household goods, saltwater intrusion to groundwater aquifer, coastal erosion and livelihood. The swell wave of April 1987 was one of the most destructive causing economic losses of over MVR 90 million (Edwards, 1989). Strong winds and associated rough seas have also caused damage to sea and some air transport. While gust-winds of 50 miles per hour is almost an every year event, winds of 60 mph have return periods of 2-3 years and 4-7 years respectively in the central and southern atolls.

(iii) Have resilience practices and measures to address projected climate risks and impacts been considered? How will these be dealt with?

The SNAP of 2010-2020 manifests political commitment to optimize disaster risk reduction (DRR) and climate change adaptation (CCA) countermeasures, and mainstreams these into the planning and budgeting process. Specific focus is given to mainstreaming community-based DRR into development planning by incorporating disaster mitigation within the sustainable development projects, communities, international institutions, and disaster management policies. The government has also heavily invested in capacity building, disaster education, and regional assessments. The private sector had given considerations for DRR fund allocations, and the largest insurance company of the country had begun working with National Disaster Management Center to establish disaster sensitive insurance schemes for households across the country.

Further in developing the project outputs and pilots the climate risk screen will be used to identify specific aspects that can be addressed at the specific transport project level. This has been included in the TORs for

all the relevant outputs, viz, National E-mobility plan, Transport plan for Male, and the pilots on e-bikes, e-buses and e-boats.

(iv) What technical and institutional capacity, and information, will be needed to address climate risks and resilience enhancement measures?

The Second National Communication identified the following key areas of further information and institutional capacity at national level required to address climate change risks.

? Understanding climate change: Knowing about past climate patterns, current trends and projected future changes to climate

? Understanding the implications of climate change: Accurately identifying the impacts on our physical environment, infrastructure, economy and society.

? Living with climate change ? towards climate resilient islands: Understanding practical and cost effective measures to lead us to a climate resilient pathway.

? Understanding how we can communicate risks: Knowing what, who, how and when to communicate climate information for towards a climate resilient pathway.

The Government through its own resources and support from international community is addressing this capacity and information gaps. Further in terms of ensuring protection of infrastructure the Govt of Maldives has identified the following capacity needs:

? Strengthen capacity for planning and design of infrastructure to ensure development of resilient infrastructure.

? Build capacity for coastal protection, coastal zone management and flood control

6. Institutional Arrangement and Coordination

Describe the institutional arrangement for project implementation. Elaborate on the planned coordination with other relevant GEF-financed projects and other initiatives.

? Institutional arrangements:

UNEP will be the Implementing Agency, while the Ministry of Environment (MEE) Maldives will be the Executing Agency. The executing agency will get active support from the Ministry of Transport and Civil Aviation (a nominated representative will be part of the PMU. MEE will be coordinating with the relevant institutions and other related projects/programs in order to avoid duplication of efforts and enhance the complementarity and synergy between these projects.

The proposed project is being submitted as an associated project under the ?Global Program to Support Countries with the Shift to Electric Mobility? program. In this instance, the project will build upon the materials and pieces of training provided by its global GEF Program on Supporting the Shift to Global Electric Mobility and will in return feed-back the experience gained, best practices identified and policies developed to the global knowledge hub hosted by the International Energy Agency. Identified stakeholders from government, academia as well as the private sector of Maldives will join the regional meetings and thematic working groups organized by the global electric mobility project to share their knowledge with other countries of the region and to benefit from the know-how generated within the thematic platforms. The transfer of knowledge and best practices from South to South, North to South and peer to peer is a core component of the GEF Program on Supporting the Shift to Global Electric Mobility and will ensure the effective use of funds, both at the country as well as at the global level.

Besides its parent project, the proposed project will build synergies with other on-going national initiatives, GEF and non-GEF projects such as the UNEP-GEF Strengthening Low Carbon Energy Island Strategies. There is considerable scope for drawing lessons from these successful measures and tools in the proposed project.

Body	Composition	Role and description	Frequency of meetings
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Body	Composition	Role and description	Frequency of meetings
Project Steering Committee (PSC)	<ul style="list-style-type: none"> ? Task Manager UNEP, ? Representation from GEF Focal Point ? Senior Representatives from Ministry of Environment, Ministry of Transport and Civil Aviation, Ministry of Planning and Infrastructure, Ministry of Housing and Urban Development, Ministry of Finance, President Office ? Other Special Invitees 	<ul style="list-style-type: none"> ? Provides oversight of the project progress and implementation of outputs; ? Approves annual work plans and budget; ? Approves management decisions to ensure timely delivery of quality outputs; ? Provides overall guidance and strategic direction; 	Twice a year
Technical Working Group for supporting project tasks	<p>Technical Working Group will be constituted for the main elements of work with members from the relevant ministries as well as INGOs/NGOs, including:</p> <ul style="list-style-type: none"> ? Ministry of Environment ? MTCC ? Ministry of Gender, Family and Social Services ? Male? City Council ? HDC ? STELCO ? Maldives National University (MNU) ? Bike Maldives ? Other Invitees 	<ul style="list-style-type: none"> ? Provides technical inputs to support the completion of project activities. ? Provides linkages with other on-going works of parent departments to ensure synergies. ? Participates in consultation meetings and training programs as well as provide data and information required for executing the activities. 	As per the requirement of the project, at least twice a year.

Body	Composition	Role and description	Frequency of meetings
Implementing Agency (IA)	UNEP Climate Mitigation Unit	<ul style="list-style-type: none"> ? Ensures timely disbursement/sub-allotment to executing agency based on an agreed legal document and in accordance with UNEP and GEF fiduciary standards; ? Follows-up with Executing agency for progress, equipment, financial and audit reports; ? Provides consistent and regular oversight on project execution and conduct project supervisory missions as per Supervision Plans and in doing so ensures that all UNEP and GEF criteria, rules and regulations are adhered to by project partners; ? Technically assesses and oversees the quality of project outputs, products, and deliverables ? including formal publications; ? Provides no-objection to main TORs and subcontracts issued by the project, including the selection of National Technical Coordinator or equivalent; ? Attends and facilitates inception workshops, field visits where relevant, and selected steering committee meetings; ? Assesses project risks, and monitors and enforces a risk management plan; ? Regularly monitors project progress and performance and rates progress towards meeting project objectives, project execution progress, quality of project monitoring and evaluation, and risk; ? Monitors reporting by project executing partners and provide prompt feedback on the contents of the report; ? Promptly informs the management of any significant risks or project problems and acts and follow up on decisions made; ? Applies adaptive management principles to the supervision of the project; 	Periodic meetings with Project Management Unit (PMU) and Executing Agency (EA)

Body	Composition	Role and description	Frequency of meetings
Executing Agency (EA)	Ministry of Environment (with representation from Ministry of Transport and Civil Aviation in the PMU)	<ul style="list-style-type: none"> ? Appoints a National Project Director to oversee and guide the execution of the project. NPD will be supported by the Project Management Unit. ? Ensures that the project meets its objectives and achieves expected outcomes; ? Ensures technical execution according to the execution plan laid out in the project document; ? Ensures technical quality of products, outputs, and deliverables; ? Ensures compilation and submission of progress, financial and audit reporting to Implementing Agency (IA); ? Submits budget revisions to IA for approval; ? Addresses and proposes solutions to any problem or inconsistency raised by the IA; ? Brings issues raised by or associated with clients to the IA for resolution; ? Facilitates meetings of Steering Committees and other oversight bodies of the project; ? Day to day oversight of project execution; ? Submits all technical reports and completion reports to IA (realized outputs, inventories, verification of co-finance, terminal reporting, etc.); ? Monitoring and evaluation of the project outputs and outcomes; ? Effective use of both international and national resources ? Timely availability of financing to support project execution; ? Proper coordination among all project stakeholders; national parties; ? Timely submission of all project 	Internal quarterly meetings with the National Technical Coordinator (NTC) and national focal point

Body	Composition	Role and description	Frequency of meetings
Project Management Unit (PMU)	National Project Director (NPD)	<ul style="list-style-type: none"> ? Will be represented by an officer from the Executing Agency; ? Acts as a member of the PSC; ? Reports to and receives advice from the PSC; ? Identifies and secures partner support for the implementation of project activities; ? Advises on the hiring process. 	Regular meetings with NTC

Body	Composition	Role and description	Frequency of meetings
	National Coordinator Technical	<p>This position will be paid with GEF funds, will be hosted by The Ministry of Natural Resources and Environment, and will be responsible for:</p> <ul style="list-style-type: none"> ? Takes responsibility for day-to-day project operations; ? Takes responsibility for the execution of the project in accordance with the project objectives, activities, and budget; ? Delivers the outputs and demonstrates its best efforts in achieving the project outcomes; ? Coordinates project execution and liaisons with national counterparts (relevant ministries, electric utilities, private sector, NGOs, etc.); ? Undertakes field visits; ? Manages financial resources and processing all financial transaction relating to sub-allotments; ? Prepares all annual/year-end project revisions; ? Attends and facilitates inception workshops and national steering committee meetings; ? Assesses project risks in the field, monitors risk management plan; ? Ensures technical quality of products, outputs, and deliverables; ? Coordinates the project work team; ? Coordinates with strategic taskforces; ? Acts as secretary of the PSC; ? Plans and hosts/chair the PSC annual meetings; ? Periodic reporting to UNEP and the PSC for allocation of the GEF grant according to the quarterly and annual work plans and budgets in coordination with UNEP and NPD; 	Regular meetings with NPD, the NTC (at least twice per month)

? **Coordination with other initiatives:**

Mapping was undertaken at PPG stage of all the ongoing initiatives in the country that link with the GEF project. Most of these projects are being executed by agencies who also are stakeholders of the current project and will be represented on the PSC and Technical Working Groups (TWG), enabling coordination. Further, one of tasks of the National Technical Coordinator (NTC) is to continuously update the related initiatives and develop a link with the project if relevant. The table below provides the projects that will be coordinated with during the execution.

Project Name	Description	Implementation period
<p>Climate and Clean Air Coalition to Reduce Short-Lived Climate Pollutants (CCAC)</p> <p>Implementing Partner-MEE</p>	<p>Supporting National Planning for Action on Short-Lived Climate Pollutants in the Maldives</p> <p>Baseline Activities:</p> <ul style="list-style-type: none"> ? Awareness and outreach on the impacts and mitigation strategies ? Regional and local actions by identifying barriers, enhancing capacity and technical assistance ? Promote and finance best practices and measures in agriculture, industries, solid waste management, household cooking and domestic heating; transport, etc. ? Part of the Urban Health Initiative of the CCAC 	<p>2015 - ongoing</p>
<p>Capacity Strengthening for Improved Transparency of Climate Change Mitigation and Adaptation Actions in the Maldives</p> <p>Executing Agency: MEE</p>	<p>The Project will support the country in strengthening its Transparency Framework in line with the Paris Agreement. A key component of project is to track NDC implementation and report. The MRV framework for Transport related emissions will complement the work of the Capacity Building Initiative for Transparency (CBIT) project. The framework will be developed in close cooperation with the CBIT team, which too is led by MEE.</p>	<p>PIF has been approved on December 9th. Project implementation expected to start early 2021.</p>

<p>Accelerating Sustainable Private Investments in Renewable Energy (ASPIRE)</p> <p>Implementing Partner ? MEE, FENAKA, MEA</p>	<p>The ASPIRE Programme consists of the following projects:</p> <ul style="list-style-type: none"> ? Project 1: Renewable Energy Investments under a Feed-in Tariff <ul style="list-style-type: none"> o Greater Male? Region Solar PV investments ? 15MW of solar PV to be fed in the grid systems (11MW for Male and 4MW for Hulhumale) o Outer island solar & wind investments ? combined RE investments in solar PV and wind installation of about 3MW on medium to large electricity consuming island (>1GWh/year) ? Project 2: Utilization of Waste-to-Energy (WTE) Technologies in Outer Islands <ul style="list-style-type: none"> o WTE investments in islands (S.Hithadhoo, HDh. Kulhudhufushi and R. Vandhoo) to displace diesel used for electricity and water production ? Project 3: Implementation Support and Institutional Development <ul style="list-style-type: none"> o Technical requirements for successful deployment as well as developing standards for interconnection and performance monitoring 	<p>2016 - On-going</p>
<p>Thilafushi Waste-to-Energy (WTE)</p>	<p>The project comprises of implementation of the WTE facility to be part of a solid waste management system for the greater Male? region and the neighbouring resort islands. The overall system to include waste collection and transportation to Thilafushi, waste processing and disposal on Thilafushi (segregation, recycling, composting, gasification and inert waste disposal in the landfill); and an up to 4 MW WTE power generation facility to replace the existing diesel-based power generators on the island</p>	<p>2018 (On-going)</p>
<p>Grid Interconnection between Male and Hulhumale</p>	<p>The project is another step forward in implementing environment friendly energy production, as it would increase the efficiency of diesel power generation</p>	<p>2016-ongoing</p>

7. Consistency with National Priorities

Describe the consistency of the project with national strategies and plans or reports and assessments under relevant conventions from below:

NAPAs, NAPs, ASGM NAPs, MIAs, NBSAPs, NCs, TNAs, NCSAs, NIPs, PRSPs, NPFE, BURs, INDCs, etc.

The project is directly supportive of, and consistent with, Maldives national priorities and policies related to climate change and development. Specifically, it is consistent with the NDC, Strategic Action Plan:

Framework for Development, National Environmental Action Plan 3, National Energy Policy, and National Sustainable Development Strategy. The Maldives submitted an NDC that targets an unconditional economy-wide target of 10% below BAU by 2030 and up to 24% below BAU by 2030. However, no specific mitigation measures are identified.

In the United Nations Development Assistance Framework (UNDAF), 2016-2020 for the Maldives, this project supports Outcome 4, "By 2020, growth and development are inclusive, sustainable, increase resilience to climate change and disasters, and contribute to enhanced food, energy and water security and natural resource management".

The project is also in line with the Maldives Climate Change Policy Framework, especially Policy Goal 2, "strengthen a low emission development future and ensure energy security for the Maldives" and Policy Goal 5, "foster sustainable development while ensuring security, economic sustainability and sovereignty from the negative consequences of the changing climate." In the Strategic Goal of Low Emission Development, there are also specific objectives that are directly appropriate to this project, namely:

• To create a more sustainable and stable economy independent of external shocks to base economic factors such as fluctuating energy prices;

• To ensure that transport and electricity systems meet society's economic, social and environmental needs whilst minimizing their undesirable impacts on the economy, society and the environment;

• To achieve a balanced shift towards environmentally friendly transport modes to bring about a sustainable transport and mobility system;

8. Knowledge Management

Elaborate the "Knowledge Management Approach" for the project, including a budget, key deliverables and a timeline, and explain how it will contribute to the project's overall impact.

Knowledge management is a key part of the project, both on the national as project level as well as at the global program level. The proposed project will build on the ongoing partnerships and existing knowledge networks. MEE will manage information sharing including the public awareness-raising and advocacy campaign. The capacity building activities as part of this project will also be integral to the knowledge management plans of the project. An institution or agency will be established, or an existing organization supported to have a specific focus on integrated, sustainable, and low-emissions transport.

Furthermore, this project will receive knowledge in the form of trainings, best practices and tools provided by the Global electric mobility program. On the other hand, overall lessons from the proposed project will be of substantial value to the Global electric mobility program which will disseminate the lessons of Maldives through its regional hubs, which link the global program activities to the child projects. Linkages to the Global electric mobility program will provide countries a unique opportunity to exchange on-the-ground experiences with electric mobility South to South, North to South and Peer to Peer.

A public awareness and advocacy program will be designed and completed to illustrate detrimental effects of GHG and air quality emissions on human health as well as the multiple benefits and best practices of

low emission development with the aim of enhancing awareness and garnering support from the general public. This will include following some important communication messaging to shift users to:

- ? Shared vehicles and road de-congestion from private ownership
- ? Public transportation
- ? More walking and cycling
- ? Purchase and use of evs
- ? Disciplined and paid parking
- ? Road and traffic safety
- ? Vehicle Pollution Inspection & Maintenance
- ? Compliance with End-of-life vehicle rules

As a part of this program, 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. Surveys before the campaign and pilot programs or policy adoption will be conducted with decision makers, practitioners and general public undertaken to assess impact of the project. The public awareness and advocacy program will be partly based on a study that will be conducted to assess the impact of climate change and air quality on health and the environment in the Maldives. MRV & AQMS are very important aspects in terms of setting right output templates, processes for regular reporting and for communication to public.

The same above program shall be expanded as capacity building training for health experts, government institutions and NGOs to result in improved enforcement and compliance of regulations on air pollution.

Documentation of findings from the operation and monitoring of the demonstration projects will be prepared. At least two case studies of all demonstration projects will be prepared. These documents will cover both technical results of demos as well as results of the development impacts surveys conducted by the project. The learnings and results from Male region focused demonstration projects shall be expanded with suitable context and mapping to other islands and developed as tool kit to support mapping of e-Mobility solutions to their specific needs. Focused Trainings and dissemination workshops shall be conducted with identified 2-3 Atolls that can benefit from direct learnings from the Male region e-Mobility projects and pursue implementation.

Knowledge generated from the policy studies and demonstration projects and as well as the MRV component will be used to inform capacity development activities to showcase to the public different non-energy and other sustainable development benefits. The knowledge generated will be archived at MEE and

Ministry of Transport integrated with their existing knowledge management systems. Further, the global and regional webs will be linked up to the country level knowledge management system.

The project is part of the global GEF-UNEP Programme on Electric Vehicles. It will actively participate in the global programme's global and regional activities, for example by participating and contributing to the knowledge exchange in the regional knowledge and investment platforms and the relevant global working groups, as well as by providing insights and knowledge.

9. Monitoring and Evaluation

Describe the budgeted M and E plan

Monitoring and Evaluation (M&E) activities and related costs are presented in the costed M&E Plan (Annex J) and are fully integrated in the overall project budget.

The project will comply with UNEP standard monitoring, reporting and evaluation procedures. Reporting requirements and templates are an integral part of the legal instrument to be signed by the Executing Agency and the Implementing Agency

The project M&E plan is consistent with the GEF Monitoring and Evaluation policy. The Project Results Framework presented in Annex A includes Specific, Measurable, Achievable, Realistic, and Timely (SMART) indicators for each expected outcome as well as end-of-project targets. These indicators along with the key deliverables and benchmarks included in Annex L will be the main tools for assessing project implementation progress and whether project results are being achieved. The means of verification to track the indicators are summarized in Annex A.

The M&E plan will be reviewed and revised as necessary during the project inception workshop (PIW) to ensure project stakeholders understand their roles and responsibilities vis-à-vis project monitoring and evaluation. Indicators and their means of verification may also be fine-tuned at the inception workshop. General project monitoring is the responsibility of the Project Management Unit (PMU) but other project partners could have responsibilities in collecting specific information to track the indicators. It is the responsibility of the Project Manager to inform UNEP of any delays or difficulties faced during implementation so that the appropriate support or corrective measures can be adopted in a timely fashion.

The project Steering Committee (PSC) will receive periodic reports on progress and will make recommendations to UNEP concerning the need to revise any aspects of the Results Framework or the M&E Plan. Project oversight to ensure that the project meets UNEP and GEF policies and procedures is the responsibility of the UNEP Task Manager. The UNEP Task Manager will also review the quality of draft project outputs, provide feedback to the project partners, and establish peer review procedures to ensure adequate quality of scientific and technical outputs and publications.

Project supervision will take an adaptive management approach. The UNEP Task Manager will develop a project Supervision Plan at the inception of the project, which will be communicated to the Project Management Unit and the project partners during the Inception Workshop. The emphasis of the Task

Manager's supervision will be on outcome monitoring but without neglecting project financial management and implementation monitoring.

Progress vis-?-vis delivering the agreed project global environmental benefits will be assessed with the Steering Committee at agreed intervals. Project risks and assumptions will be regularly monitored both by the Project Management Unit, the project partners and UNEP. Risk assessment and rating is an integral part of the Project Implementation Review (PIR). The PIR will be completed by the Project Manager and ratings will be provided by UNEP's Task Manager. The quality of project monitoring and evaluation will also be reviewed and rated as part of the PIR. UNEP's Task Manager will have the responsibility of verifying the PIR and submitting it to the GEF. Key financial parameters will be monitored quarterly to ensure cost-effective use of financial resources.

Since this is a Medium-Size Project (MSP) of less than 4 years of duration, no Mid-Term Evaluation (MTE) will be undertaken. However, if the project is rated as being at risk or if deemed needed by the Task Manager, he/she may decide to conduct a Mid-Term Review (MTR). This review will include all parameters recommended by the GEF Evaluation Office for Terminal Evaluations (TE) and will verify information gathered through the GEF tracking tools, as relevant. The review will be carried out using a participatory approach whereby parties that may benefit or be affected by the project will be consulted. Such parties were identified during the stakeholder analysis (see section 2 above). Members of the project Steering Committee could be interviewed as part of the MTR process and the Project Manager will develop a management response to the review recommendations along with an implementation plan. Results of the MTR will be presented to the Project Steering Committee. It is the responsibility of the UNEP Task Manager to monitor whether the agreed recommendations are being implemented.

In-line with UNEP Evaluation Policy and the GEF's Monitoring and Evaluation Policy the project will be subject to a Terminal Evaluation (TE) commissioned by the UNEP Evaluation Office at the end of project implementation. The EOU will be responsible for the Terminal Evaluation and will liaise with the Task Manager and Executing Agency's Project Management Unit throughout the process. The TE will provide an independent assessment of project performance (in terms of relevance, effectiveness and efficiency), and determine the likelihood of impact and sustainability. It will have two primary purposes: (i) to provide evidence of results to meet accountability requirements, and (ii) to promote learning, feedback, and knowledge sharing through results and lessons learned among UNEP, the GEF, executing partners and other stakeholders.

The TE will be initiated no earlier than 6 months prior to the operational completion of project activities and, if a follow-on phase of the project is envisaged, should be completed prior to completion of the project and the submission of the follow-on proposal. TE must be initiated no later than 6 months after operational completion.

The draft TE report will be sent by the UNEP Evaluation Office to project stakeholders for comments. Formal comments on the report will be shared by the EOU in an open and transparent manner. The project performance will be assessed against standard evaluation criteria using a six-point rating scheme. The final determination of project ratings will be made by the EOU when the report is finalized and further reviewed by the GEF Independent Evaluation Office upon submission. The evaluation report will be publicly disclosed and will be followed by a recommendation compliance process. A review of the quality of the

evaluation report will be done by EOU and submitted along with the report to the GEF Evaluation Office not later than 6 months after the completion of the evaluation.

The GEF Core Indicator Worksheet is attached as Annex F. It will be updated at mid-term and at the end of the project and will be made available to the GEF Secretariat along with the project PIR report. As mentioned above, the MTR/MTE and TE will verify the information of the tracking tool.

The direct costs of reviews and evaluations will be charged against the project evaluation budget. A description of M&E activities planned and related costs is provided in Annex J. The GEF contribution for M&E activities is US\$ 45,000. The cost of preparation of various monitoring reports, which is the responsibility of the National Technical Coordinator (NTC) acting as the Project Manager, is included as the time cost of NTC under the PMC budget. A brief summary is presented in table below:

M&E Activity	
Project progress reports (half yearly report, PIR, quarterly expenditure reports)	10,000 USD (10% of the NTC's time will spent on reporting and monitoring. This is covered by PMC budget)
TE	35,000
Total	45,000

10. Benefits

Describe the socioeconomic benefits to be delivered by the project at the national and local levels, as appropriate. How do these benefits translate in supporting the achievement of global environment benefits (GEF Trust Fund) or adaptation benefits (LDCE/SCCF)?

The widespread use of low carbon vehicles for public transportation is expected to help achieve various benefits including reduction of noise pollution, reduced traffic and parking congestion. The transformation to sustainable low-emission transportation system will result in 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 too are expected benefits. Improved reliability of travel times for public transport? 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. The highly subsidized fossil fuel prices present a major burden on public budgets.

Further, improved air quality monitoring and forecasting will lead to emissions reduction from pollution sources, arising from improved policies and enforcement of standards and regulations. Finally, health and other socio-economic benefits of improved air quality are anticipated to result from the project.

COVID Response Benefits

While during COVID-19 vehicles sales have plummeted, electric vehicles sales have been relatively less affected. The IEA estimated that global car sales between January and April in 2020 dropped by about one-third from the same period in 2019, with around 9 million fewer cars sold. The IEA expects however that electric cars are likely to have a much better 2020 performance than the rest of the auto industry. Similarly, analysts from Bloomberg New Energy Finance have estimated that the electric segment of car sales will continue to outperform in terms of growth the traditional cars one as we move past the crisis, even though oil prices at a historic low will create some negative headwinds. However, orders of buses are likely to suffer delays if public perception of mass transit as being unsafe will persist.

Furthermore, in terms of green recovery, clean mobility is expected to play a key role in getting the global economy back on track. Continued social distancing measures may have an impact on how transportation services are used, and in particular public transportation, but certain modes of public transport are expected to grow, in particular in low and middle-income countries. These modes include 2&3 wheeler taxis, or usual taxis and ride-hailing providers using passenger cars, to reduce close contact with higher numbers of riders. For many of these modes good electric alternatives are available

President Ibrahim Mohamed Solih, with the support of his Cabinet of Ministers, established the national taskforce on Resilience and Recovery to address the short to medium term challenges posed by these socio-economic impacts. This national level mechanism allows for multiagency and multi sectoral coordination to address the most pressing issues facing the country at this time.

A policy priority list for the next two years was developed, called 'The National Resilience and Recovery (NRR) Plan 2020-2022'. The policies selected for this list will be given a special priority for national implementation and budgeting. The NRR Plan includes prioritizing low emission and sustainable transport systems, aligning the GEF project with the national COVID recovery plans for the next few years. As can be seen decongestion of traffic in Male and public transport is a key focus area of recovery.

The plans takes into account the reported correlation between air quality and COVID-19, whereby COVID-19 incidence and mortality are significantly higher in areas that have high levels of local air pollution. This includes particulate matters (e.g. PM2.5, PM10) as well as N2O from both mobile (e.g. trucks and cars) and stationary (e.g. coal power stations) emission sources. Since electric mobility has the potential to significantly contribute to improved urban air quality, we assume that it will play an important role in countries' strategies to respond to the COVID-19 pandemic. Similarly, a shift to electric mobility will significantly reduce the dependency of countries to import petroleum petrol fuels. It therefore increases resilience against restrictions or price spikes resulting from international crisis.

The NRR Plan 2020-2022 includes:

Plans on Male? traffic decongestion:

- ? Develop a proper plan and business model to roll out the mini bus project in Male?
- ? Identify and implement loading and unloading areas in major roads to ease congestion in Male?
- ? Develop at least 2 parking buildings in Male? with top floors to be used for community gardening
- ? Develop a national master plan for land transport
- ? Strengthen ease of services of Transport Authority and improve regulatory framework
- ? Review and amend laws and regulations governing the sector with a view to facilitate growth of the sector

Maximize solar power in energy generation and improve energy efficiency:

- ? Successful roll-out of key renewable energy projects
- ? Pursue new projects for solar energy generation under Power Purchase model to Identify the scope and locations, and ensure requirements of investors are facilitated to make investments under the PPA model
- ? Implement energy efficiency labelling programme for selected electrical appliances imported and used in the country

Ensuring energy security for Male? region:

- ? Complete Male?- Hulhumale Interconnection Project by early 2021
- ? Identify medium-term energy demand for Greater Male? Region and implement projects to increase the generation capacity to meet the demand
- ? Scope of projects and location of projects to be finalized and work to commence on securing investments, and financing for the projects

Continuous efforts are being undertaken to increase adaptation and mitigation actions and opportunities especially for SIDS, and to undertake low emission development. The current administration intends to increase the country's share of renewable energy to 70% of the peak load by 2030. This government plans to achieve it through policy interventions and as part of achieving energy policy goals and targets to provide clean energy across the country.

For the Maldives, climate change risks are existential threats, and the pandemic is constraining the fiscal space and the ability of the government to effectively address this dual crisis. While the impact from COVID-19 is temporary, the impact from climate change on the people and the country's natural resources is permanent, and on the rise. Unless an alternative development model is pursued, the loss from the COVID-19 pandemic will be made permanent by climate change.

11. Environmental and Social Safeguard (ESS) Risks

Provide information on the identified environmental and social risks and potential impacts associated with the project/program based on your organization's ESS systems and procedures

Overall Project/Program Risk Classification*

PIF	CEO Endorsement/Approval	MTR	TE
Medium/Moderate			

Measures to address identified risks and impacts

Elaborate on the types and risk classifications/ratings of any identified environmental and social risks and impacts (considering the GEF ESS Minimum Standards) and any measures undertaken as well as planned management measures to address these risks during implementation.

This project is likely to be in the moderate risk category around the risks associated with the resource efficiency and waste management category. The key issue is around the disposal of batteries used in E Vehicles.

Project includes component on adopting safe battery disposal management which will be delivered by the global project. This will be integrated into the country regulatory framework. The project will, given that Maldives is an Island, explore options of importers of vehicles taking responsibility of taking

back the batteries. Further, the design of e-vehicles will assess the battery sizes required given the small distances travelled to ensure that battery size is optimized thus reducing the volume of waste generation at the end of life.

The project infrastructure creation may result in waste which will be managed by the Waste Management regulations of the government. The project will also ensure that assessment of the waste management from demonstration projects will be assessed and addressed as per appropriate methods to ensure no impacts are created. Further, the strategy and regulations developed for sustainable transformation will assess the likely impacts and mainstream them with the overall strategy and policy framework.

The project has no social risks as the project focus on public mobility which will increase the access of mobility for lower income classes. Further, the project has a gender implementation plan to ensure that the development of pilot projects and policies/programmes take into account gender perspectives to ensure equal benefits.

Supporting Documents

Upload available ESS supporting documents.

Title	Module	Submitted
ESSSupportingDocument_Maldives EV ESERN	CEO Endorsement ESS	

ANNEX A: PROJECT RESULTS FRAMEWORK (either copy and paste here the framework from the Agency document, or provide reference to the page in the project document where the framework could be found).

Please refer to page 72 on the project document.

ANNEX B: RESPONSES TO PROJECT REVIEWS (from GEF Secretariat and GEF Agencies, and Responses to Comments from Council at work program inclusion and the Convention Secretariat and STAP at PIF).

Detailed response to comments are included in separate pdf files as follows:

Annex B.1 ? Responses to GEF Sec reviews (on the PFD)

Annex B.2 ? Responses to GEF Sec reviews (on the PFD addendum)

Annex B.3 ? Responses to STAP comments

Annex B.4 ? Responses to Council comments?

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A summary of the response based on the attached documents is provided here:

There were no specific comments on Maldives project in the council comments. Two generic comment that are relevant for all project are addressed in the project document:

(i) Review of fossil fuel subsidies as well as consider implementation of emission taxes : Component 1 on the policy regulatory framework will undertake assessment of the fossil fuel subsidies, which are primarily for electricity generation on outer smaller islands, and potential of emission taxes.

(ii) Consider environmental impacts of electric vehicles, particularly where facilities for managing batteries don't exist: Component 1 specifically includes development of framework for Maldives in re-use and environmental safe disposal of batteries.

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Similarly, no specific STAP comment was received on the Maldives Project, and the generic comments relevant to the Maldives Child project were addressed as follows:

Comment 1 -issue of availability of raw material for Battery Production: The project recognizes the issues around provision of raw materials for battery production. Nonetheless, it is not the focus of the project to ensure availability of these materials and subsequent battery supply. It seems to be understood that availability of resources such as lithium, cobalt, nickel and copper and their transformation into reserves (classification based on IEA Global Electric Vehicle Outlook [GEVO] 2019) is not constrained by the natural resource base but rather by the pace of investment to un-tap

these resources (see IEA GEVO 2019). The project seeks for acceleration of EV demand, and therefore acceleration of demand for batteries. It is believed that such an accelerated demand will lead to the necessary investment in battery production capacity and hence the provision of raw materials.

Nonetheless, the project will put focus on the development of regulation and schemes for collection of used EV batteries for re-use, recycling and safe disposal, mainly through the International Energy Agency (IEA) led Global Thematic Working Group on 'Charging infrastructure, grid integration, low-carbon power supply and batteries'. The project aims at facilitating re-use and recycling of used EV batteries through 'design for recyclability' of EV batteries to ensure that a trajectory leading to some sort of circular economy can be taken in the future. Development of adequate policies will play a major role in the stipulation of high recycling rates to ease pressure on raw material demand and to increase sustainability of e-mobility as a whole. This also includes the development of guidelines and agreements with regards to the social and environmental standards for the sourcing of these materials. Private sector alliances such as the mentioned Global Battery Alliance of the World Economic Forum can help with the facilitation of such agreements and will be included in the design of the relevant operational parts of the Global Child Project. Similarly, literature and indices such as the mentioned Roland Berger 'E-Mobility' Index will be included to the extent possible within the work of the relevant Working Groups. It needs to be noted that the Basel and Stockholm Convention Regional Centre for the Asia and Pacific Region in China (BCRC-SCRC China, hosted by the School of Environment of Tsinghua University) will be part of the GEF Global E-Mobility Programme. The Basel Convention regulates the international trade of waste, which might play a key role in the area of used EV battery recycling since large scale battery recycling is likely to depend on international shipping of used EV batteries and / or battery components.

Comment 3 ' GHG intensity of country grids and their implications for EV GHG impacts: GHG emission saving potentials for all Country Child Projects are evaluated based on 1.) the current local carbon footprint of grid electricity; and 2.) prospects to reduce the average carbon footprint of grid electricity based on commitments and pledges to mitigate climate change. In case of Maldives the majority of electric power is from diesel engines with a growing share of renewable energy being integrated into the system. As a general 'rule of thumb' a carbon footprint threshold for grid electricity of around 800 to 900 gCO₂/kWh is assumed to mark the line above which additional measures are necessary to reach net reductions of greenhouse gas emissions. Maldives emission factor is below this threshold and government plans to increase the RE capacity of system to 30% by 2030. Compared to alternative, technology based transport GHG mitigation measures such as the large scale use of biofuels as well as the use of potentially low carbon fuels such as hydrogen and synthetic fuels, it is believed that the direct use of electricity constitutes the most efficient means of decarbonizing transportation, alongside implementation of 'avoid' (avoid transport demand) and 'shift' measures (shift transport demand to more efficient means of mass transport as well as non-motorized transport). It is therefore necessary to introduce e-mobility now, in order to be prepared for upscaling once mitigation targets in the relatively low-abatement cost power sector have been achieved.

Comment 4 ' measuring of air pollution co-benefits: The air pollution reduction and associated expected health benefits will not be measured/quantified by the projects through GEF funding.

However, in case of Maldives the project has finance for installing air pollution monitoring systems. The project will support development of methodology to measure and report the GHG emissions reduction and air pollution reduction, including health impacts from reduction of air pollution.

Comment 5 ? impact on energy justice: E-mobility has the potential to increase energy justice and to support the development of local value chains. While petroleum-based fuels are imported in most of the Country Child Projects, electricity is generated locally, with the potential to include high shares of locally generated renewable power. Introduction and up-scaling of e-mobility has therefore the potential to increase energy security and to hedge against the price volatility of the global petroleum fuel market. In many of the Country Child Projects, consumer prices of petroleum fuels are regulated by government and price spikes in the global supply chain has immediate effects on countries budgets. Total cost of ownership of electric vehicles, in particular when used in fleets such as public transportation fleets (buses, taxis, 2&3 wheeler taxis) are already lower than for conventional vehicles today in many of the Child Country Projects. The large-scale introduction of EVs in such fleets can therefore lead to better economics of public transport services, which in turn can lead to better service and lower cost of transportation for the end consumer. In addition, the provision of e-mobility applications such as electric 2&3 wheelers in least developed countries can un-tap synergies with rural electrification based on renewable micro and mini-grids (e.g, based on solar PV & electricity storage). Last but not least, the relatively less complex nature of electric vehicles can lead to the creation of green jobs in the local assembly and manufacturing of EVs, notably electric 2&3wheelers.

ANNEX C: Status of Utilization of Project Preparation Grant (PPG).
(Provide detailed funding amount of the PPG activities financing status in the table below:

PPG Grant Approved at PIF: US\$			
<i>Project Preparation Activities Implemented</i>	<i>GETF/LDCF/SCCF Amount (US\$)</i>		
	<i>Budgeted Amount</i>	<i>Amount Spent to date</i>	<i>Amount Committed</i>
GEF Expert	11,000	11,000	0
E vehicle Expert	9,200	9,200	0
Missions and Consultation workshop	12,000	12,000	0
Total	32,200	32,200	0

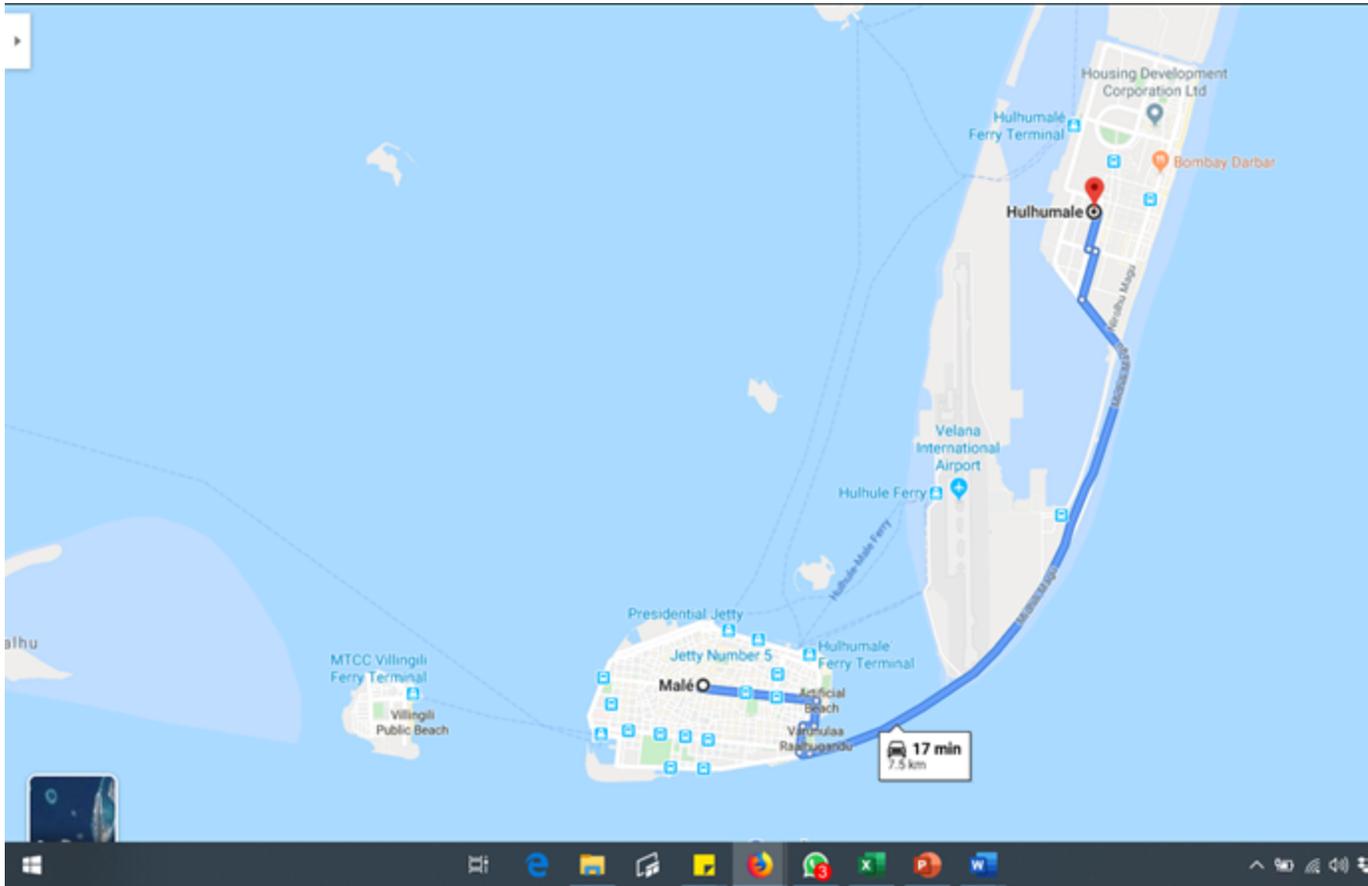
ANNEX D: CALENDAR OF EXPECTED REFLOWS (if non-grant instrument is used)

Provide a calendar of expected reflows to the GEF/LDCF/SCCF/CBIT Trust Funds or to your Agency (and/or revolving fund that will be set up)

Not Applicable

ANNEX E: Project Map(s) and Coordinates

Please attach the geographical location of the project area, if possible.



Location	Latitude	Longitude
Male?	4.175496	73.509346
Hulhumal?	4.173730	73.503960

ANNEX F: Project Budget Table

Please attach a project budget table.

Attached